



CITY OF LANCASTER
Building Department
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Required Construction Documents Residential Code of Ohio

Section 106 Construction Documents.

106.1 Submittal documents. Residential construction documents and other data shall be submitted in two or more sets with each application for an approval. Before beginning the construction of any residential building for which construction documents are required under section 105, the owner or the owner's representative shall submit construction documents to the residential building official for approval. When construction documents have been found to be in compliance with the rules of the board of building standards in accordance with section 106.3 by a certified residential building department that compliance shall be deemed sufficient to obtain approval for construction pursuant to section 105.7 and the residential building official shall issue the certificate of plan approval.

106.1.1 Information on residential construction documents. Residential construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the residential building official. Construction documents shall be coordinated and of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of the code. Construction drawings, shall include information necessary to determine compliance with the building, plumbing, and fire protection codes such as:

1. **Index.** An index of drawings located on the first sheet;
2. **Site Plan.** A site plan showing to scale the size and location of new residential construction and all existing structures on the site., including setback and sideyard dimensions, all property and interior lot lines, distances from lot lines, the locations of the nearest streets. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The residential building official is authorized to wave or modify the requirement for a site plan when the application for approval is for alteration or repair or when otherwise warranted.

2.1 **Residential buildings or structures located in flood hazard areas.**

Construction documents submitted for residential buildings or structures located in communities with identified flood hazard areas shall include the current FEMA “Flood Hazard Boundary Map” (FHBM), “Flood Insurance Rate Map” (FIRM) or “Flood Boundary Floodway Map” (FBFM) for the project location.

The required site plan shall include building elevations using the same datum as the related flood hazard map. The owner shall be responsible for the compliance with local flood damage prevention regulations for additional critical elevation information for the project.

3. **Floor Plans.** Complete floor plans, including plans of full or partial basements and full or partial attics. Floor plans must show all relevant information such as door swings, stairs and ramps, windows, shafts, all portions of means of egress, ect, and shall be sufficiently dimensioned to describe all relevant space sizes. Wall materials shall be described by cross-hatching (with explanatory key), by notation, or by other clearly understandable method. Spaces must be identified by how each space is intended to be used.
4. **Exterior wall envelop.** The residential construction documents shall provide details of the exterior wall envelope as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves, or parapets, means of drainage, water-resistive membrane, all elevations necessary to completely describe the exterior of the residential building including floor to floor dimensions, and details around openings.
5. **Sections.** Cross sections, wall sections, details including typical connections as required fully describing the residential building construction showing wall, ceiling, floor and roof materials. Residential construction documents shall describe the exterior wall envelop in sufficient detail to determine compliance with this code.
6. **Structure.** Complete structural description of the residential building including size and location of all structural elements used in the design of the residential building and other data as required to fully describe the structural system.

7. **Ratings.** The fire-resistance ratings of all structural elements as required by this code, data substantiating all required fire-resistance ratings including details showing how penetrations will be made for electrical, mechanical, plumbing, and communication conduits, pipes, and systems, and the materials and methods for maintaining the required structural integrity, fire-resistance rating, and firestopping.
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 power equipment.
9. **Additional information.** Additional graphic or text information as may be reasonably required by the residential building official to allow the review of special or extraordinary construction methods or equipment.

106.1.1.1 Fire protection system drawings. Construction documents for fire protection systems(s) shall be submitted to indicate with this code and shall be approved prior to the start of system installation.

106.1.2 Manufacturer's installation instructions. Manufacturer's installation instructions, as required by this code, shall be available on the job site at the time of inspection.

BBS MEMO

Ohio Board of Building Standards

Tuesday, October 10, 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 than 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.

Systems Description Form (Example 1)

Job site

Address: _____

Contractor: _____

WORK TYPE:

NEW

REPLACEMENT

HEATING, VENTILATION & AIR CONDITIONING SYSTEM DESCRIPTIONS (select items as listed)

1. Furnace location:	Basement	Garage	Attic	Other _____
2. Water heater location:	Basement	Garage	Attic	Other _____
3. Condensing unit location:	Rear yard	Side yard	(left)	(right)
4. Furnace / water-heater capacity:	BTU's _____			
5. Fuel type:	Natural gas	L.P.	Electric	
6. Furnace AFUE rating:	80%	90% +		
7. Ductwork type:	Sheet metal	Duct board		
8. Air conditioner capacity:	_____ Ton			
9. Air conditioning SEER rating:	11	12	13	14
	15	16		
10. Location of gas meter	Front yard	Rear yard	Side yard	(left) (right)
11. Location of vent terminations for:				
	(Dryer: front/rear/side yard/other _____)			
	(Furnace: front/rear/side yard/other _____)			
	(Water heater: front/rear/side yard/other _____)			

PLUMBING SYSTEM DESCRIPTION

(write in number of fixtures below)

Description	Count	Description	Count	Description	Count
Water closets		Dishwashers		Sewage grinders	
Lavatory sinks		Garbage disposals		Bidets	
Whirlpool tubs		Drinking fountains		Laboratory sinks	
Hot tubs		Urinals		Hot water dispensers	
Showers		Shampoo bowls		Water heaters	
Floor drains		Grease/oil intercept		Backflow devices	
Laundry tubs		Floor sinks		Washers automatic	
Select size below for building main drain:				Sump pumps	
3 inch	4 inch	6 inch			
Building water service size: ¾ inch 1 inch 1 ¼ inch 1 ½ inch 2 inch					
Building water service type: copper pvc/plastic					

ELECTRICAL SYSTEM DESCRIPTION

(write in sizes required and select items listed below)

Underground service <input type="checkbox"/>	Single phase <input type="checkbox"/> Three phase <input type="checkbox"/>
Overhead service <input type="checkbox"/>	Number of 120 volt circuits:
Service conductor size:	Number of 240 volt circuits:
Service conductor type: (aluminum) (copper)	Service size:
Grounding electrode conductor size:	Service location:
Grounding electrode conductor type: (aluminum) (copper)	Attach load calculations per NEC 220

Approved by _____

Date _____

Ohio Residential Plan Submittal Form *Part A* (Example 2)

Address of Project		City/Township		Project Description	
Contractor/DISA		Address		State License No	Phone No
Owner		Address		Phone No	
Electrical Design					
Service Size		Panel Location in dwelling		Size of Service Entrance Cable	
Location of Service					
Overhead					
Underground					

Provide additional details or drawings below

HVAC Design			
Equipment Type/Size	Location of Equipment	Type of Fuel	Heat Loss/Gain
Sq. Ft. of Conditioned Space	Duct Size (Supply/Return)	Equipment Efficiency Ratings	

Provide additional details or drawings below

As the legal owner/agent of the property above, I am performing the electrical/HVAC work described above.

Date ___/___/___

NOTE: Per section 106.1 the Residential Building Official may require additional drawings, technical data or documentation in order to verify compliance.

Building Department Only

Residential Plans Examiner/Building Official	Date of Approval	Application/Permit No

Ohio Residential Plan Submittal Form *Part B*

Referenced Code Text

ELECTRICAL	MECHANICAL																																							
<p>NEC 110.3 All electrical equipment shall be installed and used in accordance with the listing requirements and manufacturer's instructions.</p>	<p>M1401.1 Heating and cooling equipment and appliances shall be installed in accordance with the manufacturer's installation instructions and the requirements of the Residential Code.</p>																																							
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<p>Size of Service in Amperes:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Copper</th> <th style="text-align: center;">Aluminum</th> <th style="text-align: center;">Service Rating</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">☐</td> <td style="text-align: center;">4 AWG</td> <td style="text-align: center;">2 AWG</td> <td style="text-align: center;">100 Amps</td> </tr> <tr> <td style="text-align: center;">☐</td> <td style="text-align: center;">1 AWG</td> <td style="text-align: center;">2/0 AWG</td> <td style="text-align: center;">150 Amps</td> </tr> <tr> <td style="text-align: center;">☐</td> <td style="text-align: center;">2/0 AWG</td> <td style="text-align: center;">4/0 AWG</td> <td style="text-align: center;">200 Amps</td> </tr> </tbody> </table> <p>NEC 310-15 Conductor Sizes 120/240 VOLT 3-Wire, Single-Phase, Dwelling Services/Feeders</p> <p>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.</p> <p>NEC 250.52 Permitted Electrodes include:</p> <ol style="list-style-type: none"> 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 		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	<p>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.</p> <p style="text-align: center;">Gages of Metal Ducts & Plenums Used for Htg/Cooling</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Types of Ducts</th> <th style="text-align: center;">Size (inches)</th> <th style="text-align: center;">Minimum Thickness (Inch)</th> <th style="text-align: center;">Equiv. Galvanized Sheet Gage</th> <th style="text-align: center;">Approx. Aluminum B & S Gage</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">Round Ducts & Enclosed Rectangular</td> <td style="text-align: center;">14 or less</td> <td style="text-align: center;">0.013</td> <td style="text-align: center;">30</td> <td style="text-align: center;">26</td> </tr> <tr> <td style="text-align: center;">over 14</td> <td style="text-align: center;">0.015</td> <td style="text-align: center;">28</td> <td style="text-align: center;">24</td> </tr> <tr> <td rowspan="2" style="text-align: center;">Exposed Rectangular Ducts</td> <td style="text-align: center;">14 or less</td> <td style="text-align: center;">0.015</td> <td style="text-align: center;">26</td> <td style="text-align: center;">24</td> </tr> <tr> <td style="text-align: center;">over 14</td> <td style="text-align: center;">0.019</td> <td style="text-align: center;">26</td> <td style="text-align: center;">22</td> </tr> </tbody> </table>	Types of Ducts	Size (inches)	Minimum Thickness (Inch)	Equiv. Galvanized Sheet Gage	Approx. Aluminum B & S Gage	Round Ducts & Enclosed Rectangular	14 or less	0.013	30	26	over 14	0.015	28	24	Exposed Rectangular Ducts	14 or less	0.015	26	24	over 14	0.019	26	22
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<p>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</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p> <p>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.</p> <p>NEC 210.8 Ground-fault circuit-interrupter (GFCI) protection shall be provided for all 125-volt, 15 and 20 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.</p>	<p>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</p> <p>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.</p> <p>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.</p>																																							
	Plumbing																																							
	<p>Provide layout of plumbing fixtures on floor plan. Plumbing shall conform to the Residential Code.</p>																																							