

# Report Index

Report# NC0121082671

INSPECTED BY: ACU'SPECT HOME INSPECTIONS	14
Purpose - Limitations - Information	14
Wall Framing Inspection	16
Stair Framing Inspection	25
Roof Framing Inspection	28
Electrical Inspection	32
Plumbing Inspection	38
Mechanical Inspection	40



P.O. Box 1288 Sonoita, AZ 85637 TEL 1-800-455-8959 [acuspect@direcway.com](mailto:acuspect@direcway.com)

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## PROPERTY INSPECTION REPORT

*Report #NC0121082671*

*January 21, 2008*

Dear Mr. Schemp

At your request we have performed a construction phase inspection of the property at 1683 W. Gleaming Moon Lane, Tucson AZ. on January 21, 2008.

**ACU'SPECT**, is pleased to submit the enclosed report. Understand that there are limitations to this inspection. Many components of the building are not visible during the inspection and plans may not always be available at the time of the inspection or in advance of the inspection.

Backfilling of trenches before the inspection, items hidden from view, as well as site barriers are common with this type of inspection process and of course will limit the inspections. While we can reduce your risk of non conforming trade practices in the construction of the building, we cannot eliminate it, nor can we assume it.

This is not a "Code Compliance" inspection or "Plan Review" inspection. This inspection covers the generally acceptable industry trade practices for construction in this geographical area. Acceptable trade practices for the most part are stated in the approved plans and drawings and generally refer to an adopted set of codes for the county in which the structure is being built. It is not possible to be an expert in each and every county as to the codes adhered to and whatever modifications or omissions that the individual counties deemed necessary or practical.

We are not associated with any other party to the transaction of this property, except as may be disclosed to you.

Thank you for selecting our company. We appreciate the opportunity to be of service. Should you have any questions about the general condition of the building in the future, we would be happy to answer these. We hope you will recommend our services to your friends and associates.

Sincerely,

Bob Kille

**ACU'SPECT** HOME INSPECTIONS



P.O. Box 1288 Sonoita, AZ 85637 Ph: 1-520-455-5952 Email: [bob@acuspect.net](mailto:bob@acuspect.net)

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## INVOICE

**DATE: 01/21/2008**

**INVOICE #NC0121082671**

**BILL TO:** Jason Schemp

**DESCRIPTION OF SERVICES:**

**INSPECTION FEE: \$365.00**

New Construction

**AMOUNT OWED: \$365.00**

**Please send payment to: P.O. Box 1288, Sonoita AZ 85637**

Thank you for your prompt payment

**SITE INFORMATION:**

**DATE OF INSPECTION:** 01/21/2008

**LOCATION:** 1683 W. Gleaming Moon Lane Tucson AZ

**INSPECTOR:** BOB KILLE

# PROPERTY INSPECTION

## SUMMARY REPORT

The Schemp Report  
1683 W. Gleaming Moon Lane, Tucson Arizona  
Report #NC0121082671

The following items are extracted from the full report, and presented here as a summary for the readers convenience only. No representation is made that this is an all inclusive list of conditions that are important for consideration.

We highly recommend that the entire report be read as there may be other facts or conditions that may affect your conclusions or decisions.

Each of these summary items will likely require an approved method of repair or installation by appropriate persons i.e.(licensed and qualified plumber, contractor, engineer, electrician, pest technician, etc.). The bold reference numbers at the end of a comment refer to the International Residential Code **IRC** 2000, the International Building Code **IBC** 2000 or manufacturers/product guidelines. We suggest that you confer with your building site supervisor for solutions to the following corrective notices or further review concerns.

### Wall Framing Inspection

#### Wall Construction Inspection

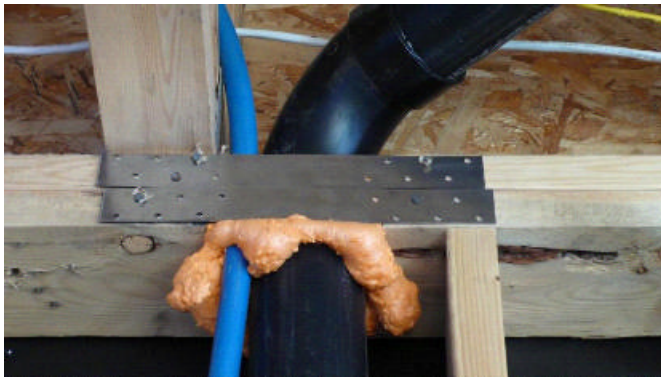
1. **Correction Notice:** Load bearing studs were observed to be cut off or over notched at the laundry wall area. The studs are not capable of accommodating and transmitting all design loads to the structural elements. We recommend that the studs be replaced, headered or doubled as required. **(R601.2)**



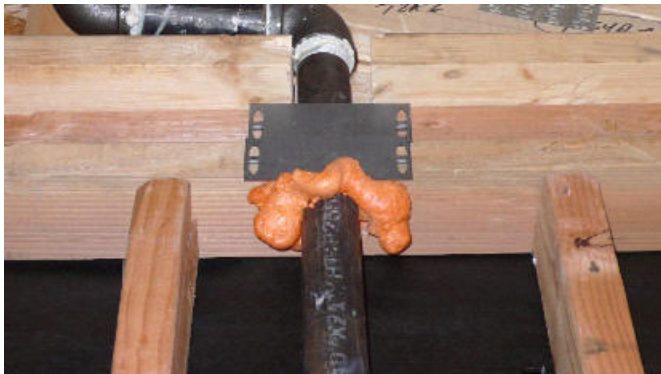
2. **Correction Notice:** The wall header at the kitchen sliding glass door was missing it's second jack stud on the right side. We recommend the Installation of the required jack stud. **(R502.5) Table (2)**



3. **Correction Notice:** The top plate straps were missing the required nailing at the left side DWV piping area. Notches or bored holes were observed at the top plate which were 50 percent or greater of the top plate width without the required 1 1/2" galvanized metal tie fastener with 6-16d nails at each side of the notch or hole. **(R602.6.1)**



4. **Correction Notice:** The required strapping was missing at the gas main top plate location. Notches or bored holes were observed at the top plate which were 50 percent or greater of the top plate width without the required 1 1/2" galvanized metal tie fastener with 6-16d nails at each side of the notch or hole. We recommend installation as required. **(R602.6.1)**



#### Shear Wall & Strapping Inspection

5. **Correction Notice:** The shear wall hold downs at all locations were observed to be installed with fasteners that did not meet the manufacturers specifications. Fasteners observed were .131 inches thick. Incorrect fastener sizes can have a significant impact on the design loads. We recommend that all hold downs receive the required fasteners as designed. **(Manufacturer's Installation Instructions)**

## SIMPSON HTT16.



6. **Correction Notice:** Continuous utility straps were observed in several locations with incorrect fastener sizes. 1 1/2" .131 nails were observed, Simpson listed straps have a minimum of 10d .148 nailing unless a load reduction of 30% is specified in the approved plans and specifications. We recommend that the CS18 strapping be installed with the recommended fasteners unless otherwise noted in the plans. **(Approved Plans & Specifications) (Manufacturers Installation Instructions)**



7. **Correction Notice:** The garage shear wall sheathing was not nailed to the doubled studs of the hold downs as required. We recommend that the required nailing be installed for the design performance rated by the manufacturer. **(Manufacturer's Installation Instructions)**





8. **Correction Notice:** The fastener size for the shear walls was observed to be smaller (.113) than the commonly prescribed 8d (.131) common nail found in engineered drawings. The size difference amounts to an approximate 15% loss in calculated load values for the assembly. Improper fastener sizing at the shear wall can significantly reduce the design specifications. Shear panel assemblies limits the distortion of the building frame by preventing the frame from racking. The assemblies are an engineered design and require that the specifications set forth in the approved plans be followed including the nailing and fastening requirements. We recommend that the fastener sizing be evaluated per plan, with correction by addition as necessary. **(APA T94-9) (Approved Plans & Specifications)**

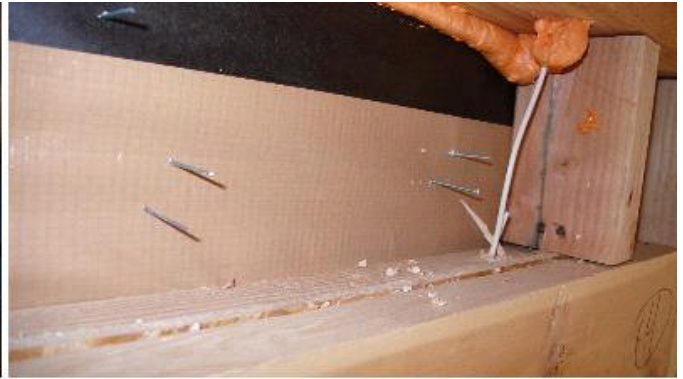
#### Fireblocking Inspection

9. **Correction Notice:** The required fire blocking was missing or incomplete at the water heating equipment stand. This is a concealed space such as a soffit, cove or dropped ceiling. We recommend the installation of fire blocking as required. **(R602.8)**



#### Moisture/Vapor/Air Barriers

10. **Correction Notice:** The moisture barrier was penetrated by the stucco staples at most window header areas. Staple penetrations into the interior of the wall create pathways for moisture to enter the enclosed space, therefore, all penetrations must be sealed at the entry point. We recommend that these areas be caulked as required. **(R703.2)**



#### **Stair Framing Inspection**

##### Stair Dimensions

11. **Correction Notice:** The rise of the first step to second step was not within the required  $\frac{3}{8}$  of an inch tolerance for stairs.  $7 \frac{5}{8}$ ths and  $7 \frac{1}{8}$ th were observed. The greatest riser height of the stairs should not exceed the smallest by more than  $\frac{3}{8}$  of an inch. This is a safety aspect of the staircase and must be addressed for the safe use of the stairs. **(311.5.3.1)**

##### Carriage Framing

12. **Further Review:** The stringers of the stairway were observed to be over notched leaving just 4 inches of solid wood at the left side stringer. We recommend further review of the load capability of 4 inch stringer assembly. **(Approved Plans & Specifications)**



13. **Correction Notice:** The thrust blocking at the bottom of the staircase was not secured to the floor with J-Bolts. A minimum 2x4 thrust block must be secured to the floor and notched into the carriages to prevent slippage. We recommend installing the properly secured and notched thrust blocking as required.





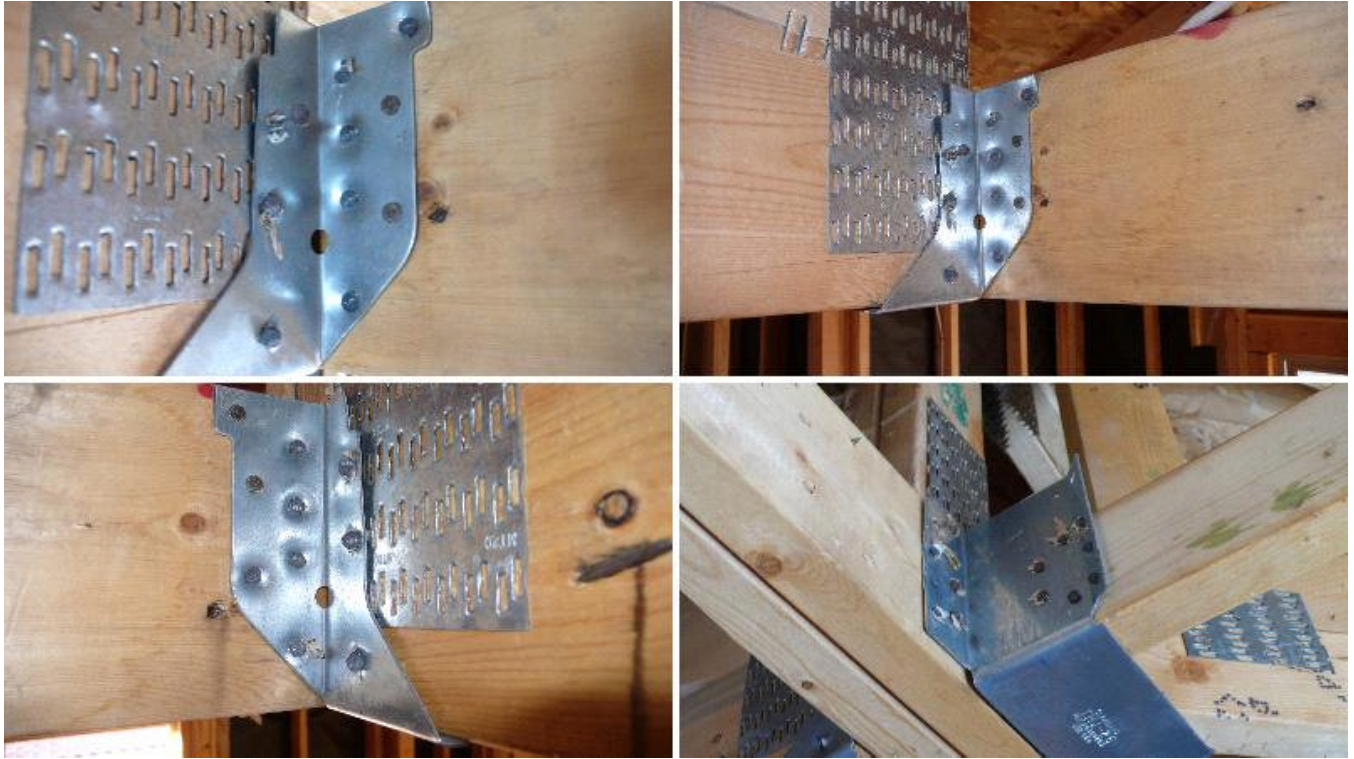
## Roof Framing Inspection

### Wood Truss Inspection

14. **Correction Notice:** The gable end bracing was incorrectly installed and/or missing at several locations. We recommend that the approved plans and specifications be consulted for proper placement and fastening procedures. **(Approved Plans & Specifications)**



15. **Correction Notice:** Truss hangers must have all nail holes filled with the correct size fastener to complete the design specifications. Incorrect fastener sizing was observed at all truss hanger locations. 1 1/2" .131 nails observed at most locations. The reduction in load design using these fastener sizes can be significant. We recommend using the recommended fasteners called for by the manufacturer of the hanger. **(Manufacturers Installation Instructions) SIMPSON HUS26 THA29 LUS24 THJ26.**



#### Roof Sheathing & Shear Transfer Inspection

16. **Correction Notice:** The roof assembly must be able to transfer its associated shear loads to the foundation. This is most commonly done by nailing blocking at the top plate and roof sheathing between the roof trusses in a required nailing pattern or combination of nails and clips. The boundary clips, Simpson A35's, were observed to be improperly installed. We recommend that the required shear transfer components (nails or clips) be installed as detailed in the approved plans and specifications. **(Approved Plans & Specifications)**





17. **Correction Notice:** The roof sheathing at the bird board was not nailed as required. Nailing patterns for this connection are typically 6" on center with 8d .131 common nails. Nails were not found at these locations around the perimeter of the roof because the roof sheathing did not extend far enough over the bird board to make a connection. We recommend that the builder install the proper nailing pattern for the eave detail constructed or provide an engineers stamp of approval detailing the roof diaphragm shear transfer as constructed without the nailing. **(Approved Plans & Specifications)**

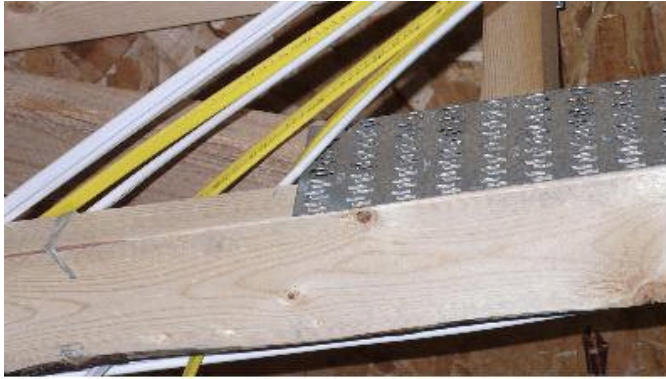


## Electrical Inspection

### Branch Circuit Wiring

18. **Correction Notice:** Electrical cable was observed to be in contact with a sharp metal truss gusset plate edge at 4 locations in the garage. Where subject to physical damage, such as draped over a metal gusset plate, cables should be protected by conduit, guard strips or other approved means. Where passing through a floor, the cable should be protected by conduit extending not less than 6 inches above the floor. **(E3702.3.2)**





## Plumbing Inspection

### Water Supply

19. **Correction Notice:** Pex piping was observed to be in contact with a metal truss gusset plate at the kitchen rear wall truss area. The plates edges may rub through the pipe over time as the pipe expands and contracts over the sharp edge. We recommend that piping be held away or rerouted to protect against physical damage as required. (P2603.2.1)

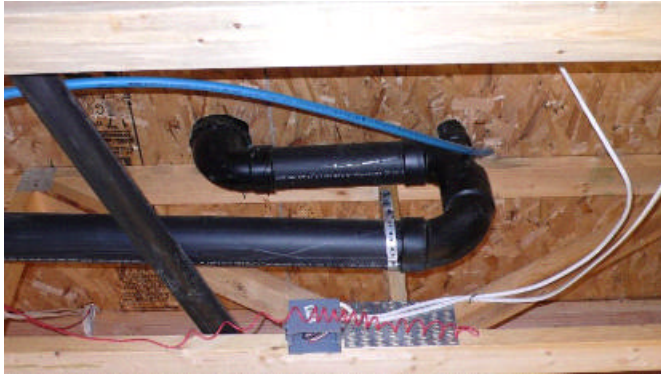


### Drain, Waste and Vent (DWV)

20. **Correction Notice:** Piping was observed without supports at the vertical 90 degree bends at multiple locations. We recommend that the required strapping or supports be installed as required.



21. **Correction Notice:** The drain line at stair area was observed to have a negative slope. Drainage fittings should be designed to maintain a one fourth unit vertical in 12 units horizontal ( 2 percent slope ) grade. We recommend that the pipe installation slope as required. (P3002.3.1)

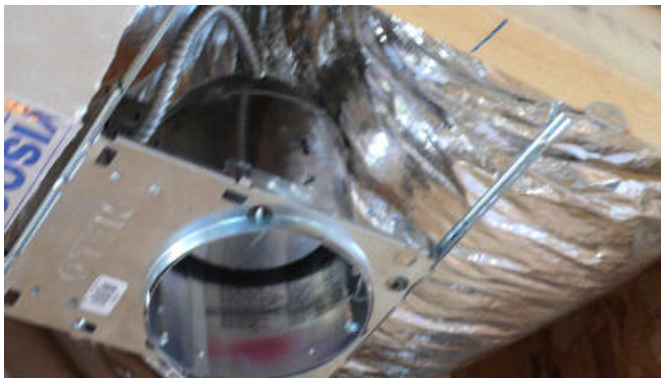


## Mechanical Inspection

### Air Duct Materials & Installation Inspection

22. **Correction Notice:** A lighting can was observed to be in direct contact with the flex duct at the stairwell location. We recommend separation as required by the flex duct manufacturer.

**(Manufacturer's Installation Instructions)**





## INSPECTED BY: ACU'SPECT HOME INSPECTIONS



**1683 W. Gleaming Moon Lane, Tucson AZ.**

## Purpose - Limitations - Information

### STATEMENT OF PURPOSE:

The purpose of this report is general in nature. No in depth examination of blueprints, mathematical calculations or engineering data used in the construction of this building will be made. The inspector will visually inspect for generally acceptable trade practices for the type of building being erected. Discrepancies will be reported on but not resolved by the inspector. Plans or blueprints are not always available for review at the building site and no prolonged attempt to obtain or review them will be made on the inspectors part. In the absence of plans or blueprints, generally acceptable

trade practice will be the governing criteria. A thorough review of plans and construction details would require an extensive amount of time and is better left to other construction disciplines. A general building construction inspection would not be appropriate for a full compliance inspection and no representation is made that this is a full compliance inspection. This report is for the express purpose of visually inspecting a phase of construction for general adherence to the approved plans and specifications (if present), and/or for generally accepted trade standards in the construction of this building.

#### **LIMITATIONS:**

The inspection report should not be construed as a compliance inspection of any governmental or non-governmental codes or regulations. The report is not intended to be a warranty or guarantee of the present or future adequacy or performance of the structure, its systems, or their component parts. This report does not constitute any express or implied warranty of merchantability or fitness for use regarding the condition of the property and it should not be relied upon as such. Any opinions expressed regarding adequacy, capacity, or expected life of the components are general estimates based on information about similar components and occasional wide variations are to be expected between such estimates and actual experience.

We certify that our inspectors have no interest, present or contemplated, in this property or its improvement and no involvement with the tradespeople or benefits derived from any sales or improvements. To the best of our knowledge and belief, all statements and information in this report are true and correct.

#### **DEFINITION OF TERMS:**

**Correction Notice:** A building technique, component or installation issue that may not be compliant with the plans and specifications, manufacturers installation requirements or generally acceptable trade practices.

## **General Information**

### **Client/Agent**

The inspection of the building detailed in this report was at the request of Jason Schemp, our client.

### **Inspector**

The inspector of record was Robert Kille, owner of Acuspect Home Inspections, State of Arizona Certification #38351.

### **Time**

The inspection began at approximately 07:30 AM and ended at approximately 9:30 AM on January 21, 2008.

### **Weather**

The ground was dry, the sky was clear, and the outside air temperature was in range of 40-50 degrees F.

### **Orientation**

For purposes of identification, comments in this report are written right, left, front and rear, as if the inspector were standing at the main entry door (front) of the property and looking into the building.

### **Builder/Subcontractor**

The name of the builder or subcontractor who was responsible for the framing of the structure was Mertiage Homes.

## **Approved Plans & Specifications**

The approved plans and specifications for the building were not made available to the inspector before or at the time of inspection.

# **Wall Framing Inspection**

## **Wall Construction Inspection**

### **Wall Materials**

The exterior stud size and spacing for the exterior wall structure was 2x4 nominal and 2x6 nominal lumber spaced 12" and 16" on center.

### **Sill Plate**

The sill/sole plates should be at least as large as the studs that bear upon them. The wood sole/sill plate at walls on monolithic slabs should be anchored to the foundation with anchor bolts spaced at a maximum of 6 feet on center for single story structures and 4 feet on center for two story structures unless otherwise noted in the approved plans and specifications. There should be a minimum of two bolts per plate section with one bolt located not more than 12 inches or less than seven bolt diameters from each end of the plate section. Bolts should be at least 1/2 inch in diameter and extend a minimum of 7 inches into masonry or concrete. Plate washers should be a minimum of 1/4 inch by 2 inches in diameter between the sill plate and the nut in seismic zones.

Interior bearing wall sole plates on monolithic slab foundations shall be positively anchored with approved fasteners. A nut and washer shall be tightened on each bolt to the plate.

Sills and sole plates shall be protected ( treated lumber ) against decay and termites with acceptable trade practices.

### **Studs**

Maximum stud spacing for standard or better grade studs is 24 inches on center. Studs used in exterior load bearing walls should not be more than 10 feet high without being engineered for the location. Where joists, trusses or rafters are spaced more than 16 inches on center and the bearing studs below are spaced 24 inches on center, the members must bear within 5 inches of the studs beneath. Exceptions to this rule are as follows: The top plates are two 2x6's or two 3x4's. A third top plate is installed or solid blocking equal in size to the studs is installed to reinforce the double top plate.

Interior load bearing walls should be constructed, framed and fireblocked as specified for exterior walls. Cripple walls less than 14 inches should be sheathed on at least one side with a wood structural panel nailed at 6 inch centers along the edges. The grade mark affixed to the studs was present and in accordance with minimum design specifications. In general, studs should be a minimum No. 3, standard or stud grade lumber. Lumber grade below No. 2 or better, should be checked at the approved plans and specifications lumber specification sheet to verify that the proper grade was incorporated into the building structure.

### **Stud Notches & Holes**

Exterior and bearing wall studs must not have notches exceeding 25 percent of the stud width. Interior nonbearing wall studs notches cannot exceed 40 percent of the stud width. Studs with bored holes cannot have diameters that exceeded 40 percent of the stud width. Whenever a wood stud in an exterior wall or bearing wall has a bored hole between 40 and 60 percent of its width an additional stud must be

added and nailed to the stud which has the hole. Studs if doubled because of bored hole diameter can not have more than two such studs in succession. All bored holes greater than 25 percent of the stud need to be at least 5/8" from the edge of the stud and none of the bored holes can be in the same cross section of a notch.

### **Top Plate**

The load bearing walls must have a top plate that is doubled which means that the plates must overlap at corners and intersections with bearing walls. Top plate end joints must have a 24" minimum offset. Plates shall be a nominal 2 inches in depth and have a width at least equal to the width of the studs. The location of the truss bearing points at the top plate in relation to the studs has no limitations with a double top plate and 16" centers. On 24 inch centers the bearing points must be within 6 inches in relation to the studs for a double top plate.

All top plates with notches or holes greater than 50 percent of their width must be reinforced with a 1 1/2" galvanized metal tie fastened across the cut plate with 6-16d nails on each side. An exception to this rule is when the entire side of the wall with the notch or cut is covered by wood structural panel sheathing. The bearing points for the trusses or rafters must follow guidelines according to spacing, therefore, the spacing must be verified and found to be in compliance. The spacing of the trusses, joists or rafters was 16 inches on center.

### **Wall Headers**

Wall headers must be properly constructed in accordance with the approved plans and specifications in size and wood grade to span the opening and transfer loads to jack studs or trimmers. Headers should be nailed 16 inches on center along each edge. Window and door headers should be set at the same height so that all the headers align.

### **Wall Bracing**

Wall bracing is generally engineered for the building taking into account the number of stories, construction design, live and dead loads, wind loads and seismic design category. A complete design review and verification of proper bracing is beyond the scope of a general construction inspection for accepted trade practice.

General trade practice in less than 100mph wind zones or less, suggest the use of a 1x4 let-in or approved metal strap bracing. These types of bracing need to be located at each corner (end) and at least every 25 feet on center, but not less than 16 percent of the braced wall length. Placed at an angle from horizontal between 45 and 60 degrees. Metal bracing is to be face nailed with 2-16d nails at the top plate, each stud and 1-8d at the sole plate. Metal bracing must be installed and mounted in accordance with the manufacturer's specifications and/or installation instructions. Metal bracing is most often used for temporary bracing.

In most residential construction, plywood or OSB sheathing panels are used for lateral bracing and are nailed 6 inches on center at the edges and 12 inches on center in the field. This provides excellent racking resistance.

### **Nailing**

Studs must be toe nailed at the top/sole plates with at least 3-8d or 2-16d nails. Double studs and built-up corner studs should be faced nailed with 10-d nails @ 24" on center. The top of the sole plate should be end nailed to the studs with 2-16d nails.

The continuous headers are required to be toe nailed or strapped to studs with 4-8d nails.

Wood structural panels, subfloor, roof and wall sheathing to framing is required to be nailed with 6d common nails every 6 inches at the edges and 12 inches in the field for 5/16" to 1/2" wall sheathing. 8d

nails for roof sheathing. If the panel thickness is 19/32" to 1" an 8d nail shall be used with the same spacing requirements at the edge and in the field.

### **Load Path**

All loads start at the roof and must transfer on an unbroken path through structural members or elements to the foundation. Many cracking problems, which are misinterpreted as "settling" are actually caused by broken load paths. These broken paths result in loads being carried by areas that were not designed to carry them.

### **Inclusive Home Design**

Pima county inclusive home design ordinance requires that bathrooms located on the accessible route have walls at the tub/shower and toilet locations that are reinforced to allow the future installation of grab bars. This reinforcement must be installed flush with the studs and at the following locations:

For the toilets, wall reinforcement should be placed 33 - 36 inches above the floor on all adjacent walls. Horizontal length of reinforcement should be sufficient to allow a 42 inch grab bar and a 24 inch rear grab bar.

For the tub/shower back wall. Two backing reinforcements, one backing reinforcement horizontal position 33 - 36 inches above the floor, and one backing reinforcement 9 inches above the rim of the bathtub. Each backing reinforcement should be 24 inches long minimum and should be 24 inches maximum from the head end wall and 12 inches maximum from the foot end wall.

For the foot end wall of the bathtub. One backing reinforcement 24 inches long minimum on the foot end wall at the front edge of the bathtub.

For the head end wall of the bathtub. One backing reinforcement 12 inches long minimum on the head end wall at the front edge of the bathtub.

Shower walls should have backing on a minimum of two walls not to include the control valve wall mounted at 33 - 36 inches above shower floor.

All wall reinforcement should be capable of resisting shear and bending forces of a minimum of 250 pounds. Reinforcement is not required at the location of vanities, linen closets, and pre-molded shower/tub surrounds, or in a room containing only a sink and a toilet, provided that the room does not contain the only sink or toilet on the accessible floor of the home.

### **Inspection Observations**

**Status:** The load path, top plate, sole plate, headers, bracing and studs were inspected for grade mark, size and spacing, nailing, cutting, notching and/or bored holes and found to be in compliance with the above requirements or accepted trade practice except for the following:

### **Stud Issues**

**Correction Notice:** Load bearing studs were observed to be cut off or over notched at the laundry wall area. The studs are not capable of accommodating and transmitting all design loads to the structural elements. We recommend that the studs be replaced, headered or doubled as required. **(R601.2)**





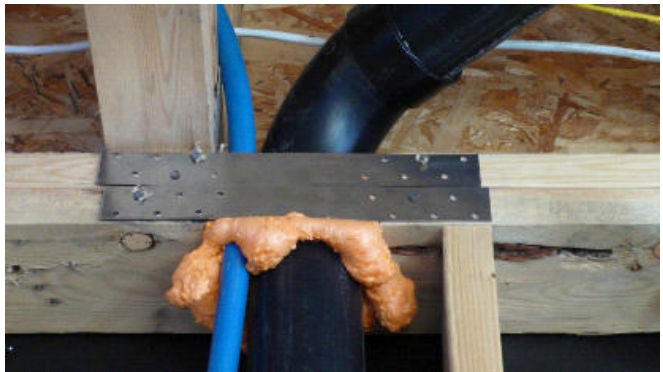
## Wall Header Issues

**Correction Notice:** The wall header at the kitchen sliding glass door was missing it's second jack stud on the right side. We recommend the Installation of the required jack stud. **(R502.5) Table (2)**

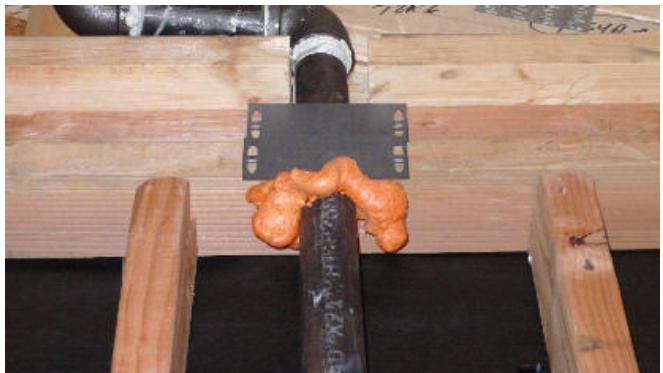


## Top Plate Issues

**Correction Notice:** The top plate straps were missing the required nailing at the left side DWV piping area. Notches or bored holes were observed at the top plate which were 50 percent or greater of the top plate width without the required 1 1/2" galvanized metal tie fastener with 6-16d nails at each side of the notch or hole. **(R602.6.1)**



**Correction Notice:** The required strapping was missing at the gas main top plate location. Notches or bored holes were observed at the top plate which were 50 percent or greater of the top plate width without the required 1 1/2" galvanized metal tie fastener with 6-16d nails at each side of the notch or hole. We recommend installation as required. **(R602.6.1)**



## Shear Wall & Strapping Inspection

### Hold downs

The location of the hold down straps must consistent with the working drawings or plans. Hold downs in general, must be imbedded into the concrete 7 inches and all the nail holes must be filled with 6-d nails or manufacturer supplied screws. Hold downs are not always visible, and called for locations in the approved plans and specifications are generally unknown to the inspector.

## Straps

Strapping of the buildings support members for uplift requirements and the location of the straps must be consistent with the plans. All nail holes shall be filled with 6-d nails.

## Shear Walls

Shear walls are generally made out of 5/16's sheathing for 16 inch centers or 3/8 inch thick sheathing for 24 inch centers and are placed at engineered locations throughout the buildings walls. A sheer wall can also be of 1/2 inch drywall with specific nailing requirements at the interior of the building. Both interior and exterior shear walls have rigorous nailing schedules, with nails spaced only 3 inches apart on panel edges. Nails must be held back 3/8 inch from the edges of the sheathing panels and 3/8 inch in from the framing members. Also, they must be staggered vertically. The sheathing size, stud spacing, nailing patterns and locations of shear walls must be consistent with the approved plans and drawings. Checking these specifications is only possible if the plans are present at the time of inspection.

## Nailing

Shear panel assemblies limits the distortion of the building frame by preventing the frame from racking. The assemblies are an engineered design and require that the specifications set forth in the approved plans be followed including the nailing and fastening requirements. Nails which penetrate further than the crown or head (nail set), into the shear structural panel reduce the design characteristics. Nail set of a percentage greater than 20% of the total perimeter nailing is considered to be excessive and compromises the engineered design. If any of the nails are over driven greater than or equal to 1/8 inch, additional fasteners should be driven to maintain the required shear capacity. For every two fasteners over driven, one additional fastener should be used. If the nails are spaced to close to allow the placement of additional nails, then approved staples must be used for the additional fasteners required.

## Inspection Observations

**Status:** The visible load path, hold downs, strapping and shear walls were inspected and found to be in compliance with the above requirements except for the following:

### Hold Down Issues

**Correction Notice:** The shear wall hold downs at all locations were observed to be installed with fasteners that did not meet the manufacturers specifications. Fasteners observed were .131 inches thick. Incorrect fastener sizes can have a significant impact on the design loads. We recommend that all hold downs receive the required fasteners as designed.

**(Manufacturer's Installation Instructions) SIMPSON HTT16.**



## Strapping Issues



**Correction Notice:** Continuous utility straps were observed in several locations with incorrect fastener sizes. 1 1/2" .131 nails were observed, Simpson listed straps have a minimum of 10d .148 nailing unless a load reduction of 30% is specified in the approved plans and specifications. We recommend that the CS18 strapping be installed with the recommended fasteners unless otherwise noted in the plans. **(Approved Plans & Specifications)**  
**(Manufacturers Installation Instructions)**



### Shear Wall Issues

**Correction Notice:** The garage shear wall sheathing was not nailed to the doubled studs of the hold downs as required. We recommend that the required nailing be installed for the design performance rated by the manufacturer. **(Manufacturer's Installation Instructions)**

**Correction Notice:** The fastener size for the shear walls was observed to be smaller (.113) than the commonly prescribed 8d (.131) common nail found in engineered drawings. The size difference amounts to an approximate 15% loss in calculated load values for the assembly. Improper fastener sizing at the shear wall can significantly reduce the design specifications. Shear panel assemblies limit the distortion of the building frame by preventing the frame from racking. The assemblies are an engineered design and require that the specifications set forth in the approved plans be followed including the nailing and fastening requirements. We recommend that the fastener sizing be evaluated per plan, with correction by addition as necessary. **(APA T94-9) (Approved Plans & Specifications)**



### Fireblocking Inspection

## Concealed Spaces & Interconnections

Two inch nominal lumber must be used in all concealed spaces of stud walls and partitions (including furred spaces, soffits, dropped and cove ceilings) to provide fireblocking between floor and ceiling/roof intersections. Stair stringers at the top and bottom of the run shall have fireblocking material in place.

## Openings

Noncombustible fireblocking material that is rated to resist the free passage of flame and products of combustion must be provided for at all openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor level. Mineral wool or unfaced fiberglass batts in full cross section at least 16" high can be used at these locations. Voids of more than 1/8 inch will undermine the material's fire stopping ability.

For irregularly shaped openings, the use of a "intumescent" fire stopping compound that will expand to fill a void left by plastic piping or cable insulation that has melted away is recommended.

## Gable Fire Barrier

The gable ends require a radiant fire barrier for protection of adjacent properties. The barrier was present and in good condition with no holes observed.

## Inspection Observations

**Status:** The wall frame fireblocking was inspected and found to be in compliance with the above requirements except for the following:

## Concealed Spaces & Interconnection Issues

**Correction Notice:** The required fire blocking was missing or incomplete at the water heating equipment stand. This is a concealed space such as a soffit, cove or dropped ceiling. We recommend the installation of fire blocking as required. **(R602.8)**



## Moisture/Vapor/Air Barriers

### Moisture Barrier

A moisture barrier (also called a weather barrier) is a membrane directly under the siding that prevents any water penetrating the siding from reaching the sheathing or the framing. An effective moisture barrier stops liquid water but lets water vapor through, thereby letting the wall breathe. Many products such as 15-lb. felt and bitumen-impregnated paper which come in 3 foot wide rolls, have been used historically and are suitable for this purpose.

The moisture barrier shall align at the bottom edge of the sheathing or flashing, shall overlap 2 to 4 inches at the horizontal joints and overlap at least 4 inches in the vertical joints. Any holes or penetrations should be sealed to prevent moisture entry.

### Air Leakage

All joints, seams, penetrations; openings between window and door assemblies and their respective jambs and framing; and other sources of air leakage (infiltration and exfiltration) through the buildings thermal envelope shall be caulked, gasketed, weatherstripped, wrapped, or otherwise sealed to limit uncontrolled air movement.



## Inspection Observations

**Status:** The visible moisture and air barriers generally required at the walls and thermal envelope were found to be in compliance with the above requirements except for the following:

### Moisture Barrier Issues

**Correction Notice:** The moisture barrier was penetrated by the stucco staples at most window header areas. Staple penetrations into the interior of the wall create pathways for moisture to enter the enclosed space, therefore, all penetrations must be sealed at the entry point. We recommend that these areas be caulked as required. **(R703.2)**



## Window Flashing

### Flashing

Window flashing is generally made up of a moisture resistant material such as "Moist Top". The installation of this type of material has the order of bottom section first followed by the sides with the top overlaying the sides. Staples or nails should be placed at the outer edges or where the window attachment will cover the fasteners. The top outer edges should be left open for later integration with the wall moisture barrier. This procedure is adequate for most exposed situations because all layers overlap in an order that directs water away from the structural frame of the building.

## Inspection Observations

**Status:** The visible window flashings were observed to generally comply with the above procedure for installing the flashings.

## Safety Glazing

### Glazing Requirements

Safety glazing is required at all areas within 24 inches of a door or walkway and at any window in which the bottom frame is less than 18 inches from the floor. Safety glazing is also required within 60 inches of the bottom of a tub or shower pan.

## Inspection Observations

**Status:** The safety glazing of the installed windows at the safety glazing areas were observed to be compliant with the above requirements.

## **Exterior Covering**

### **Exterior Plaster**

Expanded metal or woven wire lath should be attached with 1 1/2 inch, 11 gauge nails with a 7/16ths head, or 7/8ths inch 16 gauge staples, spaced no more than 6 inches or as otherwise approved. The exterior lath should cover and terminate on the attachment flange of the weep screed.

On wood frame construction with an on grade floor slab system, exterior plaster should be applied in such a manner as to cover, but not extend below, lath, paper and screed. Weep screeds should be a minimum of 26 gauge galvanized or plastic with a minimum vertical attachment flange of 3 1/2 inches provided at or below the foundation plate line. The weep screed shall be placed a minimum of 4 inches above the earth and 2 inches above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building.

### **Inspection Observations**

**Status:** The exterior lath or woven wire (if present), was inspected and found to be in compliance with the above requirements.

## **Stair Framing Inspection**

## **Stair Dimensions**

### **Proportion**

More than most other parts of a building, stairs need to be proportioned to the human body for safety. The height (rise) and depth (run) of the individual step must be in a comfortable relationship for the average person and must be manageable for people who are infirm or disabled.

### **Rise and Run**

Minimum unit rise is typically 4 inches and the maximum is 7 3/4 inches. For residential stairs, however, a comfortable rise is about 7 inches. Minimum unit run is 11 inches, except for residential stairs which can have 9 inch treads.

For safety, it is important to make each riser of a stair the same height. Only a 3/8 inch variance between the tallest and the shortest riser in a flight of stairs is allowed. The maximum total rise between floors or landings is typically 12 feet. Landings must be as deep as the width of the stairway but need not exceed 44 inches if the stair has a straight run.

### **Stair Width**

Minimum width is usually 36 inches except for residential stairs which sometimes may be as narrow as 30 inches. Minimum widths are measured inside finished stairwells, so rough openings must allow for the finished wall surfaces.

### **Headroom**

Headroom is measured vertically from an imaginary line connection the nosing of all the treads. Minimum headroom is required to be at least six feet eight inches.

## Inspection Observations

**Status:** The proportion, rise and run, stair width and head room were all found to be in compliance with the above requirements except for the following:

### Rise and Run Issues

**Correction Notice:** The rise of the first step to second step was not within the required  $\frac{3}{8}$  of an inch tolerance for stairs.  $7 \frac{5}{8}$ ths and  $7 \frac{1}{8}$ th were observed. The greatest riser height of the stairs should not exceed the smallest by more than  $\frac{3}{8}$  of an inch. This is a safety aspect of the staircase and must be addressed for the safe use of the stairs. **(311.5.3.1)**

## Carriage Framing

### Support

A carriage (stringers) for a stairway may be supported by floor supports at the top of the stair, a hangerboard at the top of stair, wall supports at top of stair, or continuously supported by an adjacent wall to the top of the stairs. In openings that are larger than the joist spacing, such as for stairways, the floor structure around the opening must be strengthened. For openings up to three joist spaces wide, doubling the trimmer joists at the sides and doubling the header joists at the ends of the opening is usually required. The use of perpendicular metal joist connectors at the header locations is generally required.

### Thrust Block

A 2x4 thrust block must be nailed or secured to the floor and notched into the carriages to prevent slippage.

## Inspection Observations

**Status:** The supports, handrails, thrust blocking and stair landings if present were found to be in compliance with the above requirements except for the following:

### Support Issues

**Further Review:** The stringers of the stairway were observed to be over notched leaving just 4 inches of solid wood at the left side stringer. We recommend further review of the load capability of 4 inch stringer assembly. **(Approved Plans & Specifications)**



### Thrust Block Issues

**Correction Notice:** The thrust blocking at the bottom of the staircase was not secured to the floor with J-Bolts. A minimum 2x4 thrust block must be secured to the floor and notched into the carriages to prevent slippage. We recommend installing the properly secured and notched thrust blocking as required.



## Roof Framing Inspection

### Wood Truss Inspection

#### **Design**

Trusses are an engineered product, meaning that all the calculations for allowable spans and types of materials and connectors have been designed and approved by a licensed structural engineer. The trusses supplied and installed in this building were not compared with the design specifications listed in the drawings as these are rarely present. The lumber grade mark at the truss members must be present for proper identification of structural use. A mark/tag should be located at one or more similar trusses which indicate that the members were passed by an approved testing agency.

Truss members shall not be cut, notched, drilled, spliced or otherwise altered in any way without the approval of a registered design professional. Any missing or partially detached plates should be replaced or repaired by a registered design professional.

#### **Bearing Points**

The truss bearing point at the supporting wood element or hanger for the floor/ceiling framing must be in compliance with the approved plans and specifications.

#### **Lateral Ties**

A lateral tie at the truss cords must be in place to limit the twist out of plane and keep the spacing correct along there spans.

#### **Tie-Downs & Hangers**

The trusses must be tied down at the top plate by approved connector ties having a resistance to uplift of 175 pounds with all nailing holes filled to meet the design strength of the connector. A continuous load path shall be provided to transmit the uplift forces from the rafter or truss ties to the foundation. Hangers or connectors must be consistent with the approved plans and drawings for the truss system design.

#### **Bracing**

Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the approved plans for the building and/or on the individual truss design drawings.

#### **Gable Bracing**

**Correction Notice:** The gable end bracing was incorrectly installed and/or missing at several locations. We recommend that the approved plans and specifications be consulted for proper placement and fastening procedures. **(Approved Plans & Specifications)**



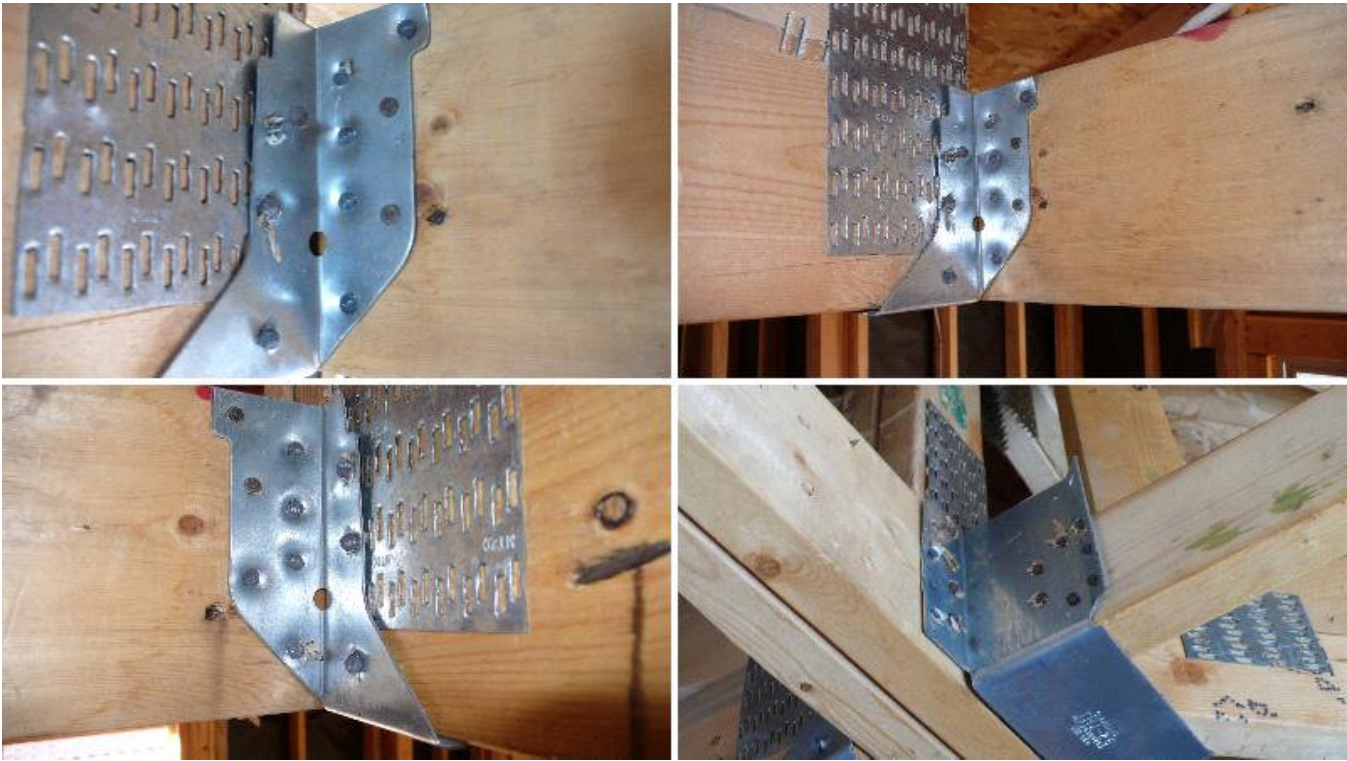


## Inspection Observations

**Status:** The engineered trusses were observed to be installed in accordance with the above stated requirements except for the following:

### Truss Hanger Issues

**Correction Notice:** Truss hangers must have all nail holes filled with the correct size fastener to complete the design specifications. Incorrect fastener sizing was observed at all truss hanger locations. 1 1/2" .131 nails observed at most locations. The reduction in load design using these fastener sizes can be significant. We recommend using the recommended fasteners called for by the manufacturer of the hanger. **(Manufacturers Installation Instructions) SIMPSON HUS26 THA29 LUS24 THJ26.**



## **Roof Sheathing & Shear Transfer Inspection**

### **Grade Mark**

The wood structural panels used at the roof sheathing has a grade mark and was listed with a panel type of Exposure 1.

### **Span & Thickness**

The panel thickness was 15/32nds with an APA rating of 32/16, the maximum allowable span is 32 inches. For sheathing spans greater than 24 in., tongue-and-groove edges, lumber blocking, or panel edge clips are required at edges between supports. Recommended fastening is 6 in. o.c. at edges and 12 in. in the field.

### **Shear Transfer**

The roof assembly must be able to transfer its associated shear loads to the foundation. This is most commonly done by nailing blocking at the top plate and roof sheathing between the roof trusses.

### **Inspection Observations**

**Status:** The wood panel structural roof sheathing complied with all the above requirements and grade marks except for the following:

### **Shear Transfer Issues**

**Correction Notice:** The roof assembly must be able to transfer its associated shear loads to the foundation. This is most commonly done by nailing blocking at the top plate and roof sheathing between the roof trusses in a required nailing pattern or combination of nails and clips. The boundary clips, Simpson A35's, were observed to be improperly installed. We recommend that the required shear transfer components (nails or clips) be installed as detailed in the approved plans and specifications.

**(Approved Plans & Specifications)**





**Correction Notice:** The roof sheathing at the bird board was not nailed as required. Nailing patterns for this connection are typically 6" on center with 8d .131 common nails. Nails were not found at these locations around the perimeter of the roof because the roof sheathing did not extend far enough over the bird board to make a connection. We recommend that the builder install the proper nailing pattern for the eave detail constructed or provide an engineers stamp of approval detailing the roof diaphragm shear transfer as constructed without the nailing. **(Approved Plans & Specifications)**



## **Roof Ventilation Inspection**

### **Attic Cross Ventilation**

Adequate roof ventilation is generally provided for control of condensation and heat build-up. The cross ventilation openings must be large enough to provide a sufficient flow of air. Enclosed attic spaces must be cross ventilated and the openings must be protected against the entry of rain or snow. The openings must have a corrosion resistant material with a minimum dimension of an 1/8 inch to a maximum of 1/4

inch.

### **Opening Size**

The totaled size of the openings should be at least 1/150 of the area of the attic and/or enclosed rafter space. The total size of the openings can be as little as 1/300 of the area of the attic and/or enclosed rafter space if 50 to 80 percent of the openings are at least three feet above the cornice of eave vents and the balance of the openings are cornice or eave vents.

### **Location of Vents**

The eve or soffit vents must be installed in a manner that does not block air flow. A minimum of a 1 inch space must be provided between the insulation and the roof sheathing.

### **Inspection Observations**

**Status:** The roof ventilation requirements were observed and appear to conform to the above stated requirements. Ventilation calculations and placement is beyond the scope of this inspection. A study of the plans and vent dimensions would be needed for accurate conformation of ventilation installation per plan requirement.

## **Attic Access Inspection**

### **Attic Access**

The attic hatch framing was observed and adequate load carrying transfer capability was provided for with the use of a header of equivalent size as the joist or truss cord at the opening. Attic access is only required if the attic areas exceed 30 square feet and have a vertical height of 30 or more inches. The rough framed opening should not be less than 22 inches by 30 inches and should be located in a hallway or other readily accessible location.

### **Inspection Observations**

**Status:** The attic access requirements were observed and appear to conform to the above stated requirements.

## **Electrical Inspection**

- **No load calculations, voltage limitations, proportionate loading or specific loads addressed in the approved plans and specifications will be verified by this general inspection.**
- **The approved plans and specifications for the electrical circuits details the required circuits for each of the individual rooms of the building. For the purposes of a general rough electrical inspection without the aid of completed circuits and labels at the panel we will assume that the circuits were wired as designed. Tracing of individual wires or accounting for each of the required wiring circuit runs will not be made in this general inspection. General box locations and wire size at the boxes will be the only consideration used to assess the completeness of the circuit required for a specific or general location.**

## **Main Service**

### **Main Service**

Generally, each building or structure is allowed only one service. This rule provides for a single centralized location where all power to a building can be disconnected. Further, each lateral run can only serve one set of service entrance conductors. There are permitted exceptions to this rule which will not be covered unless present. Service equipment must be marked "Suitable for Use as Service Equipment".

## **Attachment & Support**

Above ground conductors and cables must have adequate supports and protection from physical damage.

## **Inspection Observations**

**Status:** The buildings main service box and lateral run were observed to be installed in accordance with the above stated requirements.

## **Branch Circuit Wiring**

### **Branch Circuit Cable/Wire**

The building's branch wiring method was 3 wire non metallic shielded cable run to the 120v, 15 and 20 amp receptacles and general lighting. Generally, cables must be fastened to boxes. Type NM cable need not be secured to one gang plastic boxes if the cable is fastened within 8 inches of the box. This method of wiring is required to be securely fastened in place of intervals of 4 1/2 feet and 12 inches from boxes (8 inches for plastic boxes) or other enclosures. This type of wiring is limited to dry locations. Staples if used to secure the wire must not pinch the cable. The cable sheath is required to penetrate the box by no less than 1/4 inch.

Cable penetrations through fire blocking and draftstopping should be protected in an approved manner to maintain the integrity of the element penetrated. Generally, this would entail stuffing the remainder of the hole with fiberglass insulation or applying an approved fire retardant foam to the penetration.

### **Cable Protection**

Type NM cable and other cables must be spaced at least 1 1/4 inches from the face of the framing members to reduce the likelihood of penetration by nails or screws. Protective steel plates must be provided where the spacing cannot be maintained. This 1 1/4 inch spacing must also be maintained along any parallel run of a wood or steel member. If installed at metal framing the wires must be protected by grommets that are listed for the purpose and remain after the installation. Where cables are installed on the underside of joists, they must be protected by installing the cables on running boards. Where passing through a floor, the cable shall be enclosed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC rigid nonmetallic conduit or other metal pipe extending not less than 6 inches above the floor. Cables must be supported every 4 feet and must not make contact with any metal plates to prevent chaffing of the insulation.

### **Conductors @ Box**

Where conductors are spliced or terminated in a box, at least 6 inches of free conductor must be available in the box for making the splice or termination. If the box is less than 8 inches in any direction then the conductor must be long enough for at least 3 inches to extend outside the box opening.

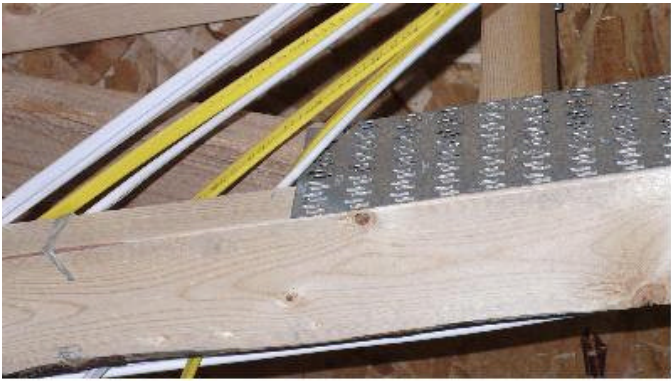
## **Inspection Observations**

**Status:** The branch circuit wiring throughout the building was observed to be installed in accordance with the above stated requirements except for the following:

### **Cable Protection Issues**

**Correction Notice:** Electrical cable was observed to be in contact with a sharp metal truss gusset plate edge at 4 locations in the garage. Where subject to physical damage, such as draped over a metal gusset plate, cables should be protected by conduit, guard strips or other approved means. Where passing through a floor, the cable should be protected by conduit extending not less than 6 inches above the floor. **(E3702.3.2)**





## **Branch Circuit Boxes**

### **Box Suitability**

Most boxes commonly used in residential wiring are suitable only for dry or damp locations. Boxes must be suitable for their intended applications. Wet locations, floor boxes and ceiling fan boxes or other large luminaire boxes require a listing for the specific purpose. Unused openings in boxes must be effectively closed in an approved manner.

### **Box Placements**

Boxes are required at all junction and outlet points. Boxes must be accessible and may not be covered by drywall, plaster, concrete, or other building finishes. However, boxes are not required to be readily accessible.

### **Box Attachment**

Generally, boxes are required to be securely and rigidly attached to the surface or structure. The support means for a plastic box should be located outside the box or otherwise isolated from contact with conductors. Placement of the boxes should be such that the boxes are within 1/4 inch of the finished wall surface if the wall surface is non combustible.

### **Inspection Observations**

**Status:** The building's branch circuit boxes were observed to be installed in accordance with the above stated requirements.

## **Kitchen**

### **Receptacle Spacing**

Receptacles must be installed to serve kitchen countertops and be installed so that every countertop space that is 12 inches or more in width and runs along a wall has a receptacle within 24 inches of any point along the wall. The receptacles must not be located greater than 20 inches above the surface of the countertop. A receptacle located inside an appliance garage is not counted as one of the required receptacles. Peninsula and island countertop spaces must be provided with at least one receptacle outlet unless such spaces are less than 12" x 24" in size. Receptacles on walls without countertops are required to comply with the standard rule for receptacle wall spacing.

### **Small Appliance Circuits**

The required receptacles installed in kitchens, pantries, dining rooms, breakfast rooms, and similar rooms must be connected only to 20 amp small appliance branch circuits. Additional separate circuits for specific appliances such as some microwave ovens and some refrigerators may be present.

### **Switched Lighting**

Lighting outlets in kitchens must be connected to general lighting circuits and may not be connected to the small appliance circuits. At least one such lighting outlet must be controlled by a wall switch. Switched receptacles may not be used to satisfy this requirement.

### **Dedicated Circuits**

Small appliance branch circuits are intended only for use with portable appliances and refrigerators. Additional circuits are required for appliances that are fixed in place, are permanently installed, or require dedicated circuits. All such circuits must be adequate for the load they serve.

## **Inspection Observations**

**Status:** The kitchen's receptacle spacing, small appliance circuit boxes, switched lighting and dedicated circuit boxes were observed to be installed in accordance with the above stated requirements.

## **Dining Room**

### **Receptacle Spacing Requirements**

The locations of dining room receptacles are based on the same spacing rule that applies to most rooms. A receptacle must be installed in each wall space over 2 feet in width, and additional receptacles must be installed so that no point on any unbroken wall space is over 6 feet, measured horizontally along the wall, from a receptacle.

### **Small Appliance Circuits**

All receptacles in dining rooms should be on small appliance branch circuits except for those that are used for general lighting and are controlled by a wall switch.

### **Switched Lighting**

A wall switch controlling either a fixed lighting outlet or a receptacle must be installed in a dining room.

## **Inspection Observations**

**Status:** The dining rooms receptacle spacing, 20amp circuits boxes and switched wall lighting boxes were observed to be installed in accordance with the above stated requirements.

## **Bathrooms**

### **Receptacle Location**

Each basin in a bathroom must have a receptacle within 36 inches of the outside edge of the basin. The receptacle must be located on a wall or partition adjacent to the basin or basin countertop.

### **Dedicated Circuit**

Bathroom receptacles must be supplied by 20 amp branch circuits that either are dedicated to bathroom receptacle outlets in one or more bathrooms or are dedicated to individual bathrooms. When dedicated to an individual bathroom other loads such as an exhaust fan may be on the circuit if it does not exceed 50 percent of the branch circuit rating.

### **General Lighting**

Unless the 20 amp receptacle circuit for a bathroom is dedicated only to that bathroom, the lighting in the bathroom must be supplied by a general lighting circuit.

## **Inspection Observations**

**Status:** The boxes for the bathroom receptacle locations, dedicated circuits if present and general lighting were observed to be installed in accordance with the above stated requirements.

## **Other Habitable Rooms**

### **Receptacle Spacing Requirements**

The locations of habitable room receptacles are based on the same spacing rule that applies to most rooms. A receptacle must be installed in each wall space over 2 feet in width, and additional receptacles must be installed so that no point on any unbroken wall space is over 6 feet, measured horizontally along the wall, from a receptacle. A floor receptacle that is located within 18 inches of the wall can be used as a required receptacle.

## **Switched Lighting**

At least one wall switched controlled lighting outlet is required in each habitable room. The outlet may be either a fixed lighting outlet or a switched receptacle. Switching one half of a duplex receptacle meets the requirement for providing a wall switched controlled lighting outlet.

## **Inspection Observations**

**Status:** The buildings habitable room receptacle spacing and switched lighting boxes were observed to be installed in accordance with the above stated requirements.

## **Hallways**

### **Wall Switch**

At least one wall switched controlled lighting outlet must be present at the hallways. Switched receptacles are not permitted as the required lighting outlets in hallways. Local switches are not required if central, automatic, or remote controls such as home automation systems or motion sensors control hallway lighting outlets.

### **Hallway Receptacles**

Hallways that are continuous for 10 feet or more are required to have at least one receptacle outlet. Hallway length is measured along the centerline of the hallway. Hallways that are broken into sections by doorways are considered separate hallways.

## **Inspection Observations**

**Status:** The hallway receptacle boxes were observed to be installed in accordance with the above stated requirements.

## **Closets**

### **Lighting Clearances**

Lighting outlets are not required in clothes closets. Where they are installed, clearances between the defined storage spaces in a closet must be maintained. Incandescent luminaries with open lamps are not permitted in clothes closets. Incandescent lamps must be totally enclosed. A clearance of 12 inches is required from surface mounted incandescent luminaries, and a clearance of 6 inches is required from recessed incandescent or from surface or recessed mounted fluorescent luminaries.

## **Inspection Observations**

**Status:** The boxes for the buildings closet lighting (if present) was observed to be installed in accordance with the above stated requirements.

## **Laundry Area**

### **Laundry Circuits**

At least one receptacle outlet must be installed in a laundry area. All receptacle outlets in the laundry area may be supplied by a dedicated 20 amp laundry branch circuit. However, lighting in the laundry area and receptacles in other areas must be supplied by a general lighting circuit. A receptacle must be located within 6 feet of the intended appliance location.

## **240 Volt Receptacle**

Generally, a 30 amp four wire branch circuit that includes two ungrounded conductors, a grounded conductor, and an equipment grounding conductor is required for new 240V dryer installations. The use of the neutral conductor for grounding the frames of the dryers is no longer permitted in new installations.

## **Inspection Observations**

**Status:** The boxes for the laundry room receptacles and four wire 240 volt receptacle was observed to be installed in accordance with the above stated requirements.

## **Garages**

### **Receptacle**

Attached garages are required to have at least one receptacle outlet. Detached garages are not required to have electrical power, but those that do are required to have at least one receptacle outlet.

### **Lighting**

A lighting outlet controlled by a wall switch is required in attached garages and in detached garages that have electrical power.

## **Inspection Observations**

**Status:** The boxes for the garage receptacles and lighting were observed to be installed in accordance with the above stated requirements.

## **Outdoors**

### **Receptacles**

Outdoor GFCI protected receptacles that are accessible from and not over 6 1/2 feet above grade level must be provided at the front and back of a residential building. In addition, GFCI protected receptacles must be provided within 25 feet of any heating, air conditioning, or refrigeration equipment located outdoors.

### **Lighting**

Exterior lighting outlets are required at all outdoor entrances other than garage doors for vehicles. Remote, central, or automatic controls may be substituted for wall switched control of such lighting outlets.

## **Inspection Observations**

**Status:** The buildings outdoor receptacle boxes and lighting boxes were observed to be installed in accordance with the above stated requirements.

# **Plumbing Inspection**

## **Water Supply**

### **Piping Materials**

The water distribution piping must be an approved material for this use. The water distribution piping used was cross link polyethylene piping commonly called PEX tubing.



## Pipe Sizing

The water main, branch mains and fixture branches must comply with the approved plans and specifications. This should ensure that the plumbing installation is sized sufficient to supply potable water in amounts and pressures to meet the needs of the household and to operate fixtures efficiently.

## Support & Protection

The piping must be supported by hangers or anchors, protected from breakage, corrosion, and freezing. In concealed locations, where piping, other than cast iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1.5 inches from the nearest edge of the member, the pipe shall be protected by shield plates.

## Faucet Installation

Faucets for the tub and showers should be secured by the means provided by the manufacturer. Loose faucets can result in leaking joints and damage to the wall. Other methods of securing faucets are generally found to be acceptable if they can resist movement of 20lbs of force.

## Inspection Observations

**Status:** The water supply materials, size, support and protection were inspected and substantially comply with the above requirements except for the following:

## Support & Protection Issues

**Correction Notice:** Pex piping was observed to be in contact with a metal truss gusset plate at the kitchen rear wall truss area. The plates edges may rub through the pipe over time as the pipe expands and contracts over the sharp edge. We recommend that piping be held away or rerouted to protect against physical damage as required. **(P2603.2.1)**



## Drain, Waste and Vent (DWV)

### Piping & Connections

The interior DWV system was not concealed at the time of inspection or put into use. The size and slope of the waste piping must be sufficient for the removal of wastes to the buildings sewer. The ABS piping used is an approved type for this application. All materials used for joints, fittings and connections must be approved for this use in the DWV system and the methods of installation must comply with the approved plans and specifications.

### Support & Protection

The DWV pipelines must be securely supported and protected against corrosion and breakage.

### Clean Outs

Cleanouts must be correctly sized, accessibly located, and installed using approved methods.

## Vents

Vent stacks and vent connections must be sized for intended purpose and installed in the correct locations.

## Drain Lines

Individual drain lines must be of proper size for the fixture or appliance served.

## Inspection Observations

**Status:** The DWV pipes were capped for the pressure test. Results of the test are not known to the inspector. The DWV system was observed to be installed in substantial accordance with the above stated requirements except for the following:

## Support & Protection Issues

**Correction Notice:** Piping was observed without supports at the vertical 90 degree bends at multiple locations. We recommend that the required strapping or supports be installed as required.



## Drain Line Issues

**Correction Notice:** The drain line at stair area was observed to have a negative slope. Drainage fittings should be designed to maintain a one fourth unit vertical in 12 units horizontal ( 2 percent slope ) grade. We recommend that the pipe installation slope as required. (P3002.3.1)



## Mechanical Inspection

## Access, Clearance & Installation

### **Access**

Heating and cooling equipment shall be located with respect to building construction and other equipment to permit maintenance, servicing and replacement.

### **Clearance**

Clearances shall be maintained to permit cleaning of heating and cooling surfaces; replacement of filters, blowers, motors, controls and vent connections; lubrication of moving parts; and adjustments. The equipment is not yet in place for an actual clearance inspection but the location suggest that the clearance will be adequate.

### **Walkway & Platform**

Attics containing appliances requiring access must have an opening and a clear and unobstructed passageway large enough to allow removal of the largest appliance, but not less than 30 inches high and 22 inches wide and not more than 20 feet in length when measured along the centerline of the passageway from the opening to the appliance. The passageway should have continuous solid flooring in accordance with Chapter 5 of the IRC and be not less than 24 inches wide. A level service space at least 30 inches deep and 30 inches wide should be present along all sides of the appliance where access is required. The clear access opening dimensions should be a minimum of 20 inches by 30 inches or larger if need be to remove the largest appliance.

### **Inspection Observations**

**Status:** The location of the mechanical equipment, walkway and platform if present, suggests that the equipment can be properly inspected, maintained, replaced, or repaired in accordance with the above stated requirements.

## **Air Duct Materials & Installation Inspection**

### **Materials**

The air ducts of the building consisted of sheet metal at the appliance locations and approved metallic flex duct connected to registers or air intake vents throughout the structure. Metallic flex duct shall be installed in accordance with the manufacturers installation instructions and avoid contact with dissimilar metals which could cause a dielectric corrosive action.

### **Location**

The location of the air intakes and return air ducts must conform to the approved plans and specification requirements for approved locations. The joints or connections must be properly fastened with approved connectors.

### **Supports**

Solid or strapping type supports of not less than 2 inches wide must be used at all distribution boxes or hanging supports. The flex duct cannot be used to support a distribution box or fitting. Flex duct is to be supported at 4 foot intervals and in a manner that avoids crimping within 3 feet of the register. Registers shall be supported on at least three sides. Registers shall be supported on at least three sides.

### **Inspection Observations**

**Status:** The air duct materials were observed to be installed in accordance with the above stated requirements except for the following:

## Material Issues

**Correction Notice:** A lighting can was observed to be in direct contact with the flex duct at the stairwell location. We recommend separation as required by the flex duct manufacturer. **(Manufacturer's Installation Instructions)**



**Correction Notice:** The air duct material at the coil box connection was pulled away at the joint or finish. Joints of duct systems must be made substantially airtight by means of tapes, mastics, gasketing or other approved closure systems. **(M1601.3.1)**



## Exhaust Systems

### Clothes Dryer Exhaust

Dryer exhaust systems should be independent of all other systems. The system should convey the moisture to the outdoors and terminate on the outside of the building. Terminations must be in accordance with the manufacturers installation instructions. Screens are not allowed at the duct terminations. Exhaust ducts cannot be connected with sheet metal screws or fastening means that extend into the duct. Exhaust ducts must be equipped with a back draft damper. Exhaust ducts should be constructed with a minimum .016 inch thick rigid metal duct, having smooth interior surfaces with joints running in the direction of air flow. Flexible transition ducts used to connect the dryer to the exhaust duct system should be limited to single lengths, not to exceed 8 feet and must be labeled in accordance with UL 2158A. Transition ducts cannot be concealed within construction.

### Inspection Observations

**Status:** The clothes dryer duct materials were observed to be installed in accordance with the above stated requirements.

### Range Hoods

Range hoods are required to discharge to the outdoors through a single wall duct. The duct serving the hood should have a smooth interior surface, be air tight and equipped with a backdraft damper. Ducts serving range hoods may not terminate in an attic or crawl space or areas inside the building. Exceptions may be made where installed in accordance with the manufacturers installation instructions, and where mechanical or natural ventilation is otherwise provided. Listed and labeled ductless range hoods are not required to discharge to the outdoors. Ducts may be made of galvanized steel, stainless steel or copper.



**Inspection Observations**

**Status:** The range hood duct materials were observed to be installed in accordance with the above stated requirements.

**Laundry Exhaust Fan**

The laundry exhaust fan and duct materials should be securely mounted with the duct vented to the exterior and strapped at the termination point.

**Bathroom Exhaust Fans**

Bathroom exhaust fans should be run to the exterior of the building and securely strapped at the termination point.

**Inspection Observations**

**Status:** The bathroom exhaust fans were located and vented to the exterior with the proper strapping and placement to the above stated requirements.