



Engineering

Wayne Goodwin, Commissioner of Insurance
Rick McIntyre, Assistant State Fire Marshal

July 12, 2016

Charles Travis, FAIA
Housing Studio
333 West Trade Street
Suite 300
Charlotte, NC 28202

**RE: 2012 NC Building Code, Section 1009.13, Stairway to Roof
2012 NC Fire Code, Section 504.3, Stairway Access to Roof
Hollycrest – Huntersville, NC**

Mr. Travis:

This letter is in response your request for formal interpretation dated 6/24/2016. I have also reviewed the Carl Martin e-mail string ending 6/20/2016 and the David Dubay RFI #141 dated 9/8/2015.

The specific question raised in the request letter (in my words) is:

Can the required stairway to roof be located outside of an exit stairway enclosure in a 4-story building?

NCBC 1009.13 Stairway to roof. *In buildings four or more stories above grade plane, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope). In buildings without an occupied roof, access to the roof from the top story shall be permitted to be by an alternating tread device or a ships ladder meeting the following: a pitch of 60 to 75 degrees (1.05 to 1.31 rad) maximum, width of 30 inches (762 mm) to the outside of the handrails, minimum tread depth of 5 inches (127 mm), riser height of 9½ inches (241.3 mm) to 12 inches (304.8 mm), 1¼-inch (31.75 mm) pipe handrail. The height between the top landing of the stair and the roof shall not exceed 20 feet (6096 mm).*

1009.13.1 Roof access. *Where a stairway is provided to a roof, access to the roof shall be provided through a penthouse complying with Section 1509.2.*

Exception: *In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 m²) in area and having a minimum dimension of 2 feet (610 mm).*

The Building Code requires an alternating tread device, a ships ladder, or a stairway to the roof in buildings four or more stories above grade plane. The intent is to provide both fire department access and rooftop equipment repair access to the roof.

NCFC 504.3 Stairway access to roof. *New buildings four or more stories above grade plane, except those with a roof slope greater than four units vertical in 12 units horizontal (33.3-percent slope), shall be provided with a stairway to the roof. Stairway access to the roof shall be in accordance with Section 1009.13. Such stairway shall be marked at street and floor levels with a sign indicating that the stairway continues to the roof. Where roofs are used for roof gardens or for other purposes, stairways shall be provided as required for such occupancy classification.*

The Fire Code requires signage at the street level indicating that the stairway continues to the roof. The intent is to provide fire department access from the street level to the roof in buildings four or more stories above grade plane.

Page 2
July 12, 2016
Barry Gupton, PE

Another question asked in the Carl Martin e-mail string is:
What is the logic behind the language in the commentary?

The IBC Commentary is an expression of opinion about the Code and is advisory only. I can't speculate on the logic behind an anonymous individual opinion. The Code Official alone has the authority and responsibility for interpreting the Code. I did not find an ICC Technical Opinion, which carries more weight than individual Commentary, on this subject at the following link.

http://www2.iccsafe.org/cs/codes_list.cfm?Committees_Id=1&chap_num=10

The intent of both the Building and Fire Codes is to provide marked roof access within an exit stairway enclosure from grade level to the roof in buildings four or more stories above grade plane. Roof access is required within the Exit Stair #2 enclosure. Please contact us if you have comments or questions.

Sincerely,



Barry Gupton, PE
Chief Code Consultant

cc: File
David Gieser, Mecklenburg
Carl Martin, NCDOI

2. *Alternating tread devices* used as a *means of egress* shall not have a rise greater than 20 feet (6096 mm) between floor levels or landings.

1009.8 Curved stairways. Curved *stairways* with *winder* treads shall have treads and risers in accordance with Section 1009.4 and the smallest radius shall not be less than twice the required width of the *stairway*.

Exception: The radius restriction shall not apply to curved *stairways* for occupancies in Group R-3 and within individual dwelling units in occupancies in Group R-2.

1009.9 Spiral stairways. *Spiral stairways* are permitted to be used as a component in the *means of egress* only within dwelling units or from a space not more than 250 square feet (23 m²) in area and serving not more than five occupants, or from galleries, catwalks and *gridirons* in accordance with Section 1015.6.

A *spiral stairway* shall have a 7½-inch (191 mm) minimum clear tread depth at a point 12 inches (305 mm) from the narrow edge. The risers shall be sufficient to provide a headroom of 78 inches (1981 mm) minimum, but riser height shall not be more than 9½ inches (241 mm). The minimum *stairway* clear width at and below the *handrail* shall be 26 inches (660 mm).

1009.10 Alternating tread devices. *Alternating tread devices* are limited to an element of a *means of egress* in buildings of Groups F, H and S from a mezzanine not more than 250 square feet (23 m²) in area and which serves not more than five occupants; in buildings of Group I-3 from a guard tower, observation station or control room not more than 250 square feet (23 m²) in area and for access to unoccupied roofs.

1009.10.1 Handrails of alternating tread devices. *Handrails* shall be provided on both sides of *alternating tread devices* and shall comply with Section 1012.

1009.10.2 Treads of alternating tread devices. *Alternating tread devices* shall have a minimum projected tread of 5 inches (127 mm), a minimum tread depth of 8½ inches (216 mm), a minimum tread width of 7 inches (178 mm) and a maximum riser height of 9½ inches (241 mm). The projected tread depth shall be measured horizontally between the vertical planes of the foremost projections of adjacent treads. The riser height shall be measured vertically between the leading edges of adjacent treads. The combination of riser height and projected tread depth provided shall result in an alternating tread device angle that complies with Section 1002. The initial tread of the device shall begin at the same elevation as the platform, landing or floor surface.

Exception: *Alternating tread devices* used as an element of a *means of egress* in buildings from a mezzanine area not more than 250 square feet (23 m²) in area which serves not more than five occupants shall have a minimum projected tread of 8½ inches (216 mm) with a minimum tread depth of 10½ inches (267 mm). The rise to the next alternating tread surface should not be more than 8 inches (203 mm).

1009.11 Ship ladders. Ship ladders are permitted to be used in Group I-3 as a component of a *means of egress* to and from control rooms or elevated facility observation stations not more

than 250 square feet (23 m²) with not more than three occupants and for access to unoccupied roofs.

Ship ladders shall have a pitch of 60 to 75 degrees (1.05 to 1.31 rad), maximum width of 30 inches (762 mm) to the outside of the handrails, minimum tread depth of 5 inches (127 mm), riser height of 9½ inches (241.3 mm) to 12 inches (304.8 mm), 1¼-inch (31.75 mm) pipe handrail. The vertical rise between floor levels or landings shall not exceed 20 feet (6096 mm).

Handrails shall be provided on both sides of ship ladders. The minimum clear width at and below the *handrails* shall be 20 inches (508 mm).

1009.12 Handrails. *Stairways* shall have *handrails* on each side and shall comply with Section 1012. Where glass is used to provide the *handrail*, the *handrail* shall also comply with Section 2407.

Exceptions:

1. *Handrails* for *aisle stairs* are not required where permitted by Section 1028.13.
2. *Stairways* within dwelling units, *spiral stairways* and *aisle stairs* serving seating only on one side are permitted to have a *handrail* on one side only.
3. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require *handrails*.
4. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require *handrails*.
5. Changes in room elevations of three or fewer risers within dwelling units and sleeping units in Group R-2 and R-3 do not require *handrails*.

1009.13 Stairway to roof. In buildings four or more stories above *grade plane*, one *stairway* shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope). In buildings without an occupied roof, access to the roof from the top story shall be permitted to be by an alternating tread device or a *ships ladder* meeting the following: a pitch of 60 to 75 degrees (1.05 to 1.31 rad) maximum width of 30 inches (762 mm) to the outside of the handrails, minimum tread depth of 5 inches (127 mm), riser height of 9½ inches (241.3 mm) to 12 inches (304.8 mm), 1¼-inch (31.75 mm) pipe handrail. The height between the top landing of the stair and the roof shall not exceed 20 feet (6096 mm).

1009.13.1 Roof access. Where a *stairway* is provided to a roof, access to the roof shall be provided through a *penthouse* complying with Section 1509.2.

Exception: In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 m²) in area and having a minimum dimension of 2 feet (610 mm).

1009.13.2 Protection at roof hatch openings. Where the roof hatch opening providing the required access is located

fire apparatus and shall be surfaced so as to provide all-weather driving capabilities.

503.2.4 Turning radius. The required turning radius of a fire apparatus access road shall be determined by the *fire code official*.

503.2.5 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) in length shall be provided with an *approved* area for turning around fire apparatus.

503.2.6 Bridges and elevated surfaces. Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO HB-17. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the *fire code official*. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, *approved* barriers, *approved* signs or both shall be installed and maintained when required by the *fire code official*.

503.2.7 Grade. The grade of the fire apparatus access road shall be within the limits established by the *fire code official* based on the fire department's apparatus.

503.2.8 Angles of approach and departure. The angles of approach and departure for fire apparatus access roads shall be within the limits established by the *fire code official* based on the fire department's apparatus.

503.3 Marking. Where required by the *fire code official*, *approved* signs or other *approved* notices or markings that include the words NO PARKING—FIRE LANE shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. The means by which *fire lanes* are designated shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.

503.4 Obstruction of fire apparatus access roads. Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in Section 503.2.1 shall be maintained at all times.

503.5 Required gates or barricades. The *fire code official* is authorized to require the installation and maintenance of gates or other *approved* barricades across fire apparatus access roads, trails or other accessways, not including public streets, alleys or highways. Electric gate operators, where provided, shall be *listed* in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.

503.5.1 Secured gates and barricades. When required, gates and barricades shall be secured in an *approved* manner. Roads, trails and other accessways that have been closed and obstructed in the manner prescribed by Section 503.5 shall not be trespassed on or used unless authorized by the *owner* and the *fire code official*.

Exception: The restriction on use shall not apply to public officers acting within the scope of duty.

503.6 Security gates. The installation of security gates across a fire apparatus access road shall be *approved* by the fire chief. Where security gates are installed, they shall have an *approved* means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be *listed* in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.

SECTION 504

ACCESS TO BUILDING OPENINGS AND ROOFS

504.1 Required access. Exterior doors and openings required by this code or the *International Building Code* shall be maintained readily accessible for emergency access by the fire department. An *approved* access walkway leading from fire apparatus access roads to exterior openings shall be provided when required by the *fire code official*.

504.2 Maintenance of exterior doors and openings. Exterior doors and their function shall not be eliminated without prior approval. Exterior doors that have been rendered nonfunctional and that retain a functional door exterior appearance shall have a sign affixed to the exterior side of the door with the words THIS DOOR BLOCKED. The sign shall consist of letters having a principal stroke of not less than $\frac{3}{4}$ inch (19.1 mm) wide and at least 6 inches (152 mm) high on a contrasting background. Required fire department access doors shall not be obstructed or eliminated. *Exit* and *exit access* doors shall comply with Chapter 10. Access doors for *high-piled combustible storage* shall comply with Section 2306.6.1.

504.3 Stairway access to roof. New buildings four or more stories above grade plane, except those with a roof slope greater than four units vertical in 12 units horizontal (33.3-percent slope), shall be provided with a *stairway* to the roof. *Stairway* access to the roof shall be in accordance with Section 1009.13. Such *stairway* shall be marked at street and floor levels with a sign indicating that the *stairway* continues to the roof. Where roofs are used for roof gardens or for other purposes, *stairways* shall be provided as required for such occupancy classification.

SECTION 505

PREMISES IDENTIFICATION

505.1 Address identification. New and existing buildings shall have *approved* address numbers, building numbers or *approved* building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches (101.6 mm) high with a minimum stroke width of 0.5 inch (12.7 mm). Where access is by means of a private road and the building cannot be viewed from the *public way*, a monument, pole or other sign or means shall be used to identify the structure.

505.2 Street or road signs. Streets and roads shall be identified with *approved* signs. Temporary signs shall be installed at each street intersection when construction of new roadways allows



June 24, 2016

Mr. Barry Gupton
Engineering Division
Office of State Fire Marshal
N. C. Department of Insurance
322 Chapanoke Road. Suite 200
Raleigh, NC 27603-3400

Re: Hollycrest - Huntersville, NC
Building Code Appeal Request

Dear Barry,

As suggested by Carl Martin, I am writing you to formally request clarification of the following, "Stairways to Roof 1009.13" in a four story building, with a partial flat roof area that is not used for habitable space purposes. I am enclosing the relevant code section, 1009.13, as well as the Code Commentary that states, "While it is not specifically required that roof access be through an exit stairway enclosure, since part of the intent is for fire department access to the roof, it is strongly advised".

I am also enclosing the e-mail exchange with Carl where I question why this is written in the commentary if it is not allowed?.....his response was, "I have no idea". I think the Commentary is a purposeful document meant to elaborate on the intent of the code, which will allow an auxiliary location for a roof access if properly installed.

I have also attached additional information for your review, not meant to complicate what I believe is a simple question / answer, to provide context regarding where and why this question has arisen.

Please feel free to call me if you want to discuss in person. I appreciate your time and consideration of this appeal.

Best Regards,

Charles L. Travis, III, FAIA
President

Attachments -

Barbara Rayfield

From: Charles L. Travis, III
Sent: Friday, June 24, 2016 2:11 PM
To: Barbara Rayfield
Subject: FW: Hollycrest, Huntersville, NC - Code Clarification Request



Chuck Travis, FAIA Principal, LEED AP
333 West Trade Street, Suite 300
Charlotte, NC 28202
T:704.333.7862
F:980.237.3862
www.housingstudio.com



From: Martin, Carl [mailto:Carl.Martin@ncdoi.gov]
Sent: Monday, June 20, 2016 2:24 PM
To: Charles L. Travis, III
Cc: Gupton, Barry; Michael Gribble (mgribble@northwoodravin.com)
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

Charles,

No form is required; just a letter describing the situation and what you are appealing. See Section 203.2.2 of the 2012 NC Administrative Code and Policies. You should include a copy of this email string with your appeal along with any other documents such as drawings that help describe the situation and/or support your viewpoint.

Carl Martin

Chief Building Code Consultant
Engineering Division
Office of State Fire Marshal
N. C. Department of Insurance
322 Chapanoke Road, Suite 200
Raleigh, NC 27603-3400
Tel: 919-661-5880 x225
Fax: 919-662-4414

From: Charles L. Travis, III [mailto:CTravis@housingstudio.com]
Sent: Monday, June 20, 2016 1:53 PM
To: Martin, Carl <Carl.Martin@ncdoi.gov>
Cc: Gupton, Barry <Barry.Gupton@ncdoi.gov>; Michael Gribble (mgribble@northwoodravin.com) <mgribble@northwoodravin.com>
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

Carl, Our client has requested that I file the appeal with Mr. Gupton. Is there a specific form that I need to submit?.....I assume since he is cc'd on this string that he is somewhat familiar with what we are talking about? I am happy to do whatever is required, just need your guidance in how and what to submit.

Thank you, Chuck



Chuck Travis, FAIA Principal, LEED AP
 333 West Trade Street, Suite 300
 Charlotte, NC 28202
 T:704.333.7862
 F:980.237.3862
 www.housingstudio.com



From: Martin, Carl [<mailto:Carl.Martin@ncdoi.gov>]
Sent: Monday, June 13, 2016 12:00 PM
To: Charles L. Travis, III
Cc: Gupton, Barry
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

Charles,

Knowing the purpose of the stair and what is written in the code it is unlikely that ICC is going to be able to justify what is written in the commentary; so, it is unlikely that a determination from ICC is going to sway what I have written.

It would probably be more beneficial to you to appeal this to our Chief Code Consultant, Barry Gupton. That appeal would need to be a hardcopy letter to his attention. Mr. Gupton has the same mailing address as mine (see below).

Carl Martin

Chief Building Code Consultant
 Engineering Division
 Office of State Fire Marshal
 N. C. Department of Insurance
 322 Chapanoke Road, Suite 200
 Raleigh, NC 27603-3400
 Tel: 919-661-5880 x225
 Fax: 919-662-4414

From: Charles L. Travis, III [<mailto:CTravis@housingstudio.com>]
Sent: Monday, June 13, 2016 11:40 AM
To: Martin, Carl <Carl.Martin@ncdoi.gov>
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

Sorry to ask another question - I assume there must be some exception to allow an auxiliary location if this is part of the commentary.....is there a way to ask IBC to clarify?..... and will their answer have any influence on your direction if it differs?



Chuck Travis, FAIA Principal, LEED AP
 333 West Trade Street, Suite 300
 Charlotte, NC 28202
 T:704.333.7862
 F:980.237.3862
 www.housingstudio.com



From: Martin, Carl [<mailto:Carl.Martin@ncdoi.gov>]
Sent: Monday, June 13, 2016 11:27 AM
To: Charles L. Travis, III
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

I have no idea.

Carl Martin

From: Charles L. Travis, III [<mailto:CTravis@housingstudio.com>]
Sent: Monday, June 13, 2016 11:31 AM
To: Martin, Carl <Carl.Martin@ncdoi.gov>
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

So what is the logic behind the language in the "Commentray"?....just curious why it would even mention this as an option.



Chuck Travis, FAIA Principal, LEED AP
333 West Trade Street, Suite 300
Charlotte, NC 28202
T:704.333.7862
F:980.237.3862
www.housingstudio.com



From: Martin, Carl [<mailto:Carl.Martin@ncdoi.gov>]
Sent: Monday, June 13, 2016 11:11 AM
To: Charles L. Travis, III
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

Charles,

I do not know of any condition that allows the stair required in Section 1009.13 to be outside the egress enclosure. Section 1022.8 requires the stair that provides roof access to have signage stating such. That would not be possible if the roof access stair were outside the exit enclosure.

Carl Martin

Chief Building Code Consultant
Engineering Division
Office of State Fire Marshal
N. C. Department of Insurance
322 Chapanoke Road, Suite 200
Raleigh, NC 27603-3400
Tel: 919-661-5880 x225
Fax: 919-662-4414

From: Charles L. Travis, III [<mailto:CTravis@housingstudio.com>]
Sent: Monday, June 13, 2016 10:52 AM
To: Martin, Carl <Carl.Martin@ncdoi.gov>
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

Thank you for your response Carl. Why does the Commentary indicate that it is "highly suggested" as opposed to the clarity of your response? What condition will allow for it to not be in the stairwell per the Commentary?

Thank you, Chuck



Chuck Travis, FAIA Principal, LEED AP
333 West Trade Street, Suite 300
Charlotte, NC 28202
T:704.333.7862
F:980.237.3862
www.housingstudio.com



From: Martin, Carl [<mailto:Carl.Martin@ncdoi.gov>]
Sent: Monday, June 13, 2016 10:38 AM
To: Charles L. Travis, III
Subject: RE: Hollycrest, Huntersville, NC - Code Clarification Request

Charles,

The roof access required by 2012 NC Building Code Section 1009.13 must be located within the protected enclosure of the egress stair. The purpose of the stair is to provide the fire service with protected access to and egress from the roof for purposes of firefighting.

Carl Martin

Chief Building Code Consultant
Engineering Division
Office of State Fire Marshal
N. C. Department of Insurance
322 Chapanoke Road, Suite 200
Raleigh, NC 27603-3400
Tel: 919-661-5880 x225
Fax: 919-662-4414

From: Charles L. Travis, III [<mailto:CTravis@housingstudio.com>]
Sent: Thursday, June 09, 2016 5:02 PM
To: Martin, Carl <Carl.Martin@ncdoi.gov>
Subject: FW: Hollycrest, Huntersville, NC - Code Clarification Request

Mr. Martin, any update on the timing of your response? Chuck



Chuck Travis, FAIA Principal, LEED AP
333 West Trade Street, Suite 300
Charlotte, NC 28202
T:704.333.7862
F:980.237.3862
www.housingstudio.com



From: Charles L. Travis, III
Sent: Tuesday, June 07, 2016 7:09 AM
To: 'Carl.Martin@ncdoi.gov'
Cc: Michael Gribble (mgribble@northwoodravin.com); Elizabeth Hale
Subject: FW: Hollycrest, Huntersville, NC - Code Clarification Request

Mr. Martin, I am writing to request a clarification to the following "Stairways to Roof 1009.13" in a four story building, with a partial flat roof area that is not used for habitable purposes. I have attached the relevant code section, 1009.13, as well as the Code Commentary that states, "While it is not specially required that roof access be through an exit stairway enclosure, since part of the intent is for fire department access to the roof, it is strongly advised." however, it is not prohibited from my reading of the code.

The attached project diagram illustrates what is currently under construction, a Type V-A building with 1 hour protected construction and a 13R fire suppression system that has a combination of flat and pitched roof areas. The roof access has been installed in a separate room from the stairwell, located less than 25' in travel distance away from the stairwell entry, to provide the ability to maintain the two hour cap in the stairwell without interruption by an unrated access hatch (to my knowledge, no one manufactures a hatch rated for a penetration in the 2HR shaft cap).

Please provide clarification and if any questions, please let me know. Thank you in advance for your assistance, Chuck



Chuck Travis, FAIA Principal, LEED AP
333 West Trade Street, Suite 300
Charlotte, NC 28202
T:704.333.7862
F:980.237.3862
www.housingstudio.com



Northwood Ravin LLC

1057 East Morehead Street
Charlotte, NC 28204
Ph : 704-714-9640

RFI

To: Keith Britt
The Housing Studio
333 West Trade St Ste 300
Charlotte, NC 28202
Ph: 704-333-7862

RFI #: 141
Date: 9/8/2015
Job: C02-NC-HOLLY Holly Crest
Phone:

CC: Michael Gribble (Northwood Ravin Development)

Subject: Bldg #1 & #10 Roof & Attic Access

Drawing:
Cost Impact: None

Spec Section:
Schedule Impact: None

Request:

Date Required: 9/15/2015

After discussions between THS and NWR, this is a confirming RFI. Please see attached Holly Crest drawings A3.13, A3.15, A3.51, A3.53, Holly Crest drawings A10.1, A10.6, attached Roof Truss Layouts (Submittal), and attached Roof Heat Pump Layouts (HC RFI 131) for this issue:

Based on feedback from Mecklenburg County Building Inspectors on Holly Crest's 2-3 floor buildings, the roof and attic accesses on Bldg #1 and #10 (4/5 split floors) will require changes. Overall, the roof and attic access hatches need to be removed from the rated stair shaft ceilings in Bldg #1 and #10 while still providing access to the roof. Bldg #1 is completely framed and Bldg #10 recently started framing. Referencing attached drawings A3.13, A3.15, A3.51 and A3.54 with markups, the following is a recommended solution:

(1) Move the Stair #2 Roof Access to the Utility Closet and frame-in the open space. The alternating tread ladder can be attached to the Utility Closet wall (not protrude into the access space) with wall bracing. A new rated ceiling access panel flush to the ceiling with a pull down mechanism could be installed, but should not conflict with the ladder. The existing ceiling assembly must maintain continuity with new ceiling access panel. Above the access panel and on the TPO roof, the existing roof hatch can provide waterproof access to the roof. As needed, request field adjustment of the roof access within the Utility Closet to deconflict with roof trusses (see attached submittal layouts) and roof HP Units (see HC RFI 131 layouts).

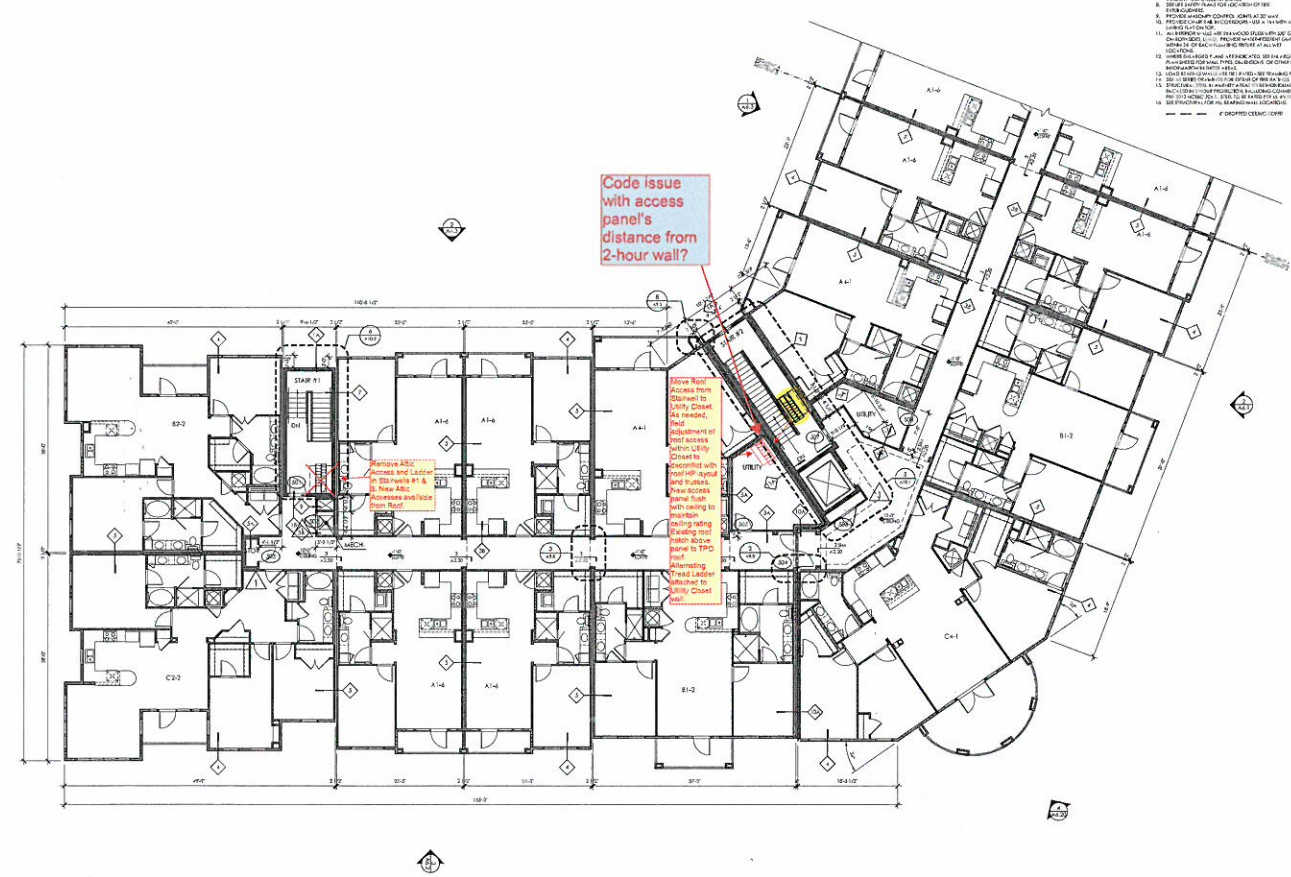
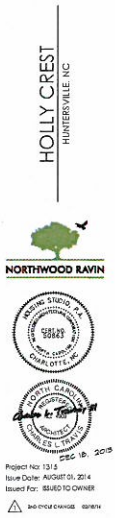
(2) Delete Stair #1 & #3 attic access hatches in Bldgs #1 & #10 and frame-in the open space. To ensure access to the attic spaces in the sloped roof, install new, waterproof access hatches into the sloped roof. These new hatches can be accessed from the flat TPO roof. Inside the attic from the sloped roof hatch, framed steps, a catwalk landing, and electrical light switch with overhead fluorescent light should be installed.

Please comment on this issue and update appropriate drawings, include all applicable details. Thank you.

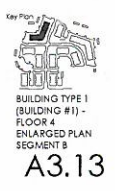
Requested by: David Dubay
NWR Construction, LLC

Response:

- GENERAL BUILDING PLAN NOTES
 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF THE 2015 IBC.
 2. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 IBC.
 3. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 IBC.
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 15. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 IBC.
 16. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 IBC.



1 FLOOR 4 ENLARGED PLAN SEGMENT B
 1/8" = 1'-0"

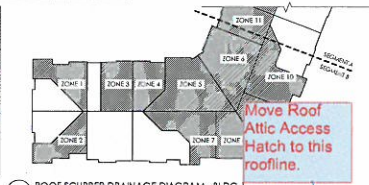


PERFORMANCE CALCULATIONS

Item	Material	U-Value	Area	Heat Loss
1	Roof	0.15	1000	1500
2	Wall	0.25	500	1250
3	Window	1.0	100	1000
4	Door	0.5	50	250
5	Floor	0.1	1000	100

ROOF DRAINAGE CALCULATIONS - BUILDING TYPE I

Zone	Area	Drainage	Flow
Zone 1	2627	1	100
Zone 2	1669	2	80
Zone 3	2374	3	120
Zone 4	1357	4	70
Zone 5	2174	5	110
Zone 6	1517	6	60
Zone 7	2734	7	130
Zone 8	2174	8	110
Zone 9	2734	9	130
Zone 10	1517	10	60
Zone 11	2627	11	100
Zone 12	2174	12	110
Zone 13	2734	13	130
Zone 14	2174	14	110
Zone 15	2734	15	130



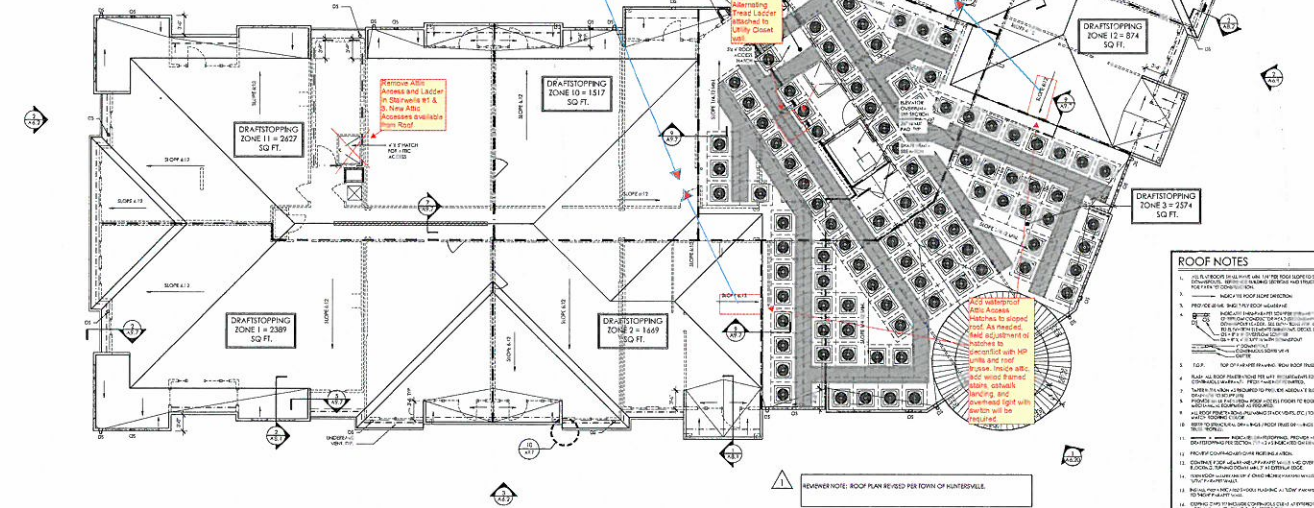
- EXTERIOR WATERPROOFING NOTES**
1. ALL ROOF FLASHINGS SHALL BE INSTALLED OVER THE ROOF FINISH SURFACE OF ROOFING OVER DECKING.
 2. ROOF FLASHINGS SHALL BE INSTALLED OVER THE ROOF FINISH SURFACE OF ROOFING OVER DECKING.
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 10. ROOF FLASHINGS SHALL BE INSTALLED OVER THE ROOF FINISH SURFACE OF ROOFING OVER DECKING.



Project No: 1315
Issue Date: AUGUST 01, 2014
Issued For: ISSUED FOR OWNER

Key Plan

BUILDING TYPE I
ROOF ENLARGED
PLAN SEGMENT B



Move Roof Attic Access Hatch to this roofline.

Move Roof Attic Access Hatch to this roofline.

Move Roof Attic Access Hatch to this roofline.

Move Roof Attic Access Hatch to this roofline.

REMEMBER NOTE: ROOF PLAN REVIEW FOR FORM OF HUNTERVILLE