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02/06/07

Inspection Report of 1005 Ruby Ave Vero Beach FL 32968
Prepared for Bob & Tracey Schafer



The State of Florida requires the builder to build in compliance with the Florida Building Code.

Florida State Statutes 455 & 489 requires builders to build in accordance with the Florida Building Code. The building department inspectors are only trying to assist the builder in meeting the contractor's code compliance requirements and make it easier to deliver a safe, quality built home to the client. The building department accepts no liability for defects in the quality and workmanship at your house. If a problem is not visible or not viewed by the local building official it does not relieve the builder of his responsibility to correct the problem.

Note: Manufacturer's specifications can take precedence over codes. If there is a conflict over a specific requirement and a general requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive governs.

Note: Photos were taken of many of the items in the house and are to be considered as part of this report. The photos may be representative of many instances of the same problem, but not each and every problem. One photo could be representative of 1 to 10+ locations of the same problem. It is the responsibility of the builder/qualifier to construct the house in accordance with the requirements of their licenses.

Note: This is a limited visual inspection of the building at 1005 Ruby Ave Vero Beach Fl 32968. The inspection and report are not intended to be used as a guarantee, warranty, or insurance policy, expressed or implied, regarding the adequacy, performance or condition of any inspected structure, item, component or system. This is not a code compliance inspection. Some codes are provided for clarification. The purpose of the inspection is to observe the visible problems associated with the building at the time of the inspection.

Other Statutes may also apply:

The State of Florida Statute 95 gives consumers purchasing newer homes rights to a quality product regardless of any restrictive warranty offered by a builder. Under the Statute, the workmanship & materials are actionable for four years after the completion of construction, and latent defects for fifteen years. You may want to have your attorney review the details of this document. The web address for the section found below is:

http://www.flsenate.gov/statutes/index.cfm?App_mode=Display_Statute&URL=Ch0095/ch0095.htm

The page contains the sections which apply to new construction contract obligations as defined in Florida State Law. (Chapter 95, Title VIII, 95.03 & 95.11 3a&c apply.)

Chapter 95, Title VIII 95.03 Contracts shortening time.--Any provision in a contract fixing the period of time within which an action arising out of the contract may be begun at a time less than that provided by the applicable statute of limitations is void.

The web address for the section found below is:

http://www.flsenate.gov/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=Ch0095/SEC11.HTM

3) WITHIN FOUR YEARS.--

- (a) **An action founded on negligence. (i.e. failure to build to code or manufacturers specification)**
- (b) An action relating to the determination of paternity, with the time running from the date the child reaches the age of majority.
- (c) **An action founded on the design, planning, or construction of an improvement to real property, with the time running from the date of actual possession by the owner, the date of the issuance of a certificate of occupancy, the date of abandonment of construction if not completed, or the date of completion or termination of the contract between the professional engineer,**

registered architect, or licensed contractor and his or her employer, whichever date is latest; except that, when the action involves a latent defect, the time runs from the time the defect is discovered or should have been discovered with the exercise of due diligence. In any event, the action must be commenced within 15 years after the date of actual possession by the owner, the date of the issuance of a certificate of occupancy, the date of abandonment of construction if not completed, or the date of completion or termination of the contract between the professional engineer, registered architect, or licensed contractor and his or her employer, whichever date is latest.

The 2005 Florida Statutes

Title XXXIII

REGULATION OF TRADE, COMMERCE, INVESTMENTS, AND SOLICITATIONS Chapter 558

[CONSTRUCTION DEFECTS](#) [View Entire Chapter](#)

CHAPTER 558

CONSTRUCTION DEFECTS

558.001 Legislative findings and declaration.--The Legislature finds that it is beneficial to have an alternative method to resolve construction disputes that would reduce the need for litigation as well as protect the rights of homeowners. An effective alternative dispute resolution mechanism in certain construction defect matters should involve the claimant filing a notice of claim with the contractor, subcontractor, supplier, or design professional that the claimant asserts is responsible for the defect, and should provide the contractor, subcontractor, supplier, or design professional with an opportunity to resolve the claim without resort to further legal process.

553.781 Licensee accountability.--

(1) The Legislature finds that accountability for work performed by design professionals and contractors is the key to strong and consistent compliance with the Florida Building Code and, therefore, protection of the public health, safety, and welfare. The purpose of this section is to provide such accountability.

(2)(a) Upon a determination by a local jurisdiction that a licensee, certificate holder, or registrant licensed under chapter 455, chapter 471, chapter 481, or chapter 489 has committed a material violation of the Florida Building Code and failed to correct the violation within a reasonable time, such local jurisdiction shall impose a fine of no less than \$500 and no more than \$5,000 per material violation.

(b) If the licensee, certificate holder, or registrant disputes the violation within 30 days following notification by the local jurisdiction, the fine is abated and the local jurisdiction shall report the dispute to the Department of Business and Professional Regulation or the appropriate professional licensing board for disciplinary investigation and final disposition. If an administrative complaint is filed by the department or the professional licensing board against the certificate holder or registrant, the commission may intervene in such proceeding. Any fine imposed by the department or the professional licensing board, pursuant to matters reported by the local jurisdiction to the department or the professional licensing board, shall be divided equally between the board and the local jurisdiction which reported the violation.

(3) The Department of Business and Professional Regulation, as an integral part of the automated information system provided under s. 455.2286, shall establish, and local jurisdictions and state licensing boards shall participate in, a system of reporting violations and disciplinary actions taken against all licensees, certificate holders, and registrants under this section that have been disciplined for a violation of the Florida Building Code. Such information shall be available electronically. Any fines collected by a local jurisdiction pursuant to subsection (2) shall be used initially to help set up the parts of the reporting system for which such local jurisdiction is responsible. Any remaining moneys shall be used solely for enforcing the Florida Building Code, licensing activities relating to the Florida Building Code, or education and training on the Florida Building Code.

(4) Local jurisdictions shall maintain records, readily accessible by the public, regarding material violations and shall report such violations to the Department of Business and Professional Regulation by means of the reporting system provided in s. 455.2286.

For purposes of this section, a material code violation is a violation that exists within a completed building, structure, or facility which may reasonably result, or has resulted, in physical harm to a person or significant damage to the performance of a building or its systems. Except when the fine is abated as provided in subsection (2), failure to pay the fine within 30 days shall result in a suspension of the licensee's, certificate holder's, or registrant's ability to obtain permits within this state until such time as the fine is paid. Such suspension shall be reflected on the automated information system under s. 455.2286.

553.72 Intent.--

(1) The purpose and intent of this act is to provide a mechanism for the uniform adoption, updating, amendment, interpretation, and enforcement of a single, unified state building code, to be called the Florida Building Code, which consists of a single set of documents that apply to the design, construction, erection, alteration, modification, repair, or demolition of public or private buildings, structures, or facilities in this state and to the enforcement of such requirements and which will allow effective and reasonable protection for public safety, health, and general welfare for all the people of Florida at the most reasonable cost to the consumer. The Florida Building Code shall be organized to provide consistency and simplicity of use. The Florida Building Code shall be applied, administered, and enforced uniformly and consistently from jurisdiction to jurisdiction. The Florida Building Code shall provide for flexibility to be exercised in a manner that meets minimum requirements, is affordable, does not inhibit competition, and promotes innovation and new technology. The Florida Building Code shall establish minimum standards primarily for public health and life safety, and secondarily for protection of property as appropriate.

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Site photo. The front of the house faces towards the east.

1005 Ruby Ave Vero Beach FL



The roof wall abutment areas have not been correctly pointed up with mortar as required by the manufacturer's NOA. R118-3.13

Florida Building Code

As per the Roof Tile Notice of Acceptance (NOA)

R118-3.13 Wall Abutments

R118-3.13A. Cut tile to fit approximately 1/2 in. to base of walls. Fill void with mortar and point to finish.

NOTE #13: It may be necessary to remove the lugs from the field tile at wall flashing for proper positioning of cut field tiles. For tiles installed at headwalls, tile shall be installed with approved roof tile adhesive.



There were areas around the wall flashing & fascia boards that were not completely sealed with stucco.

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Location of the previous photos over the garage.



The roof wall abutments have not been correctly pointed up with mortar as required by the tile manufacturer's NOA. R118-3.13



There were areas around the wall flashing that were not completely sealed with stucco.



There were areas around the wall flashing & fascia boards that were not completely sealed with stucco.



Location of the previous photos.



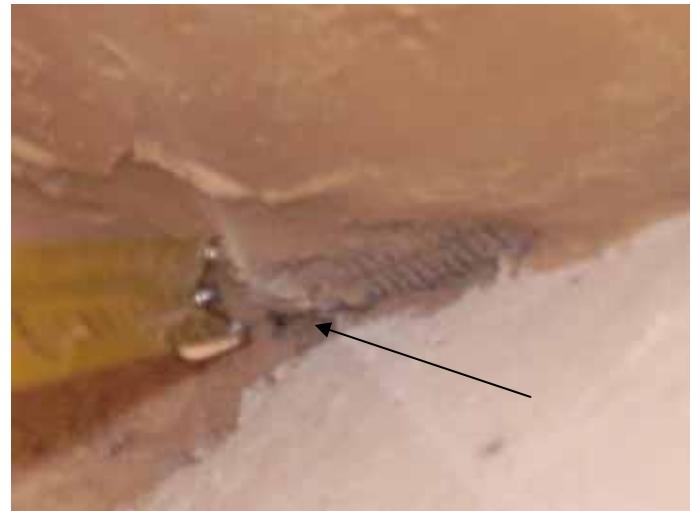
The roof wall abutments have not been correctly pointed up with mortar as required by the tile manufacturer's NOA. R118-3.13



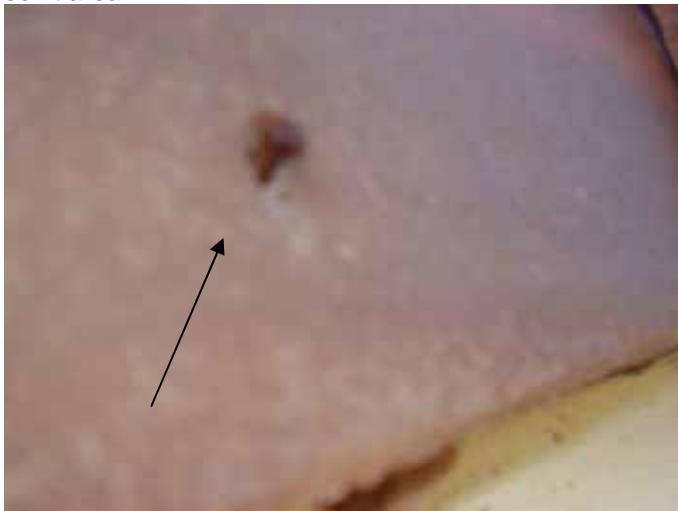
Location of the previous photo.



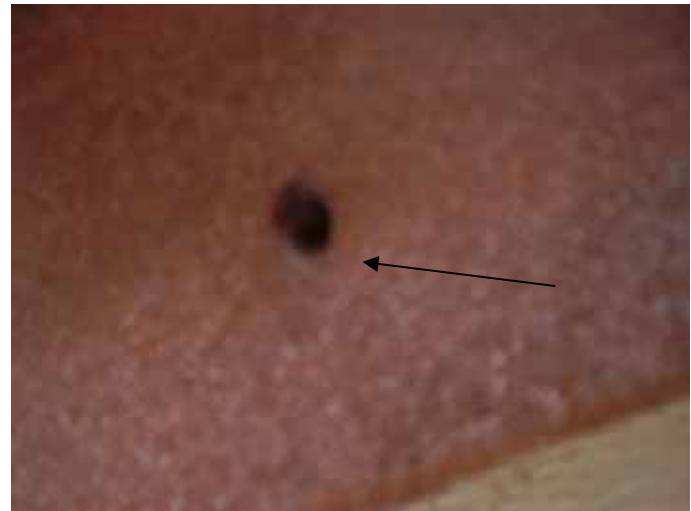
There was exposed lath at the soffit return above the front entry. There was not enough stucco applied to the soffit area.



There were unsealed openings at the soffit return areas that can allow pest intrusion into the attic & house.



There was rust &/or corrosion at some of the rake tile anchor nails. §1506.5 Fasteners



Some of the rake tile anchor nails were loose or not correctly secured. – Hazard.

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Florida Building Code

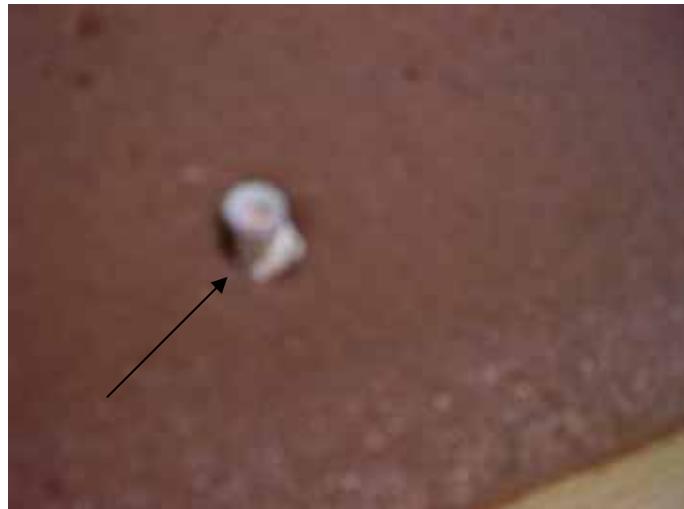
Broken roof tiles cannot be “glued” back together

§1506.5 Fasteners

§1506.5.1 Nails shall be corrosion resistant nails conforming to ASTM F 1667. The corrosion resistance shall meet ASTM A 641, Class 1 or an equal corrosion resistance by coating, electro galvanization, mechanical galvanization, hot dipped galvanization, stainless steel, nonferrous metal and alloys or other suitable corrosion resistant material.

Information concerning the correct use of RT-600 roof tile adhesive from Ohio Sealants (OSI) -product manufacturer's engineering department.

Thanks for your inquiry regarding our products. **RT600 is specified for replacing an entire tile, not for gluing a broken tile back together.** Please email or call (800) 624-7767 with any questions. Sincerely, BHeineking OSI Sealants / Tech Service



All of the rake tile anchor nails should be made of corrosion resistant material as per FBC §1506.5 Fasteners & R118-2.01A.

**Florida Building Code (FBC)
Roof Application Standards (RAS)**



Some of the rake tile anchor nails were loose or not correctly secured. – Hazard.

R118-2.01A. Tile Fasteners:

1. All roof tile nails or fasteners, except those made of copper, monel, aluminum, or stainless steel, shall be tested for corrosion in compliance with TAS 114 Appendix T114-E, Section 2 (ASTM G85), for salt spray for 1000 hr. Tile fasteners used in coastal building zones, as define in Chapter 16 (High Velocity Hurricane Zones), shall be copper, monel, aluminum, or stainless steel.



There were broken tiles that were incorrectly "glued" back together on the roof.



The broken roof tiles should be removed & replaced, not "glued" back together.



Location of the previous photos.



Some of the rake tile anchor nails were loose or not correctly secured. – Hazard.



Some of the rake tile anchor nails were loose or not correctly secured. – Hazard.



Location of the previous photos.



Broken tiles have been incorrectly repaired or "glued" back together at multiple locations.



There were broken & incorrectly repaired roof tiles at multiple locations.



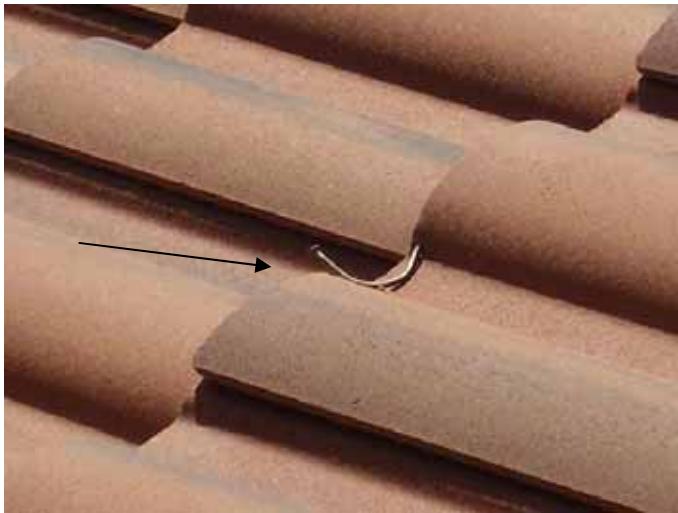
The broken roof tiles should be removed & replaced, not "glued" back together.



Location of the previous photos at the north side of the upper level roof.



All nails & construction debris should be removed from the roof.



All nails & construction debris should be removed from the roof.



All nails & construction debris should be removed from the roof. – Hazard.



There were broken & incorrectly repaired roof tiles at multiple locations. The broken roof tiles should be removed & replaced, not "glued" back together.



Some of the waste drain plumbing vent stacks are very close to the exhaust hood openings.



Some of the waste drain plumbing vent stacks are very close to the exhaust hood openings. Ref: §M401.5.1, §P904.5



Location of the previous photos.

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§M401.5.1 Intake openings. Mechanical and gravity outside air intake openings shall be located a minimum of 10 feet (3048 mm) from any hazardous or noxious contaminant, such as vents, chimneys, plumbing vents, streets, alleys, parking lots and loading docks, except as otherwise specified in this code. Fresh air intakes shall not be located closer than 10 ft (3048 mm) from any chimney or vent outlet, or sanitary sewer vent outlet.

§P904.5 Location of vent terminal. An open vent terminal from a drainage system shall not be located directly beneath any door, openable window, or other air intake opening of the building or of an adjacent building, and any such vent terminal shall not be within 10 feet (3048 mm) horizontally of such an opening unless it is at least 2 feet (610 mm) above the top of such opening.



The plumbing vent stack was not the correct height. The vent stack should terminate at 6 inches minimum above the roof. §P904.1

The opening can act as a make up air intake when the AC or Heat is running. Sewer gasses can be drawn back into the attic & house. §M401.5.1, §P904.5. We recommend installing dampers at the exhaust hoods to prevent any possibility of waste gasses re-entering the building.

Florida Building Code

904.1 Roof extension.

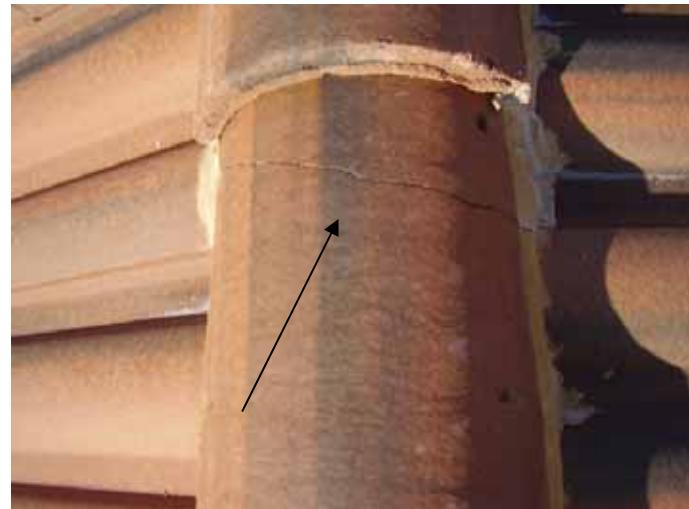
All open vent pipes that extend through a roof shall be terminated at least 6 inches (152 mm) above the roof and not less than 2 inches (51 mm) above the invert of the emergency overflow, except that where a roof is to be used for any purpose other than weather protection, the vent extensions shall be run at least 7 feet (2134 mm) above the roof.



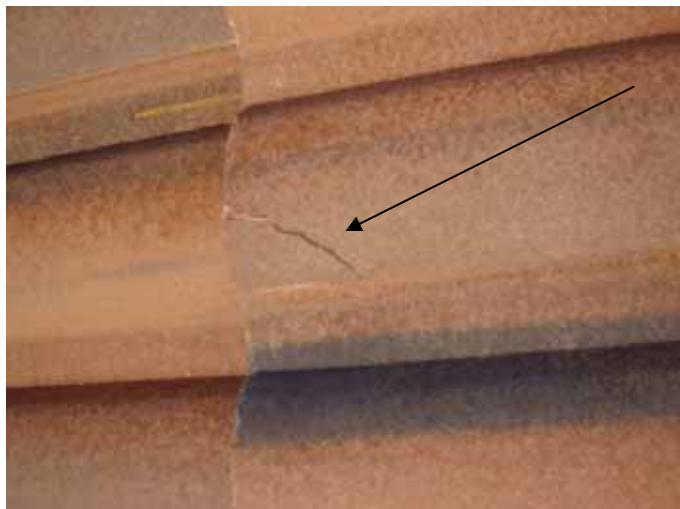
Some of the waste drain plumbing vent stacks are very close to the exhaust hood openings.



Location of the previous photo/s at the SW side of the upper level roof.



All broken tiles should be removed & replaced, not glued back together.



There were broken & incorrectly repaired roof tiles at multiple locations.



The broken roof tiles should be removed & replaced, not "glued" back together.



Location of the previous photos taken at the upper level roof.



Location of the previous photos.

Inspection Report of 1005 Ruby Ave Vero Beach FL 32968

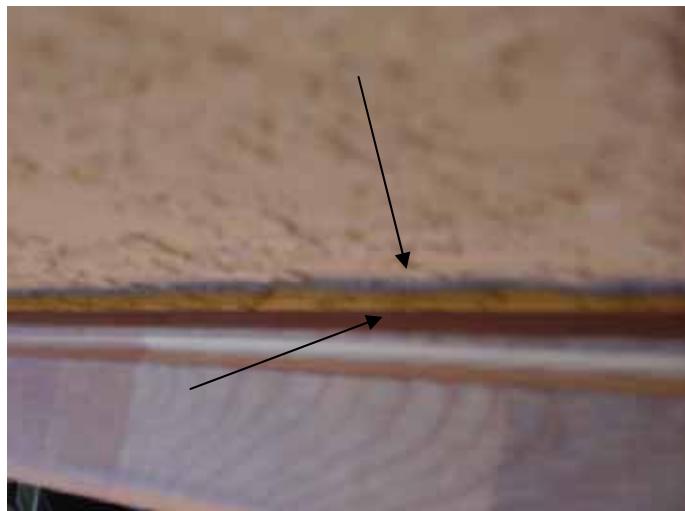
02.06.07

Florida Building Code

§1403.1.3 Veneered walls shall provide weather protection for the building at the walls.

§2504.2 Exterior lathing and plastering

§2504.2.1 Exterior use of portland cement plaster shall comply with the application requirements of ASTM C 926.



The stucco at the some of the exterior walls is concave or curved in & does not appear to be the correct thickness.
§2504.2



Some of the stucco work appears to be uneven & not the proper depth. ASTM C 926, §2504.2 §1403.1.3



Location of the previous photo/s. We recommend core sampling at the areas identified to verify the thickness of the exterior stucco & compliance with ASTM C 926.



The stucco at the some of the exterior walls is concave or curved in & does not appear to be the correct thickness.
§2504.2



Some of the stucco work appears to be uneven & not the proper depth. ASTM C 926, §2504.2 §1403.1.3



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The stucco at some of the exterior walls is concave or curved in & does not appear to be the correct thickness.
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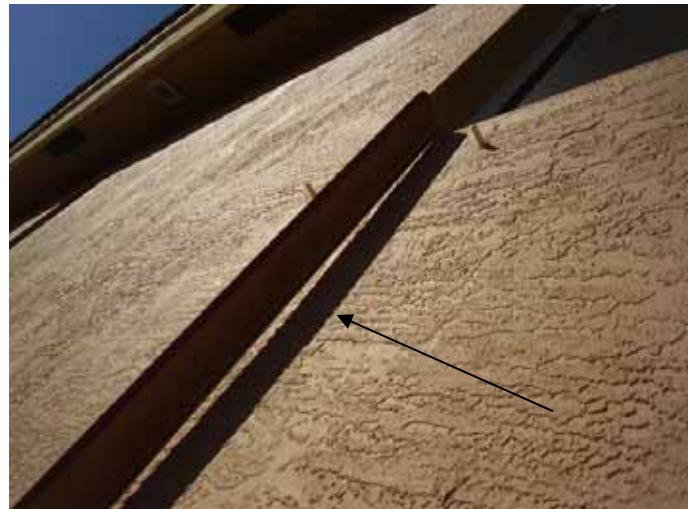
Location of the previous photos at the south side of the building.



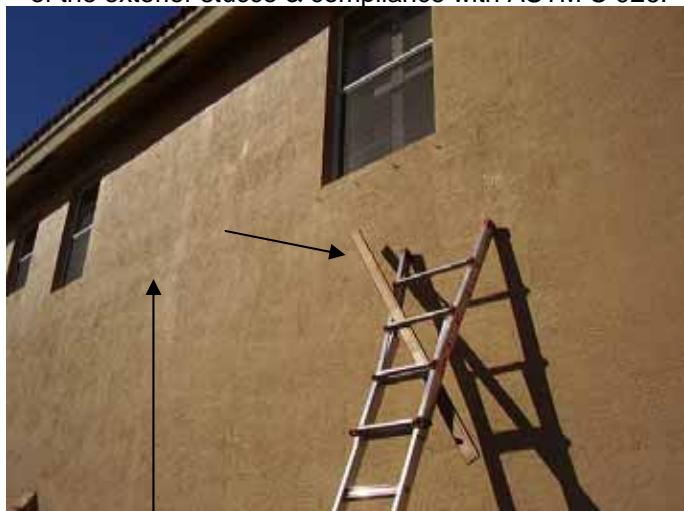
Some of the stucco work appears to be uneven & not the proper depth. ASTM C 926, §2504.2 §1403.1.3



Location of the previous photo/s. We recommend core sampling at the areas identified to verify the thickness of the exterior stucco & compliance with ASTM C 926.



The stucco at the some of the exterior walls is concave or curved in & does not appear to be the correct thickness. \$2504.2



Location of the previous photo/s. The make-up air intake exhaust covers were loose &/or not correctly secured or sealed at the soffits.



There was rust bleeding through the stucco at several locations. We recommend core sampling at the areas identified to verify the thickness of the exterior stucco.



Location of the previous photo at the south side of the building.



We recommend core sampling at the areas identified to verify the thickness of the exterior stucco & compliance with ASTM C 926.



There was rust bleeding through the stucco at several locations. We recommend core sampling at the areas identified to verify the thickness of the exterior stucco.

Florida Building Code**§13-606.1.ABC.1.2 Exterior Joints or Openings in the Envelope.**

Exterior joints, cracks, or openings in the building envelope that are sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed in accordance with the criteria in

§13-606.1.ABC.1.2.1 through §13-606.1.ABC.1.2.5.

§13-606.1.ABC.1.2.1 Exterior and Adjacent Walls.

Exterior and adjacent walls shall be sealed at the following locations:

1. Between windows and doors and their frames;
2. Between windows and door frames and the surrounding wall;
4. Joints between exterior wall panels at changes in plane, such as with exterior sheathing at corners and changes in orientation;
5. Openings and cracks around all penetrations through the wall envelope such as utility services and plumbing;



Location of the previous photo at the south side of the building.



All openings around penetrations into the building should be sealed to prevent water & pest intrusion.



Location of the previous photo at the south side of the building.



All openings around penetrations into the building should be sealed to prevent water & pest intrusion.



Location of the previous photo at the AC condensing units at the south side of the building.



Some of the screw anchors are not completely set or sealed to prevent water & pest intrusion.



Some of the screw anchors are not completely set or sealed to prevent water & pest intrusion at the rear sliding glass doors.



All of the screws should be correctly installed, set & sealed to prevent water & pest intrusion.



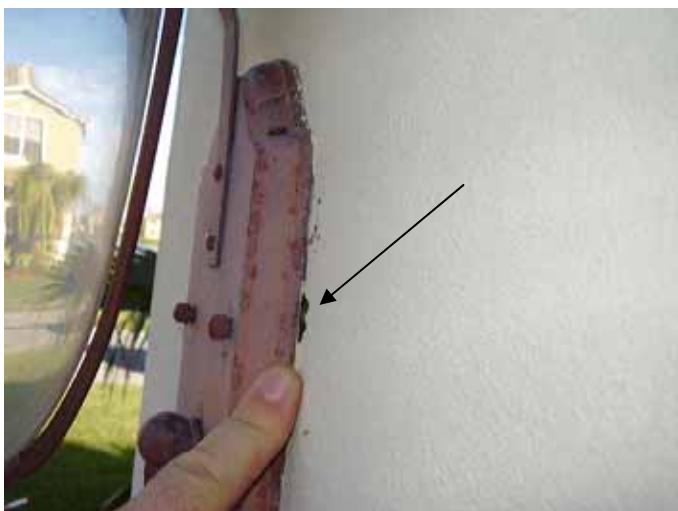
There were unsealed cracks in the stucco in the exterior wall under the NE side guest bedroom area window.



All of the cracks should be correctly sealed to prevent water & pest intrusion.



The area should be monitored for signs of additional cracking &/or settlement.



Some of the lighting fixtures were not completely sealed to prevent water & pest intrusion at the wall or base.
2002 NEC 410.4, §13-606.1.ABC.1.2

Florida Building Code

§13-606.1.ABC.1.2 Exterior Joints or Openings in the Envelope.

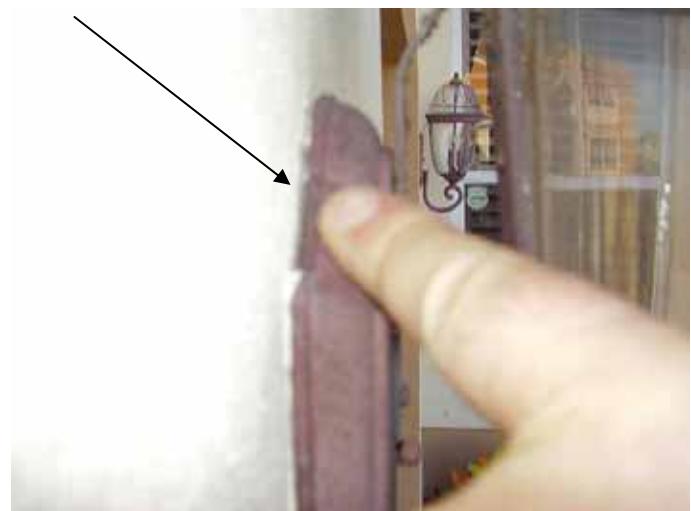
Exterior joints, cracks, or openings in the building envelope that are sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed in accordance with the criteria in

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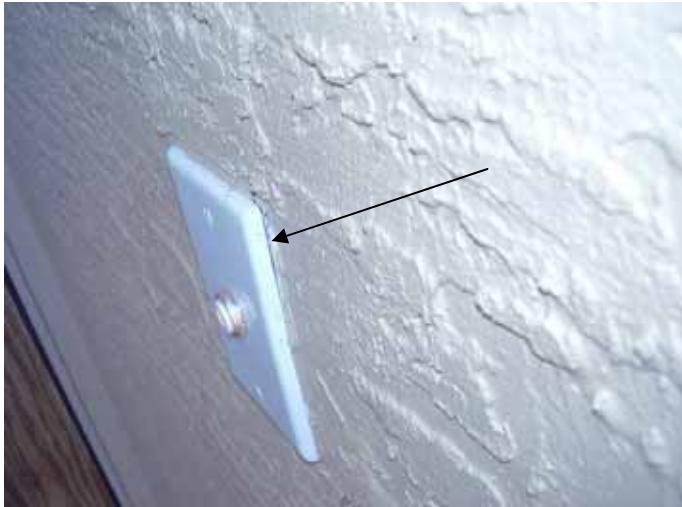


The exterior lighting fixtures were not completely sealed to prevent water & pest intrusion at the wall or base.
2002 NEC 410.4, §13-606.1.ABC.1.2

2002 National Electric Code (NEC)

410.4 Luminaires (Fixtures) in Specific Locations.

(A) Wet and Damp Locations. Luminaires (fixtures) installed in wet or damp locations shall be installed so that water cannot enter or accumulate in wiring compartments, lampholders, or other electrical parts. All luminaires (fixtures) installed in wet locations shall be marked, "Suitable for Wet Locations." All luminaires (fixtures) installed in damp locations shall be marked, "Suitable for Wet Locations" or "Suitable for Damp Locations."



The doorbell cover was not completely sealed to prevent water & pest intrusion at the wall. 2002 NEC 410.4, §13-606.1.ABC.1.2



Location of the previous photo at the front side of the building.



The exterior lighting fixtures were not completely sealed to prevent water & pest intrusion at the wall or base. 2002 NEC 410.4, §13-606.1.ABC.1.2



The doorbell cover was not completely sealed to prevent water & pest intrusion at the wall. 2002 NEC 410.4, §13-606.1.ABC.1.2



The self closing hinges were not working correctly at the south side gate.



Some of the gates did not close or latch correctly.



Location of the previous photo.



The plumbing wasteline cleanout access was located in an area where pedestrian traffic may occur. The cover should be countersunk or turned upside down. Trip hazard. §P708.2

Florida Building Code

§P708.2 Cleanout plugs. Cleanout plugs shall be of brass, plastic or other approved materials. Brass cleanout plugs shall be utilized with metallic drain, waste and vent piping only, and shall conform to ASTM A 74. Plastic cleanout plugs shall conform to the requirements of §P702.4. Plugs shall have raised square or countersunk square heads. Countersunk heads shall be installed where raised heads are a trip hazard. Cleanout plugs with borosilicate glass systems shall be of borosilicate glass.



The front of the house & yard were very wet. The area was not draining correctly.



The front of the house & yard were very wet. The area was not draining correctly.



The meter box was filled with water.



Location of the previous photo.



Location of the previous photos at the front of the house.



We did not remove the entire pool cover. A partial review of the jets & pool surface was performed.



There were leaks at the pool plumbing pipe at the connection to the filter housing.



The bottom of the pipe was wet.



The concrete pad below the pool filter housing was also wet.



Location of the previous photos.



The pool heater was short cycling or turning on for only a short period of time before turning back off.



The pool heater was short cycling or turning on for only a short period of time before turning back off.



Location of the previous photos.



The tape used to secure the low voltage wiring & refrigerant line insulation was deteriorating & did not appear to be exposed to UV radiation or sunlight.



All of the wiring & insulation should be correctly secured.



There were (4) Tap-Con type fasteners installed inside the housing base without washers to secure the AC condensing units to the concrete pad.



3 fasteners are required per side or as prescribed by the design professional or by the specifications in FBC M301.13.1

Florida Building Code

M301.13.1 Ground-mounted units. Ground-mounted units for R3 residential applications may be anchored with #14 screws with gasketed washers according to the following.

1. For units with sides less than 12 inches, one screw shall be used at each side of the unit.
2. For units between 12 and 24 inches, two screws shall be used per side.
3. For units between 24 and 36 inches, three screws shall be used per side.
4. For units greater than 36 inches or 5 tons, anchorage shall be designed in accordance with M301.13.



Location of the previous photo at the south side of the building.

Thank you for contacting Carrier.

Following are general clearances requirements for the outdoor section of split system air conditioners and heat pumps.

Allow 30 inches clearance to the service side of the unit, 48 inches above the unit, 6 inches on one side, and 12 inches on the remaining sides. Allow 24 inches between units.

Regards,

Danielle
Customer Relations



There should be 3 anchors per side as per FBC M301.13.1 unless otherwise prescribed by the design professional.

Any national or local code supercedes our recommendations.

Regards,

Joanne Hertel
Customer Relations

We ask that you REPLY to this email if you have additional questions.

We value your comments. If you would like to take a few moments to complete a survey, just go to

<http://www.surveymonkey.com/s.asp?u=81982611093>



The AC condensing units were turned the wrong way. 36 inch working space clearance is required at the electrical component access panel.



The AC condensing units were turned the wrong way. 36 inch working space clearance is required at the electrical component access panel.

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02.06.07

Florida Building Code (FBC)

2002 NEC

ACCESS AND SERVICE SPACE

§M306.1 Clearances for maintenance and replacement. Clearances around appliances to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly.

110.26 Spaces About Electrical Equipment.

Sufficient access and working space shall be provided and maintained about all electric equipment to permit ready and safe operation and maintenance of such equipment.

Table 110.26(A)(1) Working Spaces
Nominal Voltage to Ground Minimum Clear Distance

	Condition 1	Condition 2	Condition 3
0–150	900 mm (3 ft)	900 mm (3 ft)	900 mm (3 ft)

Condition 2 — Exposed live parts on one side and grounded parts on the other side. Concrete, brick, or tile walls shall be considered as grounded.



The AC condensing units were turned the wrong way. 36 inch working space clearance is required at the electrical component access panel.

Florida Building Code

§13-610.1.ABC.3.7 Mechanical Closets. The interior surfaces of mechanical closets shall be sheathed with a continuous air barrier as specified in §13-10.1.ABC.3.7.1 and shall be sealed to 100 percent closure with approved closure systems as specified in §13-610.1.ABC.3.7.2. All joints shall be sealed between air barrier segments and between the air barriers of walls and those of the ceiling, floor and door framing. All penetrations of the air barrier including, but not limited to, those by air ducts, plenums, pipes, service lines, refrigerant lines, electrical wiring, and condensate drain lines shall be sealed to the air barrier with approved closure systems.



The AC condensing units were turned the wrong way. 36 inch working space clearance is required at the electrical component access panel.



The grommet or seal is not installed around the refrigerant line.

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The grommet or seal is not installed around the low voltage line.



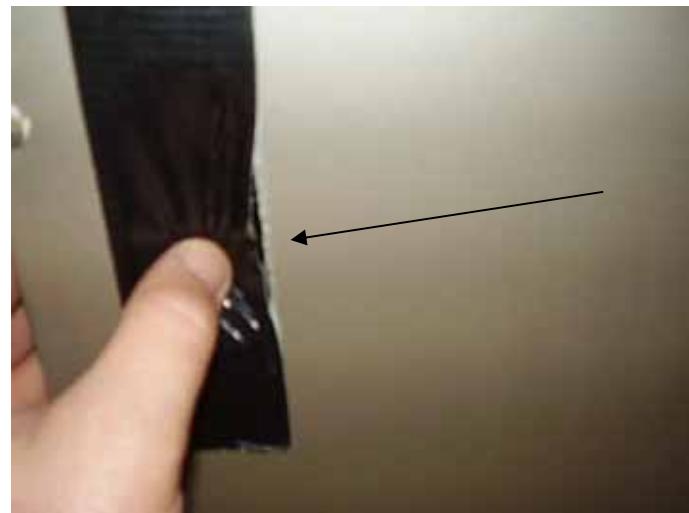
The AC mechanical closet was not completely sealed as required. §M603.1.3, §13-410.1.ABCD.3.7



Location of the previous photos.



Location of the previous photos at AHU #2.



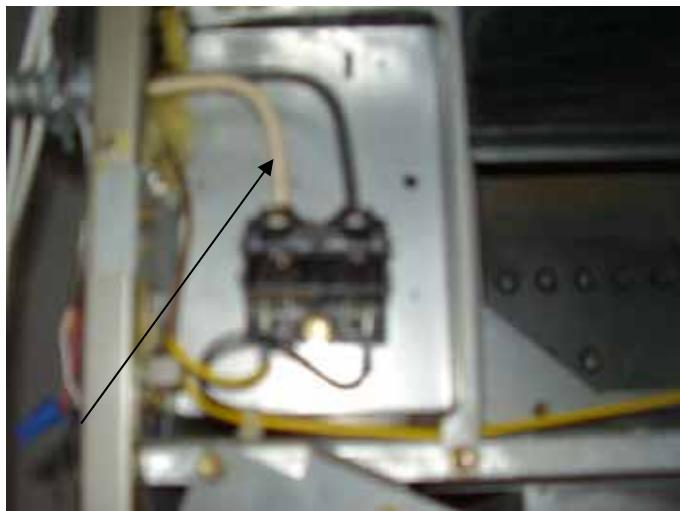
The tape patch was not correctly sealed at the opening in the front of AHU #1.



The grommet provided by the AC manufacturer should be installed.



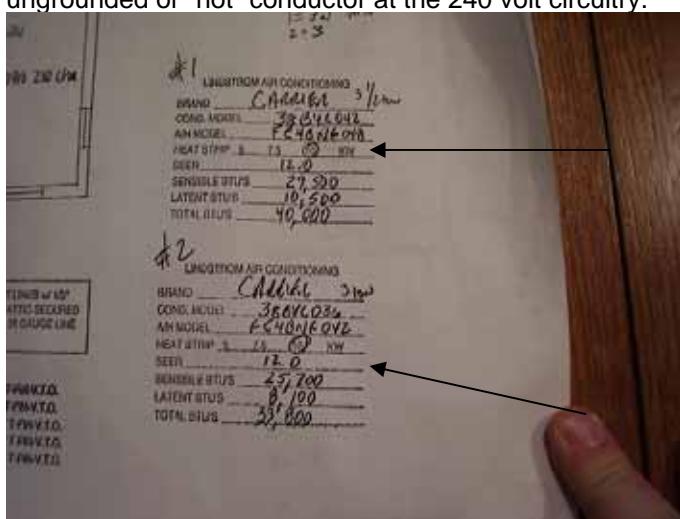
The tape patch was not correctly sealed at the opening in the front of AHU #1. The grommet provided by the AC manufacturer should be installed.



The white insulated wiring needs to be permanently marked or color coded to indicate it is being used as an ungrounded or "hot" conductor at the 240 volt circuitry.



There were no electric heat strips located inside the furnace.

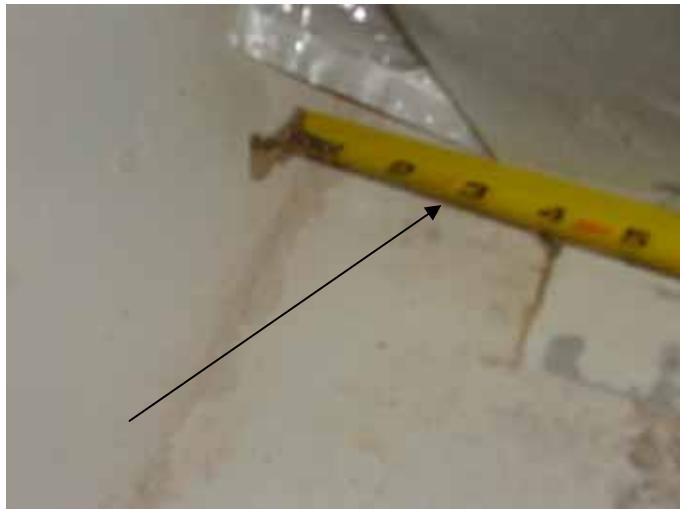


The mechanical plans call for a separate electric heat strips to be installed in the furnaces or handlers.

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§13-610.1.ABC.3.0.3 Space Provided. Sufficient space shall be provided adjacent to all mechanical components located in or forming a part of the air distribution system to assure adequate access for 1) construction and sealing in accordance with the requirements of §13-610.1.ABC.3 of this code 2) inspection and 3) cleaning and maintenance. A minimum of 4" is considered sufficient space around air handling units.

§M603.1.3 Space provided. Sufficient space shall be provided adjacent to all mechanical components located in or forming a part of the air distribution system to assure adequate access for (1) construction and sealing in accordance with the requirements of §M603.1 of this code (2) inspection and (3) cleaning and maintenance. A minimum of 4" is considered sufficient space around air handling units.



There was not sufficient clearance from the back of the wall to the AC air handler. §M603.1.3 4 inches of clearance is required.



There was not sufficient clearance from the back of the wall to the AC air handler. §M603.1.3 4 inches of clearance is required.



The low voltage wiring should be correctly secured & protected from damage.



Location of the previous photos.



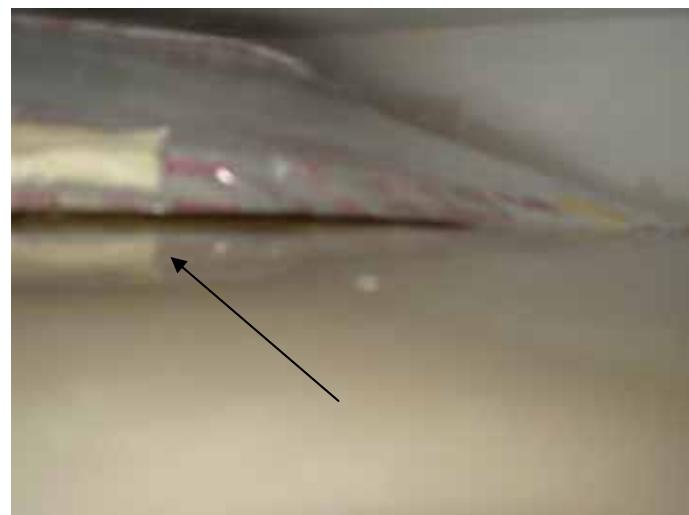
The AC mechanical closet is not completely sealed as required. §M603.1.3, §13-410.1.ABCD.3.7



The AC mechanical closet is not completely sealed as required. §M603.1.3, §13-410.1.ABCD.3.7

Florida Building Code

§13-610.1.ABC.3.7 Mechanical Closets. The interior surfaces of mechanical closets shall be sheathed with a continuous air barrier as specified in §13-10.1.ABC.3.7.1 and shall be sealed to 100 percent closure with approved closure systems as specified in §13-610.1.ABC.3.7.2. All joints shall be sealed between air barrier segments and between the air barriers of walls and those of the ceiling, floor and door framing. All penetrations of the air barrier including, but not limited to, those by air ducts, plenums, pipes, service lines, refrigerant lines, electrical wiring, and condensate drain lines shall be sealed to the air barrier with approved closure systems.



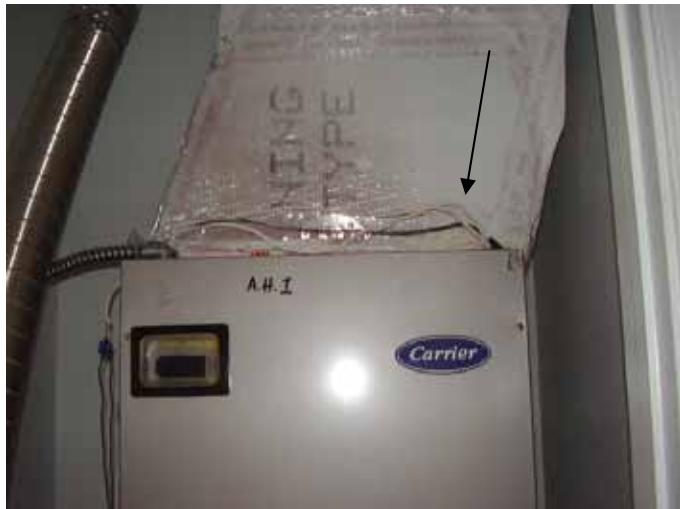
The ductwork was not completely sealed at the top of the Air Handler.

Florida Building Code

§M603.1.2 Sealing. Air distribution system components shall be sealed to 100 percent closure with approved closure systems.



The grommet was not correctly installed at the top of AHU #1



Location of the previous photos.



2002 NEC

200.7 Use of Insulation of a White or Gray Color or with Three Continuous White Stripes.

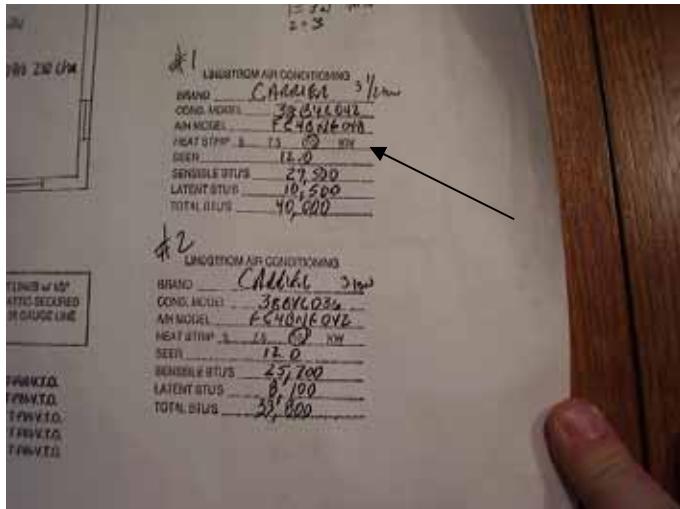
(A) General. The following shall be used only for the grounded circuit conductor, unless otherwise permitted in 200.7(B) and (C):

(1) A conductor with continuous white or gray covering
(2) A conductor with three continuous white stripes on other than green insulation (3) A marking of white or gray color at the termination© Circuits of 50 Volts or More. The use of insulation that is white or gray or that has three continuous white stripes for other than a grounded conductor for circuits of 50 volts or more shall be permitted only as in (1) through (3).

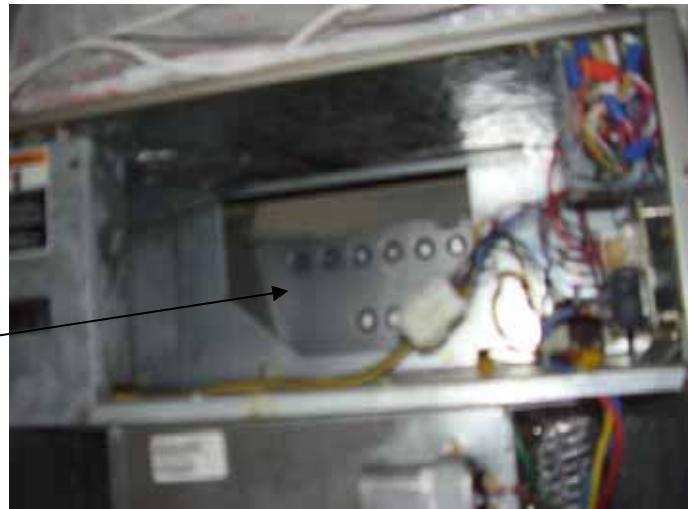
(1) If part of a cable assembly and where the insulation is permanently re-identified to indicate its use as an ungrounded conductor, by painting or other effective means at its termination, (continued on top of next box).

The white insulated wiring needs to be permanently marked or color coded to indicate it is being used as an ungrounded or "hot" conductor at the 240 volt circuitry. And at each location where the conductor is visible and accessible. 2) Where a cable assembly contains an insulated conductor for single-pole, 3-way or 4-way switch loops and the conductor with white or gray insulation or a marking of three continuous white stripes is used for the supply to the switch but not as a return conductor from the switch to the switched outlet. In these applications, the conductor with white or gray insulation or with three continuous white stripes shall be permanently re-identified to indicate its use by painting or other effective means at its terminations and at each location where the conductor is visible and accessible.

(3) Where a flexible cord, having one conductor identified by a white or gray outer finish or three continuous white stripes or by any other means permitted by 400.22, is used for connecting an appliance or equipment permitted by 400.7. This shall apply to flexible cords connected to outlets whether or not the outlet is supplied by a circuit that has a grounded conductor.



The mechanical plans call for a separate electric heat strips to be installed in the furnaces or handlers.



There were no electric heat strips located inside the furnace.



There were only 15 amp breakers at the furnace circuits in the main panel in the garage.



There were only 15 amp breakers at the furnace circuits in the main panel in the garage.



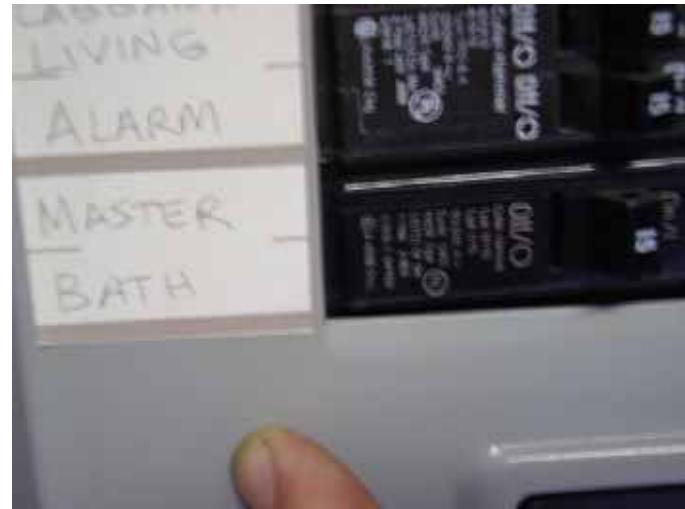
The approved plans called for 10kW w/ 60 amp or 7.5 kW with 40 amp overcurrent protection.



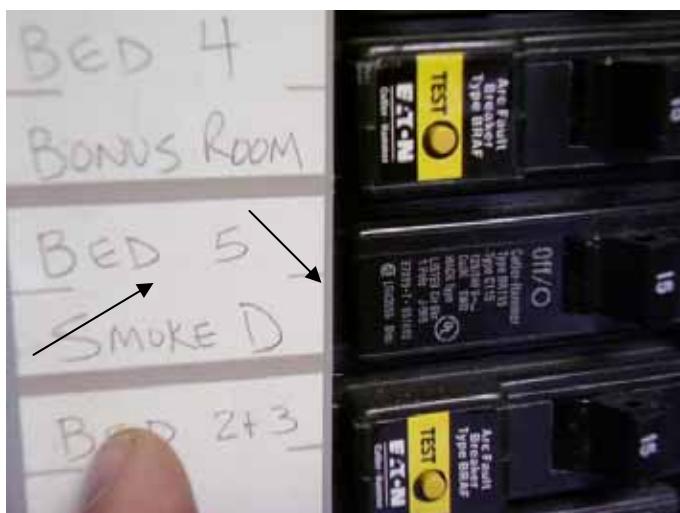
The approved plans called for 10kW w/ 60 amp or 7.5 kW with 40 amp overcurrent protection.



Location of the previous photos at the main electric distribution panel in the garage.



The bottom left circuit marked master bathroom was also used for several outlets in the master bedroom. AFCI protection should be provided at this circuit.
2002 NEC



There was no AFCI protection for the circuit marked BED 5 Smoke D.

210.12 Arc-Fault Circuit-Interrupter Protection.

(A) Definition. An arc-fault circuit interrupter is a device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when an arc fault is detected.

(B) Dwelling Unit Bedrooms. All branch circuits that supply 125-volt, single-phase, 15- and 20-ampere outlets installed in dwelling unit bedrooms shall be protected by an arc-fault circuit interrupter listed to provide protection of the entire branch circuit.



The voltage drop at many of the outlets exceeds 10%.
2002(NEC) 210.19 Conductors. We believe that any voltage drops over 10% require further investigation.



Location of the previous photo/s.

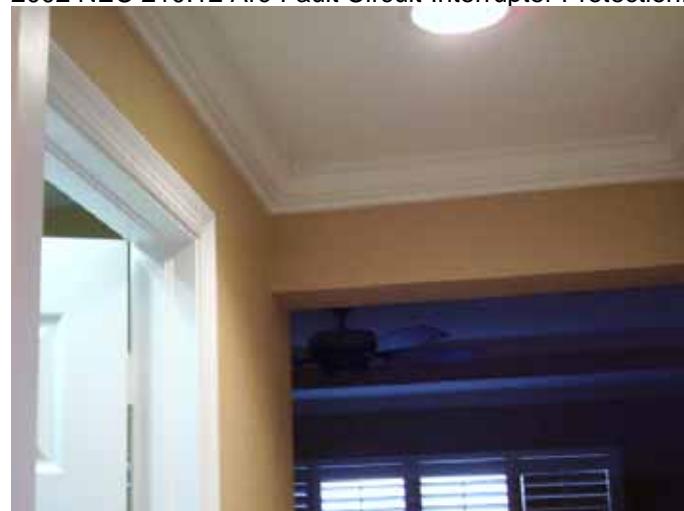
Note: The NEC suggests that voltage drops do not exceed 5% to provide reasonable efficiency of operation. The voltage drops noted in the report are referenced as a guideline & informational only. They are not considered a violation of the code & this condition is not enforceable. However, we believe that any voltage drops over 10% can indicate an electrical problem & require further investigation & correction where required. See the articles provided towards the end of the report.



The receptacle & fixture outlets test non-AFCI protected behind by the closet in the 2nd floor master bedroom.
2002 NEC 210.12 Arc-Fault Circuit-Interrupter Protection.



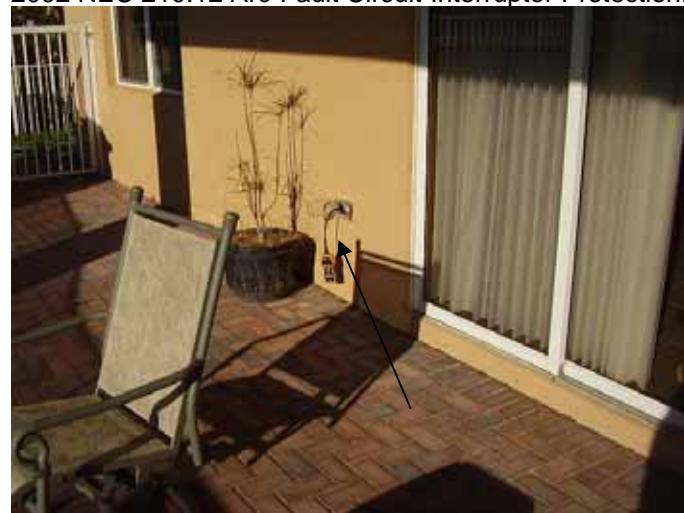
Location of the previous photo/s in & by the closets in the master bedroom.



The receptacle & fixture outlets test non-AFCI protected behind by the closet in the 2nd floor master bedroom.
2002 NEC 210.12 Arc-Fault Circuit-Interrupter Protection.



The voltage drop at many of the outlets exceeds 10%.
2002(NEC) 210.19 Conductors. We believe that any voltage drops over 10% require further investigation.



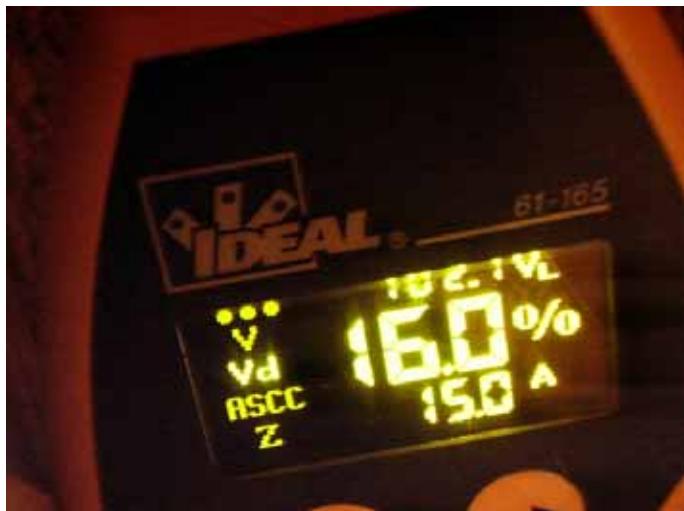
Location of the previous photo/s.



The window locks should not be higher than 54" above the floor in the bedrooms.



The window locks should not be higher than 54" above the floor in the bedrooms.



The voltage drop at many of the outlets exceeds 10%. 2002(NEC) 210.19 Conductors. We believe that any voltage drops over 10% require further investigation.



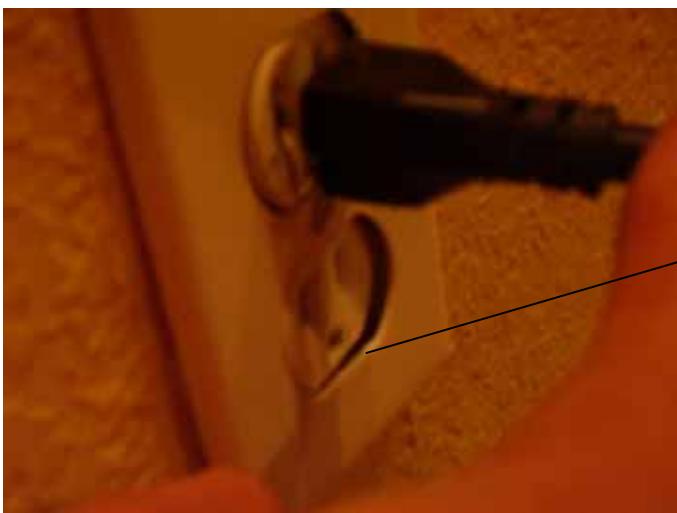
Location of the previous photo/s.



The voltage drop at many of the outlets exceeds 10%. 2002(NEC) 210.19 Conductors. We believe that any voltage drops over 10% require further investigation.



Location of the previous photo/s.



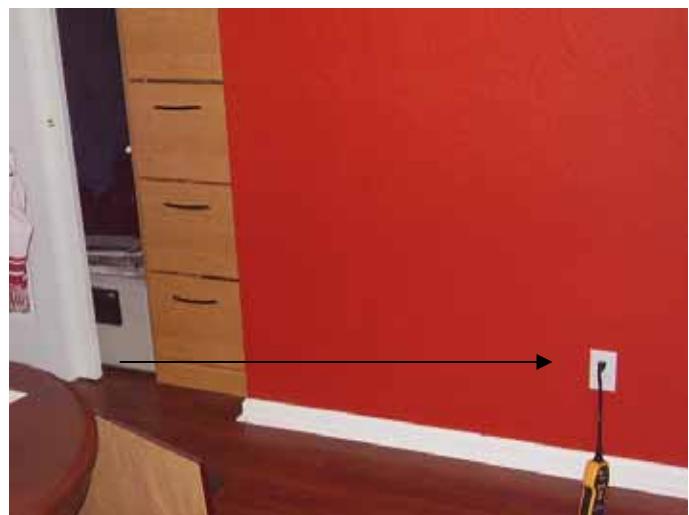
There were several receptacles that were loose & not correctly secured in the walls.



Location of the previous photo/s.



The receptacle & fixture outlets test non-AFCI protected behind by the closet in the 1st floor bedroom. 2002 NEC 210.12 Arc-Fault Circuit-Interrupter Protection.



Location of the previous photo/s.



The voltage drop at several of the outlets exceeds 20%. 2002(NEC) 210.19 Conductors. We believe that any voltage drops over 10% require further investigation.



Location of the previous photo/s.



The voltage drop at several of the outlets exceeds 20%. 2002(NEC) 210.19 Conductors. We believe that any voltage drops over 10% require further investigation.



Location of the previous photo/s.



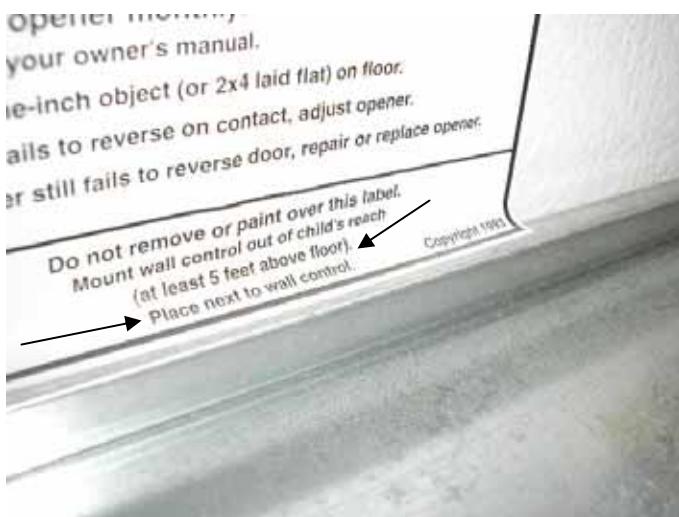
The voltage drop at several of the outlets exceeds 10%. 2002(NEC) 210.19 Conductors. We believe that any voltage drops over 10% require further investigation.



The client stated that there has been a problem with the fish tank when the TV is turned on.



The client stated that there has been a problem with the fish tank when the TV is turned on.



A warning label like this one needs to go on the wall by the auto door opener switch §M304.1

The central vacuum is vented into the interior of the garage. The interior of a garage is still the interior of a building or structure and not considered the outside. The central vacuum needs to be vented to the exterior of the structure as required. M501.3 Outdoor discharge

Florida Building Code

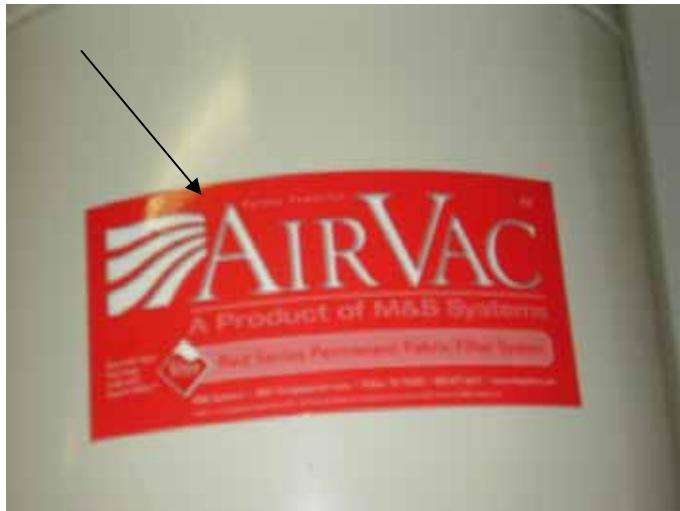
§M501.3 Outdoor discharge. The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a nuisance and from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or crawl space.



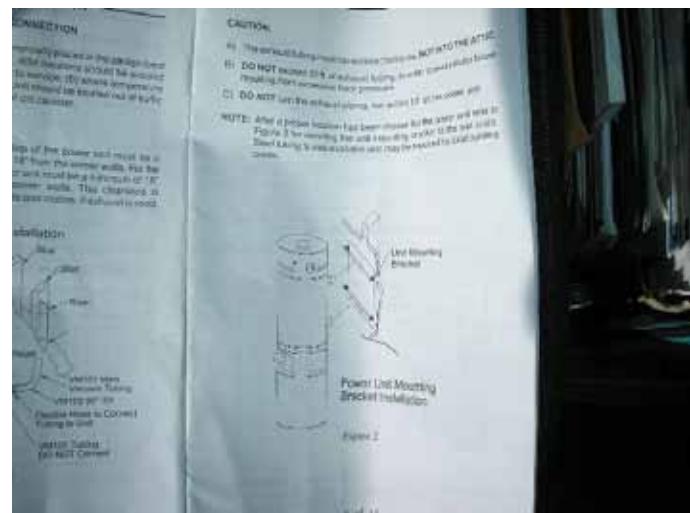
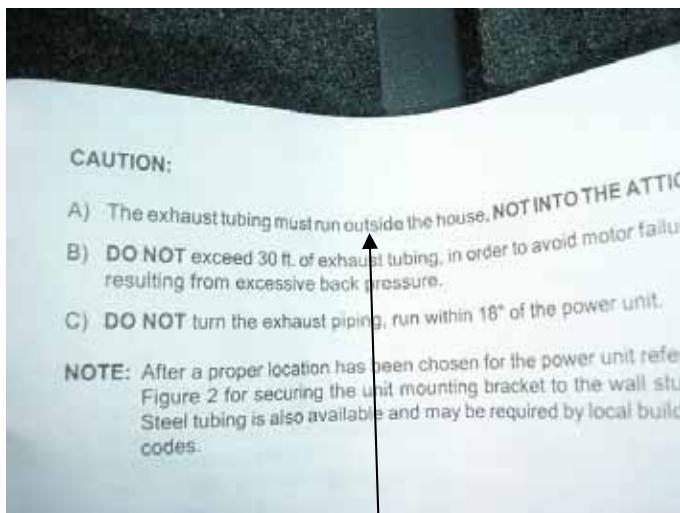
A warning label like this one needs to go on the wall by the auto door opener switches §M304.1



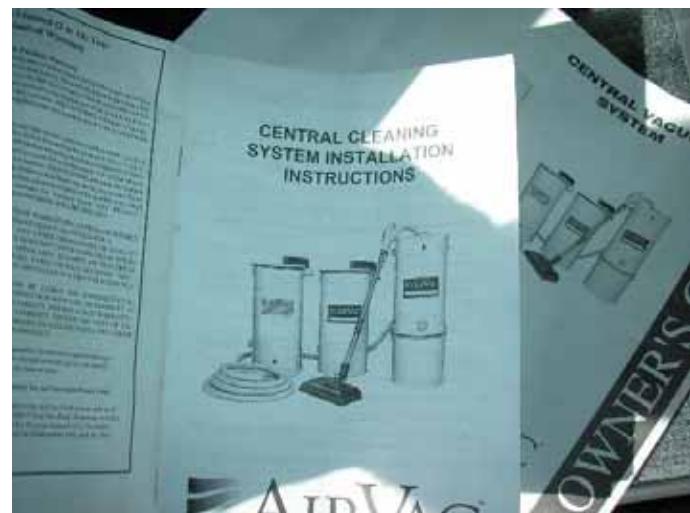
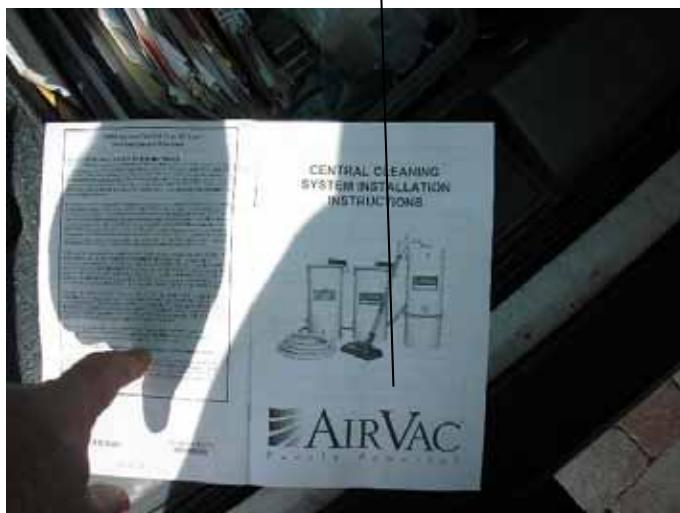
The central vacuum should be vented to the outdoors as per §M501.3 & by the manufacturer's installation instructions. See Below. §M304.1



Location of the previous photos in the garage.



The instructions state the exhaust tubing must be run outside of the house & not into the attic.





Note: we were unable to operate the single car garage door due to stored items.



There should not be any loose anchor nuts at the garage door bucks. All of the garage door anchor nuts should be correctly secured.

Florida Building Code

§2309.6 Access to attic space. Attic spaces shall be provided with an interior access opening not less than 20x36 inches (508x914 mm). Access opening shall be accessible and provided with a lid or device that may be easily removed or operated. When mechanical equipment is to be installed in the attic, it shall be installed in accordance with §M306.3 of Florida Building Code, Mechanical. Access is not required when the clear height of the attic space, measured at the roof peak, is less than 24 inches (610 mm).



An access has not been installed for entry to the attic above the garage.



There was more than 24" clear height between the garage ceiling & the roof peak. §2309.6

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§13-606.1.ABC.1.2 Exterior Joints or Openings in the Envelope.

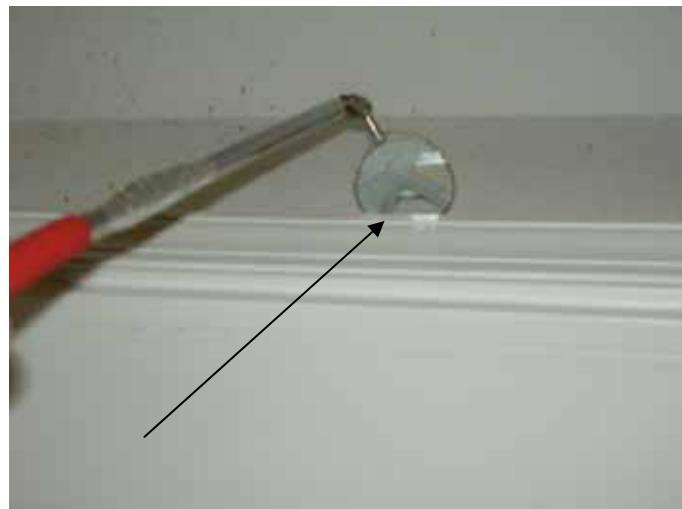
Exterior joints, cracks, or openings in the building envelope that are sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed in accordance with the criteria in

§13-606.1.ABC.1.2.1 through §13-606.1.ABC.1.2.5.

§13-606.1.ABC.1.2.1 Exterior and Adjacent Walls.

Exterior and adjacent walls shall be sealed at the following locations:

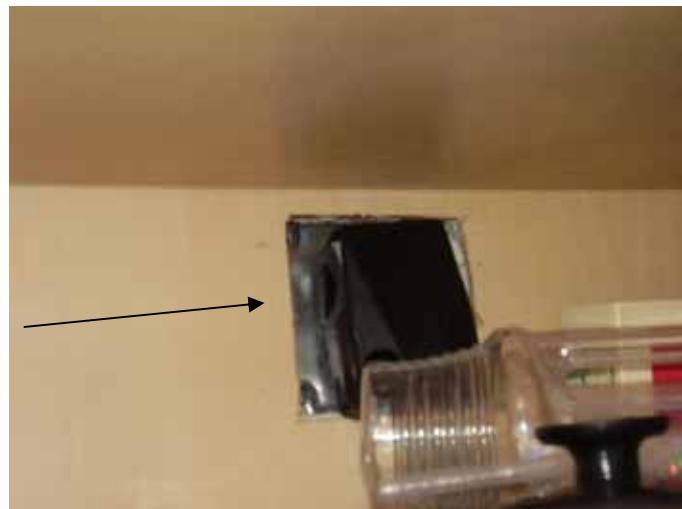
1. Between windows and doors and their frames;
2. Between windows and door frames and the surrounding wall;
4. Joints between exterior wall panels at changes in plane, such as with exterior sheathing at corners and changes in orientation;
5. Openings and cracks around all penetrations through the wall envelope such as utility services and plumbing;



The top of the garage/laundry room access door frame was not correctly sealed. §13-606.1.ABC.1.2



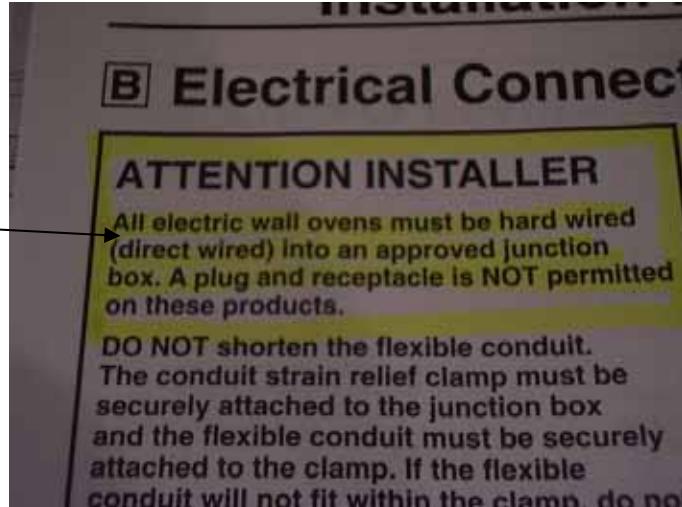
Both sides of the door frame should be sealed.



A plug & receptacle are not permitted for the wall oven electric supply. §M304.1



Location of the previous photo/s.



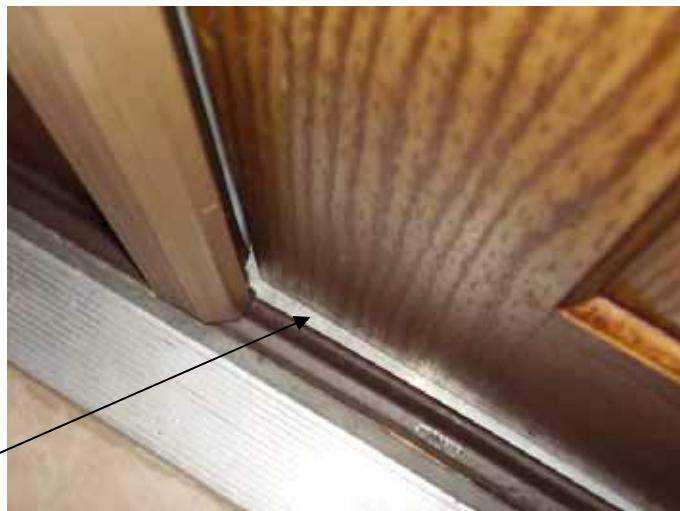
Install in accordance with manufacturer's instructions. §M304.1

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§M304.1 General. Equipment and appliances shall be installed as required by the terms of their approval. Equipment and appliances shall be installed in accordance with the conditions of listing and the manufacturer's installation instructions and this code. Manufacturer's installation instructions shall be available on the job site at the time of inspection.



There were gaps with daylight at the front door & frame.



There were gaps with daylight at the front door & frame.



Location of the previous photo/s.



The sink was not completely sealed at the countertop to prevent water from seeping through to the cabinet below.



The sink was not completely sealed at the countertop to prevent water from seeping through to the cabinet below in the kitchen.



The hot & cold were reversed at the faucets at the master bath tub.



The hot water faucet handle should be on the left side when operated from inside the tub.

Florida Building Code

§13-606.1.ABC.1.2.3 Ceilings. Ceilings shall be sealed at the following locations:

5. The attic access hatch, if located in the conditioned space shall have an airtight seal.



2nd floor attic inspection begins.



There was no air tight seal or gasket at the attic access openings as required. §13-606.1.ABC.1.2.3



Drywall screws & light gauge framing metal is not designed to support the weight of persons entering the attic. – Hazard. §2504.5.1

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Florida Building Code



§2504.5 Application of steel studs

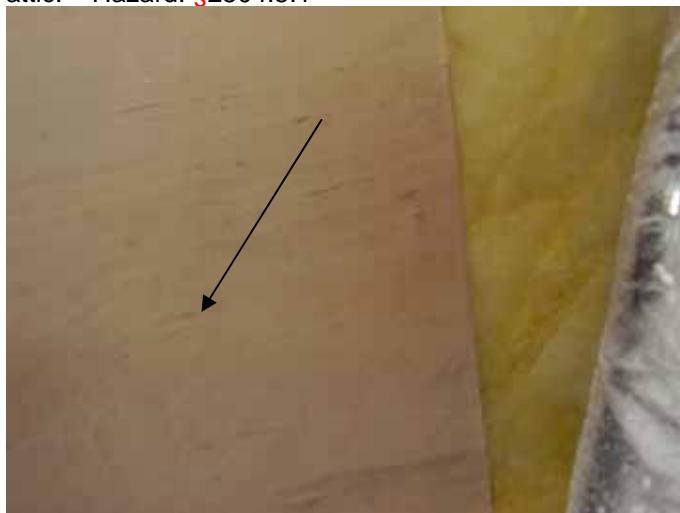
§2504.5.1 Nonload-bearing steel framing shall be installed in compliance with the provisions of ASTM C 754.

See the manufacturer's warning label on the steel stud. The 2x4 blocking should be secured through the trusses with 16d nails.

Drywall screws & light, 25 gauge metal framing studs are not designed to support persons entering an attic at the 2x4 wood blocking between the trusses. §2504.5.1



Drywall screws & light gauge framing metal is not designed to support the weight of persons entering the attic. – Hazard. §2504.5.1



There was no insulation for the attic hatch cover. Insulation should be attached to the back of the attic access hatch cover.



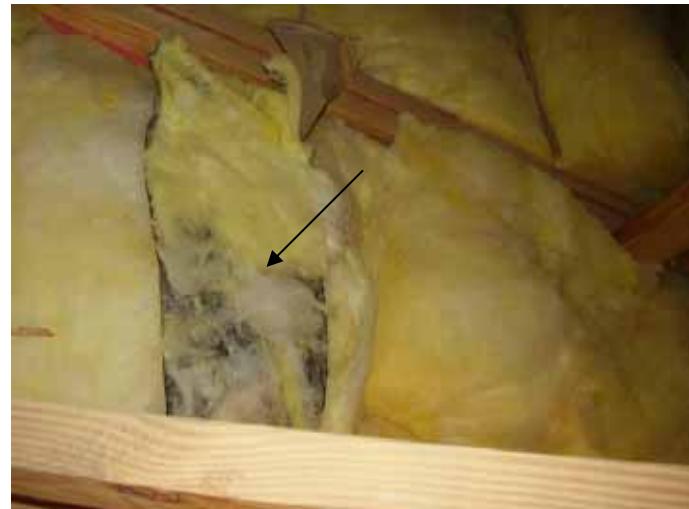
The AC refrigerant ductwork was installed over the attic opening & obstructs entrance to the attic.



All insulation scraps & debris should be removed from the attic.



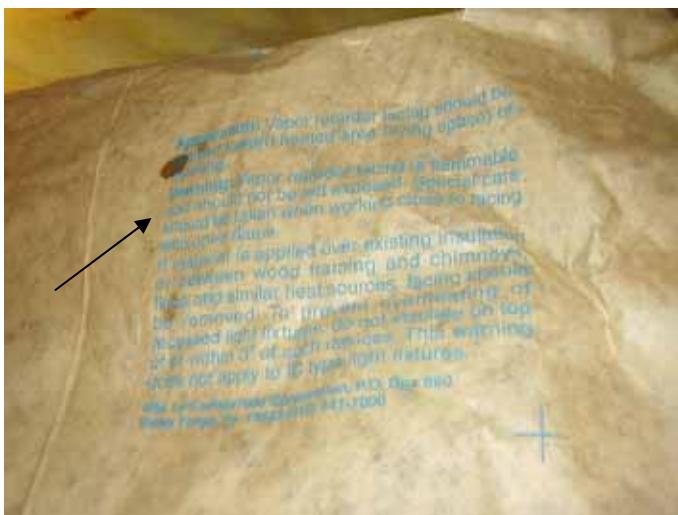
There is exposed kraft paper insulation backing in the attic. The manufacturer states the facing will burn & should not be exposed. §708.2



All insulation scraps & debris should be removed from the attic.



All insulation scraps & debris should be removed from the attic.



There is exposed kraft paper insulation backing in the attic. The manufacturer states the facing will burn & should not be exposed. §708.2

Florida Building Code

§708.2 Concealed installation

§708.2.1 Insulating materials, when concealed as installed, in buildings of any type construction, shall have a flame spread rating of not more than 75 and a smoke developed rating of not more than 450.

§708.2.2 When such materials are installed in concealed spaces in buildings of Type III, Type V or Type VI construction, the flame spread and smoke developed limitations do not apply to facings, coverings and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

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Florida Building Code

Florida Building Code

§1606.1.3 Anchorage against overturning, uplift and sliding. Structural members and systems, and components and cladding in a building or structure shall be anchored to resist wind-induced overturning, uplift and sliding and to provide continuous load paths for these forces to the foundation. Where a portion of the resistance to these forces is provided by dead load, the minimum dead load likely to be in place during a design wind event shall be used.

§2306.2 Other fastenings. Where framing anchors, clips, staples, glues or other methods of fastening are used, they shall be labeled, listed and installed in accordance with their listing.

Florida Building Code

§2319.3 Bearing.

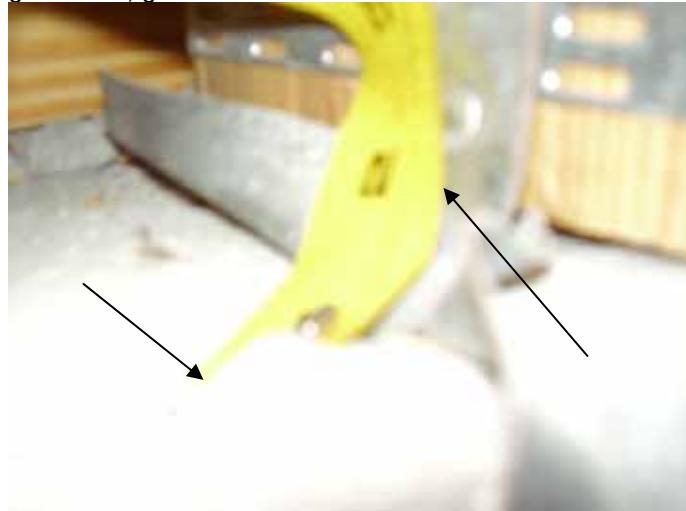
§2319.3.1 Joists and rafters shall have not less than three inches of bearing, on wood, metal, grout filled masonry or concrete except as provided in §2319.3.2, §2319.3.3 and §2319.3.4.



Some of the truss anchor straps are not correctly installed. There should be no slack in the straps. §1606.1.3, §2306.2



Some of the truss anchor straps are not correctly embedded in the concrete. They are offset 1& ½" or more from trusses over the garage. §2306.2, §1606.1.3



Some of the truss anchor straps are not correctly embedded in the concrete. They are offset 1& ½" or more from trusses over the garage. §2306.2, §1606.1.3



Some of the truss anchor straps are not correctly installed. There should be no slack in the straps. §1606.1.3, §2306.2



Some of the truss anchor straps were not correctly embedded into the concrete. §1606.1.3, §2306.2.



The straps should be embedded into the concrete up to the line on the strap. Some of the straps had more than an inch exposed below the embedment line.



There were one or missing straps at the roof framing above the front gable end wall at the 2nd floor.



Location of the previous photo. There was no strap at this 2x6 roof framing component above the front gable end wall at the 2nd floor.



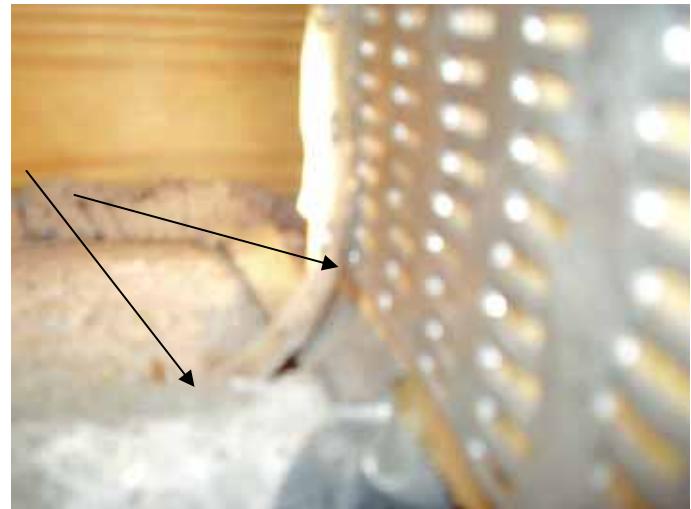
The 2x4 ceiling joist support was cut for the recessed lighting fixture & should be re-routed above the front entryway.



Some of the truss anchor straps were not correctly embedded into the concrete. The concrete should fill the block up to the top & embedment line. §1606.1.3, §2306.2.



Some of the trusses do not have 3 " bearing on a grout filled masonry cell or concrete as required. §2319.3



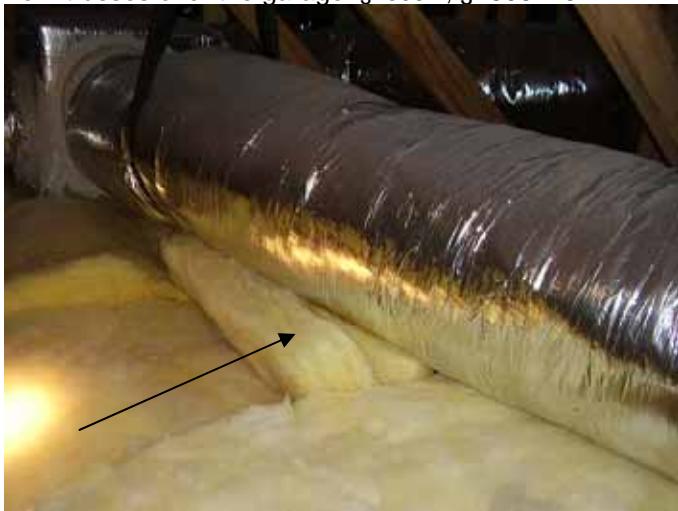
Some of the truss anchor straps are not correctly installed. There should be no slack in the straps. §1606.1.3, §2306.2



Some of the truss anchor straps are not correctly embedded in the concrete. They are offset 1& ½" or more from trusses over the garage. §2306.2, §1606.1.3



Location of the previous photo/s at the 2nd floor attic.



Some of the AC ducts were not correctly supported off the attic insulation or other ductwork as required.



Some of the AC ducts were not correctly supported off the attic insulation or other ductwork as required.



Some of the AC ducts were not correctly supported off the attic insulation or other ductwork as required.



Some of the attic insulation was out of place or missing.



Some of the AC ducts were not correctly supported off the attic insulation or other ductwork as required.

Florida Building Code

13-610.1.ABC.3.3.6 Flexible Duct Installation and Support.

Flexible ducts shall be configured and supported so as to prevent the use of excess duct material, prevent duct dislocation or damage, and prevent constriction of the duct below the rated duct diameter in accordance with the following requirements:

1. Ducts shall be installed fully extended. The total extended length of duct material shall not exceed 5 percent of the minimum required length for that run.
2. Bends shall maintain a center line radius of not less than one duct diameter.
3. Terminal devices shall be supported independently of the flexible duct. >>>>>

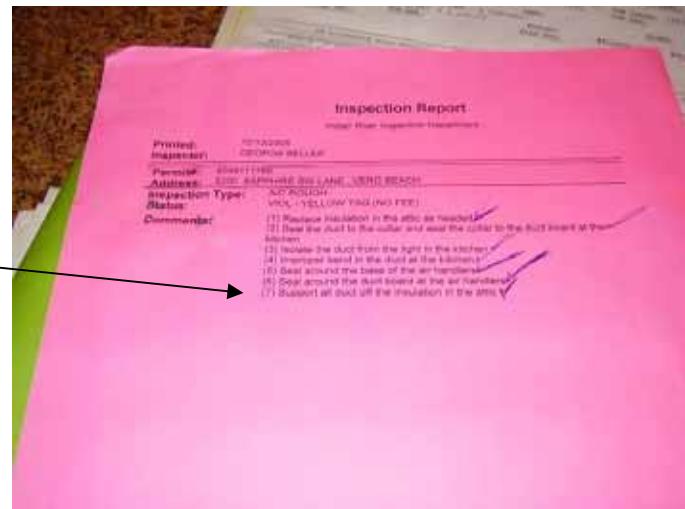
>>>>4. Horizontal duct shall be supported at intervals not greater than 5 feet. Duct sag between supports shall not exceed $\frac{1}{2}$ inch per foot of length. Supports shall be provided within 1.5 feet of intermediate fittings and between intermediate fittings and bends. Ceiling joists and rigid duct or equipment may be considered to be supports.

5. Vertical duct shall be stabilized with support straps at intervals not greater than 6 feet.

6. Hangers, saddles and other supports shall meet the duct manufacturer's recommendations and shall be of sufficient width to prevent restriction of the internal duct diameter. In no case shall the material supporting flexible duct that is in direct contact with it be less than 1-1/2 inches wide.

M603.11 Condensation. Provisions shall be made to prevent the formation of condensation on the exterior of any duct.

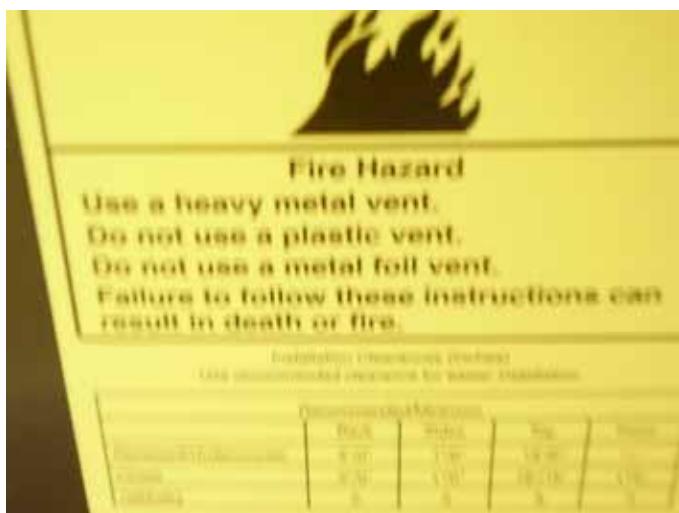
See item (7) from the Indian River Inspection Department which states to Support all duct off the insulation in the attic.



The grommet was not installed to secure the electrical wiring at the back of the dryer. – Shock Hazard.



The foil vent is not permitted for use with this dryer.



The manufacturer states the use of this duct is a fire hazard.



The dryer exhaust housing was obstructed with lint & did not allow the damper door to close correctly.



Technical Articles SureTest® Frequently Asked Questions - Voltage Drop

By Harold P. Kopp

What is voltage drop? A voltage drop in an electrical circuit normally occurs when current is passed through the wire. The greater the resistance of the circuit, the higher the voltage drop.

How much voltage drop is acceptable? A footnote (NEC 210-19 FPN No. 4) in the National Electrical Code states that a voltage drop of 5% at the furthest receptacle in a branch wiring circuit is acceptable for normal efficiency. In a 120 volt 15 ampere circuit, this means that there should be no more than a 6 volt drop (114 volts) at the furthest outlet when the circuit is fully loaded. It also means that the circuit has a resistance that does not exceed 0.4 ohms.

What causes “excess voltage drop” in a branch circuit? The cause is usually:

1. High resistance connections at wiring junctions or outlet terminals, usually caused by:

- poor splices anywhere in the circuit
- loose or intermittent connections anywhere in the circuit
- corroded connections anywhere in the circuit
 - inadequate seating of wire in the slot connection on backwired “push-in type” receptacles and switches.

2. The wire does not meet code standards (not heavy enough gauge for the length of the run).

What are the consequences of “excess” voltage drop in a circuit? Excess voltage drop can cause the following conditions:

1. Low voltage to the equipment being powered, causing improper, erratic, or no operation - and damage to the equipment.
2. Poor efficiency and wasted energy.
3. Heating at a high resistance connection/splice may result in a fire at high ampere loads.

At what % voltage drop does a circuit become hazardous? It is difficult to say at what point excess voltage drop will cause a fire, because it depends on how much current is flowing through the high resistance connection, what is the resistance of that connection and because many factors must be considered regarding at what point ignition will occur, e.g.:

1. Is the high resistance connection in contact with a combustible material?

2. Is there air flow to dissipate the heat?
3. Is the area around the connection insulated, so that heat cannot escape.

The NFPA reports [1] that from 1988-1992, there was an average annual total of 446,300 fires in homes, resulting in 3,860 Deaths and \$4.4 Billion property damage. 42,300 (9%) of these fires were caused each year by **Electrical Distribution Systems**. The largest portion of fires caused by electrical distribution systems (48%) were caused by **faulty fixed wiring, receptacles and switches**.

Electrical Distribution Equipment Fires in U.S. Homes²

1988-1992 Average

Cause of Fire	No. Of Fires
Total Electrical Distribution System	42,300 (100%)
Faulty Fixed Wiring	15,400 (36%)
Switches, Receptacles, Outlets	4,800 (11%)

The results of an in-depth investigation of 149 residential fires caused by electrical distribution systems was summarized in an article by Smith & McCoskrie [2]. Of the fires occurring as a result of:

- 1. faulty fixed wiring** - poor/loose splices, damaged connectors, improper installation and ground faults accounted for **94%** of these fires.
- 2. receptacles and switches** - loose/poor connections accounted for **59%** of these fires.
- 3. Lighting fixtures** - loose or poor connections accounted for **37%** of these fires.

Most of these faulty circuits and receptacles could have been previously identified as hazards with a 15-ampere load test, and many of these fires could have been easily prevented.

The **Philadelphia Housing Development Corporation** requires contractors to perform the 15-ampere-load test prior to insulating existing homes with insulation blown into attic crawl spaces in older row homes. [3] Prior to instituting the test, smoldering fires were associated with half a dozen installations. The PHDC found that 70% of the homes flunked the 5% maximum voltage drop test with "a cluster around 6%". The PHDC arbitrarily established **10%** as an unacceptable voltage drop, beyond which the contractor must repair/replace the circuit prior to proceeding with the insulation project. PHDC has been using this criteria successfully for 2 years (no fires in 2,500 installations).

RECOMMENDATIONS

For power efficiency, the NEC standard of 5% maximum voltage drop is recommended.

From a safety perspective, because wiring connections in some homes deteriorate with time (particularly in homes that use aluminum wiring for power circuits), and do-it-yourself modifications may be less than professional, excess voltage drop is a concern because of the potential fire hazard at high resistance connections, particularly on circuits that power electric motors while occupants of the dwelling are asleep, e.g. air conditioners, refrigerators, furnace fans, exhaust fans, etc.

Some agencies arbitrarily set a maximum voltage drop criteria of 10% to be considered unacceptable and a hazard. The author believes that any voltage drop difference of >1% from an adjacent receptacle should be investigated, that any voltage drop difference of >2% from an adjacent receptacle should be considered a hazard, and that using a maximum voltage drop criteria of more than 8% (3% above the "efficiency" recommendation) is courting disaster. A 3% voltage drop (3.6 volts in a 120 volt circuit) at one connection with a 15 ampere flow develops 54 watts of heat - which can cause ignition under certain conditions.

Footnotes

[1]NFPA U.S. Home Product Report 1988-1992 (Appliances & Equipment) Alison L. Miller August, 1994

[2] Smith, Linda & Dennis McCoskrie, "What Causes Wiring Fires in Residences" *Fire Journal* Jan/Feb 1990: 19-24, 69

[3] Kinney, Larry "Assessing the Integrity of Electrical Wiring" *Home Energy* Sept/Oct 1995: 5,6

-CONTACT US-

Voltage Drop

By Mike Holt for EC&M Magazine

Electrical equipment shall be installed so that it operates within its voltage rating as specified by the manufacturer. Because of circuit conductor voltage drop, the operating voltage at electrical equipment will naturally be less than the output voltage of the power supply.

UL does not have any specific requirement that equipment manufacturers specify the voltage range of equipment but, typically manufacturers recommend that the minimum circuit voltage not be less than 10 percent of the equipment voltage rating.

We must be careful to understand the difference between *nominal circuit voltage*, *equipment voltage rating*, and *actual operating voltage*. For example, an 115V rated motor is designed to be installed on a 120 *nominal* voltage circuit, but the actual *operating* voltage should not be less than 104V.

Inductive loads (e.g., motors, ballasts, etc.) can overheat, resulting in shorter equipment operating life and increased cost if they operate at voltage below their rating. In addition, under voltage can cause sensitive electronic equipment such as computers, laser printers, copy machines, etc., to lock up or suddenly power down. This can result in data loss, increased production cost, and possible equipment failure.

Resistive loads that operate at under voltage simply will not provide the expected rated power output. For example, a 10 kW heater rated 230V will provide less than 8.2 kW of power (work) at 208V ($P = E^2/R$). This (under voltage and under power) might not be a hazard, but it could cause production delays as well as increased production cost because the process is not function as it was intended.

Reduced circuit voltage can cause incandescent lighting to flicker when other appliances, office equipment, or heating and cooling systems are cycled on. Though this might be annoying for some, it's not dangerous and does not violate the NEC.

The actual operating voltage for a load can be determined by subtracting the conductor voltage drop from the nominal voltage rating. The voltage drop of the circuit conductors for a single-phase load can be determined by multiplying the

current of the circuit by the total resistance of the circuit conductors:

$$VD \text{ Single Phase} = I \times Z \times 2$$

$$VD \text{ Single Phase} = I \times Z \times 1.732$$

I = The load in amperes

Z = The impedance of the conductor as listed in the National Electrical Code Chapter 9, Table 9.

Question: Can a 16A, 115V motor be connected to a 120V circuit, if the 12 AWG circuit conductors are no more than 100 ft each?

Answer: Yes this installation will be fine, because the NEC does not limit the voltage drop to this type of load.

The voltage drop of the circuit conductors is equal to the current of the load times the impedance of the circuit conductors. The load is equal to 16A and the resistance of 12 AWG conductors in accordance to Chapter 8, Table 9 is equal to: 0.4 ohms [(2 ohm/1,000 ft) x 200 ft].

The circuit voltage drop is equal to 6.4V (16A x 0.4 ohms), therefore, the load will be operating at 113.6V, assuming the circuit voltage is 120V nominal.

Other factors that need to be taken into consideration include the power factor of the load as well as some of the NEC requirements. But remember, we need to be sure the equipment is supplied with a voltage that meets the equipment manufacturer's requirements.

Mike Holt's Comment: If you have any comments or feedback, please let me know at Mike@MikeHolt.com

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Consumer Product Safety Commission

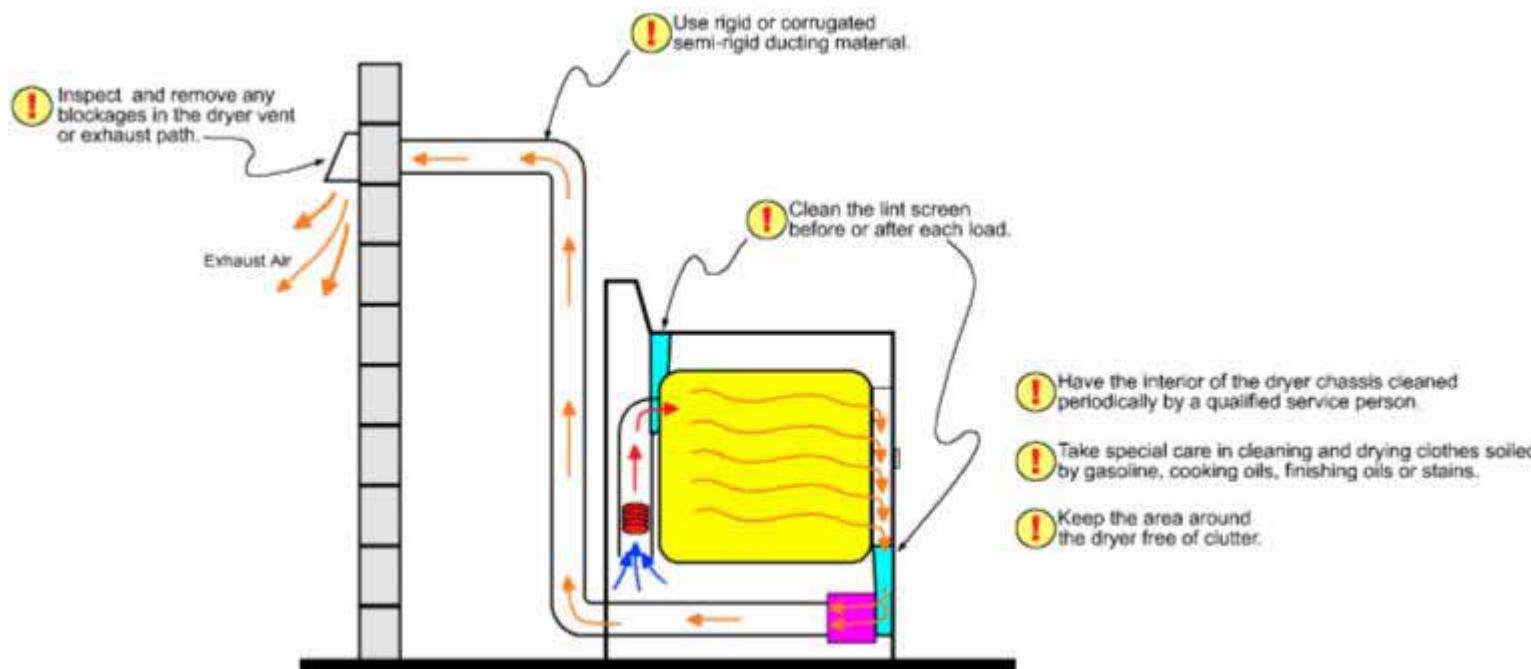
Overheated Clothes Dryers Can Cause Fires

CPSC Document # 5022
Updated June 2003

The U.S. Consumer Product Safety Commission estimates that in 1998, clothes dryers were associated with 15,600 fires, which resulted in 20 deaths and 370 injuries. Fires can occur when lint builds up in the dryer or in the exhaust duct. Lint can block the flow of air, cause excessive heat build-up, and result in a fire in some dryers.

To help prevent fires:

- **Clean the lint screen/filter before or after drying each load of clothes.** If clothing is still damp at the end of a typical drying cycle or drying requires longer times than normal, this may be a sign that the lint screen or the exhaust duct is blocked.
- **Clean the dryer vent and exhaust duct periodically.** Check the outside dryer vent while the dryer is operating to make sure exhaust air is escaping. If it is not, the vent or the exhaust duct may be blocked. To remove a blockage in the exhaust path, it may be necessary to disconnect the exhaust duct from the dryer. Remember to reconnect the ducting to the dryer and outside vent before using the dryer again.
- **Clean behind the dryer, where lint can build up.** Have a qualified service person clean the interior of the dryer chassis periodically to minimize the amount of lint accumulation. Keep the area around the dryer clean and free of clutter.
- **Replace plastic or foil, accordion-type ducting material with rigid or corrugated semi-rigid metal duct.** Most manufacturers specify the use of a rigid or corrugated semi-rigid metal duct, which provides maximum airflow. The flexible plastic or foil type duct can more easily trap lint and is more susceptible to kinks or crushing, which can greatly reduce the airflow.
- **Take special care when drying clothes that have been soiled with volatile chemicals** such as gasoline, cooking oils, cleaning agents, or finishing oils and stains. If possible, wash the clothing more than once to minimize the amount of volatile chemicals on the clothes and, preferably, hang the clothes to dry. If using a dryer, use the lowest heat setting and a drying cycle that has a cool-down period at the end of the cycle. To prevent clothes from igniting after drying, do not leave the dried clothes in the dryer or piled in a laundry basket.



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The U.S. Consumer Product Safety Commission is charged with protecting the public from unreasonable risks of serious injury or death from more than 15,000 types of consumer products under the agency's jurisdiction. Deaths, injuries and property damage from consumer product incidents cost the nation more than \$700 billion annually. The CPSC is committed to protecting consumers and families from products that pose a fire, electrical, chemical, or mechanical hazard or can injure children. The CPSC's work to ensure the safety of consumer products - such as toys, cribs, power tools, cigarette lighters, and household chemicals - contributed significantly to the 30 percent decline in the rate of deaths and injuries associated with consumer products over the past 30 years.

To report a dangerous product or a product-related injury, call CPSC's hotline at (800) 638-2772 or CPSC's teletypewriter at (800) 638-8270, or visit CPSC's web site at www.cpsc.gov/talk.html. To join a CPSC email subscription list, please go to www.cpsc.gov/cpsclist.asp. Consumers can obtain this release and recall information at CPSC's Web site at www.cpsc.gov.

Thomas Glynn

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- State of Florida Board of Professional Engineers Certification - #1100008097(EI)
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 - Registered Professional Inspector - Florida Association of Building Inspectors ID#- RPI 0447
 - Certified Member American Society of Home Inspectors ID # 205294
 - International Brotherhood of Carpenters & Joiners – Member Local Union #608, NYC Since 1985. Ledger Page #1934
 - Palm Beach County License - #2003-16237
 - Port St. Lucie, Indian River & Martin County License - #2003-275-429
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 - Twenty Five (25) Years in the Construction, Building Maintenance, Engineering & Inspection Industry
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