SECTION R202
GENERAL DEFINITIONS

CLOSED CRAWL SPACE
A foundation without wall vents that uses air sealed walls, ground and foundation moisture control, and mechanical drying potential to control crawl space moisture. Insulation may be located at the floor level or at the exterior walls.

CONDITIONED CRAWL SPACE
A conditioned crawl space is a foundation without wall vents that encloses an intentionally heated and/or cooled space. Insulation is located at the exterior walls.

WALL VENTED CRAWL SPACE
A foundation that uses foundation wall vents as a primary means to control space moisture. Insulation is located at the floor level.

SECTION R314
FOAM PLASTIC

R314.2.3 Attics and crawl spaces.

Within attics where entry is made only for service of utilities, foam plastic shall be protected against ignition by 1 ½ -inch –thick (38mm) mineral fiber insulation, ¼ -inch thick (6.4mm) wood structural panels, 3/8 –inch (9.5mm) particleboard, ¼ –inch (6.4mm) hardboard, 3/8 –inch (9.5mm) gypsum board, or corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406). Within crawl spaces, foam plastic use is governed by R409.8.2.

R314.3 Specific approval.
Plastic foam not meeting the requirements of Sections R314.1 and R314.2 may be specifically approved on the basis of one of the following approved tests: FM 4880, UL 1040, NFPA 286, ASTM E 152, or UL 1715, or fire tests related to actual end-use configurations. The specific approval may be based on the end use, quantity, location and similar considerations where such tests would not be applicable or practical.

SECTION 320
PROTECTION AGAINST TERMITES

R320.5 Crawl spaces. The use of foam plastic insulation inside of crawl spaces is governed by R409.8.1.1.

SECTION R408
WALL VENTED CRAWL SPACES

R408.1 Space moisture vapor control. Vented crawl space foundations shall be provided with foundation vent openings through the exterior foundation walls.

R408.1.1 Foundation vent sizing. The minimum net area of ventilation openings shall be not less than 1 square foot (0.0929 m2) for each 150 square feet (13.9 m2) of crawl space ground area.

Exception: The total area of ventilation openings may be reduced to 1/1,500 of the crawl space ground area where the required openings are placed so as to provide cross-ventilation of the crawl space. The installation of operable louvers shall not be prohibited.

R408.1.2 Foundation vent location. One foundation vent shall be within 3 feet (914mm) of each corner of the building. To prevent rainwater entry when the crawl space is built on a sloped site, the uphill foundation walls may be constructed without wall vent openings. Vent dams shall be provided when the bottom of the foundation vent opening is less than 4 inches above the finished exterior grade.

R408.1.3 Covering material. To prevent rodent entry, foundation vents shall be covered with any of the following materials provided that the ventilation holes through the covering material shall not exceed ¼ inch (6.4mm) in any direction:

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick.
3. Cast iron grills or grating.
4. Extruded load-bearing brick vents.
5. Hardware cloth of 0.035 inch (0.89 mm) wire or heavier.
6. Corrosion-resistant mesh, with the least dimension being 1/8 inch (3.2 mm)

R408.1.4 Drains and vent terminations. Drains (including pressure relief and drain pans) shall terminate outdoors, to crawl space floor drains or interior pumps, and shall not intentionally discharge water into the crawl space. Crawl space drains shall be separate from roof gutter drain systems and foundation perimeter drains. Dryer vents shall terminate outdoors.

R408.1.5 Space separation. Wall vented crawl spaces shall be separated from adjoining basements, porches and garages by permanent solid wall surfaces with all utility penetrations thru the separating wall sealed. Latched, weather-stripped doors or access panels shall provide access between the crawl space and such adjoining spaces.

R408.2. Ground vapor retarder. Wall vented crawl spaces require full coverage ground vapor retarders. Wall vented crawl spaces shall be protected from water entry by the evaporation of water from the ground surface. A minimum 6-mil (0.15 mm) polyethylene vapor retarder or equivalent shall be installed to cover all exposed earth in the crawl space, with joints lapped not less than 12 inches (305 mm). Where there is no evidence that the groundwater table can rise to within 6 inches (152 mm) of the floor of the crawl space, it is acceptable to puncture the ground vapor retarder at low spots to prevent water puddles from forming on top of the vapor retarder due to condensation. The floor of

the crawl space shall be graded so that it drains to one or more low spots. Install a drain to daylight or sump pump at each low spot. Crawl space drains shall be kept separate from roof gutter drain systems and foundation perimeter drains.

R408.3 Wall dampproofing. Where the outside grade is higher than the inside grade, the exterior walls shall be dampproofed from the top of the footing to the finished grade as required by Section R406.1.

R408.4 Site grading. Building site shall be graded to drain water away from the crawl space foundation per the requirements of R401.3.

R408.5 Insulation. The thermal insulation in a wall vented crawl space shall be placed in the floor system. Wall insulation is not allowed as the only insulation system in a wall vented crawl space. The required insulation value can be determined from Table N1102.1.

R408.6 Floor air leakage control. All plumbing, electrical, duct, plenum, phone, cable, computer wiring and other penetrations through the subfloor shall be sealed with nonporous materials, caulks or sealants. The use of Rockwool or fiberglass insulation is prohibited as an air sealant.

R408.7 Duct air leakage control. All heating and cooling ductwork located in the crawl space shall be sealed with mastic or other industry approved duct closure systems.

R408.8 Access. A minimum access opening measuring 18 inches by 24 inches (457 mm by 610 mm) shall be provided to the crawl space. See the North Carolina Mechanical Code for access requirements where mechanical equipment is located under floors.

R408.9 Removal of debris. The crawl space floor shall be cleaned of all vegetation and organic material. All wood forms used for placing concrete shall be removed before a building is occupied or used for any purpose. All construction materials shall be removed before a building is occupied or used for any purpose.

R408.10 Finished grade. The finished grade of the crawl space may be located at the bottom of the footings; however, where there is evidence that the groundwater table can rise to within 6 inches (152 mm) of the finished grade of the crawl space at the perimeter or where there is evidence that the surface water does not readily drain from the building site, the grade in the crawl space shall be as high as the outside finished grade, unless an approved drainage system is provided.

R408.11 Flood resistance. For buildings located in areas prone to flooding as established in Table R301.2 (1), the walls enclosing the crawl space shall be provided with flood openings in accordance with Section R323.2.2.

SECTION R409
CLOSED CRAWL SPACES

R409.1 Air sealed walls. Closed crawlspaces shall be built to minimize the entry of outdoor air into the crawl space. Specifically prohibited are foundation wall vents and wall openings to ventilated porch foundations. When outdoor packaged heating and cooling equipment is used, solid blocking and sealants shall be used to seal gaps between the exterior wall opening and the smaller supply and return ducts that pass through the opening.

R409.1.1 Caulking and sealants. Air sealing caulk, gaskets or sealants shall be applied to the foundation wall and floor assembles that separate the crawl space from outside and other ventilated areas such as joints around access door and frame, between foundation and sill plate, at penetrations for plumbing, mechanical, electrical and gas lines and at duct penetrations.

R409.1.2 Access panel/door. A minimum access opening measuring 18 inches by 24 inches (457 mm by 610 mm) shall be provided to the crawl space. See the North Carolina Mechanical Code for access requirements where mechanical equipment is located under floors. To minimize air entry, provide a tight fitting access panel/door with a latch mechanism. Access panels or doors shall be insulated to a minimum of R-2.

R409.2 Ground vapor retarder. Closed crawl spaces shall be protected from water entry by the evaporation of water from the ground surface.

R409.2.1 Ground vapor retarder. A minimum 6-mil (0.15 mm) polyethylene vapor retarder or equivalent shall be installed to cover all exposed earth in the crawl space, with joints lapped not less than 12 inches (305 mm). Minor pockets or wrinkles that prevent total drainage across the surface of the vapor retarder are allowed. The floor of the crawl space shall be graded so that it drains to one or more low spots. Install a drain to daylight or sump pump at each low spot. Crawl space drains shall be kept separate from roof gutter drain systems and foundation perimeter drains.

R409.2.2 Liner. The ground vapor retarder may be installed as a full interior liner by sealing the edges to the walls and beam columns and sealing the seams. Single piece liner systems are approved. The top edge of the wall liner shall terminate 3 inches (76 mm) below the top edge of the masonry foundation wall. The top edge of liner shall be brought up the interior columns a minimum of 4 inches (102 mm) above the crawl space floor. The floor of the crawl space shall be graded so that it drains to one or more low spots. Install a drain to daylight or sump pump at each low spot. Crawl space drains shall be separate from roof gutter drain systems and foundation perimeter drains.

R409.2.2.1 Wall liner termite inspection gap. Provide a clear and unobstructed 3-inch (76 mm) minimum inspection gap between the top of the wall liner and the bottom of the wood sill. This inspection gap may be ignored with regards to energy performance and is not intended to create an energy penalty.

R409.2.3 Concrete floor surfacing. The ground vapor retarder may be protected against ripping and displacement by pouring an un-reinforced, 2-inch thick minimum, concrete surface directly over the vapor barrier. A base course of gravel or other drainage material under the ground moisture barrier is not required. The floor of the crawl space shall be graded so that the concrete surface drains to one or more low spots. Install a drain to daylight or sump pump at each low spot. Crawl space drains shall be separate from roof gutter drain systems and foundation perimeter drains.

R409.2.4 Drains and vent terminations. Drains (including pressure relief and drain pans) shall terminate outdoors, to crawl space floor drains or interior pumps, and shall not intentionally discharge water into the crawl space. Crawl space drains shall be separate from

roof gutter drain systems and foundation perimeter drains. Dryer vents shall terminate outdoors.

R409.3 Wall dampproofing. Where the outside grade is higher than the inside grade the exterior walls shall be dampproofed from the top of the footing to the finished grade as required by Section R406.1.

R409.4 Site grading. The building site shall be graded to drain water away from the crawl space foundation per the requirements of Section R401.3.

R409.5 Space moisture vapor control. Closed crawl spaces shall be provided with a mechanical drying capability to control space moisture levels. The allowed methods are listed below in R409.5.1 – R409.5.5. At least one method shall be provided; however, combination systems shall be allowed.

R409.5.1 Dehumidifier. A permanently installed dehumidifier shall be provided in the crawl space. The minimum rated capacity per day is 15 pints (7.1 Liters). Condensate discharge shall be drained to daylight or interior condensate pump. Permanently installed dehumidifier shall be provided with an electrical outlet.

R409.5.2 Supply air. Supply air from the dwelling air conditioning system shall be ducted into the crawl space at the rate of 1 cubic foot per minute (0.5 L/s) per 30 square feet (4.6m2) **[correct math would be 2.8 m2]** of crawl space floor area. No return air duct from the crawl space to the dwelling air conditioning system is allowed. The crawl space supply air duct shall be fitted with a backflow damper to prevent the entry of crawl space air into the supply duct system when the system fan is not operating. An air relief vent to the outdoors may be installed. Crawl spaces with moisture vapor control installed in accordance with this section are not to be considered plenums.

R409.5.3 House air. House air shall be blown into the crawl space with a fan at the rate of 1 cubic foot per minute (0.5 L/s) per 50 square feet (4.6 m2) of crawl space floor area. The fan motor shall be rated for continuous duty. No return air duct from the crawl space back to the dwelling air conditioning system is allowed. An air relief vent to the outdoors may be installed. Crawl spaces with moisture vapor control installed in accordance with this section are not to be considered plenums.

R409.5.4 Exhaust fan. Crawl space air shall be exhausted to outside with a fan at the rate of 1 cubic foot per minute (0.5 L/s) per 50 square feet (4.6 m2) of crawl space floor area. The fan motor shall be rated for continuous duty. There is no requirement for make-up air.

R409.5.5 Conditioned space. The crawl space shall be designed as a heated and cooled, conditioned space with wall insulation installed per the requirements of Section R409.8.1. Intentionally returning air from the crawl space to space conditioning equipment that serves the dwelling shall be allowed. Foam plastic insulation located in a crawl space plenum shall be protected against ignition by an approved thermal barrier.

R409.6 Plenums. Closed crawl spaces used as supply or return plenums for distribution of heated or cooled air shall comply with the requirements of the NC Mechanical Code. Crawl space plenums shall not contain plumbing cleanouts, gas lines or other prohibited components. Foam plastic insulation located in a crawl space plenum shall be protected against ignition by an approved thermal barrier.

R409.7 Combustion air. The air sealing requirements of a closed crawl space may result in a foundation which cannot provide adequate combustion air for fuel-burning appliances; therefore, fuel-burning appliances located in the crawl space such as furnaces and water heaters shall obtain combustion air from outdoors as per the NC Mechanical Code.

R409.8 Insulation. The thermal insulation in a closed crawl space may be located in the floor system or at the exterior walls. The required insulation value can be determined from Table N1102.1

Exception: Insulation shall be placed at the walls when the closed crawl space is designed to be an intentionally heated or cooled, conditioned space.

R409.8.1 Wall Insulation. Where the floor above a closed crawl space is not insulated, the walls shall be insulated. Wall insulation can be located on any combination of the exterior and interior surfaces and within the structural cavities or materials of the exterior crawl space walls. Wall insulation systems require that the band joist area of the floor frame be insulated. Wall insulation shall begin 3 inches (76 mm) below the top of the masonry foundation wall and shall extend down to 3 inches (76 mm) above the top of the footing or concrete floor, 3 inches (76 mm) above the interior ground surface or 24-inches (610 mm) below the outside finished ground level, whichever is less. No insulation shall be required on masonry walls of 9 inches (229 mm) height or less.

R409.8.1.1 Foam plastic termite inspection gap. For outside wall Section R320 governs applications. When expanded polystyrene, extruded polystyrene, polyisocyanurate, or other foam plastic insulation is installed on the inside surface of the exterior foundation walls, the provisions of Sections R409.8.1.1.1 and R409.8.1.1.2 apply.

R409.8.1.1.1 Earth floored crawl spaces. Provide a clear and unobstructed 3-inch (76 mm) minimum termite inspection gap between the top of the foam plastic wall insulation and the bottom of the wood sill. Because Insulation ground contact is not allowed, provide a continuous 3-inch (76 mm) minimum clearance gap between the bottom edge of the foam plastic wall Insulation and the earth floor surface. Refer to N1102.1.7 to determine maximum allowances for insulation gaps.

R409.8.1.1.2 Concrete floor surfaced crawl spaces. Provide a clear and unobstructed 3-inch minimum termite inspection gap between the top of the foam plastic wall insulation and the bottom of the wood sill. Provide a continuous 3-inch minimum clearance gap between the bottom edge of the foam plastic wall Insulation and the earth **[should say concrete not earth]** floor surface. Refer to N1102.1.7 to determine maximum allowances for insulation gaps.

R409.8.1.2 Porous insulation materials. When fiberglass, rockwool, cellulose or other porous insulation materials are installed on the inside wall surface of a closed crawl space, provide a clear and unobstructed 3-inch (76 mm) minimum termite inspection gap between the top of the porous wall insulation and the bottom of the wood sill.

To reduce wicking potential, porous insulation ground contact is not allowed in earth floored or concrete surfaced crawl spaces. Provide a continuous 3-inch (76 mm) minimum wicking gap between the bottom edge of the porous wall Insulation and the earth or concrete floor surface. Refer to Section N1102.1.7 to determine maximum allowances for insulation gaps.

R409.8.2 Foam plastic fire safety. Foam plastic insulation may be installed inside crawl spaces without a thermal barrier or ignition barrier when the insulation product has been tested in accordance with Section R314.3. Foam plastic tested in accordance with Section R314.3 shall be installed according to the limitations stated in the ICC Evaluation Service (ICC-ES) for the product. Foam plastics that have not been tested to meet these ratings shall be protected against ignition per Section R314.2.3.

Exception: Foam plastic insulation located in closed crawl spaces as defined in Section R409.5.5 or R409.6 shall be protected against ignition by an approved thermal barrier.

R409.9 Floor air leakage control. All plumbing, electrical, duct, plenum, phone, cable, computer wiring, and other penetrations through the subfloor shall be sealed with nonporous materials, caulks or sealants. The use of rockwool or fiberglass insulation is prohibited as an air sealant.

R409.00000 Duct air leakage control. All heating and cooling ductwork located in the crawl space shall be sealed with mastic or other industry approved duct closure systems. **[This section was included and approved by the NC Building Code Council but mistakenly left out of Section R409 when the new residential code was compiled by the folks in Atlanta]**

R409.10 Access. A minimum access opening measuring 18 inches by 24 inches 9457 mm by 610 mm) shall be provided to the crawl space. See the North Carolina Mechanical Code for access requirements where mechanical equipment is located under floors.

R409.11 Removal of debris. The crawl space floor shall be cleaned of all vegetation and organic material. All wood forms used for placing **[the word concrete was left out]** shall be removed before a building is occupied or used for any purpose. All construction materials shall be removed before a building is occupied or used for any purpose.

R409.12 Finished grade. The finished grade of the crawl space floor may be located at the bottom of the footings; however, where there is evidence that the groundwater table can rise to within 6 inches (152 mm) of the finished grade of the crawl space at the perimeter or where there is evidence that the surface water does not readily drain from the building site, the grade in crawl space shall be as high as the outside finished grade, unless an approved drainage system is provided.

Energy Chapter 11 changes follow

N1102.1.7 Crawl space walls. Where the floor above a closed crawl space is not insulated, the exterior walls shall be insulated as required by Section R409.8.1. The required insulation value can be determined from Table N1102.1

Wall insulation can be located on any combination of the outside and inside wall surfaces and within the structural cavities or materials of the wall system. Wall insulation requires that the exterior wall band joist area of the floor frame be insulated. Wall insulation shall begin 3 inches (76 mm) below the top of the masonry foundation wall and shall extend down to 3 inches (76 mm) above the top of the footing or concrete floor; 3 inches (76 mm) above the interior ground surface or 24 inches (610 mm) below the outside finished ground level, whichever is less.

Termite inspection, clearance and/or wicking gaps are allowed in wall insulation systems. Insulation may be deleted in the gap area without energy penalty. The allowable insulation gap widths are listed in Table N1102.1.7 [a]. If gap widths exceed the allowances, one of the following energy compliance options shall be met.

1. Wall insulation is not allowed and the required insulation value shall be provided in the floor system.
2. Compliance shall be demonstrated with energy trade-off methods provided by MecCheck version 3.0 or higher, or Chapter 4, or Chapter 5 of the North Carolina Energy Code.

TABLE N1102.1.7[a]
WALL INSULATION ALLOWANCES FOR TERMITE INSPECTION AND WICKING GAPS

Maximum Gap width (inches)	Insulation location	Gap description
3	Outside	Above grade inspection between top of insulation and bottom of siding
6	Outside	Below grade treatment
4[a]	Inside	Wall inspection between top of insulation and bottom of sill
4[a]	Inside	Clearance/wicking space between bottom of insulation and top of ground surface, footing, or concrete floor

a. No insulation shall be required on masonry walls of 9 inches height or less.

Definitions

CLOSED CRAWL SPACE
A foundation without wall vents that uses air sealed walls, ground and foundation moisture control, and mechanical drying potential to control crawl space moisture. Insulation may be located at the floor level or at the exterior walls.

CONDITIONED CRAWL SPACE
A conditioned crawl space is a foundation without wall vents that encloses an intentionally heated and/or cooled space. Insulation is located at the exterior walls.

WALL VENTED CRAWL SPACE
A foundation that uses foundation wall vents as a primary means to control space moisture. Insulation is located at the floor level.

TABLE 502.2
HEATING AND COOLING CRITERIA [a]

ELEMENT	MODE	DETACHED ONE-AND TWO-FAMILY DWELLINGS	GROUP R-2, R-4 OR TOWNHOMES
		U_O	U_O
Walls	Heating or cooling		
Roof/ceiling	Heating or cooling		
Floors over unheated spaces	Heating or cooling		
Heated slab on grade[b,f]	Heating	*R*-value =	*R*-value =
Unheated slab on grade[c, d,f]	Heating	*R*-value =	*R*-value =
Basement wall[e,f]	Heating or cooling	*U*-factor =	*U*-factor =
Crawl space wall[d,e,f] **[d was added]**	Heating or cooling	*U*-factor =	*U*-factor =

For **SI**: 1 Btu/h · ft^2 °F = 5.678 W/(m^2 · K), °C = (°F)-32]/1.8.

a. Values shall be determined by using the graphs [Figures 502.2(1), 502.2(2), 502.2(3), 502.2(4), 502.2(5) and 502.2(6)] using HDD as specified in Section 302. **[Example correction 502.2.1.5(1)]**

b. There are no insulation requirements for heated slabs in locations having less than 500 HDD.

c. There are no insulation requirements for unheated slabs in locations having less than 2,500 HDD.

d. Slab edge insulation is not required for unheated slabs in areas of very heavy termite infestation probability in accordance with Section 502.2.1.4, and as shown in Figure 502.2(7). When horizontal termite inspection, clearance and/or wicking gaps are used, wall insulation for closed crawl spaces is not required for the allowable gap widths listed in Table 502.2(2).

e. Basement and crawl space wall *U*-factors shall be based on the wall components and surface air films. Adjacent soil shall not be considered in the determination of the *U*-factor.

f. Typical foundation insulation techniques can be found in the DOE Building Foundation Design Handbook.

TABLE 502.2(2)
WALL INSULATION ALLOWANCES FOR TERMITE TREATMENT AND INSPECTION GAPS

Maximum Gap width (inches)	Insulation location	Gap description
3	Outside	Above grade inspection between top of insulation and bottom of siding
6	Outside	Below grade treatment
4[a]	Inside	Wall inspection between top of insulation and bottom of sill
4[a]	Inside	Clearance/wicking space between bottom of insulation and top of ground surface, footing, or concrete floor

For SI: 1 inch = 25.4 mm
a. No insulation shall be required on masonry walls of 9 inches height or less.

****[The compilers did not include the language below which was approved by the NC Building Code Council for Section 502.2.1.5. They left the old incorrect language in place. The incorrect language is not included. Though it is currently in the printed code it will be corrected.]**

502.2.1.5 Closed crawl space walls. Where the floor above a closed crawl space is not insulated, the exterior crawl space walls shall be insulated. The exterior walls shall have a thermal transmittance value not exceeding the value given in Table 502.2.

Wall insulation can be located on any combination of the outside and inside wall surfaces and within the structural cavities or materials of the wall system. Wall insulation requires that the exterior wall band joist area of the floor frame be insulated. Wall insulation shall begin 3 inches (76 mm) below the top of the masonry foundation wall and shall extend down to 3 inches (76 mm) above the top of the footing or concrete floor; 3 inches (76 mm) above the interior ground surface or 24 inches (610 mm) below the outside finished ground level, whichever is less. [See Appendix Details 502.2.1.5(1), 502.2.1.5(2) and 502.2.1.5(3)].

Termite inspection, clearance and/or wicking gaps are allowed in wall insulation systems [see Appendix Details 502.2.1.5(4) and 502.2.1.5(5)]. Insulation may be deleted in the gap area without energy penalty. The allowable insulation gap widths are listed in Tables 502.2(2) and N1102.1.7 [a]. If gap widths exceed the allowances, one of the following energy compliance options shall be met.

1. Wall insulation is not allowed and the required insulation value shall be provided in the floor system.
2. Compliance shall be demonstrated with energy trade-off methods provided by MecCheck version 3.0 or higher, or the North Carolina Energy Code Chapter 4, or Chapter 5.

502.2.3.5 Closed crawl space walls. Where the floor above a closed crawl space is not insulated, the exterior crawl space walls shall be insulated. The exterior walls shall have a thermal transmittance value not exceeding the value given in Table 502.2. The U-factor of the wall shall be determined by selecting the U-factor for the appropriate crawl space wall section from Appendix Table 502.2.3.5.

Wall insulation can be located on any combination of the outside and inside wall surfaces and within the structural cavities or materials of the wall system. Wall insulation requires that the exterior wall band joist area of the floor frame be insulated. Wall insulation shall begin 3 inches (76 mm) below the top of the masonry foundation wall and shall extend down to 3 inches (76 mm) above the top of the footing or concrete floor 3 inches (76 mm) above the interior ground surface or 24 inches (610 mm) below the outside finished ground level, whichever is less. [See Appendix Details 502.2.1.5(1), 502.2.1.5(2) and 502.2.1.5(3)].

Termite inspection, clearance and/or wicking gaps are allowed in wall insulation systems [see Appendix Details 502.2.1.5(4) and 502.2.1.5(5)]. Insulation may be deleted in the gap area without energy penalty. The allowable insulation gap widths are listed in Tables 502.2(2). If gap widths exceed the allowances, one of the following energy compliance options shall be met.

1. Wall insulation is not allowed and the required insulation value shall be provided in the floor system.
2. Compliance shall be demonstrated with energy trade-off methods provided by MecCheck version 3.0 or higher, or the North Carolina Energy Code Chapter 4, or Chapter 5.

502.2.4.12 Closed crawl space walls. "Crawl space wall *R*-value" shall apply to closed crawl spaces only. Crawl space insulation shall be installed in accordance with Section 502.2.1.5.

602.1.7 Closed crawl space walls. Where the floor above a closed crawl space is not insulated, the exterior crawl space walls shall be insulated. The exterior walls shall have a thermal transmittance value not exceeding the value given in Table 602.1.

Wall insulation can be located on any combination of the outside and inside wall surfaces and within the structural cavities or materials of the wall system. Wall insulation requires that the exterior wall band joist area of the floor frame be insulated. Wall insulation shall begin 3 inches (76 mm) below the top of the masonry foundation wall and shall extend down to 3 inches (76 mm) above the top of the footing or concrete floor; 3 inches (76 mm) above the interior ground surface or 24 inches (610) below the outside finished ground level, whichever is less. [See Appendix Details 502.2.1.5(1), 502.2.1.5(2) and 502.2.1.5(3)].

Termite inspection, clearance and/or wicking gaps are allowed in wall insulation systems [see Appendix Details 502.2.1.5(4) and 502.2.1.5(5)]. Insulation may be deleted in the gap area without energy penalty. The allowable insulation gap widths are listed in Tables 502.2(2). If gap widths exceed the allowances, one of the following energy compliance options shall be met.

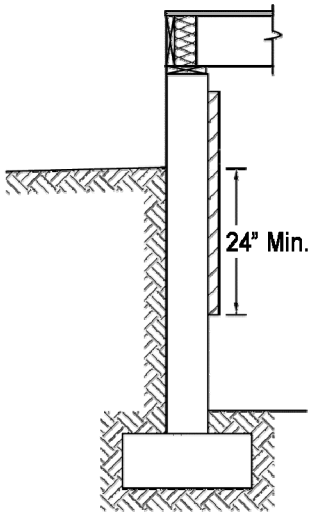
1. Wall insulation is not allowed and the required insulation value shall be provided in the floor system.
2. Compliance shall be demonstrated with energy trade-off methods provided by MecCheck version 3.0 or higher, or the North Carolina Energy Code Chapter 4, or Chapter 5.

APPENDIX

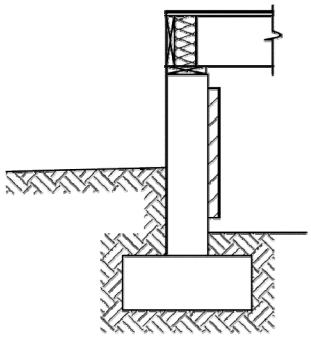
The sections and construction details in Details 502.2.1.5(1), 502.2.1.5(2), 502.2.1.5(3), 502.2.1.5(4), 502.2.1.5(5), and Tables 502.2.3.1(1), 502.2.3.1(2), 502.2.3.1(3), 502.2.3.2, 502.2.3.3, 502.2.3.5 and 502.2.3.6 are intended to be representative and not all-inclusive. Adopting agencies are encouraged to add construction details and sections appropriate to their specific areas.

Utilization of these tables should be correlated with local industry group practices and model code research recommendations.

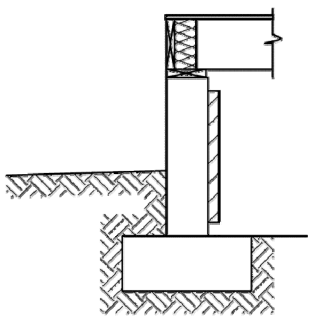
Detail 502.2.1.5(1)
Insulation has 3" top inspection gap and extends down 24" below grade



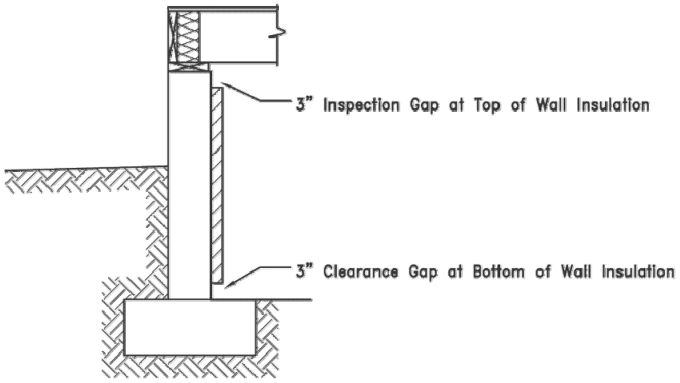
Detail 502.2.1.5(2)
Insulation has 3" top inspection gap and extends down to 3" above interior ground surface



Detail 502.2.1.5(3)
Insulation has 3" top inspection gap and extends down to 3" above top of wall footing or concrete floor



Detail 502.2.1.5(4)
Typical Rigid Foam Insulation
Termite Inspection Gaps



Detail 502.2.1.5(5)
Typical Porous Insulation
Termine Inspection Gaps