



MIKE CAUSEY, INSURANCE COMMISSIONER & STATE FIRE MARSHAL
BRIAN TAYLOR, CHIEF STATE FIRE MARSHAL

September 30, 2022

Mr. Jason Adkins
President
16 Pointe Properties, LLC
222 Seacrest Drive
Wrightsville Beach, NC 28480

RE: 2018 NC Residential Code Section AM108.1 Post height and Table AM108.1 Deck Support Post Height

Mr. Adkins:

This letter is in response to your request for formal interpretation dated September 15 that was received in NCDOT by email on September 15, 2022. Your request for formal interpretation states in part:

“Please advise if the height limit of a post for a deck described in AM108.1 is intended to limit the height due to a lack of lateral support for an individual deck (as there is no plurality given in the code). If so please advise if decks on top of one another, just like a floor stacks on top of one another, are individual decks since they are laterally supported just like a wall or if “deck” in AM108.1 counts all decks(s) as a cumulative height even when laterally supported. If the decks are cumulative then why does the code state deck in the singular and why does this not apply to a wall?”

Remarks:

Code sections noted in this letter are referring to the 2018 edition of the NC Residential Code unless otherwise noted.

Attachment A is comprised of the request for formal interpretation as well as all supporting information submitted with the request.

Code Analysis:

Wood decks regulated under the 2018 NC Residential Code are accessory structures and the code requirements are included in Appendix M.

AM102.1 Footings. Support posts shall be supported by a minimum footing in accordance with Figure AM102.1(1) and Table AM102.1. Minimum footing depth shall be 12 inches (305 mm) below finished grade in accordance with Section R403.1.4. Tributary area is calculated as shown in Figure AM102.1(2).

**TABLE AM102.1
FOOTING TABLE^{a,b,c}**

SIZE (inches)		TRIBUTARY AREA (sq. ft.)	THICKNESS (inches)	
A x A	B x C		Precast	Cast-in-Place
8 x 16	8 x 16	36	4	6
12 x 12	12 x 12	40	4	6
16 x 16	16 x 16	70	8	8
—	16 x 24	100	—	8
—	24 x 24	150	—	8

- For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m².
a. Footing values are based on single floor and roof loads
b. Support post must rest in center 1/3 of footer
c. Top of footer shall be level for full bearing support of post

Comments: Section AM102.1 notes that support posts shall be supported by a minimum footing in accordance with the accompanying figure (not shown for brevity) and table. Footnote a. of Table AM102.1 notes that the footing values listed are based on single floor and roof loads.

AM108.1 Post Height. Maximum height of deck support posts shall be in accordance with Table AM108.1.

**TABLE AM108.1
DECK SUPPORT POST HEIGHT**

POST SIZE ^a	MAXIMUM POST HEIGHT ^{b, c}
4" x 4"	8'-0"
6" x 6"	20'-0"

- For SI: 1 inch = 25.4, 1 foot = 304.8 mm.
a. This table is based on No. 2 Southern Pine posts.
b. From top of footing to bottom of girder.
c. Decks with post heights exceeding these requirements shall be designed by a registered design professional.

Comments: Section AM108.1 notes the maximum height of deck support posts shall be in accordance with the accompanying table. Footnote c. of Table AM108.1 notes that decks with post heights exceeding the listed requirements shall be designed by a registered design professional.

Conclusions: Appendix M Wood Decks applies only to single-level decks with a single floor and roof load on a single footing, not two-story or more loading conditions on a single footing nor multi-level decks. Support posts for single-level decks that exceed the values listed in Table AM108.1 and all multi-level decks are required to be designed by a registered design professional as those conditions are outside the scope of Appendix M and this code.

Please call or email if you have comments or questions.

Sincerely,



David B. Rittlinger, PE, LEED AP

Chief Code Consultant
NCDOT-OSFM Engineering & Codes Division

cc: File
Bridget Herring, Chair - BCC
Mark Matheny, Vice-Chair - BCC
Gary Embler, Chair, Residential Super Committee - BCC

ATTACHMENT A



16 POINTE PROPERTIES

222 Seacrest Dr Wrightsville Beach NC 28480

910-434-5001

jason@16pointeproperties.com

NCDOT
Codes & Interpretations
1201 Mail Service Center
Raleigh NC 27699-1201
Attention: Carl Martin, Pak Yip

Mssrs. Martin & Yip,

I am requesting a formal interpretation of Section AM108.1 and Table AM108.1 Post Height, with two questions to be answered as outlined below.

Mr. Yip as you know I have had multiple conversations with you regarding this section and the intent of it as well as with my engineer and other engineers in Wilmington. It clearly states "Deck Support Post Height". The intent is understood to be for a deck to not exceed the heights due to lack of lateral support and deflection of the post without that lateral support.

Part 1 of my request for interpretation is as follows. At the coast it is typical to have a deck with an 8"x8" post supporting it at approximately 10' in height. I have attached documentation where the NHC building department would not accept an 8"x8" at only 5' high that supported a deck nor at 10' and wanted an engineer's letter. This far exceeds the 6"x6" at 5', 10' or even 20' in the code and since codes are minimums it is my understanding that any time you exceed the minimum you have met the code. Evidently when you exceed the code minimum in New Hanover County an engineer is required. This is a slippery slope as a single story home built with 2x6's at 16" O.C. exceeds the code minimum of 2x4's. Please advise if exceeding code minimums requires an engineer.

Part 2 of my request for interpretation is as follows. Both of my engineers, my truss designer and myself are all in agreement that this is meant for a single deck to not have more than a 20' tall 6x6. Pretty clear in the code and we believe this limitation is due to lateral support of the 6x6 piling. However in the flood zones where we have pilings that are 8x8 and a deck that is 10' up and then another floor where a deck is another 10' and another 10 more feet up, etc these are still individual decks with lateral support at each level and regardless that they are stacked the 8x8 never exceeds 20' or even close to it laterally unsupported. The compressive strength of wood does not change as it gets taller only the bending strength does.

The deck is no different than a wall when it comes to support. I can stack walls with headers over openings transferring load down to the footing all day long as long as that wall is laterally supported. A deck with a post and girder is the same as a wall with a header and kings/jacks.

A perfect example of this interpretation comes from R301.3 as shown below.

R301.3 Story height.

The wind and seismic provisions of this code shall apply to buildings with *story heights* not exceeding the following:

- 1.1. For wood wall framing, the *story height* shall not exceed 11 feet 7 inches (3531 mm) and the **laterally unsupported** bearing wall stud height permitted by [Table R602.3\(5\)](#).

This is pretty clear that each story is its own just like each deck on that same story would be an individual deck. Since the house can be laterally supported with numerous floors stacked and they are treated as individual floors why would a deck not also be treated as individual decks? There is a girder and joists at each level tying the deck to the post and offering the same lateral support that a floor system does to a wall.

Pak you mentioned in your email to me on 1-29-21 that the "the column capacity shall be determined from the "effective unbraced length" between the fixity (end condition). This unbraced length constitutes the slenderness ratio to determine the buckling limitation of the column".

Since the 8x8 is braced the "buckling" limitation is lessened and further the "effective unbraced length" is less than the 20' height per code and the 8"x8" exceeds the code minimum of a 6"x6". In your informal interpretation you advised that "Even if the "unbraced length" of the column are identical between the upper level and the lower level, the design lateral load and gravity load are different between the two level support".

How is the gravity load of a deck any different than a wall with headers? Further proof of this rhetorical question is that AM105.3 Specifically [refers back](#) to Table R602.7(3) of which Chapter 6 is *wall construction*. By the way on a side note there is still a typo that needs to be addressed in AM105.3 which you have acknowledged regarding tables 1 and 2 in R602.7.

Please advise if the height limit of a post for a deck described in AM108.1 is intended to limit the height due to a lack of lateral support for an individual deck (as there is no plurality given in the code). If so please advise if decks on top of one another, just like a [floor stacks](#) on top of one another, are individual decks since they are laterally supported just like a wall or if "deck" in AM108.1 counts all decks(s) as a cumulative height even when laterally supported. If the decks are cumulative then why does the code state deck in the singular and why does this not apply to a wall?

Thank You,
Jason Akins
President
16 Pointe Properties LLC

16 Pointe Properties LLC
 222 Seacrest Drive
 Wrightsville Beach, North Carolina

Bonoff Residence
 4312 Cranes Bill Court
 Wilmington, North Carolina

REVISIONS	BY	DATE
1	CA	07/20/20
2	CA	07/20/20
3	CA	07/20/20
4	CA	07/20/20
5	CA	07/20/20
6	CA	07/20/20
7	CA	07/20/20
8	CA	07/20/20
9	CA	07/20/20
10	CA	07/20/20
11	CA	07/20/20
12	CA	07/20/20
13	CA	07/20/20
14	CA	07/20/20
15	CA	07/20/20
16	CA	07/20/20
17	CA	07/20/20
18	CA	07/20/20
19	CA	07/20/20
20	CA	07/20/20

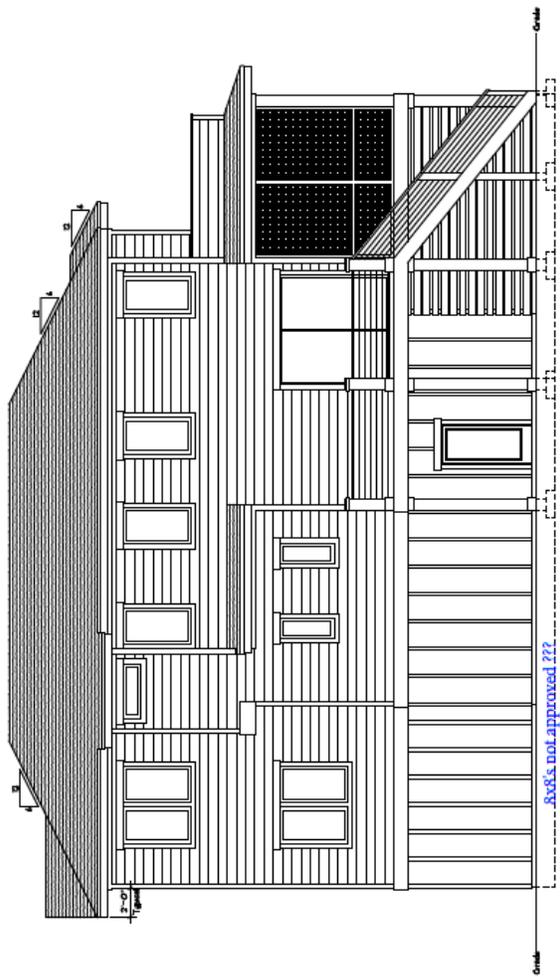
NEWKIRK
 DRAFTING & DESIGN
 10000 W. 10th Street, Suite 100
 Wrightsville Beach, NC 28586
 Phone: 910.329.1111
 Fax: 910.329.1112
 www.newkirk.com

DATE: 07/20/20
 FILE: Bonoff Rev04.dwg
 PLOT:

Notes for Review of this Construction - Materials, Finishes and Details. L.L.C.
 Plans for Review or other use are developed under the supervision of the architect.
 Changes in the responsibility of the Client or Contractor in regard to these
 items after the date of this Construction - Materials, Finishes and Details. L.L.C.

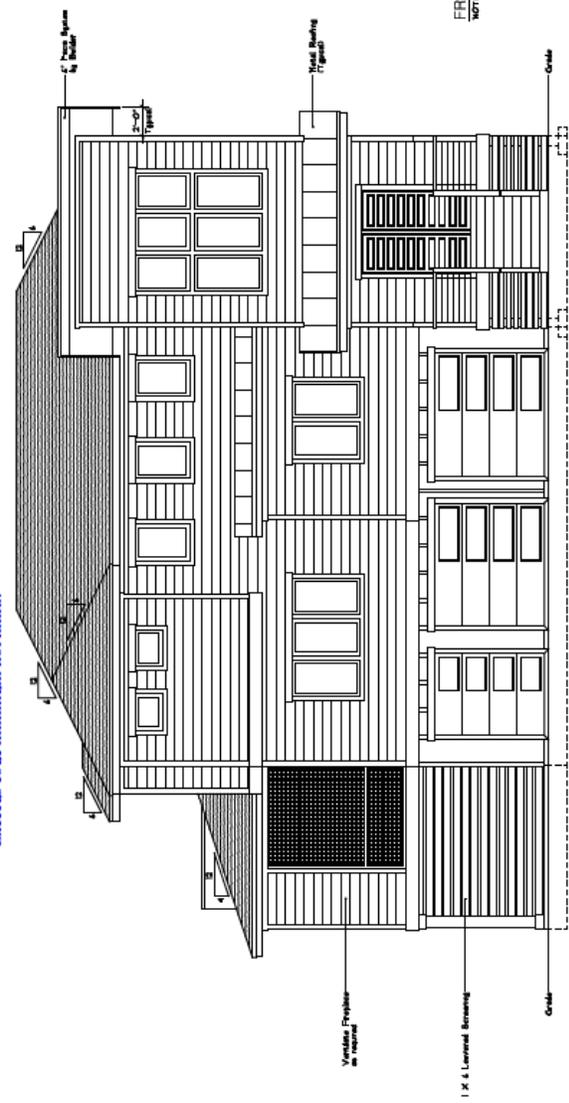
FRONT ELEVATION SCALE: 1/4" = 1'-0"

- NOTES:**
1. ALL CONSTRUCTION TO COMPLY WITH LOCAL AND N.C. BUILDING CODES.
 2. MATERIALS ARE SUBJECT TO CHANGE.
 3. FOUNDATION TO BE DETERMINED BY GEOTECHNICAL ENGINEER.
 4. 2008 NCSD SO WITH END ZONE.
 5. FOUNDATION ATTACHED TO ADJACENT STRUCTURE.
 6. FOUNDATION ATTACHED AS REQUIRED.
 7. FOUNDATION ATTACHED AS REQUIRED.
 8. TYPICAL COLUMNS IS 30".



FRONT ELEVATION SCALE: 1/4" = 1'-0"

- NOTES:**
1. ALL CONSTRUCTION TO COMPLY WITH LOCAL AND N.C. BUILDING CODES.
 2. MATERIALS ARE SUBJECT TO CHANGE.
 3. FOUNDATION TO BE DETERMINED BY GEOTECHNICAL ENGINEER.
 4. 2008 NCSD SO WITH END ZONE.
 5. FOUNDATION ATTACHED TO ADJACENT STRUCTURE.
 6. FOUNDATION ATTACHED AS REQUIRED.
 7. FOUNDATION ATTACHED AS REQUIRED.
 8. TYPICAL COLUMNS IS 30".



16 Pointe Properties LLC
 222 Seacrest Drive
 Wrightsville Beach, North Carolina

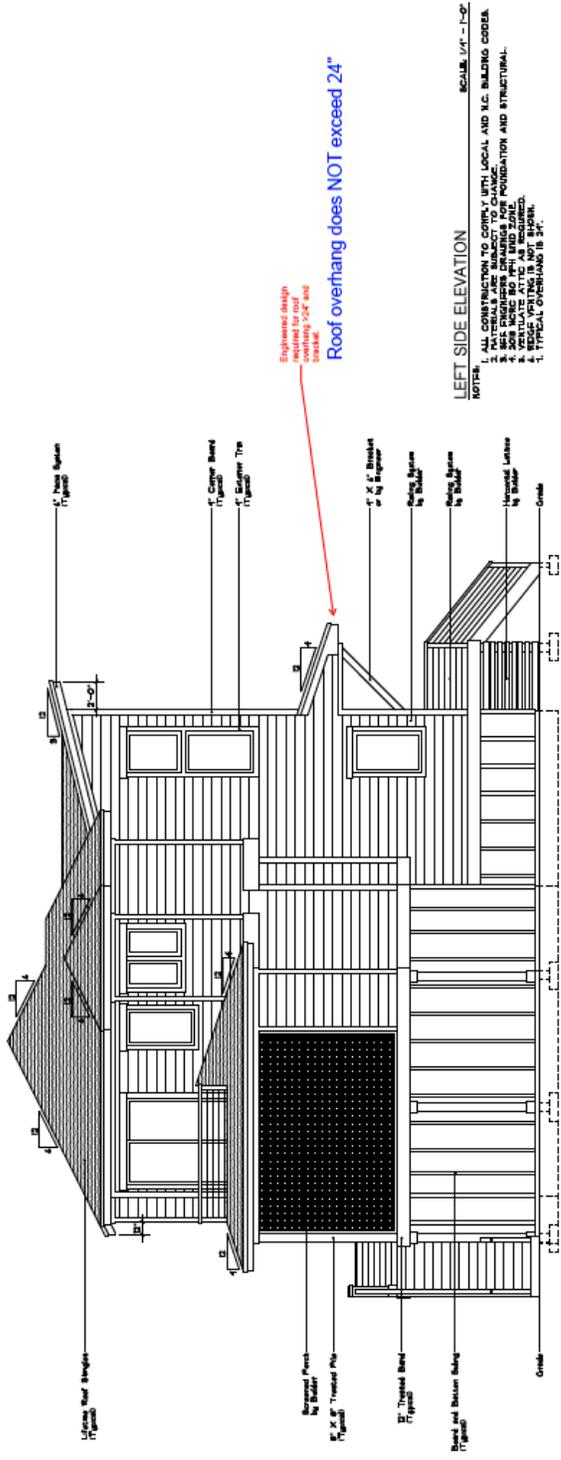
Bonoff Residence
 4312 Craes Bill Court
 Wilmington, North Carolina

DATE	DESCRIPTION
01/20/2021	PRELIMINARY
02/10/2021	REVISED PER COMMENTS
03/05/2021	REVISED PER COMMENTS
03/15/2021	REVISED PER COMMENTS
03/25/2021	REVISED PER COMMENTS
04/05/2021	REVISED PER COMMENTS
04/15/2021	REVISED PER COMMENTS
04/25/2021	REVISED PER COMMENTS
05/05/2021	REVISED PER COMMENTS
05/15/2021	REVISED PER COMMENTS
05/25/2021	REVISED PER COMMENTS
06/05/2021	REVISED PER COMMENTS
06/15/2021	REVISED PER COMMENTS
06/25/2021	REVISED PER COMMENTS
07/05/2021	REVISED PER COMMENTS
07/15/2021	REVISED PER COMMENTS
07/25/2021	REVISED PER COMMENTS
08/05/2021	REVISED PER COMMENTS
08/15/2021	REVISED PER COMMENTS
08/25/2021	REVISED PER COMMENTS
09/05/2021	REVISED PER COMMENTS
09/15/2021	REVISED PER COMMENTS
09/25/2021	REVISED PER COMMENTS
10/05/2021	REVISED PER COMMENTS
10/15/2021	REVISED PER COMMENTS
10/25/2021	REVISED PER COMMENTS
11/05/2021	REVISED PER COMMENTS
11/15/2021	REVISED PER COMMENTS
11/25/2021	REVISED PER COMMENTS
12/05/2021	REVISED PER COMMENTS
12/15/2021	REVISED PER COMMENTS
12/25/2021	REVISED PER COMMENTS

NEWKIRK
 DRAFTING & DESIGN
 10000 W. HARRIS LANE, SUITE 100
 WILMINGTON, NC 28403
 TEL: 910.341.1111
 WWW.NEWMARKDRAFTING.COM

DATE: 07/20/21
 FILE: Bonoff Rnd.dwg
 SHEET:

Drawings are the property of the Designer and shall remain the property of the Designer. No part of these drawings shall be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Designer.



Engineered design required for roof overhangs greater than 24\"/>

Roof overhang does NOT exceed 24\"/>

Where is roof tie down to posts??

LEFT SIDE ELEVATION SCALE: 1/4" = 1'-0"

- NOTES:
1. ALL CONSTRUCTION IS GOVERNED BY LOCAL AND N.C. BUILDING CODES.
 2. ALL MATERIALS SHALL BE SUBJECT TO QUALITY CONTROL.
 3. SEE ENGINEER DRAWINGS FOR FOUNDATION AND STRUCTURAL.
 4. VERIFY ALL AT THE AS REQUIRED.
 5. TYPICAL OVERHANG IS 24".



RIGHT SIDE ELEVATION SCALE: 1/4" = 1'-0"

- NOTES:
1. ALL CONSTRUCTION IS GOVERNED BY LOCAL AND N.C. BUILDING CODES.
 2. ALL MATERIALS SHALL BE SUBJECT TO QUALITY CONTROL.
 3. SEE ENGINEER DRAWINGS FOR FOUNDATION AND STRUCTURAL.
 4. VERIFY ALL AT THE AS REQUIRED.
 5. TYPICAL OVERHANG IS 24".

