



**2022 ICC CODE DEVELOPMENT CYCLE
UPDATES TO THE 2021 PROPOSED
CHANGES TO THE INTERNATIONAL
CODES**

**Update to the 2022 Group B – Consolidated Monograph
Updates**

First Printing

Publication Date: March 2022

Copyright © 2022

By

International Code Council, Inc.

ALL RIGHTS RESERVED. This 2021-2022 Code Development Cycle, Group B (2022) Proposed Changes to the 2021 *International Codes* is a copyrighted work owned by the International Code Council, Inc. Without advanced written permission from the copyright owner, no part of this book may be reproduced, distributed, or transmitted in any form or by any means, including, without limitations, electronic, optical or mechanical means (by way of example and not limitation, photocopying, or recording by or in an information storage retrieval system). For information on permission to copy material exceeding fair use, please contact: Publications, 4051 West Flossmoor Road, Country Club Hills, IL 60478 (Phone 1-888-422-7233).

Trademarks: "International Code Council," the "International Code Council" logo are trademarks of the International Code Council, Inc.

PRINTED IN THE U.S.A.

TABLE OF CONTENTS

PAGE

2022 Committee Rosters

IBC – Structural	1
IRC – Building.....	2

2022 Hearing Orders

IADMIN	3
IBC – Structural	4
IEBC	6
IRC – Building.....	7

2022 Proposed Changes

IADMIN	10
IBC – Fire Safety	14
IBC – Structural	15
IEBC	20
IRC – Building.....	21
CCC.....	31

2022 GROUP B – PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE – STRUCTURAL

INTERNATIONAL BUILDING CODE – STRUCTURAL COMMITTEE

Edward Lisinski, PE, CBO Chair

Upper Midwest Regional Manager
American Wood Council
West Allis, WI

Jonathan C. Siu, PE, SE, Vice Chair

Rep: Washington Association of Building Officials
Technical Code Development Committee
Jon Siu Consulting, LLC
Renton, WA

Matthew Bailey

Rep: National Association of Home Builders
BP Builders
Rogersville, MO

Kevin Dommer, PE, SE

Engineering Manager
Mid-States Concrete Industries
South Beloit, IL

Cole W. Graveen, S.E., P.E.

Senior Structural Engineer
Raths, Raths & Johnson, Inc.
Willowbrook, IL

Hayne Kim, SE

Senior Structural Engineer
Department of Health Care Access and
Information
Los Angeles, CA

Rose Lorenzo

Principal Engineer
Otis Elevator Company
Florence, SC

Dan Lungu, M.A.Sc., P. Eng.

Project Engineer
Intertek
North Vancouver, BC Canada

Adam Matthews

Codes Specialist
NJ Department of Community Affairs, Division of
Codes & Standards
Trenton, NJ

Cornelia Orzescu, EIT

Chief Building Official
City of Wheat Ridge
Wheat Ridge, CO

Larry Anthony Paul, AIA

Principal Architect
L. A. Paul Associates
San Rafael, CA

David P. Renn, PE, SE

Engineer-Architect Specialist
City and County of Denver
Denver, CO

Jay Richards, RA

Assistant Construction Code Administrator
State of Ohio-Board of Building Standards
Reynoldsburg, OH

Robert Ross

Rep: NAHB
Owner
G&R Construction Services, LLC
Granger, TX

Paul A. Turner, AIA

Principal Architect
Stewart, Schaberg & Turner/Architects LLC
Maplewood, MO

Rupert Williams, PE, PhD

Construction Site Safety Support Engineer
New York City Department of Buildings
New York, NY

Howard L. Zee, PE, SE

Structural Engineer
City & County of San Francisco,
Department of Building Inspection
San Francisco, CA

Staff Secretariat:

Lawrence C. Novak, SE, F.SEI, CERT, LEED AP
Chief Structural Engineer
Codes and Standards Development
International Code Council
Central Regional Office

2022 GROUP B – PROPOSED CHANGES TO THE INTERNATIONAL RESIDENTIAL CODE - BUILDING

INTERNATIONAL RESIDENTIAL CODE COMMITTEE – BUILDING

Sean DeCrane, Chair

Manager, Industry Relations
Underwriters Laboratories
Cleveland, OH

Paul Armstrong, PE, CBO, Vice Chair

Western Regional Manager
American Wood Council
Long Beach, CA

Anne M. Anderson, PE, SE

Owner, CEO
Green Mountain Structural Engineering
Camas, WA

Sean P. Farrell, CBO, CZA

Rep: Virginia Building and Code Officials
Association
Development Project Manager
Prince William County
Prince William, VA

Stan Harbuck, CEM

Chief Instructor
School of Building Inspection
Arlington, MA

Greg Janik

Rep: International Association of Fire Chiefs
Fire Chief/Fire Marshal
Saugatuck Township Fire District
Saugatuck, MI

Stephen Kartak, CBO

Rep: AMBO, 10 Lakes Chapter, Region III
Building Official
City of Eden Prairie
Eden Prairie, MN
Field Supervisor
City of Edina
Edina, MN

Kevin T. McOsker, PE, CBO

Director/Building Official

City of Las Vegas Department of Building &
Safety
Las Vegas, NV

David C. Sowders

Rep: National Association of Home Builders
Owner
Sowders Company Designers/Builders LLC
Bowling Green, KY

Jonathan Sukonik

Rep: National Association of Home Builders
Owner
Sukonik Building Companies
Plymouth Meeting, PA

Frank C. Thompson

Rep: National Association of Home Builders
President
Sweetwater Builders, Inc.
Cranberry Twp., PA

Tim Williams

Rep: National Association of Home Builders
Director of Codes and Safety
America's Home Place, INC
Gainesville, GA

Staff Secretariats:

Kimberly Paarlberg, RA

Senior Staff Architect
Codes and Standards Development
ICC Indiana Field Office
Carmel, IN

Samhar Hoz, LEED Green Assoc.

Staff Engineer, MS in Engineering Management
(MEM)
Codes and Standards Development
International Code Council
Central Regional Office
Country Club Hills, IL

See highlighted changes to the hearing order

TENTATIVE ORDER OF DISCUSSION 2022 PROPOSED CHANGES TO THE ADMINISTRATIVE PROVISIONS CODE

The following is the tentative order in which the proposed changes to the code will be discussed at the public hearings. Proposed changes which impact the same subject have been grouped to permit consideration in consecutive changes.

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation does not necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair. Note that some ADM code change proposals may not be included on this list, as they are being heard by another committee.

ADM1-22 Part I	ADM37-22 Part I
ADM2-22	ADM38-22 Part I
ADM3-22 Part I	ADM39-22
ADM4-22 Part I	ADM40-22
RB2-22 Part II	ADM41-22 Part I
ADM5-22	ADM42-22
ADM6-22	ADM43-22 Part I
ADM7-22 Part I	S125-22 Part II
ADM8-22	ADM44-22
ADM53-22 Part I	ADM45-22 Part I
ADM9-22	ADM46-22
ADM10-22	ADM47-22
ADM11-22	ADM48-22 Part I
ADM12-22	ADM49-22
ADM13-22 Part I	ADM50-22
ADM14-22	ADM51-22
ADM15-22 Part I	ADM52-22
ADM16-22 Part I	
ADM17-22 Part I	
ADM18-22	
ADM19-22	
ADM20-22	
ADM21-22	
ADM22-22	
ADM23-22	
ADM24-22 Part I	
ADM25-22	
ADM26-22	
ADM27-22	
ADM28-22	
ADM29-22	
ADM30-22	
ADM31-22	
ADM32-22	
ADM33-22	
ADM34-22 Part I	
ADM35-22	
ADM36-22 Part I	

See highlighted changes to the hearing order

TENTATIVE ORDER OF DISCUSSION 2022 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE - STRUCTURAL

The following is the tentative order in which the proposed changes to the code will be discussed at the public hearings. Proposed changes which impact the same subject have been grouped to permit consideration in consecutive changes.

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation does not necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair. Note that some S code change proposals may not be included on this list, as they are being heard by another committee.

Numbers Not Used

S54-22
S61-22
S93-22
S104-22
S120-22
S156-22
S221-22
S226-22
S237-22
S238-22

EB2-22	EB57-22	FS3-22	G11-22
EB3-22	EB58-22	FS4-22	G12-22
EB4-22	EB59-22	FS5-22	G13-22
EB6-22	EB60-22	FS6-22	G14-22
EB9-22	EB61-22	FS7-22	G15-22
EB10-22	EB62-22	FS8-22	SP1-22
EB13-22	EB63-22	FS9-22	SP2-22
EB14-22	EB64-22	FS10-22	S1-22
EB15-22	EB65-22	FS11-22	S2-22
EB16-22	EB66-22	FS12-22	S3-22
EB17-22	EB67-22	PC1-22	S4-22
EB18-22	EB68-22	PC2-22	S5-22
EB19-22	EB69-22	PC3-22	S6-22
EB38-22	EB70-22	PC4-22	S7-22
EB39-22	EB75-22	PC5-22	S8-22
EB40-22	EB76-22	PC6-22	S9-22
EB41-22	EB77-22	G1-22 Part I	S10-22
EB42-22	EB103-22 Part	G2-22	S11-22
EB47-22	II	G3-22	S12-22
EB49-22	EB104-22	G4-22 Part I	S13-22
EB50-22	EB105-22	G5-22 Part I	S14-22
EB51-22	EB112-22	G6-22	S15-22
EB52-22	EB113-22	G7-22	S16-22
EB53-22	EB114-22	G8-22	S17-22
EB54-22	FS1-22	G9-22	S18-22
EB55-22	FS2-22	G10-22	S19-22

S20-22	S76-22	S133-22	S188-22
S21-22	S77-22	S134-22	S189-22
S22-22 Part I	S78-22	S135-22	S190-22
S23-22	S79-22	S136-22	S191-22
S24-22 Part I	S80-22	S137-22	S192-22
S25-22	S81-22	S138-22	S193-22
S26-22	S82-22	S139-22	S194-22
S27-22	S83-22	S140-22	S195-22
S28-22	S84-22	S141-22	S196-22
S29-22	S85-22	S142-22	S197-22
S30-22	S86-22	S143-22	S198-22
S31-22	S87-22	S144-22	S199-22
S32-22	S88-22	S145-22	S200-22
S33-22	S89-22	S146-22	S201-22
S34-22	S90-22	S147-22	S202-22
S35-22 Part I	S91-22	S148-22	S203-22
S36-22	S92-22	S149-22	S204-22
S37-22	S94-22	S150-22	S205-22
S38-22	S95-22	S151-22	S206-22
S39-22	S96-22	S152-22	S207-22
S40-22	S97-22	S153-22	S208-22
S41-22	S98-22	S154-22 Part I	S209-22
S42-22	S99-22	S155-22	S210-22
S43-22	S100-22	S157-22	S211-22
S44-22	S101-22	S158-22	S212-22
S45-22	S102-22	S159-22	S213-22
S46-22	S103-22	S160-22	S214-22
S47-22	S105-22	S161-22	S215-22
S48-22 Part I	S106-22	S162-22	S216-22
S49-22 Part I	S107-22	S163-22	S217-22
S50-22	S108-22	S164-22	S218-22
S51-22	S109-22	S165-22	S219-22
S52-22	S110-22	S166-22	S220-22
S53-22	S111-22	S167-22	S222-22
S55-22	S112-22	S168-22	S223-22
S56-22	S113-22	S169-22	S224-22
S57-22	S114-22	S170-22	S225-22
S58-22 Part I	S115-22	S171-22	S227-22
S59-22 Part I	S116-22	S172-22	S228-22
S60-22	S117-22	S173-22	S229-22
S62-22	S118-22	S174-22	S230-22
S63-22	S119-22 Part I	S175-22	S231-22
S64-22	S121-22	S176-22	S232-22
S65-22	S122-22	S177-22	S233-22
S66-22	S123-22	S178-22	S234-22
S67-22	S124-22	S179-22	S235-22
S68-22	S125-22 Part I	S180-22	S236-22
S69-22	S126-22	S181-22	S239-22
S70-22	S127-22	S182-22	S240-22 Part I
S71-22	S128-22	S183-22	S241-22 Part I
S72-22	S129-22	S184-22	S242-22
S73-22	S130-22	S185-22	S243-22 Part I
S74-22	S131-22	S186-22	S244-22
S75-22	S132-22	S187-22	

See highlighted changes to the hearing order

TENTATIVE ORDER OF DISCUSSION 2022 PROPOSED CHANGES TO THE INTERNATIONAL EXISTING BUILDING CODE

The following is the tentative order in which the proposed changes to the code will be discussed at the public hearings. Proposed changes which impact the same subject have been grouped to permit consideration in consecutive changes.

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation does not necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair. Note that some EB code change proposals may not be included on this list, as they are being heard by another committee.

Numbers Not Used

EB49-22
EB115-22

EB1-22	EB71-22	EB107-22
EB5-22	EB72-22	EB108-22
EB7-22	EB73-22	EB109-22
EB8-22	EB74-22	EB110-22
EB11-22	EB78-22	EB111-22
EB12-22	EB79-22	EB116-22
EB20-22	EB80-22	
EB21-22	EB81-22	
EB22-22	EB82-22	
EB23-22	EB83-22	
EB24-22	EB84-22	
EB25-22	EB85-22	
EB26-22	EB86-22	
EB27-22	EB87-22	
EB28-22	EB88-22	
EB29-22	EB89-22	
EB30-22	EB90-22	
EB31-22	EB91-22	
EB32-22	EB92-22	
EB33-22	EB93-22	
EB34-22	EB94-22	
EB37-22	EB95-22	
EB35-22	EB96-22	
EB36-22	EB97-22	
EB37-22	EB98-22	
EB43-22	EB99-22	
EB44-22	EB100-22	
EB45-22	EB101-22	
EB46-22	EB102-22	
EB48-22	EB103-22 Part I	
EB56-22	EB106-22	

See highlighted changes to the hearing order

TENTATIVE ORDER OF DISCUSSION 2022 PROPOSED CHANGES TO THE INTERNATIONAL RESIDENTIAL CODE –BUILDING

The following is the tentative order in which the proposed changes to the code will be discussed at the public hearings. Proposed changes which impact the same subject have been grouped to permit consideration in consecutive changes.

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation does not necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair. Note that some RB code change proposals may not be included on this list, as they are being heard by another committee.

Numbers Not Used

RB21-22
RB33-22
RB50-22
RB119-22
RB128-22
RB211-22
RB301-22
RB303-22

ADM3-22 Part II	RB15-22	RB34-22	RB61-22
ADM4-22 Part II	RB16-22	RB35-22	RB62-22
RB1-22	ADM41-22 Part II	RB36-22	RB63-22
RB2-22 Part I	ADM43-22 Part II	S119-22 Part II	RB64-22
RB3-22	RB17-22	RB37-22	RB65-22
RB4-22	S58-22 Part II	RB38-22	RB66-22
RB5-22	ADM45-22 Part II	RB39-22	RB67-22
ADM7-22 Part II	RB18-22	RB40-22	RB68-22
ADM53-22 Part II	RB126-22	RB41-22	RB69-22
RB6-22	ADM48-22 Part II	RB42-22	RB70-22
RB7-22	RB19-22	RB43-22	RB71-22
RB8-22	RB20-22	RB44-22	RB72-22
RB9-22	RB22-22	RB45-22	RB73-22
RB10-22	RB23-22	RB46-22	RB74-22
ADM13-22 Part II	G1-22 Part II	RB47-22	RB75-22
ADM17-22 Part II	G5-22 Part II	RB48-22	RB76-22
RB11-22	RB24-22	RB49-22	RB77-22
ADM15-22 Part II	RB25-22	RB51-22	RB78-22
ADM24-22 Part II	ADM1-22 Part II	RB52-22	RB79-22
ADM 34-22 Part II	RB26-22	RB53-22	RB80-22
RB12-22	RB27-22	RB54-22	RB81-22
ADM16-22 Part II	RB28-22	RB55-22	RB82-22
RB13-22	RB29-22	RB56-22	RB83-22
ADM36-22 Part II	G4-22 Part II	RB57-22	RB84-22
ADM38-22 Part II	RB30-22	RB58-22	RB85-22
ADM37-22 Part II	RB31-22	RB59-22	RB86-22
RB14-22	RB32-22	RB60-22	RB87-22

RB88-22	RB144-22	RB199-22	RB253-22
RB89-22	RB145-22	RB200-22	RB254-22
RB90-22	RB146-22	RB201-22	RB255-22
RB91-22	RB147-22	RB202-22	RB256-22
RB92-22	RB148-22	RB203-22	RB257-22
RB93-22	RB149-22	RB204-22	S22-22 Part II
RB94-22	RB150-22	RB205-22	S24-22 Part II
RB95-22	RB151-22	RB206-22	RB258-22
RB96-22	RB152-22	RB207-22	RB259-22
RB97-22	RB153-22	RB208-22	RB260-22
RB98-22	RB154-22	RB209-22	RB261-22
RB99-22	RB155-22	RB210-22	RB262-22
RB100-22	RB156-22	RB212-22	RB263-22
RB101-22	RB157-22	RB213-22	RB264-22
RB102-22	RB158-22	RB214-22	RB265-22
RB103-22	RB159-22	RB215-22	RB266-22
RB104-22	RB160-22	RB216-22	RB267-22
RB105-22	RB161-22	RB217-22	RB268-22
RB106-22	RB162-22	RB218-22	RB269-22
RB107-22	RB163-22	RB219-22	RB270-22
RB108-22	RB164-22	RB220-22	RB271-22
RB109-22	RB165-22	RB221-22	RB272-22
RB110-22	RB166-22	RB222-22	RB273-22
RB111-22	RB167-22	RB223-22	RB274-22
RB112-22	RB168-22	RB224-22	RB275-22
RB113-22	RB169-22	S240-22 Part II	RB276-22
RB114-22	RB170-22	RB225-22	S35-22 Part II
RB115-22	RB171-22	S241-22 Part II	RB277-22
RB116-22	S154-22 Part II	S243-22 Part II	RB278-22
RB117-22	RB172-22	RB226-22	RB279-22
RB119-22	RB173-22	RB227-22	RB280-22
RB118-22	RB174-22	RB228-22	RB281-22
RB120-22	RB175-22	RB229-22	S49-22 Part II
RB121-22	RB176-22	RB230-22	RB282-22
RB122-22	RB177-22	RB231-22	S48-22 Part II
RB123-22	RB178-22	RB232-22	S59-22 Part II
RB124-22	RB179-22	RB233-22	RB283-22
RB125-22	RB180-22	RB234-22	RB284-22
RB126-22	RB181-22	RB235-22	RB285-22
RB18-22	RB182-22	RB236-22	RB286-22
RB127-22	RB183-22	RB237-22	RB287-22
RB129-22	RB184-22	RB238-22	RB288-22
RB130-22	RB185-22	RB239-22	RB289-22
RB131-22	RB186-22	RB240-22	RB290-22
RB132-22	RB187-22	RB241-22	RB291-22
RB133-22	RB188-22	RB242-22	RB292-22
RB134-22	RB189-22	RB243-22	RB293-22
RB135-22	RB190-22	RB244-22	RB294-22
RB136-22	RB191-22	RB245-22	RB295-22
RB137-22	RB192-22	RB246-22	RB296-22
RB138-22	RB193-22	RB247-22	RB297-22
RB139-22	RB194-22	RB248-22	RB298-22
RB140-22	RB195-22	RB249-22	RB299-22
RB141-22	RB196-22	RB250-22	RB300-22
RB142-22	RB197-22	RB251-22	RB302-22
RB143-22	RB198-22	RB252-22	RB304-22

RB305-22
RB306-22
RB307-22
RB308-22
RB309-22
RB310-22
RB311-22
RB312-22
RB313-22
RB314-22
RB315-22
RB316-22
RB317-22

2022 PROPOSED CHANGES TO THE ADMINISTRATIVE PROVISIONS

ADM12-22: Code change is Editorial and has been removed from the hearing agenda

ADM12-22

NUMBER NOT USED

ADM52-22: See highlighted changes. Also see remaining standards that did not display in the Committee Action Agenda

ADM52-22

APA	APA-Engineered Association	
Standard Reference Number	Title	Referenced in Code(s)
ANSI/ A190.1-2017 2022	Product Standard for Structural Glued-laminated Timber	IRC
ANSI /APA A190.1-2017 2022	Product Standard for Structural Glued-Laminated Timber	IBC

ASTM	ASTM	
Standard Referenced Number	Title	Referenced in Code (s)
E84—18b 21a	Standard Test Method for Surface Burning Characteristics of Building Materials	IBC, IFC, IMC, IRC, IWUIC

SDI	Steel Deck Institute	
Standard Referenced Number	Title	Referenced in Code (s)
SDI-QA/QC—2017 2022	Standard for Quality Control and Quality Assurance for Installation of Steel Deck	IBC

During the final compilation of the monograph several standards, displayed below, could not be included in the referenced standard administrative update code change (ADM52-22) due to technical processing issues.

ASCE

Standard Reference Number	Title	Referenced in Code(s):
41-47 <u>23</u>	Seismic Evaluation and Retrofit of Existing Buildings	IEBC

ASTM

Standard Reference Number	Title	Referenced in Code(s):
C428M/C428-05(2011)e1 (2019)	Specification for Asbestos-Cement Nonpressure Sewer Pipe	IPSDC
C478/C478M-15a <u>20</u>	Specification for Circular Precast Reinforced Concrete Manhole Sections	IPSDC
C913-08 <u>21</u>	Specification for Precast Concrete Water and Waste Water Structures	IPSDC
C1644-06(<u>2017</u>)	Specification for Resilient Connectors Between Reinforced Concrete On-Site Wastewater Tanks and Pipes	IPSDC
E519/E519M-2015 <u>21</u>	Standard Test Method for Diagonal Tension (Shear) in Masonry Assemblages	IEBC- Appendix A
F1760-2016(<u>2020</u>)	Standard Specification for Coextruded Poly (Vinyl Chloride) (PVC) Non-Pressure Plastic Pipe Having Reprocessed-Recycled Content	IRC- Appendix AG

CGA

Standard Reference Number	Title	Referenced in Code(s):
P-20(2009) <u>2017</u>	Standard for Classification of Toxic Mixtures	IFC Appendix E
P-23(2008) <u>2015</u>	Standard for Categorizing Gas Mixtures Containing Flammable and Nonflammable Components	IFC Appendix E

FEMA

Standard Reference Number	Title	Referenced in Code(s):
FEMA P-646-12 <u>19</u>	Guidelines for Design of Structures for Vertical Evacuation from Tsunamis	IBC-Appendix M

NFPA

Standard Reference Number	Title	Referenced in Code(s):
1901-16 <u>1900-23</u>	Standard for Automotive Fire Apparatus	IFC Appendix L
1989-13 <u>19</u>	Breathing Air Quality for Fire Emergency Services Respiratory Protection	IFC Appendix L

ADM53-22: Code change proposal was not in the monograph. See ADM53-22 Parts I and II

ADM53-22 Part I

IBC: [A] 101.3; ICCPC: [A] 101.3.1; IEBC: [A] 101.3; IFC: [A] 101.3

Proponents: William Koffel, representing Fire Safe North America (wkoffel@koffel.com)

2021 International Building Code

Revise as follows:

[A] 101.3 Purpose. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, health and general welfare through structural strength, *means of egress*, stability, sanitation, light and *ventilation*, energy conservation, resiliency and for providing a reasonable level of life safety and property protection from the hazards of fire, *explosion* or *dangerous* conditions, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

2021 International Code Council Performance Code

Revise as follows:

[A] 101.3.1 Building. Part II of this code provides requirements for buildings and structures and includes provisions for structural strength, stability, sanitation, means of access and egress, light and ventilation, safety to life and protection of property from fire, resiliency and, in general, to secure life and property from other hazards affecting the built environment. This code includes provisions for the use and occupancy of buildings, structures, facilities and premises, their alteration, repair, maintenance, removal, demolition, and the installation and maintenance of amenities including, but not limited to, such services as the electrical, gas, mechanical, plumbing, energy conservation and building transportation systems.

2021 International Existing Building Code

Revise as follows:

[A] 101.3 Purpose. The intent of this code is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to provide a reasonable level of safety, health, property protection, resiliency and general welfare insofar as they are affected by the *repair, alteration, change of occupancy, addition* and relocation of *existing buildings*.

2021 International Fire Code

Revise as follows:

[A] 101.3 Purpose. The purpose of this code is to establish the minimum requirements consistent with nationally recognized good practice for providing a reasonable level of life safety, and property protection and resiliency from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

Reason: See ADM53-22 Part II

Cost Impact: See ADM53-22 Part II

ADM53-22 Part II

IRC: R101.3

Proponents: William Koffel, representing Fire Safe North America (wkoffel@koffel.com)

2021 International Residential Code

Revise as follows:

R101.3 Purpose. The purpose of this code is to establish minimum requirements to provide a reasonable level of safety, health and general welfare through affordability, structural strength, means of egress, stability, sanitation, light and ventilation, energy conservation, resiliency and safety to life and property from fire and other hazards and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

Reason: The ICC is part of an alliance, the Alliance for National & Community Resilience, that published a White Paper titled *"Building Community Resilience through Modern Model Building Codes."* While community resilience is also addressed in the White Paper, the paper does note that *"Resilience in the building environment starts with strong, regularly adopted, and properly administered building codes."* The ICC published a White Paper "Resilience Contributions of the International Building Code." The White Paper indicates that the *"scope of the IBC is clearly focused on assuring that a community's building stock supports the resilience of the community. Reducing the impacts on people and property in the face of multiple shocks and stresses allows communities to survive and ultimately thrive."*

The National Academy of Sciences defines "resilience" as *"the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events."* The average cost and frequency of billion-dollar disaster events (CPI-adjusted) in the United States has been increasing since 1980 (ncdc.noaa.gov/billion). The NIBS Report, *"Natural Hazard Mitigation Saves: 2019 Report"* represents an exhaustive benefit-cost analysis of natural hazard mitigation, from adopting up-to-date building codes and exceeding codes to addressing the retrofit of existing buildings and utility and transportation infrastructure. The work was funded by the U.S. Department of Housing and Urban Development (HUD) and earlier editions of the report were funded by the Federal Emergency Management Agency (FEMA), U.S. Economic Development Administration (EDA), International Code Council (ICC), Insurance Institute for Business and Home Safety (IBHS), American Institute of Architects (AIA), and National Fire Protection Association (NFPA). The report notes that the overall benefit-cost ratio for adopting current codes with respect to floods, hurricanes, wind, earthquake, and wildland-urban interface fires is 11:1. The proposed change is consistent with the messaging from the ICC regarding resilience.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. A change to the Purpose Statement does not impact the cost of construction. However, taking resiliency into consideration, the cost of construction to communities should be reduced and the magnitude of large loss incidents should be reduced.

2022 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE – FIRE SAFETY

The following code changes are adding the TMS 402-22 standard. Staff Analysis also added.

Code change affected:

FS3-22

Add new standard(s) as follows:

TMS

TMS 402-22 Building Code Requirements for Masonry Structures

Staff Analysis: The proposal is referencing an updated version of an existing referenced standard. Therefore the updated version is considered an new standard. A review of the standard proposed for inclusion in the code, TMS 402-22 Building Code Requirements for Masonry Structures, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 16, 2022.

2022 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE – STRUCTURAL

The following code changes are adding the ASCE 7-22 standard. Staff Analysis also added.

Code changes affected:

S62-22, S63-22, S64-22, S65-22, S83-22, S84-22, S85-22, S86-22, S87-22, S88-22, S89-22, S90-22, S92-22, S94-22, S97-22, S98-22, S100-22, S103-22, S105-22, S107-22, S108-22, S110-22, S111-22, S114-22, S115-22, S117-22, S121-22, S123-22, S124-22, S127-22, S128-22, S131-22, S133-22, S165-22, S175-22, S210-22

Add new standard(s) as follows:

ASCE/SEI

7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures

Staff Analysis: The proposal is referencing an updated version of an existing referenced standard. Therefore the updated version is considered an new standard. A review of the standard proposed for inclusion in the code, ASCE 7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 16, 2022.

The following code change is adding the TMS402-22 standard. Staff Analysis also added.

Code changes affected:

S144-22

Add new standard(s) as follows:

TMS

TMS
402-22 Building Code Requirements for Masonry Structures

Staff Analysis: The proposal is referencing an updated version of an existing referenced standard. Therefore the updated version is considered an new standard. A review of the standard proposed for inclusion in the code, TMS 402-22 Building Code Requirements for Masonry Structures, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 16, 2022.

S92-22: Code change did not display correctly in the CAH Agenda. Full code change displayed

S92-22

IBC: 1507.15, 1603.1.2, SECTION 1607, 1607.1, 1607.2, 1607.3, 1607.13, 1607.14.1, 1607.12, 1607.14, 1607.14.2, 1607.14.2.1, 1607.14.2.2, 1607.14.3, 1607.14.4, 1607.14.4.1, 1607.14.4.2, 1607.14.4.3, 1607.14.4.4, 1607.14.4.5, 1808.3, 3111.1, 3111.1.1, 3111.1.2

Proponents:

Jennifer Goupil, representing Structural Engineering Institute of ASCE (jgoupil@asce.org)

2021 International Building Code

Revise as follows:

1507.15 Vegetative roofs and landscaped roofs. *Vegetative roofs* and landscaped roofs shall comply with the requirements of this chapter, Section ~~1607.14.2.2~~1607.13.2 and the *International Fire Code*.

1603.1.2 Roof live load. The *roof live load* used in the design shall be indicated for roof areas (~~Section 1607.14~~).

SECTION 1607 LIVE LOADS

1607.1 General. *Live loads* are those loads defined in Chapter 2 of this code.

1607.2 Loads not specified. For occupancies or uses not designated in Section 1607, the *live load* shall be determined in accordance with a method *approved* by the *building official*.

Revise as follows:

1607.3 Uniform live loads. The *live loads* used in the design of buildings and *other structures* shall be the maximum loads expected by the intended use or occupancy but shall not be less than the minimum uniformly distributed *live loads* given in Table 1607.1. *Live loads acting on a sloping surface shall be assumed to act vertically on the horizontal projection of that surface.*

~~1607.13~~ **1607.3.1 Distribution of floor loads.** *Partial loading of floors.* Where uniform floor *live loads* are involved in the design of structural members arranged so as to create continuity, the minimum applied loads shall be the full *dead loads* on all spans in combination with the floor *live loads* on spans selected to produce the greatest *load effect* at each location under consideration. ~~Floor Uniform floor live loads applied to selected spans~~ are permitted to be reduced in accordance with Section 1607.12.

~~1607.14.1~~ **1607.3.2 Distribution of roof loads.** *Partial loading of roofs.* Where uniform roof *live loads* are reduced to less than 20 psf (0.96 kN/m²) in accordance with Section ~~1607.14.2.1~~ 1607.13.1 and are applied to the design of structural members arranged so as to create continuity, the reduced roof *live load* shall be applied to adjacent spans or to alternate spans, whichever produces the most unfavorable *load effect*. See Section 1607.14.2 for reductions in minimum roof *live loads* and Section 7.5 of ASCE 7 for partial snow loading.

1607.12 Reduction in uniform live loads. Except for uniform *live loads* at roofs, all other minimum uniformly distributed *live loads*, *L_o*, in Table 1607.1 are permitted to be reduced in accordance with Section 1607.12.1 or 1607.12.2. Uniform *live loads* at roofs are permitted to be reduced in accordance with Section ~~1607.14.2~~ 1607.13.

~~1607.14 Roof loads.~~ The structural supports of roofs and *marquees* shall be designed to resist wind and, where applicable, snow and earthquake loads, in addition to the *dead load* of construction and the

appropriate *live loads* as prescribed in this section, or as set forth in Table 1607.1. The *live loads* acting on a sloping surface shall be assumed to act vertically on the horizontal projection of that surface.

1607.14.2-1607.13 Reduction in uniform roof live loads. The minimum uniformly distributed *live loads* of roofs and *marquees*, L_o , in Table 1607.1 are permitted to be reduced in accordance with Section 1607.14.2.1-1607.13.1.

1607.14.2.1-1607.13.1 Ordinary roofs, awnings and canopies. Ordinary flat, pitched and curved roofs, and *awnings* and canopies other than of fabric construction supported by a skeleton structure, are permitted to be designed for a reduced uniformly distributed *roof live load*, L_r , as specified in the following equations or other controlling combinations of *loads* as specified in Section 1605, whichever produces the greater *load effect*.

In structures such as *greenhouses*, where special scaffolding is used as a work surface for workers and materials during maintenance and repair operations, a lower roof *load* than specified in the following equations shall not be used unless *approved* by the *building official*. Such structures shall be designed for a minimum roof live *load* of 12 psf (0.58 kN/m²).

$$L_r = L_o R_1 R_2$$

(Equation 16-10)

where: $12 \leq L_r \leq 20$
For SI: $L_r = L_o R_1 R_2$

where: $0.58 \leq L_r \leq 0.96$

L_o = Unreduced *roof live load* per square foot (m²) of horizontal projection supported by the member (see Table 1607.1).

L_r = Reduced *roof live load* per square foot (m²) of horizontal projection supported by the member.

The reduction factors R_1 and R_2 shall be determined as follows:

$$R_1 = 1 \text{ for } A_t \leq 200 \text{ square feet (18.58 m}^2\text{)}$$

(Equation 16-11)

$$R_1 = 1.2 - 0.001A_t \text{ for } 200 \text{ square feet} \\ < A_t < 600 \text{ square feet}$$

(Equation 16-12)

$$R_1 = 0.6 \text{ for } A_t \geq 600 \text{ square feet (55.74 m}^2\text{)}$$

(Equation 16-13)

where:

A_t = Tributary area (span length multiplied by effective width) in square feet (m²) supported by the member, and

$$R_2 = 1 \text{ for } F \leq 4$$

(Equation 16-14)

$$R_2 = 1.2 - 0.05 F \text{ for } 4 < F < 12$$

(Equation 16-15)

$$R_2 = 0.6 \text{ for } F \geq 12$$

(Equation 16-16)

where:

F = For a sloped roof, the number of inches of rise per foot (for SI: $F = 0.12 \times \text{slope}$, with slope expressed as a percentage), or for an arch or dome, the rise-to-span ratio multiplied by 32.

1607.14.2.2-1607.13.2 Occupiable roofs. Areas of roofs that are occupiable, such as *vegetative roofs*, landscaped roofs or for assembly or other similar purposes, and *marquees* are permitted to have their uniformly distributed *live loads* reduced in accordance with Section 1607.12.

1607.14.3-1607.14 Awnings and canopies. *Awnings* and canopies shall be designed for uniform *live loads* as required in Table 1607.1 as well as for snow *loads* and wind *loads* as specified in Sections 1608 and 1609.

1607.14.4-1607.15 Photovoltaic panel systems. Roof structures that provide support for *photovoltaic panel systems* shall be designed in accordance with Sections ~~1607.14.4.1-1607.15.1~~ through ~~1607.14.4.5-1607.15.5~~, as applicable.

1607.14.4.1-1607.15.1 Roof live load. Roof structures that support *photovoltaic panel systems* shall be designed to resist each of the following conditions:

1. Applicable uniform and concentrated roof *loads* with the *photovoltaic panel system dead loads*.

Exception: *Roof live loads* need not be applied to the area covered by *photovoltaic panels* where the clear space between the panels and the roof surface is 24 inches (610 mm) or less.

2. Applicable uniform and concentrated roof *loads* without the *photovoltaic panel system* present.

1607.14.4.2-1607.15.2 Photovoltaic panels or modules. The structure of a roof that supports solar *photovoltaic panels* or modules shall be designed to accommodate the full solar *photovoltaic panels* or modules and ballast *dead load*, including concentrated *loads* from support frames in combination with the *loads* from Section ~~1607.14.4.1-1607.15.1~~ and other applicable *loads*. Where applicable, snow drift *loads* created by the *photovoltaic panels* or modules shall be included.

1607.14.4.3-1607.15.3 Photovoltaic panels installed on open grid roof structures. Structures with open grid framing and without a *roof deck* or sheathing supporting *photovoltaic panel systems* shall be designed to support the uniform and concentrated *roof live loads* specified in Section ~~1607.14.4.1-1607.15.1~~, except that the uniform *roof live load* shall be permitted to be reduced to 12 psf (0.57 kN/m²).

1607.14.4.4-1607.15.4 Ground-mounted photovoltaic (PV) panel systems or modules installed as an independent structure. Ground-mounted photovoltaic (PV) panel systems that are independent structures and do not have accessible/occupied space underneath are not required to accommodate a roof photovoltaic *live load*. Other *loads* and combinations in accordance with Section 1605 shall be accommodated.

1607.14.4.5-1607.15.5 Ballasted photovoltaic panel systems. Roof structures that provide support for ballasted *photovoltaic panel systems* shall be designed, or analyzed, in accordance with Section 1604.4; checked in accordance with Section 1604.3.6 for deflections; and checked in accordance with Section 1611 for ponding.

1808.3 Design loads. Foundations shall be designed for the most unfavorable effects due to the combinations of *loads* specified in Section 2.3 or 2.4 of ASCE 7 or the alternative allowable stress design load combinations of Section 1605.2. The *dead load* is permitted to include the weight of foundations and overlying fill. Reduced *live loads*, as specified in Sections 1607.12 and ~~1607.14-1607.13~~, shall be permitted to be used in the design of foundations.

3111.1 General. Solar energy systems shall comply with the requirements of this section.

3111.1.1 Wind resistance. Rooftop-mounted photovoltaic (PV) panel systems and solar thermal collectors shall be designed in accordance with Section 1609.

Revise as follows:

3111.1.2 Roof live load. Roof structures that provide support for solar energy systems shall be designed in accordance with Section ~~1607.14.4~~ 1607.15.

Reason: This proposal is a coordination proposal to bring the 2024 IBC up to date with the provisions of the 2022 edition of ASCE/SEI 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-22). ASCE 7 will be updated to the 2022 edition from the 2016 edition as an Administrative update in the 2024 I-Codes.

These changes are proposed to improve the coordination between the IBC and ASCE 7 by aligning the organization of 1) partial loading requirements and 2) roof live load provisions.

This proposal primarily relocates requirements in Section 1607 Live Loads so that they are provided in a more logical order and so that they align with ASCE 7. General requirements for the distribution of uniform floor live loads and uniform roof live loads, also known as partial loading or pattern loading, are moved forward in Section 1607 so that they appear immediately after the introduction of uniform live loads in Section 1607.3. These requirements are better suited to appear in the beginning of the Live Load section as they are general requirements. The placement as subsections under Section 1607.3 Uniform live loads is logical as they apply to uniform loads. This location also aligns with ASCE 7.

Minor changes to the text are also made in some locations for clarity and to coordinate with the ASCE 7 text.

In Section 1607.3, the sentence added at the end is moved from existing Section 1607.14 Roof Loads as that section is deleted in the proposal (see below for why). This sentence does not just apply to roofs, it also applies to sloped ramps, and therefore it is better suited in Section 1607.3 whose scope is not limited to roofs.

Section 1607.13 is relocated to 1607.3.1 as a sub-section to the Uniform Live Load section. It is also renamed to better describe the content. This section deals with selectively applying the uniform live load, or pattern loading, and therefore is more appropriately located directly after the uniform live load section.

Section 1607.14 Roof Loads is deleted except for one sentence that was moved to Section 1607.3 as described above. There is no need for a stand alone Roof Loads section as roof live loads are contained in Table 1607.1 just like all the other live loads. In addition, most of the text in 1607.14 references other loads, wind, snow, earthquake, and dead, which has no place in the Live Load section. These loads have their own sections in the IBC, and there is also a section (Load Combinations) that governs how to combine the different loads.

Section 1607.14.1 is also relocated as a sub-section to the Uniform Live Load section, as new Section 1607.3.2. This section deals with roof pattern live loading and is more appropriately located after the uniform live load section.

The remainder of the changes are section number changes that are the result of moving the two sections on load distribution, 1607.3 and 1607.14.1, and deleting the Roof Load section, 1607.14. The uniform roof live load reduction provision get their own section, Section 1607.13, awnings and canopies get Section 1607.14, and the photovoltaic panel systems get Section 1607.14.

Due to an issue with cdpAccess not formatting existing Section 1607.14.2.1 correctly, a Word file is attached to this proposal that correctly shows the new section number for this section and shows it in its new location.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal contains ASCE 7 alignment and coordination changes.

S186-22: Code change is Staff Editorial

S186-22

Staff Editorial

2022 PROPOSED CHANGES TO THE INTERNATIONAL EXISTING BUILDING CODE

EB58-22: Added hearing committee banner

Proponents: Gwenyth Searer, representing myself (gsearer@wje.com)

THIS CODE CHANGE WILL BE HEARD BY THE IBC-STRUCTURAL CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2022 PROPOSED CHANGES TO THE INTERNATIONAL RESIDENTIAL CODE - BUILDING

The following code changes are adding the ASCE 7-22 standard. Staff Analysis also added.

Code changes affected:

RB34-22, RB35-22, RB38-22

Add new standard(s) as follows:

ASCE/SEI

7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures

Staff Analysis: The proposal is referencing an updated version of an existing referenced standard. Therefore the updated version is considered an new standard. A review of the standard proposed for inclusion in the code, ASCE 7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 16, 2022.

RB9-22: Staff analysis not applicable.

RB9-22

Proponents: Dennis Richardson, representing self (dennisrichardsonpe@yahoo.com)

Staff Analysis: A review of the standard proposed for inclusion in the code, ICC IWUIC-2024 International Wildland-Urban Interface Code, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 16, 2022.

RB21-22 Part I: Code change number not used.

Proponents: Glenn Mathewson, representing North American Deck and Railing Association (glenn@glennmathewson.com)

Code change is located in the CCC agenda. See CCCIRC21-22 Part I

RB21-22 Part II: Code change number not used.

Proponents: Glenn Mathewson, representing North American Deck and Railing Association (glenn@glennmathewson.com)

Code change is located in the CCC agenda. See CCCIRC21-22 Part II

RB22-22: Replace the proposal with the following:

RB22-22

Proponents: Timothy Pate, representing Colorado Chapter Code Change Committee
(tpate@broomfield.org)

2021 International Residential Code

Revise as follows:

[RB] EXTERIOR WALL. An above-grade wall that defines the exterior boundaries of a building. Includes between-floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, gable end roof trusses, walls enclosing a mansard roof and basement walls with an average below-grade wall area that is less than 50 percent of the total opaque and nonopaque area of that enclosing side.

For the definition applicable in Chapter 11, see Section N1101.6.

Reason: This proposal is to add gable end wall trusses to this definition which will clarify that these will be considered as part of the exterior walls. This is important since when determining fire ratings due to FSD the rating would need to include these gable roof trusses. The proposal is also to delete the RE in front of Exterior Wall and replace that with RB - This would need to be done by ICC Staff since CDP Access does not allow this to be done.

Cost Impact: The code change proposal will increase the cost of construction
This change will only increase the cost of construction in jurisdictions that have not interpreted the code to include these gable end wall trusses to be fire rated when the FSD requires the rating

Staff note: This definition was existing the in IRC. There is a posted errata restoring this definition in the 2018 and 2021 editions.

RB33-22: Code change number not used.

Proponents: Steven Orlowski, Sundowne Building Code Consultants, LLC, representing Self
(sorlowski@sbcc.codes)

Code change is located in the CCC agenda. See CCCIRC1-22

RB35-22: Table R301.2.2(1) is cut off in the CAH Agenda. Tables shown below.

RB35-22

Proponents: T. Eric Stafford, representing Insurance Institute for Business and Home Safety (testafford@charter.net); Jennifer Goupil, representing Structural Engineering Institute of ASCE (jgoupil@asce.org); Don Scott, representing ASCE 7 Wind Load Subcommittee (dscott@pcs-structural.com)

Delete and Substitute:

~~TABLE R301.2.1(1)
COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (ASD)
(psf) a, b, c, d, e, f, g~~

TABLE R301.2.1(1)
COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (ASD)
(psf) a, b, c, d, e, f, g

	Zone	Effective Wind Area	90		95		100		105		110		115		120		130		140		150		160		170		180	
			PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NE	PO	NEG
Gable Roof < 7	1,1'	10	3.6	-13.9	4.0	-15.5	4.4	-17.2	4.8	-19.0	5.3	-20.8	5.8	-22.7	6.3	-24.8	7.4	-29.1	8.6	-33.7	9.9	-38.7	11.2	-44.0	12.7	-49.7	14.2	-55.7
	1,1'	20	3.3	-12.4	3.7	-13.8	4.1	-15.3	4.5	-16.8	5.0	-18.5	5.4	-20.2	5.9	-22.0	7.0	-25.8	8.1	-29.9	9.3	-34.4	10.5	-39.1	11.9	-44.1	13.3	-49.5
	1,1'	50	3.0	-10.3	3.4	-11.5	3.8	-12.7	4.1	-14.0	4.5	-15.4	5.0	-16.8	5.4	-18.3	6.3	-21.5	7.4	-24.9	8.4	-28.6	9.6	-32.5	10.8	-36.7	12.2	-41.2
	1,1'	100	2.8	-8.7	3.1	-9.7	3.5	-10.8	3.8	-11.9	4.2	-13.1	4.6	-14.3	5.0	-15.5	5.9	-18.2	6.8	-21.2	7.8	-24.3	8.9	-27.6	10.0	-31.2	11.3	-35.0
	2	10	3.6	-18.4	4.0	-20.5	4.4	-22.7	4.8	-25.0	5.3	-27.4	5.8	-30.0	6.3	-32.7	7.4	-38.3	8.6	-44.5	9.9	-51.0	11.2	-58.1	12.7	-65.6	14.2	-73.5
	2	20	3.3	-16.4	3.7	-18.2	4.1	-20.2	4.5	-22.3	5.0	-24.5	5.4	-26.7	5.9	-29.1	7.0	-34.2	8.1	-39.6	9.3	-45.5	10.5	-51.8	11.9	-58.4	13.3	-65.5
	2	50	3.0	-13.7	3.4	-15.3	3.8	-16.9	4.1	-18.7	4.5	-20.5	5.0	-22.4	5.4	-24.4	6.3	-28.6	7.4	-33.2	8.4	-38.1	9.6	-43.3	10.8	-48.9	12.2	-54.8
	2	100	2.8	-11.7	3.1	-13.0	3.5	-14.5	3.8	-15.9	4.2	-17.5	4.6	-19.1	5.0	-20.8	5.9	-24.4	6.8	-28.3	7.8	-32.5	8.9	-37.0	10.0	-41.8	11.3	-46.8
	3	10	3.6	-25.0	4.0	-27.9	4.4	-30.9	4.8	-34.1	5.3	-37.4	5.8	-40.9	6.3	-44.5	7.4	-52.2	8.6	-60.6	9.9	-69.6	11.2	-79.1	12.7	-89.4	14.2	-100.2
	3	20	3.3	-21.0	3.7	-23.4	4.1	-26.0	4.5	-28.6	5.0	-31.4	5.4	-34.4	5.9	-37.4	7.0	-43.9	8.1	-50.9	9.3	-58.4	10.5	-66.5	11.9	-75.1	13.3	-84.2
	3	50	3.0	-15.7	3.4	-17.5	3.8	-19.4	4.1	-21.4	4.5	-23.5	5.0	-25.6	5.4	-27.9	6.3	-32.8	7.4	-38.0	8.4	-43.6	9.6	-49.6	10.8	-56.0	12.2	-62.8
	3	100	2.8	-11.7	3.1	-13.0	3.5	-14.5	3.8	-15.9	4.2	-17.5	4.6	-19.1	5.0	-20.8	5.9	-24.4	6.8	-28.3	7.8	-32.5	8.9	-37.0	10.0	-41.8	11.3	-46.8
Gable Roof > 7 to 20 degrees	1	10	5.8	-16.2	6.4	-18.0	7.1	-19.9	7.9	-22.0	8.6	-24.1	9.4	-26.4	10.3	-28.7	12.1	-33.7	14.0	-39.1	16.1	-44.9	18.3	-51.0	20.6	-57.6	23.1	-64.6
	1	20	5.3	-13.9	5.9	-15.5	6.5	-17.1	7.2	-18.9	7.9	-20.7	8.6	-22.7	9.4	-24.7	11.0	-29.0	12.7	-33.6	14.6	-38.6	16.6	-43.9	18.8	-49.5	21.1	-55.5
	1	50	4.6	-10.9	5.1	-12.1	5.7	-13.4	6.2	-14.8	6.8	-16.3	7.5	-17.8	8.2	-19.4	9.6	-22.7	11.1	-26.4	12.7	-30.3	14.5	-34.4	16.4	-38.9	18.3	-43.6
	1	100	4.1	-8.6	4.5	-9.6	5.0	-10.7	5.5	-11.7	6.1	-12.9	6.6	-14.1	7.2	-15.3	8.5	-18.0	9.8	-20.9	11.3	-24.0	12.9	-27.3	14.5	-30.8	16.3	-34.5
	2	10	5.8	-21.3	6.4	-23.8	7.1	-26.3	7.9	-29.0	8.6	-31.9	9.4	-34.8	10.3	-37.9	12.1	-44.5	14.0	-51.6	16.1	-59.3	18.3	-67.4	20.6	-76.1	23.1	-85.4
	2	20	5.3	-18.4	5.9	-20.5	6.5	-22.7	7.2	-25.1	7.9	-27.5	8.6	-30.1	9.4	-32.8	11.0	-38.4	12.7	-44.6	14.6	-51.2	16.6	-58.2	18.8	-65.7	21.1	-73.7
	2	50	4.6	-14.6	5.1	-16.2	5.7	-18.0	6.2	-19.8	6.8	-21.8	7.5	-23.8	8.2	-25.9	9.6	-30.4	11.1	-35.3	12.7	-40.5	14.5	-46.1	16.4	-52.0	18.3	-58.3
	2	100	4.1	-11.7	4.5	-13.0	5.0	-14.4	5.5	-15.9	6.1	-17.4	6.6	-19.0	7.2	-20.7	8.5	-24.3	9.8	-28.2	11.3	-32.4	12.9	-36.8	14.5	-41.6	16.3	-46.6
	3	10	5.8	-28.0	6.4	-31.2	7.1	-34.6	7.9	-38.1	8.6	-41.8	9.4	-45.7	10.3	-49.8	12.1	-58.4	14.0	-67.8	16.1	-77.8	18.3	-88.5	20.6	-99.9	23.1	-112.0
	3	20	5.3	-24.0	5.9	-26.7	6.5	-29.6	7.2	-32.7	7.9	-35.8	8.6	-39.2	9.4	-42.7	11.0	-50.1	12.7	-58.1	14.6	-66.6	16.6	-75.8	18.8	-85.6	21.1	-96.0
	3	50	4.6	-18.7	5.1	-20.8	5.7	-23.1	6.2	-25.4	6.8	-27.9	7.5	-30.5	8.2	-33.2	9.6	-39.0	11.1	-45.2	12.7	-51.9	14.5	-59.1	16.4	-66.7	18.3	-74.7
	3	100	4.1	-14.7	4.5	-16.3	5.0	-18.1	5.5	-20.0	6.1	-21.9	6.6	-24.0	7.2	-26.1	8.5	-30.6	9.8	-35.5	11.3	-40.8	12.9	-46.4	14.5	-52.3	16.3	-58.7
Gable Roof > 20 to 27 degrees	1	10	5.8	-12.4	6.4	-13.9	7.1	-15.4	7.9	-16.9	8.6	-18.6	9.4	-20.3	10.3	-22.1	12.1	-26.0	14.0	-30.1	16.1	-34.6	18.3	-39.3	20.6	-44.4	23.1	-49.8
	1	20	5.3	-11.2	5.9	-12.5	6.5	-13.9	7.2	-15.3	7.9	-16.8	8.6	-18.4	9.4	-20.0	11.0	-23.5	12.7	-27.2	14.6	-31.2	16.6	-35.5	18.8	-40.1	21.1	-45.0
	1	50	4.6	-9.7	5.1	-10.8	5.7	-11.9	6.2	-13.1	6.8	-14.4	7.5	-15.8	8.2	-17.2	9.6	-20.2	11.1	-23.4	12.7	-26.8	14.5	-30.5	16.4	-34.5	18.3	-38.6
	1	100	4.1	-8.5	4.5	-9.4	5.0	-10.4	5.5	-11.5	6.1	-12.6	6.6	-13.8	7.2	-15.0	8.5	-17.7	9.8	-20.5	11.3	-23.5	12.9	-26.7	14.5	-30.2	16.3	-33.8
	2	10	5.8	-19.9	6.4	-22.1	7.1	-24.5	7.9	-27.0	8.6	-29.7	9.4	-32.4	10.3	-35.3	12.1	-41.4	14.0	-48.0	16.1	-55.2	18.3	-62.8	20.6	-70.8	23.1	-79.4
	2	20	5.3	-17.0	5.9	-18.9	6.5	-20.9	7.2	-23.1	7.9	-25.3	8.6	-27.7	9.4	-30.1	11.0	-35.4	12.7	-41.0	14.6	-47.1	16.6	-53.6	18.8	-60.5	21.1	-67.8
	2	50	4.6	-13.1	5.1	-14.6	5.7	-16.2	6.2	-17.9	6.8	-19.6	7.5	-21.4	8.2	-23.3	9.6	-27.4	11.1	-31.8	12.7	-36.5	14.5	-41.5	16.4	-46.8	18.3	-52.5
	2	100	4.1	-10.2	4.5	-11.4	5.0	-12.6	5.5	-13.9	6.1	-15.3	6.6	-16.7	7.2	-18.2	8.5	-21.3	9.8	-24.7	11.3	-28.4	12.9	-32.3	14.5	-36.5	16.3	-40.9

	3	10	5.8	-23.6	6.4	-26.3	7.1	-29.1	7.9	-32.1	8.6	-35.2	9.4	-38.5	10.3	-41.9	12.1	-49.2	14.0	-57.0	16.1	-65.4	18.3	-74.5	20.6	-84.1	23.1	-94.2
	3	20	5.3	-20.0	5.9	-22.3	6.5	-24.7	7.2	-27.2	7.9	-29.9	8.6	-32.6	9.4	-35.5	11.0	-41.7	12.7	-48.4	14.6	-55.5	16.6	-63.2	18.8	-71.3	21.1	-80.0
	3	50	4.6	-15.3	5.1	-17.0	5.7	-18.9	6.2	-20.8	6.8	-22.8	7.5	-24.9	8.2	-27.2	9.6	-31.9	11.1	-37.0	12.7	-42.4	14.5	-48.3	16.4	-54.5	18.3	-61.1
	3	100	4.1	-11.7	4.5	-13.0	5.0	-14.5	5.5	-15.9	6.1	-17.5	6.6	-19.1	7.2	-20.8	8.5	-24.4	9.8	-28.3	11.3	-32.5	12.9	-37.0	14.5	-41.8	16.3	-46.8
Gable Roof > 27 to 45 degrees	1	10	8.0	-14.7	8.9	-16.3	9.9	-18.1	10.9	-20.0	12.0	-21.9	13.1	-24.0	14.2	-26.1	16.7	-30.6	19.4	-35.5	22.2	-40.8	25.3	-46.4	28.5	-52.3	32.0	-58.7
	1	20	7.3	-12.4	8.2	-13.9	9.0	-15.4	10.0	-16.9	10.9	-18.6	11.9	-20.3	13.0	-22.1	15.3	-26.0	17.7	-30.1	20.3	-34.6	23.1	-39.3	26.1	-44.4	29.3	-49.8
	1	50	6.4	-9.5	7.1	-10.6	7.9	-11.7	8.7	-12.9	9.6	-14.2	10.5	-15.5	11.4	-16.9	13.4	-19.8	15.5	-23.0	17.8	-26.4	20.3	-30.0	22.9	-33.9	25.6	-38.0
	1	100	5.7	-7.3	6.4	-8.1	7.1	-9.0	7.8	-9.9	8.6	-10.8	9.3	-11.9	10.2	-12.9	11.9	-15.1	13.9	-17.6	15.9	-20.2	18.1	-22.9	20.4	-25.9	22.9	-29.0
	2	10	8.0	-16.2	8.9	-18.0	9.9	-19.9	10.9	-22.0	12.0	-24.1	13.1	-26.4	14.2	-28.7	16.7	-33.7	19.4	-39.1	22.2	-44.9	25.3	-51.0	28.5	-57.6	32.0	-64.6
	2	20	7.3	-14.4	8.2	-16.1	9.0	-17.8	10.0	-19.7	10.9	-21.6	11.9	-23.6	13.0	-25.7	15.3	-30.1	17.7	-34.9	20.3	-40.1	23.1	-45.6	26.1	-51.5	29.3	-57.7
	2	50	6.4	-12.2	7.1	-13.6	7.9	-15.0	8.7	-16.6	9.6	-18.2	10.5	-19.9	11.4	-21.6	13.4	-25.4	15.5	-29.5	17.8	-33.8	20.3	-38.5	22.9	-43.4	25.6	-48.7
	2	100	5.7	-10.5	6.4	-11.7	7.1	-12.9	7.8	-14.2	8.6	-15.6	9.3	-17.1	10.2	-18.6	11.9	-21.8	13.9	-25.3	15.9	-29.0	18.1	-33.0	20.4	-37.3	22.9	-41.8
	3	10	8.0	-19.9	8.9	-22.1	9.9	-24.5	10.9	-27.0	12.0	-29.7	13.1	-32.4	14.2	-35.3	16.7	-41.4	19.4	-48.0	22.2	-55.2	25.3	-62.8	28.5	-70.8	32.0	-79.4
	3	20	7.3	-17.3	8.2	-19.3	9.0	-21.3	10.0	-23.5	10.9	-25.8	11.9	-28.2	13.0	-30.7	15.3	-36.1	0.0	-41.8	20.3	-48.0	23.1	-54.6	26.1	-61.7	29.3	-69.1
	3	50	6.4	-13.9	7.1	-15.5	7.9	-17.1	8.7	-18.9	9.6	-20.7	10.5	-22.7	11.4	-24.7	13.4	-29.0	15.5	-33.6	17.8	-38.6	20.3	-43.9	22.9	-49.5	25.6	-55.5
	3	100	5.7	-11.3	6.4	-12.6	7.1	-14.0	7.8	-15.4	8.6	-16.9	9.3	-18.5	10.2	-20.1	11.9	-23.6	13.9	-27.4	15.9	-31.4	18.1	-35.8	20.4	-40.4	22.9	-45.3
Hip Roof > 7 to 20 degrees	1	10	6.5	-14.7	7.3	-16.3	8.0	-18.1	8.9	-20.0	9.7	-21.9	10.6	-24.0	11.6	-26.1	13.6	-30.6	15.8	-35.5	18.1	-40.8	20.6	-46.4	23.3	-52.3	26.1	-58.7
	1	20	5.6	-13.0	6.3	-14.4	6.9	-16.0	7.7	-17.6	8.4	-19.4	9.2	-21.2	10.0	-23.0	11.7	-27.0	13.6	-31.3	15.6	-36.0	17.8	-40.9	20.1	-46.2	22.5	-51.8
	1	50	4.4	-10.7	5.0	-11.9	5.5	-13.2	6.1	-14.5	6.6	-16.0	7.3	-17.5	7.9	-19.0	9.3	-22.3	10.8	-25.9	12.4	-29.7	14.1	-33.8	15.9	-38.1	17.8	-42.8
	1	100	3.6	-9.0	4.0	-10.0	4.4	-11.1	4.8	-12.2	5.3	-13.4	5.8	-14.7	6.3	-16.0	7.4	-18.7	8.6	-21.7	9.9	-24.9	11.2	-28.4	12.7	-32.0	14.2	-35.9
	2	10	6.5	-19.1	7.3	-21.3	8.0	-23.6	8.9	-26.0	9.7	-28.6	10.6	-31.2	11.6	-34.0	13.6	-39.9	15.8	-46.3	18.1	-53.1	20.6	-60.4	23.3	-68.2	26.1	-76.5
	2	20	5.6	-17.2	6.3	-19.2	6.9	-21.3	7.7	-23.5	8.4	-25.7	9.2	-28.1	10.0	-30.6	11.7	-35.9	13.6	-41.7	15.6	-47.9	17.8	-54.5	20.1	-61.5	22.5	-68.9
	2	50	4.4	-14.7	5.0	-16.4	5.5	-18.2	6.1	-20.1	6.6	-22.0	7.3	-24.1	7.9	-26.2	9.3	-30.7	10.8	-35.7	12.4	-40.9	14.1	-46.6	15.9	-52.6	17.8	-58.9
	2	100	3.6	-12.9	4.0	-14.3	4.4	-15.9	4.8	-17.5	5.3	-19.2	5.8	-21.0	6.3	-22.8	7.4	-26.8	8.6	-31.1	9.9	-35.7	11.2	-40.6	12.7	-45.9	14.2	-51.4
	3	10	6.5	-20.6	7.3	-22.9	8.0	-25.4	8.9	-28.0	9.7	-30.8	10.6	-33.6	11.6	-36.6	13.6	-43.0	15.8	-49.8	18.1	-57.2	20.6	-65.1	23.3	-73.5	26.1	-82.4
	3	20	5.6	-18.5	6.3	-20.7	6.9	-22.9	7.7	-25.2	8.4	-27.7	9.2	-30.3	10.0	-33.0	11.7	-38.7	13.6	-44.9	15.6	-51.5	17.8	-58.6	20.1	-66.2	22.5	-74.2
	3	50	4.4	-15.8	5.0	-17.6	5.5	-19.5	6.1	-21.5	6.6	-23.6	7.3	-25.8	7.9	-28.1	9.3	-33.0	10.8	-38.3	12.4	-43.9	14.1	-50.0	15.9	-56.5	17.8	-63.3
	3	100	3.6	-13.8	4.0	-15.3	4.4	-17.0	4.8	-18.7	5.3	-20.6	5.8	-22.5	6.3	-24.5	7.4	-28.7	8.6	-33.3	9.9	-38.2	11.2	-43.5	12.7	-49.1	14.2	-55.1
Hip Roof > 20 to 27 degrees	1	10	6.5	-11.7	7.3	-13.0	8.0	-14.5	8.9	-15.9	9.7	-17.5	10.6	-19.1	11.6	-20.8	13.6	-24.4	15.8	-28.3	18.1	-32.5	20.6	-37.0	23.3	-41.8	26.1	-46.8
	1	20	5.6	-10.4	6.3	-11.6	6.9	-12.8	7.7	-14.1	8.4	-15.5	9.2	-16.9	10.0	-18.4	11.7	-21.6	13.6	-25.1	15.6	-28.8	17.8	-32.8	20.1	-37.0	22.5	-41.5
	1	50	4.4	-8.6	5.0	-9.6	5.5	-10.6	6.1	-11.7	6.6	-12.8	7.3	-14.0	7.9	-15.3	9.3	-17.9	10.8	-20.8	12.4	-23.9	14.1	-27.2	15.9	-30.7	17.8	-34.4
	1	100	3.6	-7.3	4.0	-8.1	4.4	-9.0	4.8	-9.9	5.3	-10.8	5.8	-11.9	6.3	-12.9	7.4	-15.1	8.6	-17.6	9.9	-20.2	11.2	-22.9	12.7	-25.9	14.2	-29.0
	2	10	6.5	-16.2	7.3	-18.0	8.0	-19.9	8.9	-22.0	9.7	-24.1	10.6	-26.4	11.6	-28.7	13.6	-33.7	15.8	-39.1	18.1	-44.9	20.6	-51.0	23.3	-57.6	26.1	-64.6
	2	20	5.6	-13.9	6.3	-15.5	6.9	-17.2	7.7	-18.9	8.4	-20.8	9.2	-22.7	10.0	-24.7	11.7	-29.0	13.6	-33.7	15.6	-38.7	17.8	-44.0	20.1	-49.7	22.5	-55.7
	2	50	4.4	-11.0	5.0	-12.2	5.5	-13.5	6.1	-14.9	6.6	-16.4	7.3	-17.9	7.9	-19.5	9.3	-22.9	10.8	-26.6	12.4	-30.5	14.1	-34.7	15.9	-39.2	17.8	-43.9

	2	100	3.6	-8.7	4.0	-9.7	4.4	-10.8	4.8	-11.9	5.3	-13.1	5.8	-14.3	6.3	-15.5	7.4	-18.2	8.6	-21.2	9.9	-24.3	11.2	-27.6	12.7	-31.2	14.2	-35.0
	3	10	6.5	-16.2	7.3	-18.0	8.0	-19.9	8.9	-22.0	9.7	-24.1	10.6	-26.4	11.6	-28.7	13.6	-33.7	15.8	-39.1	18.1	-44.9	20.6	-51.0	23.3	-57.6	26.1	-64.6
	3	20	5.6	-13.9	6.3	-15.5	6.9	-17.2	7.7	-18.9	8.4	-20.8	9.2	-22.7	10.0	-24.7	11.7	-29.0	13.6	-33.7	15.6	-38.7	17.8	-44.0	20.1	-49.7	22.5	-55.7
	3	50	4.4	-11.0	5.0	-12.2	5.5	-13.5	6.1	-14.9	6.6	-16.4	7.3	-17.9	7.9	-19.5	9.3	-22.9	10.8	-26.6	12.4	-30.5	14.1	-34.7	15.9	-39.2	17.8	-43.9
	3	100	3.6	-8.7	4.0	-9.7	4.4	-10.8	4.8	-11.9	5.3	-13.1	5.8	-14.3	6.3	-15.5	7.4	-18.2	8.6	-21.2	9.9	-24.3	11.2	-27.6	12.7	-31.2	14.2	-35.0
Hip Roof = 45 degrees	1	10	6.5	-12.4	7.3	-13.9	8.0	-15.4	8.9	-16.9	9.7	-18.6	10.6	-20.3	11.6	-22.1	13.6	-26.0	15.8	-30.1	18.1	-34.6	20.6	-39.3	23.3	-44.4	26.1	-49.8
	1	20	5.6	-10.7	6.3	-11.9	6.9	-13.2	7.7	-14.5	8.4	-15.9	9.2	-17.4	10.0	-19.0	11.7	-22.2	13.6	-25.8	15.6	-29.6	17.8	-33.7	20.1	-38.0	22.5	-42.7
	1	50	4.4	-8.3	5.0	-9.3	5.5	-10.3	6.1	-11.3	6.6	-12.4	7.3	-13.6	7.9	-14.8	9.3	-17.3	10.8	-20.1	12.4	-23.1	14.1	-26.2	15.9	-29.6	17.8	-33.2
	1	100	3.6	-6.5	4.0	-7.3	4.4	-8.0	4.8	-8.9	5.3	-9.7	5.8	-10.6	6.3	-11.6	7.4	-13.6	8.6	-15.8	9.9	-18.1	11.2	-20.6	12.7	-23.3	14.2	-26.1
	2	10	6.5	-14.7	7.3	-16.3	8.0	-18.1	8.9	-20.0	9.7	-21.9	10.6	-24.0	11.6	-26.1	13.6	-30.6	15.8	-35.5	18.1	-40.8	20.6	-46.4	23.3	-52.3	26.1	-58.7
	2	20	5.6	-12.4	6.3	-13.9	6.9	-15.4	7.7	-16.9	8.4	-18.6	9.2	-20.3	10.0	-22.1	11.7	-26.0	13.6	-30.1	15.6	-34.6	17.8	-39.3	20.1	-44.4	22.5	-49.8
	2	50	4.4	-9.5	5.0	-10.6	5.5	-11.7	6.1	-12.9	6.6	-14.2	7.3	-15.5	7.9	-16.9	9.3	-19.8	10.8	-23.0	12.4	-26.4	14.1	-30.0	15.9	-33.9	17.8	-38.0
	2	100	3.6	-7.3	4.0	-8.1	4.4	-9.0	4.8	-9.9	5.3	-10.8	5.8	-11.9	6.3	-12.9	7.4	-15.1	8.6	-17.6	9.9	-20.2	11.2	-22.9	12.7	-25.9	14.2	-29.0
	3	10	6.5	-19.1	7.3	-21.3	8.0	-23.6	8.9	-26.0	9.7	-28.6	10.6	-31.2	11.6	-34.0	13.6	-39.9	15.8	-46.3	18.1	-53.1	20.6	-60.4	23.3	-68.2	26.1	-76.5
	3	20	5.6	-16.0	6.3	-17.8	6.9	-19.7	7.7	-21.8	8.4	-23.9	9.2	-26.1	10.0	-28.4	11.7	-33.4	13.6	-38.7	15.6	-44.4	17.8	-50.5	20.1	-57.1	22.5	-64.0
	3	50	4.4	-11.9	5.0	-13.2	5.5	-14.6	6.1	-16.1	6.6	-17.7	7.3	-19.4	7.9	-21.1	9.3	-24.8	10.8	-28.7	12.4	-33.0	14.1	-37.5	15.9	-42.3	17.8	-47.5
	3	100	3.6	-8.7	4.0	-9.7	4.4	-10.8	4.8	-11.9	5.3	-13.1	5.8	-14.3	6.3	-15.5	7.4	-18.2	8.6	-21.2	9.9	-24.3	11.2	-27.6	12.7	-31.2	14.2	-35.0
Walls	4	10	8.7	-9.5	9.7	-10.6	10.8	-11.7	11.9	-12.9	13.1	-14.2	14.3	-15.5	15.5	-16.9	18.2	-19.8	21.2	-22.9	24.3	-26.3	27.6	-30.0	31.2	-33.8	35.0	-37.9
	4	20	8.3	-9.1	9.3	-10.1	10.3	-11.2	11.4	-12.4	12.5	-13.6	13.6	-14.8	14.8	-16.2	17.4	-19.0	20.2	-22.0	23.2	-25.2	26.4	-28.7	29.8	-32.4	33.4	-36.4
	4	50	7.8	-8.6	8.7	-9.5	9.7	-10.6	10.7	-11.7	11.7	-12.8	12.8	-14.0	13.9	-15.2	16.3	-17.9	18.9	-20.7	21.7	-23.8	24.7	-27.1	27.9	-30.6	31.3	-34.3
	4	100	7.4	-8.2	8.3	-9.1	9.2	-10.1	10.1	-11.1	11.1	-12.2	12.1	-13.3	13.2	-14.5	15.5	-17.1	18.0	-19.8	20.7	-22.7	23.5	-25.8	26.5	-29.2	29.7	-32.7
	5	10	8.7	-11.7	9.7	-13.0	10.8	-14.5	11.9	-15.9	13.1	-17.5	14.3	-19.1	15.5	-20.8	18.2	-24.4	21.2	-28.3	24.3	-32.5	27.6	-37.0	31.2	-41.8	35.0	-46.8
	5	20	8.3	-10.9	9.3	-12.2	10.3	-13.5	11.4	-14.9	12.5	-16.3	13.6	-17.8	14.8	-19.4	17.4	-22.8	20.2	-26.4	23.2	-30.3	26.4	-34.5	29.8	-39.0	33.4	-43.7
	5	50	7.8	-9.9	8.7	-11.0	9.7	-12.2	10.7	-13.4	11.7	-14.8	12.8	-16.1	13.9	-17.6	16.3	-20.6	18.9	-23.9	21.7	-27.4	24.7	-31.2	27.9	-35.2	31.3	-39.5
	5	100	7.4	-9.1	8.3	-10.1	9.2	-11.2	10.1	-12.4	11.1	-13.6	12.1	-14.8	13.2	-16.2	15.5	-19.0	18.0	-22.0	20.7	-25.2	23.5	-28.7	26.5	-32.4	29.7	-36.4

RB50-22: Code change number not used.

Proponents: John Swanson, representing National Fire Sprinkler Association (swanson@nfsa.org)

Code change is located in the CCC agenda. See CCCIRC4-22

RB59-22: Replace proposal with the following.

RB59-22

Proponents: Ali Fattah, representing City of San Diego Development Services Department (afattah@sandiego.gov)

2021 International Residential Code

Revise as follows:

R302.2.4 Parapets for townhouses. Parapets constructed in accordance with Section R302.2.5 shall be constructed for townhouses as an extension of exterior walls or common walls separating *townhouse units* 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 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 penetrations in the roof are not within 4 feet (1219 mm) of the common walls. Fire-retardant-treated wood shall meet the requirements of Sections R802.1.5 and R803.2.1.2.

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. Openings in the wall shall be protected with assemblies having a fire protection rating of not less than 3/4 hour. Portions of the exterior walls greater than 15 feet (4572 mm) above the lower roof shall be of non fire-resistance- rated construction. Openings in the wall shall be protected with assemblies having a fire protection rating of not less than 3/4 hour.

Reason: The proposed code change is necessary to address a significant omission in the IRC that predates the 2005 edition where exterior wall openings located in common walls extending above a lower roof in a stepped Townhouse are neither prohibited nor required to be protected.

While the common wall is not a party-wall that is regulated in the IBC as a fire wall, common walls are protected similar to exterior walls located at zero fire separation distance; IRC Section R302.2.2 does not permit openings in the common wall and restricts penetrations. Additionally, communicating openings are not permitted between dwelling units it would seem reasonable to prohibit exterior wall openings in exterior portions of the common wall.

The proposed code change takes an approach to solving the problem caused by the regulatory omission that is consistent with method in which the IBC regulates fire walls. While communicating openings are not permitted between dwelling units it would seem onerous to prohibit exterior wall openings in exterior portions of the common wall. The proposed modification and addition to item # 3 adds regulatory language from IBC Section 706.6.1.

The attached figures 1 and 2 attempt to illustrate the issue. Figure one shows a plan view of the third story and roof and figure 2 shows a building section depicting the elevation difference. The common wall is depicted in the dotted blue line.

This code change is option 2 in the event that the committee prefers to permit a protected opening however proponent feels the other option submitted whereby openings in the wall are prohibited is the preferred option.

Cost Impact: The code change proposal will increase the cost of construction. The proposed change is a clarification however if the project chooses to add an opening in the wall then the code of a fire protection rated opening will increase the cost of construction.
RB119-22: Code change number not used.

RB119-22: Code change number not used.

Proponents: Glenn Mathewson, representing North American Deck and Railing Association (glenn@glennmathewson.com)

Code change is located in the CCC agenda. See CCCIRC3-22

RB128-22: Code change number not used.

Proponents: Tim Earl, representing Self (tearl@gbhint.com)

Code change is located in the CCC agenda. See CCCIRC5-22

RB211-22: Code change number not used.

Proponents: Martin Hammer, representing Martin Hammer, Architect (mfhammer@pacbell.net); David Eisenberg, representing DCAT (strawnet@gmail.com)

Code change is located in the CCC agenda. See CCCIRC6-22

RB248-22: Portions of text overlap. Section R806.5 Items 1 thru 5.2.9 unchanged, 5.2.10 and 5.3 shown below. Section R806.6 shown below.

RB248-22

Proponents: Craig Conner, representing self (craig.conner@mac.com); Joseph Lstiburek, representing Self (joe@buildingscience.com)

Revise as follows:

R806.5 Unvented attic and unvented enclosed rafter assemblies where thermal boundary located at roof deck. Unvented attics created where the thermal boundary is located at the roof deck and unvented enclosed roof framing assemblies created by ceilings that are applied directly to the underside of the roof framing members and structural roof sheathing applied directly to the top of the roof framing members/rafters, shall be permitted where all the following conditions are met:

- 5.2.10. Where air-permeable insulation is used and is installed directly below the roof structural sheathing, air shall be supplied at a flow rate greater than or equal to 50 CFM (23.6 L/s) per 1,000 square feet (93 m²) of ceiling. The air shall be supplied from ductwork providing supply air to the occupiable space when the conditioning system is operating. Alternatively, the air shall be supplied by a supply fan when the conditioning system is operating.

Exceptions Exception:

4. Where both air-impermeable and air-permeable insulation are used, and the R-value in Table 806.5 is met, air supply to the attic is not required.
 - ~~2. Where only air-permeable insulation is used and is installed on top of the attic floor, or on top of the ceiling, air supply to the attic is not required.~~
- 5.3. Where preformed insulation board is used as the air-impermeable insulation layer, it shall be sealed at the perimeter of each individual sheet interior surface to form a continuous layer.

Add new text as follows:

R806.6 Sealed attic plus vapor diffusion port where air-permeable insulation and thermal boundary located at the attic floor or ceiling. In Climate Zones 0, 1, 2 & 3, sealed attics with vapor diffusion ports where air-permeable insulation and thermal boundary are located at the attic floor or ceiling shall be permitted where all the following conditions are met:

1. An approved vapor diffusion port shall be installed not more than 12 inches (305 mm) from the highest point of the roof, measured vertically from the highest point of the roof to the lower edge of the port.
2. The port area shall be greater than or equal to 1:150 of the ceiling area. Where there are multiple ports in the attic, the sum of the port areas shall be greater than or equal to the area requirement.
3. The vapor-permeable membrane in the vapor diffusion port shall have a vapor permeance rating of greater than or equal to 20 perms when tested in accordance with Procedure A of ASTM E96.
4. The vapor diffusion port shall serve as an air barrier between the attic and the exterior of the building.
5. The vapor diffusion port shall protect the attic against the entrance of rain and snow.
6. Framing members and blocking shall not block the free flow of water vapor to the port. Not less than a 2-inch (51 mm) space shall be provided between any blocking and the roof sheathing. Air-permeable insulation shall be permitted within that space.
7. The roof slope shall be greater than or equal to 3:12 (vertical/horizontal).
8. Air-permeable insulation shall be installed on top of the attic floor, or on top of the ceiling.
9. Air-permeable insulation shall be installed on top of the attic floor, or on top of the ceiling.

RB303-22: Code change number not used.

Proponents: Martin Hammer, representing Martin Hammer, Architect (mfhammer@pacbell.net); David Eisenberg, representing DCAT (strawnet@gmail.com); Anthony Dente, representing Verdant Structural Engineers (anthony@verdantstructural.com); David Arkin, representing California Straw Building Association (david@arkintilt.com)

Code change is located in the CCC agenda. See CCCIRC8-22

RB316-22: Add the Appendix Title to the proposal.

RB316-22

Proponents: Jacob Waddell, representing US Hemp Building Association (President@ushba.org); Martin Hammer, representing Martin Hammer, Architect (mfhammer@pacbell.net); David Eisenberg, representing DCAT (strawnet@gmail.com); Mary Dempsey, representing Mpactful Ventures, PBLLC (mary@mpactfulventures.org); Anthony Dente, representing Verdant Structural Engineers (anthony@verdantstructural.com); Kiko Thébaud, representing Kiko Thébaud, Architect (kikothebaud@gmail.com); Cameron McIntosh, representing Americhanvre LLC (cameron@americhanvre.com); Matt Marino, representing Homeland Hempcrete (matt@homelandhempco.com); Anastasiya Konopitskaya, representing Coexist Build LLC (ana@coexist.build); Chris Magwood, representing Endeavour Centre (chris@endeavourcentre.org); Graham Durrant, representing Hemp-Lime Spray Limited (hemplimespray@yahoo.com); Timothy Callahan, representing Self (t.l.callahan@icloud.com); Matthew Mead, representing Hempitecture Inc. (mattie@hempitecture.com); Jennifer Martin, representing HempStone LLC (jennifer@hempstone.net); Tom Rossmassler, representing Hempstone, LLC (tom@hempstone.net); C Michael Donoghue, representing Maritech Engineering, Inc (cmd@maritechengineering.com); Anthony Néron, representing DuChanvre (info@duchanvre.com); Marilyn Hill, representing Self (knowledgeisliving@yahoo.com); Laurent Goudet, representing Expert hemp concrete builder; Sergiy Kovalenkov, Hempire International, representing Hempire International (sergiy@hempire.tech); Dion Lefebvre, representing Divita Hemp Block (8thfireinnovations@gmail.com)

Add new text as follows:

APPENDIX AY
HEMP-LIME CONSTRUCTION

2022 PROPOSED CHANGES TO THE CODE CORRELATION COMMITTEE

CCCIRC21-22 Part I: Correction to the Proponent line

Proponents: Glenn Mathewson, representing North American Deck and Railing Association
(glenn@glennmathewson.com)

CCCIRC21-22 Part II: Correction to the Proponent line

Proponents: Glenn Mathewson, representing North American Deck and Railing Association
(glenn@glennmathewson.com)
