

# ANN ARBOR BUILDING BOARD OF APPEALS

## STAFF REPORT

**Meeting Date: May 17, 2018**

**Type of Request: APPEAL**

Building Board of Appeals Request **BBA18-004** at 211 W. Davis, ANN ARBOR, MI 48104.

(Parcel Identification Number: **09-09-32-205-004**)

### DESCRIPTION AND DISCUSSION

#### Property Owners Name and Address:

Donald and Patricia Roof  
518 Brooks Hollow  
Dundee, MI 48131

### BACKGROUND

The applicant is appealing to the Building Board of Appeals (BBA) and asking that another alternative be considered as opposed to what was previously approved at the December 19, 2017 BBA Hearing.

The applicant Maven Development indicates that the differing interpretation of the building code created the issue. The small lot (4865 sq ft) was granted a setback variance based upon the previously existing footprint. The west-side yard setback was established at 1'5". The new single-family residence's attached garage was then set back from the side lot 2'0" with a 12" overhang. The applicant believes that the projection would be allowed 2 foot extending out from the wall per Table R302.1 providing the projection/soffit was fire rated and blocking installed between the roof sheeting and top plate.

Additional information Maven Development wants to be considered include:

1. A minimum 15 foot setback requirement for the adjacent residential property to the property line. Only green landscaping is permitted in this setback area.
2. An additional one-hour rating (total 2-hour rating) on the inside of the west wall of the garage, a one-hour rating to the ceiling, and a one-hour rating to the house/garage wall separation.
3. The already installed one-hour rating on exterior of garage wall and soffit.
4. The applicants proposal is also based on the reasoning of Table R302.1(2)(a) a 6 foot setback statement in Table R302.1(2)(a), that would allow a projection reduced to 0 feet.

Other issues to consider:

1. A previous appeal to the building board of appeals BBA17-010 on December 19, 2017. The appeal allowed a 12 inch projection from the garage roof to the property line on the basis that the garage is going to be equipped with a limited sprinkler system. The garage

was also required to have a one-hour rated wall, the projection was required to be fire rated and fire blocked, and that the entire assembly had to be facing the 15 foot no build buffer area on the adjacent property.

2. Table R302.1(1) indicates that the exterior wall element – the projection is not allowed less than two foot to the property line with only an exception to:
  - a. detached garages
  - b. detached tool sheds and storage sheds, playhouses and similar structures exempted from permits
3. The applicant wants to use some reasoning from table 302.1(2)(a) as indicated in Item 4 above, which allows a projection to within 0 foot of the property line. However, Table 302.1(2)(a) **is only used when a residential subdivision requires all residential dwelling units to be equipped throughout with an automatic sprinkler system.**
4. See attached previous Board approved minutes from BBA Hearing December 19, 2017.

### **Code Summary of Conditions, Interpretation, Staff Recommendation**

The Building Board of Appeals heard an appeal on December 19, 2017 to rule on the interpretation of the Fire-Resistant Construction of a projection according to Table 302.1(1). The board approved the appeal for an exception to allow the projection of 12 inches to the property line based on the following:

1. That the garage is going to be equipped with a limited sprinkler system.
2. The garage would have a one hour rated wall.
3. The projection was required to be fire rated and fire blocked.
4. The projection and entire assembly had to be facing the 15 foot no build buffer area on the adjacent property.

The applicant received an exception to the code per PA 230 “125.1515 – Specific variance from code; requirements; breach of condition; permissible variance. Sec. 15.”

The applicant has now requested an appeal to change the requirements as established by the BBA. Maven Development the applicant has three options:

1. To meet the appeal requirements of BBA17-010 as established by the Board on December 19, 2017

Or

2. To meet the requirements as originally requested by the Building Official prior to the original BBA appeal

Or

3. To meet any new requirements as established by the Building Board of Appeals through a new appeal process

**In conclusion, staff would not recommend approval unless the garage had a sprinkler system and the fire resistance ratings as previously approved by the BBA.**

**Standards for Approval:**

**PA 230 Section 125.15.15**

*Specific variance from code: breach of condition; permissible variance.*

*Sec. 15.*

- (1) After a public hearing a board of appeals may grant a specific variance to a substantive requirement of the code if the literal application of the substantive requirement would result in an exceptional, practical difficulty to the applicant, and if both of the following requirements are satisfied:
  - a. The performance of the particular item or part of the building or structure with respect to which the variance is granted shall be adequate for its intended use and shall not substantially deviate from performance required by the code of that particular item or part for the health, safety and welfare of the people of this state.*
  - b. The specific condition justifying the variance shall be neither so general nor recurrent in nature as to make an amendment of the code with respect to the condition reasonably practical or desirable.**
- (2) A board of appeals may attach in writing any condition in connection with the granting of a variance that in its judgement is necessary to protect the health, safety and welfare of the people of this state. The breach of a condition shall automatically invalidate the variance and any permit, license and certificate granted on the basis of it. In no case shall more than a minimum variance from the code be granted than is necessary to alleviate the exceptional, practical difficulty.*



**City of Ann Arbor**  
**Meeting Minutes - Final**  
**Building Board of Appeals**

301 E. Huron St.  
Ann Arbor, MI 48104  
<http://a2gov.legistar.com/Calendar.aspx>

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**Tuesday, December 19, 2017**

1:30 PM

Larcom City Hall, 301 E Huron St, Second floor, City Council Chambers

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Changed from 12/21

**A CALL TO ORDER**

**B ROLL CALL**

*Staff: 4 - G. Dempsey, K. Summersgill, M. Howell, D. Williams*

**Present:** 6 - Paul Darling, Robert Hart, Chair Kenneth J. Winters, Gordon Berry, David Arnsdorf, and Hugh A. Flack Jr.

**C APPROVAL OF AGENDA**

**Approved unanimously.**

**D APPROVAL OF MINUTES**

**D1 17-2091** Building Board of Appeals Meeting Minutes October 19, 2017

**Attachments:** BBA Meeting Minutes 10-19-17.pdf

**Approved by the Board and forwarded to City Council.**

**E APPEALS, ACTIONS, AND SHOW CAUSE HEARINGS**

**E1 17-2095** BBA17-009 Variance for 218 W. Kingsley, Ann Arbor, MI 48104

**Attachments:** 218 W. Kingsley.pdf

*G. Dempsey gave the Staff Report for the property. Brad Moore and John Bagasarian explained the property fingerprint and why it should be exempt from being considered a high-rise. K. Summersgill said the building is accessible for fire trucks.*

*P. Darling moves that the Board grant a variance for BBA17-009 at 218*

*W. Kingsley to make the interpretation that the plans as submitted are not considered a high-rise under section 403 of the Michigan Building Code 2012 and finds that the height to the partially occupied portion of the roof is less than 55 feet and that the footprint of the deck and patio elevation will not be increased in the future, that additional safeguards are in place, that the City of Ann Arbor has a 70 foot ladder truck will reach the 54 feet high occupied floor level and the Board finds that it meets the intent of the code. This interpretation is not to be construed as a precedent for future applications.*

*R. Hart supports.*

*Approved unanimously.*

**Approved**

**E2**      [17-2099](#)      BBA17-010 Variance for 211 W. Davis, Ann Arbor, MI 48104

**Attachments:**      211 W. Davis.pdf

*G. Dempsey gave the Staff Report for this property. Dan Williams and Marc Reuter described the history of the property and expressed the need for a variance of the projection over the property line, stating that at the time of build, the projection was allowed.*

*R. Hart moves that BBA17-010 at 211 W. Davis, Ann Arbor, to permit an exception to 2015 MRC section R302.1 for the exterior wall section of Residential Building Code to permit a projection of 12 inches from garage roof to the property line on the basis that the garage is going to be equipped with a limited sprinkler system, that the garage has a one hour rated wall, that the projection is fire rated and fire blocked and that the entire assembly is facing 15 foot no build buffer area on the adjacent property. Finds this to be equivalent performance criteria to the code and with the further stipulation that this specific condition shall be neither so general nor recurrent in nature as to make an amendment of the code with respect to the condition reasonably practical or desirable.*

*B. Gordan seconds.*

*Approved unanimously.*

**Approved**

**F**      **OLD BUSINESS**

*None*

**G NEW BUSINESS**

*None*

**H REPORTS AND COMMUNICATIONS**

*None*

**I PUBLIC COMMENTARY - GENERAL**

*N/A*

**J ADJOURNMENT**

**Adjourn**

Accommodations, including sign language interpreters, may be arranged by contacting Planning and Development Services by telephone at 1-734-794-6000, x42663 or by written request addressed to Planning Development Services c/o Board of Appeals, 301 East Huron, Ann Arbor, MI 48104. Requests made with less than two business days notice may not be able to be accommodated. Email: [ahoward@a2gov.org](mailto:ahoward@a2gov.org)

BUILDING PLANNING

**R301.6 Roof load.** The roof shall be designed for the live load indicated in Table R301.6 or the snow load indicated in Table R301.2(1), whichever is greater.

**TABLE R301.6**  
MINIMUM ROOF LIVE LOADS IN POUNDS-FORCE  
PER SQUARE FOOT OF HORIZONTAL PROJECTION

ROOF SLOPE	TRIBUTARY LOADED AREA IN SQUARE FEET FOR ANY STRUCTURAL MEMBER		
	0 to 200	201 to 600	Over 600
Flat or rise less than 4 inches per foot (1:3)	20	16	12
Rise 4 inches per foot (1:3) to less than 12 inches per foot (1:1)	16	14	12
Rise 12 inches per foot (1:1) and greater	12	12	12

For SI: 1 square foot = 0.0929 m<sup>2</sup>, 1 pound per square foot = 0.0479 kPa, 1 inch per foot = 83.3 mm/m.

**R301.7 Deflection.** The allowable deflection of any structural member under the live load listed in Sections R301.5 and R301.6 or wind loads determined by Section R301.2.1 shall not exceed the values in Table R301.7.

**TABLE R301.7**  
ALLOWABLE DEFLECTION OF STRUCTURAL MEMBERS<sup>b, c</sup>

STRUCTURAL MEMBER	ALLOWABLE DEFLECTION
Rafters having slopes greater than 3:12 with finished ceiling not attached to rafters	L/180
Interior walls and partitions	H/180
Floors	L/360
Ceilings with brittle finishes (including plaster and stucco)	L/360
Ceilings with flexible finishes (including gypsum board)	L/240
All other structural members	L/240
Exterior walls—wind loads <sup>a</sup> with plaster or stucco finish	H/360
Exterior walls—wind loads <sup>a</sup> with other brittle finishes	H/240
Exterior walls—wind loads <sup>a</sup> with flexible finishes	H/120 <sup>d</sup>
Lintels supporting masonry veneer walls <sup>c</sup>	L/600

Note: L = span length, H = span height.

a. For the purpose of the determining deflection limits herein, the wind load shall be permitted to be taken as 0.7 times the component and cladding (ASD) loads obtained from Table R301.2(2).

b. For cantilever members, L shall be taken as twice the length of the cantilever.

c. For aluminum structural members or panels used in roofs or walls of sunroom additions or patio covers, not supporting edge of glass or sandwich panels, the total load deflection shall not exceed L/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed L/175 for each glass lite or L/60 for the entire length of the member, whichever is more stringent. For sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed L/120.

d. Deflection for exterior walls with interior gypsum board finish shall be limited to an allowable deflection of H/180.

e. Refer to Section R703.8.2.

**R301.8 Nominal sizes.** For the purposes of this code, dimensions of lumber specified shall be deemed to be nominal dimensions unless specifically designated as actual dimensions.

**SECTION R302**  
**FIRE-RESISTANT CONSTRUCTION**

**R302.1 Exterior walls.** Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1(2).

**Exceptions:**

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.
2. Walls of dwellings and accessory structures located on the same lot.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
4. Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.

**R302.2 Townhouses.** Each townhouse shall be considered a separate building and shall be separated by a 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119 or UL 263 with exposure from both sides.

**Exception:** Where the building is provided with an automatic fire sprinkler system installed in accordance with NFPA 13D or Section P2904.1, a common 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119 or UL 263, as listed in Chapter 44, is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts, or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with Chapters 34 to 43. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

R 408.30544a

**R302.2.1 Continuity.** The fire-resistance-rated wall or assembly separating townhouses shall be continuous from the foundation to the underside of the roof sheathing, deck or slab. The fire-resistance rating shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures.

BUILDING PLANNING

**TABLE R302.1(1)  
EXTERIOR WALLS**

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E119 or UL 263 with exposure from both sides	< 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside	≥ 2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Openings in walls	Not allowed	N/A	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None required	5 feet

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable.

a. Except as allowed as per Section R302.1 exceptions 3 and 4.

R 408.30544b

**TABLE R302.1(2)  
EXTERIOR WALLS—DWELLINGS WITH FIRE SPRINKLERS**

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E119 or UL 263 with exposure from the outside	0 feet
	Not fire-resistance rated	0 hours	3 feet <sup>a</sup>
Projections	Not allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside <sup>b,c</sup>	2 feet <sup>a</sup>
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not allowed	N/A	< 3 feet
	Unlimited	0 hours	3 feet <sup>a</sup>
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet <sup>a</sup>

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable

- a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with Section P2901, the fire separation distance for nonrated exterior walls and rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.
- b. The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fireblocking is provided from the wall top plate to the underside of the roof sheathing.
- c. The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided that gable vent openings are not installed.

**R302.2.2 Parapets for townhouses.** Parapets constructed in accordance with Section R302.2.3 shall be constructed for townhouses as an extension of exterior walls or common walls in accordance with the following:

1. Where roof surfaces adjacent to the wall or walls are at the same elevation, the parapet shall extend not less than 30 inches (762 mm) above the roof surfaces.
2. Where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is not more than 30 inches (762 mm) above the lower roof, the parapet shall extend not less than 30 inches (762 mm) above the lower roof surface.

**Exception:** A parapet is not required in the preceding two cases where the roof covering complies with a minimum Class C rating as tested in accordance with ASTM E108 or UL 790 and the roof decking or sheathing is of noncombustible materials or approved fire-retardant-treated wood for a distance of 4 feet (1219 mm) on each side of the wall or walls, or one layer of 5/8-inch (15.9 mm) Type X gypsum board is installed directly beneath the roof decking or sheathing, supported by not less than nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members, for a distance of not less than 4 feet (1219 mm) on each side of the wall or walls and any openings or penetra-





**City of Ann Arbor**  
**PLANNING & DEVELOPMENT — CONSTRUCTION SERVICES**

301 E. Huron St. | P.O. Box 8647 | Ann Arbor, Michigan 48107-8647  
p. 734.794.6263 | f. 734.994.8460 | [building@a2gov.org](mailto:building@a2gov.org)

**APPLICATION FOR VARIANCE**  
**BUILDING BOARD OF APPEALS**

**NOTICE TO APPLICANTS**

**Applications must include all required information** such as drawings, site plans, floor plans and/or photographs to completely describe the request.

- **The BBA normally meets on the third Thursday of each month.** Public notices for each request before the BBA are published at least 5 days prior to the meeting, in accordance with the Open Meetings Act. **Applications must be received BY NOON at least 4 weeks prior to the meeting date.** If your application is submitted any later than that, it will **NOT BE ACCEPTED**.
- **All applications will be reviewed by staff, but it is suggested that it be reviewed BEFORE SUBMISSION. INCOMPLETE applications will not be accepted.** Applications with incorrect or inadequate information will be returned to the applicant for corrections and will be scheduled for the next available meeting date.
- **Applicant must supply 2 complete packets of information or 1 original packet and an electronic version of the original complete packet (CD with Adobe PDF file preferred).**
- **All communication with BBA members must be through the application and at public meetings ONLY.** Solicitation of members on an individual basis outside of these venues is inappropriate and prohibited.
- **Application to the BBA does not guarantee the request will be scheduled until after the application is deemed complete by staff.**
- **Filing Fees - \$250.00 (Single Family Home); \$500.00 (All Other Buildings & Structures)**

**APPLICATION FOR VARIANCE  
BUILDING BOARD OF APPEALS**

**Section 1: Applicant Information**

Name of Applicant: Maven Development LLC  
 Address of Applicant: 544 Detroit Street #1, Ann Arbor, MI 48104  
 Daytime Phone: 734-945-3603  
 Fax: 734-527-6048  
 Email: dan@mavendevlopment.com  
 Applicant's Relationship to Property: Builder

**Section 2: Property Information**

Address of Property: 211 W Davis, Ann Arbor, MI 48103  
 Zoning Classification: R4C  
 Tax ID# (if known): 09-09-32-205-004

**Section 3: Request Information**

Variance

Chapter(s) and Section(s) from which a variance is requested:	REQUIRED dimension:	PROPOSED dimension:
<u>Table R302.1 (2)</u>	<u>3'-0"</u>	<u>2'-0"</u>
<u>Example: 2003 Building Code, Sec 5:26</u>	<u>Example: 7' Ceiling Clearance</u>	<u>Example: 6'5" under landing</u>

Give a detailed description of the work you are proposing and why it will require a variance (attach additional sheets if necessary)

See Attached

**Section 4: Variance Request (If not applying for a variance, skip to section 5)**

The City of Ann Arbor Building Board of Appeals has the powers granted by State law and Building Codes. A variance may be granted by the Building Board of Appeals only in cases involving practical difficulties or unnecessary hardships when **ALL** of the following is found **TRUE**. Please provide a complete response to each item below. These responses, together with the required materials in Section 5 of this application, will form the basis for evaluation of the request by staff and the Building Board of Appeals.

**1. Are there hardships or practical difficulties to complying with the Code? Are these hardships or practical difficulties an exception or unique to the property compared to other properties in the City?**

The residence has been substantially completed and the code problem cannot be corrected without damage to the attached garage.

**2. Are the hardships or practical difficulties more than mere inconvenience, inability to obtain a higher financial return, or both? (explain)**

If the eave were to be removed and no gutters installed, the garage walls would not be protected from the elements, water would run down the side of the garage walls, and the adjacent property drainage could be impaired.

*(continued)*

3. What effect will granting the variance have on the neighboring properties? \_\_\_\_\_

There will be no harmful effects upon neighboring property.

4. What physical characteristics of your property in terms of size, shape, location or topography prevent you from using it in a way that is consistent with the Code?

There are no physical characteristics of the property that prevent code compliance.

5. Is the condition which prevents you from complying with the ordinance self-imposed? How did the condition come about?

See Attached

### Section 5: Required Materials

The following materials are required for all variance requests. Failure to provide these materials will result in an incomplete application and will delay staff review and Building Board of Appeals consideration of the request. The materials listed below must accompany the application and constitute an inseparable part of the application.

All materials must be provided on 8 1/2" by 11" sheets. If incomplete, you will be scheduled for the NEXT MEETING DATE ON THE FOLLOWING MONTH.

- State proposed use of the property, size of lot and size and type of proposed changes.
- Building floor plans showing interior rooms, including dimensions.
- Photographs of the property and any existing buildings involved in the request.
- Any other graphic or written materials that support the request.

### Section 7: Acknowledgement

#### SIGNATURES

I, the applicant, request a variance from the above named Chapter(s) and Section(s) of the State of Michigan Building Residential/Commercial Code(s) for the stated reasons, in accordance with the materials attached hereto.

734-945-3603

Phone Number



Signature

dan@mavenddevelopment.com

Email Address

Dan Williams

Print Name

#### STAFF USE ONLY

Date Submitted: \_\_\_\_\_ Fee Paid: \_\_\_\_\_

File No.: \_\_\_\_\_ Date of Public

Hearing \_\_\_\_\_

Pre-filing Staff Reviewer & Date \_\_\_\_\_ BBA Action:

Pre-Filing Review: \_\_\_\_\_

Staff Reviewer & Date: \_\_\_\_\_



# CITY OF ANN ARBOR

100 N. FIFTH AVE • ANN ARBOR, MI 48104  
(734) 794-6267

**Receipt Number: 2018-00057749**

**Project Number** BBA18-004  
**Receipt Print Date:** 05/14/2018  
**Address** 211 W DAVIS AVE  
**Applicant**  
**Owner** ROOF DONALD C & PATRICIA A  
**Project Description** Variance

## FEES PAID

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0026-033-3370-0000-4361

P&D - APPEAL FEES 15/16

BBA 1 & 2 FAMILY

0026-033-3370-0000-4361

250.00

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**Total Fees for Account 0026-033-3370-0000-4361:**

**250.00**

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**TOTAL FEES PAID**

**250.00**

DATE PAID: Monday, May 14, 2018

PAID BY: LOGOS

PAYMENT METHOD: CHECK 3786



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## Memorandum

Date: 5/5/18

To: Glen Dempsey, Building Official of Ann Arbor, MI

From: Maven Development

Project: 211 W. Davis Ave.

Re: Roof Overhang

Below is the response to question #5:

**Is the condition which prevents you from complying with the ordinance self-imposed? How did the condition arise?**

The condition arose from a differing interpretation of the building code that was identified during plan review. The small lot (4865 sq ft) was granted setback variances based upon the previously existing footprint. The west side-yard setback was established at 1'-5".

The new single-family residence's attached garage was set back from the side lot 2'0" with a 12" overhang. MRBC Table R302.1 (1) was interpreted to allow projections into the wall setback if the wall was at least 2' from the lot line. While the MBC has a separate table for projections, the MRBC places projections under the table for walls. This interpretation would allow for an eave projection if the soffit was fire rated and blocking installed between the roof sheeting and top plate. The building official disagreed with this interpretation.

A mitigating factor is the adjacent property to the west, a multifamily townhouse project developed under the conflicting land use provisions of the R4C zoning district. This measure establishes a permanent 15 ft setback from adjacent residential properties. This 15 ft plus the 2' setback on the subject property would create a 17 ft building separation or in effect an 8'6" fire separation distance. Within this setback no structures, trellises, accessory buildings or patios are allowed. Only green landscaping is permitted.

As a further measure of public safety, the builder has proposed to put a 2-hour rating assembly to the west wall of the garage that is near the lot line, a 1-hour rating to ceiling and a 1-hour rating to house/garage separation. See Attached 2-hour assembly.

MRBC Table 302.1(2) allows for the elimination of firewalls and allows for unlimited openings on lot lines when the adjacent property setbacks are six ft or more and the building is sprinkled. Our proposal is based upon the reasoning in this code provision.

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GIRDER TRUSSES AS REQUIRED

R40 CELLULOSE ROOF INSULATION TYP

ROOF TRUSSES (PITCH MAY VARY)

LOW SLOPE ROOF TRUSSES (PITCH MAY VARY)

TR  
BEC  
COI  
SP/1  
SP/2  
LCC  
LCK

10'-4"

8

12

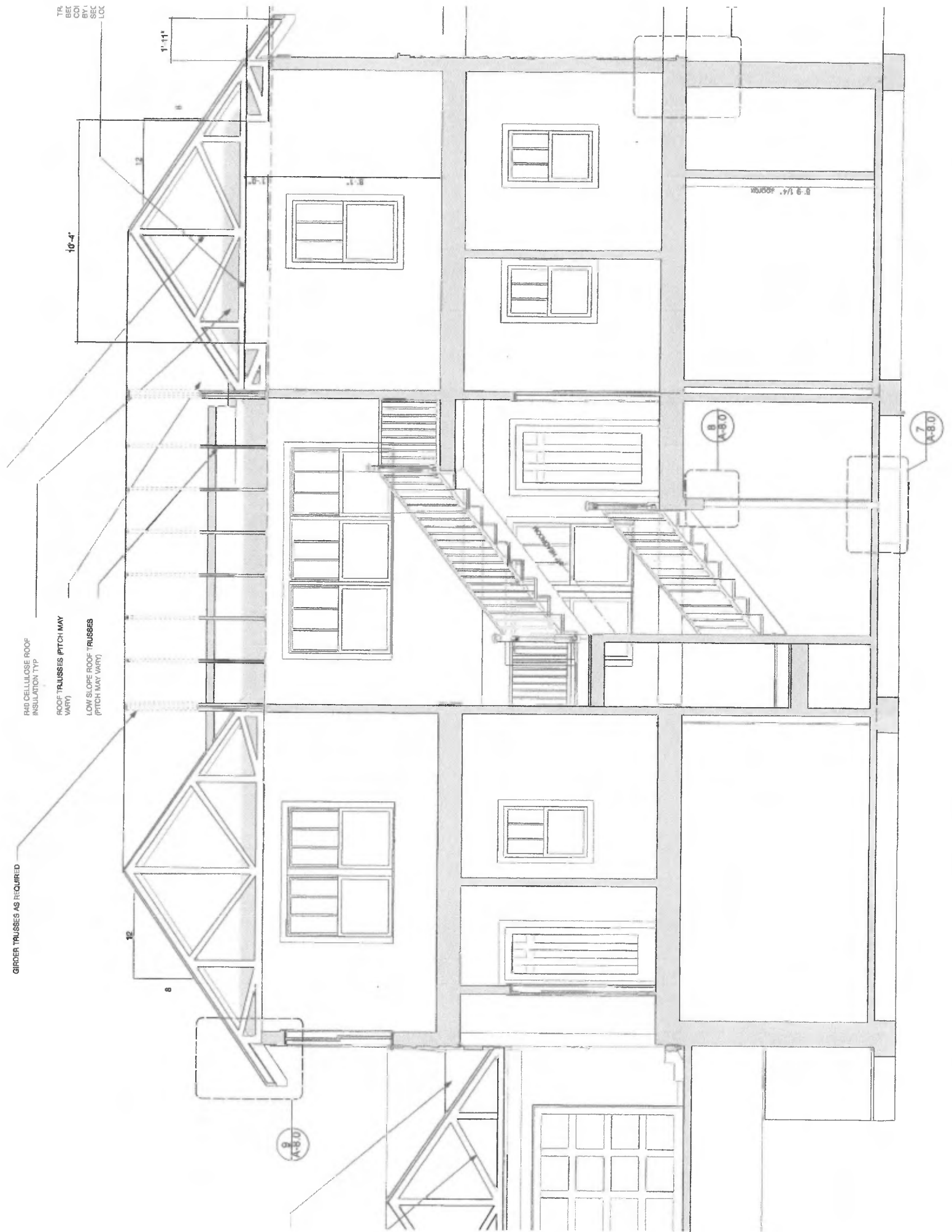
1'-11"

9  
A-B/D

8  
A-B/D

7  
A-B/D

8'-9 1/4" APPROX







W. DAVIS AVE

R-2 MANHOLE  
RIM 866.54  
18' SW 860.64  
12' E 860.64  
12' NW 861.7  
12' SW 861.7

500.00'00"E 99.07'

N00°00'00"E

E LINE EDGEWOOD SUB.

870.5

33'-10 1/2"

22'-9 1/2"

871.0'

412.5'

21'-0"

18'-7"

20'-8"

20'-8"

872.0'

873.5

366.5'

16'-0"

872.8'

14'-6 1/2"

873.2

15'-0"

conflicting land use  
buffer

NOTE:  
Additional setback  
required by Ch 5B section

NOTE:  
Eight site elevations  
within 20 feet of the  
building to establish  
average grade

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BUILDING PLANNING

**R301.6 Roof load.** The roof shall be designed for the live load indicated in Table R301.6 or the snow load indicated in Table R301.2(1), whichever is greater.

TABLE R301.6  
MINIMUM ROOF LIVE LOADS IN POUNDS-FORCE PER SQUARE FOOT OF HORIZONTAL PROJECTION

ROOF SLOPE	TRIBUTARY LOADED AREA IN SQUARE FEET FOR ANY STRUCTURAL MEMBER		
	0 to 200	201 to 600	Over 600
Flat or rise less than 4 inches per foot (1:3)	20	16	12
Rise 4 inches per foot (1:3) to less than 12 inches per foot (1:1)	16	14	12
Rise 12 inches per foot (1:1) and greater	12	12	12

For SI: 1 square foot = 0.0929 m<sup>2</sup>, 1 pound per square foot = 0.0479 kPa, 1 inch per foot = 83.3 mm/m.

**R301.7 Deflection.** The allowable deflection of any structural member under the live load listed in Sections R301.5 and R301.6 or wind loads determined by Section R301.2.1 shall not exceed the values in Table R301.7.

TABLE R301.7  
ALLOWABLE DEFLECTION OF STRUCTURAL MEMBERS<sup>a, c</sup>

STRUCTURAL MEMBER	ALLOWABLE DEFLECTION
Rafters having slopes greater than 3:12 with finished ceiling not attached to rafters	L/180
Interior walls and partitions	H/180
Floors	L/360
Ceilings with brittle finishes (including plaster and stucco)	L/360
Ceilings with flexible finishes (including gypsum board)	L/240
All other structural members	L/240
Exterior walls—wind loads <sup>a</sup> with plaster or stucco finish	H/360
Exterior walls—wind loads <sup>a</sup> with other brittle finishes	H/240
Exterior walls—wind loads <sup>a</sup> with flexible finishes	H/120 <sup>d</sup>
Lintels supporting masonry veneer walls <sup>e</sup>	L/600

Note: L = span length, H = span height.

- a. For the purpose of the determining deflection limits herein, the wind load shall be permitted to be taken as 0.7 times the component and cladding (ASD) loads obtained from Table R301.2(2).
- b. For cantilever members, L shall be taken as twice the length of the cantilever.
- c. For aluminum structural members or panels used in roofs or walls of sunroom additions or patio covers, not supporting edge of glass or sandwich panels, the total load deflection shall not exceed L/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed L/175 for each glass lite or L/60 for the entire length of the member, whichever is more stringent. For sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed L/120.
- d. Deflection for exterior walls with interior gypsum board finish shall be limited to an allowable deflection of H/180.
- e. Refer to Section R703.8.2.

**R301.8 Nominal sizes.** For the purposes of this code, dimensions of lumber specified shall be deemed to be nominal dimensions unless specifically designated as actual dimensions.

SECTION R302  
FIRE-RESISTANT CONSTRUCTION

**R302.1 Exterior walls.** Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1(2).

Exceptions:

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.
2. Walls of dwellings and accessory structures located on the same lot.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
4. Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.

**R302.2 Townhouses.** Each townhouse shall be considered a separate building and shall be separated by a 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119 or UL 263 with exposure from both sides.

**Exception:** Where the building is provided with an automatic fire sprinkler system installed in accordance with NFPA 13D or Section P2904.1, a common 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119 or UL 263, as listed in Chapter 44, is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts, or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with Chapters 34 to 43. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

R 408.30544a

**R302.2.1 Continuity.** The fire-resistance-rated wall or assembly separating townhouses shall be continuous from the foundation to the underside of the roof sheathing, deck or slab. The fire-resistance rating shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures.

BUILDING PLANNING

TABLE R302.1(1)  
EXTERIOR WALLS

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour -- tested in accordance with ASTM E119 or UL 263 with exposure from both sides	< 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not allowed <sup>a</sup>	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside	≥ 2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Openings in walls	Not allowed	N/A	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None required	5 feet

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable.

a. Except as allowed as per Section R302.1 exceptions 3 and 4.

R 408.30544b

TABLE R302.1(2)  
EXTERIOR WALLS—DWELLINGS WITH FIRE SPRINKLERS

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour -- tested in accordance with ASTM E119 or UL 263 with exposure from the outside	0 feet
	Not fire-resistance rated	0 hours	3 feet <sup>a</sup>
Projections	Not allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside <sup>b,c</sup>	2 feet <sup>a</sup>
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not allowed	N/A	< 3 feet
	Unlimited	0 hours	3 feet <sup>a</sup>
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet <sup>a</sup>

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable

a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, the fire separation distance for nonrated exterior walls and rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.

b. The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fireblocking is provided from the wall top plate to the underside of the roof sheathing.

c. The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided that gable vent openings are not installed.

**R302.2.2 Parapets for townhouses.** Parapets constructed in accordance with Section R302.2.3 shall be constructed for townhouses as an extension of exterior walls or common walls in accordance with the following:

1. Where roof surfaces adjacent to the wall or walls are at the same elevation, the parapet shall extend not less than 30 inches (762 mm) above the roof surfaces.
2. Where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is not more than 30 inches (762 mm) above the lower roof, the parapet shall extend not less than 30 inches (762 mm) above the lower roof surface.

**Exception:** A parapet is not required in the preceding two cases where the roof covering complies with a minimum Class C rating as tested in accordance with ASTM E108 or UL 790 and the roof decking or sheathing is of noncombustible materials or approved fire-retardant-treated wood for a distance of 4 feet (1219 mm) on each side of the wall or walls, or one layer of 3/8-inch (15.9 mm) Type X gypsum board is installed directly beneath the roof decking or sheathing, supported by not less than nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members, for a distance of not less than 4 feet (1219 mm) on each side of the wall or walls and any openings or penetra-

BUILDING PLANNING

box shall not exceed 1/8 inch (3.1 mm). Such boxes on opposite sides of the wall shall be separated by one of the following:

- 1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual noncommunicating stud cavities.
- 1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation.
- 1.3. By solid fireblocking in accordance with Section R302.11.
- 1.4. By protecting both boxes with *listed* putty pads.
- 1.5. By other *listed* materials and methods.
2. Membrane penetrations by *listed* electrical boxes of any materials provided that the boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the *listing*. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm) unless *listed* otherwise. Such boxes on opposite sides of the wall shall be separated by one of the following:
  - 2.1. By the horizontal distance specified in the *listing* of the electrical boxes.
  - 2.2. By solid fireblocking in accordance with Section R302.11.
  - 2.3. By protecting both boxes with *listed* putty pads.
  - 2.4. By other *listed* materials and methods.
3. The annular space created by the penetration of a fire sprinkler provided that it is covered by a metal escutcheon plate.

**R302.5 Dwelling-garage opening and penetration protection.** Openings and penetrations through the walls or ceilings separating the *dwelling* from the garage shall be in accordance with Sections R302.5.1 through R302.5.3.

**R302.5.1 Opening protection.** Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honey-

comb-core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

R 408.30544b

**R302.5.2 Duct penetration.** Ducts in the garage and ducts penetrating the walls or ceilings separating the *dwelling* from the garage shall be constructed of a minimum No. 26 gage (0.48 mm) sheet steel or other *approved* material and shall not have openings into the garage.

**R302.5.3 Other penetrations.** Penetrations through the separation required in Section R302.6 shall be protected as required by Section R302.11, Item 4.

**R302.6 Dwelling-garage fire separation.** The garage shall be separated as required by Table R302.6. Openings in garage walls shall comply with Section R302.5. Attachment of gypsum board shall comply with Table R702.3.5. The wall separation provisions of Table R302.6 shall not apply to garage walls that are perpendicular to the adjacent *dwelling unit* wall.

**R302.7 Under-stair protection.** Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with 1/2-inch (12.7 mm) gypsum board.

**R302.8 Foam plastics.** For requirements for foam plastics, see Section R316.

**R302.9 Flame spread index and smoke-developed index for wall and ceiling finishes.** Flame spread and smoke developed indexes for wall and ceiling finishes shall be in accordance with Sections R302.9.1 through R302.9.4.

**R302.9.1 Flame spread index.** Wall and ceiling finishes shall have a flame spread index of not greater than 200.

**Exception:** Flame spread index requirements for finishes shall not apply to trim defined as picture molds, chair rails, baseboards and handrails; to doors and windows or their frames; or to materials that are less than 1/28 inch (0.91 mm) in thickness cemented to the surface of walls or ceilings if these materials exhibit flame spread index values not greater than those of paper of this thickness cemented to a noncombustible backing.

**R302.9.2 Smoke-developed index.** Wall and ceiling finishes shall have a smoke-developed index of not greater than 450.

**R302.9.3 Testing.** Tests shall be made in accordance with ASTM E84 or UL 723.

TABLE R302.6  
DWELLING-GARAGE SEPARATION

SEPARATION	MATERIAL
From the residence and attics	Not less than 1/2-inch gypsum board or equivalent applied to the garage side
From habitable rooms above the garage	Not less than 3/8-inch Type X gypsum board or equivalent
Structure(s) supporting floor/ceiling assemblies used for separation required by this section	Not less than 1/2-inch gypsum board or equivalent
Garages located less than 3 feet from a dwelling unit on the same lot	Not less than 1/2-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

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tions in the roof are not within 4 feet (1219 mm) of the common walls.

3. A parapet is not required where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is more than 30 inches (762 mm) above the lower roof. The common wall construction from the lower roof to the underside of the higher roof deck shall have not less than a 1-hour fire-resistance rating. The wall shall be rated for exposure from both sides.

**R302.2.3 Parapet construction.** Parapets shall have the same fire-resistance rating as that required for the supporting wall or walls. On any side adjacent to a roof surface, the parapet shall have noncombustible faces for the uppermost 18 inches (457 mm), to include counterflashing and coping materials. Where the roof slopes toward a parapet at slopes greater than 2 units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a distance of 3 feet (914 mm), and the height shall be not less than 30 inches (762 mm).

**R302.2.4 Structural independence.** Each individual townhouse shall be structurally independent.

**Exceptions:**

1. Foundations supporting exterior walls or common walls.
2. Structural roof and wall sheathing from each unit fastened to the common wall framing.
3. Nonstructural wall and roof coverings.
4. Flashing at termination of roof covering over common wall.
5. Townhouses separated by a common wall as provided in Section R302.2, Item 1 or 2.

**R302.3 Two-family dwellings.** Dwelling units in two-family dwellings shall be separated from each other by wall and floor assemblies having not less than a 1-hour fire-resistance rating where tested in accordance with ASTM E119 or UL 263. Fire-resistance-rated floor/ceiling and wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies shall extend from the foundation to the underside of the roof sheathing.

**Exceptions:**

1. A fire-resistance rating of  $\frac{1}{2}$  hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13.
2. Wall assemblies need not extend through attic spaces where the ceiling is protected by not less than  $\frac{3}{8}$ -inch (15.9 mm) Type X gypsum board, an attic draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the dwellings and the structural framing supporting the ceiling is protected by not less than  $\frac{1}{2}$ -inch (12.7 mm) gypsum board or equivalent.

**R302.3.1 Supporting construction.** Where floor assemblies are required to be fire-resistance rated by Section

R302.3, the supporting construction of such assemblies shall have an equal or greater fire-resistance rating.

**R302.4 Dwelling unit rated penetrations.** Penetrations of wall or floor-ceiling assemblies required to be fire-resistance rated in accordance with Section R302.2 or R302.3 shall be protected in accordance with this section.

**R302.4.1 Through penetrations.** Through penetrations of fire-resistance-rated wall or floor assemblies shall comply with Section R302.4.1.1 or R302.4.1.2.

**Exception:** Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space shall be protected as follows:

1. In concrete or masonry wall or floor assemblies, concrete, grout or mortar shall be permitted where installed to the full thickness of the wall or floor assembly or the thickness required to maintain the fire-resistance rating, provided that both of the following are complied with:
  - 1.1. The nominal diameter of the penetrating item is not more than 6 inches (152 mm).
  - 1.2. The area of the opening through the wall does not exceed 144 square inches (92 900 mm<sup>2</sup>).
2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 or UL 263 time temperature fire conditions under a positive pressure differential of not less than 0.01 inch of water (3 Pa) at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

**R302.4.1.1 Fire-resistance-rated assembly.** Penetrations shall be installed as tested in the approved fire-resistance-rated assembly.

**R302.4.1.2 Penetration firestop system.** Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E814 or UL 1479, with a positive pressure differential of not less than 0.01 inch of water (3 Pa) and shall have an F rating of not less than the required fire-resistance rating of the wall or floor-ceiling assembly penetrated.

**R302.4.2 Membrane penetrations.** Membrane penetrations shall comply with Section R302.4.1. Where walls are required to have a fire-resistance rating, recessed fixtures shall be installed so that the required fire-resistance rating will not be reduced.

**Exceptions:**

1. Membrane penetrations of not more than 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m<sup>2</sup>) in area provided that the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m<sup>2</sup>) in any 100 square feet (9.29 m<sup>2</sup>) of wall area. The annular space between the wall membrane and the

## BUILDING PLANNING

**R302.9.4 Alternative test method.** As an alternative to having a flame spread index of not greater than 200 and a smoke-developed index of not greater than 450 where tested in accordance with ASTM E84 or UL 723, wall and ceiling finishes shall be permitted to be tested in accordance with NFPA 286. Materials tested in accordance with NFPA 286 shall meet the following criteria:

The interior finish shall comply with the following:

1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread to the outer extremity of the sample on any wall or ceiling.
3. Flashover, as defined in NFPA 286, shall not occur.
4. The peak heat release rate throughout the test shall not exceed 800 kW.
5. The total smoke released throughout the test shall not exceed 1,000 m<sup>2</sup>.

**R302.10 Flame spread index and smoke-developed index for insulation.** Flame spread and smoke-developed index for insulation shall be in accordance with Sections R302.10.1 through R302.10.5.

**R302.10.1 Insulation.** Insulation materials, including facings, such as vapor retarders and vapor-permeable membranes installed within floor-ceiling assemblies, roof-ceiling assemblies, wall assemblies, crawl spaces and attics shall have a flame spread index not to exceed 25 with an accompanying smoke-developed index not to exceed 450 where tested in accordance with ASTM E84 or UL 723.

**Exceptions:**

1. Where such materials are installed in concealed spaces, the flame spread index and smoke-developed index limitations do not apply to the facings, provided that the facing is installed in substantial contact with the unexposed surface of the ceiling, floor or wall finish.
2. Cellulose fiber loose-fill insulation, that is not spray applied, complying with the requirements of Section R302.10.3, shall not be required to meet the smoke-developed index of not more than 450 and shall be required to meet a smoke-developed index of not more than 450 where tested in accordance with CAN/ULC S102.2.
3. Foam plastic insulation shall comply with Section R316.

**R302.10.2 Loose-fill insulation.** Loose-fill insulation materials that cannot be mounted in the ASTM E84 or UL 723 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Section R302.10.1 where tested in accordance with CAN/ULC S102.2.

**Exception:** Cellulosic fiber loose-fill insulation shall not be required to be tested in accordance with CAN/

ULC S102.2, provided such insulation complies with the requirements of Sections R302.10.1 and R302.10.3.

**R302.10.3 Cellulosic fiber loose-fill insulation.** Cellulosic fiber loose-fill insulation shall comply with CPSC 16 CFR, Parts 1209 and 1404. Each package of such insulating material shall be clearly *labeled* in accordance with CPSC 16 CFR, Parts 1209 and 1404.

**R302.10.4 Exposed attic insulation.** Exposed insulation materials installed on *attic* floors shall have a critical radiant flux not less than 0.12 watt per square centimeter.

**R302.10.5 Testing.** Tests for critical radiant flux shall be made in accordance with ASTM E970.

**R302.11 Fireblocking.** In combustible construction, fireblocking shall be provided to cut off both vertical and horizontal concealed draft openings and to form an effective fire barrier between stories, and between a top *story* and the roof space.

Fireblocking shall be provided in wood-framed construction in the following locations:

1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs, as follows:
  - 1.1. Vertically at the ceiling and floor levels.
  - 1.2. Horizontally at intervals not exceeding 10 feet (3048 mm).
2. At interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R302.7.
4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an *approved* material to resist the free passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM E136 requirements.
5. For the fireblocking of chimneys and fireplaces, see Section R1003.19.
6. Fireblocking of cornices of a two-family *dwelling* is required at the line of *dwelling unit* separation.

**R302.11.1 Fireblocking materials.** Except as provided in Section R302.11, Item 4, fireblocking shall consist of the following materials.

1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25.4 mm) nominal lumber with broken lap joints.
3. One thickness of <sup>23</sup>/<sub>32</sub>-inch (18.3 mm) wood structural panels with joints backed by <sup>23</sup>/<sub>32</sub>-inch (18.3 mm) wood structural panels.
4. One thickness of <sup>3</sup>/<sub>4</sub>-inch (19.1 mm) particleboard with joints backed by <sup>3</sup>/<sub>4</sub>-inch (19.1 mm) particleboard.
5. One-half-inch (12.7 mm) gypsum board.

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6. One-quarter-inch (6.4 mm) cement-based millboard.
7. Batts or blankets of mineral wool or glass fiber or other *approved* materials installed in such a manner as to be securely retained in place.
8. Cellulose insulation installed as tested in accordance with ASTM E119 or UL 263, for the specific application.

**R302.11.1.1 Batts or blankets of mineral or glass fiber.** Batts or blankets of mineral or glass fiber or other *approved* nonrigid materials shall be permitted for compliance with the 10-foot (3048 mm) horizontal fireblocking in walls constructed using parallel rows of studs or staggered studs.

**R302.11.1.2 Unfaced fiberglass.** Unfaced fiberglass batt insulation used as fireblocking shall fill the entire cross section of the wall cavity to a height of not less than 16 inches (406 mm) measured vertically. Where piping, conduit or similar obstructions are encountered, the insulation shall be packed tightly around the obstruction.

**R302.11.1.3 Loose-fill insulation material.** Loose-fill insulation material shall not be used as a fireblock unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.

**R302.11.2 Fireblocking integrity.** The integrity of fireblocks shall be maintained.

**R302.12 Draftstopping.** In combustible construction where there is usable space both above and below the concealed space of a floor-ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1,000 square feet (92.9 m<sup>2</sup>). Draftstopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draftstopping shall be provided in floor-ceiling assemblies under the following circumstances:

1. Ceiling is suspended under the floor framing.
2. Floor framing is constructed of truss-type open-web or perforated members.

**R302.12.1 Materials.** Draftstopping materials shall be not less than 1/2-inch (12.7 mm) gypsum board, 3/8-inch (9.5 mm) wood structural panels or other *approved* materials adequately supported. Draftstopping shall be installed parallel to the floor framing members unless otherwise *approved* by the *building official*. The integrity of the draftstops shall be maintained.

**302.13 Combustible insulation.** Combustible insulation shall be separated a minimum of 3 inches (76 mm) from recessed lighting fixtures, fan motors, and other heat-producing devices.

**Exception:** When heat-producing devices are listed for lesser clearances, combustible insulation complying with the listing requirements shall be separated in accordance with the conditions stipulated in the listing.

Recessed lighting fixtures installed in the building thermal envelope shall be installed in accordance with the manufacturer's installation instructions.

R 408.30538

**R302.14 Combustible insulation clearance.** Combustible insulation shall be separated not less than 3 inches (76 mm) from recessed luminaires, fan motors and other heat-producing devices.

**Exception:** Where heat-producing devices are listed for lesser clearances, combustible insulation complying with the listing requirements shall be separated in accordance with the conditions stipulated in the listing.

Recessed luminaires installed in the *building thermal envelope* shall meet the requirements of Section N1102.4.5 of this code.

### SECTION R303 LIGHT, VENTILATION AND HEATING

**R303.1 Habitable rooms.** Habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural *ventilation* shall be through windows, skylights, doors, louvers or other *approved* openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The openable area to the outdoors shall be not less than 4 percent of the floor area being ventilated.

#### Exceptions:

1. The glazed areas need not be openable where the opening is not required by Section R310 and a whole-house mechanical *ventilation* system is installed in accordance with Section M1507.
2. The glazed areas need not be installed in rooms where Exception 1 is satisfied and artificial light is provided that is capable of producing an average illumination of 6 footcandles (65 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.
3. Use of sunroom and patio covers, as defined in Section R202, shall be permitted for natural *ventilation* if in excess of 40 percent of the exterior sunroom walls are open, or are enclosed only by insect screening.

**R303.2 Adjoining rooms.** For the purpose of determining light and *ventilation* requirements, any room shall be considered to be a portion of an adjoining room where not less than one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room and not less than 25 square feet (2.3 m<sup>2</sup>).

**Exception:** Openings required for light or *ventilation* shall be permitted to open into a sunroom with thermal isolation or a patio cover, provided that there is an openable area between the adjoining room and the sunroom or patio cover of not less than one-tenth of the floor area of the interior room and not less than 20 square feet (2 m<sup>2</sup>). The





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## FIRE-RESISTANCE DESIGN

Assembly Usage Disclaimer

### Search Parameters

Assembly type

Walls and Partitions

Protection type

Wood Stud, Gypsum Board, Lath &/or  
Plaster

Rating

Rating  $\geq$  1 hr and  $<$  2 hr

Manufacturer

hoover

### **BXUV - Fire-resistance Ratings - ANSI/UL 263**

See General Information for Fire-resistance Ratings - ANSI/UL 263

Design No. V314



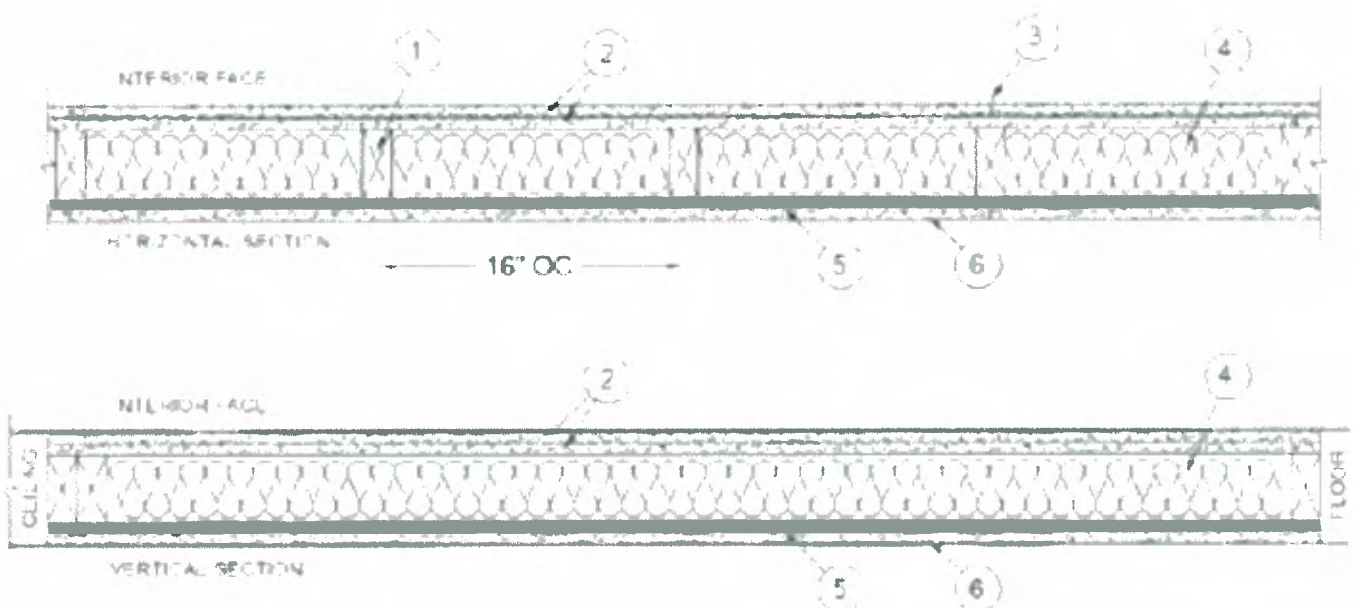
**Bearing Wall Rating - 1 Hr Rating Exposed to Fire on Exterior Face (See Item 8)**

**Bearing Wall Rating - 2 Hr Rating Exposed to Fire on Interior Face**

**Finish Rating — 42 min (Exposed to Fire on Interior Face)**

**Loaded Per 2012 NDS Supplement, ASD Method, Wall Braced Mid-Height**

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



**1. Framing Members\*** — Pressure-treated, fire-retardant Wood Studs - nominal 2 by 4 in., spaced 16 in. OC effectively fire stopped. As an option, pressure-treated, fire-retardant Wood Studs nominal 2 by 6 in., spaced 24 in. OC effectively fire-stopped.

**HOOVER TREATED WOOD PRODUCTS INC** — Pyro-Guard treated lumber

**2. Gypsum Board\*** — Nom 5/8 in. thick, 4 ft. wide, two layers applied vertically. Base layer nailed to wood studs and bearing plates 6 in. OC. with 6d cement coated nails, 1-7/8 in. long, 0.0915 in. shank diam. and 1/4 in. diam. head. The face layer, with joints staggered from base layer, nailed to the studs and bearing plates over the base layer, 8 in. OC with 8d cement coated nails, 2-3/8 in. long, 0.113 in. shank diam. 9/32 in. diam. head.

**ACADIA DRYWALL SUPPLIES LTD** ([View Classification](#)) — Type X

Resistant Type X, Mold & Mildew Resistant AR Type X, Type Blueglass Exterior Sheathing

**AMERICAN GYPSUM CO** ([View Classification](#)) — Type AGX-1, AG-C, LightRoc

**BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO** ([View Classification](#)) — Type DBX-1

**CERTAINTED GYPSUM INC** ([View Classification](#)) — Type X, Type X-1, Easi-Lite Type X-2, Type EGRG, GlasRoc, GlasRoc-2, SilentFX, Type FRPC, Type C

**CGC INC** ([View Classification](#)) — Type AR, Type IP-X1, Type IP-X2, Type IP-AR, Type IPC-AR, Type SCX, Type SHX, Type WRX, Type C

**CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C** ([View Classification](#)) — Type LGFC-C/A, Type LGFC2A, Type LGFC-WD

**GEORGIA-PACIFIC GYPSUM L L C** ([View Classification](#)) — Types GPFS1, Type GPFS2, Type GPFS6, Type DA, Type DAPC, Type DGG, Type DD, Type DS, Type DAP, Type 5, Type 6

**NATIONAL GYPSUM CO** ([View Classification](#)) — Type FSK-G, Type FSW-G, Type FSW-5, Type FSW-6, Type FSK-C, Type FSW-C

**PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM** ([View Classification](#)) — Type PG-2, Type PG-3W, Type PG-3WS, Type PG-4, Type PG-5W, Type PG-5WS, Type PG-6, Type PG-WRS, Type QuietRock ES, Type C

**PANEL REY S A** ([View Classification](#)) — Type PRX, Type RHX, Type MDX, Type ETX, Type GREX

**SIAM GYPSUM INDUSTRY (SARABURI) CO LTD** ([View Classification](#)) — Type EX-1

**UNITED STATES GYPSUM CO** ([View Classification](#)) — Type AR, Type IP-X1, Type IP-X2, Type IP-AR, Type IPC-AR, Type SCX, Type SGX, Type SHX, Type WRX, Type C, Type ULIX

**USG BORAL DRYWALL SFZ LLC** — Types C, SCX, SGX

**USG MEXICO S A DE C V** ([View Classification](#)) — Type AR, Type IP-X1, Type IP-X2, Type IP-AR, Type IPC-AR, Type SCX, Type SHX, Type WRX, Type C

**3. Joints and Nailheads** — Gypsum board joints covered with tape and joint compound. Nail heads covered with joint compound.

**4. Batts and Blankets\*** — Faced or unfaced mineral fiber insulation, 3-1/2 in. thick, nom 3.0 pcf, pressure fit in the wall cavity between stud, plates, and cross bracing. Insulation may be applied in multiple layers to achieve final thickness.

See Batts and Blankets\* (BZJZ) category for names of Classified manufacturers.

**4A. Fiber, Sprayed\*** — As an alternate to Batts and Blankets (Item 4) — Spray applied granulated mineral fiber material. The fiber is applied with adhesive at a minimum density of 4.0 pcf to completely fill the wall cavity in accordance with the application instructions supplied with the product. See **Fiber, Sprayed** (CCAZ).

**AMERICAN ROCKWOOL MANUFACTURING, LLC** — Type Rockwool Premium Plus

**4B. Batts and Blankets\*** — For use with Item 7 or Item 8, as an alternate to Batts and Blankets (Item 4) — Faced or unfaced glass fiber batts 3-1/2 in. thick, nom 1.45 pcf, friction fit in the wall cavity between stud, plates, and cross bracing. Insulation may be applied in multiple layers to achieve final thickness.

See **Batts and Blankets\*** (BZJZ) category for names of Classified manufacturers.

**5. Building Units\*** — Pressure-treated, fire-retardant plywood installed vertically nailed to the wood framing with 1-7/8 in. long, 6d nails, spaced 6 in. OC. on the perimeter and 12 in. OC. in the field. Vertical and horizontal joints are backed by framing. Panels provided in nominal size

**HOOVER TREATED WOOD PRODUCTS INC — Pyro-Guard treated plywood**

**6. Exterior Facings** — For use with Items 4 and 4A. — Any exterior facing, as authorized by the Authority Having Jurisdiction and installed in accordance with the manufacturer's installation instructions are allowed. Exterior facings may include, but are not limited to the following examples:

**6A. Molded Plastic\*** — Solid vinyl siding mechanically secured to framing members in accordance with manufacturer's recommended installation details.

**6B. Brick** — Brick veneer, meeting the requirements of local code agencies. Brick veneer attached to the studs with corrugated metal wall ties attached to each stud with 8d cement coated nails, every sixth course of bricks.

**6C. Particle Board Siding** — Oriented strand board, wafer board, or hard board exterior building sidings including patterned panels.

**6D. Plywood** — American Plywood Association rated siding including T1-11 and series 303 textures, rough sawn, MDO, brushed, channel grooved, and lap siding.

**6E. Cementitious Stucco** — Portland cement or synthetic stucco systems (e.g. EIFS) with self-furring metal lath or adhesive base coat. Thickness from 3/8 in. to 3/4 in. depending on system.

**6F. Fiber Cement Siding** — Fiber Cement Lap or Vertical Siding. Minimum 5/16 in. thick, fastened to studs through the Building Units, Item 5, with nails or screws, at the locations specified by the manufacturer.

**7. Exterior Facings** — (Not Shown) — For use with Item 4B. One of the following exterior facings shall be installed in accordance with the manufacturer's installation instructions:

**7A. Brick** — Brick veneer, meeting the requirements of local code agencies. Brick veneer attached to the studs with corrugated metal wall ties attached to each stud with 8d cement coated nails, every sixth course of bricks.

**7B. Particle Board Siding\*** — Oriented strand board,

including patterned panels.

**7C. Plywood** — American Plywood Association rated siding including T1-11 and series 303 textures, rough sawn, MDO, brushed, channel grooved, and lap siding.

**7D. Cementitious Stucco** — Portland cement or synthetic stucco systems with self-furring metal lath or adhesive base coat. Thickness from 3/8 in. to 3/4 in. depending on system.

**7E. Fiber Cement Siding** — Fiber Cement Lap or Vertical Siding. Minimum 5/16 in. thick, fastened to studs through the Building Units, Item 5, with nails or screws, at the locations specified by the manufacturer.

**8. Exterior Facings** — (Not Shown) — Required for 1 Hour Rating on the Exterior Face, for use with Items 4, 4A, and 4B. The following exterior facing shall be installed in accordance with the manufacturer's installation instructions:

**8A. Brick** — Brick veneer, minimum thickness of 2.3 inches, meeting the requirements of local code agencies. Brick veneer attached to the studs with corrugated metal wall ties attached to each stud with 8d cement coated nails, every sixth course of bricks.

**8B. Cementitious Stucco** — Portland cement with self-furring metal lath. Minimum thickness of 3/4 in. with a mix ratio of 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2018-02-05

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## **Design/System/Construction/Assembly Usage Disclaimer**

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance

- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

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