CITY OF LAWNDALE

14717 Burin Avenue, Lawndale, California 90260
Phone (310) 973-3200 – www.lawndalecity.org

AGENDA
LAWNDALE CITY COUNCIL REGULAR MEETING
LAWNDALE PUBLIC FINANCING AUTHORITY REGULAR MEETING
Monday, November 7, 2022 - 6:30 p.m.
Lawndale City Hall Council Chamber
14717 Burin Avenue

Any person who wishes to address the City Council regarding any item listed on this agenda or any other matter that is within its subject matter jurisdiction is invited, but not required, to fill out a Public Meeting Speaker Card and submit it to the City Clerk prior to the oral communications portion of the meeting. The purpose of the card is to ensure that speakers' names are correctly recorded in the meeting minutes and, where appropriate, to provide contact information for later staff follow-up. You are still eligible to submit comment via the Temporary eComment Policy for Public Meetings, the comments will be read verbatim into the record.

How to observe the Meeting:
To maximize public safety while still maintaining transparency and public access, members of the public can now observe the meeting in person, with limited capacity, while strictly adhering to the **City Facilities Entry Protocols**. Members of the public are still be able to view the meeting on YouTube "Lawndale CityTV", the City Website, or Lawndale Community Cable Television on Spectrum & Frontier Channel 3.

Copies of this Agenda packet may be obtained prior to the meeting outside of the Lawndale City Hall foyer or on the **City Website**. Interested parties may contact the City Clerk Department at (310) 973-3213 for clarification regarding individual agenda items.

This Agenda is subject to revision up to 72 hours before the meeting.

A. CALL TO ORDER AND ROLL CALL

B. CEREMONIALS (Flag Salute and Inspiration)

C. PUBLIC SAFETY REPORT

a. Los Angeles County Sherriff's Department Update
b. Los Angeles County Fire Department Update

D. ORAL COMMUNICATIONS - ITEMS NOT ON THE AGENDA (Public Comments)

E. COMMENTS FROM COUNCIL

F. CONSENT CALENDAR

Items 1 through 6, will be considered and acted upon under one motion unless a City Councilmember removes individual items for further City Council consideration or explanation.

1. Motion to read by title only and waive further reading of all ordinances listed on the Agenda
Recommendation: that the City Council approve.

2. Consideration of Claims for Damage Against the City
Recommendation: that the City Council reject the claims filed by Arthur Petrousian, Esq. on behalf of Maria Arevalo and Noemi Cortez and instruct staff to process the appropriate correspondence to the claimants.

3. Accounts Payable Register
Recommendation: that the City Council adopt Resolution No. CC-2211-051 authorizing the payment of certain claims and demands in the amount of $1,561,491.84

4. Minutes of the Lawndale City Council Regular Meeting – October 17, 2022
Recommendation: that the City Council approve.

LAWNDALE PUBLIC FINANCING AUTHORITY

5. Annual Accounting of Lawndale Public Financing Authority Financial Activities
Recommendation: that the Board of the Lawndale Public Financing Authority receive and file the annual accounting of financial activities.

6. Minutes of the Lawndale Public Financing Authority Annual Meeting – November 15, 2021
Recommendation: that the Directors approve.

G. PUBLIC HEARING

7. Consideration of Ordinance No. 1192-22 to add Chapter 17.104 to Title 17 of the Lawndale Municipal Code pertaining to Citywide streamlining standards for electric vehicle charging station(s)
Recommendation: that the City Council a.) Conduct a public hearing; b.) Determine that Ordinance No. 1192-22 is exempt from the California Environmental Quality Act ("CEQA") pursuant to Sections 15378 and 15061(b)(3) of the CEQA Guidelines; and c.) Introduce for first reading by title only Ordinance No. 1192-22, an Ordinance amending the Lawndale Municipal Code regarding EV charging stations to reflect recent changes in state law, and waive further reading.

8. An Ordinance adopting 2022 building, electrical, mechanical, plumbing, residential, green building standards, and existing building code updates, with local amendments, and finding of exemption from CEQA
Recommendation: that the City Council a.) Acknowledge that the Project is categorically exempt pursuant to Section 15061(b)(3) of the CEQA Guidelines; and b.) Adopt Ordinance No. 1193-22 updating building codes.

H. ADMINISTRATION

9. Request to Authorize the Sale of Cable TV Video Production Van and Equipment
Recommendation: that the City Council approve the designation of the City's 2017 Video Production Van and four (4) Ikegami HD portable video camera systems to be surplus personal property and authorize the City Manager or designee to initiate the disposal of the property through a bidding process to sale the property.

I. CITY MANAGER REPORT

a. Overview of California Contract Cities Association, City Managers' Summit

J. ITEMS FROM CITY COUNCILMEMBERS

10. Local Travel Network Wayfinding Logo Survey – South Bay Cities Council of Governments (SBCCOG)

Requested by Councilmember Bernadette Suarez.

Recommendation: that the City Council a.) Review the final three wayfinding design logo's for the Local Travel Network; and b.) Rank the three wayfinding design logo's in order of preference; and c.) Instruct City Delegate Councilmember Bernadette Suarez and/or the City Manager's Department, to relay the City of Lawndale's ranking in order of preference on the three wayfinding design logo's to the SBCCOG Board prior to the SBCCOG meeting of November 17, 2022.

11. Mayor/City Councilmembers Report of Attendance at Meetings and/or Event

K. ADJOURNMENT

City Hall will be closed on the next regular meeting date. Therefore, the next regularly scheduled meeting of the City Council will be held at 6:30 p.m. on Monday, December 5, 2022, in the Lawndale City Hall Council Chamber, 14717 Burin Avenue, Lawndale, California.

It is the intention of the City of Lawndale to comply with the Americans with Disabilities Act (ADA) in all respects. If, as an attendee or a participant at this meeting, you will need special assistance beyond what is normally provided, we will attempt to accommodate you in every reasonable manner. Please contact the City Clerk Department (310) 973-3213 prior to the meeting to inform us of your particular needs and to determine if accommodation is feasible. Please advise us at that time if you will need accommodations to attend or participate in meetings on a regular basis.

I hereby certify under penalty of perjury under the laws of the State of California that the Agenda for the regular meeting of the City Council to be held on November 7, 2022 was posted not less than 72 hours prior to the meeting.

_____

Cynthia Rodriguez, Administrative Assistant

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CITY OF LAWNDALE
14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200 ♦ www.lawndalecity.org

DATE: November 7, 2022

TO: Honorable Mayor and City Council

FROM: Cynthia Rodriguez, Administrative Assistant II

SUBJECT: Motion Pertaining to the Reading of Ordinances

BACKGROUND

California Government Code reads, in part, as follows:

> "Except when, after reading the title, further reading is waived by regular motion adopted by majority vote, all ordinances shall be read in full either at the time of introduction or passage."

RECOMMENDATION

Staff recommends that the City Council read by title only and waive further reading of all ordinances listed on the agenda.

CITY OF LAWNDALE

Back to Agenda

14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200 ♦ www.lawndalecity.org

DATE: November 7, 2022

TO: Honorable Mayor and City Council

FROM: Sean M. Moore, City Manager

PREPARED BY: Raylette Felton, Assistant to the City Manager/ Human Resources Director

SUBJECT: **Consideration of Claims for Damage against the City**

BACKGROUND

The City of Lawndale received a personal injury claim filed by Arthur Petrousian, Esq. on behalf of Maria Arevalo (Claimant) on August 30, 2022. The claim filed alleged that on March 24, 2022, the claimant tripped and fell on the sidewalk at 4547 154th Street, Lawndale, CA. This matter was referred to the City's third party claims administrator (Carl Warren & Company) for review and investigation.

On September 21, 2022, the City received a property damage claim filed by Noemi Cortez (Claimant) alleging that on September 9, 2022, a tree limb fell causing damage to their personal vehicle while parked at 14329 Grevillea Ave., Lawndale, CA.

STAFF REVIEW

All claims were referred to the City's third party claims administrator, Carl Warren & Company, for review and investigation. Based on the investigations completed by Carl Warren, it was determined that liability for the claims could not be assigned to the City. As a result, Carl Warren recommends that the City reject the claims as filed.

LEGAL REVIEW

N/A

RECOMMENDATION

Staff recommends that the City Council reject the claims filed by Arthur Petrousian, Esq. on behalf of Maria Arevalo and Noemi Cortez and instruct staff to process the appropriate correspondence to the claimants.

Attachments:
1) Claim for Damages to Person or Property and Rejection Notice – Maria Arevalo (3037971)
2) Claim for Damages to Person or Property and Rejection Notice – Noemi Cortez (3038467 - LMG)

CARL WARREN & COMPANY
Claims Management and Solutions

October 13, 2022

To: City of Lawndale
Attn: Raylette Felton

RE:			
	Claimant	:	Maria Arevalo
	Member	:	City of Lawndale
	Date of Event	:	03/24/2022
	CW File Number	:	3037971

We have reviewed the above captioned claim and request that you take the action indicated below:
CLAIM REJECTION: Send a standard rejection letter to the claimant.

Please provide us with a copy of the notice sent, as requested above. If you have any questions, please advise.

Best Regards,
CARL WARREN & CO.

Glen Raphael

Glen Raphael
Claims Examiner
Email: graphael@carlwarren.com
Office Tel.: 657 622 4315

CITY OF LAWNDALE
CLAIM FOR DAMAGES TO PERSON OR PROPERTY

File with the City Clerk
14717 Burin Ave., Lawndale, CA 90260
(310) 973-3200, Fax: (310) 644-4556

Reserve for Filing Stan

5491285
2 of 3

'22 AUG 30 11:00AM

Claim No.: _____

Instructions:

1. Claims for death, injury to person or to personal property must be filed not later than six (6) months after the occurrence. (Gov. Code Sec. 911.2)
2. Claims for damages to real property must be filed not later than one (1) year after the occurrence. (Gov. Code Sec. 911.2)
3. Read entire claim form before filing.
4. See page 2 for diagram upon which to locate place of accident.
5. This claim form must be signed on page 2 at bottom.
6. Attach separate sheets, if necessary, to give full details. SIGN EACH SHEET.
7. Claim must be filed with the City Clerk. (Gov. Code Sec. 915a)

CITY OF LAWNDALE			
Claimant's Name	*Maria Arevalo*	Claimant's Occupation	
Claimant's Home Address		Claimant's Home Phone #	
Claimant's Business Address		Claimant's Business Phone #	

Address and telephone number to which you desire notices or communications to be sent regarding this claim:
633 W. 5th Street, Suite 2652, Los Angeles, CA 90071; (323) 025-3424

When did DAMAGE or INJURY occur? Date: *3/24/22* Time: _____
If claim is for Equitable Indemnity, give date claimant served with the complaint: Date: _____
Names of any city employees involved in INJURY or DAMAGE

Where did DAMAGE or INJURY occur? Describe fully, and locate on diagram on reverse side of this sheet. Where appropriate, give street names and address and measurements from landmarks:

On the sidewalk located at 4547 154th Street, Lawndale, CA 90260

Describe in detail how the DAMAGE or INJURY occurred.

Mrs. Arevalo was walking on the sidewalk when she tripped and fell due to uneven pavement. Ms. Arevalo was taken by Ambulance to Providence Little Company of Mary Medical Center due to the serious injuries she sustained.

Why do you claim the city is responsible?

The condition of the pavement was unreasonably dangerous due to the negligent maintance, repair, failure to warn and/or inspect. The County of Los Angeles knew, or should have known that there was a dangerous/defective condition and did not do anything to correct it which caused serious injuries to my client.

Describe in detail each INJURY or DAMAGE

Mrs. Arevalo sustained a right knee injury and fractured right wrist, among other injuries.

THIS CLAIM MUST BE SIGNED ON PAGE 2

The amount claimed, as of the date of presentation of this claim, is computed as follows:

Damages incurred to date (exact):	$500,000	Estimated prospective damages as far as known:	$1,000,000
Damage to property	$	Future expenses for medical and hospital care	$
Expenses for medical and hospital care	$	Future loss of earnings	$
Loss of Earnings	$	Other prospective special damages	$
Special Damages for	$	Prospective general damages	$
		Total estimate prospective damages	$
General Damages	$		
Total Damages incurred to date	$		
		Total amount claimed as of date of presentation of this claim	$1,500,000

Was damage and/or injury investigated by police? No If so, what city? _____ File #: _____

Were paramedics or ambulance called? Yes If so, name city or ambulance Unknown

If injured, state date, time, _____

name and address of doctor of your first visit _____

WITNESSES to DAMAGE or INJURY: List all persons and addresses of person known to have information:

Name _____ Address _____ Phone _____

Name _____ Address _____ Phone _____

Name _____ Address _____ Phone _____

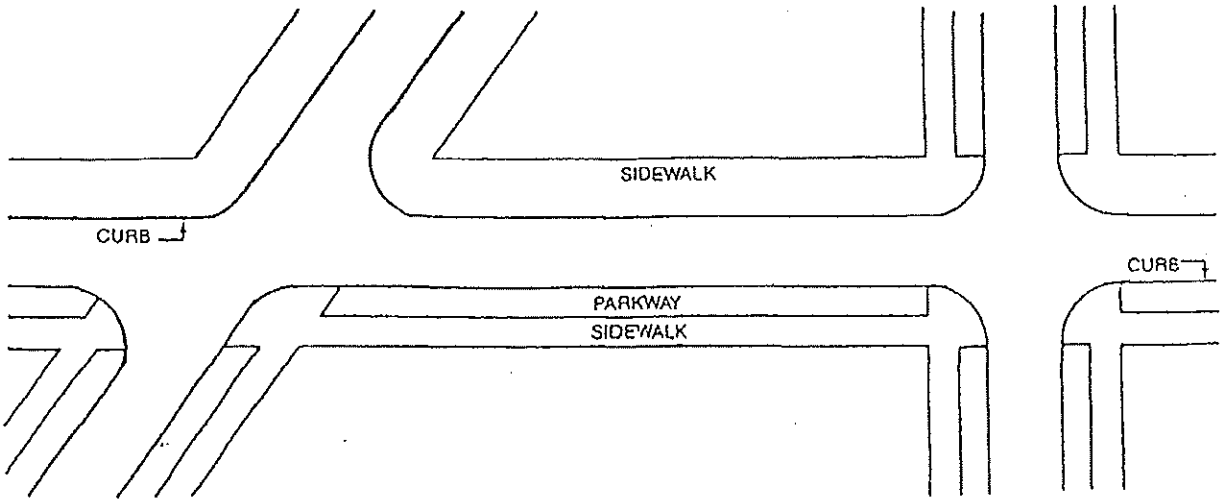
DOCTORS and HOSPITALS:

Hospital _____ Address _____ Date of Hospitalization _____

Doctor _____ Address _____ Date of Treatment _____

Doctor _____ Address _____ Date of Treatment _____

For all accident claims place on following diagram names of streets, including North, East, South and West; indicate place of accident by "X" and by showing house numbers or distances to street corners. If city vehicle was involved, designate by letter "A" location of city vehicle when you first saw it, and by "B" location of yourself or your vehicle when you first saw city vehicle; location of city vehicle at time of accident by "A-1" and location of yourself or your vehicle at the time of the accident by "B-1" and the point of impact by "X". NOTE: if diagrams below do not fit the situation, attach hereto a proper diagram signed by claimant.



Signature of Claimant or person filing on his/her behalf giving relationship to Claimant:	Typed/Printed Name	Date
	Arthur Petrousian, Esq.	8/25/22

THIS CLAIM MUST BE SIGNED ON PAGE 2

CARL WARREN & COMPANY
Claims Management and Solutions

A VENBROOK Company

November 2, 2022

TO: City of Lawndale

ATTENTION: Raylette Felton

RE:	Claim	:	Cortez vs. Lawndale
	Claimant	:	Noemi Cortez
	Date of Event	:	9-9-2022
	Claim Number	:	3038467 LMG

Please allow this correspondence to acknowledge receipt of the captioned claim. Please take the following action:

- **CLAIM REJECTION: Send a standard rejection letter to the claimant.**

Please include a Proof of Mailing with your rejection notice to the claimant. Please provide us with a copy of the Notice of Rejection and copy of the Proof of Mailing. If you have any questions feel free to contact the assigned adjuster or the undersigned supervisor.

Very Truly Yours,

Emily Gutierrez
Claims Supervisor
Carl Warren & Company, LLC | A Venbrook Company

CITY OF LAWNDALE
CLAIM FOR DAMAGES TO PERSON OR PROPERTY

File with the City Clerk
14717 Burin Ave., Lawndale, CA 90260
(310) 973-3200, Fax: (310) 644-4556

Reserve for Filing Stamp

'22 SEP 21 8:48AM

Claim No.: _____

Instructions:

1. Claims for death, injury to person or to personal property must be filed not later than six (6) months after the occurrence. (Gov. Code Sec. 911.2)
2. Claims for damages to real property must be filed not later than one (1) year after the occurrence. (Gov. Code Sec. 911.2)
3. Read entire claim form before filing.
4. See page 2 for diagram upon which to locate place of accident.
5. This claim form must be signed on page 2 at bottom.
6. Attach separate sheets, if necessary, to give full details. SIGN EACH SHEET.
7. Claim must be filed with the City Clerk. (Gov. Code Sec. 915a)

CITY OF LAWNDALE			
Claimant's Name	Noemi Carter	Claimant's Occupation	Insurance Biller
Claimant's Home Address		Claimant's Home Phone #	
Claimant's Business Address	— Gurdon	Claimant's Business Phone #	— 7607

Address and telephone number to which you desire notices or communications to be sent regarding this claim:

When did DAMAGE or INJURY occur? Date: 09-04-22 Time: 6pm
If claim is for Equitable Indemnity, give date claimant served with the complaint: Date: 09-16-22
Names of any city employees involved in INJURY or DAMAGE
Derrick Derrick James

Where did DAMAGE or INJURY occur? Describe fully, and locate on diagram on reverse side of this sheet. Where appropriate, give street names and address and measurements from landmarks:
My truck was parked on Hawthorn - Parker on the street. A big branch fell on top of my truck.

Describe in detail how the DAMAGE or INJURY occurred.
A City tree - A big branches fell on top of my truck.

Why do you claim the city is responsible? This is the 3rd incident with this City tree. I had 2 incidents - 1st 1 big branch fell on my property no damage. 2nd incident 2 big branches fell on top of car. City tree is [redacted] (no past claims filed - no damage)

Describe in detail each INJURY or DAMAGE
Front Windshield cracked, huge dent on top of truck. Front bracket broken, dent on hood. Dent on top drivers window. Top of door dented. Multiple dents on drivers side. From drivers side down to the back. Inside brake light broken. Cracked inside.

THIS CLAIM MUST BE SIGNED ON PAGE 2

The amount claimed, as of the date of presentation of this claim, is computed as follows:

Damages incurred to date (exact):	$	Estimated prospective damages as far as known:	$
Damage to property	$	Future expenses for medical and hospital care	$
Expenses for medical and hospital care	$	Future loss of earnings	$
Loss of Earnings	$	Other prospective special damages	$
Special Damages for	$	Prospective general damages	$
		Total estimate prospective damages	$
General Damages	$		
Total Damages incurred to date	$		
		Total amount claimed as of date of presentation of this claim	$

Was damage and/or injury investigated by police? No If so, what city? _____ File #: _____

Were paramedics or ambulance called? No If so, name city or ambulance _____

If injured, state date, time, _____

name and address of doctor of your first visit _____

WITNESSES to DAMAGE or INJURY: List all persons and addresses of person known to have information:

Name Silvia Cram Address _____ Phone _____

Name Danny Lopez Address _____ Phone _____

Name [illegible] Address 1010 Ct. Phone _____

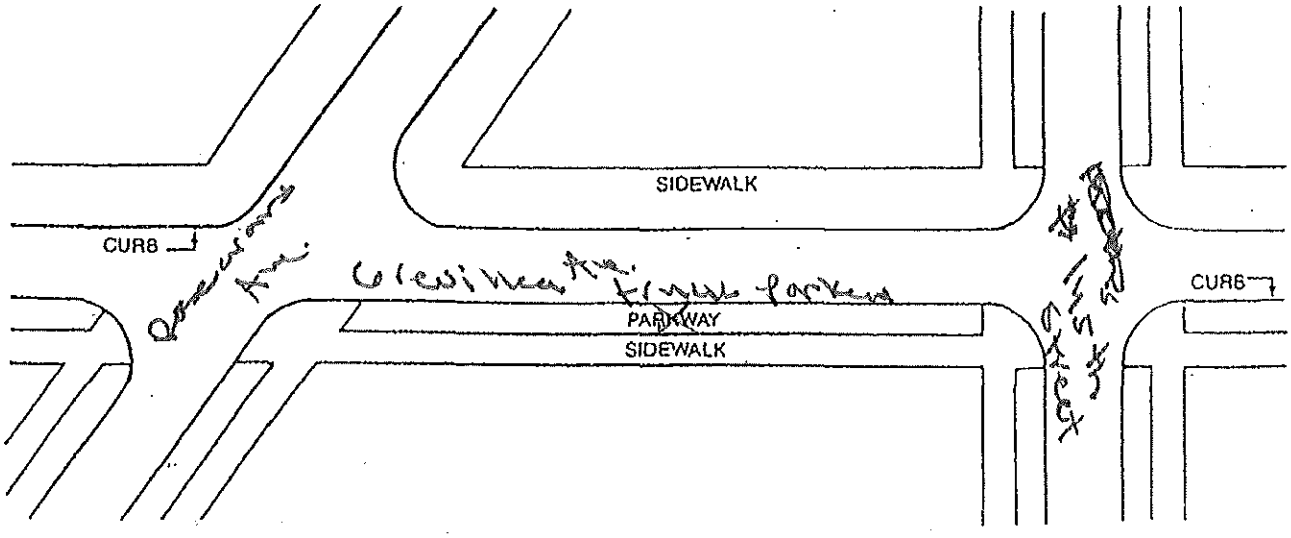
DOCTORS and HOSPITALS:

Hospital — Address _____ Date of Hospitalization _____

Doctor — Address _____ Date of Treatment _____

Doctor — Address _____ Date of Treatment _____

For all accident claims place on following diagram names of streets, including North, East, South and West; indicate place of accident by "X" and by showing house numbers or distances to street corners. If city vehicle was involved, designate by letter "A" location of city vehicle when you first saw it, and by "B" location of yourself or your vehicle when you first saw city vehicle; location of city vehicle at time of accident by "A-1" and location of yourself or your vehicle at the time of the accident by "B-1" and the point of impact by "X". NOTE: if diagrams below do not fit the situation, attach hereto a proper diagram signed by claimant.



Signature of Claimant or person filing on his/her behalf giving relationship to Claimant: | Typed/Printed Name | Date

_____ Noemi Cortez 09.16.22

THIS CLAIM MUST BE SIGNED ON PAGE 2

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RESOLUTION NO. CC-2211-051

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LAWNDALE, CALIFORNIA AUTHORIZING CERTAIN CLAIMS AND DEMANDS IN THE SUM OF $1,561,491.84

THE CITY COUNCIL OF THE CITY OF LAWNDALE, CALIFORNIA, DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

SECTION 1. That in accordance with Sections 37202 and 37209 of the Government Code, the Director of Finance, as certified below, hereby attests to the accuracy of these demands and to the availability of funds for the payment thereof.

SECTION 2. That the following claims and demands have been audited as required by law, and that appropriations for these claims and demands are included in the annual budget as approved by the City Council.

SECTION 3. That the claims and demands paid by check numbers 203368 through 203447 for the aggregate total of $1,561,491.84 are hereby authorized.

Effective Date: November 7th, 2022

Approved by:

Hrant Manuelian, Director of Finance

PASSED, APPROVED AND ADOPTED this 7th day of November, 2022.

Robert Pullen-Miles, Mayor

ATTEST:

State of California)
County of Los Angeles) SS
City of Lawndale)

I, Erica Harbison, City Clerk of the City of Lawndale, California, do hereby certify that the City Council of the City of Lawndale duly approved and adopted the foregoing Resolution No. CC-2211-051 at a regular meeting of said Council held on the 7th day of November, 2022, by the following roll call vote:

Name	Voting		Present, Not Voting		Absent
	Aye	No	Abstain	Not Participating	
Robert Pullen-Miles, Mayor					
Rhonda H. Gorman, Mayor Pro Tem					
Pat Kearney					
Sirley Cuevas					
Bernadette Suarez					

_____

Erica Harbison, City Clerk

City of Lawndale
Summary of Audited Claims and Demands

Claims and Demands Paid By Check:

Check Date	Check Number Beginning	Ending	Aggregate Total
10/13/2022	203368	203403	771,991.63
10/20/2022	203404	203429	137,515.46
10/27/2022	203430	203447	651,984.75
	Total Checks		**1,561,491.84**

Claims and Demands Paid By Electronic ACH Transfer:

Date	Name of Payee	Description	Amount
	Total ACH Payments		**0.00**

Total Audited Claims and Demands Paid	**1,561,491.84**

Check Register Report

City of Lawndale

BANK: WELLS FARGO BANK N.A

Date: 10/13/2022
Time: 8:39 am
Page: 1

Check Number	Check Date	Status	Void/Stop Date	Vendor Number	Vendor Name	Check Description	Amount
WELLS FARGO BANK N.A Checks							
203368	10/13/2022	Printed		0112	ALL CITY MANAGEMENT SVCS, INC	SCHOOL CROSSING GUARD SERVICES	9,686.12
203369	10/13/2022	Printed		7052	AMALEA JOY FISHER, LLC	INSTRUCTOR FEES - SENIOR	397.50
203370	10/13/2022	Printed		7773	AMERICA'S BEST ROOFING CO	CONS DEMO DEPOSIT REFUND	360.00
203371	10/13/2022	Printed		4185-WEST	AMERICAN STRUCTURAL PEST	MONTHLY PEST CONTROL- CITY	50.00
203372	10/13/2022	Printed		7660	ARAMSCO INC	CUSTODIAL SUPPLIES	1,725.48
203373	10/13/2022	Printed		0219	COUNTY OF LA DEPT OF PUBLIC WK	BUILDING INSPECTION SERVICES -	19,973.79
203374	10/13/2022	Printed		1288	EWING IRRIGATION PRODUCTS INC	IRRIGATION PARTS	768.40
203375	10/13/2022	Printed		7996	SHELLY FISCHER	CONS&DEMO DEPOSIT REFUND	436.20
203376	10/13/2022	Printed		6636	FRONTIER COMMUNICATIONS	PHONE CHARGES	122.15
203377	10/13/2022	Printed		6530	GENERAL INDUSTRIAL TOOL & SUPP	CREW JACKETS & RAIN SUITS FOR	528.52
203378	10/13/2022	Printed		7991	INTERWEST CONSULTING GROUP INC	CONSTRUCTION INSPECTION SVCS	39,215.00
203379	10/13/2022	Printed		2307	KALBAN, INC.	ANNUAL ST IMPROV - FY 2021-22	666,803.75
203380	10/13/2022	Printed		7104	KILGORE FITNESS SVC, LLC	EQUIP. REPLACEMENT FOR FITNESS	894.23
203381	10/13/2022	Printed		7801	IGNATIUS LIN	PRSSC MEETING STIPEND	50.00
203382	10/13/2022	Printed		7442	FREDRICK JR. LLANO	PLANNING DEPOSIT REFUND	1,556.87
203383	10/13/2022	Printed		7995	VAN MAI	PLANNING DEPOSIT REFUND	1,512.62
203384	10/13/2022	Printed		7308	JESSICA MARTINEZ	PRSSC MEETING STIPEND	50.00
203385	10/13/2022	Printed		7227	OCCUPATIONAL HEALTH CENTERS	PREEMPLOY PHYSICAL/DRUG SCREEN	49.00
203386	10/13/2022	Printed		1140	PACIFIC TIRE SERVICE	TIRE FOR VEH#482	440.00
203387	10/13/2022	Printed		5216	POWERSTRIDE BATTERY	NEW BATTERY FOR VEH# 504	140.92
203388	10/13/2022	Printed		6123	PRUDENTIAL OVERALL SUPPLY	WEEKLY OVERALL CHARGES	247.19
203389	10/13/2022	Printed		7170	RESOURCE RECYCLING & RECOVERY	OPP11-20-0133 UNSPENT FUNDS	37.24
203390	10/13/2022	Printed		6759	SMARTHIRE INC.	BACKGROUND CHECKS - AUG 2022	204.06
203391	10/13/2022	Printed		0440	SOUTHERN CALIFORNIA GAS CO.	UTILITY GAS CHARGES	1,491.25
203392	10/13/2022	Printed		0849	THE SAFEMART OF SO CAL INC	KEYS & LOCKSET FOR WILLIAM	235.87
203393	10/13/2022	Printed		3938	TRANSTECH ENGINEERS INC	STAFF AUGMENTATION SVCS-	12,356.00
203394	10/13/2022	Printed		3672-CCK	U.S. BANK CORPORATE PAYMENT	CREDIT CARD PAYMENT	809.80
203395	10/13/2022	Printed		3672-CSD	U.S. BANK	CREDIT CARD PAYMENT	3,395.78
203396	10/13/2022	Printed		3672-FIN	U.S. BANK	CREDIT CARD PAYMENT	81.28
203397	10/13/2022	Printed		3672-MSD	U.S. BANK	CREDIT CARD PAYMENT	1,887.41
203398	10/13/2022	Printed		2883	UNDERGROUND SERVICE ALERT SC	DIG ALERT TICKETS& MAINT. FEE	127.25
203399	10/13/2022	Printed		3373	VERIZON WIRELESS	DESK & CELL PHONES SERVICE	3,460.28
203400	10/13/2022	Printed		0480	VISTA PAINT	GRAFFITI PAINT SUPPLIES	233.42
203401	10/13/2022	Printed		7939	VORTEX INDUSTRIES, LLC	SOUTH WALL - NEW PEDESTRIAN	1,489.00
203402	10/13/2022	Printed		6697	DANIEL T WOODS	PRSSC MEETING STIPEND	50.00
203403	10/13/2022	Printed		7987	NING ZHENG	PLANNING DEPOSIT REFUND	1,125.25
			Total Checks: 36			**Checks Total (excluding void checks):**	**771,991.63**
			Total Payments: 36			**Bank Total (excluding void checks):**	**771,991.63**
			Total Payments: 36			**Grand Total (excluding void checks):**	**771,991.63**

Check Register Report

City of Lawndale

BANK: WELLS FARGO BANK N.A

Date: 10/19/2022
Time: 4:43 pm
Page: 1

Check Number	Check Date	Status	Void/Stop Date	Vendor Number	Vendor Name	Check Description	Amount
WELLS FARGO BANK N.A Checks							
203404	10/20/2022	Printed		7670	1000BULBS.COM	LED STRING LIGHTS	4,010.05
203405	10/20/2022	Printed		1541	ALESHIRE & WYNDER, LLP	LEGAL SERVICES - SEPT. 2022	4,025.40
203406	10/20/2022	Printed		7470	ARAMARK REFRESHMENT SVCS LLC	COFFEE/TEA FOR PWD	163.63
203407	10/20/2022	Printed		0372C	AT & T - CALNET3	PHONE CHARGES	1,261.90
203408	10/20/2022	Printed		7194	BAVCO BACKFLOW & APPARATUS	BACKFLOW INSPECTION	540.00
203409	10/20/2022	Printed		4333	CALIF BLDG STANDARDS COMMISSIO	SURCHARGE QTR ENDING 9-30-2022	175.00
203410	10/20/2022	Printed		6459	CASC ENGINEERING & CONSULTING	NPDES PERMIT COMPLIANCE SVCS -	11,555.00
203411	10/20/2022	Printed		4734	COUNTY OF LOS ANGELES	REFUNDABLE CLEANING DEPOSIT	250.00
203412	10/20/2022	Printed		7577	DE NOVO PLANNING GROUP	GENERAL PLAN & SPECIFIC PLAN	16,748.75
203413	10/20/2022	Printed		6531	DARREN P DOERSCHEL	SYSTEMS INTEGRATION CONSULTING	2,565.00
203414	10/20/2022	Printed		1288	EWING IRRIGATION PRODUCTS INC	IRRIGATION PARTS	414.03
203415	10/20/2022	Printed		7996	SHELLY FISCHER	PERMIT FEE REFUND	66.40
203416	10/20/2022	Printed		0441	GOLDEN STATE WATER CO.	WATER USAGE SERVICES	9,439.73
203417	10/20/2022	Printed		5965	JOHNSON CONTROLS INC	HVAC SVC REPAIR FOR CITY HALL	934.00
203418	10/20/2022	Printed		2119	L & J AUTO BODY AND PAINT	VEHICLE REPAIR-2018TOYOTA RAV4	3,117.21
203419	10/20/2022	Printed		7940	MARIPOSA LANDSCAPES, INC	MAIN LINE REPAIR @ JANE ADAMS	36,620.29
203420	10/20/2022	Printed		7998	ARGISHT MEGRABYAN	PERMIT FEE REFUND	387.60
203421	10/20/2022	Printed		7997	DALE MOEN	PLANNING DEPOSIT REFUND	769.09
203422	10/20/2022	Printed		7890	ODP BUSINESS SOLUTIONS LLC	OFFICE SUPPLIES	547.21
203423	10/20/2022	Printed		7047	PRECISION AUTO CARE, INC	CNG ENGINE PROGRAM SERVICE	7,860.56
203424	10/20/2022	Printed		5895	RICOH USA INC	LEASE CHARGES FOR COPIERS -	5,671.80
203425	10/20/2022	Printed		0439	SOUTHERN CALIFORNIA EDISON CO.	UTILITIES ELECTRICITY	27,062.58
203426	10/20/2022	Printed		0346	SPARKLETTS	BOTTLE WATER SERVICE-	740.18
203427	10/20/2022	Printed		6349	STEAMX, LLC	PRESSURE WASHER REPAIR	250.41
203428	10/20/2022	Printed		3672-PWD	U.S. BANK	CREDIT CARD PAYMENT	2,314.62
203429	10/20/2022	Printed		3373	VERIZON WIRELESS	M2M ACCOUNT SHARE DATA LINE	25.02
			Total Checks: 26			**Checks Total (excluding void checks):**	**137,515.46**
			Total Payments: 26			**Bank Total (excluding void checks):**	**137,515.46**
			Total Payments: 26			**Grand Total (excluding void checks):**	**137,515.46**

Check Register Report

Date: 10/26/2022
Time: 4:32 pm
Page: 1

City of Lawndale

BANK: WELLS FARGO BANK N.A

Check Number	Check Date	Status	Void/Stop Date	Vendor Number	Vendor Name	Check Description	Amount
WELLS FARGO BANK N.A Checks							
203430	10/27/2022	Printed		6608	BELLAGIO CAR WASH	CAR WASH - SEPT. 2022	75.00
203431	10/27/2022	Printed		0615	CLEANSTREET, LLC	STREET SWEEPING CITYWIDE	15,092.95
203432	10/27/2022	Printed		0219	COUNTY OF LA DEPT OF PUBLIC WK	TRAFFIC SIGNAL MAINT. -	13,515.02
203433	10/27/2022	Printed		1635	DELL MARKETING L.P.	REPLACING 9 COMPUTERS AT CSD	7,658.78
203434	10/27/2022	Printed		0218	DEPARTMENT OF JUSTICE	FINGERPRINTING APPS(2)-SEPT-22	64.00
203435	10/27/2022	Printed		7990	FARONICS TECHNOLOGIES USA, INC	DEEP FREEZE, WINSELECT, PROSVS	2,570.10
203436	10/27/2022	Printed		6636	FRONTIER COMMUNICATIONS	FAX LINE FOR PWD	84.80
203437	10/27/2022	Printed		0441	GOLDEN STATE WATER CO.	WATER USAGE SERVICES	5,417.03
203438	10/27/2022	Printed		0308	LOS ANGELES COUNTY	PUBLIC SAFETY SERVICES -	560,080.10
203439	10/27/2022	Printed		7227	OCCUPATIONAL HEALTH CENTERS	PREEMPLOY PHYSICAL/DRUG SCREEN	98.00
203440	10/27/2022	Printed		7999	CHAVINP PONGSAKORNPATARA	PERMIT#PR20220000964 REFUND	600.00
203441	10/27/2022	Printed		0440	SOUTHERN CALIFORNIA GAS CO.	UTILITY GAS CHARGES	80.04
203442	10/27/2022	Printed		0211	SOUTHERN CALIFORNIA NEWS GROUP	LEGAL ADS	269.08
203443	10/27/2022	Printed		6238	SOUTHERN COMPUTER WAREHOUSE	ADVANCED SECURITY LICENSE	1,075.77
203444	10/27/2022	Printed		3938	TRANSTECH ENGINEERS INC	PROFESSIONAL SVCS - PWD	15,604.00
203445	10/27/2022	Printed		4715	URBAN FUTURES, INC	DISCLOSURE/COMPLIANCE SVCS	1,887.00
203446	10/27/2022	Printed		6538	UTILITY CRANE & EQUIPMENT, INC	REPAIR LIFT "BOOM" TRUCK	1,123.08
203447	10/27/2022	Printed		7794	W.G. ZIMMERMAN ENGINEERING INC	ENGINEERING STAFF SERVICES -	26,690.00
			Total Checks: 18			**Checks Total (excluding void checks):**	**651,984.75**
			Total Payments: 18			**Bank Total (excluding void checks):**	**651,984.75**
			Total Payments: 18			**Grand Total (excluding void checks):**	**651,984.75**

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MINUTES OF THE
LAWNDALE CITY COUNCIL REGULAR MEETING
October 17, 2022

A. CALL TO ORDER AND ROLL CALL

Mayor Pullen-Miles called the meeting to order at 6:34 p.m. in the City Hall Council Chamber, 14717 Burin Avenue, Lawndale, California.

Councilmembers Present: Mayor Robert Pullen-Miles, Mayor Pro Tem Rhonda Hofmann Gorman, Councilmember Bernadette Suarez, Councilmember Pat Kearney, Councilmember Sirley Cuevas

Other Participants: City Clerk Erica Harbison, City Manager Sean M. Moore, City Attorney Greg M. Murphy, Assistant City Clerk Yvette Hall, Los Angeles County Sheriff's Department Lieutenant Jose Salgado, Community Services Director Mike Estes, Municipal Services Director Michael Reyes, Community Development Manager Jared Chavez, Finance Director Hrant Manuelian, Interim Public Works Director Ahmad Ansari

B. CEREMONIALS

Councilmember Kearney led the flag salute and Pastor Jimmy Orellana from Calvary Chapel South Bay provided the inspiration.

Assistant City Clerk Hall provided voting information for the November 8, 2022 General Municipal Election and encouraged everyone to vote.

C. PRESENTATION

a. Senator Steven Bradford's Office - Legislative Update

Senator Steven Bradford, 35th State Senate District, provided his annual legislative update and information on local community events.

Mayor Pro Tem Hofmann Gorman requested staff to post the Turkey Giveaway information on the City website.

D. PUBLIC SAFETY REPORT

Los Angeles County Sheriff's Department Lieutenant Salgado summarized the recent law enforcement activities.

Mayor Pullen-Miles inquired if illegal camping is the same as a homeless encampment.

Lieutenant Salgado responded they are both different.

Mayor Pro Tem Hofmann Gorman commended Lieutenant Salgado for providing the number of citations for loud vehicle mufflers and requested to continue providing the numbers.

DRAFT

Councilmember Cuevas commented there has been loud and dangerous vehicle stunts on 147th Street and Mansel Avenue.

Lieutenant Salgado responded that the deputies are aware of the hazardous vehicle stunts and have been trying to catch the drivers.

E. ORAL COMMUNICATIONS - ITEMS NOT ON THE AGENDA (Public Comments)

Gary Adams, Resident, spoke about his concerns with the City policies and Municipal Code and commented on all visible code violations in the City.

Holly Osborne, Redondo Beach Resident, spoke about a Metro construction project due to erosion damage on the right-of-way of railroad areas, an embankment and possible retaining walls.

Jesus Armenta, Resident, spoke about recent vandalism of vehicles and loitering in his neighborhood and commented on the absence of Sheriff's Deputies patrolling the area.

Randall Abram, Resident, spoke about his concerns with the reporting of the fireworks sales by the non-profit organizations.

F. COMMENTS FROM COUNCIL

The City Council responded generally to the public comments.

Councilmember Kearney requested staff review the erosion damage construction work being done by Metro.

Councilmember Suarez commended everyone for speaking and responded generally to the public comments. Councilmember Suarez concurred with Councilmember Kearney's comment.

Councilmember Cuevas requested that the Sheriff's Deputies apprehend the driver performing stunts.

Mayor Pro Tem Hofmann Gorman commented she was not aware of the construction work being done on the railroad tracks and noted she will bring it up in the next meeting with Metro. Mayor Pro Tem Hofmann Gorman requested Ms. Osborne provide any available information.

Mayor Pullen-Miles commended everyone for speaking. Mayor Pullen-Miles requested more information on the Metro construction work and additional patrol by the deputies in the area where dangerous driving has been reported. Mayor Pullen-Miles indicated that staff is reviewing the firework reports submitted by the organizations.

CONSENT CALENDAR

1. Motion to read by title only and waive further reading of all ordinances listed on the Agenda
Recommendation: that the City Council approve.

2. Second Reading and Adoption of Ordinance No. 1191-22 amending the Municipal Code penalties for unlawful handbill distribution

Recommendation: that the City Council read by title only, waive further reading, and adopt Ordinance No. 1191-22 amending the Lawndale Municipal Code to increase the citation amounts for non-permitted handbill distribution.

3. Amendment to City's Conflict of Interest Code

Recommendation: that the City Council adopt Resolution No. CC-2210-050 amending the City's Conflict of Interest Code and Rescinding Resolution No. CC-2009-050.

4. Accounts Payable Register

Recommendation: that the City Council adopt Resolution No. CC-2210-049 authorizing the payment of certain claims and demands in the amount of $767,220.50

5. Minutes of the Lawndale City Council Regular Meeting – October 3, 2022

Recommendation: that the City Council approve.

A motion was made by Councilmember Kearney to approve the Consent Calendar and was seconded by Councilmember Cuevas and carried by a vote of 5-0.

G. ADMINISTRATION

6. Potential Reschedule and/or Cancelation of Upcoming City Council Meetings

Recommendation: that the City Council 1) Cancel the meeting of Monday, January 2, 2023; and 2) Determine if the November 8, 2022 General Municipal Election results and conduct of other election related matters should be declared at the Monday, December 19, 2022 City Council meeting; or 3) Cancel the Monday, December 19, 2022 City Council meeting and call for a special City Council meeting to declare the November 8, 2022 General Municipal Election results and conduct of other election related matters; or 4) Provide staff with other guidance and direction.

Assistant City Clerk Hall provided the staff report for the potential reschedule and/or cancelation of upcoming City Council meetings.

Councilmember Kearney requested not to cancel the December 19, 2022 City Council meeting.

Councilmember Cuevas concurred with Councilmember Kearney and recommended a light agenda.

The City Council reached a general consensus, without any objections, to cancel the following City Council meetings: Monday, November 21, 2022 and Monday, January 2, 2023.

7. Quarterly Investment Report for the Quarter Ended September 30, 2022

Recommendation: that the City Council receive and file the Quarterly Investment Report for the quarter ended September 30, 2022.

Finance Director Manuelian provided the staff report for the quarterly investment report for the quarter ended September 30, 2022.

Mayor Pullen-Miles commented on the good financial standing of the City as indicated by the report.

The City Council reached a unanimous consensus to receive and file the report.

8. Professional Service Agreement Extension with De Novo Planning Group

Recommendation: that the City Council approve to extend the professional service agreement with De Novo for the General Plan and Hawthorne Boulevard Specific Plan Update.

Manager of Community Development Chavez provided the staff report for the professional service agreement with De Novo for the General Plan and Hawthorne Boulevard Specific Plan update.

The City Council commended the Community Development Department for the Housing Element certification received by the State Department of Housing and Community Development (HCD) Department.

Councilmember Cuevas inquired what the cost for the extension is and where is the funding coming from.

Manager of Community Development Chavez responded that the funds were allocated from leftover funds from a Request for Proposal and grant funding.

City Manager Moore added the funding was set-aside from the sale of a corner lot by the City.

A motion was made by Councilmember Suarez to approve to extend the professional service agreement with De Novo for the General Plan and Hawthorne Boulevard Specific Plan Update. Councilmember Kearney seconded the motion which carried by a vote of 5-0.

9. Transtech Engineers, Inc. Contract Agreement Extension

Recommendation: that the City Council 1) Approve the contract extension with Transtech Engineers, Inc. for staff augmentation services for the Community Development Department; and 2) Authorize the Finance Department to transfer $39,000 from the Community Development Department's "Salaries – Full-Time" account to the department's "Contract Services" account.

Manager of Community Development Chavez provided the staff report for the Transtech Engineers, Inc. Contract Agreement Extension.

Councilmember Cuevas inquired why it takes six months to train a new hire.

Manager of Community Development Chavez responded the department is currently under staffed due to the consultant being out on leave.

City Manager Moore added there is not a full staff augmentation in place and the additional staff will be part-time and will focus on site plan reviews while the Manager of Community Development Chavez trains the new Planner.

Councilmember Cuevas inquired if the contract can be terminated if the staff is up to speed in less than six months.

City Manager Moore responded the contract can be terminated in less than six months for the reason that it is an As-Needed contract.

A discussion ensued among the City Councilmembers and staff regarding the staffing needs of the department and the costs.

A motion was made by Councilmember Kearney to approve the contract extension with Transtech Engineers, Inc. for staff augmentation services for the Community Development Department; and authorize the Finance Department to transfer $39,000 from the Department's "Salaries – Full-Time" account to the department's "Contract Services" account. Councilmember Suarez seconded the motion which carried by a vote of 5-0.

10. <u>Update on Sales Tax Measure L Oversight Committee</u>

Recommendation: that the City Council 1) Take no action and continue to rely on the annual audit and budget to demonstrate that the City is accountable and spending funds responsibly, or 2) Ask staff to bring back an item to City Council to create a Citizen Oversight Committee for the Sales Tax Measure.

Finance Director Manuelian provided the staff report for the update on sales tax Measure L Oversight Committee.

Councilmember Suarez commented she was not aware the Oversight Committee was optional and recommended a discussion be held at the next budget meeting.

Councilmember Kearney concurred with Councilmember Suarez and recommended recruiting residents to volunteer as members on the Oversight Committee.

The City Council reached a unanimous consensus to present this item at the next budget meeting and determine, at that time, if there are any volunteers who are interested in participating in the Citizen Oversight Committee.

11. <u>Approval to Dispose of Two Vehicles for Public Works Department</u>

Recommendation: that the City Council approve the sale of 2006 Toyota Prius and 2008 Ford Escape - Hybrid through our standard public auction process facilitated by Ken Porter Auctions in Carson, California.

Interim Public Works Director Ansari provided the staff report for the approval to dispose of two Vehicles for Public Works Department.

Councilmember Kearney requested a breakdown of how much the vehicles are sold for.

City Manager Moore responded staff will provide a report after the sale of the vehicles.

A motion was made by Councilmember Cuevas to approve the sale of 2006 Toyota Prius and 2008 Ford Escape – Hybrid through our standard public auction process facilitated by Ken Porter Auctions in Carson, California. Councilmember Kearney seconded the motion which carried by a vote of 5-0.

H. CITY MANAGER REPORT

City Manager Moore commended Community Development Department for certifying the General Plan and reminded City Council to contact him for any bulky items they see and added staff has been monitoring and picking up the bulky items.

Councilmember Cuevas spoke about a bulky item that was not picked up.

City Manager Moore spoke about staff assigned to four quadrants of the City and that the bulky item will be taken care of.

I. ITEMS FROM CITY COUNCILMEMBERS

12. Mayor/City Councilmembers Report of Attendance at Meetings and/or Events

Councilmember Kearney attended the Sherriff's Liability Trust Fund and Oversight Committee meeting, California Joint Powers Insurance Authority (JPIA) forum and the Retro Games Plus grand opening.

Councilmember Suarez attended the California Joint Powers Insurance Authority (JPIA) forum and recommended City Council work on strategic planning to prioritize projects as a group.

Councilmember Cuevas attended the Retro Games Plus grand opening and requested an update on the properties being built on Hawthorne Boulevard and the status of the vacant lot on Hawthorne Boulevard. Councilmember Cuevas requested staff invite the Lawndale Chamber of Commerce to provide an update at the next City Council meeting.

City Manager Moore provided an update on the properties on Hawthorne Boulevard.

Mayor Pro Tem Hofmann Gorman noted that she will be meeting with Los Angeles County Supervisors Janice Hahn and Holly J. Mitchell regarding the Metro C-line (Green) Extension Project. Mayor Pro Tem Hofmann Gorman requested staff remove visible handbills from the trees and light poles, and reminded the public of the City's Halloween Haunt event.

Mayor Pullen-Miles attended the Los Angeles County Sanitation Districts Board of Directors meeting and a lunch with the senior adult residents. He reminded everyone that the Community Center is open and serving lunch to the senior residents.

Mayor Pro Tem Hofmann Gorman reminded the residents of the Veterans Field of Honor Event and available flags for purchase.

J. CLOSED SESSION

At 8:09 p.m. the City Council entered into Closed Session.

13. Conference with Labor Negotiator

The City Council will conduct a closed session, pursuant to Government Code section 54957.6, with the City Manager, the City Attorney and the City's negotiators, regarding labor negotiations with Local 1895, Council 36, American Federation of State, County and Municipal Employees, AFL-CIO, representing the City's mid-management and classified employees.

At 8:26 p.m. the City Council entered back into open session.

City Attorney Gregory M. Murphy reported that the City Council met in Closed Session to discuss the item listed on the Closed Session agenda. The City Council was updated on the item and there was no reportable action taken.

K. ADJOURNMENT

There being no further business to conduct, the Mayor adjourned the meeting at 8:29 p.m.

_____
Robert Pullen-Miles, Mayor

ATTEST:

_____
Erica Harbison, City Clerk

Approved: 11/07/2022

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LAWNDALE PUBLIC FINANCING AUTHORITY

14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200, FAX (310) 644-4556
www.lawndalecity.org

DATE: November 7, 2022

TO: Honorable Board of the Lawndale Public Financing Authority

FROM: Sean M. Moore, City Manager

PREPARED BY: Hrant Manuelian, Finance Director/Treasurer

SUBJECT: Annual Accounting of Lawndale Public Financing Authority Financial Activities

BACKGROUND

The Lawndale Public Financing Authority established under the Joint Exercise of Powers Agreement (the "Agreement"), dated August 3, 2009, between the City of Lawndale and the Lawndale Redevelopment Agency ("LRA"), requires an annual accounting of financial activities within a reasonable time after the close of each Fiscal Year. (Article VI, Section 6.02 of the Agreement). The Authority was created for the sole purpose of issuing bonds for financing capital projects including the Community Center located at 14700 Burin Avenue, road improvements (sidewalk, pavement, curb and gutter), park and open space improvements (lights and playground) and new park acquisition and improvements.

On November 1, 2009, $20,545,000 of Tax Allocation Bonds, Series 2009, were issued. Interest rates range from 2% to 5.6% with interest payable semiannually on February 1 and August 1 and principal maturing annually on August 1. Debt service payments are included on the Lawndale Recognized Obligation Payment Schedule ("ROPS") and funded through the Successor Agency to the former Lawndale Redevelopment Agency, pursuant to Assembly Bill 1X 26.

STAFF REVIEW

For the fiscal year ended June 30, 2022, debt service of $1,296,988. ($335,000 principal and $961,988 interest) was paid and the same amount was received from the Successor Agency. The outstanding principal on the debt changed as follows:

Outstanding Tax Revenue Bond Balance, 7/1/21	$ 17,805,000
Principal Payment, 8/1/21	335,000
Outstanding Tax Revenue Bond Balance, 6/30/22	$ 17,470,000

The debt service schedule is as follows:

Year Ending June 30,	Principal	Interest	Total
2023	350,000	946,138	1,296,138
2024	370,000	928,575	1,298,575
2025	385,000	909,700	1,294,700
2026	405,000	888,938	1,293,938
2027	430,000	865,975	1,295,975
2028-2032	2,540,000	3,936,625	6,476,625
2033-2037	3,965,000	3,050,438	7,015,438
2038-2042	5,180,000	1,799,875	6,979,875
2043-2045	3,845,000	324,638	4,169,638
Total	**17,470,000**	**13,650,902**	**31,120,902**

The $1,296,138 debt service payment for fiscal year ended June 30, 2023 is included in the approved annual ROPS to be received from the Successor Agency during the year. In addition, both the revenue and debt service payments are included in the Successor Agency to the LRD section of the Adopted Budget for Fiscal Year 2022-2023.

COMMISSION REVIEW

N/A

LEGAL REVIEW

N/A

FISCAL IMPACT

There is no fiscal impact.

RECOMMENDATION

Staff recommends the Board of the Lawndale Public Financing Authority receive and file the annual accounting of financial activities.

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MINUTES OF THE
REGULAR MEETING OF THE BOARD OF DIRECTORS OF THE
LAWNDALE PUBLIC FINANCING AUTHORITY MEETING
November 15, 2021

A. CALL TO ORDER AND ROLL CALL

The meeting was called to order at 6:30 p.m. in the Lawndale City Hall council chamber, 14717 Burin Avenue, Lawndale, California. *The board met concurrently with the City Council, minutes order and numbering reflect the concurrent meeting.*

Members Present: Chair Robert Pullen-Miles, Vice-Chair Pat Kearney, Director Bernadette Suarez, Director Rhonda Hofmann Gorman, Director Sirley Cuevas

Other Participants: Secretary Erica Harbison, Acting Executive Director Raylette Felton, Legal Counsel Gregory M. Murphy

B. CEREMONIALS

Director Cuevas led the flag salute.

D. ORAL COMMUNICATIONS - ITEMS NOT ON THE AGENDA

No public comment provided.

E. COMMENTS FROM DIRECTORS

No comments from the Directors.

F. CONSENT CALENDAR

7. Annual Report of Redevelopment Bond Payments for Fiscal Year 2020-2021

Recommendation: that the Board of the Lawndale Public Financing Authority receive and file the annual accounting of financial activities.

8. Minutes of the Public Financing Authority Annual Meeting – September 8, 2020
Recommendation: that the Directors approve.

A motion by Vice-Chair Kearney to approve the consent calendar was seconded by Director Cuevas and carried by a vote of 5-0.

J. ITEMS FROM DIRECTORS

None.

L. ADJOURNMENT

There being no further business to conduct, the meeting was adjourned at 8:40 p.m.

DRAFT

_____
Robert Pullen-Miles, Chair

ATTEST:

_____
Erica Harbison, Secretary

Approved: 11/07/2022

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CITY OF LAWNDALE

14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200 ♦ www.lawndalecity.org

November 7, 2022

TO: Honorable Mayor and City Council

FROM: Sean M. Moore, City Manager

REVIEWED BY: Jared Chavez, Community Development Manager

PREPARED BY: Jose Hernandez, Associate Planner

SUBJECT: **Consideration of Ordinance No. 1192-22 to add Chapter 17.104 to Title 17 of the Lawndale Municipal Code pertaining to Citywide streamlining standards for electric vehicle charging station(s)**

BACKGROUND

The California State Legislature recently passed two electric charging station bills, Assembly Bill (AB) 1236 (2015) and AB 970 (2021) in an effort to expedite the permit process for electric vehicle (EV) charging stations.

The initial bill, AB 1236, found that local government compliance was not widespread as expected by the Governor's Office of Business and Economic Development. Thus, AB 970 is written to speed up EV charging deployment and address the problem of noncompliance. AB 970 codifies the California Governor's Office of Business and Economic Development best management practices by establishing that permit applications would be "deemed complete" or "deemed approved".

AB 970 will allow a permit for an EV charging station application to be automatically deemed approved if a local government takes no action on the permit application 20 business days after the application was deemed complete. In the effort to expedite and streamline permitting process for electric vehicle charging stations (EVCS), jurisdictions are required to adopt their own ordinance that comply with the California Government Code to achieve a timely and cost-effective EVCS installation.

California is one of the most robust states in zero emissions vehicle (ZEV) infrastructure, and therefore these bills aim to establish a process that would allow property owners (residential or commercial) to facilitate building additional infrastructure for ZEVs. Which this goes hand-in-hand with Governor Newson's efforts to phase out new gasoline-fueled vehicles by 2035.

Assembly Bill 1236

Legislature AB 1236 was adopted in October of 2015. AB 1236 was an original attempt by the State to require every city to expedite, streamline and administrate the permitting process for electric vehicle charging stations and to adopt a checklist for the review of each EV charging station application. Specifically, this bill required the following:

1. Local jurisdictions to adopt an ordinance on or before September 30, 2017, that streamlined the permitting process for EV charging stations.

2. Local jurisdictions to publish, on a publicly accessible website, a checklist of all requirements and the required permitting documentation, allow for electronic submittal of a permit application and associated documents, and authorize electronic signatures on all submittal documents.

3. An EV charging station to meet health and safety standards and requirements imposed by State and Local permitting authorities, as well as safety and performance standards established by the California Electrical Code, the Institute of Electrical and Electronics Engineers, accredited testing laboratories, and, where applicable, rules of the California Public Utilities Commission regarding safety and reliability.

Assembly Bill 970

AB 970 was adopted to amend AB 1236. AB 970 went into effect on January 1, 2022 for cities with a population of 200,000 residents or more. However, AB 970 does not go into effect until January 1, 2023 for cities with populations of less than 200,000 residents. AB 970 clarifies that this provision applies to all cities, including charter cities. AB 970 amends AB 1236 by requiring the following timelines for a streamline process:

1. The application shall be deemed complete five (5) business days after submission for applications of at least 1, but not more than 25 electric vehicle charging stations at a single site; or ten business days after submission for applications of more than 25 electric vehicle charging stations at a single site.

2. EV Charging Stations shall be deemed approved twenty (20) business days after the application was deemed complete, if the application: is at least 1 but not more than 25 electric vehicle charging stations at a single site; or forty (40) business days after the application was deemed complete, if the application is for more than 25 electric vehicle charging stations at a single site.

Nevertheless, Lawndale must comply with AB 1236, and update the City Municipal Code to ensure it also complies with AB 970.

STAFF REVIEW

City Staff has drafted an ordinance which establishes rules and regulations for the purpose of streamlining electrical vehicle charging station projects within the City of Lawndale.

Staff has reviewed Assembly Bill 970 and has prepared an Ordinance which will establish streamline procedures and development standards which are:

- Technical review process that is consistent with Government Code Section 65850.7.
- Electrical vehicle charging stations shall meet the requirements of the California Building or Residential Code.

- The City shall adopt a checklist of all requirements under the most current version of the "Plug-in Electric Vehicle Infrastructure Permitting Checklist" of the "Zero-Emission Vehicles in California: Community Readiness Guidebook".
- Zoning clearance compliance that promotes screening, stealthing, and/or design features to a proposed electrical vehicle charging system.

ENVIRONMENTAL ASSESSMENT

Staff is requesting that the City Council determine that the project is exempt from the California Environmental Quality Act (CEQA) under Sections (Project) 15378 and (Review for Exemption) 15061(b)(3) of the CEQA Guidelines.

LEGAL REVIEW

The City Attorney has reviewed Ordinance No. 1192-22 and has approved it as to form.

PUBLIC REVIEW

The Notice of public hearing was posted on the City's notice board located outside City Hall and published in the *Daily Breeze* on October 28, 2022.

COMMISSION REVIEW

On September 28, 2022, the Planning Commission held a public hearing, reviewed and approved Resolution No. 22-05 recommending that City Council adopt the draft Ordinance No. 1192-22.

FISCAL IMPACT

No additional funding required.

RECOMMENDATION

It is recommended that the City Council do the following;

A. Conduct a public hearing;

B. Determine that Ordinance No. 1192-22 is exempt from the California Environmental Quality Act ("CEQA") pursuant to Sections 15378 and 15061(b)(3) of the CEQA Guidelines; and

C. Introduce for first reading by title only Ordinance No. 1192-22, an Ordinance amending the Lawndale Municipal Code regarding EV charging stations to reflect recent changes in state law, and waive further reading.

Attachments: *A. Ordinance No. 1192-22*
B. PC Resolution No 22-05

Attachment A.

Ordinance No. 1192-22

ORDINANCE NO. 1192-22

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF LAWNDALE, CALIFORNIA ADDING CHAPTER 17.104 ELECTRIC VEHICLE CHARGING STATIONS TO TITLE 17 ZONING, OF THE LAWNDALE MUNICIPAL CODE REGARDING AND FINDINGS OF EXEMPTION FROM CEQA

SUMMARY: This ordinance regulates Electric Vehicle Charging Stations within the City.

WHEREAS, the State of California has consistently promoted and encouraged the use of energy efficient electric vehicles; and

WHEREAS, in 2015 the State of California adopted Assembly Bill 1236, which requires local agencies to adopt an ordinance that creates an expedited and streamlined permitting process for electric vehicle charging systems; and

WHEREAS, the State of California recently adopted Assembly Bill 970 amending Assembly Bill 1236 requiring an application to install an electric vehicle charging station to be deemed complete after a specific number of business days depending on the number of electric vehicle charging stations proposed after an application is submitted; and

WHEREAS, creation of an expedited, streamlined permitting process for electric vehicle charging stations would facilitate convenient charging of electric vehicles and help reduce the reliance on fossil fuels ; and

WHEREAS, the Planning Commission considered this ordinance at a properly noticed public hearing on September 28, 2022 and recommended that the City Council adopts this ordinance; and

WHEREAS, the City Council, after a duly public notice on October 28, 2022 was given as required by law, held a public hearing on November 7, 2022 in the City Hall council chamber located at 14717 Burin Avenue, Lawndale, California, to consider this matter.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LAWNDALE, CALIFORNIA, DOES ORDAIN AS FOLLOWS:

SECTION 1. The City Council of the City of Lawndale hereby makes the following findings:

A. The above recitals are true and correct and incorporated fully herein.
B. The changes to the Zoning Code of the City of Lawndale made by this Ordinance are consistent with the General Plan of the City of Lawndale.

SECTION 2. Chapter 17.104 is added to Title 17 of the City of Lawndale Municipal Code to read, in its entirety, as follows:

"17.104.010 Electric Vehicle Charging Station

17.72.020 Intent and Purpose. The intent and purpose of this chapter is to adopt an expedited, streamlined permitting process for electric vehicle charging stations that complies with Government Code Section 6580.71, to achieve timely and cost-effective installations. This chapter is designed to encourage the use of electric vehicles by removing what the State Legislature considers to be unreasonable barriers, thus minimizing costs to property owners and the city, and expanding the ability of property owners to install electric vehicle charging systems and electric vehicle charging spaces. This chapter allows the city to achieve these goals while protecting the public health and safety.

17.72.030 Definitions

For purposes of this chapter, the following words and phrases shall have the following meanings:

A. "Electric vehicle charging station or charging station" means any level of electric vehicle supply equipment station that is designed and built in compliance with Article 625 of the California Electrical Code, as it reads on the effective date of this Article, and delivers electricity from a source outside an electric vehicle into a plug-in electric vehicle.

B. "Specific, adverse impact" means a significant, quantifiable, direct, and unavoidable impact, based on objective, identified, and written public health or safety standards, policies, or conditions as they existed on the date the application was deemed complete.

C. "Electronic submittal" means the utilization of one or more of the following:

1. Electronic mail or email.
2. Facsimile.
3. The internet

D. "Zoning Clearance" means an approval from the City's Planning department, as allowed in the City of Lawndale Municipal code, by verifying the proposed use, structure and/or equipment complies with the City's land use requirements.

17.72.040 Applicability

This chapter applies to the permitting of all electric vehicle charging stations in the City. Electric vehicle charging stations legally established or permitted prior to the effective date of this Chapter are not subject to its requirements unless physical modifications or alterations are undertaken that materially change the size, type, or components of an electric vehicle charging station in such a way as to require new

permitting. Routine operation and maintenance or like for like replacements with no structural alterations shall not require a permit.

17.72.050 Technical Review

A. In the technical review of a charging station permit application, consistent with Government Code Section 65850.7, the Building Official shall not condition the approval for any such permit on the approval of such system by an association, as that term is defined by Civil Code Section 4080.

B. Prior to submitting an application for processing, the applicant shall verify that the installation of an electric vehicle charging station will not have specific, adverse impact to public health and safety and building occupants. Verification by the applicant includes but is not limited to: electrical system capacity and loads; electrical system wiring, bonding and overcurrent protection; building infrastructure affected by charging station equipment and associated conduits; areas of charging station equipment and vehicle parking.

C. Anchorage of either floor-mounted or wall-mounted electric vehicle charging stations shall meet the requirements of the California Building or Residential Code as applicable per occupancy, and the provisions of the manufacturer's installation instructions. Mounting of charging stations shall not adversely affect building elements.

17.72.060 Duties of Building and Safety Division and Building Official

A. The Building Official shall implement an expedited, streamlined permitting process and adopt a checklist of all requirements which electric vehicle charging stations shall comply with in order to be eligible for expedited review within 30 days of the adoption of this chapter.

B. Electric vehicle charging stations shall be eligible for expedited review as provided in this chapter.

C. All documents required for submission of an expedited electric vehicle charging station system shall be made available on the city's publicly accessible website.

D. Electronic submittal of the required permit application and documents via email, the city's website, or facsimile shall be made available to all electric vehicle charging station permit applicants.

E. The Building and Safety Division shall adopt a standard plan and checklist of all requirements with which electric vehicle charging stations shall comply with to be eligible for expedited review.

F. The electric vehicle charging station permit process, standard plans, and checklist shall substantially conform to the recommendations for expedited permitting, including the checklist and standard contained in the most current version of the "Plug-in Electric Vehicle Infrastructure Permitting Checklist" of the "Zero-Emission Vehicles in California: Community Readiness Guidebook" published by the Governor's Office of Planning and Research.

G. All fees prescribed for the permitting of electrical vehicle charging stations shall comply with Government Code Section 17556.

17.72.070 Expedited Review and Inspection Requirements

A. For an application for electric vehicle charging stations that meets the requirements of the approved checklist and standard plan, the Building and Safety Division shall issue a building permit or other non-discretionary permit within three (3) business days following receipt of a completed application. The expedited, streamlined permitting process and checklist refers to the recommendations contained in the most current version of the "Plug-In Electric Vehicle Infrastructure Permitting Checklist" of the "Zero-Emission Vehicles in California: Community Readiness Guidebook" as published by the Governor's Office of Planning and Research. The checklist adopted by the city shall be published on the city's website. The Building Official may require the applicant to apply for an electric vehicle charging station use permit only if the Official finds, based on substantial evidence, the electric vehicle charging station could have a specific, adverse impact upon the public health and safety. Such decisions may be appealed to the Planning Commission by filing a written appeal pursuant to chapter 17.12 of the Lawndale Municipal Code.

B. Review of the application for a permit for an electric vehicle charging station shall be limited to the Building Officials review of local, state and federal building health and safety requirements. If the Building Official determines that the permit application is incomplete, he or she shall issue a written correction notice to the applicant, detailing all deficiencies in the application and any additional information required to be eligible for expedited permit issuance.

C. If an electric vehicle charging station permit is required pursuant to subsection (A) of this section, the Building Official may deny the application if the Building Official makes written findings based upon substantive evidence in the record that the proposed installation would have a specific, adverse impact upon public health or safety and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. Such written findings shall include the basis for the rejection of the potential feasible alternative for preventing adverse impact. Such decisions may be appealed to the Planning Commission as provided in this chapter.

D. Any condition imposed on an application shall be designed to mitigate the specific, adverse impact upon health and safety at the lowest possible cost. The city shall use its best efforts to ensure the selected method, condition, or mitigation meets the conditions of Civil Code Section 714(d)(1)(A)-(B).

E. If an application for an electric vehicle charging station is deemed incomplete, a written correction notice detailing all deficiencies in the application and any additional information or documentation required to be eligible for expedited permitting shall be sent to the applicant within three business days following the date the application is deemed incomplete.

F. The Building Official shall allow for electronic submittal of permit applications covered by this chapter and associated supporting documentations. In accepting such permit applications, the Building

Official shall also accept electronic signatures on all forms, applications, and other documentation in lieu of a wet signature by any applicant.

G. A permit application that satisfies the information requirements in the city's adopted checklist shall be deemed complete and be promptly processed. Upon confirmation by the Building Official that the permit application and supporting documents meets the requirements of the city's adopted checklist, and is consistent with all applicable laws and health and safety standards, the Building Official shall approve the application and issue all necessary permits. Such approval does not authorize an applicant to energize or utilize the electric vehicle charging station until it passes final inspection by the city.

H. Only one inspection shall be required and it shall be performed by the Building and Safety Division for electric vehicle charging stations eligible for expedited review.

I. The inspection shall be done in a timely manner and should combine inspections of multiple trades if feasible. An inspection shall be scheduled within two business days of a request.

J. If an electric vehicle charging station fails inspection, a subsequent inspection is authorized but need not conform to the requirements of this chapter.

17.72.80 Electric Vehicle Charging Station Use Permit and Appeals

A. If the Building Official determines, based on substantial evidence, that the electric vehicle charging station could have a specific, adverse impact upon the public health or safety, the Building Official shall make written findings to support this determination and shall require the applicant to apply for a conditional use permit pursuant to the provisions of Title 17 (Zoning).

B. If the Building Official requires an electric vehicle charging station use permit, the Planning Commission shall approve an application for a electric vehicle charging station use permit to install an electric vehicle charging station, provided that the Planning Commission is able to make the findings set forth in Section 17.28.050 of the Code and the Planning Commission determines there are feasible methods to satisfactorily mitigate or avoid specific, adverse impact upon public health and safety.

C. Appeals. Decisions of the Building Official may be appealed to the Planning Commission pursuant to the provisions of chapter 17.12of the Lawndale Municipal Code; Decisions of the Planning Commission may be appealed to the City Council pursuant to the provisions of chapter 17.12 of the Lawndale Municipal Code.

17.72.090 Electric Vehicle Charging Station Installation Requirements

A. Electric vehicle charging station equipment shall meet the requirements of the California Electrical Code, the Society of Automotive Engineers, the National Electrical Manufacturers Association, and accredited testing laboratories such as Underwriters Laboratories, and rules of the Public Utilities Commission or a Municipal Electric Utility Company regarding safety and reliability.

B. Installation of electric vehicle charging stations and associated wiring, bonding, disconnecting means and overcurrent protective devices shall meet the requirements of Article 625 and all applicable provisions of the California Electrical Code.
C. Installation of electric vehicle charging stations shall be incorporated into the load calculations of all new or existing electrical services and shall meet the requirements of the California Electrical Code. Electric vehicle charging equipment shall be considered a continuous load.

17.72.100 Zoning Clearance

A. A zoning clearance shall be required if, based on substantial evidence, a finding is made that the charging station would have a specific, adverse impact upon the public health, safety and general welfare.

B. Any conditions on a zoning clearance approval shall be solely imposed in order to mitigate the specific, adverse impact upon the public health or safety and shall do so at the lowest cost possible.

C. New and proposed electric charging stations shall be subject to the City of Lawndale Residential Development Standards and Design Guidelines.

D. New and proposed electric charging stations shall be designed in a manner to protect the visual character of the city through careful design, siting, landscaping and innovative camouflaging techniques for electrical charging station equipment. "

SECTION 3. This Ordinance is exempt from the California Environmental Quality Act ("CEQA") pursuant to Public Resources Code Section 21080.17 and CEQA Guidelines section 15282(h). These sections statutorily exempt the adoption of an ordinance implementing provisions of Government Code Section 65852.1 and 65852.2. This ordinance would allow for the construction of electric vehicle charging stations consistent with and as required by state law. Additionally, this ordinance is exempt from CEQA under Section 15061(b)(3) of the CEQA Guidelines, which provides that CEQA only applies to projects that have the potential for causing a significant effect on the environment. Where, as here, it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

SECTION 4. If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of any competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance, and each and every section, subsection, sentence, clause and phrase thereof not declared invalid or unconstitutional without regard to whether any portion of the Ordinance would be subsequently declared invalid or unconstitutional.

SECTION 5. The City Clerk shall certify to the passage and adoption of this ordinance, and shall make a minute of the passage and adoption thereof in the records of and the proceedings of the City Council at which the same is passed and adopted. This ordinance shall be in full force and effect thirty

(30) days after its final passage and adoption, and within fifteen (15) days after its final passage, the City Clerk shall cause it to be posted and published in a newspaper of general circulation in the manner required by law.

PASSED, APPROVED, AND ADOPTED this 7th day of November, 2022.

_____
Robert Pullen-Miles, Mayor

ATTEST:

State of California)
County of Los Angeles) SS
City of Lawndale)

I, Erica Harbison, City Clerk of the City of Lawndale, California, do hereby certify that the City Council duly introduced the foregoing Ordinance No. 1192-22 at its regular meeting held on the 7th day of November, 2022, and duly approved and adopted said ordinance at its regular meeting held on the day of __, __, by the following roll call vote:

Name	Voting		Present, Not Voting		Absent
	Aye	No	Abstain	Not Participating	
Robert Pullen-Miles, Mayor					
Rhonda Hofmann Gorman, Mayor Pro Tem					
Pat Kearney					
Bernadette Suarez					
Sirley Cuevas					

_____ _____
Erica Harbison, City Clerk Date

APPROVED AS TO FORM:

_____
Gregory Murphy, City Attorney

City of Lawndale
Community Development Department
14717 Burin Avenue, Lawndale , CA 90260
(310) 973-3230 - Office
(310) 970-2150 - Fax
www.Lawndalecity.org

Eligibility Checklist for Expedited Electric Vehicle Charging Station Multi-Unit Dwelling Permitting

This checklist is provided to determine if your application is eligible for expedited EVCS processing. If any item is checked NO, revise design, otherwise application must go through standard review process.

Type of Charging Station(s) Proposed	Power Levels (proposed circuit rating)	Check one
Level 1	110/120 volt alternating current (VAC) at 15 or 20 Amps	☐
Level 2 - 3.3 kilowatt (kW) (low)	208/240 VAC at 20 or 30 Amps	☐
Level 2 – 6.6kW (medium)	208/240 VAC at 40 Amps	☐
Level 2 – 9.6kW (high)	208/240 VAC at 50 Amps	☐
Level 2 – 19.2kW (highest)	208/240 VAC at 100 Amps	☐
Other (provide detail):_____	Provide rating:_____	☐

PERMIT APPLICATION

A. Is the application complete with the following information: Project address, parcel #, builder/owner name, contractor name, valid contractor's license #, phone numbers, etc.	☐Y	☐N
B. Does the application include EVCS manufacturer's specs and installation guidelines	☐Y	☐N

ELECTRIC LOAD CALCULATION WORKSHEET

A. Is an electrical load calculation worksheet included? (CEC 220)	☐Y	☐N
B. Based on the load calculation worksheet, is a new electrical service panel upgrade required	☐Y	☐N
1) If yes, do plans include the electrical service panel upgrade	☐Y	☐N
C. Is the charging circuit appropriately sized for a continuous load (125%)	☐Y	☐N
D. If charging equipment proposed is a Level 2 – 9.6 kW station with a circuit rating of 50 Amps or higher, is a completed circuit card with electrical calculations included with the single line diagram	☐Y	☐N

SITE PLAN & SINGLE LINE DRAWING

A. Is a site plan and electrical plan with a single-line diagram included with the permit application	☐Y	☐N
1) If mechanical ventilation requirements are triggered for indoor venting requirements (CEC 625.29 (D)), is a mechanical plan included with the permit application	☐Y	☐N
B. Is the site plan fully dimensioned and drawn to scale	☐Y	☐N
1) Showing location, size, and use of all structures	☐Y	☐N
2) Showing location of electrical panel to charging system	☐Y	☐N
3) Showing type of charging system and mounting	☐Y	☐N

COMPLIANCE WITH 2013 CALIFORNIA ELECTRICAL CODE (TITLE 24, PART 3)

A. Does the plan include EVCS manufacturer's specs and installation guidelines	☐Y	☐N
B. Does the electrical plan identify the amperage and location of existing electrical service panel	☐Y	☐N
1) If yes, does the existing panel schedule show room for additional breakers	☐Y	☐N
C. Is the charging unit rated more than 60 amps or more than 150V to ground	☐Y	☐N
1) If yes, are disconnecting means provided in a readily accessible location in line of site and within 50' of EVCS. (CEC 625.23)	☐Y	☐N
D. Does the charging equipment have a Nationally Recognized Testing Laboratory (NRTL) approved listing mark. (UL 2202/UL 2200)	☐Y	☐N
E. If trenching is required, is the trenching detail called out	☐Y	☐N
1) Is the trenching in compliance with electrical feeder requirements from structure to structure (CEC 225)	☐Y	☐N
2) IS the trenching in compliance of minimum cover requirements for wiring methods or circuits (18" for direct burial per CEC 300)	☐Y	☐N

COMPLIANCE WITH 2013 MANDATORY CALGREEN CODE FOR NEW CONSTRUCTION

A. Do CAL Green EV Readiness installation requirements apply to this project	☐Y	☐N
1) Should be identified during plan review. (5.106.5.3)	☐Y	☐N
2) Do the plans demonstrate conformance with mandatory measures for 3% of total parking spaces in lots with 51+ must be EV capable	☐Y	☐N
*** 2016 CAL Green proposed mandatory requirements –** For new construction include measures for 6% of total parking spaces in lots with 10+ spaces being EV capable (Effective January 1, 2017)	☐Y	☐N

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Eligibility Checklist for Expedited Electric Vehicle Charging Station Non-Residential Permitting

This checklist is provided to determine if your application is eligible for expedited EVCS processing. If any item is checked NO, revise design, otherwise application must go through standard review process.

Type of Charging Station(s) Proposed	Power Levels (proposed circuit rating)		Check one
Level 1	110/120 volt alternating current (VAC) at 15 or 20 Amps	Commercial/Office Building	☐
Level 2 – 3.3 kilowatt (kW) (Low)	208/240 VAC at 20 or 30 Amps	Multi-Unit dwelling	☐
Level 2 – 6.6 kW (medium)	208/240 VAC at 40 Amps	Commercial Office Building	☐
Level 2 – 9.6 kW (high)	208/240 VAC at 50 Amps	Public Access	☐
Level 2 – 19.2 kW (highest)	208/240 VAC at 100 Amps		☐
DC Fast Charging	440 or 480 VAC	Public Access/Large Com. Office Building or parks Hospitality & Recreation	☐
Other (Provide Detail):	Provide Ratings:		☐

PERMIT APPLICATION

A.	Is the application complete with the following information: Project address, parcel #, builder/owner name, contractor name, valid contractor license #, phone numbers etc.	☐Y	☐N
B.	Does the application include EVCS manufacturer's specs and installation guidelines	☐Y	☐N

ELECTRIC LOAD CALCULATION WORKSHEET

A.	Is an electrical load calculation worksheet included? (CEC 220)	☐Y	☐N
B.	Based on the load calculation worksheet, is a new electrical service panel upgrade required	☐Y	☐N
1)	If yes, do plans include the electrical service panel upgrade	☐Y	☐N
C.	Is the charging circuit appropriately sized for a continuous load (125%)	☐Y	☐N
D.	If charging equipment proposed is a Level 2 – 9.6 kW station with a circuit rating of 50 Amps or higher, is a completed circuit card with electrical calculations included with the single line diagram	☐Y	☐N

SITE PLAN & SINGLE LINE DRAWING

A.	Is a site plan and electrical plan with a single-line diagram included with the permit application	☐Y	☐N
1)	If mechanical ventilation requirements are triggered for indoor venting requirements (CEC 625.29 (D)), is a mechanical plan included with the permit application	☐Y	☐N
B.	Is the site plan fully dimensioned and drawn to scale	☐Y	☐N
1)	Showing location, size, and use of all structures	☐Y	☐N
2)	Showing location of electrical panel to charging system	☐Y	☐N
3)	Showing type of charging system and mounting	☐Y	☐N

COMPLIANCE WITH 2013 CALIFORNIA ELECTRICAL CODE (TITLE 24, PART 3)

A.	Does the plan include EVCS manufacturer's specs and installation guidelines	☐Y	☐N
B.	Does the electrical plan identify the amperage and location of existing electrical service panel	☐Y	☐N
1)	If yes, does the existing panel schedule show room for additional breakers	☐Y	☐N
C.	Is the charging unit rated more than 60 amps or more than 150V to ground	☐Y	☐N
1)	If yes, are disconnecting means provided in a readily accessible location in line of site and within 50' of EVCS. (CEC 625.23)	☐Y	☐N
D.	Does the charging equipment have a Nationally Recognized Testing Laboratory (NRTL) approved listing mark. (UL 2202/UL 2200)	☐Y	☐N
E.	If trenching is required, is the trenching detail called out	☐Y	☐N
1)	Is the trenching in compliance with electrical feeder requirements from structure to structure? (CEC 225)	☐Y	☐N
2)	Is the trenching in compliance of minimum cover requirements for wiring methods or circuits (18" for direct burial per CEC 300)	☐Y	☐N

COMPLIANCE WITH 2013 MANDATORY CALGREEN CODE FOR NEW CONSTRUCTION

A. Do CAL Green EV Readiness installation requirements apply to this project	☐Y	☐N
1) Should be identified during plan review. (5.106.5.3)	☐Y	☐N
2) Do the plans demonstrate conformance with mandatory measures for 3% of total parking spaces in lots with 51+ must be EV capable	☐Y	☐N
*** 2016 CAL Green proposed mandatory requirements –** For new construction include measures for 6% of total parking spaces in lots with 10+ spaces being EV capable (Effective January 1, 2017)	☐Y	☐N

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Eligibility Checklist for Expedited Electric Vehicle Charging Station Residential Permitting

This checklist is provided to determine if your application is eligible for expedited EVCS processing. If any item is checked NO, revise design, otherwise application must go through standard review process.

Type of Charging Station(s) Proposed	Power Levels (proposed circuit rating)	Check one
Level 1	110/120 volt alternating current (VAC) at 15 or 20 Amps	☐
Level 2 – 3.3 kilowatt (kW) (low)	208/240 VAC at 20 or 30 Amps	☐
Level 2 – 6.6kW (medium)	208/240 VAC at 40 Amps	☐
Level 2 – 9.6kW (high)	208/240 VAC at 50 Amps	☐
Level 2 – 19.2kW (highest)	208/240 VAC at 100 Amps	☐
Other (provide detail):_____	Provide rating:_____	☐

PERMIT APPLICATION

A. Is the application complete with the following information: Project address, parcel #, builder/owner name, contractor name, valid contractor's license #, phone numbers, etc.	☐Y	☐N
B. Does the application include EVCS manufacturer's specs and installation guidelines	☐Y	☐N

ELECTRIC LOAD CALCULATION WORKSHEET

A. Is an electrical load calculation worksheet included? (CEC 220)	☐Y	☐N
B. Based on the load calculation worksheet, is a new electrical service panel upgrade required	☐Y	☐N
1) If yes, do plans include the electrical service panel upgrade	☐Y	☐N
C. Is the charging circuit appropriately sized for a continuous load (125%)	☐Y	☐N
D. If charging equipment proposed is a Level 2 – 9.6 kW station with a circuit rating of 50 Amps or higher, is a completed circuit card with electrical calculations included with the single line diagram	☐Y	☐N

SITE PLAN & SINGLE LINE DRAWING

A. Is a site plan and electrical plan with a single-line diagram included with the permit application	☐Y	☐N
1) If mechanical ventilation requirements are triggered for indoor venting requirements (CEC 625.29 (D)), is a mechanical plan included with the permit application	☐Y	☐N
B. Is the site plan fully dimensioned and drawn to scale	☐Y	☐N
1) Showing location, size, and use of all structures	☐Y	☐N
2) Showing location of electrical panel to charging system	☐Y	☐N
3) Showing type of charging system and mounting	☐Y	☐N

COMPLIANCE WITH 2013 CALIFORNIA ELECTRICAL CODE (TITLE 24, PART 3)

A. Does the plan include EVCS manufacturer's specs and installation guidelines	☐Y	☐N
B. Does the electrical plan identify the amperage and location of existing electrical service panel	☐Y	☐N
1) If yes, does the existing panel schedule show room for additional breakers	☐Y	☐N
C. Is the charging unit rated more than 60 amps or more than 150V to ground	☐Y	☐N
1) If yes, are disconnecting means provided in a readily accessible location in line of site and within 50' of EVCS (CEC 625.23)	☐Y	☐N
D. Does the charging equipment have a Nationally Recognized Testing Laboratory (NRTL) approved listing mark? (UL 2202/UL 2200)	☐Y	☐N
E. If trenching is required, is the trenching detail called out	☐Y	☐N
1) Is the trenching in compliance with electrical feeder requirements from structure to structure(CEC 225)	☐Y	☐N
2) Is the trenching in compliance of minimum cover requirements for wiring methods or circuits(18" for direct burial per CEC 300)	☐Y	☐N

Attachment B.

PC Resolution No. 22-05

RESOLUTION NO. 22-05

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF LAWNDALE, CALIFORNIA RECOMMENDING THAT THE CITY COUNCIL APPROVE ORDINANCE NO. 1192-22 AND ADD CHAPTER 17.104 TO TITLE 17 OF THE LAWNDALE MUNICIPAL CODE, PERTAINING TO ELECTRIC VEHICLE CHARGING STATIONS AND ADOPT A FINDING OF CEQA EXEMPTION

WHEREAS, the State of California and the City of Lawndale has consistently promoted and encouraged the use of fuel-efficient electric vehicles; and

WHEREAS, the State of California recently adopted Assembly Bill 1236, which requires local agencies to adopt an ordinance that creates an expedited and streamlined permitting process for electric vehicle charging systems; and

WHEREAS, the State of California recently adopted Assembly Bill 970 amending Assembly Bill 1236 requiring an application to install an electric vehicle charging station to be deemed complete after a specific number of business days depending on the number of electric vehicle charging stations proposed after an application is submitted; and

WHEREAS, creation of an expedited, streamlined permitting process for electric vehicle charging stations would facilitate convenient charging of electric vehicles and help reduce the reliance on fossil fuels; and

WHEREAS, the Planning Commission considered this Resolution at a properly noticed public hearing on September 28, 2022 and recommended adoption by the City Council; and

WHEREAS, evidence was heard and presented from all persons interested in affecting said proposal, from all persons protesting the same and from members of the City staff, and the Planning Commission has reviewed, analyzed and studied said proposal.

NOW, THEREFORE, THE PLANNING COMMISSION OF THE CITY OF LAWNDALE, CALIFORNIA DOES HEREBY RESOLVE AND RECOMMEND AS FOLLOWS:

Section 1. The Planning Commission finds and determines that the recitals above are true and correct.

Section 2. The Planning Commission finds and determines that the changes to the City's Municipal Code made by this proposed Ordinance are consistent with the General Plan of the City of Lawndale. Additionally, the proposed updates to the Lawndale Municipal Code would bring the City's Code up to date with the State Government Code pertaining to electric vehicle charging stations.

Section 3. The Planning Commission finds that after careful consideration of text, facts, exhibits, testimony, staff reports and public comments, the Planning Commission recommends that:

1. Find and determine that the draft ordinance is exempt from the California Environmental Quality Act ("CEQA") pursuant to Section 15061(b)(3) of the CEQA Guidelines; and

2. The City Council adopt the proposed ordinance entitled: "Electric Vehicle Charging Stations"

PASSED, APPROVED AND ADOPTED THIS 28th DAY OF SEPTEMBER, 2022

John Martinez, Chairperson
Lawndale Planning Commission

ATTEST

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF LAWNDALE)

I, Jared Chavez, Community Development Manager for the City of Lawndale, California, do hereby certify that the foregoing **Resolution No. 22-05** was duly approved by the Planning Commission of the City of Lawndale at a regular meeting of said Commission held on the **28th day of September, 2022** by the following roll call vote:

AYES: MARTINEZ, SMITH, PRICE
NOES:
ABSENT: ESCAMILLA, SITKA
ABSTAINED:

Jared Chavez,
Community Development Manager

Back to Agenda

CITY OF LAWNDALE

14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200, FAX (310) 644-4556
www.lawndalecity.org

November 7, 2022

TO: Honorable Mayor and City Council

FROM: Sean M. Moore, City Manager

PREPARED BY: Jared Chavez, Community Development Manager

SUBJECT: **An ordinance adopting 2022 building, electrical, mechanical, plumbing, residential, green building standards, and existing building code updates, with local amendments, and finding of exemption from CEQA**

BACKGROUND

The California Building Standards Code establishes statewide codes and regulations for building construction and fire safety. The California Building Standards Code is published every three years by order of the California legislature. The 2022 California Building Standards Code was published by the State on July 1, 2022 and goes into effect on January 1, 2023. Pursuant to Health and Safety Code Section 18941.5, local jurisdictions are mandated to adopt such state codes, generally within 180 days after publication of the code by the California Building Standards Commission.

The County of Los Angeles, whom the City contracts with for plan checking and building inspection services, exercised the right granted by the State to establish more restrictive building standards given that the amendments were reasonably necessary because of local climatic, geological, and/or topographic conditions.

The State codes will be codified as Los Angeles County Code Title 26 (Building Code), Title 27 (Electrical Code), Title 28 (Plumbing Code), Title 29 (Mechanical Code), Title 30 (Residential), California Green Building Standards Code, and Title 33 (Existing Building Code) of the Los Angeles County Code (Building Code updates are available for review at the Community Development Department).

Historically, the City has adopted the Los Angeles County codes as the City's uniform codes in Title 15 of the Lawndale Municipal Code (LMC).

STAFF REVIEW

The 2022 California Building Standards Code applies to nearly all commercial and residential structures in California. Staff has thoroughly reviewed all of the proposed changes and found them to be minor changes or amendments to existing requirements. The following sections are being proposed for updates:

- ***Title 26, Building Code;***

- ***Title 27, Electrical Code;***
- ***Title 28, Plumbing Code;***
- ***Title 29, Mechanical Code;***
- ***Title 30, Residential Code;***
- ***California Green Building Standards; and***
- ***Title 33, Existing Building Code***

The Los Angeles County Code Title 26 (Building Code) will re-adopt the mandatory repair and retrofit programs that were adopted back in 2019. Title 33, Existing Building Code, is a new section added within the California Building Code which the County adopted as Title 33. The Existing Building Code regulations set forth requirements for existing building owners who are interested in voluntarily retrofitting their buildings against earthquakes and wind conditions.

During the last update cycle in 2020, the City Council did not adopt the County's suggested Green Building Codes because the regulations were considered to be too onerous on property owners, such that the City adopted only the California Green Building codes. This update cycle staff is again recommending that the City not adopt the County's Green Building codes, but rather the California Green Building Code because the County's Green Building Codes are again believed by staff to be more restrictive and would be onerous on property owners.

Previously, the Fire Code, Title 32, was adopted together with other building code updates. Unfortunately, due to additional refinements being undertaken by the County of Los Angeles, additional potential changes may be made such that the Fire Code updates will be reviewed/adopted separately from the balance of the uniform codes this cycle.

Amending LMC Title 15 Buildings and Construction

Staff has posted signs at the public counter, on the City's website, City's social media and on the cable television station alerting the public to the upcoming code changes.

ENVIRONMENTAL ASSESSMENT

Staff is requesting that the City Council find that the project is exempt from the California Environmental Quality Act (CEQA) under Section 15061(b)(3) of the CEQA Guidelines, which provides that CEQA only applies to projects that have the potential for causing a significant effect on the environment. Where, as here, it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

PLANNING COMMISSION REVIEW

Not applicable.

PUBLIC REVIEW

The Notice of public hearing was posted on the City's notice board located outside City Hall and published in the *Daily Breeze* on October 29, 2022.

LEGAL REVIEW

The City Attorney reviewed the proposed ordinance and has approved it as to form.

FUNDING

No funding is required for this item.

RECOMMENDATION

It is recommended that the City Council:

1. Acknowledge that the Project is categorically exempt pursuant to Section 15061(b)(3) of the CEQA Guidelines; and

2. Adopt Ordinance No. 1193-22 updating building codes.

ATTACHMENT:

A. Draft Ordinance No. 1193-22
B. Building Code updates

ATTACHMENT A

DRAFT ORDINANCE NO. 1193-22

ORDINANCE NO. 1193-22

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF LAWNDALE, CALIFORNIA AMENDING PORTIONS OF LAWNDALE MUNICIPAL CODE TITLE 15 TO UPDATE THE UNIFORM CODES ADOPTED BY THE CITY BY REFERENCE, BY ADOPTING THE 2022 LOS ANGELES COUNTY BUILDING, ELECTRICAL, MECHANICAL, PLUMBING, RESIDENTIAL, AND EXISTING BUILDING CODES, AND THE 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE WITHIN TITLE 15 AND ADOPTING LOCAL AMENDMENTS TO THESE COUNTY CODES

SUMMARY: This ordinance will update the uniform codes adopted by the City by adopting the 2022 Los Angeles County Building, Electrical, Mechanical, Plumbing, Existing Building, and Residential Codes and the 2022 California Green Building Standards Code.

WHEREAS, pursuant to Government Code Section 50022.9, the City of Lawndale ("City") adopts portions of certain Los Angeles County codes as the City's codes; and

WHEREAS, the California Building Standards Code ("California Building Code") establishes statewide codes and regulations for building construction and is published every three years by order of the California legislature; and

WHEREAS, the 2022 California Building is based on the International Code Council's ("ICC") 2021 International Building Code; and

WHEREAS, the 2022 California Building Code was published by the State on July 1, 2022 and becomes effective on January 1, 2023; and

WHEREAS, a local jurisdiction has the right granted by the State to establish more restrictive building standards given that the amendments are reasonably necessary because of local climatic, geological, and/or topographic conditions; and

WHEREAS, Los Angeles County has updated portions of its codes by adopting such local amendments and incorporating them as the County's 2022 California Building Code (Title 26 Los Angeles County Building Code), the 2022 California Electrical Code, (Title 27 Los Angeles County Electrical Code), the 2022 California Plumbing Code (Title 28 Los Angeles County Plumbing Code), the 2022 California Mechanical Code (Title 29 Los Angeles County Mechanical Code), the 2022 California Residential Code (Title 30 Los Angeles County Residential Code); and the 2022 Existing Building Code (Title 33 Existing Building Code); and

WHEREAS, Los Angeles County has also adopted, with local amendments, the 2022 California Green Building Standards Code (Title 31 Los Angeles County Green Building Standards Code); and

WHEREAS, the City has historically adopted certain county codes with their local amendments as a uniformity of standards serves to minimize conflict and confusion in addressing the public health needs of the community; and

WHEREAS, the County's amendments to the 2022 California Green Building Standards Code are more stringent and burdensome on residents and businesses such that the City does not desire to adopt those local amendments at this time; and

WHEREAS, the City desires to adopt the 2022 Los Angeles County Building, Electrical, Mechanical, Plumbing, Existing Building and Residential Codes with all local amendments proposed by the County; and

WHEREAS, the City desires to adopt the 2022 California Green Building Standards Code; and

WHEREAS, this matter was agendized for a duly noticed public hearing before the City Council on November 7, 2022, and evidence was heard and presented from all persons interested in affecting said proposal, from all persons protesting the same and from members of the City staff, and the City Council has reviewed, analyzed and studied said proposal; and

WHEREAS, at this time the City Council desires to update the City's Building, Electrical, Mechanical, Plumbing, Existing Building, Residential, and Green Building Standards Codes.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LAWNDALE, CALIFORNIA, DOES ORDAIN AS FOLLOWS:

SECTION 1. The recitals above are true and correct and incorporated herein by this reference.

SECTION 2. Subsection A of Section 15.04.010 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

> "A. The 2022 California Building Code as amended by Title 26 the Los Angeles County Building Code together with their appendices is adopted by the city as the city's building code, which regulates the erection, construction, enlargements, alteration, repair, moving, removal, conversion, demolition, occupancy, use, equipment, height, area, security, abatement, and maintenance of certain residential buildings or structures within the city, and provides for the issuance of permits and collection of fees therefore, are hereby adopted by reference, and conflicting ordinances are hereby repealed."

SECTION 3. Section 15.04.040 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"The 2022 Los Angeles County Building Code, adopted in this chapter as the building code of the city, is amended to read as set forth in Sections 15.04.050 through 15.04.140.

Wherever reference is made to the County of Los Angeles or to the unincorporated area of the County, such area shall be deemed to include within its corporate limits the area of the city for purposes of fulfilling the requirements of this chapter."

SECTION 4. Subsection A of Section 15.08.010 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"A. The 2022 California Electrical Code as amended by Title 27 the 2022 Los Angeles County Electrical Code together with their appendices is adopted by the city as the city's electrical code, to regulate the erection, construction, enlargements, alteration, repair, moving, removal, conversion, demolition, occupancy, use, equipment, height, area, security, abatement, and maintenance of certain residential buildings or structures within the city, and provide for the issuance of permits and collection of fees therefore, are hereby adopted by reference, and conflicting ordinances are hereby repealed."

SECTION 5. Section 15.08.030 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"A. The 2022 Los Angeles County Electrical Code, adopted in this chapter as the electrical code of the city, is amended as follows:

Section 220.41 is added, to read as follows:

Section 220.41 - For all new one- and two-family dwelling units, the service panels and/or sub panels shall have the capacity of an additional load not less than 5 kVA for every 2,000 square feet of living space, or any fraction thereof, designated to accommodate future energy storage system(s). This load shall be considered continuous, and demand factors shall not apply. Additionally, the service panels and/or sub panels shall have space(s) reserved/dedicated to permit installation of the branch circuit overcurrent protective device(s) for the energy storage system.

B. The 2022 Los Angeles County Electrical Code, as adopted by Section 15.08.010, is hereby amended as follows:

"Wherever reference is made to the County of Los Angeles or to the unincorporated area of the County, such area shall be deemed to include within its corporate limits the area of the city for purposes of fulfilling the requirements of this chapter."

SECTION 6. Subsection A of Section 15.12.010 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"A. The 2022 California Mechanical Code as amended by Title 29 the 20122 Los Angeles County Mechanical Code, together with their appendices are adopted by the city as the city's mechanical code, to regulate the erection, construction, enlargements, alteration, repair, moving, removal, conversion, demolition, occupancy, use, equipment, height, area, security, abatement, and maintenance of certain residential buildings or structures within the city, and provide for the issuance of permits and collection of fees therefore, are hereby adopted by reference, and conflicting ordinances are hereby repealed."

SECTION 7. Section 15.12.030 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"A. The 2022 Los Angeles County Mechanical Code, adopted in this chapter as the mechanical code of the city, is amended as follows:

Section 204.0 amended to read as follows:

Section 204.0 - B- "The most recent edition of Title 26 of the Los Angeles County Code."

Section 207.0 is hereby amended to read as follows:

Section 207.0 - B- "The most recent edition of Title 27 of the Los Angeles County Code."

Section 218.0 is hereby amended to read as follows:

Section 218.0 - B- "The most recent edition of Title 28 of the Los Angeles County Code."

Section 501.1 is hereby amended to read as follows:

Section 501.1"This Chapter includes requirements for environmental air ducts, product-conveying systems, and commercial hoods and kitchen ventilation. Part I addresses environmental air ducts and product-conveying systems. Part II addresses commercial hoods and kitchen ventilation. Ventilation systems installed to control occupational health hazards shall comply with the requirements of the Health Officer."

Section 501.1.6 is hereby amended to read as follows:

Section 501.1.6"Duct bracing and supports shall be of noncombustible material, securely attached to the structure, not less than the gauge required for

grease-duct construction, and designed to carry gravity and lateral loads within the stress limitations of the Building Code. Bolts, screws, rivets, and other mechanical fasteners shall not penetrate duct walls."

Section 603.7.1.1 is hereby amended to read as follows:

Section 603.7.1.1 "Supports for rectangular ducts shall be installed on two opposite sides of each duct and shall be welded, riveted, bolted, or metal screwed to each side of the duct at intervals specified.

Section 1114.4 is hereby amended to read as follows:

Section 1114.4 "The method of discharge of systems containing other than group A1 refrigerants shall comply with the pertinent requirements of Title 32 (Fire Code) and Division 2 of Title 20 (Sanitary Sewer and Industrial Waste) of the Los Angeles County Code."

B. The 2022 Los Angeles County Mechanical Code, as adopted by Section 15.12.010 is hereby amended as follows:

"Wherever reference is made to the County of Los Angeles or to the unincorporated area of the County, such area shall be deemed to include within its corporate limits the area of the city for purposes of fulfilling the requirements of this chapter."

SECTION 8. Subsection A of Section 15.16.010 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"A. The 2022 California Plumbing Code as amended by Title 28 the 2022 Los Angeles County Plumbing Code, together with their appendices are adopted by the city as the city's plumbing code, to regulate the erection, construction, enlargements, alteration, repair, moving, removal, conversion, demolition, occupancy, use, equipment, height, area, security, abatement, and maintenance of certain residential buildings or structures within the city, and provide for the issuance of permits and collection of fees therefore, are hereby adopted by reference, and conflicting ordinances are hereby repealed."

SECTION 9. Section 15.16.030 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"A. The 2022 Los Angeles County Plumbing Code, adopted in this chapter as the plumbing code of the city, is amended as follows:

Section 304.1 is amended, to read as follows:

Section 304.1 - Rev Plumbing fixtures, drains, appurtenances, and appliances, used to receive or discharge liquid wastes or sewage, shall be connected properly to the drainage system of the building or premises, in accordance with the requirements of this Code.

Exception: *[HCD 1] Limited-density owner-built rural dwellings. Where conventional plumbing, in all or in part, is installed within the structure, it shall be installed in accordance with the provisions of this Code. Alternative materials and methods shall be permitted provided that the design complies with the intent of the Code, and that such alternatives shall perform to protect health and safety for the intended purpose.*

Dual waste piping shall be installed to permit the discharge from clothes washers, bathtubs, showers, and bathroom/restroom wash basins to be used for a graywater irrigation system. Partial connection of plumbing fixtures to the graywater system, based on accepted engineering practices and required volume of water for irrigation, shall be accepted. Graywater systems shall be designed and installed in accordance with Chapter 15 and other parts of this Code.

Exceptions:
(1) Buildings with a graywater system, rain catchment system, or recycled water system.
(2) Sites with landscape areas not exceeding 500 square feet.
(3) Projects where graywater systems are not permitted due to geological conditions.
(4) Additions and alterations that use the existing building drain.

Section 601.2.3 is added, to read as follows:

Section 601.2.3 - A hot water recirculation system shall be installed, as defined in Chapter 2, and shall not allow more than 0.6 gallons of water to be delivered to any fixture before hot water arrives. Hot water recirculation systems may include, but are not limited to, the following:

(1) Timer-initiated systems.
(2) Temperature sensor-initiated systems.
(3) Occupancy sensor-initiated systems.
(4) Smart hot water recirculation systems.
(5) Demand hot water recirculation systems.
(6) Other systems acceptable to the Authority Having Jurisdiction.

Exception: Minor additions and alterations as determined by the Authority Having Jurisdiction that use the existing water distribution pipe system and which does not contain a hot water recirculation system.

Section 609.7 is amended, to read as follows:

Section 609.7 - A hot water recirculation system shall be installed, as defined in Chapter 2, and shall not allow more than 0.6 gallons of water to be delivered to any fixture before hot water arrives. Hot water recirculation systems may include, but are not limited to, the following:

Section 721.3 is amended, to read as follows:

Section 721.3 – "If the public sewer does not extend to a point from which each building on a lot or parcel of land large enough to permit future subdivision can be independently served, the property owner shall construct a public sewer as required by Title 20 – Utilities – of the Los Angeles County Code, Division 2 (Sanitary Sewer and Industrial Waste), to provide adequate sewerage for each such possible parcel.

Exception: When the Authority Having Jurisdiction finds that the character of a lot is such that no further subdivision can be reasonably anticipated, or the use is such as to preclude subdivision, or where the owner has executed a covenant stating that the lot or parcel of land, together with all improvements thereon, will be maintained as a unit and that before any subdivision is made or any portion of said lot is transferred to another owner, separate sewerage facilities as hereinbefore required in this Section will be installed, the drainage system of all buildings may be connected to a common building sewer or private sewage disposal system. The covenant shall be recorded by the owner in the office of the Registrar-Recorder as part of the conditions of ownership of said property. Such agreement shall be binding on all heirs, successors, and assigns to said property.

This exception shall apply only while the whole of such lot remains in one undivided ownership. Upon the transfer of any portion of such lot other than the whole thereof to another owner, whether such transfer is made before or after the operative date of the ordinance adding this provision, the exception shall cease and a person shall not use or maintain any building or structure except in compliance with the provisions of this Code. As used in this Section, a sale, foreclosure, or contract to sell by the terms of which the purchaser is given the right of possession shall be deemed a transfer."

Section 728.0 is amended, to read as follows:

Section 728.0 "**Building Sewer Connection Requirements.**"

Section 101.8 is amended, to read as follows:

Section Table H 101.8 :

Section Table H 101.8 **TABLE H 101.8**
LOCATION OF SEWAGE DISPOSAL SYSTEM

MINIMUM HORIZONTAL DISTANCE	BUILDING SEWER	SEPTIC TANK	DISPOSAL FIELD	SEEPAGE PIT OR CESSPOOL
Building or structures[1]	2 feet	5 feet	8 feet	8 feet
Property line adjoining private property	Clear[2]	5 feet	5 feet	8 feet
Water supply wells[9]	50 feet[3]	50 feet	100 feet	150 feet
Streams and other bodies of water[9]	50 feet	50 feet	100 feet[7]	150 feet[7]
Trees[10]		10 feet		10 feet
Seepage pits or cesspools[8]		5 feet	5 feet	12 feet
Disposal field[8]		5 feet	4 feet[4]	5 feet
On-site domestic water service line	1 foot[5]	5 feet	5 feet	5 feet
Distribution box			5 feet	5 feet
Pressure public water main	10 feet[6]	10 feet	10 feet	10 feet

For SI units: 1 foot = 304.8 mm

Notes:

1 Including porches and steps, whether covered or uncovered, breezeways, roofed porte cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.

2 See Section 312.3.

3 Drainage piping shall clear domestic water supply wells by not less than 50 feet (15 240 mm). This distance shall be permitted to be reduced to not less than 25 feet (7620 mm) where the drainage piping is constructed of materials approved for use within a building.

4 Plus 2 feet (610 mm) for each additional 1 foot (305 mm) of depth in excess of 1 foot (305 mm) below the bottom of the drain line. (See Section H 601.0)

5 See Section 720.0.

6 For parallel construction -- For crossings, approval by the Health Department shall be required.

7 These minimum clear horizontal distances shall also apply between disposal fields, seepage pits, and the mean high-tide line.

8 Where disposal fields, seepage pits, or both are installed in sloping ground, the minimum horizontal distance between any part of the leaching system and ground surface shall be 15 feet (4572 mm).

9 Where special hazards are involved, the distance required shall be increased as may be directed by the Authority Having Jurisdiction.

10 The septic tank and seepage pit shall not be within the protected zone of an oak tree as defined by Section 22.14.150 of Title 22 – Planning and Zoning – of the Los Angeles County Code

Section 201.1 is amended, to read as follows:

Section Table H 201.1:

TABLE H 201.1(1)
CAPACITY OF SEPTIC TANKS[1, 2, 3, 4, 5]

SINGLE-FAMILY DWELLINGS - NUMBER OF BEDROOMS	MULTIPLE DWELLING UNITS OR APARTMENTS - ONE BEDROOM EACH	OTHER USES: MAXIMUM FIXTURE UNITS SERVED PER TABLE 702.1	MINIMUM SEPTIC TANK CAPACITY (gallons)
1 or 2	—	15	750
3	—	20	1000
4	2 units	25	1200
5 or 6	3	33	1500
—	4	45	2000

—	5	55	2250
—	6	60	2500
—	7	70	2750
—	8	80	3000
—	9	90	3250
—	10	100	3500

For SI units: 1 gallon = 3.785 L

Notes:

1 Extra bedroom, 150 gallons (568 L) each.
2 Extra dwelling units over 10:250 gallons (946 L) each.
3 Extra fixture units over 100: 25 gallons (94.6 L) per fixture unit.
4 Septic tank sizes in this table include sludge storage capacity and the connection of domestic food waste disposers without further volume increase.
5 Applies to mobile homes not installed in a mobile home park.

Section 201.1 (2) is amended, to read as follows:

Section 201.1 (2) Table H

TABLE H 201.1(2)
DESIGN CRITERIA OF ~~FIVE~~SIX TYPICAL SOILS

TYPE OF SOIL	REQUIRED SQUARE FEET OF LEACHING AREA PER 100 GALLONS	MAXIMUM ABSORPTION CAPACITY IN GALLONS PER SQUARE FEET OF LEACHING AREA FOR A 24 HOUR PERIOD
Coarse sand or gravel	20	5.0
Fine sand	25	4.0
Sandy loam ~~or sandy clay~~	40	2.5
Sandy clay	60	1.66
Clay with considerable sand or gravel	90	1.1
Clay with small amount of sand or gravel	120	0.8

For SI units: 1 square foot = 0.0929 m^2, 1 gallon = 3.785 L, 1 gallon per square foot = 40.7 L/m^2

Section 201.1 (4) is amended, to read as follows:

Section 201.1 (4) Table H

TABLE H 201.1(4)
ESTIMATED WASTE SEWAGE FLOW RATES[1, 2, 3]

TYPE OF OCCUPANCY	GALLONS PER DAY
Airports (per employee)	15
Airports (per passenger)	5
Auto washers – check with equipment manufacturer	-
Bowling alleys – with snack bar only (per lane)	75
Campground – with central comfort station (per person)	35
Campground – with flush toilets - no showers (per person)	25
Camps (day) – no meals served (per person)	15
Camps (summer and seasonal camps) – (per person)	50
Churches – sanctuary (per seat)	5
Churches – with kitchen waste (per seat)	7
Dance halls – (per person)	5
Factories – no showers (per employee)	25
Factories – with showers (per employee)	35
Factories – with cafeteria (per employee)	5
Hospitals – (per bed)	250
Hospitals – kitchen waste only (per bed)	25
Hospitals – laundry waste only (per bed)	40
Hotels – no kitchen waste (per bed)	60
Institutions – resident (per person)	75
Nursing home – (per person)	125
Rest home – (per person)	125

Laundries – self-service with minimum 10 hours per day (per ~~wash cycle~~machine)	3005~~0~~
Laundries – commercial check with manufacturer's specification	-
Motel (per bed space)	50
Motel – with kitchen (per bed space)	60
Offices – (per employee)	20
~~Parks – mobile homes (per space)~~	~~250~~
Parks (picnic) – with toilets only (per parking space)	20
Parks (recreational vehicles) – without water hook-up (per space)	75
Parks (recreational vehicles) – with water and sewer hook-up (per space)	100
Restaurants – cafeteria (per ~~employee~~seat)	50~~2~~0
~~Restaurants – with toilet waste (per customer)~~	~~7~~
~~Restaurants – with kitchen waste (per meal)~~	~~6~~
~~Restaurants – with kitchen waste disposable service (per meal)~~	~~2~~
~~Restaurants – with garbage disposal (per meal)~~	~~1~~
~~Restaurants – with cocktail lounge (per customer)~~	~~2~~
Schools staff and office (per person)	20
Schools – elementary (per student)	15
Schools – intermediate and high (per student)	20
Schools – with gym and showers (per student)	5
Schools – with cafeteria (per student)	3
Schools (boarding) – total waste (per person)	100
Service station – with toilets for 1st bay	1000
Service station – with toilets for each additional bay	500
Stores – (per employee)	20
Stores – with public restrooms (per 10 square feet of floor space)	1

Swimming pools – (per person)	10
Theaters – auditoriums (per seat)	5
Theaters – with drive-in (per space)	10

For SI units: 1 square foot = 0.0929 m^2, 1 gallon per day 3.785 L/day

Notes:

~~1 Sewage disposal systems sized using the estimated waste/sewage flow rates shall be calculated as follows:~~

~~(a) Waste/sewage flow, up to 1500 gallons per day (5678 L/day)~~
~~Flow x 1.5 = septic tank size~~

~~(b) Waste/sewage flow, over 1500 gallons per day (5678 L/day)~~
~~Flow x 0.75 + 1125 = septic tank size~~

~~(c) Secondary system shall be sized for total flow per 24 hours.~~

21 See Section H 201.1.

32 Because of the many variables encountered, it is not possible to set absolute values for waste/sewage flow rates for all situations. The designer should evaluate each situation and, where figures in this table need modification, they should be made with the concurrence of the Authority Having Jurisdiction.

Section H 301.1 is amended, to read as follows:

Section H 301.1

(3) No excavation for a leach line or leach bed shall be located within 5 feet (1524 mm) of the groundwater table nor to a depth where sewage is capable of contaminatingmay contaminate the underground water stratum that is useable for domestic purposes.

Exception: In areas where the records or data indicate that the groundwaters are grossly degraded, the 5 foot (1524 mm) separation requirement shall be permitted to be reduced by the Authority Having JurisdictionWhen approved by the Authority Having Jurisdiction, this distance may be reduced to 5 feet (1524 mm) from ocean water. The applicant shall supply evidence of groundwater depth to the satisfaction of the Authority Having Jurisdiction.

(4) The minimum effective absorption area in any seepage pit shall be calculated as the excavated sidewall area below the inlet exclusive of any hardpan, rock, clay, or other impervious formations. The minimum required area of porous formation shall be provided in one or more seepage pits. No excavation shall extend within 10 feet (3048 mm) of thegroundwater table nor to a depth where sewage is capable of contaminatingmay contaminate the underground water stratum that is useable for domestic purposes.

Exception: In areas where the records or data indicate that the groundwaters are grossly degraded, the 10 foot (3048 mm) separation requirement shall be permitted to be reduced by the Authority Having JurisdictionWhen approved by the Authority Having Jurisdiction, this distance may be reduced to 5 feet (1524 mm) from ocean water.

Section H 401.3 is amended, to read as follows:

Section H 401.3 "**H 401.3 Absorption Rates.** Where a percolation test is required, the proposed system shall have the capability to absorb a quantity of clear water in a 24-hour period equal to at least five times the liquid capacity of the proposed septic tank. ~~n~~No private disposal system shall be permitted to serve a building if that test shows the absorption capacity of the soil is less than 0.83 gallons per square foot (gal/ft^2) (33.8 L/m^2) or more than 5.12 gal/ft^2 (208.6 L/m^2) of leaching area per 24 hours. Where the percolation test shows an absorption rate greater than 5.12 gal/ft^2 (208.6 L/m^2) per 24 hours, a private disposal system shall be permitted where the site does not overlie groundwaters protected for drinking water supplies, a minimum thickness of 2 feet (610 mm) of the native soil below the entire proposed system is replaced by loamy sand, and the system design is based on percolation tests made in the loamy sand."

Section H 601.5 is amended, to read as follows:

Section H 601.5 "H 601.5 Distribution Boxes. Where two or more drain lines are installed, an approved distribution box of sufficient size to receive lateral lines shall be installed at the head of each disposal field. The inverts of outlets shall be level, and the invert of the inlet shall be not less than 1 inch (25.4 mm) above the outlets. Distribution boxes shall be designed to ensure equal flow and shall be installed on a level concrete slab in natural or compacted soil. Distribution boxes shall be coated on the inside with a bituminous coating or other approved method acceptable to the Authority Having Jurisdiction."

Section H 601.8 is amended, to read as follows:

Section H 601.8 "H 601.8 Dosing Tanks. Where the quantity of sewage exceeds the amount that is permitted to be disposed in 500 lineal feet (152.4 m) of leach line, a dosing tank shall be used. Dosing tanks shall be equipped with an automatic siphon or pump that discharges the tank once every 3 or 4 hours. The tank shall have a capacity equal to 60 to 75 percent of the interior capacity of the pipe to be dosed at one time. Where the total length of pipe exceeds 1000 lineal feet (305 m), the dosing tank shall be provided with two siphons or pumps dosing alternately and each serving one-half of the leach field Automatic syphon or dosing tanks shall be installed when required or as permitted by the Authority Having Jurisdiction."

Section H 1001.1 is amended, to read as follows:

Section H 1001.1 "H 1001.1 Inspection. Inspection requirements shall comply with the following:

(1) Applicable provisions of Section 105.0104.0 of this cCode and this aAppendix shall be required. Plans shall be required in accordance with Section 103.3102.1 of this cCode.

. . .

(5) Disposal fields and seepage pits shall not be installed in uncompacted fill."

Section H 1101.6 is amended, to read as follows:

Section H 1101.6 "**H 1101.6 Excavation.** No excavation for an abandoned sewer or sewage facility shall be left unattended at any time, unless the permittee shall have first provided a suitable and adequate barricade to assure public safety."

Section 27 Appendix S is added, to read as follows:

Section H 1101.6 "**H 1101.6 Excavation.** No excavation for an abandoned sewer or sewage facility shall be left unattended at any time, unless the permittee shall have first provided a suitable and adequate barricade to assure public safety."

SOLAR THERMAL ENERGY SYSTEMS

S 1.0 General.

In addition to the requirements of this Appendix, the provisions of this Code and Title 29 – Mechanical Code – of the Los Angeles County Code shall apply to the erection, installation, alteration, relocation, replacement, addition to, use, maintenance and repair of solar thermal energy systems, including, but not limited to, equipment and appliances intended to utilize solar thermal energy for water heating and swimming pool heating.

S 2.0 Definitions.

For the purpose of this Appendix, certain terms, words, phrases, and their derivatives shall be construed as set forth in this Section. Whenever terms are not defined, their ordinary dictionary meaning shall apply.

Absorber. That part of the solar collector that receives the incident radiation energy.

Absorptance. The collecting of heat, measured as percent of total radiation available.

Ambient Temperature. Surrounding temperature.

Aperture. The maximum projected area of a solar collector through which the unconcentrated solar radiant energy is admitted.

Area, Absorber. The total projected heat transfer area from which the absorbed solar irradiation heats the transfer media.

Auxiliary Heating System. Equipment using non-solar energy sources to supplement or back up the output provided by a solar thermal energy system.

Closed Loop System. A system where the fluid is enclosed in a piping system that is not vented to the atmosphere.

Collector. See Solar Collector.

Collector Cover (Glazing). The material covering the aperture to provide thermal and environmental protection.

Collector System. That section of the solar collector system that includes the collector and piping or ducts from the collector to the storage system.

Combustible Liquid. A liquid having a flash point at or above 100°F (38°C). Combustible liquids shall be divided into the following classifications:

(1) Class II liquids having a flash point above 100°F (38°C) and below 140°F (60°C).

(2) Class IIIA liquids having a flash point at or above 140°F (60°C) and below 200°F (93°C).

(3) Class IIIB liquids having a flash point at or above 200°F (93°C).

The classifications of combustible liquids do not include compressed gases or cryogenic fluids.

Concentrating Solar Collector. A solar collector that uses reflectors, lenses, or other optical elements to concentrate the radiant energy passing through the aperture onto an absorber of which the surface area is smaller than the aperture area.

Design Pressure. The maximum allowable pressure for which a specific part of a system is designed.

Design Temperature. The maximum allowable continuous or intermittent temperature for which a specific part of a solar energy system is designed to operate safely and reliably.

Distribution System. That section of the solar energy system from the storage system to the point of use.

Drainback System. A closed loop system which allows gravity draining of the heat transfer fluid into lower portions of the solar loop under prescribed circumstances.

Draindown (Drainback). An active solar energy system in which the fluid in the solar collector is drained from the solar energy system under prescribed circumstances.

Energy Collector Fluid. That fluid used to transfer energy from the collector to the storage system or point of use.

Energy Storage Fluid (or Media). That fluid (or media) used in the storage container for storing collected energy.

Energy Transfer Fluid. That fluid used within a closed system either from the collector to the storage system or from the storage system to the point of use.

Essentially Nontoxic Transfer Fluid. Fluid generally recognized as safe by the Food and Drug Administration (FDA) as food grade.

External Auxiliary Heating. Auxiliary heating device located outside the storage. The heat is transferred to the storage by direct or indirect charging via a charge loop.

Fail-Safe Freeze Protection. A freeze-protection method that does not rely on the activation or continued operation of any mechanical or electrical component.

Flammable Liquid. Any liquid that has a flash point below 100°F (38°C), and has a vapor pressure not exceeding 40 psi (276 kPa) at 100°F (38°C). Flammable liquids shall be known as Class I liquids and shall be divided into the following classifications:

(1) Class IA liquids having a flash point below 73°F (23°C) and a boiling point below 100°F (38°C).

(2) Class IB liquids having a flash point below 73°F (23°C) and a boiling point at or above 100°F (38°C).

(3) Class IC liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

Flash Point. The minimum temperature corrected to a pressure of 14.7 psi (101 kPa) at which a test flame causes the vapors of a portion of the sample to ignite under the conditions specified by the test procedures and apparatus. The flash point of a liquid shall be determined in accordance with ASTM D 56, ASTM D 93, or ASTM D 3278.

Freeze Protection. Any method for protecting solar thermal systems from damage due to freezing conditions where installed in locations where freezing ambient temperature conditions exist.

Heat Exchanger. A device that transfers heat from one medium to another.

Heat Transfer Medium. The medium used to transfer energy from the solar collectors to the thermal storage or load.

Immersed Heat Exchanger. Heat exchanger, which is completely surrounded with the fluid in the storage tank.

Instantaneous Efficiency. The amount of energy removed by the transfer fluid per gross collector area, during a specified time period, divided by the total solar radiation incident on the collector per unit area during the same test period, under steady state or quasi-steady state.

Integral Collector Storage. A solar thermal heating system that uses a solar collector that has all or most of its heat transfer medium inside the collector.

Langelier Saturation Index. A formula used to measure water balance or mineral saturation control of pool, spa, or hot tub water. Total alkalinity, calcium hardness, pH, water temperature, and total dissolved solids are measured, given a factor, and calculated to determine whether water has a tendency to be corrosive or scale forming.

Open Loop System. A system where the fluid is enclosed in a piping system that is vented to the atmosphere.

Out-Gassing. As applied to thermal energy, the thermal process by which materials expel gas.

Passive Solar Systems. As used in these requirements, are solar energy systems that utilize elements of a building, without augmentation by mechanical components such as blowers or pumps, to provide for the collections, storage, or distribution of solar energy for heating, cooling, or both.

Rock Storage. A bin, basement, or other container filled with rock to act as an energy reservoir for a solar energy system.

Solar Collector. A device used to absorb energy from the sun.

Solar Energy System. A configuration of equipment and components to collect, convey, store, and convert the sun's energy for a purpose.

Solar Energy System Components. Any appliance, assembly, device, equipment, or piping used in the conversion of solar energy into thermal energy for service water heating, pool water heating, space heating and cooling, and electrical service.

Solar Thermal Energy System. See Solar Thermal System.

Solar Thermal System. A complete assembly of subsystems which convert solar energy into thermal energy and utilize this energy for service water heating, pool water heating, space heating and cooling purposes.

Storage Temperature. Temperature of the storage medium.

Thermal Energy. The amount of sensible heat energy stored within a material or fluid. The product of the mass, specific thermal capacity, and temperature increase/decrease of the material or fluid. Also known as sensible heat energy.

Thermal Storage. A tank or vessel used in a solar thermal, hydronic, or geothermal system, in which thermal energy is stored.

Thermosiphon. The natural circulation of fluids due to temperature differential.

Total Alkalinity. The sum of all alkaline minerals in the water that is primarily in bicarbonate form, but also as sodium, calcium, magnesium, potassium carbonates, and hydroxides. It is a measure of the water's ability to resist changes in pH.

S 3.0 Permits Required.

It shall be unlawful for a person, firm, or corporation to construct, install, alter, repair, replace, or remodel a solar thermal energy system regulated by this Code or cause the same to be done without first obtaining a separate permit for each separate system or interconnected set of systems as specified in Section 103.0 of this Code.

S 4.0 Plans and Specifications.

Plans, engineering calculations, diagrams, and other data shall be submitted in one or more sets with each application for a permit. Where required by the Authority Having Jurisdiction, the plans, computations, diagrams, specifications, and other data shall be prepared by, and the solar thermal energy system designed by, an engineer, an architect, or both, who shall be licensed by the state to practice as such.

Exception: The submission of plans, calculations, or other data may be waived where the Authority Having Jurisdiction determines that the nature of the work applied for is such that reviewing of plans is not necessary to obtain compliance within the Code.

S 5.0 Installation.

S 5.1 Listed Appliances. Except as otherwise provided in this Code, the installation of appliances regulated by this Code shall be in accordance with the conditions of the listing. The appliance installer shall leave the manufacturer's installation and operating instructions attached to the appliance. Clearances of listed appliances from combustible materials shall be as specified in the listing or on the rating plate.

S 5.2 Standards. Standards listed or referred to in this Appendix or other provisions of this Code cover materials that will conform to the requirements of this Code, where used in accordance with the limitations prescribed in this Code and their listing. Where a standard covers materials of various grades, weights, quality, or configurations, the portion of the listed standard that is applicable shall be used. Design and materials for special conditions or materials

not provided for herein may be permitted as authorized by Section 301.3. A list of standards that appear in specific sections of this Appendix are referenced in Table S 18.1. A list of additional standards, publications, practices, and guides that are not referenced in specific sections of this Appendix appear in Table S 18.2. The documents indicated in Table S 18.2 shall be permitted in accordance with Section 301.3.

S 6.0 Inspection and Testing.

S 6.1 General. Solar thermal energy systems for which a permit is required by this Code shall be inspected by the Authority Having Jurisdiction. No solar thermal energy system or portion thereof shall be covered, concealed, or put into use until it first has been tested, inspected, and approved as prescribed in this Code. Neither the Authority Having Jurisdiction nor the jurisdiction shall be liable for expense entailed in the removal or replacement of material required to permit inspection. Solar thermal energy systems regulated by this Code shall not be connected to the water, the energy fuel supply, or the sewer system until authorized by the Authority Having Jurisdiction. Installation of a solar thermal energy system shall comply with other parts of this Code, including Section 104.0.

S 6.2 Required Inspection. New solar thermal energy system work and such portions of existing systems as affected by new work, or changes, shall be inspected by the Authority Having Jurisdiction to ensure compliance with the requirements of this Code and to ensure that the installation and construction of the solar thermal energy system is in accordance with approved plans. The Authority Having Jurisdiction shall make the following inspections and other such inspections as necessary. The permittee or the permittee's authorized agent shall be responsible for the scheduling of such inspections as follows:

(1) Underground inspection shall be made after trenches or ditches are excavated and bedded, piping installed, and before backfill is put in place.

(2) Rough-in inspection shall be made prior to the installation of wall or ceiling membranes.

(3) Final inspection shall be made upon completion of the installation.

S 6.3 Testing. Solar thermal energy systems shall be tested and approved as required by this Code or the Authority Having Jurisdiction.

S 6.3.1 Piping. The piping of the solar thermal system shall be tested with water, air, a heat transfer medium, or as recommended by the manufacturer's instructions, except that plastic pipe shall not be tested with air. The Authority Having Jurisdiction shall be permitted to require the removal of plugs, etc., to ascertain where the pressure has reached all parts of the system.

S 6.3.2 System Requirements. Prior to the installation of insulation and startup, a solar thermal system, including piping, collectors, heat exchangers, and other related equipment, shall be tested and proved airtight.

S 6.3.2.1 Direct (Open Loop) Systems. Direct (open loop) systems shall be tested under a water pressure not less than one and one-half times the maximum design operating pressure or 150 pounds force per square inch (psi) (1034 kPa), whichever is more. Systems shall withstand the test without leaking for a period of not less than 15 minutes.

S 6.3.2.2 Indirect (Closed Loop) Systems. Indirect (closed loop) systems shall be hydrostatically tested at one and one-half times the maximum designed operating pressure in accordance with the manufacturer's installation instructions. Systems shall withstand the test without leaking for a period of not less than 15 minutes.

S 6.3.3 Test Pressure for Storage Tanks. The test pressure for storage tanks that are subject to water pressure from utility mains (with or without a pressure reducing valve) shall be two times the working pressure but not less than 300 psi (2068 kPa).

S 6.3.3.1 Pressure Type. Pressure-type storage tanks exceeding 15 psi (103 kPa) shall be tested in accordance with ASME BPVC Section VIII. Pressure-type storage tanks not exceeding 15 psi (103 kPa) shall be hydrostatically tested at one and one-half times the maximum design operating pressure.

S 6.3.3.2 Atmospheric-Type. Atmospheric-type thermal storage tanks shall be tested by filling with water for a period of 24 hours prior to inspection and shall withstand the test without leaking. No thermal storage tank or portion thereof shall be covered or concealed prior to approval.

S 6.3.4 Connection to Service Utilities. No person shall make connections from a source of energy or fuel to a solar thermal energy system or equipment regulated by this Code and for which a permit is required until approved by the Authority Having Jurisdiction. No person shall make connection from a water-supply line nor shall they connect to a sewer system regulated by this Code and for which a permit is required until approved by the Authority Having Jurisdiction. The Authority Having Jurisdiction shall be permitted to authorize temporary connection of the solar thermal energy system equipment to the source of energy or fuel for the purpose of testing the equipment.

S 7.0 Water Heating Systems.

S 7.1 Solar Water Heating System. Solar water heating systems shall be in accordance with IAPMO S1001.1 or ICC 900/SRCC 300. Where solar collectors are capable of being isolated from the remainder of the system, a suitable pressure relief valve shall be installed in the isolatable section.

S 7.2 Auxiliary Heating System. An auxiliary heating system shall be installed in conjunction with the solar thermal system and shall be adequate to provide service in the absence of solar thermal energy input. An auxiliary heating system that utilizes electricity as the energy source shall be in accordance with Section S 15.0. Auxiliary heating systems that utilize solid fuel or fuel gas as the energy source shall be in accordance with Title 29 – Mechanical Code – of the Los Angeles County Code.

S 8.0 Abandonment.

S 8.1 General. An abandoned solar thermal energy system or part thereof shall be disconnected from remaining systems, drained, plugged, and capped in a manner satisfactory to the Authority Having Jurisdiction.

S 8.2 Storage Tank. An underground water storage tank that has been abandoned or discontinued otherwise from use in a solar thermal energy system shall be completely drained and filled with earth, sand, gravel, concrete, or

other approved material or removed in a manner satisfactory to the Authority Having Jurisdiction.

S 9.0 Tanks.

S 9.1 Storage Tanks.

S 9.1.1 Plans. Plans for tanks shall be submitted to the Authority Having Jurisdiction for approval, unless listed by an approved listing agency. Such plans shall show dimensions, reinforcing, structural calculations, and such other pertinent data as required by the Authority Having Jurisdiction.

S 9.1.2 Atmospheric Tanks. Atmospheric storage tanks shall be vented to the atmosphere and installed in accordance with the manufacturer's installation instructions.

S 9.1.2.1 Overflow. Gravity tanks shall be installed with an overflow opening of not less than 2 inches in diameter. The openings shall be above ground and installed with a screened return bend.

S 9.1.2.2 Makeup Water. Makeup water from a potable water system to an atmospheric tank shall be protected by an air gap.

S 9.1.2.3 Draining. An overflow shall be provided for an atmospheric tank. The overflow shall be provided with a means of drainage in accordance with Section 303.0 of this Code. The overflow for an atmospheric tank containing nonpotable water shall be emptied into an approved container.

S 9.1.3 Prefabricated Storage Tanks. Prefabricated tanks shall be listed by an approved agency and labeled.

S 9.1.4 Pressure Vessels. A pressure-type storage tank exceeding an operating pressure of 15 psi (103kPa) shall be constructed in accordance with ASME BPVC Section VIII.1. Fiber-reinforced plastic storage tanks shall be constructed in accordance with ASME BPVC Section X.

S 9.1.5 Devices. Devices attached to or within a tank shall be accessible for repair and replacement.

S 9.1.5.1 Safety Devices. Pressure-type thermal storage tanks shall be installed with a listed combination temperature and pressure relief valve in accordance with Section S 14.3.1. The temperature setting shall not exceed 210°F (99°C) and the pressure setting shall not exceed 150 percent of the maximum designed operating pressure of the system, or 150 percent of the established normal operating pressure of the piping materials, or the labeled maximum operating pressure of a pressure-type storage tank, whichever is less. The pressure and temperature setting shall not exceed the pressure and temperature rating of the tank or as recommended by the tank manufacturer.

Storage tanks and bottom fed tanks connected to a water heater shall be designed to withstand vacuum induced pressure, or shall be provided with a vacuum relief in accordance with Section S 14.3.4. The vacuum relief valve shall be installed at the top of the tank and shall have an operating pressure not to exceed 200 psi (1379 kPa) and a temperature rating not to exceed 250°F (121°C). The size of such vacuum relief valves shall have a minimum rated capacity for the equipment served. This Section shall not apply to pressurized captive air diaphragm or bladder tanks.

S 9.1.6 Separate Storage Tanks. For installations with separate storage tanks, a pressure relief valve and temperature relief valve or combination thereof shall be installed on both the main storage tank and auxiliary tank.

S 9.1.6.1 Isolation Valves. Storage tanks shall be provided with isolation valves for servicing.

S 9.1.7 Underground Storage Tanks. Tanks shall be permitted to be buried underground where designed and constructed for such installation.

S 9.1.8 Tank Covers. Tank covers shall be structurally designed to withstand anticipated loads and pressures in accordance with the manufacturer's instructions.

S 9.1.9 Drainage Pan. Where water heater, boiler, or other thermal storage tank is installed in an attic, attic-ceiling assembly, floor-ceiling assembly, or floor subfloor assembly where damage could result from a leaking water heater, boiler or tank, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater, boiler, or tank, with not less than 3/4 of an inch (20 mm) diameter drain to an approved location. Such pan shall be not less than 1 ½ inches (38mm) in depth.

S 9.1.10 Storage Tank Construction and Materials.

S 9.1.10.1 Construction. Storage tanks shall be constructed of durable materials not subject to excessive corrosion or decay and shall be watertight. Each such tank shall be structurally designed to withstand anticipated loads and pressures and shall be installed level and on a solid bed.

S 9.1.10.2 Concrete. The walls and floor of each poured-in-place, concrete tank shall be monolithic. The exterior walls shall be double-formed so as to provide exposure of the exterior walls during the required water test. The compressive strength of a concrete tank wall, top and covers, or floor shall be not less than 2500 pounds-force per square inch (psi) (lb/in2) (1.7236 E+04, kPa). Where required by the Authority Having Jurisdiction, the concrete shall be sulfate resistant (Type V Portland Cement).

S 9.1.10.3 Metal Tanks. Metal tanks shall be welded, riveted and caulked, brazed, bolted, or constructed using a combination of these methods.

S 9.1.10.4 Filler Metal. Filler metal used in brazing shall be non-ferrous metal or an alloy having a melting point above 1000°F (538°C) and below that of the metal joined.

S 9.1.10.5 Insulation. Tank insulation shall have a thermal resistance not less than as shown in Table S 9.I.10.5. The temperature difference shall be calculated as the difference between the design operating temperature of the tank and the temperature of the surrounding air, or soil where the tank is installed underground. Where such data is not available, a temperature difference of 50°F (28°C) shall be used.

TABLE S 9.1.10.5

TEMPERATURE DIFFERENCE(°F)	THERMAL RESISTANCE (*R*)[°F•h•ft² /(Btu)]
50	6

100	12
150	18
200	24
250	30

For SI units: °C = °F(0.5555556), 1 degree Fahrenheit hour square foot per British thermal unit = [0.176 (m2•K)/W], 1 British thermal unit inch per degree Fahrenheit hour square feet = 0.1441 W/(m•K)* Based on thermal conductivity (*k*) of 0.20 [(Btu•inch)/(°F•h•ft²)] (0.03 W/(m•K)

S 9.2 Expansion Tanks.

S 9.2.1 Where Required. An expansion tank shall be installed in a solar thermal energy system as a means for controlling increased pressure caused by thermal expansion. Expansion tanks shall be of the closed type and securely fastened to the structure. Tanks shall be rated for the pressure of the system. Supports shall be capable of carrying twice the weight of the tank filled with water without placing strain on the connecting piping.

Solar thermal energy systems incorporating hot water tanks or fluid relief columns shall be installed to prevent freezing under normal operating conditions.

S 9.2.2 Closed-Type Solar Thermal Energy Systems. Closed-type systems shall have an airtight tank or other approved air cushion that will be consistent with the volume and capacity of the system, and shall be designed for a hydrostatic test pressure of two and one-half times the allowable working pressure of the system. Expansion tanks for systems designed to operate at more than 30 pounds-force per square inch (psi) (207 kPa) shall comply with ASME BPVC Section VIII.1. Provisions shall be made for draining the tank without emptying the system.

S 9.2.3 Minimum Capacity of Closed-Type Expansion Tanks. The minimum capacity for a gravity-type hot water system expansion tank shall be in accordance with Table S 9.2.3(1). The minimum capacity for a forced-type hot water system expansion tank shall be in accordance with Table S 9.2.3(2) or Equation S 9.2.3(1). The minimum capacity for diaphragm tanks shall be in accordance with Table S 9.2.3(2) or Equation S 9.2.3(2).

Equation S 9.2.3(1)
Vt(forced type) =

Equation S 9.2.3(2)
Vt(diaphram) =

Where:
C1 = 0.00041
C2 = 0.0466
Vt = Minimum volume of expansion tank, gallons (L)
Vs = Volume of system, not including expansion tank, gallons (L)
t = Average operating temperature, °F (°C).

Pa = Atmospheric pressure, pounds per square inch (kPa)
Pf = Fill pressure, pounds per square inch (kPa)
Po = Maximum operating pressure, pounds per square inch (kPa)
For SI units: C1 = 0.000738, C2 = 0.03348, 1 gallon = 3.785 L, °C = (°F-32)/1.8,
1 pound per square inch = 6.8947 kPa

TABLE S 9.2.3(1)
EXPANSION TANK CAPACITIES FOR GRAVITY HOT WATER SYSTEMS[1]

INSTALLED EQUIVALENT DIRECT RADIATION[2] (square feet)	TANK CAPACITY (gallons)
Up to 350	18
Up to 450	21
Up to 650	24
Up to 900	30
Up to 1100	35
Up to 1400	40
Up to 1600	2 to 30
Up to 1800	2 to 30
Up to 2000	2 to 35
Up to 2400	2 to 40

For SI units: 1 gallon = 3.785 L, 1 square foot = 0.0929 m^2
Notes:
1 Based on a two-pipe system with an average operating water temperature of 170°F (77°C), using cast-iron column radiation with a heat emission rate of 150 British thermal units per square foot hour [Btu/(ft^2•h)] (473 W/m^2) equivalent direct radiation.
2 For systems exceeding 2400 square feet (222.9 m^2) of installed equivalent direct water radiation, the required capacity of the cushion tank shall be increased on the basis of 1 gallon (4 L) tank capacity per 33 square feet (3.1 m^2) of additional equivalent direct radiation.

TABLE S 9.2.3(2)
EXPANSION TANK CAPACITIES FOR FORCED WATER SYSTEMS[1]

SYSTEM VOLUME[2] (gallons)	TANK CAPACITY DIAPHRAGM TYPE (gallons)	TANK CAPACITY (gallons)
100	9	15
200	17	30
300	25	45
400	33	60
500	42	75
1000	83	150
2000	165	300

For SI units: 1 gallon = 3.785 L

Notes:

1 Based on an average operating water temperature of 195°F (91°C), a fill pressure of 12 psig (83 kPa), and an operating pressure of not more than 30 psig (207 kPa).

2 Includes volume of water in boiler, radiation, and piping, not including expansion tank.

S 10.0 Solar Collectors.

S 10.1 General. Frames and braces exposed to the weather shall be constructed of materials for exterior locations, and protected from corrosion or deterioration, in accordance with the requirements of the Authority Having Jurisdiction.

S 10.1.1 Construction. Collectors shall be designed and constructed to prevent interior condensation, out-gassing, or other processes that will reduce the transmission properties of the glazing, reduce the efficiency of the insulation, or otherwise adversely affect the performance of the collector.

S 10.1.2 Flat Plate Collector Glass. Flat plate collector glass shall be tempered.

S 10.1.3 Plastic. Plastic used in collector and other parts of the solar thermal energy system construction shall be installed in accordance with the manufacturer's installation instructions.

S 10.1.4 Listing. Collectors that are manufactured as a complete component shall be listed or labeled by an approved listing agency in accordance with ICC 901/SRCC 100, UL 1279, or equivalent standard.

S 10.1.5 Air Collectors. Materials exposed within air collectors shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke developed index not to exceed 50 where tested as a composite product in accordance with ASTM E 84 or UL 723.

S 10.1.5.1 Testing. Materials used within an air collector shall not smoke, smolder, glow, or flame where tested in accordance with ASTM C 411 at temperatures exposed to in service. In no case shall the test temperature be less than 250°F (121°C).

S 10.2 Solar Collector Installation.

S 10.2.1 General. Solar collectors shall be anchored to roof structures or other surfaces in accordance with the manufacturer's installation instructions and Title 26 – Building Code – of Los Angeles County. Collectors shall be mounted to minimize the accumulation of debris. Connecting pipes shall not be used to provide support for a solar collector.

S 10.2.2 Roof Installations. Anchors secured to and through a roofing material shall be made to maintain the water integrity of the roof covering. Roof drainage shall not be impaired by the installation of collectors. Solar collectors that are not an integral part of the roofing system shall be installed to preserve the integrity of the roof surface.

S 10.2.3 Above Or On The Roof. Collectors located above or on roofs, and functioning as building components, shall not reduce the required fire-resistance and fire-retardance classification of the roof covering materials.

Exceptions:

(1) Collectors located on one- and two-family dwellings.

(2) Collectors located on buildings not exceeding three stories in height or 9,000 square feet (836.13 m2) total floor area, or both, provided:

(a) The collectors are noncombustible.

(b) Collectors with plastic covers have noncombustible sides and bottoms, and the total area covered and the collector shall not exceed the following:

(i) Plastic CC1 – 33 1/3 percent of the roof area;

(ii) Plastic CC2 – 25 percent of the roof area; and

(c) Collectors with plastic film covers having a thickness of not more than 0.010 of an inch (0.25 mm) shall have noncombustible sides and bottoms, and the total area covered by the collector shall not exceed 33 1/3 percent of the roof area.

S 10.2.4 Ground Installations. Solar collectors shall terminate above finished grade to avoid obstruction by vegetation, snow, or ice. The supporting columns shall extend below the frost line.

S.10.2.5 Wall Mounted. Solar collectors mounted on a wall shall be secured and fastened in accordance with Section 313.0 of this Code.

S 10.2.6 Access. Access shall be provided to collectors and components in an approved manner. A work space adjacent to collectors for maintenance and repair shall be provided in accordance with requirements of the Authority Having Jurisdiction.

S 10.2.7 Stagnation Condition. The collector and other parts of the solar thermal assembly shall be capable of withstanding stagnant conditions in accordance with the manufacturer's instructions where high solar flux and no flow occurs.

S 10.2.8 Waterproofing. Joints between structural supports and buildings or dwellings, including penetrations made by bolts or other means of fastening, shall be made watertight with approved material.

S 10.2.9 Fasteners. Mountings and fasteners shall be made of corrosion-resistant materials. Carbon steel mountings and fasteners shall be classified as noncorrosive in accordance with ASME SA194.

S 10.2.10 Combustible Materials. Solar thermal energy systems constructed with combustible materials shall not be located on or adjacent to construction required to be of noncombustible materials or in Very High Fire Hazard Severity Zone as defined in Title 32 - Fire Code – of the Los Angeles County Code, unless approved by the Authority Having Jurisdiction.

S 10.2.11 Orientation. Collectors shall be located and oriented in accordance with the manufacturer's installation instructions.

S 10.3 Fire Safety Requirements.

S 10.3.1 Building Components. Collectors that function as building components shall be in compliance with Title 26 – Building Code – of the Los Angeles County Code.

S 11.0 Hazardous Heat Transfer Medium for Solar Thermal Energy Systems. Heat-transfer mediums that are hazardous shall not be used in solar thermal energy systems, except where approved by the Authority Having Jurisdiction.

S 11.1 Flash Points. The flash point of a heat-transfer medium shall be 50°F (10°C) or more above the design maximum temperature.

S 11.2 Discharge. The collector, collector manifold, and manifold relief valve shall not discharge directly or indirectly into the building or toward an open flame or other source of ignition.

S 12.0 Heat Exchangers.

S 12.1 General. Solar thermal energy systems utilizing heat exchangers shall protect the potable water system from being contaminated by the heat transfer medium. Systems that incorporate a single-wall heat exchanger to separate potable water from the heat transfer fluid shall meet all of the following requirements:

(1) The heat transfer medium is either potable water or contains fluids recognized as safe by the Food and Drug Administration (FDA) as food grade.

(2) A tag or label shall be securely affixed to the heat source with the word "CAUTlON" and the following statements:

(a) The heat transfer medium shall be water or other nontoxic fluid recognized as safe by the FDA.

(b) The maximum operating pressure of the heat exchanger shall not exceed the maximum operating pressure of the potable water supply.

(3) The word "CAUTlON" and the statements listed above shall have an uppercase height of not less than 0.120 of an inch (3.048 mm). The vertical spacing between lines of type shall be not less than 0.046 of an inch (1.168 mm). Lowercase letters shall be not less than compatible with the uppercase letter size specification.

Systems that do not comply with the requirements for a single-wall heat exchanger shall install a double-wall heat exchanger. Double-wall heat exchangers shall separate the potable water from the heat transfer medium by providing a space between the two walls vented to the atmosphere.

S 13.0 Valves.

S 13.1 General. Valves shall be rated for the operating temperature and pressures of the solar thermal energy system and shall be compatible with the type of heat transfer medium and piping materials. Valves shall be installed in accordance with this Section.

S 13.2 Heat Exchanger. Shutoff valves and isolation valves shall be installed on the supply and return side of the heat exchanger.

Exception: Where a heat exchanger is an integral part of a boiler or is a part of a manufactured boiler and heat exchanger packaged unit, and is capable of being isolated from the hydronic system by supply and return valves.

S 13.3 Pressure Vessels. Isolation valves shall be installed on connections to pressure vessels.

S 13.4 Pressure Reducing Valves. Isolation valves shall be installed on both sides of a pressure reducing valve.

S 13.5 Equipment, Components, and Appliances. Serviceable equipment, components, and appliances within the system shall have isolation valves installed upstream and downstream of such devices.

S 13.6 Expansion Tanks. Isolation valves shall be installed at connections to non-diaphragm-type expansions tanks.

S 13.7 Flow Balancing Valves. Where flow balancing valves are installed, such valves shall be capable of increasing or decreasing the amount of flow by means of adjustment.

S 13.7.1 Location. Balancing valves shall be installed at the outlet of each group of collectors.

S 13.8 Control Valves. An approved three-way valve shall be permitted to be installed for manual control systems. An approved electric control valve shall be permitted to be installed for automatic control systems. The installation and operation of automatic control valves shall comply with the manufacturer's instructions.

S 13.8.1 Mixing or Temperature Control Valves. Where mixing or temperature control valves are installed, such valves shall be capable of obtaining the design water temperature and design flow requirements.

S 13.9 Thermosiphoning. An approved type check valve shall be installed on liquid heat transfer piping to control thermosiphoning of heated liquids.

S 13.10 Air Removal Device or Air Vents. Isolation valves shall be installed where air removal devices or automatic air vents are utilized to permit cleaning, inspection, or repair without shutting the system down.

S 13.11 Closed Loop Systems. Closed loop systems, where hose bibbs or similar valves are used to charge or drain the system, shall be of loose key type; have valve outlets capped; or have handles removed where the system is operational.

S 13.12 Fullway Valves. A fullway valve shall be installed in the following locations:

(1) On the water supply to a solar thermal energy system.

(2) On the water supply pipe to a gravity or pressurized water tank.

(3) On the water supply pipe to a water heater.

S 13.13 Accessible. Required fullway or shutoff valves shall be accessible.

S 14.0 Piping and Cross-connection Control For Solar Thermal Energy Systems.

S 14.1 Cross Connection Control. No piping installation, or part thereof, shall be made in such a manner that it will be possible for used, unclean, polluted, or contaminated water, mixtures, or substances to enter a portion of the potable water system from a pipe, tank, receptor, or any other equipment by reason of backsiphonage, suction, or any other cause, either during normal use and operation thereof, or where such pipe, tank, receptor, or equipment is subject to pressure exceeding the operating pressure in the potable water system.

S 14.2 Materials.

S 14.2.1 Piping Materials. Piping, tubing, and fittings materials shall comply with Table S 14.2. Joining methods shall be in accordance with Section 605.0. Materials in contact with the heat transfer medium shall be approved for such use. Galvanized steel shall not be used for solar thermal piping systems

containing antifreeze. Black steel shall not be used in systems with entrained air. Unions between dissimilar metals shall comply with Sections 310.6 and 605.15. The material used shall be capable of withstanding the maximum temperature and pressure of the system.

S 14.2.1.1 Plastic. Plastic used in the construction of a solar thermal system shall be installed in accordance with the manufacturer's installation instructions.

S 14.2.1.2 Combustible Materials. Combustible materials shall not be located on or adjacent to construction required to be of noncombustible materials or in fire areas, unless approved by the Authority Having Jurisdiction.

S 14.2.1.3 Adhesives. Adhesives used in a solar collector shall not vaporize at the design temperature.

S 14.2.1.4 Potable Water. Materials in contact with potable water shall comply with NSF 61. Piping in solar thermal systems designed to convey potable water shall be flushed and disinfected in accordance with this Code.

S 14.2.1.5 Racks. Dissimilar metals used for racking shall be isolated to prevent galvanic corrosion. Paint shall not be used as a method of isolation.

S 14.2.1.6 Fasteners. Mountings and fasteners shall be made of corrosion-resistant materials. Carbon steel mountings and fasteners shall be classified as noncorrosive in accordance with ASME SA194.

S 14.2.2 Storage Tank Connectors. Flexible metallic storage tank connectors or reinforced flexible storage tank connectors connecting a storage tank to the piping system shall be in accordance with the applicable standards referenced in Table S 18.1. Copper or stainless steel flexible connectors shall not exceed 24 inches (610 mm). PEX, PE-AL-PE, or PE-RT tubing shall not be installed within the first 18 inches (457 mm) of piping connected to a storage tank.

S 14.2.2.1 Flexible Connectors. Listed flexible connectors shall be installed in readily accessible locations, unless otherwise indicated in the listing.

S 14.3 Safety Devices.

S 14.3.1 Pressure Relief Valves. Solar thermal energy system components containing pressurized fluids shall be protected against pressures exceeding design limitations with a pressure relief valve. Each section of the system in which excessive pressures are capable of developing shall have a relief device located so that a section cannot be isolated from a relief device. Pressure and temperature relief valves shall be installed in accordance with the terms of their listing and the manufacturer's installation instructions.

TABLE S 14.2
MATERIALS FOR SOLAR THERMAL SYSTEM, PIPING, TUBING, AND FITTINGS

MATERIAL	STANDARDS	
	PIPING/TUBING	FITTINGS
Copper/Copper Alloy	ASTM B42, ASTM B43, ASTM B75, ASTM B88, ASTM B135, ASTM B251*, ASTM B302, ASTM B447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.23, ASME B16.24, ASME B16.26, ASME B16.29, ASME B16.51, ASSE 1061, ASTM F3226, IAPMO PS 117

Steel	ASTM A53, ASTM A106, ASTM A254	ASME B16.5, ASME B16.9, ASME B16.11, ASTM A420, ASTM F3226, IAPMO PS 117
Gray Iron	—	ASTM A126
Malleable Iron	—	ASME B16.3
Chlorinated Polyvinyl Chloride (CPVC)	ASTM D2846, ASTM F441, ASTM F442, CSA B137.6	ASSE 1061, ASTM D2846, ASTM F437, ASTM F438, ASTM F439, ASTM F1970, CSA B137.6
Polyethylene (PE)	ASTM D1693, ASTM D2513, ASTM D2683, ASTM D2737, ASTM D3035, ASTM D3350, ASTM F714, ASTM F2165, AWWA C901, CSA B137.1, NSF 358-1	ASTM D2609, ASTM D2683, ASTM D3261, ASTM F1055, ASTM F2165, CSA B137.1, NSF 358-1
Cross-Linked Polyethylene (PEX)	ASTM F876, ASTM F2165, ASTM F3253, CSA B137.5, NSF 358-3	ASSE 1061, ASTM F877, ASTM F1055, ASTM F1807, ASTM F1960, ASTM F2080, ASTM F2098, ASTM F2159, ASTM F2165, ASTM F2735, ASTM F3253, ASTM F3347, ASTM F3348, CSA B137.5, NSF 358-3
Polypropylene (PP)	ASTM F2165, ASTM F2389, CSA B137.11, NSF 358-2	ASTM F2165, ASTM F2389, CSA B137.11, NSF 358-2
Polyvinyl Chloride (PVC)	ASTM D1785, ASTM D2241, CSA B137.3	ASTM D2464, ASTM D2466, ASTM D2467, ASTM F1970, CSA B137.2, CSA B137.3
Raised Temperature Polyethylene (PE-RT)	ASTM F2165, ASTM F2623, ASTM F2769, CSA B137.18	ASSE 1061, ASTM D3261, ASTM F1055, ASTM F1807, ASTM F2159, ASTM F2165, ASTM F2735, ASTM F2769, CSA B137.18
Cross-Linked Polyethylene/Aluminum/ Cross-Linked Polyethylene (PEX-AL-PEX)	ASTM F1281, ASTM F2165, CSA B137.10	ASTM F1281, ASTM F1974, ASTM F2165, ASTM F2434, CSA B137.10
Polyethylene/Aluminum/Polyethylene (PE- AL-PE)	ASTM F1282, ASTM F2165, CSA B137.9	ASTM F1282, ASTM F1974, ASTM F2165, CSA B137.9
Stainless Steel	ASTM A269, ASTM A312, ASTM A554, ASTM A778	ASTM F1476, ASTM F1548, ASTM F3226, IAPMO PS 117
Chlorinated Polyvinyl Chloride/Aluminum/ Chlorinated Polyvinyl Chloride (CPVC/AL/CPVC)	ASTM F2855	ASTM D2846

* Only Type K, L, or M shall be permitted to be installed.

S 14.3.2 Pressurized Vessels. Pressurized vessels shall be provided with overpressure protection by means of a listed pressure relief valve installed in accordance with the manufacturer's installation instructions.

S 14.3.3 Discharge Piping. The discharge piping serving a temperature relief valve, pressure relief valve, or combination of both shall have no valves, obstructions, or means of isolation and comply with the following:

(1) The discharge pipe shall equal the size of the valve outlet and shall discharge full size to the flood level of the area receiving the discharge and pointing down.

(2) Materials shall be rated at not less than the operating temperature of the system and approved for such use or shall comply with ASME A112.4.1.

(3) The discharge pipe shall discharge independently by gravity through an air gap into the drainage system or outside of the building with the end of the pipe not exceeding 2 feet (610 mm) and not less than 6 inches (152 mm) above the ground and pointing downwards.
(4) The discharge pipe shall discharge in such a manner that does not cause personal injury or structural damage.
(5) No part of such discharge pipe shall be trapped or subject to freezing.
(6) The terminal end of the pipe shall not be threaded.
(7) Discharge from a relief valve into a water heater pan is prohibited.
(8) The discharge termination point shall be readily observable.

S 14.3.4 Vacuum Relief Valves. System components that are subjected to a vacuum while in operation or during shutdown shall be protected with vacuum relief valves. Where the piping configuration, equipment location, and valve outlets are located below the storage tank elevation, the system shall be equipped with a vacuum relief valve at the highest point.

S 14.3.5 Temperature Regulation. Where a system is capable of providing potable water at temperatures that exceed 140°F (60°C), a thermostatic mixing valve that is in accordance with ASSE 1017 shall be provided to limit the water supplied to the potable hot water distribution system to a temperature of 140°F (60°C) or less.

S 14.4 Protection of System Components.

S 14.4.1 Materials. System components in contact with heat-transfer mediums shall be approved for such use. Components installed outdoors shall be resistant to ultraviolet radiation.

S 14.4.2 Corrosion. Solar thermal energy systems and components subject to corrosion shall be protected in an approved manner. Metal parts exposed to atmospheric conditions shall be of corrosion-resistant material.

S 14.4.3 Mechanical Damage. Portions of a solar thermal energy system installed where subjected to mechanical damage shall be guarded against such damage by being installed behind approved barriers or, where located within a garage, be elevated or located out of the normal path of a vehicle.

S 14.4.4 Freeze Protection. Unless designed for such conditions, solar thermal energy systems and components that contain liquid as the heat transfer medium shall be protected from freezing, by means of fail-safe freeze protection in accordance with this Section, where the ambient temperature may be less than 46°F (8°C).

S 14.4.4.1 Antifreeze. Antifreeze shall be used in accordance with the solar thermal system manufacturer's instructions.

S 14.4.4.2 Drainback. Drainback systems shall drain by gravity and shall be permitted to be installed in applications where the ambient temperature may not be less than -60°F (-51°C).

S 14.4.4.3 Integral Collector Storage. Integral collector storage systems shall be permitted to be installed in applications where the ambient temperature may not be less than 23°F (-5°C) and the duration of below-freezing episodes exceeding 18 hours. Exposed piping in a solar thermal energy system shall be protected with insulation having a thermal resistance of not less than R-5.0.

S 14.4.4.4 Indirect Thermosiphon. Indirect thermosiphon systems shall be permitted to be installed in applications where the ambient temperature may not be less than 23°F (-5°C). Exposed piping in a solar thermal energy system shall be protected with insulation having a thermal resistance of not less than R-5.

S 14.4.4.5 Air Heating Systems. Air solar heating systems shall be permitted to be used in accordance with the manufacturer's instructions.

S 14.4.4.6 Labeling. A label indicating the method of freeze protection for the system shall be attached to the system in a visible location.

S 14.4.4.7 Piping. Fittings, pipe slope, and collector shall be designed to allow for manual gravity draining and air filling of solar thermal energy system components and piping. Pipe slope for gravity draining shall be not less than 1/4 inch per foot (20.8 mm/m) of horizontal length. Collector header pipes or absorber plate riser tubes internal to the collector shall be sloped in accordance with the manufacturer's instructions. Where a means to drain the system is provided, a drain valve shall be installed.

S 14.4.5 Water Hammer Protection. The flow of the hydronic piping system shall be designed to prevent water hammer.

S 14.4.6 Heat Transfer Fluid. Solar thermal piping shall be identified with an orange background with black uppercase lettering, with the words "Caution: heat transfer FLUID, do not drink." Each solar thermal energy system shall be identified to designate the medium being conveyed. The minimum size of the letters and length of the color field shall comply with Table S 14.4.6.

Each outlet on the solar thermal piping system shall be posted with black uppercase lettering as follows:

"CAUTION: HEAT TRANSFER FLUID, DO NOT DRINK."

TABLE S 14.4.6

MINIMUM LENGTH OF COLOR FIELD AND SIZE OF LETTERS

OUTSIDE DIAMETER OF PIPE OR COVERING (inches)	MINIMUM LENGTH OF COLOR FIELD (inches)	MINIMUM SIZE OF LETTERS (inches)
½ to 1¼	8	½
1½ to 2	8	¾
2½ to 6	12	1¼
8 to 10	24	2½
Over 10	32	3½

S 14.4.7 Insulation.

S 14.4.7.1 General. The temperature of surfaces within reach of building occupants shall not exceed 140°F (60°C) unless the surfaces are protected by insulation. Where sleeves are installed, the insulation shall continue full size through them. Coverings and insulation used for piping shall be of material approved for the operating temperature of the system and the installation environment. Where installed in a plenum, the insulation, jackets and lap-seal adhesives, including pipe coverings and linings, shall have a flame spread index

not to exceed 25 and a smoke-developed index not to exceed 50 where tested in accordance with ASTM E84 or UL 723.

S 14.4.7.2 Heat Loss. Insulation shall be installed on interconnecting solar and hot water piping. The final 5 feet (1524 mm) of the cold water supply line, or the entire length where less than 5 feet (1524 mm), shall be insulated. The insulation thickness shall be in accordance with Table S 14.4.7.3(1) or Table S 14.4.7.3(2), or the insulation installed shall have an R-value of not less than R-2.6 degree Fahrenheit hour square foot per British thermal unit (°F•h•ft2/Btu) (R-0.46 m2•K/W). Piping, storage tanks, and circulating air ductwork shall be insulated. Ductwork and piping shall be permitted to not be insulated where exposed in conditioned spaces, and the heat loss from such ducts or piping does not otherwise contribute to the heating or cooling load within such space.

Exception: Low temperature, aboveground piping installed for swimming pools, spas, and hot tubs in accordance with the manufacturer's installation instructions unless such piping is located within a building.

S 14.4.7.3 Piping. Pipes and fittings, other than unions, flanges, or valves, shall be insulated. Insulation material shall be approved for continuous operating temperatures of not less than 220°F (104°C). [See Table S 14.4.7.3(1) and Table S 14.4.7.3(2)].

TABLE S 14.4.7.3(1)
MINIMUM PIPE INSULATION

NPS (inches)	PIPE O.D. (inches)	INSULATION I.D. (inches)	INSULATION O.D. (inches)										
			INSULATION NOMINAL THICKNESS (inches)*										
			½	¾	1	1.5	2	2.5	3	3.5	4	4.5	5
½	0.84	0.86	1.84	2.36	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
¾	1.05	1.07	2.06	2.36	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
1	1.315	1.33	2.32	2.88	3.50	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75
1¼	1.660	1.68	2.66	3.28	3.50	5.00	5.56	6.62	7.62	8.62	9.62	10.75	11.75
1½	1.900	1.92	2.78	3.50	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75	12.75
2	2.375	2.41	3.42	3.98	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75
2½	2.875	2.91	3.88	4.48	5.00	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00
3	3.500	3.53	4.50	4.96	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00
3½	4.000	4.03	4.96	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75	12.75	14.00
4	4.500	4.53	5.56	6.58	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00	15.00
6	6.625	6.70	7.80	8.12	8.62	9.62	10.75	11.75	12.75	14.00	15.00	16.00	17.00

For SI units: 1 inch = 25 mm

* Thickness values are applicable for calcium silicate, cellular foam plastics, cellular glass, mineral fiber, and perlite preformed insulation materials

TABLE S 14.4.7.3(2)
STANDARD TUBING INSULATION THICKNESS

TUBE SIZE (inches)	TUBE O.D. (inches)	INSULATION I.D. (inches)	INSULATION O.D. (inches)
			INSULATION NOMINAL THICKNESS (inches)*

			1	1.5	2	2.5	3	3.5	4	4.5	5
⅜	0.500	0.52	2.38	3.50	4.50	5.56	6.62	-	-	-	-
½	0.625	0.64	2.88	3.50	4.50	5.56	6.62	-	-	-	-
¾	0.875	0.89	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
1	1.125	1.14	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
1¼	1.375	1.39	3.50	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75
1½	1.625	1.64	3.50	4.50	5.56	6.62	7.62	8,62	9.62	10.75	11.75
2	2.125	2.16	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75	12.75
2½	2.625	2.66	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75
3	3.125	3.16	5.00	6.61	7.62	8.62	9.62	10.75	11.75	12.75	14.00
3½	3.625	3.66	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00
4	4.125	4.16	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00	15.00
5	5.125	5.16	7.62	8.62	9.62	10.75	11.75	12.75	14.00	15.00	16.00
6	6.125	6.20	8.62	9.62	10.75	11.75	12.75	14.00	15.00	16.00	17.00

S 14.4.7.4 Fittings. Fittings shall be insulated with mitered sections, molded fittings, insulating cement, or flexible insulation.

S 14.4.7.5 Installation. Insulation shall be finished with a jacket or facing with the laps sealed with adhesives or staples so as to secure the insulation on the pipe. Insulation jacket seams shall be on the underside of the piping and shall overlap in accordance with the manufacturer's installation instructions. Joints and seams shall be sealed with a sealant that is approved for both the material and environmental conditions. In lieu of jackets, molded insulation shall be permitted to be secured with 16 gauge galvanized wire ties not exceeding 9 inches (229 mm) on center.

S 14.4.7.5.1 Exterior Applications. Insulation for exterior applications shall be finished with an approved jacket or facing with the surfaces and laps sealed. Jacketing, facing, and tape used for exterior applications shall be designed for such use. Where flexible insulation is used, it shall be wrapped and sealed against water penetration. Insulation used for exterior applications shall be resistant to extreme temperatures, UV exposure, and moisture.

S 15.0 Specific Requirements.

S 15.1 Electrical.

S 15.1.1 Wiring. Electrical connections, wiring, and devices shall be installed in accordance with NFPA 70. Electrical equipment, appliances, and devices installed in areas that contain flammable vapors or dusts shall be of a type approved for such environment.

S 15.1.2 Controls. Required electrical, mechanical, safety, and operating controls shall be listed or labeled by a listing agency. Electrical controls shall be of such design and construction as to be suitable for installation in the environment in which they are located.

S 15.2 Flow Directions. Flow directions shall be permanently affixed on the solar thermal energy system.

S 15.3 Attic Installations. An attic space in which solar energy system components are installed shall comply with Section 508.4 of this Code.

S 15.4 Connections to Drainage System Required. Receptors, drains, appurtenances, and appliances, used to receive or discharge liquid waste, shall be

connected to the drainage system of the building or premises in accordance with the requirements of this Code.

S 15.5 Dry Storage Systems.

S 15.5.1 Waterproofing. The containment structure for dry thermal storage systems shall be constructed in an approved manner to prevent the infiltration of water or moisture.

S 15.5.2 Detecting Water Intrusion. The containment structure shall be capable of fully containing spillage or moisture accumulation that occurs. The structure shall have a means, such as a sight glass, to detect spillage or moisture accumulation, and shall be fitted with a drainage device to eliminate spillage.

S 15.5.3 Rock as Storage Material. Systems utilizing rock as the thermal storage material shall use clean, washed rock that is free of organic material.

S 15.5.4 Odor and Particulate Control. Thermal storage materials and containment structures, including interior protective coating, shall not impart toxic elements, particulate matter, or odor to areas of human occupancy.

S 15.6 Heat Pumps. Heat pumps shall be in compliance with Table S 15.6, as applicable. Heat pumps shall also be listed and labeled in accordance with UL 1995 or UL 60335-2-40. Heat pumps shall be fitted with a means to indicate that the compressor is locked out.

TABLE S 15.6

TYPE OF HEAT PUMP	STANDARDS
Water-to-Air	AHRI/ASHRAE/ISO 13256-1
Water-to-Water	AHRI/ASHRAE/ISO 13256-2
Air Source	AHRI 210/240

S 16.0 Solar Thermal Energy Systems for Swimming Pool, Spas, and Hot Tubs.

S 16.1 Water Chemistry. Where water from a swimming pool, spa, or hot tub is heated by way of circulation through solar collectors, the chemistry of such water shall comply with the requirements of Section S 16.2 and shall be filtered in accordance with Section S 16.3 and Section S 16.3.1 of this Code.

S 16.2 Parameters. Parameters for chemicals used within a swimming pool, spa, or hot tub shall be in accordance with Table S 16.2.

TABLE S 16.2
WATER CHEMISTRY

PARAMETER	ACCEPTABLE RANGE
Calcium hardness	200 – 400 parts per million (ppm)
Langelier Saturation Index	0 (+ or - 0.3 acceptable)
pH	7.2 – 7.8

TDS	< 1500 ppm
Total alkalinity	80 – 120 ppm

S 16.3 Filter. A filter shall be provided to remove debris from the water entering the solar loop.

Exception: A solar swimming pool, spa, or hot tub heating system with a heat exchanger.

S 16.3.1 Location. A filter shall be located upstream of a pump used to direct water to solar collectors.

S 16.4 Corrosion Resistant. Glazed solar collectors made of copper shall not be used for solar pool, spa, or hot tub heating.

Exception: Where a heat exchanger is provided between the collector circuit and the swimming pool, spa, or hot tub water.

S 17.0 Certificate of Compliance. Upon completion of the solar thermal energy system, the permittee shall sign a Certificate of Compliance with this Code. The Certificate of Compliance shall also list the following information:

(1) Type of freeze protection;
(2) Mixing valve setting degrees Fahrenheit (° F);
(3) Subsystem working pressure (if applicable) pounds per square inch;
(4) Subsystem test pressure (if applicable) pounds per square inch;
(5) Heat exchanger make and model number (if applicable);
(6) Circulating pump over temperature protection shut-off setting degrees Fahrenheit (° F) for one-tank systems where the water heater controls utilize fusible-link type over temperature protection.

This Certificate shall be posted in a conspicuous location at or near the water heater.

S 18.0 General.

S 18.1 Referenced Standards. The standards listed in Table S 18.1 are referenced in various sections of this Appendix and shall be considered part of the requirements of this Code. The standards are listed herein by the standard number and effective date, the title and application. The application of the referenced standard(s) shall be as specified in Section S 5.2.

TABLE S 18.1
REFERENCED STANDARDS

STANDARD NUMBER	STANDARD TITLE	APPLICATION
AHRI 210/240-2017	Performance Rating of Unitary Air-conditioning & Air- source Heat Pump Equipment	Air-Source Heat Pumps
AHRI 870-2016	Performance Rating of Direct Geoexchange Heat Pumps	Equipment
AHRI/ASHRAE/ISO 13256-1-1998 (R2012)	Water-Source Heat Pumps – Testing and Rating for Performance – Part 1: Water-to-Air and Brine-to-Air Heat Pumps	Water-Source Heat Pumps

AHRI/ASHRAE/ISO 13256-2-1998 (R2012)	Water-Source Heat Pumps – Testing and Rating for Performance – Part 2: Water-to-Water and Brine-to-Water Heat Pumps	Water-Source Heat Pumps
ASHRAE 34-2019	Designation and Safety Classification of Refrigerants	Refrigerant Classifications
ASHRAE 194-2017	Method of Test for Direct-Expansion Ground-Source Heat Pumps	Ground-Source Heat Pumps
ASME A112.1.2-2012 (R2017)	Air Gaps in Plumbing Systems (for Plumbing Fixtures and Water-Connected Receptors)	Backflow Protection
ASME A112.1.3-2000 (R2015)	Air Gap Fittings for Use with Plumbing Fixtures, Appliances, and Appurtenances	Backflow Protection
ASME A112.4.1-2009 (R2019)	Water Heater Relief Valve Drain Tubes	Discharge Piping
ASME B1.20.1-2013 (R2018)	Pipe Threads, General Purpose (Inch)	Joints
ASME B16.3-2016	Malleable Iron Threaded Fittings: Classes 150 and 300	Fittings
ASME B16.5-2017	Pipe Flanges and Flanged Fittings: NPS 1/2 Through NPS 24 Metric/Inch	Fittings
ASME B16.9-2018	Factory-Made Wrought Buttwelding Fittings	Fittings
ASME B16.11-2016	Forged Fittings, Socket-Welding and Threaded	Fittings
ASME B16.15-2018	Cast Copper Alloy Threaded Fittings: Classes 125 and 250	Fittings
ASME B16.18-2018	Cast Copper Alloy Solder Joint Pressure Fittings	Fittings
ASME B16.22-2018	Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings	Fittings
ASME B16.23-2016	Cast Copper Alloy Solder Joint Drainage Fittings: DWV	Fittings
ASME B16.24-2016	Cast Copper Alloy Pipe Flanges, Flanged Fittings, and Valves: Classes 150, 300, 600, 900, 1500, and 2500	Fittings
ASME B16.26-2018	Cast Copper Alloy Fittings for Flared Copper Tubes	Fittings
ASME B16.29-2017	Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings – DWV	Fittings
ASME B16.51-2018	Copper and Copper Alloy Press-Connect Pressure Fittings	Fittings
ASME BPVC Section VIII.1-2019	Rules for Construction of Pressure Vessels Division 1	Miscellaneous

ASME BPVC Section X- 2019	Fiber-Reinforced Plastic Pressure Vessels	Pressure Vessel Construction, Pressure Vessels
ASME SA194-2015	Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both	Mounting
ASSE 1013-2011	Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Pre-venters	Backflow Prevention
ASSE 1017-2009	Temperature Actuated Mixing Valves for Hot Water Distribution Systems	Valves
ASSE 1061-2015	Push-Fit Fittings	Fittings
ASSE 1079-2012	Dielectric Pipe Unions	Fittings
ASTM A53/A53M-2018	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	Piping
ASTM A106/A106M-2019a	Seamless Carbon Steel Pipe for High-Temperature Service	Piping
ASTM A126-2004 (R2019)	Gray Iron Castings for Valves, Flanges, and Pipe Fittings	Piping
ASTM A254/A254M-2012 (R2019)	Copper-Brazed Steel Tubing	Piping
ASTM A269/A269M-2015a (R2019)	Seamless and Welded Austenitic Stainless Steel Tubing for General Service	Piping
ASTM A312/A312M-2019	Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes	Piping
ASTM A420/A420M-2019a	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service	Fittings
ASTM A554-2016	Welded Stainless Steel Mechanical Tubing	Piping
ASTM A778/A778M-2016	Welded, Unannealed Austenitic Stainless Steel Tubular Products	Piping
ASTM B32-2008 (R2014)	Solder Metal	Joints
ASTM B42-2015a	Seamless Copper Pipe, Standard Sizes	Piping
ASTM B43-2015	Seamless Red Brass Pipe, Standard Sizes	Piping

ASTM B75/B75M-2019	Seamless Copper Tube	Piping
ASTM B88-2016	Seamless Copper Water Tube	Piping
ASTM B135/B135M-2017	Seamless Brass Tube	Piping
ASTM B251/B251M-2017	General Requirements for Wrought Seamless Copper and Copper-Alloy Tube	Piping
ASTM B280-2019	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	Piping
ASTM B302-2017	Threadless Copper Pipe, Standard Sizes	Piping
ASTM B447-2012a	Welded Copper Tube	Piping
ASTM B813-2016	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	Joints
ASTM B828-2016	Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings	Joints
ASTM C411-2019	Hot-Surface Performance of High-Temperature Thermal Insulation	Duct Coverings and Linings
ASTM D1693-2015	Environmental Stress-Cracking of Ethylene Plastics	Piping
ASTM D1785-2015[e1]	Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120	Piping
ASTM D2241-2015	Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)	Piping
ASTM D2464-2015	Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Fittings
ASTM D2466-2017	Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40	Fittings
ASTM D2467-2015	Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Fittings
ASTM D2513-2019	Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings	Piping
ASTM D2564-2012 (R2018)	Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems	Joints
ASTM D2609-2015	Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe	Fittings
ASTM D2683-2014	Socket-Type Polyethylene Fittings for Outside Diameter- Controlled Polyethylene Pipe and Tubing	Fittings
ASTM D2737-2012a	Polyethylene (PE) Plastic Tubing	Piping

ASTM D2846/D2846M-2019a	Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems	Piping
ASTM D3035-2015	Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter	Piping
ASTM D3139-2019	Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals	Joints
ASTM D3261-2016	Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing	Fittings
ASTM D3350-2014	Polyethylene Plastics Pipe and Fittings Materials	Piping
ASTM E84-2019b	Surface Burning Characteristics of Building Materials	Miscellaneous
ASTM F437-2015	Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Fittings
ASTM F438-2017	Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40	Fittings
ASTM F439-2019	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Fittings
ASTM F441/F441M-2015	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80	Piping
ASTM F442/F442M-2019	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)	Piping, Plastic
ASTM F493-2014	Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings	Joints
ASTM F656-2015	Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings	Joints
ASTM F714-2013 (R2019)	Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter	Piping
ASTM F876-2019a	Crosslinked Polyethylene (PEX) Tubing	Piping
ASTM F877-2019	Crosslinked Polyethylene (PEX) Hot- and Cold-Water Distribution Systems	Piping
ASTM F1055-2016a	Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing	Fittings
ASTM F1281-2017	Crosslinked Polyethylene/ Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe	Piping
ASTM F1282-2017	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Compo- site Pressure Pipe	Piping

ASTM F1476-2007 (R2019)	Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Fittings
ASTM F1548-2001 (R2018)	Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications	Fittings
ASTM F1807-2019b	Metal Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps, for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings
ASTM F1960-2019a	Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings
ASTM F1970-2019	Special Engineered Fittings, Appurtenances or Valves for Use in Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Systems	Piping
ASTM F1974-2009 (R2015)	Metal Insert Fittings for Polyethylene/Aluminum/Polyethylene and Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene Composite Pressure Pipe	Fittings
ASTM F2080-2019	Cold-Expansion Fittings with Metal Compression-Sleeves for Crosslinked Polyethylene (PEX) Pipe and SDR9 Polyethylene of Raised Temperature (PE-RT) Pipe	Fittings
ASTM F2098-2018	Stainless Steel Clamps for Securing SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) to Metal Insert and Plastic Insert Fittings	Fittings
ASTM F2159-2019a	Plastic Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings
ASTM F2165-2019	Flexible Pre-Insulated Plastic Piping	Fittings, Piping and Tubing
ASTM F2389-2019	Pressure-Rated Polypropylene (PP) Piping Systems	Piping

ASTM F2434-2019	Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Cross-linked Polyethylene/Aluminum/Cross-linked Polyethylene (PEX-AL-PEX) Tubing	Fittings
ASTM F2620-2019	Heat Fusion Joining of Polyethylene Pipe and Fittings	Joints
ASTM F2623-2019	Polyethylene of Raised Temperature (PE-RT) Systems for Non-Potable Water Applications	Piping
ASTM F2735-2018	Plastic Insert Fittings for SDR9 Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings
ASTM F2769-2018	Polyethylene of Raised Temperature (PE-RT) Plastic Hot and Cold-Water Tubing and Distribution Systems	Piping, Fitting
ASTM F2855-2019	Chlorinated Poly (Vinyl Chloride)/Aluminum/Chlorinated Poly (Vinyl Chloride) (CPVC-AL-CPVC) Composite Pressure Tubing	Piping, Plastic
ASTM F3226/F3226M-2019	Metallic Press-Connect Fittings for Piping and Tubing Systems	Fittings
ASTM F3253-2019	Crosslinked Polyethylene (PEX) Tubing with Oxygen Barrier for Hot- and Cold-Water Hydronic Distribution Systems	Piping, Fittings
ASTM F3347-2019a	Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing	Fittings
ASTM F3348-2019	Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing	Fittings
AWS A5.8M/A5.8-2019	Filler Metals for Brazing and Braze Welding	Joints
AWWA C901-2017	Polyethylene (PE) Pressure Pipe and Tubing, 3/4 In. (19 mm) Through 3 In. (76 mm), for Water Service	Piping
CSA B137.1-2017	Polyethylene (PE) Pipe, Tubing, and Fittings for Cold-Water Pressure Services	Piping
CSA B137.2-2017	Polyvinylchloride (PVC) Injection-Moulded Gasketed Fittings for Pressure Applications	Fittings

CSA B137.3-2017	Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications	Piping, Fittings
CSA B137.5-2017	Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications	Piping
CSA B137.6-2017	Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing, and Fittings for Hot- and Cold-Water Distribution Systems	Piping, Fittings
CSA B137.9-2017	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems	Piping
CSA B137.10-2017	Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems	Piping
CSA B137.11-2017	Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	Piping
CSA B137.18-2017	Polyethylene of Raised Temperature Resistance (PE-RT) Tubing Systems for Pressure Applications	Piping, Fittings
CSA C22.2 No. 108-2014 (R2019)	Liquid Pumps	Pumps
CSA C448.1-2016	Design and Installation of Ground Source Heat Pump Systems for Commercial and Institutional Buildings	Ground-Source Heat Pumps
CSA C448.2-2016	Design and Installation of Ground Source Heat Pump Systems for Residential and Other Small Buildings	Ground-Source Heat Pumps
CSA/IGSHPA C448-2016	Design and Installation of Ground Source Heat Pump Systems for Commercial and Residential Buildings	Miscellaneous
CSA Z21.10.1-2019	Gas Water Heaters, Volume I, Storage Water Heaters with Input Ratings of 75,000 Btu Per Hour or Less (same as CSA 4.1)	Fuel Gas, Appliances
CSA Z21.10.3-2019	Gas-Fired Water Heaters, Volume III, Storage Water Heaters with Input Ratings Above 75,000 Btu Per Hour, Circulating and Instantaneous (same as CSA 4.3)	Fuel Gas, Appliances
IAPMO PS 117-2019	Press Connections	Fittings
IAPMO S1001.1-2013 (R2019)	Design and Installation of Solar Water Heating Systems	Solar Thermal Systems
ICC 900/SRCC 300-2015	Solar Thermal System Standard	Solar Thermal Systems
ICC 901/SRCC 100-2015	Solar Thermal Collector Standard	Collectors

NFPA 70-2020	National Electrical Code	Miscellaneous
NGWA-01-2014	Water Well Construction Standard	Geothermal
NSF 60-2019	Drinking Water Treatment Chemicals-Health Effects	Backfill
NSF 61-2019	Drinking Water System Components - Health Effects	Miscellaneous
NSF 358-1-2017	Polyethylene Pipe and Fittings for Water-Based Ground- Source "Geothermal" Heat Pump Systems	Piping, Fittings
NSF 358-2-2017	Polypropylene Pipe and Fittings for Water-Based Ground- Source "Geothermal" Heat Pump Systems	Piping, Fittings
NSF 358-3-2016	Cross-Linked Polyethylene (PEX) Pipe and Fittings for Water- Based Ground-Source (Geothermal) Heat Pump Systems	Piping, Fittings
NSF 358-4-2018	Polyethylene of Raised Temperature (PE-RT) Tubing and Fittings for Water-Based Ground-Source (Geothermal) Heat Pump Systems	Piping, Fittings
UL 723-2018	Test for Surface Burning Characteristics of Building Materials	Miscellaneous
UL 778-2016	Motor-Operated Water Pumps (with revisions through January 17, 2019)	Pumps
UL 834-2004	Heating, Water Supply, and Power Boilers – Electric (with revisions through July 17, 2019)	Appliances
UL 1279-2010	Outline of Investigation for Solar Collectors	Electrical
UL 1699B-2018	Photovoltaic (PV) DC Arc-Fault Circuit Protection	Electrical
UL 1703-2002	Flat-Plate Photovoltaic Modules and Panels (with revisions through November 25, 2019)	Electrical
UL 1741-2010	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (with revisions through February 15, 2018)	Electrical
UL 1995-2015	Heating and Cooling Equipment (with revisions through August 17, 2018)	Heat Pumps
UL 2523-2009	Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters, and	Fuel Gas, Appliances

	Boilers (with revisions through March 16, 2018)	
UL 2703-2015	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels (with revisions through December 16, 2019)	Electrical
UL 2989-2016	Outline of Investigation for Tracer Wire	Tracer Wire
UL 3703-2015	Solar Trackers	Electrical
UL 4703-2014	Photovoltaic Wire	Electrical
UL 6703-2014	Connectors for Use in Photovoltaic Systems (with revisions through December 22, 2017)	Electrical
UL 8703-2011	Outline of Investigation for Concentrator Photovoltaic Mod- ules and Assemblies	Electrical
UL 60335-2-40-2017	Household And Similar Electrical Appliances-Safety-Part 2- 40: Particular Requirements for Electrical Heat Pumps, Air- Conditioners and Dehumidifiers	Heat Pumps
UL 61730-1-2017	Photovoltaic (PV) Module Safety Qualification - Part 1: Requirements for Construction	Electrical
UL 61730-2-2017	Photovoltaic (PV) Module Safety Qualification - Part 2: Requirements for Testing	Electrical
UL 62109-1-2014	Safety of Power Converters for Use in Photovoltaic Power Systems - Part 1: General Requirements (with revisions through April 30, 2019)	Electrical
ASHRAE 95-1981 (RA1987)	Methods of Testing to Determine the Thermal Performance of Solar Domestic Water Heating Systems	Testing
ASHRAE 96-1980 (RA1989)	Thermal Performance of Unglazed Flat-Plate Liquid-Type Solar Collectors	Testing, Collector
ASME A13.1-2015	Scheme for the Identification of Piping Systems	Piping
ASME B16.21-2016	Nonmetallic Flat Gaskets for Pipe Flanges	Joints
ASME B16.34-2017	Valves - Flanged, Threaded, and Welding End	Valves
ASME B16.47-2017	Large Diameter Steel Flanges: NPS 26 Through NPS 60 Metric/Inch	Fittings

ASME BPVC Section IV-2017	Rules for Construction of Heating Boilers	Miscellaneous
ASME BPVC Section IX-2017	Welding, Brazing, and Fusing Qualifications	Certification
ASSE 1010-2004	Water Hammer Arresters	Water Supply Component
ASTM A377-2018	Ductile Iron Pressure Pipe	Piping, Ferrous
ASTM A733-2016	Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples	Piping, Ferrous
ASTM D56-2016a	Flash Point by Tag Closed Cup Tester	Testing
ASTM D93-2019	Flash Point by Pensky-Martens Closed Cup Tester	Testing
ASTM D635-2018	Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position	Testing
ASTM D2235-2004 (R2016)	Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings	Joints
ASTM D2672-2014	Joints for IPS PVC Pipe Using Solvent Cement	Joints
ASTM D2855-2015	Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets	Joints
ASTM D3278-1996 (R2011)	Flash Point of Liquids by Small Scale Closed-Cup Apparatus	Testing
ASTM E136-2019a	Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C	Furnace
ASTM F480-2014	Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80	Piping, Plastic
ASTM F891-2016	Coextruded Poly(Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core	Piping, Plastic
AWS B2.2/B2.2M-2016	Brazing Procedure and Performance Qualification	Certification
AWWA C507-2018	Ball Valves, 6 In. through 60 In. (150 mm Through 1,500 mm)	Valves

BS EN 12975-1-2006 (R2010)	Thermal Solar Systems and Components – Solar Collectors – Part 1: General Requirements	Collector
BS EN 12976-1-2017	Thermal Solar Systems and Components – Factory Made Systems – Part 1: General Requirements	Solar Thermal Systems
BS EN 12976-2-2017	Thermal Solar Systems and Components – Factory Made Systems – Part 2: Test Methods	Solar Thermal Systems
BS EN ISO 9806-2017	Solar Energy – Solar Thermal Collectors – Test Methods	Collector
BS EN ISO 9488-2000	Solar Energy – Vocabulary	Miscellaneous
CSA Z21.22-2015	Relief Valves for Hot Water Supply Systems (same as CSA 4.4)	Valves

TABLE S 18.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
CSA Z21.24-2015	Connectors for Gas Appliances (same as CSA 6.10)	Fuel Gas
IAPMO IGC 332-2017a	Hydronic Radiators	Hydronic Systems
IEEE 937-2007	Installation and Maintenance of Lead-Acid Batteries for Photovoltaic (PV) Systems	Installation and Maintenance, Photovoltaic
IEEE 1013-2019	Sizing Lead-Acid Batteries for Stand-Alone Photovoltaic (PV) Systems	Photovoltaic, Sizing
IEEE 1361-2014	Selecting, Charging, Testing, and Evaluating Lead-Acid Batteries Used in Stand-Alone Photovoltaic (PV) Systems	Testing, Evaluation
IEEE 1526-2003	Testing the Performance of Stand-Alone Photovoltaic Systems	Testing, Photovoltaic
IEEE 1547-2018	Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces	Connections, Photovoltaic
IEEE 1562-2007	Array and Battery Sizing in Stand-Alone Photovoltaic (PV) Systems	Array, Battery, Photo-voltaic

IEEE 1661-2019	Test and Evaluation of Lead-Acid Batteries Used in Photovoltaic (PV) Hybrid Power Systems	Testing and Evaluation, Photovoltaic
MSS SP-58-2018	Pipe Hangers and Supports – Materials, Design, Manufacture, Selection, Application, and Installation (including Amendment 1, dated October 17, 2019)	Fuel Gas
MSS SP-80-2019	Bronze Gate, Globe, Angle, and Check Valves	Valves
NFPA 54/Z223.1-2018	National Fuel Gas Code	Fuel Gas
NFPA 274-2018	Test Method to Evaluate Fire Performance Characteristics of Pipe Insulation	Pipe Insulation
NSF 14-2018	Plastic Piping System Components and Related Materials	Piping, Plastic
UL 174-2004	Household Electric Storage Tank Water Heaters (with revisions through December 3, 2019)	Appliances
UL 873-2007	Temperature-Indicating and -Regulating Equipment (with revisions through February 6, 2015)	Electrical
UL 916-2015	Energy Management Equipment	Electrical
UL 1453-2016	Electric Booster and Commercial Storage Tank Water Heaters (with revisions through May 18, 2018)	Appliances
UL 60730-1 2016	Automatic Electrical Controls – Part 1: General Requirements	Electrical

ABBREVIATIONS IN TABLE S 18.1 AND TABLE S 18.2

AHRI Air-Conditioning, Heating, and Refrigeration Institute, 2311 Wilson Boulevard, Suite 400, Arlington, VA22201.

ANSI American National Standards Institute, Inc., 25 W. 43rd Street, 4th Floor, New York, NY 10036.

ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329-2305.

ASME American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ASSE American Society of Sanitary Engineering, 18927 Hickory Creek Drive, Suite 220, Mokena, IL 60448.

ASTM ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

AWS American Welding Society, 8669 NW 36 Street, # 130, Miami, FL 33166-6672.

AWWA	American Water Works Association, 6666 W. Quincy Avenue, Denver, CO 80235.
BSI (BS EN)	British Standard International, 389 Chiswick High Road, London, W4 4AL United Kingdom.
CSA	Canadian Standards Association, 178 Rexdale Boulevard, Toronto, ON, Canada M9W 1R3.
e1	An editorial change since the last revision or reapproval.
IAPMO	International Association of Plumbing and Mechanical Officials, 4755 E. Philadelphia Street, Ontario, CA 91761.
ICC	International Code Council, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001.
IEEE	The Institute of Electrical and Electronics Engineers, Inc., 3 Park Avenue, 17th Floor, New York, NY 10016-5997.
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street NE, Vienna, VA 22180.
NFPA	National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.
NGWA	National Ground Water Association, 601 Dempsey Road, Westerville, OH 43081.
NSF	NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.
SRCC	Solar Rating and Certification Corporation, 3060 Saturn Street, Suite 100, Brea, CA 92821.
UL	Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062.

B. The 2022 Los Angeles County Plumbing Code, as adopted by Section 15.16.010, is hereby amended as follows:

Wherever reference is made to the County of Los Angeles or to the unincorporated area of the County, such area shall be deemed to include within its corporate limits the area of the city for purposes of fulfilling the requirements of this chapter."

SECTION 10. Subsection A of Section 15.24.010 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.24.010 Residential Code - Adoption

A. The 2022 California Residential Code as amended by Title 30 the 2022 Los Angeles County Residential Code together with their appendices are adopted by the city as the city's residential code, to regulate the erection, construction, enlargements, alteration, repair, moving, removal, conversion, demolition, occupancy, use, equipment, height, area, security, abatement, and maintenance of certain residential buildings or structures within the city, and

provide for the issuance of permits and collection of fees therefore, are hereby adopted by reference, and conflicting ordinances are hereby repealed."

SECTION 11. Section 15.24.020 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.24.020 Residential Code - Penalty

A. No person shall erect, construct, enlarge, alter, repair, improve, remove, convert, demolish, equip, use, occupy or maintain any building or structure or cause the same to be done, contrary to or in violation of any provision of this 2019 California Residential Code, including other codes duly adopted by this chapter.

B. A violation of this section is punishable as an infraction pursuant to Section 1.08.030 of this code or punishable as a misdemeanor pursuant to Section 1.08.020 of this code."

SECTION 12. Section 15.24.030 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.24.030 Residential Code - Amendments Generally

The 2022 Los Angeles County Residential Code, as adopted by Section 15.24.010, is hereby amended as follows:

Wherever reference is made to the County of Los Angeles or to the unincorporated area of the County, such area shall be deemed to include within its corporate limits the area of the city for purposes of fulfilling the requirements of this chapter."

SECTION 13. Subsection A of Section 15.26.010 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.26.010 California Existing Building Code Adoption

A. The 2022 California Existing Building Code as amended by Title 33 of the Los Angeles County Existing Building Code together with their appendices are adopted by the city as the city's existing building code, to regulate voluntarily retrofits of buildings to make them stronger against earthquakes and strong wind conditions within the city, and provide for the issuance of permits and collection of fees therefor, are hereby adopted by reference, and conflicting ordinances are hereby repealed."

SECTION 14. Section 15.26.030 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.26.030 Amendments to the Existing Building Code generally The 2019 Los Angeles County Existing Building Code, as adopted by Section 15.26.010, is hereby amended as follows:

Wherever reference is made to the County of Los Angeles or to the unincorporated area of the County, such area shall be deemed to include within its corporate limits the area of the city for purposes of fulfilling the requirements of this chapter."

SECTION 15. Subsection A of Section 15.28.010 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.28.010 Green Building Standards Code – Adoption

A. The 2022 California Green Building Standards Code which regulates the erection, construction, enlargements, alteration, repair, moving, removal, conversion, demolition, occupancy, use, equipment, height, area, security, abatement, and maintenance of certain residential buildings or structures within the city, provides for the issuance of permits and collection of fees therefore, are hereby adopted by reference, and conflicting ordinances are hereby repealed."

SECTION 16. Section 15.28.020 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.28.020 Green Building Standards Code - Penalty

A. No person shall erect, construct, enlarge, alter, repair, improve, remove, convert, demolish, equip, use, occupy or maintain any building or structure or cause the same to be done, contrary to or in violation of any provision of this 2022 California Green Building Standards, including other codes duly adopted by this chapter.

B. A violation of this section is punishable as an infraction pursuant to Section 1.08.030 of this code or punishable as a misdemeanor pursuant to Section 1.08.020 of this code."

SECTION 17. Section 15.28.030 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.28.030 Green Building Standards Code - Conflict

Whenever an apparent conflict or inconsistency exists between any provision of 2022 California Green Building Standards Code, as adopted in Section 15.28.010, and any provision of this code, each provision shall be construed so as to supplement the other. In the event any apparently conflicting or inconsistent

provisions may not reasonably be so construed, the city's community development director shall determine which provision shall prevail."

SECTION 18. Section 15.28.040 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.28.040 Green Building Standards Code - No Entitlement Created Hereby

The adoption of the 2022 California Green Building Standards Code, as set forth in Section 15.28.010, shall not be construed for any purpose as creating any entitlement or authorizing any business or use which is prohibited by any provision contained in this code."

SECTION 19. Section 15.28.050 of the Lawndale Municipal Code is amended to read, in its entirety, as follows:

"15.28.050 Green Building Standards Code - Severability

The City Council hereby declares that should any provision, section, paragraph, sentence or word of this chapter or the 2022 California Green Building Standards Code, adopted by reference in Section 15.28.010, be rendered or declared invalid by any final court action in a court of competent jurisdiction, or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences and words of this chapter and the 2022 California Green Building Standards Code hereby adopted shall remain in full force and effect."

SECTION 20. The City Council hereby makes a finding of reasonable necessity for the amendments as stated separately for each such amendment and identified in the Los Angeles County Code Titles 26, 27, 28, 29, 30, and 33. These amendments to the Los Angeles County Codes, incorporating the uniform and international codes, are reasonably necessary due to the local climatic, geological and/or topographical conditions characterized by hot, dry summers and the high potential for seismic activity which make structures particularly vulnerable to rapidly spreading fires and structural damage.

SECTION 21. The adoption of this Ordinance is hereby determined to be exempt from the California Environmental Quality Act pursuant to State Guidelines Section 15061(b)(3) as a project that has no potential for causing a significant effect on the environment.

SECTION 22. That this Ordinance is enacted pursuant to the authority conferred upon the City Council of the City of Lawndale by Government Code Sections 36934 and 36937 and shall

SECTION 23. If any section, subsection, sentence, clause, or phrase of this ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of any competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance, and each and every section, subsection, sentence, clause and phrase thereof not declared invalid or unconstitutional

without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

SECTION 24. The City Clerk shall certify to the passage and adoption of this ordinance, and shall make a minute of the passage and adoption thereof in the records of and the proceedings of the City Council at which the same is passed and adopted. This ordinance shall be in full force and effect thirty (30) days after its final passage and adoption, and within fifteen (15) days after its final passage, the City Clerk shall cause it to be posted and published in a newspaper of general circulation in the manner required by law.

PASSED, APPROVED, AND ADOPTED this ____ day of November, 2022.

_____
Robert Pullen-Miles, Mayor

ATTEST:

State of California)
County of Los Angeles) SS
City of Lawndale)

I, Erica Harbison, City Clerk of the City of Lawndale, California, do hereby certify that the City Council duly introduced the foregoing Ordinance No. 1193-22 at its regular meeting held on the 7th day of November, 2022, and duly approved and adopted said ordinance at its regular meeting held on the ____ day of December, 2022, by the following roll call vote:

Name	Voting		Present, Not Voting		Absent
	Aye	No	Abstain	Not Participating	
Robert Pullen-Miles, Mayor					
Rhonda Hofmann Gorman, Mayor Pro Tem					
Pat Kearny					
Bernadette Suarez					
Sirley Cuevas					

_____ _____
Erica Harbison, City Clerk Date

APPROVED AS TO FORM:

_____
Gregory M. Murphy, City Attorney

ATTACHMENT B

BUILDING CODE UPDATES

10/20/22

ANALYSIS

This ordinance repeals those provisions of Title 26 – Building Code – of the Los Angeles County Code that had incorporated by reference portions of the 2019 Edition of the California Building Code and replaces them with provisions incorporating by reference portions of the 2022 California Building Code, published by the California Building Standards Commission, with certain changes and modifications.

State law requires that the County's Building Code contain the same requirements as are contained in the building standards published in the most recent edition of the California Building Code. State law allows the County to change or modify these requirements only if it determines that such changes or modifications are reasonably necessary because of local climatic, geological, or topographical conditions.

The changes and modifications to requirements contained in the building standards published in the 2022 California Building Code that are contained in this ordinance are based upon express findings, contained in the ordinance, that such changes are reasonably necessary due to local climatic, geological, or topographical conditions.

This ordinance also makes certain modifications to the administrative provisions of Title 26 and to certain chapters of Title 26 that relate to subjects not covered by the California Building Code.

DAWYN R. HARRISON
Acting County Counsel

By Carole Suzuki
CAROLE B. SUZUKI
Senior Deputy County Counsel
Public Works Division

CBS:rm

Requested: 07/27/22
Revised: 10/11/22

10/20/22

ORDINANCE NO. _____

An ordinance amending Title 26 – Building Code – of the Los Angeles County Code, to adopt and incorporate by reference the 2022 California Building Code, with certain changes and modifications, and to make other revisions thereto.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Sections 119.1.2 through 119.1.14 of Chapter 1, Chapters 2 through 35, and Appendices C, H, I, J, and O, of the Los Angeles County Code, which incorporate by reference and modify portions of the 2019 California Building Code, are hereby repealed.

SECTION 2. Chapter 1 is hereby amended to read as follows:

100 ADOPTION AND INCORPORATION BY REFERENCE

Except as hereinafter changed or modified, Sections 1.2 through 1.14 of Chapter 1 of Division I of that certain building code known and designated as the ~~2019~~2022 California Building Code, as published by the California Building Standards Commission, are adopted and incorporated by reference into this Title 26 of the Los Angeles County Code as if fully set forth below, and shall be known as Sections 119.1.2 through 119.1.14, respectively, of Chapter 1 of Title 26 of the Los Angeles County Code.

Except as hereinafter changed or modified, Chapters 2 through 35, and Appendices C, H, I, J and ~~O~~P, of that certain building code known and designated as the ~~2019~~2022 California Building Code, as published by the California Building Standards Commission, are adopted and incorporated by reference into this Title 26 of

the Los Angeles County Code as if fully set forth below, and shall be known as Chapters 2 through 35, and Appendices C, H, I, J and ~~O~~P, of Title 26 of the Los Angeles County Code.

A copy of said California Building Code, hereinafter referred to as the CBC, including the above-designated appendices, shall be at all times maintained by the Building Official for use and examination by the public.

. . .

SECTION 102 UNSAFE BUILDINGS

. . .

102.5.2 Emergency procedure.

Whenever any portion of a building, structure, or grading work constitutes an immediate hazard to life or property, and in the opinion of the Building Official, the conditions are such that repairs, ~~or~~ demolition, or barricading must be undertaken within less than the designated period, the Building Official may take necessary action, such as performing alterations, repairs, barricading, grading and/or demolition ~~of the structures~~, to protect life or property, or both, after giving such notice to the parties concerned as the circumstances will permit or without any notice whatever when, in the Building Official's opinion, immediate action is necessary.

. . .

SECTION 104 ORGANIZATION AND ENFORCEMENT

. . .

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104.3 Definitions

. . .

BUILDING DEPARTMENT shall mean the Building and Safety Division of the ~~Department of~~ Los Angeles County Public Works.

. . .

SECTION 106 PERMITS

. . .

106.3 Work Exempted.

A building permit shall not be required for the following:

. . .

2. Fences which are not used as a barrier to private swimming pools, spas, or hot tubs, and ground signs, provided that:

2.1 ~~Masonry or concrete f~~Fences do not exceed 6 feet (1.8 m) in height ~~and are set back from public ways a distance at least equal to the fence height~~.

~~2.2 Fences constructed of other materials do not exceed 6 feet (1.8 m) in height.~~

2.~~3~~2 Ground signs do not exceed 6 feet (1.8 m) in height.

. . .

12. Sheds, office or storage buildings, and other structures that are less than 1,500 square feet (139 m²) and incidental to ~~and~~ work authorized by a valid grading or building permit. Such structures must be removed upon expiration of the permit or completion of the work covered by the permit.

. . .

SECTION 107 FEES

. . .

107.17 Annual review of fees.

The fees in this Code shall be reviewed annually by the Director of Public Works. Beginning on July 1, 1992, and thereafter on each succeeding July 1, the amount of each fee in this Code shall be adjusted as follows: Calculate the percentage movement between March of the previous year and March of the current year in the Consumer Price Index (CPI) for all urban consumers in the Los Angeles-Long Beach-Anaheim, CA areas, as published by the United States Government Bureau of Labor Statistics; and adjust each fee by said percentage amount ~~and round off to the nearest 10 cents~~, provided, however, that no adjustment shall decrease any fee and no fee shall exceed the reasonable cost of providing services. When it is determined that the amount reasonably necessary to recover the cost of providing services is in excess of this adjustment, the Building Official may present fee proposals to the Board of Supervisors for approval.

. . .

SECTION 109 USE AND OCCUPANCY

109.1 General.

No building or structure or portion thereof shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the Building Official has approved the building or structure or

portion thereof for such use or occupancy as evidenced by the issuance of a certificate of occupancy or a temporary certificate of occupancy. A building of Group R-1, R-2, R-2.1, R-3, R-3.1, or R-4. Occupancy, if erected on a site where grading has been performed without a grading permit or pursuant to a grading permit issued under provisions of this Code, shall not be occupied, nor shall gas or electric utilities be connected thereto, unless the grading has been completed in accordance with Appendix J or the Building Official has found, should the grading not be so completed, that the site conditions will pose no hazard to health, safety or welfare of occupants and/or occupants of adjacent properties, and that a temporary certificate of occupancy has been issued.

. . .

SECTION 3. Section 701A.1 is hereby amended to read as follows:

701A.1 Scope.

This ~~c~~Chapter applies to building materials, systems, and/or assemblies used in the exterior design and construction of new buildings ~~located~~, and to additions, alterations, or repairs made to existing buildings, erected, constructed, or moved within a Wildland-Urban Interface (WUI) Fire Area as defined in Section 702A.

SECTION 4. Section 701A.3 is hereby amended to read as follows:

701A.3 Application.

New buildings, and any additions, alterations, or repairs made to existing buildings located in or moved within any Fire Hazard Severity Zone or any Wildland-Urban Interface (WUI) Fire Area designated by the ~~enforcing agency~~Los Angeles

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County Fire Department, that is constructed after the application date shall comply with the provisions of this ~~c~~Chapter (see Section 701A.3.1). This shall include all new buildings, and any additions, alterations, or repairs made to existing buildings, with residential, commercial, educational, institutional or similar occupancy type use, which shall be referred to in this chapter as "applicable building(s)" (see definition in Section 702A), as well as new buildings and structures, and any additions, alterations, or repairs made to existing buildings accessory to those applicable buildings (see Exceptions 1 and 4).

Exceptions:

. . .

4. ~~New a~~Accessory buildings and miscellaneous structures, including additions, alterations, or repairs, as specified in Section 710A shall comply only with the requirements of that ~~s~~Section.

5. ~~Additions to and remodels of buildings originally constructed prior to July 1, 2008.~~Reserved

SECTION 5. Section 701A.3.1 is hereby amended to read as follows:

701A.3.1 Application date and where required.

New buildings for which an application for a building permit is submitted on or after July 1, 2008, and any additions, alterations, or repairs made to existing buildings for which an application for a building permit is submitted on or after January 1, 2023, located in any Fire Hazard Severity Zone or Wildland–Urban Interface Fire Area shall comply with all sections of this ~~c~~Chapter, including all of the following areas:

. . .

Exceptions:

1. ~~New b~~Buildings located in any Fire Hazard Severity Zone within State Responsibility Areas, for which an application for a building permit is submitted on or after January 1, 2008, shall comply with all sections of this ~~c~~Chapter.

2. ~~New b~~Buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Fire Area designated by cities and other local agencies for which an application for a building permit is submitted on or after December 1, 2005 but prior to July 1, 2008, shall only comply with the following sections of this ~~c~~Chapter:

. . .

SECTION 6. Section 701A.4 is hereby amended to read as follows:

701A.4 Inspection and certification.

Building permit applications and final completion approvals for buildings within the scope and application of this ~~c~~Chapter shall comply with the following:

1. Building permit issuance. The ~~local b~~Building ~~o~~Official shall, prior to construction, provide the owner or applicant a certification that the building as proposed to be built complies with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this ~~c~~Chapter. Issuance of a building permit by the ~~local b~~Building ~~o~~Official for the proposed building shall be considered as complying with this ~~s~~Section.

2. Building permit final. The ~~local b~~Building ~~o~~Official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this ~~c~~Chapter. Issuance of a certificate of occupancy by the ~~local b~~Building ~~o~~Official for the proposed building shall be considered as complying with this ~~s~~Section.

SECTION 7. Section 702A is hereby amended to read as follows:

702A DEFINITIONS

. . .

FIRE HAZARD SEVERITY ZONES. Geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Responsibility Areas in Very High Fire Hazard Severity Zones designated pursuant to California Government Code Sections 51175 through 51189. See ~~California~~Title 32 – Fire Code – of the Los Angeles County Code, Chapter 49.

. . .

FIRE PROTECTION PLAN. A document prepared for a specific project or development proposed for a Wildland-Urban Interface (WUI) Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure.

The Fire Protection Plan shall be in accordance with this ~~c~~Chapter and ~~the California~~Title 32 – Fire Code – of the Los Angeles County Code, Chapter 49.

. . .

WILDLAND-URBAN INTERFACE (WUI). A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the ~~enforcing agency~~Los Angeles County Fire Department to be at a significant risk from wildfires.

SECTION 8. Section 703A.2 is hereby amended to read as follows:

703A.2 Qualification by testing.

Material and material assemblies tested in accordance with the requirements of Section 703A shall be accepted for use when the results and conditions of those tests are met. Product evaluation testing of material and material assemblies shall be approved or listed by the State Fire Marshal, the Building Official, or identified in a current report issued by an approved agency.

SECTION 9. Section 703A.3 is hereby amended to read as follows:

703A.3 Approved agency.

Product evaluation testing shall be performed by an approved agency as defined in Section 1702. The scope of accreditation for the approved agency shall include building product compliance with this ~~c~~Code.

SECTION 10. Section 703A.5.2 is hereby amended to read as follows:

703A.5.2 Weathering.

Fire-retardant-treated wood ~~and fire-retardant-treated wood shingles and shakes~~ shall meet the fire test performance requirements of this ~~c~~Chapter after being

subjected to the weathering conditions contained in the following standards, as applicable to the materials and the conditions of use.

SECTION 11. Section 703A.5.2.2 is hereby deleted in its entirety.

~~**703A.5.2.2 Fire-retardant-treated wood shingles and shakes.**~~

~~Fire-retardant-treated wood shingles and shakes shall be approved and listed by the State Fire Marshal in accordance with Section 208(c), Title 19 California Code of Regulations.~~

SECTION 12. Section 703A.6 is hereby amended to read as follows:

703A.6 Alternates for materials, design, tests, and methods of construction.

The ~~enforcing agency~~Building Official is permitted to modify the provisions of this ~~c~~Chapter for site-specific conditions in accordance with Chapter 1, Section ~~1.11.2.4~~104.2.7. When required by the ~~enforcing agency~~Building Official for the purposes of granting modifications, a fire protection plan shall be submitted in accordance with ~~the California~~Title 32 – Fire Code – of the Los Angeles County Code, Chapter 49.

SECTION 13. Section 704A.4 is hereby amended to read as follows:

704A.4 Alternative methods for determining ignition-resistant material.

. . .

~~3. Fire-retardant-treated wood shingles and shakes. Fire-retardant-treated wood shingles and shakes, as defined in section 1505.6 and listed by State Fire~~

~~Marshal for use as "Class B" roof covering, shall be accepted as an Ignition-resistant wall covering material when installed over solid sheathing.~~

SECTION 14. Section 705A.2 is hereby amended to read as follows:

705A.2 Roof coverings.

Roof coverings shall be Class A as specified in Section 1505.2. Where the roofing profile has an air-space under the roof covering, installed over a combustible deck, a 72 lb. (32.7 kg) cap sheet complying with ASTM D3909 Standard Specification for "Asphalt Rolled Roofing (Glass Felt) Surfaced with Mineral Granules," shall be installed over the roof deck. Bird stops shall be used at the eaves when the profile fits, to prevent debris at the eave. Hip and ridge caps shall be mudded in to prevent intrusion of fire or embers.

Exception: Cap sheet is not required when no less than 1" of mineral wool board or other noncombustible material is located between the roofing material and wood framing or deck.

Alternately, a Class A fire rated roof underlayment, tested in accordance with ASTM E108, shall be permitted to be used. If the sheathing consists of exterior fire-retardant-treated wood, the underlayment shall not be required to comply with a Class A classification. Bird stops shall be used at the eaves when the profile fits, to prevent debris at the eave. Hip and ridge caps shall be mudded in to prevent intrusion of fire or embers. Wood shingles and wood shakes are prohibited in any Fire Hazard Severity Zones regardless of classification.

SECTION 15. Section 710A.3 is hereby amended to read as follows:

710A.3 Where required.

. . .

When required by the ~~enforcing agency~~Building Official, miscellaneous structures that require a permit, and accessory buildings that are 120 square feet (11.15 m^2) or less, when separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm), shall comply with either Section 710A.3.4 or Section 710A.3.3, respectively.

. . .

SECTION 16. Section 710A.3.3 is hereby amended to read as follows:

710A.3.3 Accessory buildings 120 square feet (11.15 m^2) or less, located 3 feet (914 mm) or more but less than 50 feet (15 240 mm).

When required by the ~~enforcing agency~~Building Official, accessory buildings 120 square feet (11.15 m^2) or less and separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 704A.2.

SECTION 17. Section 710A.3.4 is hereby amended to read as follows:

710A.3.4 Miscellaneous structures located 3 feet (914 mm) or more but less than 50 feet (15 240 mm).

When required by the ~~enforcing agency~~Building Official, miscellaneous structures that require a permit and are separated from an applicable building on the same lot by a

distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 704A.2.

SECTION 18. Section 1031.2.1 is hereby amended to read as follows:

1031.2.1 Operational constraints and opening control devices.

. . .

Where security bars (burglar bars) are installed on emergency egress and rescue windows or doors, ~~on or after July 1, 2000,~~ such devices shall comply with California Building Standards Code, Part 12, Chapter 12-3 and other applicable provisions of Part 2.

. . .

SECTION 19. Table 1507.3.7 is hereby amended to read as follows:

TABLE 1507.3.7
CLAY AND CONCRETE TILE ATTACHMENT [a, b, c]

GENERAL – CLAY OR CONCRETE ROOF TILE				
Maximum Allowable Stress Design Wind Speed, V_{asd} [f] (mph)	**Mean roof height (feet)**	**Roof slope <3:12**	**Roof slope 3:12 and over**	
85	0 - 60	*Minimum slope: 2.5:12*	Two fasteners per tile. ~~Only one fastener on slopes of 7:12 and less for tiles with installed weight exceeding 7.5 lbs/sq. ft. having a width no greater than 16 inches.~~	
100	0 - 40	~~One fastener per tile. Flat tile without vertical laps,~~ Ttwo fasteners per tile.		
. . .	. . .	. . .		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS [d, e] (Installations on ~~spaced/~~solid sheathing with ~~battens or spaced sheathing~~)				
Maximum Allowable Stress Design Wind Speed, V_{asd} [f] (mph)	**Mean roof height (feet)**	**Roof slope <5:12**	**Roof slope 5:12<12:12**	**Roof slope 12:12 and over**

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85	0 - 60	~~Fasteners are not required. Tiles with installed weight less than 9 lbs/sq. ft. require not fewer than~~Minimum slope is 4:12. ~~O~~one fastener per tile.	One fastener per tile ~~every other row. All perimeter tiles require one fastener~~. Tiles with installed weight less than 9 lbs/sq.ft. require not fewer than one fastener per tile.	One fastener required for every tile. Tiles with installed weight less than 9 lbs./sq. ft. require not fewer than one fastener per tile.
100	0 - 40			
. . .	. . .	. . .		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS (Installations on solid sheathing without battens)				
Maximum Allowable Stress Design Wind Speed, V_{asd}[f] (mph)	**Mean roof height (feet)**	**~~All~~ Minimum roof slopes 4 units vertical in 12 units horizontal** **Maximum slope 7 units vertical in 12 units horizontal**		
. . .	. . .	. . .		

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m^2.

[a] Minimum fastener size. Hot dipped galvanized ring shank or other ~~C~~corrosion-resistant nails not less than No. 11 gage with $^5/_{16}$-inch head. Fasteners shall be long enough to penetrate into the sheathing ¾ inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083 inch and shall be copper, brass, or stainless steel.

. . .

SECTION 20. Section 1613.5 is hereby added to read as follows:

1613.5 Modifications to ASCE 7.

The text of ASCE 7 shall be modified as indicated in Sections 1613.5.1 through 1613.5.3.

1613.5.1 ASCE 7, 12.2.3.1, Exception 3.

Modify ASCE 7, Section 12.2.3.1, Exception 3, to read as follows:

3. Detached one- and two-family dwellings up to two stories in height of light frame construction.

1613.5.2 ASCE 7, Section 12.11.2.2.3.

Modify ASCE 7, Section 12.11.2.2.3, to read as follows:

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12.11.2.2.3 Wood diaphragms.

The anchorage of concrete or masonry structural walls to wood diaphragms shall be in accordance with AWC SDPWS 4.1.5.1 and this ~~s~~Section. Continuous ties required by this ~~s~~Section shall be in addition to the diaphragm sheathing. Anchorage shall not be accomplished by use of toenails or nails subject to withdrawal, nor shall wood ledgers or framing be used in cross-grain bending or cross-grain tension. The diaphragm sheathing shall not be considered effective as providing ties or struts required by this Section.

For structures assigned to Seismic Design Category D, E, or F, wood diaphragms supporting concrete or masonry walls shall comply with the following:

1. The spacing of continuous ties shall not exceed 40 feet. Added chords of diaphragms may be used to form subdiaphragms to transmit the anchorage forces to the main continuous crossties.

2. The maximum diaphragm shear used to determine the depth of the subdiaphragm shall not exceed 75 percent of the maximum diaphragm shear.

1613.5.3 ASCE 7, 12.12.3.

Modify ASCE 7 Equation 12.12-1 of Section 12.12.3 to read as follows:

$$\delta_M = \frac{C_d \delta_{max}}{I_e}$$

(Equation 12.12-1)

SECTION 21. Section 1613.6 is hereby added to read as follows:

1613.6 Seismic design provisions for hillside buildings.

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1613.6.1 Purpose.

The purpose of this Section is to establish minimum regulations for the design and construction of new buildings and additions to existing buildings when constructing such buildings on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent). These regulations establish minimum standards for seismic force resistance to reduce the risk of injury or loss of life in the event of earthquakes.

1613.6.2 Scope.

The provisions of this Section shall apply to the design of the lateral-force-resisting system for hillside buildings at and below the base level diaphragm. The design of the lateral-force-resisting system above the base level diaphragm shall be in accordance with the provisions for seismic and wind design as required elsewhere in this Chapter.

Exceptions:

1. Non-habitable accessory buildings and decks not supporting or supported from the main building are exempt from these regulations.

2. Additions to existing buildings that do not exceed 10 percent of the existing floor area provided that the addition is being supported completely by the existing foundation.

1613.6.3 Definitions.

For the purposes of this Section certain terms are defined as follows:

BASE LEVEL DIAPHRAGM is the floor at, or closest to, the top of the highest level of the foundation.

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DIAPHRAGM ANCHORS are assemblies that connect a diaphragm to the adjacent foundation at the uphill diaphragm edge.

DOWNHILL DIRECTION is the descending direction of the slope approximately perpendicular to the slope contours.

FOUNDATION is concrete or masonry that supports a building, including footings, stem walls, retaining walls, and grade beams.

FOUNDATION EXTENDING IN THE DOWNHILL DIRECTION is a foundation running downhill and approximately perpendicular to the uphill foundation.

HILLSIDE BUILDING is any building or portion thereof constructed on or into a slope steeper than one unit vertical in three units horizontal (33.3 percent). If only a portion of the building is supported on or into the slope, these regulations apply to the entire building.

PRIMARY ANCHORS are diaphragm anchors designed for and providing a direct connection as described in Sections 1613.6.5 and 1613.6.7.3 between the diaphragm and the uphill foundation.

SECONDARY ANCHORS are diaphragm anchors designed for and providing a redundant diaphragm to foundation connection, as described in Sections 1613.6.6 and 1613.6.7.4.

UPHILL DIAPHRAGM EDGE is the edge of the diaphragm adjacent and closest to the highest ground level at the perimeter of the diaphragm.

UPHILL FOUNDATION is the foundation parallel and closest to the uphill diaphragm edge.

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1613.6.4 Analysis and design.

1613.6.4.1 General.

Every hillside building within the scope of this Section shall be analyzed, designed, and constructed in accordance with the provisions of this Chapter. When the code-prescribed wind design produces greater effects, the wind design shall govern, but detailing requirements and limitations prescribed in this Section and all referenced Sections shall be followed.

1613.6.4.2 Base level diaphragm-downhill direction.

The following provisions shall apply to the seismic analysis and design of the connections for the base level diaphragm in the downhill direction.

1613.6.4.2.1 Base for lateral force design defined.

For seismic forces acting in the downhill direction, the base of the building shall be the floor at, or closest to, the top of the highest level of the foundation.

1613.6.4.2.2 Base shear.

In developing the base shear for seismic design, the response modification coefficient (R) shall not exceed 5 for bearing wall and building frame systems. The total base shear shall include the forces tributary to the base level diaphragm, including forces from the base level diaphragm.

1613.6.5 Base shear resistance for primary anchors.

1613.6.5.1 General.

The base shear in the downhill direction shall be resisted through primary anchors from diaphragm struts provided in the base level diaphragm to the foundation.

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1613.6.5.2 Location of primary anchors.

A primary anchor and diaphragm strut shall be provided in line with each foundation extending in the downhill direction. Primary anchors and diaphragm struts shall also be provided where interior vertical lateral-force-resisting elements occur above and in contact with the base level diaphragm. The spacing of primary anchors and diaphragm struts or collectors shall in no case exceed 30 feet (9,144 mm).

1613.6.5.3 Design of primary anchors and diaphragm struts.

Primary anchors and diaphragm struts shall be designed in accordance with the requirements of Section 1613.6.8.

1613.6.5.4 Limitations.

The following lateral-force-resisting elements shall not be designed to resist seismic forces below the base level diaphragm in the downhill direction:

1. Wood structural panel wall sheathing;
2. Cement plaster and lath;
3. Gypsum wallboard; and
4. Tension-only braced frames.

Braced frames designed in accordance with the requirements of Section 2205.2.2 may be used to transfer forces from the primary anchors and diaphragm struts to the foundation provided lateral forces do not induce flexural stresses in any member of the frame or in the diaphragm struts. Deflections of frames shall account for the variation in slope of diagonal members when the frame is not rectangular.

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1613.6.6 Base shear resistance for secondary anchors.

1613.6.6.1 General.

In addition to the primary anchors required by Section 1613.6.5, the base shear in the downhill direction shall be resisted through secondary anchors in the uphill foundation connected to diaphragm struts in the base level diaphragm.

Exception: Secondary anchors are not required where foundations extending in the downhill direction spaced at not more than 30 feet (9,144 mm) on center extend up to and are directly connected to the base level diaphragm for at least 70 percent of the diaphragm depth.

1613.6.6.2 Secondary anchor capacity and spacing.

Secondary anchors at the base level diaphragm shall be designed for a minimum force equal to the base shear, including forces tributary to the base level diaphragm, but not less than 600 pounds per lineal foot (8.76 kN/m). The secondary anchors shall be uniformly distributed along the uphill diaphragm edge and shall be spaced at a maximum of four feet (1,219 mm) on center.

1613.6.6.3 Design.

Secondary anchors and diaphragm struts shall be designed in accordance with Section 1613.6.8.

1613.6.7 Diaphragms below the base level for downhill direction.

The following provisions shall apply to the lateral analysis and design of the connections for all diaphragms below the base level diaphragm in the downhill direction.

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1613.6.7.1 Diaphragm defined.

Every floor level below the base level diaphragm shall be designed as a diaphragm.

1613.6.7.2 Design force.

Each diaphragm below the base level diaphragm shall be designed for all tributary loads at that level using a minimum seismic force factor not less than the base shear coefficient.

1613.6.7.3 Design force-resistance for primary anchors.

The design force described in Section 1613.5.7.2 shall be resisted through primary anchors from diaphragm struts provided in each diaphragm to the foundation. Primary anchors shall be provided and designed in accordance with the requirements and limitations of Section 1613.5.5.

1613.6.7.4 Design force-resistance for secondary anchors.

1613.6.7.4.1 General.

In addition to the primary anchors required in Section 1613.5.7.3, the design force in the downhill direction shall be resisted through secondary anchors in the uphill foundation connected to diaphragm struts in each diaphragm below the base level.

Exception: Secondary anchors are not required where foundations extending in the downhill direction, spaced at not more than 30 feet (9,144 mm) on center, extend up to and are directly connected to each diaphragm below the base level for at least 70 percent of the diaphragm depth.

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1613.6.7.4.2 Secondary anchor capacity.

Secondary anchors at each diaphragm below the base level diaphragm shall be designed for a minimum force equal to the design force but not less than 300 pounds per lineal foot (4.38 kN/m). The secondary anchors shall be uniformly distributed along the uphill diaphragm edge and shall be spaced at a maximum of four feet (1,219 mm) on center.

1613.6.7.4.3 Design.

Secondary anchors and diaphragm struts shall be designed in accordance with Section 1613.6.8.

1613.6.8 Primary and secondary anchorage and diaphragm strut design.

Primary and secondary anchors and diaphragm struts shall be designed in accordance with the following provisions:

1. Fasteners. All bolted fasteners used to develop connections to wood members shall be provided with square plate washers at all bolt heads and nuts. Washers shall be minimum 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. Nuts shall be tightened to finger tight plus one-half (1/2) wrench turn prior to covering the framing.

2. Fastening. The diaphragm to foundation anchorage shall not be accomplished by the use of toenailing, nails subject to withdrawal, or wood in cross-grain bending or cross-grain tension.

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3. Size of Wood Members. Wood diaphragm struts, collectors, and other wood members connected to primary anchors shall not be less than three-inch (76 mm) nominal width. The effects of eccentricity on wood members shall be evaluated as required per Item 9.

4. Design. Primary and secondary anchorage, including diaphragm struts, splices, and collectors shall be designed for 125 percent of the tributary force.

5. Allowable Stress Increase. The one-third allowable stress increase permitted under Section 1605.3.2 shall not be taken when the working (allowable) stress design method is used.

6. Steel Element of Structural Wall Anchorage System. The strength design forces for steel elements of the structural wall anchorage system, with the exception of anchor bolts and reinforcing steel, shall be increased by 1.4 times the forces otherwise required.

7. Primary Anchors. The load path for primary anchors and diaphragm struts shall be fully developed into the diaphragm and into the foundation. The foundation must be shown to be adequate to resist the concentrated loads from the primary anchors.

8. Secondary Anchors. The load path for secondary anchors and diaphragm struts shall be fully developed in the diaphragm but need not be developed beyond the connection to the foundation.

9. Symmetry. All lateral force foundation anchorage and diaphragm strut connections shall be symmetrical. Eccentric connections may be permitted when

demonstrated by calculation or tests that all components of force have been provided for in the structural analysis or tests.

10. Wood Ledgers. Wood ledgers shall not be used to resist cross-grain bending or cross-grain tension.

1613.6.9 Lateral-force-resisting elements normal to the downhill direction.

1613.6.9.1 General.

In the direction normal to the downhill direction, lateral-force-resisting elements shall be designed in accordance with the requirements of this Section.

1613.6.9.2 Base shear.

In developing the base shear for seismic design, the response modification coefficient (R) shall not exceed 5 for bearing wall and building frame systems.

1613.6.9.3 Vertical distribution of seismic forces.

For seismic forces acting normal to the downhill direction the distribution of seismic forces over the height of the building using Section 12.8.3 of ASCE 7 shall be determined using the height measured from the top of the lowest level of the building foundation.

1613.6.9.4 Drift limitations.

The story drift below the base level diaphragm shall not exceed 0.007 times the story height at strength design force level. The total drift from the base level diaphragm to the top of the foundation shall not exceed 3/4 inch (19 mm). Where the story height or the height from the base level diaphragm to the top of the foundation varies because

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of a stepped footing or story offset, the height shall be measured from the average height of the top of the foundation. The story drift shall not be reduced by the effect of horizontal diaphragm stiffness.

1613.6.9.5 Distribution of lateral forces.

1613.6.9.5.1 General.

The design lateral force shall be distributed to lateral-force-resisting elements of varying heights in accordance with the stiffness of each individual element.

1613.6.9.5.2 Wood structural panel sheathed walls.

The stiffness of a stepped wood structural panel shear wall may be determined by dividing the wall into adjacent rectangular elements, subject to the same top of wall deflection. Deflections of shear walls may be estimated by AWC SDPWS Section 4.3.2. Sheathing and fastening requirements for the stiffest section shall be used for the entire wall. Each section of wall shall be anchored for shear and uplift at each step. The minimum horizontal length of a step shall be 8 feet (2438 mm) and the maximum vertical height of a step shall be 2 feet, 8 inches (813 mm).

1613.6.9.5.3 Reinforced concrete or masonry shear walls.

Reinforced concrete or masonry shear walls shall have forces distributed in proportion to the rigidity of each section of the wall.

1613.6.9.6 Limitations.

The following lateral force-resisting-elements shall not be designed to resist lateral forces below the base level diaphragm in the direction normal to the downhill direction:

1. Cement plaster and lath;

2. Gypsum wallboard; and

3. Tension-only braced frames.

Braced frames designed in accordance with the requirements of Section 2205.2.1.2 of this Code may be designed as lateral-force-resisting elements in the direction normal to the downhill direction, provided lateral forces do not induce flexural stresses in any member of the frame. Deflections of frames shall account for the variation in slope of diagonal members when the frame is not rectangular.

1613.6.10 Specific design provisions.

1613.6.10.1 Footings and grade beams.

All footings and grade beams shall comply with the following:

1. Grade beams shall extend at least 12 inches (305 mm) below the lowest adjacent grade and provide a minimum 24-inch (610 mm) distance horizontally from the bottom outside face of the grade beam to the face of the descending slope.

2. Continuous footings shall be reinforced with at least two No. 4 reinforcing bars at the top and two No. 4 reinforcing bars at the bottom.

3. All main footing and grade beam reinforcement steel shall be bent into the intersecting footing and fully developed around each corner and intersection.

4. All concrete stem walls shall extend from the foundation and be reinforced as required for concrete or masonry walls.

1613.6.10.2 Protection against decay and termites.

All wood to earth separation shall comply with the following:

1. Where a footing or grade beam extends across a descending slope, the stem wall, grade beam, or footing shall extend up to a minimum 18 inches (457 mm) above the highest adjacent grade.

Exception: At paved garage and doorway entrances to the building, the stem wall need only extend to the finished concrete slab, provided the wood framing is protected with a moisture proof barrier.

2. Wood ledgers supporting a vertical load of more than 100 pounds per lineal foot (1.46 kN/m) based on Allowable Stress Design (ASD) levels and located within 48 inches (1219 mm) of adjacent grade are prohibited. Galvanized steel ledgers and anchor bolts, with or without wood nailers, or treated or decay resistant sill plates supported on a concrete or masonry seat, may be used.

1613.6.10.3 Sill plates.

All sill plates and anchorage shall comply with the following:

1. All wood framed walls, including nonbearing walls, when resting on a footing, foundation, or grade beam stem wall, shall be supported on wood sill plates bearing on a level surface.

2. Power-driven fasteners shall not be used to anchor sill plates except at interior nonbearing walls not designed as shear walls.

1613.6.10.4 Column base plate anchorage.

The base of isolated wood posts (not framed into a stud wall) supporting a vertical load of 4,000 pounds (17.8 kN) or more based on ASD levels, and the base plate for a steel column shall comply with the following:

1. When the post or column is supported on a pedestal extending above the top of a footing or grade beam, the pedestal shall be designed and reinforced as required for concrete or masonry columns. The pedestal shall be reinforced with a minimum of four No. 4 bars extending to the bottom of the footing or grade beam. The top of exterior pedestals shall be sloped for positive drainage.

2. The base plate anchor bolts or the embedded portion of the post base, and the vertical reinforcing bars for the pedestal, shall be confined with two No. 4 or three No. 3 ties within the top 5 inches (127 mm) of the concrete or masonry pedestal. The base plate anchor bolts shall be embedded a minimum of 20 bolt diameters into the concrete or masonry pedestal. The base plate anchor bolts and post bases shall be galvanized and each anchor bolt shall have at least two galvanized nuts above the base plate.

1613.6.10.5 Steel beam to column supports.

All steel beam to column supports shall be positively braced in each direction. Steel beams shall have stiffener plates installed on each side of the beam web at the column. The stiffener plates shall be welded to each beam flange and the beam web. Each brace connection or structural member shall consist of at least two 5/8 inch (15.9 mm) diameter machine bolts.

SECTION 22. Section 1613.7 is hereby added to read as follows:

1613.7 Suspended ceilings.

Minimum design and installation standards for suspended ceilings shall be determined in accordance with the requirements of Section 2506.2.1 and this Section.

1613.7.1 Scope.

This part contains special requirements for suspended ceilings and lighting systems. Provisions of Section 13.5.6 of ASCE 7 shall apply except as modified herein.

1613.7.2 General.

The suspended ceilings and lighting systems shall be limited to 6 feet (1828 mm) below the structural deck unless the lateral bracing is designed by a licensed engineer or architect.

1613.7.3 Sprinkler heads.

All sprinkler heads (drops) except fire-resistance-rated floor/ceiling or roof/ceiling assemblies, shall be designed to allow for free movement of the sprinkler pipes with oversize rings, sleeves or adaptors through the ceiling tile. Sprinkler heads and other penetrations shall have a 2-inch (50mm) oversize ring, sleeve, or adapter through the ceiling tile to allow for free movement of at least 1 inch (25mm) in all horizontal directions. Alternatively, a swing joint that can accommodate 1 inch (25 mm) of ceiling movement in all horizontal directions is permitted to be provided at the top of the sprinkler head extension.

Sprinkler heads penetrating fire-resistance-rated floor/ceiling or roof/ceiling assemblies shall comply with Section 714.

1613.7.4 Special requirements for means of egress.

Suspended ceiling assemblies located along means of egress serving an occupant load of 30 or more and at lobbies accessory to Group A Occupancies shall comply with the following provisions.

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1613.7.4.1 General.

Ceiling suspension systems shall be connected and braced with vertical hangers attached directly to the structural deck along the means of egress serving an occupant load of 30 or more and at lobbies accessory to Group A Occupancies. Spacing of vertical hangers shall not exceed 2 feet (610 mm) on center along the entire length of the suspended ceiling assembly located along the means of egress or at the lobby.

1613.7.4.2 Assembly device.

All lay-in panels shall be secured to the suspension ceiling assembly with two hold-down clips minimum for each tile within a 4-foot (1219 mm) radius of the exit lights and exit signs.

1613.7.4.3 Emergency systems.

Independent supports and braces shall be provided for light fixtures required for exit illumination. Power supply for exit illumination shall comply with the requirements of Section 1008.3 of this Code.

1613.7.4.4 Supports for appendages.

Separate support from the structural deck shall be provided for all appendages such as light fixtures, air diffusers, exit signs, and similar elements.

SECTION 23. Section 1704.2.3 is hereby amended to read as follows:

1704.2.3 Statement of special inspections.

The applicant shall submit a statement of special inspections in accordance with Section 106.4~~107.1, *Chapter 1, Division II*~~, as a condition for permit issuance. This statement shall be in accordance with Section 1704.3.

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. . .

SECTION 24. Section 1704.6 is hereby amended to read as follows:

1704.6 Structural observations.

Where required by the provisions of Section 1704.6.1 the owner or the owner's authorized agent shall employ a ~~registered design professional~~structural observer to perform structural observations. The structural observer shall visually observe representative locations of structural systems, details and load paths for general conformance to the approved construction documents. Structural observation does not include or waive the responsibility for the inspections in Section ~~110~~108 or the special inspections in Section 1705 or other sections of this ~~c~~Code. The structural observer shall be one of the following individuals:

1. The registered design professional responsible for the structural design, or

2. A registered design professional designated by the registered design professional responsible for the structural design.

Prior to the commencement of observations, the structural observer shall submit to the ~~b~~Building ~~o~~Official a written statement identifying the frequency and extent of structural observations.

~~At the conclusion of the work included in the permit, the structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.~~

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The owner or owner's authorized agent shall coordinate and call a preconstruction meeting between the structural observer, contractors, affected subcontractors, and special inspectors. The structural observer shall preside over the meeting. The purpose of the meeting shall be to identify the major structural elements and connections that affect the vertical and lateral load resisting systems of the structure and to review scheduling of the required observations. A record of the meeting shall be included in the report submitted to the Building Official.

Observed deficiencies shall be reported in writing to the owner or owner's authorized agent, special inspector, contractor, and the Building Official. Upon the form prescribed by the Building Official, the structural observer shall submit to the Building Official a written statement at each significant construction stage stating that the site visits have been made and identifying any reported deficiencies which, to the best of the structural observer's knowledge, have not been resolved. A final report by the structural observer, which states that all observed deficiencies have been resolved, is required before acceptance of the work by the Building Official.

SECTION 25. Section 1704.6.1 is hereby amended to read as follows:

1704.6.1 Structural observations for structures.

. . .

3. ~~The structure is assigned to Seismic Design Category E, and is greater than two stories above the grade plane~~A lateral design is required for the structure or portion thereof.

Exception: One-story wood framed Group R-3 and Group U Occupancies less than 2,000 square feet in area, provided the adjacent grade is not steeper than 1 unit vertical in 10 units horizontal (10 percent sloped), assigned to Seismic Design Category D.

. . .

SECTION 26. Section 1705.3 is hereby amended to read as follows:

1705.3 Concrete Construction.

Special inspections and tests of concrete construction shall be performed in accordance with this ~~s~~Section and Table 1705.3.

Exception: Special inspections and tests shall not be required for:

1. Isolated spread concrete footings of buildings three stories or less above grade plane that are fully supported on earth or rock where the structural design of the footing is based on a specified compressive strength (f'c) not greater than 2,500 pounds per square inch (psi) (17.2 Mpa) regardless of the compressive strength specified in the construction documents or used in the footing construction.

. . .

~~4. Concrete foundation walls constructed in accordance with Table 1807.1.6.2.~~

~~5~~4. Concrete patios, ~~driveways~~ and sidewalks, on grade.

SECTION 27. Section 1705.13 is hereby amended to read as follows:

1705.13 Special inspections for seismic resistance.

. . .

Exception: The special inspections specified in Sections 1705.13.1 through 1705.13.9 are not required for structures designed and constructed in accordance with one of the following:

. . .

3. The structure is a detached one- or two-family dwelling not exceeding two stories above grade plane, provided the structure is not assigned to Seismic Design Category D, E, or F and does not have any of the following horizontal or vertical irregularities in accordance with Section 12.3 of ASCE 7:

. . .

SECTION 28. Section 1807.1.4 is hereby amended to read as follows:

1807.1.4 Permanent wood foundations systems.

Permanent wood foundation systems shall be designed and installed in accordance with AWC PWF. Lumber and plywood shall be preservative-treated in accordance with AWPA U1 (Commodity Specification A, Special Requirement 4.2), and shall be identified in accordance with Section 2303.1.9.1. Permanent wood foundation systems shall not be used for structures assigned to Seismic Design Category D, E, or F.

SECTION 29. Section 1807.1.6 is hereby amended to read as follows:

1807.1.6 Prescriptive design of concrete and masonry foundation walls.

Concrete and masonry foundation walls that are laterally supported at the top and bottom shall be permitted to be designed and constructed in accordance with this

sSection. Prescriptive design of foundation walls shall not be used for structures assigned to Seismic Design Category D, E, or F.

SECTION 30. Section 1807.2 is hereby amended to read as follows:

1807.2 Retaining walls.

Retaining walls shall be designed in accordance with Section 1807.2.1 through 1807.2.5. Freestanding cantilever walls shall be designed in accordance with Section 1807.2.5. Retaining walls assigned to Seismic Design Category D, E, or F shall not be partially or wholly constructed of wood.

SECTION 31. Section 1807.3.1 is hereby amended to read as follows:

1807.3.1 Limitations.

The design procedures outlined in this sSection are subject to the following limitations:

1. The frictional resistance for structural walls and slabs on silts and clays shall be limited to one-half of the normal force imposed on the soils by the weight of the footing or slab.

2. Posts embedded in earth shall not be used to provide lateral support for structural or nonstructural materials such as plaster, masonry or concrete unless bracing is provided that develops the limited deflection required.

Wood poles shall be treated in accordance with AWPA U1 for sawn timber posts (Commodity Specification A, Use Category 4B) and for round timber posts (Commodity Specification B, Use Category 4B). Wood poles and posts embedded in direct contact

with soil shall not be used for structures assigned to Seismic Design Category D, E, or F.

Wood poles and posts embedded in accordance with Methods 2 and 3 of Section 1807.3.3 shall not be permitted for structures assigned to Seismic Design Category D, E, or F, except when used to support nonhabitable, nonoccupiable structures such as fences when approved by the Building Official.

SECTION 32. Section 1809.3 is hereby amended to read as follows:

1809.3 Stepped footings.

. . .

For structures assigned to Seismic Design Category D, E, or F, the stepping requirement shall also apply to the top surface of continuous footings supporting walls. Footings shall be reinforced with four No. 4 reinforcing bars. Two bars shall be located at the top and bottom of the footings as shown in Figure 1809.3.

SECTION 33. Figure 1809.3 is hereby added to read as follows:

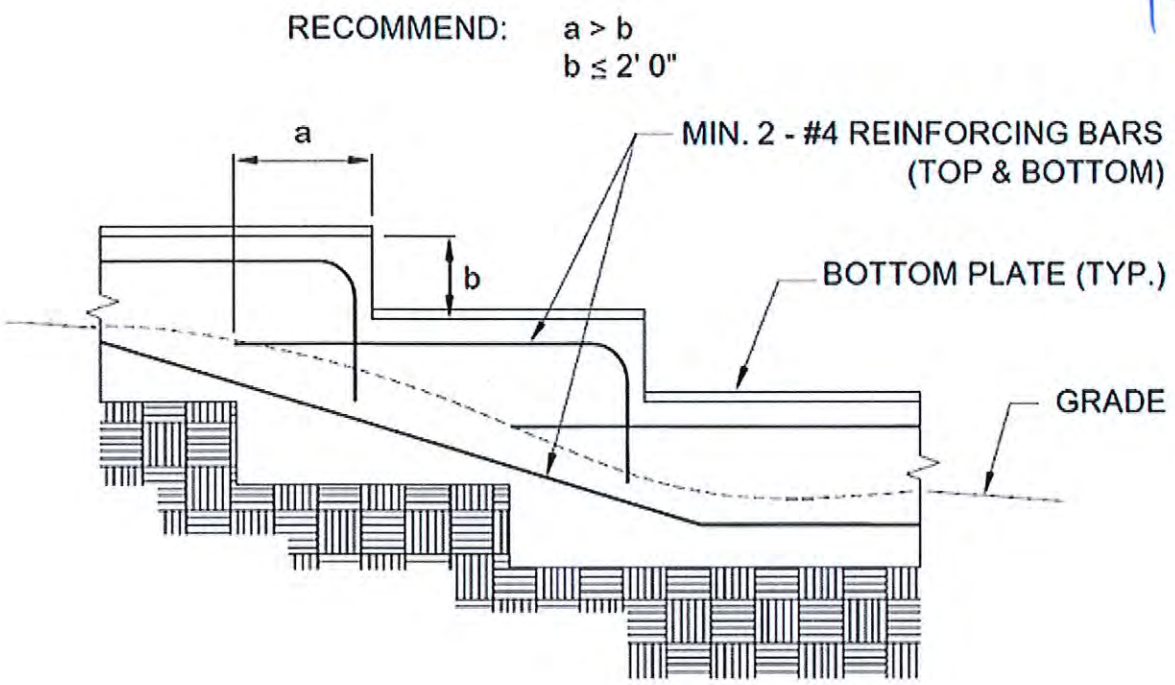


FIGURE 1809.3

STEPPED FOOTING

SECTION 34. Section 1809.7 is hereby amended to read as follows:

1809.7 Prescriptive footings for light-frame construction.

Where a specific design is not provided, concrete or masonry-unit footings supporting walls of light-frame construction shall be permitted to be designed in accordance with Table 1809.7. Prescriptive footings in accordance with Table 1809.7 shall not be used to support structures that exceed one story above grade plane and are assigned to Seismic Design Category D, E, or F.

SECTION 35. Table 1809.7 is hereby amended to read as follows:

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TABLE 1809.7

PRESCRIPTIVE FOOTINGS SUPPORTING WALLS OF LIGHT-FRAME CONSTRUCTION [a, b, c, d, e]

NUMBER OF FLOORS SUPPORTED BY THE FOOTING[f]	WIDTH OF FOOTING (inches)	THICKNESS OF FOOTING (inches)
1	12	6
2	15	6
3	18	8[g]

. . .

c. ~~Interior stud-bearing walls shall be permitted to be supported by isolated footings. The footing width and length shall be twice the width shown in this table, and footings shall be spaced not more than 6 feet on center.~~[Reserved].

. . .

~~g. Plain concrete footings for Group R-3 occupancies shall be permitted to be 6 inches thick.~~

SECTION 36. Section 1809.12 is hereby amended to read as follows:

1809.12 Timber footings.

Timber footings shall be permitted for buildings of Type V construction and as otherwise approved by the ~~b~~Building ~~o~~Official. Such footings shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B). Treated timbers are not required where placed entirely below permanent water level, or where used as capping for wood piles that project above the water level over submerged or marsh lands. The compressive stresses perpendicular to grain in untreated timber footings supported upon treated piles shall not exceed 70 percent of the allowable

stresses for the species and grade of timber as specified in the ANSI/AWC NDS._ Timber footings shall not be used in structures assigned to Seismic Design Category D, E, or F.

SECTION 37. Section 1810.3.2.4 is hereby amended to read as follows:

1810.3.2.4 Timber.

Timber deep foundation elements shall be designed as piles or poles in accordance with ANSI/AWC NDS. Round timber elements shall conform to ASTM D25. Sawn timber elements shall conform to DOC PS-20. Timber shall not be used in structures assigned to Seismic Design Category D, E, or F.

SECTION 38. Section 1905.1 is hereby amended to read as follows:

1905.1 General.

The text of ACI 318 shall be modified as indicated in Sections 1905.1.1 through 1905.1.~~8~~11.

SECTION 39. Section 1905.1.7 is hereby amended to read as follows:

1905.1.7 ACI 318, Section 14.1.4.

Delete ACI 318, Section 14.1.4, and replace with the following:

. . .

14.1.4.1 – Structures assigned to Seismic Design Category C, D, E, or F shall not have elements of structural plain concrete, except as follows:

- ~~Structural plain concrete basement, foundation or other walls below the base as defined in ASCE 7 are permitted in detached one- and two-family dwellings three stories or less in height constructed with stud-bearing walls. In dwellings assigned~~

~~to Seismic Design Category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall not be less than 7½ inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 14.6.1~~Concrete used for fill with a minimum cement content of 2 sacks of Portland cement or cementious material per cubic yard.

- Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.

~~Exception: In detached one- and two-family dwellings three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.~~

- Plain concrete footings supporting walls are permitted, provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. ~~For footings that exceed 8 inches (203 mm) in thickness, a~~A minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

~~Exceptions:~~

~~1. In Seismic Design Categories A, B and C, d~~Detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls are permitted to have plain concrete footings ~~without longitudinal reinforcement~~with at least two continuous longitudinal reinforcing bars not smaller than No. 4 and a total area of

less than 0.002 times the gross cross-sectional area of the footing.

~~2. For foundation systems consisting of a plain concrete footing and a plain concrete stemwall, a minimum of one bar shall be provided at the top of the stemwall and at the bottom of the footing.~~

~~3. Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.~~

SECTION 40. Section 1905.1.8 is hereby amended to read as follows:

1905.1.8 ACI 318, Section 17.2.3.

These requirements shall be applicable to all buildings. Modify ACI 318, Sections 17.2.3.4.2, 17.2.3.4.3 (d), and 17.2.3.5.2 to read as follows:

. . .

SECTION 41. Section 1905.1.9 is hereby added to read as follows:

1905.1.9. ACI 318, Section 18.7.5.

Modify ACI 318, Section 18.7.5, by adding Sections 18.7.5.8 and 18.7.5.9 as follows:

18.7.5.8 Where the calculated point of contraflexure is not within the middle half of the member clear height, provide transverse reinforcement as specified in ACI 318, Section 18.7.5.1, Items (a) through (c), over the full height of the member.

18.7.5.9 At any section where the design strength, φP_n, of the column is less than the sum of the shears V_e computed in accordance with ACI 318, Sections 18.7.6.1 and 18.6.5.1, for all the beams framing into the column above the level under consideration, transverse reinforcement as specified in ACI 318, Sections 18.7.5.1

through 18.7.5.3, shall be provided. For beams framing into opposite sides of the column, the moment components may be assumed to be of opposite sign. For the determination of the design strength, φP_n, of the column, these moments may be assumed to result from the deformation of the frame in any one principal axis.

SECTION 42. Section 1905.1.10 is hereby added to read as follows:

1905.1.10. ACI 318, Section 18.10.4.

Modify ACI 318, Section 18.10.4, by adding Section 18.10.4.7 as follows:

18.10.4.7 Walls and portions of walls with $P_u > 0.35P_o$ shall not be considered to contribute to the calculated shear strength of the structure for resisting earthquake-induced forces. Such walls shall conform to the requirements of ACI 318, Section 18.14.

SECTION 43. Section 1905.1.11 is hereby added to read as follows:

1905.1.11 ACI 318, Section 18.12.6.

Modify ACI 318, by adding Section 18.12.6.2, as follows:

18.12.6.2 Collector and boundary elements in topping slabs placed over precast floor and roof elements shall not be less than 3 inches (76 mm) or 6 d_b in thickness, where d_b is the diameter of the largest reinforcement in the topping slab.

SECTION 44. Section 2304.10.2 is hereby amended to read as follows:

2304.10.2 Fastener requirements.

Connections for wood members shall be designed in accordance with the appropriate methodology in Section 2302.1. The number and size of fasteners connecting wood members shall not be less than that set forth in Table 2304.10.2.

Staple fasteners in Table 2304.10.2 shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E, or F.

Exception: Staples may be used to resist or transfer seismic forces when the allowable shear values are substantiated by cyclic testing and approved by the Building Official.

. . .

SECTION 45. Table 2304.10.2 is hereby amended to read as follows:

TABLE 2304.10.2

FASTENING SCHEDULE[h]

. . .

h. Staples shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E, or F.

SECTION 46. Section 2304.10.3.1 is hereby added to read as follows:

2304.10.3.1 Quality of nails.

In Seismic Design Category D, E, or F, mechanically-driven nails used in wood structural panel shear walls shall meet the same dimensions as that required for hand-driven nails, including diameter, minimum length, and minimum head diameter. Clipped head or box nails are not permitted in new construction. The allowable design value for clipped head nails in existing construction may be taken at no more than the nail-head-area ratio of that of the same size hand-driven nails.

SECTION 47. Section 2304.12.2.8 is hereby amended to read as follows:

2304.12.2.8 Wood used in retaining walls and cribs.

Wood installed in retaining or crib walls shall be preservative treated in accordance with AWPA U1 for soil and fresh water use. Wood shall not be used in retaining or crib walls for structures assigned to Seismic Design Category D, E, or F.

SECTION 48. Section 2305.4 is hereby added to read as follows:

2305.4 Hold-down connectors.

In Seismic Design Category D, E, or F, hold-down connectors shall be designed to resist shear wall overturning moments using 75 percent of the allowable seismic load values. Such values shall be established in a valid research report from approved sources or by accepted engineering practice and the provisions of this Code.

Exception: Values established by specialized cyclic and dynamic testing may be used when approved by the Building Official in accordance with Section 104.2.8.

Connector bolts into wood framing shall require steel plate washers on the post on the opposite side of the anchorage device. Plate size shall be a minimum of 0.229 inches by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. Hold-down connectors shall be tightened to finger tight plus one-half (1/2) wrench turn just prior to covering the wall framing.

SECTION 49. Section 2306.2 is hereby amended to read as follows:

2306.2 Wood-frame diaphragms.

Wood-frame diaphragms shall be designed and constructed in accordance with AWC SDPWS. Where panels are fastened to framing members with staples, requirements and limitations of AWC SDPWS shall be met and the allowable shear

values set forth in Table 2306.2(1) or 2306.2(2) shall only be permitted for structures assigned to Seismic Design Category A, B, or C.

Exception: Allowable shear values where panels are fastened to framing members with staples may be used if such values are substantiated by cyclic testing and approved by the Building Official.

The allowable shear values in Tables 2306.2(1) and 2306.2(2) are permitted to be increased 40 percent for wind design.

Wood structural panel diaphragms used to resist seismic forces in structures assigned to Seismic Design Category D, E, or F shall be applied directly to the framing members.

Exception: Wood structural panel diaphragms are permitted to be fastened over solid lumber planking or laminated decking, provided the panel joints and lumber planking or laminated decking joints do not coincide.

SECTION 50. Section 2306.3 is hereby amended to read as follows:

2306.3 Wood-frame shear walls.

Wood-frame shear walls shall be designed and constructed in accordance with AWC SDPWS. For structures assigned to Seismic Design Category D, E, or F, application of Tables 4.3A and 4.3B of AWC SDPWS shall include the following:

1. Wood structural panel thickness for shear walls shall not be less than 3/8 inch thick and studs shall not be spaced at more than 16 inches on center.

2. The maximum nominal unit shear capacities for 3/8 inch wood structural panels resisting seismic forces in structures assigned to Seismic Design Category D, E,

or F is 400 pounds per linear foot (plf).

Exception: Other nominal unit shear capacities may be permitted if such values are substantiated by cyclic testing and approved by the Building Official.

3. Nails shall be placed not less than 1/2 inch from the panel edges and not less than 3/8 inch from the edge of the connecting members for shears greater than 350 plf using ASD or 500 plf using LRFD. Nails shall be placed not less than 3/8 inch from panel edges and not less than 1/4 inch from the edge of the connecting members for shears of 350 plf or less using ASD or 500 plf or less using LRFD.

For structures assigned to Seismic Design Category D, E, or F, application of Table 4.3B of ANSI/AWC SDPWS shall not be allowed.

For structures assigned to Seismic Design Category D, E, or F, application of Table 4.3C of ANSI/AWC SDPWS shall not be used below the top level in a multi-level building.

Where panels are fastened to framing members with staples, requirements and limitations of AWC SDPWS shall be met and the allowable shear values set forth in Table 2306.3(1), 2306.3(2) or 2306.3(3) shall only be permitted for structures assigned to Seismic Design Category A, B, or C.

Exception: Allowable shear values where panels are fastened to framing members with staples may be used if such values are substantiated by cyclic testing and approved by the Building Official.

The allowable shear values in Tables 2306.3(1) and 2306.3(2) are permitted to be increased 40 percent for wind design. Panels complying with ANSI/APA PRP-210 shall be permitted to use design values for Plywood Siding in the AWC SDPWS.

Wood structural panel shear walls used to resist seismic forces in structures assigned to Seismic Design Category D, E, or F shall be applied directly to the framing members.

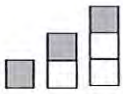
SECTION 51. Section 2307.2 is hereby added to read as follows:

2307.2 Wood-frame panel shear walls.

Wood-frame shear walls shall be designed and constructed in accordance with Section 2306.3 as applicable.

SECTION 52. Table 2308.6.1 is hereby amended to read as follows:

TABLE 2308.6.1[a]
WALL BRACING REQUIREMENTS

SEISMIC DESIGN CATEGORY	STORY CONDITION (SEE SECTION 2308.2)	MAXIMUM SPACING OF BRACED WALL LINES	BRACED PANEL LOCATION, SPACING (O.C.) AND MINIMUM PERCENTAGE (X)			MAXIMUM DISTANCE OF BRACED WALL PANELS FROM EACH END OF BRACED WALL LINE
			Bracing method[b]			
			LIB	DWB, WSP	SFB, PBS, PCP, HPS, GB[c,d]	
A and B		35′- 0″	Each end and ≤ 25′- 0″ o.c.	Each end and ≤ 25′- 0″ o.c.	Each end and ≤ 25′- 0″ o.c.	12′- 6″
		35′- 0″	Each end and ≤ 25′- 0″ o.c.	Each end and ≤ 25′- 0″ o.c.	Each end and ≤ 25′- 0″ o.c.	12′- 6″
		35′- 0″	NP	Each end and ≤ 25′- 0″ o.c.	Each end and ≤ 25′- 0″ o.c.	12′- 6″
C		35′- 0″	NP	Each end and ≤ 25′- 0″ o.c.	Each end and ≤ 25′- 0″ o.c.	12′- 6″
		35′- 0″	NP	Each end and ≤ 25′- 0″ o.c. (minimum 25% of wall length)[e]	Each end and ≤ 25′- 0″ o.c. (minimum 25% of wall length)[e]	12′- 6″
D and E [f, g, h]		25′- 0″	NP	$S_{DS} < 0.50$: Each end and ≤ 25′- 0″ o.c. (minimum 21% of wall length)[e]	$S_{DS} < 0.50$: Each end and ≤ 25′- 0″ o.c. (minimum 43% of wall length)[e]	8′- 0″
				$0.5 \le S_{DS} < 0.75$: Each end and ≤ 25′- 0″ o.c. (minimum 32% of wall length)[e]	$0.5 \le S_{DS} < 0.75$: Each end and ≤ 25′- 0″ o.c. (minimum 59% of wall length)[e]	
				$0.75 \le S_{DS} \le 1.00$: Each end and ≤ 25′- 0″ o.c. (minimum 37% of wall length)[e]	$0.75 \le S_{DS} \le 1.00$: Each end and ≤ 25′- 0″ o.c. (minimum 75% of wall length)	
				$S_{DS} > 1.00$: Each end and ≤ 25′- 0″ o.c. (minimum 48% of wall length)[e]	$S_{DS} > 1.00$: Each end and ≤ 25′- 0″ o.c. (minimum 100% of wall length)[e]	

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

NP = Not Permitted.

a. This table specifies minimum requirements for braced wall panels along interior or exterior braced wall lines.

b. See Section 2308.6.3 for full description of bracing methods.

c. For Method GB, gypsum wallboard applied to framing supports that are spaced at 16 inches on center.

d. The required lengths shall be doubled for gypsum board applied to only one face of a braced wall panel.

e. Percentage shown represents the minimum amount of bracing required along the building length (or wall length if the structure has an irregular shape).

f. DWB, SFB, PBS, and HPS wall braces are not permitted in Seismic Design Catergories D or E.

g. Minimum length of panel bracing of one face of the wall for WSP sheathing shall be at least 4'-0" long or both faces of the wall for GB or PCP sheathing shall be at least 8'-0" long; h/w ratio shall not exceed 2:1. Wall framing to which sheathing used for bracing is applied shall be nominal 2 inch wide factual 1 1/2 inch (38 mm) or larger members and spaced a maximum of 16 inches on center. Braced wall panel construction types shall not be mixed within a braced wall line.

h. WSP sheathing shall be a minimum of 15/32" thick nailed with 8d common placed 3/8 inches from panel edges and spaced not more than 6 inches on center and 12 inches on center along intermediate framing members.

SECTION 53. Section 2308.6.5.1 is hereby amended to read as follows:

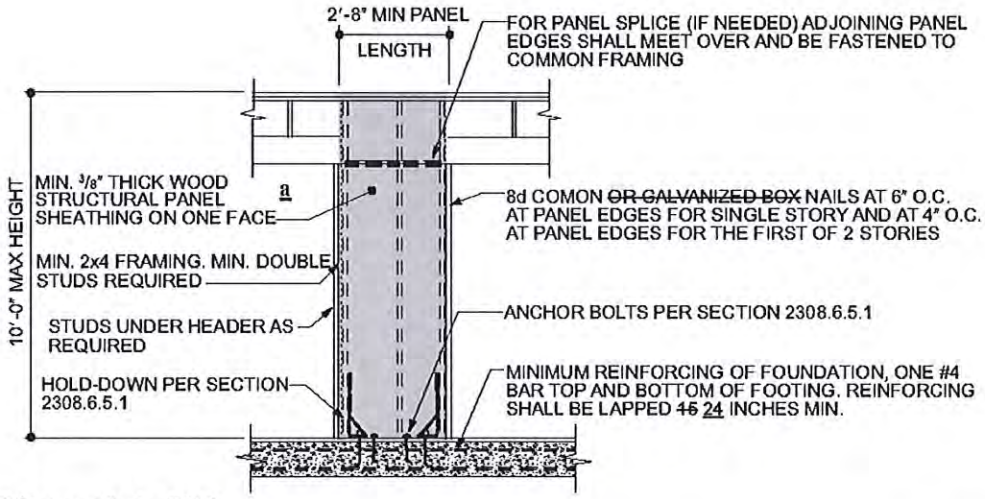
2308.6.5.1 Alternate braced wall (ABW).

An ABW shall be constructed in accordance with this section and Figure 2308.6.5.1. In one-story buildings, each panel shall have a length of not less than 2 feet 8 inches (813 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with 3/8-inch (3.2 mm) minimum-thickness wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table 2304.10.1 and blocked at wood structural panel edges. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed on one face with 15/32-inch minimum-thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports. Two anchor bolts installed in accordance with Section 2308.3.1 shall be provided in each panel. Anchor bolts shall be placed at each panel outside quarter points. Each panel end stud shall have a hold-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds (8006 N). The hold-down device shall be installed in accordance with the manufacturer's recommendations. The ABW shall be supported directly on a foundation or on floor framing supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing ~~or turned-down slab edge~~ is permitted at door openings in the braced

wall line. This continuous footing ~~or turned-down slab~~ edge shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped ~~15~~24 inches (~~381~~610 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

. . .

SECTION 54. Figure 2308.6.5.1 is hereby amended to read as follows:



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

a. For structures assigned to Seismic Design Category D or E, sheathed on one face with 15/32-inch-minimum-thickness (11.9 mm) wood structural panel sheathing.

FIGURE 2308.6.5.1
ALTERNATE BRACED WALL PANEL (ABW)

SECTION 55. Section 2308.6.5.2 is hereby amended to read as follows:

2308.6.5.2 Portal frame with hold-downs (PFH).

A PFH shall be constructed in accordance with this section and Figure 2308.6.5.2. The adjacent door or window opening shall have a full-length header.

In one-story buildings, each panel shall have a length of not less than 16 inches (406 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with a single layer of 3/8-inch (9.5 mm) minimum-thickness wood

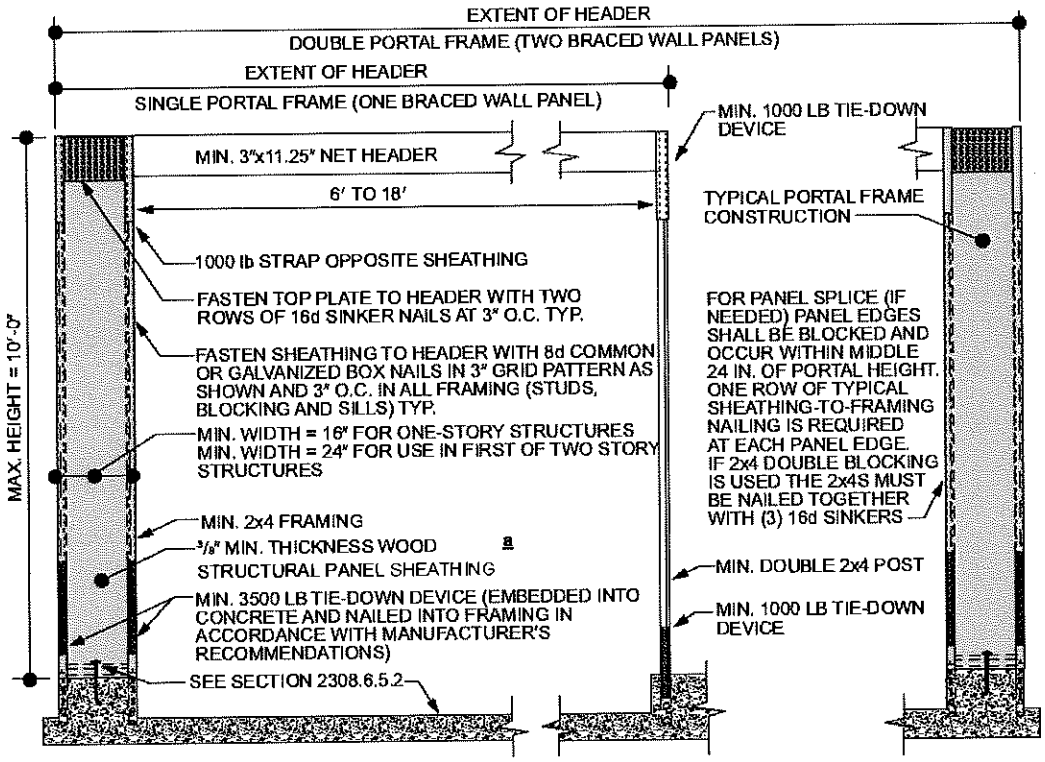
structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Figure 2308.6.5.2. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed on one face with 15/32-inch minimum-thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports and in accordance with Figure 2308.6.5.2. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure 2308.6.5.2. A built-up header consisting of at least two 2-inch by 12-inch (51 mm by 305 mm) boards, fastened in accordance with Item 24 of Table 2304.10.1 shall be permitted to be used. A spacer, if used, shall be placed on the side of the built-up beam opposite the wood structural panel sheathing. The header shall extend between the inside faces of the first full-length outer studs of each panel. The clear span of the header between the inner studs of each panel shall be not less than 6 feet (1829 mm) and not more than 18 feet (5486 mm) in length. A strap with an uplift capacity of not less than 1,000 pounds (4,400 N) shall fasten the header to the inner studs opposite the sheathing. One anchor bolt not less than 5/8 inch (15.9 mm) diameter and installed in accordance with Section 2308.3.1 shall be provided in the center of each sill plate. The studs at each end of the panel shall have a hold-down device fastened to the foundation with an uplift capacity of not less than 3,500 pounds (15 570 N).

Where a panel is located on one side of the opening, the header shall extend between the inside face of the first full-length stud of the panel and the bearing studs at the other end of the opening. A strap with an uplift capacity of not less than

1,000 pounds (4400 N) shall fasten the header to the bearing studs. The bearing studs shall also have a hold-down device fastened to the foundation with an uplift capacity of not less than 1,000 pounds (4400 N). The hold-down devices shall be an embedded strap type, installed in accordance with the manufacturer's recommendations. The PFH panels shall be supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing ~~or turned-down slab edge~~ is permitted at door openings in the braced wall line. This continuous footing ~~or turned-down slab edge~~ shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped not less than ~~15~~24 inches (~~381~~610 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

. . .

SECTION 56. Figure 2308.6.5.2 is hereby amended to read as follows:



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound = 4.448 N.

a. For structures assigned to Seismic Design Category D or E, sheathed on one face with 15/32-inch-minimum-thickness (11.9 mm) wood structural panel sheathing.

FIGURE 2308.6.5.2
PORTAL FRAME WITH HOLD-DOWNS (PFH)

SECTION 57. Section 2308.6.8.1 is hereby amended to read as follows:

2308.6.8.1 Foundation requirements.

. . .

Exception: For structures with a maximum plan dimension not more than 50 feet (15 240 mm), continuous foundations are required at exterior walls only for structures assigned to Seismic Design Category A, B, or C.

For structures in Seismic Design Categories D and E, exterior braced wall panels shall be in the same plane vertically with the foundation or the portion of the structure

containing the offset shall be designed in accordance with accepted engineering practice and Section 2308.1.1.

~~**Exceptions:**~~

~~1. Exterior braced wall panels shall be permitted to be located not more than 4 feet (1219 mm) from the foundation below where supported by a floor constructed in accordance with all of the following:~~

~~1.1. Cantilevers or setbacks shall not exceed four times the nominal depth of the floor joists.~~

~~1.2. Floor joists shall be 2 inches by 10 inches (51 mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) on center.~~

~~1.3. The ratio of the back span to the cantilever shall be not less than 2 to 1.~~

~~1.4. Floor joists at ends of braced wall panels shall be doubled.~~

~~1.5. A continuous rim joist shall be connected to the ends of cantilevered joists. The rim joist is permitted to be spliced using a metal tie not less than 0.058 inch (1.47 mm) (16 galvanized gage) and 11/2 inches (38 mm) in width fastened with six 16d common nails on each side. The metal tie shall have a yield stress not less than 33,000 psi (227 MPa).~~

~~1.6. Joists at setbacks or the end of cantilevered joists shall not carry gravity loads from more than a single story having uniform wall and roof loads nor carry the reactions from headers having a span of 8 feet (2438 mm) or more.~~

~~2. The end of a required braced wall panel shall be allowed to extend not~~

~~more than 1 foot (305 mm) over an opening in the wall below. This requirement is applicable to braced wall panels offset in plane and braced wall panels offset out of plane as permitted by Exception 1. Braced wall panels are permitted to extend over an opening not more than 8 feet (2438 mm) in width where the header is a 4-inch by 12-inch (102 mm by 305 mm) or larger member.~~

SECTION 58. Section 2308.6.9 is hereby amended to read as follows:

2308.6.9 Attachment of sheathing.

Fastening of braced wall panel sheathing shall not be less than that prescribed in Tables 2308.6.1 or 2304.10.2. Wall sheathing shall not be attached to framing members by adhesives. Staple fasteners in Table 2304.10.2 shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E, or F.

Exception: Staples may be used to resist or transfer seismic forces when the allowable shear values are substantiated by cyclic testing and approved by the Building Official.

All braced wall panels shall extend to the roof sheathing and shall be attached to parallel roof rafters or blocking above with framing clips (18 gauge minimum) spaced at maximum 24 inches (6096 mm) on center with four 8d nails per leg (total eight 8d nails per clip). Braced wall panels shall be laterally braced at each top corner and at maximum 24-inch (6096 mm) intervals along the top plate of discontinuous vertical framing.

SECTION 59. Section 3115 is hereby amended to read as follows:

SECTION 3115 INTERMODAL SHIPPING CONTAINERS

3115.1 General.

. . .

Exceptions:

. . .

6. Single-unit stand-alone intermodal shipping containers used as temporary storage or construction trailer on active construction sites. Construction support facilities for uses and activities not directly associated with the actual processes of construction, including, but not limited to, offices, meeting rooms, plan rooms, other administrative or support functions shall not be exempt from Section 3115.

. . .

3115.8.1 Foundations and supports.

Intermodal shipping containers repurposed for use as a permanent building or structure shall be supported on foundations or other supporting structures designed and constructed in accordance with Chapters 16 through 23.

. . .

3115.8.1.2 Stacking.

Intermodal shipping containers used to support stacked units shall comply with Section 3115.8.4.

3115.8.2 Welds.

~~New welds and connections shall be equal to or greater than the original connections~~The strength of new welds and connections shall be no less than the strength provided by the original connections. All new welds and connections shall be

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designed and constructed in accordance with Chapters 16, 17, and 22.

. . .

3115.8.4 Detailed structural design procedure.

A structural analysis meeting the requirements of this Section shall be provided to the Building Official to demonstrate the structural adequacy of the intermodal shipping containers.

Exception: Structures using an ~~i~~intermodal shipping container~~s~~ designed in accordance with Section 3115.8.5.

3115.8.4.1 Material properties.

Structural material properties for existing intermodal shipping container steel components shall be established by ~~material testing where the steel grade and composition cannot be identified by the manufacturer's designation as to manufacture and mill test~~Section 2202.

3115.8.4.2 Seismic design parameters.

The seismic force-resisting system shall be designed and detailed in accordance with ASCE 7 and one of the following:

1. Where all or portions of the ~~corrugated steel container sides~~profiled steel panel elements are considered to be the seismic force-resisting system, design and detailing shall be in accordance with ~~the~~AISI S100 and ASCE 7, Table 12.2-1 requirements for ~~light-frame bearing-wall systems with shear panels of all other materials~~steel systems not specifically detailed for seismic resistance, excluding cantilevered column systems.

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2. Where all or portions of the ~~corrugated steel container sides~~profiled steel panel elements are ~~retained, but are~~ not considered to be part of the seismic force-resisting system, an independent seismic force-resisting system shall be selected~~,~~ ~~designed~~ and detailed in accordance with ASCE 7, Table 12.2-1.

3. Where all or portions of the ~~corrugated steel container sides~~profiled steel panel elements are retained and integrated into a seismic force-resisting system other than as permitted by Section 3115.8.4.2, Item 1, seismic design parameters shall be developed from testing and analysis in accordance with Section 104.11 and ASCE 7, Section 12.2.1.1 or 12.2.1.2.

3115.8.4.3 Allowable shear value.

The allowable shear values for the ~~intermodal shipping container corrugated~~ profiled steel ~~sheet~~ panel side walls and end walls shall be ~~demonstrated by testing and analysis in accordance with Section 104.11~~determined in accordance with the design approach selected in Section 3115.8.4.2. Where penetrations are made in the side walls or end walls designated as part of the lateral force-resisting system, the penetrations shall be substantiated by rational analysis.

. . .

3115.8.5.2 Simplified structural design assumptions.

Where permitted by Section 3115.8.5.1, single-unit, stand-alone intermodal shipping containers shall be designed using the following assumptions for the ~~corrugated steel shear walls~~profiled steel panel side walls and end walls:

1. The appropriate detailing requirements contained in Chapters 16 through 23.

2. Response modification coefficient, R = 2,

3. Over strength factor, Ω0 = 2.5,

4. Deflection amplification factor, Cd = 2, and

5. Limits on structural height, hn = 9.5 feet (2900 mm).

3115.8.5.3 Allowable shear.

The allowable shear for the ~~corrugated~~profiled steel panel side walls (longitudinal) and end walls (transverse) for wind design and seismic design using the coefficients of Section 3115.8.5.2 shall be in accordance with Table 3115.8.5.3, provided that all of the following conditions are met:

1. The total linear length of all openings in any individual side walls or end walls shall be limited to not more than 50 percent of the length of that side wall(s) or end wall(s), as shown in Figure 3115.8.5.3(1).

2. Any full height wall length, or portion thereof, less than 4 feet (305 mm) shall not be considered as a portion of the lateral force-resisting system, as shown in Figure 3115.8.5.3(2).

3. All side walls or end walls used as part of the lateral force-resisting system shall have an existing or new boundary element on all sides to form a continuous load path, or paths, with adequate strength and stiffness to transfer all forces from the point of application to the final point of resistance, as shown in Figure 3115.8.5.3(3). The existing door interlocking mechanism shall not be considered as a component of the

required load path.

4. Where openings are made in container walls, floors or roofs, for doors, windows and other openings:

4.1 The opening shall be framed with steel elements that are designed in accordance with Chapters 16 and 22.

4.2 The cross section and material grade of any new steel element shall be equal to or greater than the steel element removed.

5. A maximum of one penetration not greater than 6-inches (152 mm) in diameter for conduits, pipes, tubes or vents, or not greater than 16 square inches (10 323 mm^2) for electrical boxes, is permitted for each individual 8-foot (2438 mm) length of lateral force-resisting wall. Penetrations located in walls that are not part of the lateral force-resisting system shall not be limited in size or quantity. Existing intermodal shipping container vents shall not be considered a penetration, as shown in Figure 3115.8.5.3(4).

6. End wall door or doors designated as part of the lateral force-resisting system shall be intermittently welded closed around the full perimeters of the door panels.

SECTION 60. Table 3115.8.5.3 is hereby amended to read as follows:

TABLE 3115.8.5.3
ALLOWABLE SHEAR VALUES FOR ~~INTERMODAL SHIPPING CONTAINER CORRUGATED STEEL~~ PROFILED STEEL PANEL SIDE WALLS AND END WALLS FOR WIND OR SEISMIC LOADING

. . .

a. The allowable ~~strength~~ shear values for the side walls and end walls of the intermodal shipping containers are derived from ISO 1496-1 and reduced by a factor of safety of 5.
b. Container designation type is derived from ISO 668.
c. Limitations of Sections 3115.8.5.1 and 3115.8.5.3 shall apply.

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SECTION 61. Section H103.1 is hereby amended to read as follows:

H103.1 Location restrictions.

Signs shall not be erected, constructed, or maintained so as to obstruct any fire escape or any window or door or opening used as part of a means of egress or as part of the accessible route, except as permitted by Chapters 10, 11A, and 11B, or so as to prevent free passage from one part of a roof to any other part thereof. A sign shall not be attached in any form, shape or manner to a fire escape, nor be placed in such manner as to interfere with any opening required for ventilation.

SECTION 62. Section H103.2 is hereby added as follows:

H103.2 Projections and clearances.

Signs extending beyond the exterior wall of the building shall comply with Section 705.2 and the following requirements.

Signs may project over a public street, public sidewalk or building line in accordance with Section 3202 and a distance as determined by the clearance of the bottoms thereof above the level of the sidewalk or grade immediately below, whichever is more restrictive, as follows:

Clearance less than 8 feet (2438 mm) shall be prohibited.

Clearance 8 feet (2438 mm) and above, a 1-foot (305 mm) projection is permitted; and for each additional 2-foot clearance (610 mm), an additional 1-foot (305 mm) projection is permitted.

No structure shall have a projection of more than 5 feet (1524 mm). A projecting sign built above and in connection with a marquee may have such a projection of 5 feet

(1524 mm) without clearance between sign and marquee. No structure shall project beyond the curb line, regardless of clearance above grade.

Signs projecting more than 6 inches (152 mm) from the face of building over private property used or intended to be used by the general public shall have a minimum clearance of 8 feet (2438 mm) above said sidewalk or grade.

No sign shall project into any alley whatsoever below a height of 14 feet (4267 mm) above grade, and no sign shall project into any alley by more than 6 inches (152 mm) when its height is 14 feet (4267 mm) or more above grade.

SECTION 63. Section H104.1 is hereby amended to read as follows:

H104.1 Identification.

Every ~~outdoor advertising display~~ sign other than wall signs hereafter erected, constructed or maintained, for which a permit is required, shall be plainly marked with the name of the person, firm or corporation erecting and maintaining such sign, and the weight of the sign, and shall have affixed on the front thereof the permit number issued for said sign or other method of identification approved by the ~~b~~Building ~~o~~Official.

SECTION 64. Section H105.1 is hereby amended to read as follows:

H105.1 General requirements.

Signs shall be designed and constructed to comply with the provisions of this ~~c~~Code for use of materials, loads and stresses. Glass panels used in signs shall comply with the requirements of Chapter 24.

SECTION 65. Section H106.1 is hereby amended to read as follows:

H106.1 Illumination.

A sign shall not be illuminated by other than electrical means, and electrical devices and wiring shall be installed in accordance with the requirements of the ~~California~~ Electrical Code (Title 27) of the Los Angeles County Code, and a separate electrical permit shall be obtained. Any open spark or flame shall not be used for display purposes unless specifically approved.

SECTION 66. Section H106.2 is hereby amended to read as follows:

H106.2 Electrical service.

Signs that require electrical service shall comply with ~~NFPA 70~~the Electrical Code (Title 27) of the Los Angeles County Code.

SECTION 67. Section H110.1 is hereby amended to read as follows:

H110.1 General.

Roof signs shall be constructed entirely of metal or other approved noncombustible material except as provided for in Sections H106.1.1 and H107.1. Provisions shall be made for electric grounding of metallic parts. Where combustible materials are permitted in letters or other ornamental features, wiring and tubing shall be kept free and insulated therefrom. Roof signs shall be so constructed as to leave a clear space of not less than 6 feet (1829 mm) between the roof level and the lowest part of the sign and shall have not less than 5 feet (11524 mm) clearance between the vertical supports thereof. Roof sign structures shall not project beyond an exterior wall.

Exception: Signs on flat roofs with every part of the roof accessible shall not be required to provide clear space between the roof level and the lowest part of the sign.

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Blocks, angles, or supports fastened to the roof shall be located as not to interfere with the drainage of the roof and, where necessary, flashing or counter flashing shall be placed.

SECTION 68. Section H116 is hereby deleted in its entirety:

~~**SECTION H116 REFERENCED STANDARDS**~~

~~**H.116.1 General.** See Table H115.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard definition with the effective date, standard title, and the section or sections of this appendix that reference the standard.~~

~~TABLE 116.1~~

~~REFERENCED STANDARDS~~

~~ASTM D635-14~~	~~Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position~~	~~H107.1.1~~
~~NFPA 70-20~~	~~California Electrical Code~~	~~H106.1, H106.2~~
~~NFPA 701-19~~	~~Methods of Fire Test for Flame Propagation of Textiles and Films~~	~~H106.1.1~~

SECTION 69. Section J101 is hereby amended to read as follows:

J101 GENERAL

J101.1 Scope.

The provisions of this ~~chapter~~Appendix apply to grading, excavation, and earthwork construction, including fills and embankments, and the control of runoff from

graded sites, including erosion sediments and construction-related pollutants. ~~Where conflicts occur between the technical requirements of this chapter and the geotechnical report, the geotechnical report shall govern~~ The purpose of this Appendix is to safeguard life, limb, property, and the public welfare by regulating grading on property subject to this Code.

J101.2 Flood hazard areas.

Unless the applicant has submitted ~~an engineering analysis~~a hydrology and hydraulic analysis, prepared in accordance with standard engineering practice by a ~~registered design professional~~California licensed civil engineer, that demonstrates the proposed work will not result in any increase in the level of the base flood, grading, excavation and earthwork construction, including fills and embankments, shall not be permitted in floodways designated in Chapter 11.60 of Title 11 – Health and Safety – of the Los Angeles County Code, or in floodways that are in flood hazard areas established in Section 1612.3 or in flood hazard areas where design flood elevations are specified but floodways have not been designated.

J101.3 General hazards.

Whenever the Building Official determines that any existing excavation, embankment, or fill on property subject to this Code has become a hazard to life and limb, or endangers property, or adversely affects the safety, use, or stability of a public way or drainage channel, the Building Official may give written notice thereof to the owner of the property upon which the excavation, embankment, or fill is located, or other person or agent in control of said property. Upon receipt of said notice, the owner

or other person or agent in control of the property shall repair, eliminate, or secure such excavation, embankment, or fill so as to eliminate the hazard, in conformance with the requirements of this Code, within the period specified in said notice.

J101.4 Safety precautions.

If at any stage of the work the Building Official determines by inspection that unpermitted grading or grading work pursuant to a grading permit is likely to endanger any public or private property, or result in the deposition of debris on any public way, or interfere with any existing drainage course, the Building Official may order the work stopped by notice in writing served on any persons engaged in doing such work or causing such work to be done, and any such person shall immediately stop such work. The Building Official may authorize the work to proceed if the Building Official finds that adequate safety precautions can be taken or corrective measures incorporated in the work to avoid likelihood of such danger, deposition, or interference.

If the grading work as done was performed without a grading permit or has created or resulted in a hazardous condition, the Building Official shall give written notice requiring correction thereof as specified in Section J103 and Section J101 of this Code.

J101.5 Protection of utilities.

Both the permittee and the owner of the property on which the grading is performed shall be responsible for the prevention of damage to any public and/or private utilities or services.

J101.6 Protection of adjacent property.

Both the permittee and owner of the property on which the grading is performed shall be responsible for the prevention of damage to adjacent property. No person shall excavate on land sufficiently close to the property line to endanger any adjoining public street, sidewalk, alley, or other public or private property without taking adequate measures to support and protect such property from settling, cracking, or other damage that might result from the proposed work. Any person performing any grading that involves imported or exported materials shall take special precautions, as approved by the Building Official, to prevent such materials from being deposited on adjacent properties, any public way, and/or any drainage course.

J101.7 Storm water control measures.

Both the permittee and the owner of the property on which the grading is performed shall put into effect and maintain all precautionary measures necessary to protect adjacent water courses and public or private property from damage by erosion, flooding, and deposition of mud, debris, and construction-related pollutants originating from the site during grading and related construction activities.

J101.8 Maintenance of protective devices and rodent control.

All drainage structures and other protective devices and all burrowing rodent control measures, as shown on the grading plans approved by the Building Official, shall be maintained in a good condition and, when necessary, promptly repaired by the permittee or the owner of the property on which grading has been performed or by any other person or agent in control of such property.

J101.9 Correlation with other sections.

The provisions of this Appendix are independent of the provisions of Chapter 99 – Building and Property Rehabilitation – of Title 26 of this Code. This Section may be applied even though the same facts have been used to determine that there is a building, structure, or substandard property subject to the provisions of Chapter 99.

J101.10 Conditions of approval.

In granting any permit under this Code, the Building Official may include such conditions as may be reasonably necessary to prevent the creation of a nuisance or hazard to public or private property. Such conditions may include, but shall not be limited to:

1. Improvement of any existing grading to comply with the standards of this Code.

2. Requirements for securing of excavations or fills that would otherwise be hazardous.

3. Requirements for temporary excavations and shoring that are to be implemented on site and shown on the plans.

4. Requirements for mitigating, stabilizing, or eliminating unpermitted grading conducted on site.

SECTION 70. Section J102.1 is hereby amended to read as follows:

J102.1 Definitions.

~~The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions~~For the

purposes of this Appendix, the terms, phrases, and words listed in this Section and their derivatives shall have the indicated meanings.

APPROVAL. When the proposed work or completed work conforms to this Appendix, as determined by and to the satisfaction of the Building Official.

AS-BUILT. See Section J105.12.

BEDROCK. The relatively solid, undisturbed rock in place either at the ground surface or beneath superficial deposits of alluvium, colluvium, and/or soil.

BENCH. A relatively level step excavated into earth material on which fill is to be placed.

BEST MANAGEMENT PRACTICE (BMP). Practices, prohibitions of practices, or other activities to reduce or eliminate the discharge of pollutants to surface waters. BMPs include structural and nonstructural controls, management practices, operation and maintenance procedures, and system, design, and engineering methods that are required to be employed in order to comply with the requirements of the National Pollution Discharge Elimination System (NPDES) permit issued to the County of Los Angeles (see Section 106.4.3 and Title 31 – Green Building Standards Code – of the Los Angeles County Code).

BORROW. Earth material acquired from an off-site location for use in grading on a site.

CIVIL ENGINEER. A professional engineer licensed in the State of California to practice in the field of civil works.

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CIVIL ENGINEERING. The application of the knowledge of the forces of nature, principles of mechanics, and the properties of materials to the evaluation, design, and construction of civil works.

COMPACTION. The densification of a fill by mechanical means.

CUT. See "Excavation."

DESILTING BASINS. Physical structures, constructed for the removal of sediments from surface water runoff.

DESIGN ENGINEER. The Civil Engineer responsible for the preparation of the grading plans for the site grading work.

DOWN DRAIN. A device for collecting water from a swale or ditch located on or above a slope, and safely delivering it to an approved drainage facility.

EARTH MATERIAL. Any rock, natural soil, or fill, or any combination thereof.

ENGINEERING GEOLOGIST. A geologist experienced and knowledgeable in engineering geology, holding a license as a geologist in the specialty of engineering geology issued by the State of California under the applicable provisions of the Geologist and Geophysicist Act of the Business and Professions Code.

ENGINEERING GEOLOGY. The application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works.

EROSION. The wearing away of the ground surface as a result of the movement of wind, water, or ice.

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EXCAVATION. The removal of earth material by artificial means, also referred to as a cut.

FIELD ENGINEER. The Civil Engineer responsible for performing the functions as set forth in Section J105.3.

FILL. Deposition of earth materials by artificial means.

GEOTECHNICAL ENGINEER. See "Soils Engineer."

GEOTECHNICAL HAZARD. An adverse condition due to landslide, settlement, and/or slippage. These hazards include, but are not limited to, loose debris, slopewash, and mud flows from natural or graded slopes.

GRADE. The vertical location of the ground surface.

GRADE, EXISTING. The grade prior to grading.

GRADE, FINAL. See Section J105.7.

GRADE, FINISHED. The grade of the site at the conclusion of all grading efforts.

GRADE, INITIAL. See Section J105.7.

GRADE, ROUGH. See Section J105.7.

GRADING. An excavation or fill or combination thereof.

KEY. A compacted fill placed in a trench excavated in earth material beneath the toe of a slope.

LANDSCAPE ARCHITECT. A person who holds a certificate to practice landscape architecture in the State of California under the applicable landscape architecture provisions of Division 3, Chapter 3.5, of the Business and Professions Code.

LINE. The horizontal location of the ground surface.

PERMITTEE. See Section J105.6.

PRIVATE SEWAGE DISPOSAL SYSTEM. A septic tank with effluent discharging into a subsurface disposal field, into one or more seepage pits, or into a combination of a subsurface disposal field and a seepage pit or of such other facilities as may be permitted in accordance with the procedures and requirements set forth in Title 28 – Plumbing Code – of the Los Angeles County Code and as required by the Los Angeles County Department of Public Health.

PROJECT CONSULTANTS. The professional consultants required by this Code, which may consist of the Design Engineer, Field Engineer, Soils Engineer, Engineering Geologist, and Landscape Architect as applicable to this Appendix.

PROFESSIONAL INSPECTION. The inspection required by this Code to be performed by the Project Consultants. Such inspections shall be sufficient to form an opinion relating to the conduct of the work.

QSD. Qualified SWPPP Developer as defined in the California State Construction General Permit.

QSP. Qualified SWPPP Practitioner as defined in the California State Construction General Permit.

SITE. A lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.

SLOPE. An inclined surface, the inclination of which is expressed as a ratio of horizontal distance to vertical distance.

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SOIL. Naturally occurring superficial deposits overlying parent bedrock.

SOILS ENGINEER (GEOTECHNICAL ENGINEER). A licensed civil engineer experienced and knowledgeable in the practice of soils engineering.

SOILS ENGINEERING (GEOTECHNICAL ENGINEERING). The application of the principles of soils mechanics in the investigation, evaluation, and design of civil works involving the use of earth materials and the inspection or testing of construction thereof.

STORM DRAIN SYSTEM. A conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, and man-made channels, designed or used for collecting and conveying storm water.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP). A site drawing with details, notes, and related documents that identify the measures proposed by the permittee to: (1) control erosion and prevent sediment and construction-related pollutants from being carried offsite by storm water, and (2) prevent non-storm-water discharges from entering the storm drain system.

SURFACE DRAINAGE. Flows over the ground surface.

SOIL TESTING AGENCY. An agency regularly engaged in the testing of soils and rock under the direction of a Civil Engineer experienced in soil testing.

TERRACE. A relatively level step constructed in the face of a graded slope for drainage and maintenance purposes.

SECTION 71. Section J103 is hereby amended to read as follows:

SECTION J103 PERMITS REQUIRED

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J103.1 Permits required.

Except as exempted in Section J103.2, grading shall not be performed without first having obtained a permit ~~therefor~~ from the ~~b~~Building ~~o~~Official. A grading permit does not include the construction of retaining walls or other structures. A separate permit shall be obtained for each site and may cover both excavations and fills. Any engineered grading as described in Section J104.2.3 shall be performed by a contractor licensed by the State of California to perform the work described hereon. Regular grading less than 5,000 cubic yards may require a licensed contractor if the Building Official determines that special conditions or hazards exist.

J103.2 Exemptions.

A grading permit shall not be required for the following:

1. When approved by the Building Official, ~~G~~grading in an isolated, self-contained area, provided that the public is not endangered and that such grading will not adversely affect adjoining properties or public rights of way.

. . .

7. Exploratory excavations performed under the direction of a ~~registered design professional~~Geotechnical Engineer or Engineering Geologist. This shall not exempt grading of access roads or pads created for exploratory excavations. Exploratory excavations must not create a hazardous condition to adjacent properties or the public in accordance with Section J101.3. A restoration plan must be provided and approved by the Building Official for all grading of access roads or pads. Restoration

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shall be completed within 90 days after the completion of soils testing unless otherwise approved by the Building Official.

8. An excavation that does not exceed 50 cubic yards (38.3 m^3) and complies with one of the following conditions and as shown in Figure J103.2:

(a) Is less than 2 feet (0.6 m) in depth.

(b) Does not create a cut slope greater than 5 feet (1.5 m) measured vertically upward from the cut surface to the surface of the natural grade and is not steeper than 2 units horizontal to 1 unit vertical (50 percent slope).

9. A fill not intended to support a structure that does not obstruct a drainage course and complies with one of the following conditions and as shown in Figure J103.2:

(a) Is less than 1 foot (0.3 m) in depth and is placed on natural terrain with a slope flatter than 5 units horizontal to 1 unit vertical (20 percent slope).

(b) Is less than 3 feet (0.9 m) in depth at its deepest point measured vertically upward from natural grade to the surface of the fill, does not exceed 50 cubic yards, and creates a fill slope no steeper than 2 units horizontal to 1 unit vertical (50 percent slope).

(c) Is less than 5 feet (1.5 m) in depth at its deepest point measured vertically upward from natural grade to the surface of the fill, does not exceed 20 cubic yards, and creates a fill slope no steeper than 2 units horizontal to 1 unit vertical (50 percent slope).

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Exemption from the permit requirements of this ~~a~~Appendix shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this ~~e~~Code or any other laws or ordinances of this jurisdiction.

J103.3 Unpermitted grading.

A person shall not own, use, occupy, or maintain any site containing unpermitted grading. For the purposes of this Code, unpermitted grading shall be defined as either of the following:

(1) Grading that was performed, at any point in time, without the required permit(s) having first been obtained from the Building Official, pursuant to Section J103.1;

(2) Grading for which a permit was obtained pursuant to this Section, but which was not completed, pursuant to Section J105, prior to the expiration of the permit, pursuant to Section 106.5.4, or

(3) Grading for which a permit was obtained pursuant to this Section, but where grading was performed outside the scope of the permit, pursuant to Section J105.

If the Building Official has determined that unpermitted grading was performed or has created or resulted in a hazardous condition, the Building Official shall give written notice requiring correction thereof as specified in Section 103, and in accordance with J101 of this Code.

The Building Official may require such conditions as may be reasonably necessary to prevent creation of a nuisance or hazard to public or private property.

Such conditions may include, but shall not be limited to, conditions set forth in Section J101.10.

J103.4 Availability of permit at site.

No person shall perform any grading that requires a permit under this Appendix unless a copy of the grading permit and approved grading plans are in the possession of a responsible person and available at the site for the Building Official's reference.

J103.5 Grading fees.

Fees shall be assessed in accordance with the provisions of this Section. The amount of the fees shall be as specified in Section 107.

1. Plan Review Fees. When a plan or other data are required to be submitted, a plan review fee shall be paid at the time of submitting plans and specifications for review. Separate plan review fees shall apply to retaining walls or major drainage structures as required elsewhere in this Code. For excavation and fill on the same site, the fee shall be based on the volume of excavation or fill, whichever is greater.

2. Permit Fees. A fee for each grading permit shall be paid to the Building Official at the time of issuance of the permit. Separate permits and fees shall apply to retaining walls or major drainage structures as required elsewhere in this Code.

3. Site Inspection Fee. When the Building Official finds that a visual inspection of the site is necessary to establish drainage requirements for the protection of property, existing buildings, or the proposed construction, a site inspection shall be made during plan check of grading plans. A fee for such inspection shall be paid to the

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Building Official at the time of submitting plans and specifications for review.

J103.6 Compliance with zoning code.

The Building Official may refuse to issue a grading permit for work on a site if either the proposed grading or the proposed land use for the site shown on the grading plan application does not comply with the provisions of Title 22 – Planning and Zoning – of the Los Angeles County Code.

J103.7 Grading security.

J103.7.1 Scope and purpose.

The Building Official may require a permittee or the owner(s) of the property on which the grading is proposed to occur to provide security as a condition of the issuance of a grading permit for any grading involving more than 1,000 cubic yards (764.6 m^3). Where unusual conditions or special hazards exist, the Building Official may require security for grading involving less than 1,000 cubic yards (764.6 m^3). The purpose of the security shall be to guarantee the permittee's obligation to mitigate any hazardous conditions, including flood and geotechnical hazards, that may be created if the grading is not completed in accordance with the approved plans and specifications, and to complete any work that the Building Official determines is necessary to bring the property into compliance with this Appendix.

Security required by this Section may include incidental off-site grading on property contiguous with the site to be developed, provided written consent of the owner of such contiguous property is filed with the Building Official.

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The Building Official may waive the requirements for security for the following:

1. Grading being done by or for a governmental agency.

2. Grading necessary to remove a geotechnical hazard, where such work is covered by an agreement and security is posted pursuant to the provisions of Title 21 – Subdivisions – of the Los Angeles County Code.

3. Grading on a site, not exceeding a slope of 3 units horizontal to 1 unit vertical, provided such grading as determined by the Building Official will not affect drainage from or to adjacent properties.

4. Filling of holes or depressions, provided such grading will not affect the drainage from or to adjacent properties.

J103.7.2 Form of security.

The security referred to in Section J103.7.1 shall be in one of the following forms:

1. A bond furnished by a corporate surety authorized to do business in this state.

2. Cash.

3. Savings and loan certificates or shares deposited and assigned to the County as provided in Chapter 4.36 of Title 4 – Revenue and Finance – of the Los Angeles County Code.

4. An instrument of credit from a financial institution subject to regulation by the State or federal government and pledging that funds in the amount required by the Building Official are on deposit and guaranteed for payment, or a letter of credit is issued by such a financial institution.

J103.7.3 Amount of security.

The amount of security shall be based on the number of cubic yards of material in either excavation or fill, whichever is greater, and the cost of all drainage or other protective devices or work necessary to eliminate potential flooding and geotechnical hazards. That portion of the security valuation based on the volume of material in either excavation or fill shall be computed as follows:

100,000 cubic yards or less – 50 percent of the estimated cost of grading work.

Over 100,000 cubic yards – 50 percent of the estimated cost of the first 100,000 cubic yards plus 25 percent of the estimated cost of that portion in excess of 100,000 cubic yards.

When the rough grading has been completed in conformance with the requirements of this Code, the Building Official may, at his or her discretion, consent to a proportionate reduction of the security to an amount estimated to be adequate to ensure completion of the grading work, site development, or planting remaining to be performed. The costs referred to in this Section shall be as estimated by the Building Official.

J103.7.4 Conditions.

All security shall include conditions that the principal shall:

1. Comply with all of the provisions of this Code, applicable laws, and ordinances;

2. Comply with all of the terms and conditions of the grading permit; and

3. Complete all of the work authorized by the permit.

J103.7.5 Term of security.

The term of each security shall begin upon the filing with the Building Official, and the security shall remain in effect until the work authorized by the grading permit is completed and approved by the Building Official.

J103.7.6 Default procedures.

In the event any grading for which a permit has been issued is not completed in accordance with the approved plans and specifications for said work or with all terms and conditions of the grading permit, the Building Official may declare that a default has occurred. The Building Official shall give notice thereof to the principal and surety or financial institution executing the security, or to the owner in the case of a cash bond or assignment.

The Building Official may thereafter determine the work that is necessary to mitigate any hazardous or unsafe conditions on the site and cause such work to be performed.

Where the security consists of a bond or instrument of credit, the surety or financial institution executing the security shall be responsible for the payment of all costs and expenses incurred by the Building Official in causing such work to be performed, up to the full amount of the security. In the case of cash security or assignment, the Building Official may pay all costs and expenses incurred in causing such work to be performed from the funds deposited and return any unused portion of such deposit or funds to the person making said deposit or assignment.

J103.7.7 Right of entry.

The Building Official or the authorized representative of any surety company or financial institution furnishing the security shall have access to the premises described in the permit for the purpose of inspecting the work.

In the event of default, as described in Section J103.7.6, the surety or financial institution furnishing the security, or the Building Official, or any person employed or engaged on the behalf of any of these parties, shall have the right to go upon the premises to perform the mitigation work, as described in Section J103.7.6.

Neither the permittee, owner, or any other person shall interfere with or obstruct the ingress into or egress from any such premises of any authorized representative of the surety or financial institution executing the security or the Building Official engaged to perform the mitigation work, as described in Section J103.7.6.

SECTION 72. Figure J103.2 is hereby added to read as follows:

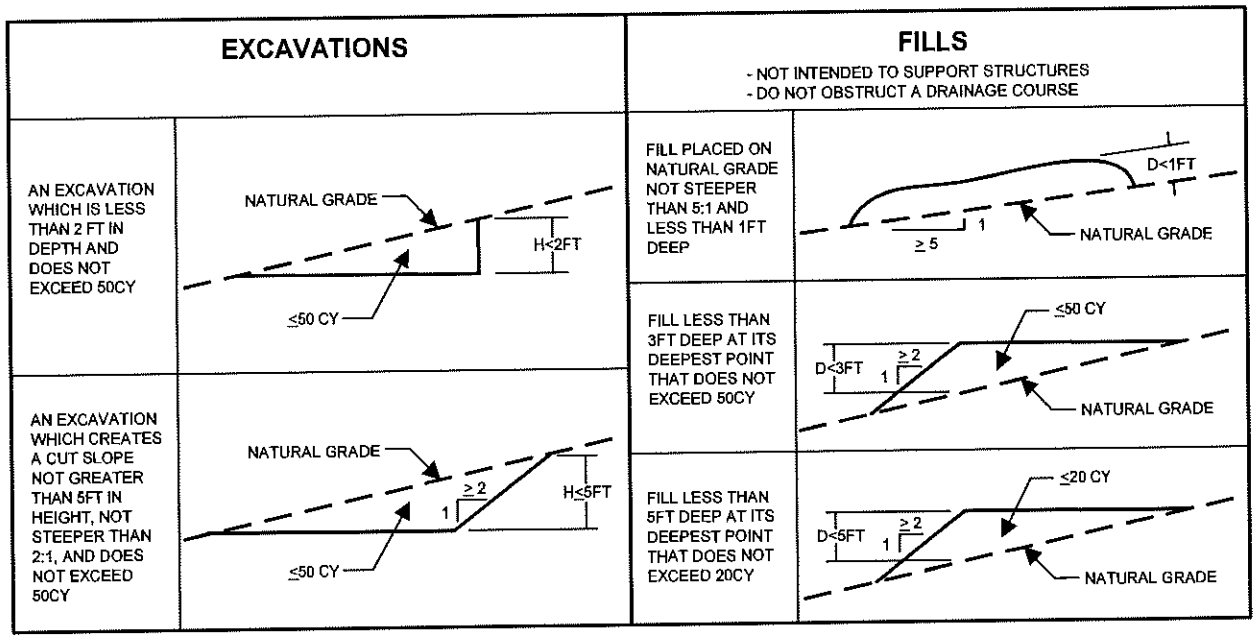


FIGURE J103.2

GRADING EXEMPTION CASES

SECTION 73. Section J104 is hereby amended to read as follows:

SECTION J104 PERMIT APPLICATION AND SUBMITTALS

J104.1 Submittal requirements.

In addition to the provisions of Section ~~105.3 and 1.8.4, as applicable~~106.4, the applicant shall state the ~~estimated quantities of excavation and fill~~following:

1. The estimated quantities of excavation, fill, borrow, removal, or combination thereof.

2. The proposed land use for the site on which the grading is to be performed.

J104.2 Site plan requirements.

In addition to the provisions of Section ~~107~~106, a grading plan shall show the existing grade and finished grade in contour intervals of sufficient clarity to indicate the nature and extent of the work and show in detail that it complies with the requirements of this ~~c~~Code. The plans shall show the existing grade on adjoining properties in sufficient detail to identify how grade changes will conform to the requirements of this ~~c~~Code.

J104.2.1 Grading designation.

Grading in excess of 5,000 cubic yards (3,825 m^3), or that is proposed to support any structure, shall be designated as "engineered grading." All engineered grading shall be performed in accordance with an approved grading plan and specifications

prepared by a Civil Engineer, unless otherwise required by the Building Official.

Grading involving less than 5,000 cubic yards (3,825 m^3), and that will not support any structure, shall be designated "regular grading" unless the permittee chooses to have the grading be designated as engineered grading, or the Building Official determines that, due to the existence of special conditions or unusual hazards, the grading should be designated as engineered grading.

J104.2.2 Regular grading requirements.

In addition to the provisions of Sections 106 and J104.2, an application for a regular grading permit shall be accompanied by plans of sufficient clarity to indicate the nature and extent of the work. The plans shall give the location of the work, the name of the owner, and the name of the person who prepared the plan. The plan shall include the following information:

1. General vicinity of the proposed site.

2. Limits and depths of cut and fill.

3. Location of any buildings or structures where work is to be performed, and the location of any buildings or structures within 15 feet (4.6 m) of the proposed grading.

4. Contours, flow areas, elevations, or slopes that define existing and proposed drainage patterns.

5. Storm water mitigation measures in accordance with the requirements of Section 106.4.3 of this Code. See Section J110.8 for specific requirements.

6. Location of existing and proposed utilities, drainage facilities, and recorded public and private easements and restricted use areas.

7. Location of all recorded floodways as established by Chapter 11.60 of Title 11 – Health and Safety – of the Los Angeles County Code.

8. Location of all Special Flood Hazard Areas as designated and defined in Title 44 of the Code of Federal Regulations.

J104.2.3 Engineered grading requirements.

In addition to the provisions of Sections 106 and J104.2, an application for a permit for engineered grading shall be accompanied by plans and specifications and supporting data consisting of a geotechnical report and engineering geology report.

Specifications shall contain information covering construction and material requirements. Plans shall be drawn to scale on paper and shall be of sufficient clarity to indicate the nature and extent of the work proposed and shall show in detail that the proposed work will conform to the provisions of this Code and all relevant laws, ordinances, rules, and regulations. The first sheet of the plans shall depict the location of the proposed work, the name and address of the owner, and the name and address of the person who prepared the plans.

The plans shall include or be accompanied by the following information:

1. General vicinity of the proposed site.

2. Property limits and accurate contours of existing ground and details of terrain and area drainage.

3. Limiting dimensions, elevations, or finish contours to be achieved by the grading, proposed drainage channels, and related construction.

4. Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams, and other protective devices to be constructed with, or as a part of, the proposed work. In addition, a map showing the drainage area and the estimated runoff of the area served by any drains.

5. Location of any existing or proposed buildings or structures located on the property on which the work is to be performed and the location of any buildings or structures on adjacent properties that are within 15 feet (4.6 m) of the property or that may be affected by the proposed grading operations.

6. Recommendations in the geotechnical report and the engineering geology report shall be incorporated into the grading plans or specifications. When approved by the Building Official, specific recommendations contained in the soils engineering report and the engineering geology report, that are applicable to grading, may be included by reference.

7. The dates of the geotechnical and engineering geology reports together with the names, addresses, and phone numbers of the firms or individuals who prepared the reports.

8. A statement of the quantities of material to be excavated and/or filled. Earthwork quantities shall include quantities for geotechnical and geological remediation. In addition, a statement of the quantities of material to be imported or exported from the site.

9. A statement of the estimated starting and completion dates for proposed work.

10. A statement signed by the owner, acknowledging that a Design Engineer, Field Engineer, Geotechnical Engineer, and Engineering Geologist, when appropriate, will be employed to perform the services required by this Code, when the Building Official requires that such professional persons be so employed. These acknowledgments shall be on a form furnished by the Building Official.

11. Storm water mitigation measures are required to be shown on the grading plan in accordance with the requirement of Section 106.4.3 of this Code. See Section J110.8 for specific requirements.

12. A drainage plan for those portions of property proposed to be utilized as a building site (building pad), including elevations of floors with respect to finish site grade and locations of proposed stoops, slabs, and fences that may affect drainage.

13. Location and type of any proposed private sewage disposal system, including the location of the expansion area.

14. Location of existing and proposed utilities, drainage facilities, and recorded public and private easements and restricted use areas.

15. Location of all recorded floodways as established by Chapter 11.60 of Title 11 – Health and Safety – of the Los Angeles County Code.

16. Location of all Special Flood Hazard Areas as designated and defined in Title 44 of the Code of Federal Regulations.

J104.3 Geotechnical and engineering geology reports.

~~A geotechnical report prepared by registered design professionals shall be provided. The report shall contain not less than the following:~~

~~1. The nature and distribution of existing soils;~~

~~2. Conclusions and recommendations for grading procedures;~~

~~3. Soil design criteria for any structures or embankments required to accomplish the proposed grading; and~~

~~4. Where necessary, slope stability studies, and recommendations and conclusions regarding site geology.~~

The geotechnical report required by Section J104.2.3 shall include data regarding the nature, distribution, and strength of existing soils, conclusions, and recommendations for grading procedures and design criteria for corrective measures, including buttress fills, when necessary, and an opinion on the adequacy for the intended use of sites to be developed by the proposed grading as affected by geotechnical factors, including the stability of slopes. All reports shall conform with the requirements of Section 111 and shall be subject to review by the Building Official. Supplemental reports and data may be required as the Building Official may deem necessary. Recommendations included in the reports and approved by the Building Official shall be incorporated in the grading plan or specifications.

The engineering geology report required by Section J104.2.3 shall include an adequate description of the geology of the site, conclusions, and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy for the intended use of sites to be developed by the proposed grading, as affected by geologic factors. The engineering geology report shall include a geologic map and cross sections utilizing the most recent grading plan as a base. All

reports shall conform with the requirements of Section 111 and shall be subject to review by the Building Official. Supplemental reports and data may be required as the Building Official may deem necessary. Recommendations included in the reports and approved by the Building Official shall be incorporated in the grading plan or specifications.

Exception: A geotechnical or engineering geology report is not required where the ~~b~~Building ~~code o~~Official determines that the nature of the work applied for is such that a report is not necessary.

J104.4 Liquefaction study.

For sites with mapped maximum considered earthquake spectral response accelerations at short periods (S_s) greater than 0.5g as determined by Section 1613, a study of the liquefaction potential of the site shall be provided and the recommendations incorporated in the plans. A geotechnical investigation will be required when the proposed work is a "Project" as defined in Public Resources Code section 2693, and is located in an area designated as a "Seismic Hazard Zone" as defined in section 3722 of Title 14 of the Code of Regulations and on Seismic Hazard Zone Maps issued by the State Geologist under Public Resources Code section 2696.

Exception: A liquefaction study is not required where the ~~b~~Building ~~o~~Official determines from established local data that the liquefaction potential is low.

SECTION 74. Section J105 is hereby amended to read as follows:

SECTION J105 INSPECTIONS

J105.1 General.

Grading ~~I~~inspections shall be governed by Section ~~110, Chapter 1, Division II of this code~~108 and as indicated herein. Grading operations for which a permit is required shall be subject to inspection by the Building Official. In addition, professional inspection of grading operations shall be performed by the Field Engineer, the Geotechnical Engineer, and the Engineering Geologist retained to provide such services in accordance with this Section for engineered grading and as required by the Building Official for regular grading.

J105.2 Special and supplemental inspections.

The special inspection requirements of Section 1705.6 shall apply to work performed under a grading permit where required by the ~~b~~Building ~~o~~Official. In addition to the called inspections specified in Section J105.7, the Building Official may make such other inspections as may be deemed necessary to determine that the work is being performed in conformance with the requirements of this Code. The Building Official may require investigations and reports by an approved soil testing agency, Geotechnical Engineer and/or Engineering Geologist, and Field Engineer. Inspection reports shall be provided when requested in writing by the Building Official.

The Building Official may require continuous inspection of drainage devices by the Field Engineer in accordance with this Section when the Building Official determines that the drainage devices are necessary for the protection of the structures in accordance with Section 110.

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J105.3 Field engineer.

The Field Engineer shall provide professional inspection of those parts of the grading project within such engineer's area of technical specialty, oversee and coordinate all field surveys, including setting grade stakes, and provide site inspections during grading operations to ensure the site is graded in accordance with the approved grading plan and the appropriate requirements of this Code. During site grading, and at the completion of both rough grading and final grading, the Field Engineer shall submit statements and reports as required by Sections J105.11 and J105.12. If revised grading plans are required during the course of the work, they shall be prepared by a Civil Engineer and approved by the Building Official.

J105.4 Geotechnical engineer.

The Geotechnical Engineer shall provide professional inspection of those parts of the grading project within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The Geotechnical Engineer shall provide sufficient observation during the preparation of the natural ground and placement and compaction of the fill to verify that such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of this Appendix. If conditions differing from the approved geotechnical engineering and engineering geology reports are encountered during grading, the Geotechnical Engineer shall provide revised recommendations to the permittee, the Building Official, and the Field Engineer.

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J105.5 Engineering geologist.

The Engineering Geologist shall provide professional inspection of those parts of the grading project within such engineer's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. If conditions differing from the approved engineering geology report are encountered, the Engineering Geologist shall provide revised recommendations to the Geotechnical Engineer.

J105.6 Permittee.

The permittee shall be responsible for ensuring that the grading is performed in accordance with the approved plans and specifications and in conformance with the provisions of this Code. The permittee shall engage project consultants, if required under the provisions of this Code, to provide professional inspections on a timely basis. The permittee shall act as a coordinator between the project consultants, the contractor, and the Building Official. In the event of changed conditions, the permittee shall be responsible for informing the Building Official of such change and shall provide revised plans for approval.

J105.7 Required inspections.

The permittee shall call for and schedule an inspection by the Building Official at the following various stages of work and shall obtain the approval of the Building Official prior to proceeding to the next stage of work:

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Pre-grade – Before any construction or grading activities occur at the site. The permittee shall ensure that all project consultants are present at the pre-grade inspection.

Initial grade – When the site has been cleared of vegetation and unapproved fill, and has been scarified, benched, or otherwise prepared for fill. No fill shall have been placed prior to this inspection.

Rough grade – When approximate final elevations have been established, drainage terraces, swales, and other drainage devices necessary for the protection of the building sites from flooding have been installed, berms have been installed at the top of the slopes, and the statements required by Section J105.12 have been received.

Final grade – When grading has been completed, all drainage devices necessary to drain the building pad have been installed, slope planting has been established, irrigation systems have been installed, and the as-built plans and required statements and reports have been submitted.

J105.8 Notification of noncompliance.

If, in the course of fulfilling their respective duties under this Appendix, the Field Engineer, the Geotechnical Engineer, or the Engineering Geologist determines that the work is not being done in conformance with this Appendix or the approved grading plans, the Field Engineer, the Geotechnical Engineer, or the Engineering Geologist shall immediately report, in writing, the discrepancies and the recommended corrective measures to the permittee and to the Building Official.

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J105.9 Transfer of responsibility.

If the Field Engineer, the Geotechnical Engineer, or the Engineering Geologist of record is changed at any time after the grading plans required pursuant to Section J104.2.2 or J104.2.3 have been approved by the Building Official, the permittee shall immediately provide written notice of such change to the Building Official. The Building Official may stop the grading from commencing or continuing until the permittee has identified a replacement and the replacement has agreed in writing to assume responsibility for those parts of the grading project that are within the replacement's area of technical competence.

J105.10 Non-inspected grading.

No person shall own, use, occupy, or maintain any non-inspected grading. For the purposes of this Code, non-inspected grading shall be defined as any grading for which a grading permit was first obtained, pursuant to Section J103, above, but which has progressed beyond any point requiring inspection and approval by the Building Official without such inspection and approval having been obtained.

J105.11 Routine field inspections and reports.

Unless otherwise directed by the Building Official, the Field Engineer for all engineered grading projects shall prepare routine inspection reports and shall file these reports with the Building Official as follows:

1. Bi-weekly during all times when grading of 400 cubic yards or more per week is occurring on the site;

2. Monthly, at all other times; and

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3. At any time when requested in writing by the Building Official.

Such reports shall certify to the Building Official that the Field Engineer has inspected the grading site and related activities and has found them in compliance with the approved grading plans and specifications, this Code, all grading permit conditions, and all other applicable ordinances and requirements. The reports shall conform to a standard "Report of Grading Activities" form, which shall be provided by the Building Official.

J105.12 Completion of work.

Upon completion of the rough grading work and at the final completion of the work, the following reports and drawings and supplements thereto are required for engineered grading or when professional inspection is otherwise required by the Building Official:

1. An "as-built" grading plan prepared by the Field Engineer retained to provide such services in accordance with Section J105.3 showing all plan revisions as approved by the Building Official. This shall include original ground surface elevations, as-built ground surface elevations, lot drainage patterns, and the locations and elevations of surface drainage facilities and the outlets of subsurface drains. As-built locations, elevations, and details of subsurface drains shall be shown as reported by the Geotechnical Engineer.

The as-built grading plan shall be accompanied by a certification by the Field Engineer that to the best of his or her knowledge, the work within the Field Engineer's area of responsibility was done in accordance with the final approved grading plan.

2. A report prepared by the Geotechnical Engineer retained to provide such services in accordance with Section J105.4, including locations and elevations of field density tests, summaries of field and laboratory tests, other substantiating data, and comments on any changes made during grading and their effect on the recommendations made in the approved geotechnical engineering investigation report. The report shall include a certification by the Geotechnical Engineer that, to the best of his or her knowledge, the work within the Geotechnical Engineer's area of responsibility is in accordance with the approved geotechnical engineering report and applicable provisions of this Appendix. The report shall contain a finding regarding the safety of the completed grading and any proposed structures against hazard from landslide, settlement, or slippage.

3. A report prepared by the Engineering Geologist retained to provide such services in accordance with Section J105.5, including a final description of the geology of the site and any new information disclosed during the grading and the effect of such new information, if any, on the recommendations incorporated in the approved grading plan. The report shall contain a certification by the Engineering Geologist that, to the best of his or her knowledge, the work within the Engineering Geologist's area of responsibility is in accordance with the approved engineering geology report and applicable provisions of this Appendix. The report shall contain a finding regarding the safety of the completed grading and any proposed structures against hazard from landslide, settlement, or slippage. The report shall contain a final as-built geologic map and cross-sections depicting all the information collected prior to and during grading.

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4. The grading contractor shall certify, on a form prescribed by the Building Official, that the grading conforms to said as-built plan and the approved specifications.

5. When a landscape permit is required by Section 490.1 of the California Department of Water Resources Model Water Efficient Landscape Ordinance, the Landscape Architect shall certify on a form prescribed by the Building Official that the landscaping conforms to approved landscape plans and specifications.

J105.13 Notification of completion.

The permittee shall notify the Building Official when the grading operation is ready for final inspection. Final approval shall not be given until all work, including installation of all drainage facilities and their protective devices, and all erosion-control measures, have been completed in accordance with the final approved grading plan, and all required reports have been submitted and approved.

J105.14 Change of ownership.

Unless otherwise required by the Building Official, when a grading permit has been issued on a site and the owner sells the property prior to final grading approval, the new property owner shall be required to obtain a new grading permit.

SECTION 75. Section J106.1 is hereby amended to read as follows:

J106.1 Maximum cut slope.

The slope of cut surfaces shall be not steeper than is safe for the intended use, and shall be not more than 1 unit vertical in 2 units horizontal (50-percent slope) unless the owner or the owner's authorized agent furnishes a geotechnical or an engineering geology report, or both, justifying a steeper slope. The reports must contain a

statement by the Geotechnical Engineer or Engineering Geologist that the site was investigated and an opinion that a steeper slope will be stable and will not create a hazard to public or private property, in conformance with the requirements of Section 111. The Building Official may require the slope of the cut surfaces to be flatter in slope than 2 units horizontal to 1 unit vertical (50-percent slope) if the Building Official finds it necessary for the stability and safety of the slope.

Exceptions:

~~1.~~ A cut surface shall be permitted to be at a slope of 1.5 units horizontal to one unit vertical (67-percent slope) provided that all of the following are met:

~~1.~~1. It is not intended to support structures or surcharges.

~~1.~~2. It is adequately protected against erosion.

~~1.~~3. It is no more than 8 feet (2438 mm) in height.

~~1.~~4. It is approved by the ~~b~~Building ~~code o~~Official.

~~1.~~5. Ground water is not encountered.

~~2. A cut surface in bedrock shall be permitted to be at a slope of one unit horizontal to one unit vertical (100 percent slope).~~

SECTION 76. Section J107 is hereby amended to read as follows:

SECTION J107 FILLS

J107.1 General.

Unless otherwise recommended in the geotechnical report, fills shall comply with the provisions of this ~~s~~Section.

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Exception: The Building Official may permit a deviation from the provisions of this Appendix for minor fills not intended to support structures, where no geotechnical report has been prepared.

J107.2 Surface Preparation.

Fill slopes shall not be constructed on natural slopes steeper than 2 units horizontal to 1 unit vertical (50 percent slope). The ground surface shall be prepared to receive fill by removing vegetation, topsoil, and other unsuitable materials (including any existing fill that does not meet the requirements of this Appendix), and scarifying the ground to provide a bond with the fill material.

Subdrains shall be provided under all fills placed in natural drainage courses and in other locations where seepage is evident, except where the Geotechnical Engineer or Engineering Geologist recommends otherwise. Such sub-drainage systems shall be of a material and design approved by the Geotechnical Engineer and acceptable to the Building Official. The Geotechnical Engineer shall provide continuous inspection during the process of subdrain installations. The location of the subdrains shall be shown on a plan prepared by the Geotechnical Engineer. Excavations for the subdrains shall be inspected by the Engineering Geologist when such subdrains are included in the recommendations of the Engineering Geologist.

J107.3 Benching.

Where existing grade is at a slope steeper than one unit vertical in five units horizontal (20-percent slope) and the depth of the fill exceeds 5 feet (1524 mm), benching shall be provided into sound bedrock or other competent material as

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determined by the Geotechnical Engineer in accordance with Figure J107.3, or as determined by the Geotechnical Engineer. When fill is to be placed over a cut, Aa key shall be provided that is not less than 10 feet (3048 mm) in width and 2 feet (610 mm) in depth. The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be constructed thereon. The Geotechnical Engineer or Engineering Geologist, or both, shall inspect and approve the cut as being suitable for the foundation and placement of fill material before any fill material is placed on the excavation.

J107.4 Fill material.

Fill material shall not include organic, frozen, or other deleterious materials. Rock or similar irreducible material greater than 12 inches (305 mm) in any dimension shall not be included in fills.

Exception: The Building Official may permit placement of larger rock when the Geotechnical Engineer properly devises and recommends a method of placement, and continuously inspects the placement and approves the fill stability. The following requirements shall also apply:

1. Prior to issuance of the grading permit, potential rock disposal areas shall be delineated on the grading plan.

2. Rock sizes greater than 12 inches (0.3 m) in maximum dimension shall be 10 feet (3.0 m) or more below grade, measured vertically.

3. Rocks shall be placed so as to assure filling of all voids with well-graded soil.

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4. The reports submitted by the Geotechnical Engineer shall acknowledge the placement of the oversized material and whether the work was performed in accordance with the engineer's recommendations and the approved plans.

5. The location of oversized rock dispersal areas shall be shown on the as-built plan.

J107.5 Compaction.

All fill material shall be compacted to a minimum of 90 percent of maximum density as determined by ASTM D1557, Modified Proctor, in lifts not exceeding 12 inches (305 mm) in depth within 40 feet (12.2 m) below finished grade and 93 percent of maximum dry density deeper than 40 feet (12.2 m) below finished grade, unless a lower relative compaction (not less than 90 percent of maximum dry density) is justified by the Geotechnical Engineer and approved by the Building Official. Where ASTM D1557, Modified Proctor, is not applicable, a test acceptable to the Building Official shall be used.

Field density shall be determined by a method acceptable to the Building Official. However, not less than ten percent of the required density tests, uniformly distributed, shall be obtained by the Sand Cone Method.

Fill slopes steeper than 2 units horizontal to 1 unit vertical (50-percent slope) shall be constructed by the placement of soil a sufficient distance beyond the proposed finish slope to allow compaction equipment to operate at the outer surface limits of the final slope surface. The excess fill is to be removed prior to completion or rough grading. Other construction procedures may be utilized when it is first shown to the

satisfaction of the Building Official that the angle of slope, construction method, and other factors will comply with the intent of this Section.

J107.6 Maximum slope.

The slope of fill surfaces shall be not steeper than is safe for the intended use. Fill slopes steeper than one unit vertical in two units horizontal (50-percent slope) shall be justified by a geotechnical reports ~~or engineering data~~conforming to the requirements of Section 111, containing a statement by the Geotechnical Engineer that the site has been investigated and an opinion that a steeper fill slope will be stable and will not create a hazard to public or private property. Substantiating calculations and supporting data may be required where the Building Official determines that such information is necessary to verify the stability and safety of the proposed slope. The Building Official may require the fill slope to be constructed with a face flatter in slope than 2 units horizontal to 1 unit vertical (50-percent slope) if the Building Official finds it necessary for stability and safety of the slope.

J107.7 Slopes to receive fill.

Where fill is to be placed above the top of an existing slope steeper than 3 units horizontal to 1 unit vertical (33-percent slope), the toe of the fill shall be set back from the top edge of the existing slope a minimum distance of 6 feet (1.8 m) measured horizontally or such other distance as may be specifically recommended by a Geotechnical Engineer or Engineering Geologist and approved by the Building Official.

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J107.8 Inspection of fill.

For engineered grading, the Geotechnical Engineer shall provide sufficient inspections during the preparation of the natural ground and the placement and compaction of the fill to ensure that the work is performed in accordance with the conditions of plan approval and the appropriate requirements of this Appendix. In addition to the above, the Geotechnical Engineer shall provide continuous inspection during the entire fill placement and compaction of fills that will exceed a vertical height or depth of 30 feet (9.1 m) or result in a slope surface steeper than 2 units horizontal to 1 unit vertical (50-percent slope).

J107.9 Testing of fills.

Sufficient tests of the fill soils shall be made to determine the density and to verify compliance of the soil properties with the design requirements. This includes soil types and shear strengths in accordance with Section J111 Referenced Standards.

SECTION 77. Section J108 is hereby amended to read as follows:

SECTION J108 SETBACKS

J108.1 General.

Cut and fill slopes shall be set back from the property lines in accordance with this sSection. Setback dimensions shall be measured perpendicular to the property line and shall be as shown in Figure J108.1, unless substantiating data is submitted justifying reduced setbacks, and reduced setbacks are recommended in a geotechnical engineering and engineering geology report approved by the Building Official.

J108.2 Top of slope.

The setback at the top of a cut slope shall be not less than that shown in Figure J108.1, or than is required to accommodate any required interceptor drains, whichever is greater. For graded slopes, the property line between adjacent lots shall be at the apex of the berm at the top of the slope. Property lines between adjacent lots shall not be located on a graded slope steeper than 5 units horizontal to 1 unit vertical (20-percent slope).

J108.3 Toe of fill sSlope protection.

The setback from the toe of a fill slope shall not be less than that shown by Figure J108.1. Where required to protect adjacent properties at the toe of a slope from adverse effects of the grading, additional protection, approved by the ~~b~~Building ~~o~~Official, shall be included. Examples of such protection may include but shall not be limited to:

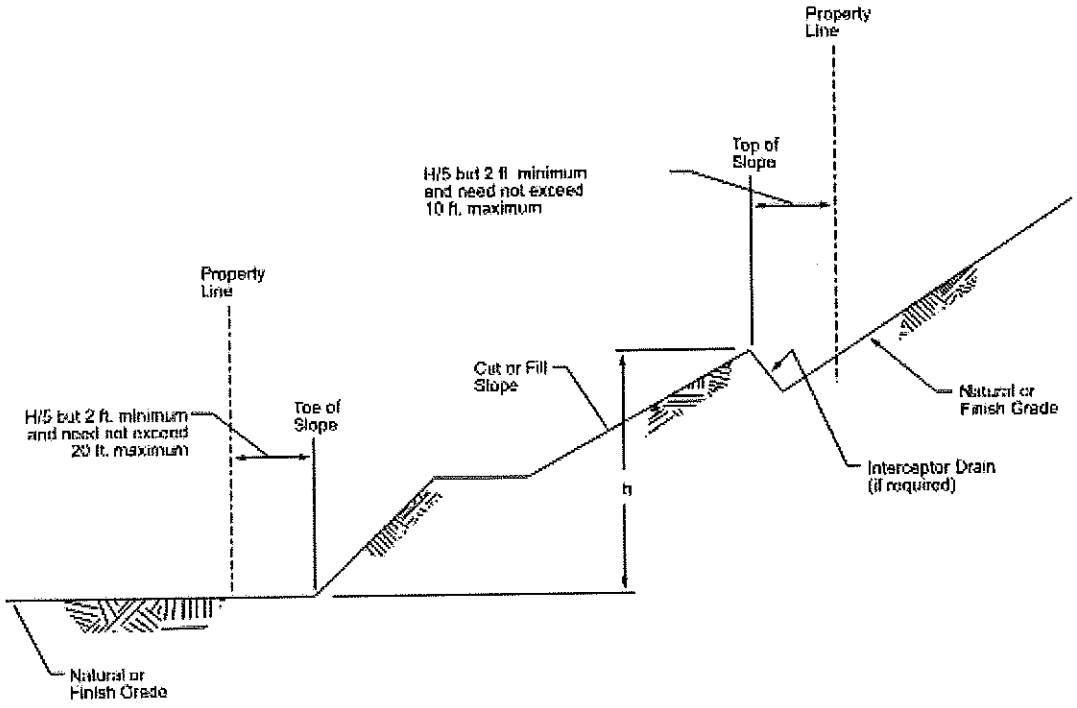
1. Setbacks greater than those required by Figure J108.1.
2. Provisions for retaining walls or similar construction.
3. Erosion protection of the fill slopes.
4. Provision for the control of surface waters.

J108.4 Alternate setbacks.

The Building Official may approve alternate setbacks if he or she determines that no hazard to life or property will be created or increased. The Building Official may require an investigation and recommendation by a qualified engineer or Engineering Geologist to justify any proposed alternate setback.

10/20/09

SECTION 78. Figure J108.1 is hereby amended to read as follows:



For SI: 1 foot = 304.8 mm.

FIGURE J108.1
~~DRAINAGE~~SETBACK DIMENSIONS

SECTION 79. Section J109 is hereby amended to read as follows:

SECTION J109 DRAINAGE AND TERRACING

J109.1 General.

Unless otherwise recommended by a ~~registered design professional~~licensed Civil Engineer and approved by the Building Official, drainage facilities and terracing shall be provided in accordance with the requirements of ~~this~~ sSection J109.2 for all cut and fill slopes 3 units horizontal to 1 unit vertical (33-percent slope) and steeper.

~~**EXCEPTION:** Drainage facilities and terracing need not be provided where the ground slope is not steeper than one unit vertical in three units horizontal (33-percent slope).~~

For slopes flatter than 3 units horizontal to 1 unit vertical (33-percent slope) and steeper than 5 units horizontal to 1 unit vertical (20-percent slope), a paved swale or ditch shall be installed at 30-foot (9.1 m) vertical intervals to control surface drainage and debris. Swales shall be sized based on contributory area and have adequate capacity to convey intercepted waters to the point of disposal as defined in Section J109.5. Swales must be paved with reinforced concrete not less than 3 inches (0.08 m) in thickness, reinforced with 6-inch (0.2 m) by 6-inch (0.2 m) No. 10 by No. 10 welded wire fabric or equivalent reinforcing centered in the concrete slab or an equivalent approved by the Building Official. Swales must have a minimum flow line depth of 1 foot (0.3 m) and a minimum paved width of 18 inches (0.5 m). Swales shall have a minimum gradient of not less than 5 percent. There shall be no reduction in grade along the direction of flow unless the velocity of flow is such that slope debris will remain in suspension on the reduced grade.

J109.2 Drainage ~~T~~terraces.

Drainage t~~T~~erraces not less than ~~6 feet (1829 mm)~~8 feet (2.4 m) in width shall be established at not more than 30-foot (9144 mm) vertical intervals on all cut or fill slopes to control surface drainage and debris. ~~Suitable access shall be provided to allow for cleaning and maintenance.~~

~~Where more than two terraces are required, one terrace, located at~~

~~approximately mid-height, shall be at least 12 feet (3658 mm) in width.~~

~~Swales or ditches shall be provided on terraces. They shall have a minimum gradient of one unit vertical in 20 units horizontal (5-percent slope) and shall be paved with concrete not less than 3 inches (76 mm) in thickness, or with other materials suitable to the application. They shall have a depth not less than 12 inches (305 mm) and a width not less than 5 feet (1524 mm).~~

~~A single run of swale or ditch shall not collect runoff from a tributary area exceeding 13,500 square feet (1256 m2) (projected) without discharging into a down drain~~When only one terrace is required, it shall be at mid-height. For cut or fill slopes greater than 100 feet (30.5 m) and up to 120 feet (36.6 m) in vertical height, one terrace at approximately mid-height shall be 20 feet (6.1 m) in width. Terrace widths and spacing for cut and fill slopes greater than 120 feet (36.6 m) in height shall be designed by the Civil Engineer and approved by the Building Official. Suitable access shall be provided to permit proper cleaning and maintenance.

Drainage swales on terraces shall have a longitudinal grade of not less than 5 percent nor more than 12 percent and a minimum depth of 1 foot (0.3 m) at the flow line. There shall be no reduction in grade along the direction of flow unless the velocity of flow is such that slope debris will remain in suspension on the reduced grade. Drainage swales must be paved with reinforced concrete not less than 3 inches (0.8 m) in thickness, reinforced with 6-inch (0.2 m) by 6-inch (0.2 m) No. 10 by No. 10 welded wire fabric or equivalent reinforcing centered in the concrete slab or an approved equal paving. Drainage swales shall have a minimum depth at the deepest point of 1 foot

(0.3 m) and a minimum paved width of 5 feet (1.5 m). Drainage swales on terraces shall be sized based on contributory area and have adequate capacity to convey intercepted waters to the point of disposal as defined in Section J109.5. Downdrains or drainage outlets shall be provided at approximately 300 foot (91.4 m) intervals along the drainage terrace or at equivalent locations. Down drains and drainage outlets shall be of approved materials and of adequate capacity to convey the intercepted waters to the point of disposal as defined in Section J109.5.

J109.3 Interceptor drains and overflow protection.

Berms, ~~i~~interceptor drains, swales, or other devices shall be installed along the top of cut slopes ~~receiving drainage from a tributary width greater than 40 feet (12 192 mm), measured horizontally~~to prevent surface waters from overflowing onto and damaging the face of a slope. Berms used for slope protection shall not be less than 12 inches (0.3 m) above the level of the pad and shall slope back at least 4 feet (1.2 m) from the top of the slope.

Interceptor drains shall be installed along the top of graded slopes greater than 5 feet in height receiving drainage from a slope with a tributary width greater than 30 feet (9.1 m), measured horizontally. They shall have a minimum depth of 1 foot (305 mm) and a minimum width of 3 feet (915 mm). The slope shall be approved by the ~~b~~Building ~~o~~Official, but shall be not less than one unit vertical in 50 units horizontal (2-percent slope). The drain shall be paved with concrete not less than 3 inches (76mm) in thickness, or by other materials suitable to the application, and reinforced as required

for drainage terraces. Discharge from the drain shall be accomplished in a manner to prevent erosion and shall be approved by the ~~b~~Building ~~o~~Official.

. . .

J109.5 Disposal.

All drainage facilities shall be designed to convey waters to the nearest-practicable street, storm drain, or natural watercourse or drainage way approved by the Building Official or other appropriate governmental agency, provided that the discharge of such waters at that location will not create or increase a hazard to life or property. Erosion of the ground in the area of discharge shall be prevented by installation of non-erosive down drains or other devices. Desilting basins, filter barriers, or other methods, as approved by the Building Official, shall be utilized to remove sediments from surface waters before such waters are allowed to enter streets, storm drains, or natural watercourses. If the drainage device discharges onto natural ground, riprap or a similar energy dissipator may be required.

Building pads shall have a minimum drainage gradient of 2 percent toward an approved drainage facility or a public street unless otherwise directed by the Building Official. A lesser slope may be approved by the Building Official for sites graded in relatively flat terrain, or where special drainage provisions are made, when the Building Official finds such modification will not result in a hazard to life or property.

SECTION 80. Section J110 is hereby amended to read as follows:

SECTION J110 SLOPE PLANTING AND EROSION CONTROL

J110.1 General.

The faces of cut and fill slopes shall be prepared and maintained to control erosion. This control shall ~~be permitted to~~ consist of effective planting, erosion control blankets, soil stabilizers, or other means as approved by the Building Official.

Exception: Erosion control measures need not be provided on cut slopes not subject to erosion due to the erosion-resistant character of the materials, as approved by the Project Consultants to the satisfaction of the Building Official.

. . .

J110.3 Planting.

The surface of all cut slopes more than 5 feet (1.5 m) in height and fill slopes more than 3 feet (0.9 m) in height shall be protected against damage from erosion by planting with grass or ground cover plants. Slopes exceeding 15 feet (4.6 m) in vertical height shall also be planted with shrubs, spaced at not to exceed 10 feet (3 m) on center, or trees, spaced at not to exceed 20 feet (6.1 m) on center; or a combination of shrubs and trees at an equivalent spacing, in addition to grass or ground cover plants. The plants selected and planting methods used shall be suitable for the soil and climatic conditions of the site.

Plant material shall be selected that will produce a coverage of permanent planting to effectively control erosion. Consideration shall be given to deep-rooted plant material needing limited watering, maintenance, high root to shoot ratio, wind susceptibility, and fire-retardant characteristics. All plant materials must be approved by the Building Official.

Planting may be modified for the site if specific recommendations are provided by both the Geotechnical Engineer and a Landscape Architect. Specific recommendations must consider soils and climatic conditions, irrigation requirements, planting methods, fire-retardant characteristics, water efficiency, maintenance needs, and other regulatory requirements. Recommendations must include a finding that the alternative planting will provide a permanent and effective method of erosion control. Modifications to planting must be approved by the Building Official prior to installation.

J110.4 Irrigation.

Slopes required to be planted by Section J110.3 shall be provided with an approved system of irrigation that is designed to cover all portions of the slope. Irrigation system plans shall be submitted to and approved by the Building Official prior to installation. A functional test of the system may be required.

For slopes less than 20 feet (6.1 m) in vertical height, hose bibs to permit hand watering will be acceptable if such hose bibs are installed at conveniently accessible locations where a hose no longer than 50 feet (15.2 m) is necessary for irrigation.

Irrigation requirements may be modified for the site if specific recommendations are provided by both the Geotechnical Engineer and a Landscape Architect. Specific recommendations must consider soils and climatic conditions, plant types, planting methods, fire-retardant characteristics, water efficiency, maintenance needs, and other regulatory requirements. Recommendations must include a finding that the alternative irrigation method will sustain the proposed planting and provide a permanent and

effective method of erosion control. Modifications for irrigation systems must be approved by the Building Official prior to installation.

J110.5 Plans and specifications.

Planting and irrigation plans shall be submitted for slopes that are required to be planted and irrigated pursuant to Sections J110.3 and J110.4. Except as otherwise required by the Building Official for minor grading, the plans for slopes 20 feet (6.1 m) or more in vertical height shall be prepared and signed by a Civil Engineer or Landscape Architect. If requested by the Building Official, planting and irrigation details shall be included on the grading plan.

J110.6 Rodent control.

Fill slopes shall be protected from potential slope damage by a preventative program of rodent control.

J110.7 Release of security.

The planting and irrigation systems required by this Section shall be installed as soon as practical after rough grading. Prior to final approval of grading and before the release of the grading security, the planting shall be well established and growing on the slopes, and there shall be evidence of an effective rodent control program.

J110.8 National Pollutant Discharge Elimination System (NPDES) compliance.

J110.8.1 General.

All grading plans and permits and the owner of any property on which such grading is performed shall comply with the provisions of this Section for NPDES compliance.

All best management practices shall be installed before grading begins or as instructed in writing by the Building Official for unpermitted grading as defined by Section J103.3. As grading progresses, all best management practices shall be updated as necessary to prevent erosion and to control construction-related pollutants from discharging from the site. All best management practices shall be maintained in good working order to the satisfaction of the Building Official until final grading approval has been granted by the Building Official and all permanent drainage and erosion control systems, if required, are in place. Failure to comply with this Section is subject to "Noncompliance Penalties" pursuant to Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

J110.8.2 Storm Water Pollution Prevention Plan (SWPPP).

The Building Official may require a SWPPP. The SWPPP shall contain details of best management practices, including desilting basins or other temporary drainage or control measures, or both, as may be necessary to control construction-related pollutants that originate from the site as a result of construction-related activities. When the Building Official requires a SWPPP, no grading permit shall be issued until the SWPPP has been submitted to and approved by the Building Official.

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For unpermitted grading as defined by Section J103.3, upon written request, a SWPPP in compliance with the provisions of this Section and Section 106.4.3 for NPDES compliance shall be submitted to the Building Official. Failure to comply with this Section is subject to "Noncompliance Penalties" per Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

J110.8.3 Erosion and Sediment Control Plans (ESCP).

Where a grading permit is issued and the Building Official determines that the grading will not be completed prior to November 1, the owner of the site on which the grading is being performed shall, on or before October 1, file or cause to be filed with the Building Official an ESCP. The ESCP shall include specific best management practices to minimize the transport of sediment and protect public and private property from the effects of erosion, flooding, or the deposition of mud, debris, or construction-related pollutants. The best management practices shown on the ESCP shall be installed on or before October 15. The plans shall be revised annually or as required by the Building Official to reflect the current site conditions.

The ESCP shall be accompanied by an application for plan checking services and plan-checking fees in an amount determined by the Building Official, up to but not exceeding 10 percent of the original grading permit fee.

Failure to comply with this Section is subject to "Noncompliance Penalties" pursuant to Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

10/20/

J110.8.4 Storm Water Pollution Prevention Plan (SWPPP), effect of noncompliance.

Should the owner fail to submit the SWPPP or the ESCP as required by Section J110.8, or fail to install the best management practices, it shall be deemed that a default has occurred under the conditions of the grading permit security. The Building Official may thereafter enter the property for the purpose of installing, by County forces or by other means, the drainage, erosion control, and other devices shown on the approved plans, or if there are no approved plans, as the Building Official may deem necessary to protect adjoining property from the effects of erosion, flooding, or the deposition of mud, debris, or constructed-related pollutants.

The Building Official shall also have the authority to impose and collect the penalties imposed by Section J110.8.5. Payment of a penalty shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work.

J110.8.5 Noncompliance penalties.

The amount of the penalties shall be as follows:

1. If a SWPPP or an ESCP is not submitted as prescribed in Sections J110.8.2 and J110.8.3:

Grading Permit Volume	Penalty
1-10,000 cubic yards (1-7645.5 m^3)	$50.00 per day
10,001-100,000 cubic yards (7646.3-76455 m^3)	$250.00 per day
More than 100,000 cubic yards (76455 m^3)	$500.00 per day

2. If the best management practices for storm water pollution prevention and wet weather erosion control, as approved by the Building Official, are not installed as prescribed in this Section J110.8:

Grading Permit Volume	Penalty
1-10,000 cubic yards (1-7645.5 m^3)	$100.00 per day
10,001-100,000 cubic yards (7646.3-76455 m^3)	$250.00 per day
More than 100,000 cubic yards (76455 m^3)	$500.00 per day

NOTE: See Section 108 for inspection request requirements.

SECTION 81. Section J111 is hereby amended to read as follows:

SECTION J111 REFERENCED STANDARDS

~~ASTM D1557-12~~	~~Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lb/ft^3 (2,700kN-m/m^3)].~~	~~J 107.5~~

These regulations establish minimum standards and are not intended to prevent the use of alternate materials, methods, or means of conforming to such standards, provided such alternate has been approved by the Building Official.

The Building Official shall approve such an alternate provided they determine that the alternate is, for the purpose intended, at least the equivalent of that prescribed in this Code in quality, strength, effectiveness, durability, and safety.

The Building Official shall require that sufficient evidence or proof be submitted to substantiate any claims regarding the alternate.

The standards listed below are recognized standards. Compliance with these recognized standards shall be prima facie evidence of compliance with the standards set forth in Sections J104 and J107.

ASTM D 1557 – Latest Revision	Laboratory Characteristics Compaction of Soil Using Modified Effort	J107.5
ASTM D 1556 – Latest Revision	Density and Unit Weight of Soils In Place by the Sand Cone Method	J104.2.3, J104.3 and J107.9
ASTM D 2167 – Latest Revision	Density and Unit Weight of Soils In Place by the Rubber Balloon Method	J104.2.3 J104.3 and J107.9
ASTM D 2937 – Latest Revision	Density of Soils in Place by the Drive Cylinder Method	J104.2.3 J104.3 and J107.9
ASTM D 2922 – Latest Revision	Density of Soil and Soil Aggregate In Place by Nuclear Methods	J104.2.3 J104.3 and J107.9
ASTM D 3017 – Latest Revision	Water Content of Soil and Rock in Place by Nuclear Methods	J104.2.3, J104.3 and J107.9

SECTION 82. Section P101.1 is hereby amended to read as follows:

P101.1 Scope.

This appendix ~~shall be applicable~~applies to emergency housing and emergency housing facilities, as defined in Section P102, when and to the extent that the County of Los Angeles Board of Supervisors ("Board") finds, by motion, resolution, or otherwise, that this appendix applies to a specific state of emergency, local emergency, or declaration of shelter crisis.

SECTION 83. Section P102.1 is hereby amended to read as follows:

P102.1 General.

. . .

ENFORCING AGENCY. The Building Official as defined in Section 104.3 of this Code.

. . .

SECTION 84. Section P103.1 is hereby amended to read as follows:

P103.1 General.

Emergency sleeping cabins, emergency transportable housing units, membrane structures and tents constructed and/or assembled in accordance with this appendix,

shall be occupied only during the duration of the declaration of state of emergency, local emergency, or shelter crisis.

. . .

SECTION 85. Section P103.4 is hereby amended to read as follows:

P103.4 Fire and life safety requirements not addressed in this appendix.

If not otherwise addressed in this appendix, fire and life safety measures, including, but not limited to, means of egress, fire separation, fire sprinklers, smoke alarms, and carbon monoxide alarms, shall be determined and enforced by the enforcing agency in consultation with the County Departments of Public Health, Fire, and other pertinent County departments, as applicable.

SECTION 86. Section P106.1 is hereby amended to read as follows:

P106.1 General.

. . .

Tents and membrane structures shall be provided with means of ventilation (natural and/or mechanical) allowing for adequate air replacement, as determined by the enforcing agency.

SECTION 87. Section P107.1 is hereby amended to read as follows:

P107.1 General.

Emergency housing shall comply with the applicable requirements in Chapter 11B and/or the US Access Board Final Guidelines for Emergency Transportable Housing as determined by the enforcing agency.

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. . .

SECTION 88. Section P110.1.1 is hereby added to read as follows:

P110.1.1 Backflow prevention.

Backflow prevention devices shall be provided in accordance with Section 602.3 of the Plumbing Code.

SECTION 89. Section P110.1.2 is hereby added to read as follows:

P110.1.2 Drinking fountains.

An adequate number of drinking fountains, bottle fillers, or drinking facilities shall be provided as determined by the enforcing agency.

SECTION 90. Section P110.3 is hereby amended to read as follows:

P110.3 Toilet and bathing facilities.

. . .

The maximum travel distance from any sleeping and/or living area to the toilet facility shall not exceed 300 feet (91.4 m) or as determined by the enforcing agency.

SECTION 91. The provisions of this ordinance contain various changes, modifications, and additions to the 2022 California Building Code. Some of those changes are administrative in nature in that they do not constitute changes or modifications to requirements contained in the building standards published in the California Building Standards Code.

Pursuant to California Health and Safety Code sections 17958.5, 17958.7, and 18941.5, the Board of Supervisors hereby expressly finds that all of the changes and modifications to requirements contained in the building standards published in the

California Building Standards Code that are contained in this ordinance are reasonably necessary because of local climatic, geological, or topographical conditions in the County of Los Angeles due to the potential for seismic activity in the region, topographical conditions that contribute to the spread of wild fires, and climatic conditions that impact air quality and increase the risk of wild fires. Without limiting the foregoing, the County makes additional findings herein:

BUILDING CODE AMENDMENTS

Code Section	Condition	Explanation of Amendment
106.3.2, Item 2	Administrative Geologic	The greater Los Angeles/Long Beach region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. Due to the risk of geologic activities in the Southern California area, buildings and structures require a high level of performance. This existing local enforcement provision limits the height of fences built without a permit in order to reduce the chance of failure of fences that may be built improperly. Because fences that are exempt from permits are constructed without the benefit of inspection to verify that proper construction methods are used, it has been observed that fences are commonly built without proper footings and/or reinforcement, which causes leaning and collapse of the fence.
701A.1	Climatic	Clarifies the application of Chapter 7A to include additions, alterations, and/or relocated buildings. Many areas of the County have been designated as Fire Hazard Severity Zones due to low humidity, strong winds, and dry vegetation. Additions, alterations, and/or relocated buildings have the same fire risk as new buildings.
701A.3	Climatic	Clarifies the application of Chapter 7A to include additions, alterations, and/or relocated buildings. Many areas of the County have been designated as Fire Hazard Severity Zones due to the increased risk of fire caused by low humidity, strong winds, and dry

Code Section	Condition	Explanation of Amendment
		vegetation. Additions, alterations, and/or relocated buildings have the same fire risk as new buildings.
701A.3.1	Climatic	Clarifies the application of Chapter 7A to include additions, alterations, and/or relocated buildings. Many areas of the County have been designated as Fire Hazard Severity Zones due to the increased risk of fire caused by low humidity, strong winds, and dry vegetation. Additions, alterations, and/or relocated buildings have the same fire risk as new buildings.
703A.5.2 and 703A.5.2.2	Climatic	Disallows the use of wood-shingle/wood-shake roofs due to the increased risk of fire in the County caused by low humidity, strong winds, and dry vegetation in high fire severity zones.
704A.4	Climatic	Disallows the use of wood-shingle/wood-shake roofs due to the increased risk of fire in the County caused by low humidity, strong winds, and dry vegetation in high fire severity zones.
705A.2	Climatic	Disallows the use of wood-shingle/wood-shake roofs and requires the use of Class A roof covering due to the increased risk of fire in the County caused by low humidity, strong winds, and dry vegetation in high fire severity zones.
1031.2.1	Geological	The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. The proposed amendment is intended to prevent occupants from being trapped in a building and to allow rescue workers to easily enter after an earthquake.
Table 1507.3.7	Geological	Table amended to require proper anchorage for clay or concrete tiles from sliding or rotating due to the increased risk of significant earthquakes in the County. This amendment incorporates the design provisions developed based on detailed study of the 1994 Northridge and the 1971 Sylmar earthquakes.
1613.5 and 1613.5.1	Geological	Observed damages to one- and two-family dwellings of light frame construction after the Northridge Earthquake may have been partially attributed to vertical irregularities common to this type of occupancy and construction. In an effort to improve quality of

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Code Section	Condition	Explanation of Amendment
		construction and incorporate lesson learned from studies after the Northridge Earthquake, the proposed modification to ASCE 7-16, Section 12.2.3.1, Exception 3, by limiting the number of stories and height of the structure to two stories will significantly minimize the impact of vertical irregularities and concentration of inelastic behavior from mixed structural systems. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
1613.5.2	Geological	A joint Structural Engineers Association of Southern California (SEAOSC), Los Angeles County and Los Angeles City Task Force investigated the performance of concrete and masonry construction with flexible wood diaphragm failures after the Northridge earthquake. It was concluded at that time that continuous ties are needed at specified spacing to control cross grain tension in the interior of the diaphragm. Additionally, there was a need to limit subdiaphragm allowable shear loads to control combined orthogonal stresses within the diaphragm. Recognizing the importance and need to continue the recommendation made by the task force while taking into consideration the improved performances and standards for diaphragm construction today, this proposal increases the continuous tie spacing limit to 40 ft in lieu of 25 ft and to use 75% of the allowable code diaphragm shear to determine the depth of the sub-diaphragm in lieu of the 300 plf and is deemed appropriate and acceptable. Due to the frequency of this type of failure during the past significant earthquakes, various jurisdictions within the Los Angeles region have taken this additional step to prevent roof or floor diaphragms from pulling away from concrete or masonry walls. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

1613.5.3	Geological	The inclusion of the importance factor in this equation has the unintended consequence of reducing the minimum seismic separation distance for important facilities such as hospitals, schools, police, and fire stations from adjoining structures. The proposal to omit the importance factor from Equation 12.12-1 will ensure that a safe seismic separation distance is provided. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.
1613.6	Geological Topographical	Section is added to improve seismic safety of buildings constructed on or into hillsides. Due to the local topographical and geological conditions of the sites within the greater Los Angeles/Long Beach region and their probabilities for earthquakes, this technical amendment is required to address and clarify special needs for buildings constructed on hillside locations. A SEAOSC and Los Angeles City Joint Task Force investigated the performance of hillside building failures after the Northridge earthquake. Numerous hillside failures resulted in loss of life and millions of dollars in damage. These criteria were developed to minimize the damage to these structures and have been in use by both the City and County of Los Angeles for several years with much success. This amendment is a continuation of an amendment adopted during previous code adoption cycles.
1613.7	Geological	The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. The proposed modification requiring safe design and construction requirements for ceiling suspension systems to resist seismic loads is intended to minimize the amount of damage within a building and therefore needs to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the California Building Code.

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1704.6	Geological Administrative	The language in section 1704.6 of the California Building Code permits the owner to employ any registered design professional to perform structural observations with minimum guidelines. However, it is important that the registered design professional responsible for the structural design has thorough knowledge of the building he/she designed. By requiring the registered design professional responsible for the structural design, or their designee, who was involved with the design to observe the construction, the quality of the observation for major structural elements and connections that affect the vertical and lateral load resisting systems of the structure will be greatly increased. Additional requirements are provided to help clarify the role and duties of the structural observer and the method of reporting and correcting observed deficiencies to the Building Official. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
1704.6.1	Geological	With the higher seismic demand placed on buildings and structures in this region, the language in section 1704.6.1, Item 3, of the California Building Code would permit many low-rise buildings and structures with complex structural elements to be constructed without the benefit of a structural observation. By requiring a registered design professional to observe the construction, the quality of the observation for major structural elements and connections that affect the vertical and lateral load resisting systems of the structure will be greatly increased. An exception is provided to permit simple structures and buildings to be excluded. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
1705.3	Geological	Results from studies after the 1994 Northridge Earthquake indicated that a significant portion of the damage was attributable to lack of quality control during construction resulting in poor performance of the building or structure. Therefore, the amendment restricts the exceptions to the requirement for special

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		inspection. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
1705.13	Geological	In Southern California, very few detached one- or two-family dwellings not exceeding two stories above grade plane are built as "box-type" structures specially for those in hillside areas and near the oceanfront. Many with steel moment frames or braced frames, and/or cantilevered columns, can still be shown as "regular" structures by calculations. With the higher seismic demand placed on buildings and structures in this region, the language in section 1705.13, Item 3, of the California Building Code would permit many detached one- or two-family dwellings not exceeding two stories above grade plane with complex structural elements to be constructed without the benefit of special inspections. By requiring special inspections, the quality of major structural elements and connections that affect the vertical and lateral load resisting systems of the structure will be greatly increased. The exception should only be allowed for detached one- or two-family dwellings not exceeding two stories above grade plane assigned to Seismic Design Categories A, B, and C.
1807.1.4	Climatic Geological	No substantiating data has been provided to show that a wood foundation is effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effect of constant moisture in the soil and wood-destroying organisms. Wood retaining walls, when they are not properly treated and protected against deterioration, have performed very poorly and have led to slope failures. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic events and wet applications. The proposed amendment takes the necessary precautionary steps to reduce or eliminate potential problems that may result by using wood foundations that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms.

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		This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the local climate and the increased risk of significant earthquakes in the County.
1807.1.6	Geological	With the higher seismic demand placed on buildings and structures in this region, it is necessary to take precautionary steps to reduce or eliminate potential problems that may result by following prescriptive design provisions that do not take into consideration the surrounding environment. Plain concrete performs poorly in withstanding the cyclic forces resulting from seismic events. In addition, no substantiating data has been provided to show that under-reinforced foundation walls are effective in resisting seismic loads, and may potentially lead to a higher risk of failure. It is important that the benefit and expertise of a registered design professional be obtained to properly analyze the structure and take these issues into consideration. This amendment is a continuation of an amendment adopted during previous code adoption cycles.
1807.2	Climatic, Geological	No substantiating data has been provided to show that wood foundation systems are effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effects of constant moisture in the soil and wood-destroying organisms. Wood foundation systems not properly treated and protected against deterioration have performed very poorly and have led to slope failures. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic events and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result in using wood foundation systems that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

1807.3.1	Climatic, Geological	No substantiating data has been provided to show that wood foundation systems are effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effects of constant moisture in the soil and wood-destroying organisms. Wood foundation systems not properly treated and protected against deterioration have performed very poorly and have led to slope failures. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic events and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result in using wood foundation systems that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.
1809.3 and Figure 1809.3	Geological	With the higher seismic demand placed on buildings and structures in this region, it is necessary to take precautionary steps to reduce or eliminate potential problems that may result for under-reinforced footings located on sloped surfaces. Requiring minimum reinforcement for stepped footings is intended to address the problem of poor performance of plain or under-reinforced footings during a seismic event. This amendment is a continuation of an amendment adopted during previous code adoption cycles.
1809.7 and Table 1809.7	Geological	No substantiating data has been provided to show that under-reinforced footings are effective in resisting seismic loads, and therefore they may potentially lead to a higher risk of failure. This amendment requires minimum reinforcement in continuous footings to address the problem of poor performance of plain or under-reinforced footings during a seismic event. With the higher seismic demand placed on buildings and structures in this region, it is necessary to take precautionary steps to reduce or eliminate potential

		problems that may result by following prescriptive design provisions for footings that do not take into consideration the surrounding environment. It is important that the benefit and expertise of a registered design professional be obtained to properly analyze the structure and take these factors into consideration. This amendment reflects the recommendations by the SEAOSC and the Los Angeles City Joint Task Force, which investigated the performance deficiencies observed in the 1994 Northridge Earthquake. This amendment is a continuation of an amendment adopted during previous code adoption cycles.
1809.12	Climatic Geological	No substantiating data has been provided to show that timber footings are effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effects of constant moisture in the soil and wood-destroying organisms. Timber footings, when they are not properly treated and protected against deterioration, have performed very poorly. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic events and wet applications. The proposed amendment takes the necessary precautionary steps to reduce or eliminate potential problems, which may result by using timber footings that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the local climate and the increased risk of significant earthquakes in the County.
1810.3.2.4	Climatic Geological	No substantiating data has been provided to show that timber footings are effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effects of constant moisture in the soil and wood-destroying organisms. Timber footings, when they are not properly treated and protected against deterioration, have performed very poorly. Most contractors are

		typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic events and wet applications. The proposed amendment takes the necessary precautionary steps to reduce or eliminate potential problems that may result by using timber footings that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the local climate and the increased risk of significant earthquakes in the County.
1905.1	Geological	This amendment is intended to carry over critical provisions for the design of concrete columns in moment frames from the legacy 1997 Uniform Building Code. Increased confinement is critical to the integrity of such columns and these modifications ensure that it is provided when certain thresholds are exceeded. In addition, this amendment carries over from the legacy 1997 Uniform Building Code a critical provision for the design of concrete shear walls. It essentially limits the use of very highly gravity-loaded walls in being included in the seismic load resisting system, since their failure could have catastrophic effect on the building. Furthermore, this amendment was incorporated in the code based on observations from the 1994 Northridge Earthquake. Rebar placed in very thin concrete topping slabs have been observed in some instances to have popped out of the slab due to insufficient concrete coverage. This modification ensures that critical boundary and collector rebars are placed in sufficiently thick topping slab to prevent buckling of such reinforcements. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
1905.1.7	Geological	This amendment requires minimum reinforcement in continuous footings to address the problem of poor performance of plain or under-reinforced footings during a seismic event. This amendment reflects the

		recommendations by the SEAOSC and the Los Angeles City Joint Task Force, which investigated the poor performance observed in the 1994 Northridge Earthquake. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
1905.1.8 through 1905.1.11	Geological	These amendments are intended to carry over critical provisions for the design of concrete columns in moment frames from the Uniform Building Code (UBC). Increased confinement is critical to the integrity of such columns and these modifications ensure that it is provided when certain thresholds are exceeded. In addition, this amendment carries over from the UBC a critical provision for the design of concrete shear walls. It essentially limits the use of very highly gravity-loaded walls from being included in the seismic load resisting system, since their failure could have a catastrophic effect on the building. Furthermore, this amendment was incorporated into this Code based on observations from the 1994 Northridge Earthquake. Rebar placed in very thin concrete topping slabs has been observed in some instances to have popped out of the slab due to insufficient concrete coverage. This modification ensures that critical boundary and collector rebars are placed in sufficiently thick slabs to prevent buckling of such reinforcements. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
2304.10.2 and Table 2304.10.2	Geological	Due to the high geologic activities in the Southern California area and the expected higher level of performance on buildings and structures, this proposed local amendment limits the use of staple fasteners in resisting or transferring seismic forces. In September 2007, limited cyclic testing data was provided to the ICC, Los Angeles Chapter Structural Code Committee, showing that stapled wood structural shear panels do not exhibit the same behavior as nailed wood structural shear panels. The test results of stapled wood structural shear panels demonstrated much lower strength and drift than nailed wood structural shear panel test results. Therefore, the use of staples as fasteners to resist or transfer seismic forces shall not be

		permitted without being substantiated by cyclic testing. This amendment is a continuation of a similar amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
2304.10.3.1	Geological	The overdriving of nails into the structural wood panels still remains a concern when pneumatic nail guns are used for wood structural panel shear wall nailing. Box nails were observed to cause massive and multiple failures of the typical 3/8-inch thick plywood during the 1994 Northridge Earthquake. The use of clipped head nails continues to be restricted from use in wood structural panel shear walls where the minimum nail head size must be maintained in order to minimize nails from pulling through sheathing materials. Clipped or mechanically driven nails used in wood structural panel shear wall construction were found to perform much worse in previous wood structural panel shear wall testing done at the University of California Irvine. The existing test results indicated that, under cyclic loading, the wood structural panel shear walls were less energy absorbent and less ductile. The panels reached ultimate load capacity and failed at substantially less lateral deflection than those using same-size hand-driven nails. This amendment reflects the recommendations by the SEAOSC and the Los Angeles City Joint Task Force, which investigated the poor performance observed in the 1994 Northridge Earthquake. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
2304.12.2.8	Climatic Geological	No substantiating data has been provided to show that wood used in retaining or crib walls is effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effect of constant moisture in the soil and wood-destroying organisms. Wood used in retaining or crib walls, when it is not properly treated and protected against deterioration, has performed very poorly. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment

		of wood that makes it suitable for both seismic events and wet applications. The proposed amendment takes the necessary precautionary steps to reduce or eliminate potential problems that may result by using wood in retaining or crib walls, which experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the local climate and the increased risk of significant earthquakes in the County.
2305.4	Geological	Many of the hold-down connectors currently in use do not have any acceptance report based on dynamic testing protocols. This amendment continues to limit the allowable capacity to 75% of the acceptance report value to provide an additional factor of safety for statically tested anchorage devices. Cyclic forces imparted on buildings and structures by seismic activity cause more damage than equivalent forces that are applied in a static manner. Steel plate washers will reduce the additional damage that can result when hold-down connectors are fastened to wood framing members. This amendment reflects the recommendations by the SEAOSC and the Los Angeles City Joint Task Force, which investigated the poor performance observed in the 1994 Northridge Earthquake. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
2306.2 2306.3 2307.2 2308.6.5.1 2308.6.5.2 Figure 2308.6.5.1 and Figure 2308.6.5.2	Geological	The SEAOSC and the Los Angeles City Joint Task Force that investigated damage to buildings and structures during the 1994 Northridge Earthquake recommended reducing allowable shear values in wood structural panel shear walls or diaphragms that were not substantiated by cyclic testing. That recommendation was consistent with a report to the Governor from the Seismic Safety Commission of the State of California recommending that code requirements be "more thoroughly substantiated with testing." The allowable shear values for wood structural panel shear walls or diaphragms fastened

		with staples are based on monotonic testing and do not take into consideration that earthquake forces load shear wall or diaphragm in a repeating and fully reversible manner. In September 2007, limited cyclic testing was conducted by a private engineering firm to determine if wood structural panels fastened with staples would exhibit the same behavior as wood structural panels fastened with common nails. The test result revealed that wood structural panels fastened with staples demonstrated much lower strength and stiffness than wood structural panels fastened with common nails. It was recommended that the use of staples as fasteners for wood structural panel shear walls or diaphragms not be permitted to resist seismic forces in structures assigned to Seismic Design Categories D, E, and F unless it can be substantiated by cyclic testing. Furthermore, the cities and unincorporated areas within the greater Los Angeles/Long Beach region have taken extra measures to maintain the structural integrity of the framing of shear walls and diaphragms designed for high levels of seismic forces by requiring wood sheathing be applied directly over the framing members and prohibiting the use of panels placed over gypsum sheathing. This amendment is intended to prevent the undesirable performance of nails when gypsum board softens due to cyclic earthquake displacements and the nail ultimately does not have any engagement in a solid material within the thickness of the gypsum board. This amendment continues the previous amendment adopted during the 2007 code adoption cycle.
2308.6.8.1	Geological	With the higher seismic demand placed on buildings and structures in this region, interior walls can easily be called upon to resist over half of the seismic loading imposed on simple buildings or structures. Without a continuous foundation to support the braced wall line, seismic loads would be transferred through other elements such as non-structural concrete slab floors, wood floors, etc. The purpose of this amendment is to limit the use of the exception to structures assigned to Seismic Design Category A, B, or C where lower seismic demands are expected. Requiring interior braced walls be supported by continuous foundations is intended to reduce or eliminate the poor performance of

		buildings or structures. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
Table 2308.6.1	Geological	This amendment specifies minimum sheathing thickness and nail size and spacing so as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands placed on buildings or structure in this region. This proposed amendment reflects the recommendations by the SEAOSC and the Los Angeles City Joint Task Force, which investigated the performance deficiencies observed in the 1994 Northridge Earthquake. This amendment is a continuation of an amendment adopted during previous code adoption cycles, and is necessary due to the increased risk of significant earthquakes in the County.
2308.6.9	Geological	Due to the high geologic activities in the Southern California area and the required higher level of performance of buildings and structures, this amendment limits the use of staple fasteners in resisting or transferring seismic forces. In September 2007, limited cyclic testing data was provided to the ICC, Los Angeles Chapter Structural Code Committee, showing that stapled wood structural shear panels do not exhibit the same behavior as nailed wood structural shear panels. The test results of stapled wood structural shear panels demonstrated much lower strength and drift than nailed wood structural shear panel test results. Therefore, the use of staples as fasteners to resist or transfer seismic forces shall not be permitted without being substantiated by cyclic testing. This amendment is a continuation of a similar amendment adopted during previous code adoption cycles.
3115; Table 3115.8.5.3	Climatic, Geologic	The greater Los Angeles/Long Beach region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the recent 1994 Northridge Earthquake. The region is further impacted by construction of buildings and structures utilizing traditional construction materials that impact the amount of energy, air quality,

		greenhouse gas emission and construction waste in the area. The proposed amendment addresses structural design requirements specific to intermodal shipping containers, reduce environmental impact of unused and unrecycled intermodal shipping containers, and increase sustainability by reducing consumption of traditional construction materials. The proposed modification needs to be incorporated into the code to assure that new buildings and additions to existing buildings utilizing intermodal shipping containers are designed and constructed in accordance with the scope and objectives of the California Building Code and California Green Building Standards Code
Appendix C	Climatic, Geologic, Voluntary appendix	Los Angeles County is a diverse region with both densely populated urban areas and rural areas with various agricultural and animal husbandry establishments. Many areas of the County have been designated as Fire Hazard Severity Zones due to the increased risk of fire caused by low humidity, strong winds, and dry vegetation, particularly the rural areas, which are often used for agricultural purposes. Furthermore, the greater Los Angeles/Long Beach region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. Due to the need for agricultural buildings to perform appropriately in the County due to its geology and climate, adoption of building standards for such structures is required.
Appendix H	Climatic, Geologic, Voluntary appendix	Los Angeles County is a diverse region with both densely populated urban areas and rural areas with various signs used in the County. The Los Angeles region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. In addition, weather events occur seasonally with high winds such as the Santa Ana Winds. Due to the need for signs to perform well in the County due to its climate and geology, adoption of building standards for signs is required.
H103.1	Geologic, Administrative, Voluntary appendix	Los Angeles County is a diverse region with both densely populated urban areas and rural areas with various signs used in the County. The greater Los Angeles/Long Beach region is situated over a vast

		array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. This provision is amended to cross-reference to applicable legal provisions and also to ensure that signs are located in such a way as to avoid damage to adjacent structures and people given the potential for earthquakes in the County.
H103.2	Geologic, Administrative, Voluntary appendix	Los Angeles County is a diverse region with both densely populated urban areas and rural areas with various signs used in the County. The greater Los Angeles/Long Beach region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. This provision is amended to cross-reference to applicable legal provisions and also to ensure that sign projections and clearances are located in such a way as to avoid damage to adjacent structures and people given the potential for earthquakes in the County.
H104.1	Geologic, Voluntary appendix	The greater Los Angeles/Long Beach region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. Due to the risk of geologic activities in the Southern California area, buildings and structures require a high level of performance, which is directly proportional to the weight of a structure. By adding the weight of a sign to the identification placard, it will improve the ability to provide structural verification in the event of damage or future modifications.
H105.1	Administrative, Voluntary appendix	The amendment provides a cross reference to Chapter 24 for user convenience.
H106.1, H106.2	Administrative, Voluntary appendix	This change corrects a call out from the model electrical code to the relevant local electrical code and clarifies that a separate electrical permit is required for user convenience.
H110.1	Climatic, Voluntary appendix	Due to the potential for severe local weather conditions with torrential rain, it is necessary to clarify that no portions of the roof sign and supporting members may interfere with proper roof drainage to prevent the potential for roof collapse due to water accumulation.

H116	Climatic, Voluntary appendix	Due to the potential for severe local weather with high speed winds and hot, dry conditions, it is necessary that the most recent test standards as specified in Chapter 35 are adopted in lieu of the older test standards specified in Section H116. This ensures that the risk from fires is minimized.
J101.1 to J101.9	Geological Topographical Climatic	Sections revised to include erosion and sediment control measures to address the complex and diverse set of soil types and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J101.10	Geological Topographical Climatic	Section revised to maintain safety and integrity of public or private property adjacent to grading sites due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J103.1 – J103.2 and Figure J103.2	Geological Topographical Climatic	Sections revised to provide adequate control of grading operations typical to the greater Los Angeles County/Long Beach region due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J104.2.1 – J104.4	Geological Topographical Climatic	Sections revised or added to provide adequate control of grading operations typical to the greater Los Angeles County/Long Beach region due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J105.1-J105.14	Geological Topographical Climatic	Sections revised or added to provide adequate control of grading operations typical to the greater Los Angeles County/Long Beach region due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J106.1	Geological Topographical Climatic	Section revised to require more stringent cut slope ratios to address the complex and diverse set of soil types and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J107.1-J107.7	Geological Topographical Climatic	Sections revised to provide more stringent fill requirements for slope stability and settlement due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.

J107.8 – J107.9	Geological Topographical Climatic	Sections revised to provide more stringent inspection and testing requirements for fill slope stability due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J108.1 – J108.4	Geological Topographical Climatic	Sections revised to provide more stringent slope setback requirements to address the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J109.1 – J109.3	Geological Topographical Climatic	Sections revised to provide more stringent drainage and terracing requirements to address the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J109.5	Geological Topographical Climatic	Subsection added to provide for adequate outlet of drainage flows due to the diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J110.1 - J110.8.5	Geological Topographical Climatic	Sections revised or added to provide for State requirements of storm water pollution prevention and more stringent slope planting, and slope stability requirements to control erosion due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
J111	Geological Topographical Climatic	Section revised to reference additional standards for soils testing due to the complex and diverse set of soil types, climates, and geologic conditions that exist in the greater Los Angeles County/Long Beach region.
Appendix P P101.1, P102.1, P103.1, P103.4, P107.1	Administrative, Voluntary appendix Climatic Geologic Topographical	Adoption of this appendix is necessary because strict compliance with State and local standards and laws would prevent, hinder, or delay the mitigation of the effects of a declared shelter crisis, local emergency or state of emergency. The modifications to this appendix are administrative in nature, to provide clarification of various provisions of the language of this voluntary Appendix.

P106.1	Climatic	Los Angeles County is subject to extreme temperatures, and many of these membrane structures will be erected and occupied during severe weather events. It is necessary to include this amendment to ensure the safety, health, and comfort of the occupants is maintained during extreme heat and cold.
P110.1.1, P110.1.2	Administrative	These sections are a cross reference to the State Plumbing Code requirement for user convenience and is not adding a new building standard nor enacting a more restrictive requirement. To the extent findings are requested, see prefatory language in this Section.
P110.3	Climatic, Voluntary appendix	The County may utilize mobile restroom facilities that are physically separate from the living facilities. Due to the potential for severe local weather conditions, with extreme temperatures or torrential rain, the distance to the restroom facilities required for the comfort, safety, and health of displaced people should be reduced to 300 feet or as determined by the Building Official.

SECTION 92. This ordinance shall become operative on January 1, 2023.

[TITLE26BUILDINGCODE2022CSCC]

10/31/22

ANALYSIS

This ordinance repeals those provisions of Title 33 – Existing Building Code – of the Los Angeles County Code that incorporated by reference portions of the 2019 California Existing Building Code, and replaces them with provisions incorporating by reference portions of the 2022 California Existing Building Code, published by the California Building Standards Commission, with certain changes and modifications. Unless deleted or modified herein, the previously-enacted provisions of Title 33 continue in effect.

State law requires that the County's Existing Building Code impose the same requirements as are contained in the building standards published in the most recent edition of the California Existing Building Code, except for changes or modifications deemed reasonably necessary by the County because of local climatic, geological, or topographical conditions.

The changes and modifications to requirements contained in the building standards published in the 2022 California Existing Building Code that are contained in this ordinance are based upon express findings, contained in the ordinance, that such changes are reasonably necessary due to local climatic, geological, or topographical conditions. This ordinance also makes certain modifications to the administrative portions of Title 33, and incorporates by reference certain administrative provisions contained in Title 26 – Building Code – of the Los Angeles County Code.

DAWYN R. HARRISON
Acting County Counsel

Carole Suzuki

By
CAROLE B. SUZUKI
Senior Deputy County Counsel
Public Works Division

CBS:rm

Requested: 07/12/22
Revised: 09/28/22

HOA.103776698.5

10/31/22

ORDINANCE NO. _____

An ordinance amending Title 33 – Existing Building Code – of the Los Angeles County Code, to adopt and incorporate by reference the 2022 California Existing Building Code, with certain changes and modifications.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Chapters 2 through 4, 15, and 16, and Appendix A, Chapters A1, A3, A4, and A5 of this Title 33 of the Los Angeles County Code, which incorporated by reference, and modified, portions of the 2019 California Existing Building Code, are hereby repealed.

SECTION 2. Chapter 1 is hereby amended to read as follows:

100 ADOPTION AND INCORPORATION BY REFERENCE

Except as hereinafter changed or modified, Sections 102 through 119 of Chapter 1 of Title 26 of the Los Angeles County Code are adopted and incorporated by reference into this Title 33 of the Los Angeles County Code as if fully set forth below, and shall be known as Sections 102 through 119 of Chapter 1 of Title 33 of the Los Angeles County Code.

Except as hereinafter changed or modified, Chapters 2 through ~~4~~5, 15, and 16, and Appendix A, Chapters A1, A3, A4, and A5, of that certain code known and designated as the ~~2019~~2022 California Existing Building Code, as published by the California Building Standards Commission, are adopted and incorporated by reference into this Title 33, as if fully set forth below, and shall be known as Chapters 2 through ~~4~~

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5, 15 and 16, and Appendix A, Chapters A1, A3, A4, and A5 of Title 33 of the Los Angeles County Code.

A copy of the ~~2019~~2022 California Existing Building Code shall be at all times maintained by the Building Official for use and examination by the public.

SECTION 3. Section 302.6 is hereby added to read as follows:

302.6 Parapets and appendages.

302.6.1 General compliance. Whenever the Building Official determines by inspection that, as a result of inadequate construction or bracing to resist horizontal forces, an existing parapet or appendage attached to and supported by an exterior wall of a building is likely to become a hazard to life or property in the event of earthquake disturbance, and such parapet or appendage is not an immediate hazard or danger, as described in Section 102, the Building Official may provide the owner of the building or other person or agent in control of the building, where such parapet or other appendage exists, with a written notice specifying the hazards and the inadequacies of the construction or bracing. The owner of the building or other person or agent in control of the building shall, within 12 months from the date of such written notice, eliminate the hazard as set forth below. Any person receiving notice as set out in this Section may appeal, in the manner provided by Section 102.4, to the Building Board of Appeals.

302.6.2 Wall anchor. The parapet or appendage shall be removed and the remainder of the wall shall be anchored at the roof line, or it shall be reconstructed so that it will conform structurally as nearly as practicable to the

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requirements of Chapter 16 of the Building Code, or it shall be otherwise braced and strengthened in a manner satisfactory to the Building Official, so that it will resist a reasonable degree of horizontal forces without becoming dislodged or at risk of falling.

302.6.3 Inspection of existing condition. Where, in the opinion of the Building Official, it is necessary to open a portion of a roof, wall, or ceiling of a building in order to determine the structural condition of any parapet or appendage, the Building Official may order the owner to make such opening, and the owner shall comply with said order at the owner's sole cost and expense.

SECTION 4. Section 302.7 is hereby added to read as follows:

302.7 Existing glass. Whenever the Building Official determines by inspection that an existing glass installation, in rooms having an occupant load of more than 100 persons or a means of egress serving an occupant load of more than 100 persons, as determined by Chapter 10 of the Building Code, is likely to become a hazard in the event of accidental human impact, as described in Section 2406.4 of the Building Code, and such installation does not comply with the provisions for glazing in such locations, the Building Official may provide the owner of the building or other person or agent in control of the building where such glazing exists with a written notice of such condition. The owner of the building or other person or agent in control of the building shall, within 90 days after receiving said notice, replace such glass or otherwise cause the installation to conform to the requirements of the Building Code.

SECTION 5. Section A401.2 is hereby amended to read as follows:

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A401.2 Scope. The provisions of this ~~c~~Chapter ~~apply to~~may be used for voluntary seismic improvements to existing buildings of wood construction that contain residential occupancies and are assigned to Risk Category II, and where the structure has a soft, weak, or open-front wall line, and there exists one or more stories above.

SECTION 6. Section A403.1 is hereby amended to read as follows:

[BS] A403.1 General. Modifications required by the provisions in this ~~c~~Chapter shall be designed in accordance with the ~~California~~ Building Code provisions for new construction, except as modified by this ~~c~~Chapter.

Exception: Buildings for which the prescriptive measures provided in Section A404 apply and are used.

Alteration of the existing lateral force-resisting system or vertical load-carrying system shall not reduce the strength or stiffness of the existing structure, unless the altered structure would remain in conformance to the ~~b~~Building ~~c~~Code and this ~~c~~Chapter.

SECTION 7. Section A404.1 is hereby amended to read as follows:

[BS] A404.1 Limitation. These prescriptive measures shall apply only to two-story buildings and only when deemed appropriate by the ~~code~~Building ~~o~~Official. These prescriptive measures rely on rotation of the second floor diaphragm to distribute the seismic load between the side and rear walls around a ground floor open area. In the absence of an existing floor diaphragm of wood structural panel or diagonal sheathing at the top of the first story, a new wood structural panel diaphragm of

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minimum thickness of ¾ inch (19.1 mm) and with 10d common nails at 6 inches (152 mm) on center shall be applied. A California licensed architect or engineer shall demonstrate compliance with the requirements of Section A404.1 and shall approve and stamp the construction documents.

SECTION 8. Section A405.1 is hereby amended to read as follows:

[BS] A405.1 New materials. New materials shall meet the requirements of the California-Building Code, except where allowed by this ~~c~~Chapter.

SECTION 9. Section A407.1 is hereby amended to read as follows:

[BS] A407.1 Structural observation.

Structural observation, in accordance with Section 1704.6 of the California Building Code, is required, regardless of seismic design category, height, or other conditions. Structural observation shall include visual observation of work for conformance to the approved construction documents and confirmation of existing conditions assumed during design.

SECTION 10. Section A407.3 is hereby amended to read as follows:

[BS] A407.3 Testing and inspection.

Structural testing and inspection for new construction materials, submittals, reports and certificates of compliance shall be in accordance with Sections 1704 and 1705 of the California Building Code. Work done to comply with this ~~c~~Chapter shall not be eligible for Exceptions 1, 2, or 3 of Section 1704.2 of the California Building Code or for the exception to Section 1705.13.2 of the California Building Code.

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SECTION 11. The provisions of this ordinance contain various changes, modifications, and additions to the 2022 Edition of the California Existing Building Code. Some of these changes are administrative in nature in that they do not constitute changes or modifications to requirements contained in the building standards published in the California Existing Building Code.

Pursuant to California Health and Safety Code sections 17958.5, 17958.7, and 18941.5, the Board of Supervisors hereby expressly finds that all of the changes and modifications to requirements contained in the building standards published in the California Building Standards Code contained in this ordinance are reasonably necessary because of local climatic, geological, or topographical conditions in the County of Los Angeles due to the potential for seismic activity in the region, topographical conditions that contribute to the spread of wild fires, and climatic conditions that impact air quality and increase the risk of wild fires. Without limiting the foregoing, the County makes additional findings herein:

EXISTING BUILDING CODE AMENDMENTS		
CODE SECTION	**CONDITION**	**EXPLANATION**
302.6.1 to 302.6.3	Geologic	The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. The purpose of the amendments is to prevent inadequate construction or bracing to increase resistance to horizontal forces, thus minimizing hazards to life or property in the event of an earthquake.

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302.7	Geologic	The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. The purpose of the amendment is to minimize injuries caused by shattering glass in the event of an earthquake.
A401.2	Geologic, Administrative, Voluntary Appendix	The greater Los Angeles/Long Beach region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. The purpose of this amendment is to provide voluntary building standards to constituents that are performing seismic retrofitting for existing structures.
A404.1	Administrative, Geologic, Voluntary Appendix	The greater Los Angeles/Long Beach region is situated over a vast array of earthquake fault systems capable of producing major earthquakes, including, but not limited to, the 1994 Northridge Earthquake. The purpose of this amendment is to provide voluntary building standards to constituents that are performing seismic retrofitting for existing structures. Due to these factors, the County requires a licensed architect or engineer stamp and approval of the construction documents.

SECTION 12. This ordinance shall become operative on January 1, 2023.

[TITLE33EXISTINGBUILDCODE2022CSCC]

10/31/22

ANALYSIS

This ordinance repeals those provisions of Title 30 – Residential Code – of the Los Angeles County Code that had incorporated by reference portions of the 2019 Edition of the California Residential Code, and replaces them with provisions incorporating by reference portions of the 2022 California Residential Code, published by the California Building Standards, with certain changes and modifications.

State law requires that the County adopt ordinances that contain the same requirements as are contained in the building standards published in the California Residential Code. State law allows the County to change or modify these requirements only if it determines that such changes or modifications are reasonably necessary because of local climatic, geological, or topographical conditions.

The changes and modifications to requirements contained in the building standards published in the 2022 California Residential Code that are contained in this ordinance are based upon express findings, contained in the ordinance, that such changes are reasonably necessary due to local climatic, geological, or topographical conditions.

DAWYN R. HARRISON
Acting County Counsel

By Carole Suzuki

CAROLE B. SUZUKI
Senior Deputy County Counsel
Public Works Division

CBS:rm

Requested: 08/04/22
Revised: 09/29/22

10/31/22

ORDINANCE NO. _____

An ordinance amending Title 30 – Residential Code – of the Los Angeles County Code, by adopting and incorporating by reference the 2022 California Residential Code, with certain changes and modifications.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Chapters 2 through 10, Chapter 44, and Appendices H, Q, S, and X, of Title 30 of the Los Angeles County Code, which incorporate by reference, and modify, portions of the 2019 California Residential Code, are hereby repealed.

SECTION 2. Chapter 1 is hereby amended to read as follows:

R100 ADOPTION AND INCORPORATION BY REFERENCE

Except as hereinafter changed or modified, Sections 102 through 119 of Chapter 1, Section 1206 of Chapter 12, and Chapters 67, 68, 69, 98, 99, and Appendix J of Title 26 of the Los Angeles County Code are adopted and incorporated by reference into this Title 30 as if fully set forth below, and shall be known as Sections 102 through 119 of Chapter 1, Section 1206 of Chapter 12, and Chapters 67, 68, 69, 98, 99, and Appendix J of Title 30 of the Los Angeles County Code.

Except as hereinafter changed or modified, Chapters 2 through 10, Chapter 44, and Appendices AH, AQ, AS, and ~~X~~AZ, of that certain code known and designated as the ~~2019~~2022 California Residential Code as published by the California Building Standards Commission are adopted and incorporated by reference into this Title 30 as if fully set forth below, and shall be known as Chapters 2 through 10, Chapter 44, and Appendices AH, AQ, AS, and ~~X~~AZ, of Title 30 of the Los Angeles County Code. A copy

of the ~~2019~~2022 California Residential Code shall be at all times maintained by the Building Official for use and examination by the public.

R101 TITLE, PURPOSE, AND INTENT

. . .

R101.3 Scope.

. . .

Exceptions:

1. Live/work units complying with the requirements of Section ~~419~~508.5 of the Los Angeles County Building Code shall be permitted to be built as one- and two-family dwellings or townhouses. Fire suppression otherwise required by Section ~~419.5~~508.5.7 of the Los Angeles County Building Code for buildings and structures constructed under this Code shall conform to Section 903.3.1.3 of the Los Angeles County Building Code.

. . .

SECTION 3. Section R301.1.3.2 is hereby amended to read as follows:

R301.1.3.2 Woodframe structures ~~greater than two stories~~.

The ~~b~~Building ~~o~~Official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of woodframe construction more than two stories and basement in height located in Seismic Design Category A, B, or C. Notwithstanding other sections of law, the law establishing these provisions is found in Business and Professions Code Sections 5537 and 6737.1.

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The Building Official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of woodframe construction more than one story in height or with a basement located in Seismic Design Category D_0, D_1, or D_2 or E.

SECTION 4. Section R301.1.5 is hereby added to read as follows:

R301.1.5 Seismic design provisions for buildings constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope).

The design and construction of new buildings and additions to existing buildings when constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope) shall comply with Section 1613.6 of the Los Angeles County Building Code.

SECTION 5. Section R301.2 is hereby amended to read as follows:

R301.2 Climatic and geographic design criteria.

Buildings shall be constructed in accordance with the provisions of this ~~c~~Code as limited by the provisions of this ~~s~~Section. ~~Additional criteria shall be established by the local jurisdiction and set forth~~Consult with the Building Official regarding additional criteria in Table R301.2.

SECTION 6. Section R301.2.2.6 is hereby amended to read as follows:

R301.2.2.6 Irregular buildings.

. . .

1. **Shear wall or braced wall offsets out of plane.** Conditions where exterior shear wall lines or braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required.

~~**Exception:** For wood light-frame construction, floors with cantilevers or setbacks not exceeding four times the nominal depth of the wood floor joists are permitted to support braced wall panels that are out of plane with braced wall panels below provided that all of the following are satisfied:~~

~~1. Floor joists are nominal 2 inches by 10 inches (51 mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) on center.~~

~~2. The ratio of the back span to the cantilever is not less than 2 to 1.~~

~~3. Floor joists at ends of braced wall panels are doubled.~~

~~4. For wood-frame construction, a continuous rim joist is connected to ends of cantilever joists. Where spliced, the rim joists shall be spliced using a galvanized metal tie not less than 0.058 inch (1.5 mm) (16 gage) and 11/2 inches (38 mm) wide fastened with six 16d nails on each side of the splice; or a block of the same size as the rim joist and of sufficient length to fit securely between the joist space at which the splice occurs, fastened with eight 16d nails on each side of the splice.~~

~~5. Gravity loads carried at the end of cantilevered joists are limited to uniform wall and roof loads and the reactions from headers having a span of 8 feet (2438 mm) or less.~~

2. **Lateral support of roofs and floors.** Conditions where a section of floor or roof is not laterally supported by shear walls or braced wall lines on all edges.

Exception: Portions of floors that do not support shear walls, braced wall panels above, or roofs shall be permitted to extend not more than 6 feet (1829 mm) beyond a shear wall or braced wall line.

3. **Shear wall or braced wall offsets in plane.** Conditions where the end of a braced wall panel occurs over an opening in the wall below ~~and extends more than 1 foot (305 mm) horizontally past the edge of the opening. This provision is applicable to shear walls and braced wall panels offset in plane and to braced wall panels offset out of plane in accordance with the exception to Item 1~~.

~~**Exception:** For wood light-frame wall construction, one end of a braced wall panel shall be permitted to extend more than 1 foot (305 mm) over an opening not more than 8 feet (2438 mm) in width in the wall below provided that the opening includes a header in accordance with all of the following:~~

~~1. The building width, loading condition and framing member species limitations of Table R602.7(1) shall apply.~~

~~2. The header is composed of:~~

~~2.1 Not less than one 2x12 or two 2x10 for an opening not more than 4 feet (1219 mm) wide.~~

~~2.2. Not less than two 2x12 or three 2x10 for an opening not more than 6 feet (1829 mm) in width.~~

~~2.3. Not less than three 2x12 or four 2x10 for an opening not more than 8 feet (2438 mm) in width.~~

~~3. The entire length of the braced wall panel does not occur over an opening in the wall below.~~

4. **Floor and roof opening.** Conditions where an opening in a floor or roof exceeds the lesser of 12 feet (3658 mm) or 50 percent of the least floor or roof dimension.

5. **Floor level offset.** Conditions where portions of a floor level are vertically offset.

~~**Exceptions:**~~

~~1. Framing supported directly by continuous foundations at the perimeter of the building.~~

~~2. For wood light-frame construction, floors shall be permitted to be vertically offset when the floor framing is lapped or tied together as required by section R502.6.1.~~

. . .

SECTION 7. Section R301.2.2.11 is hereby added to read as follows:

R301.2.2.11 Anchorage of mechanical, electrical, or plumbing components and equipment.

Mechanical, electrical, or plumbing components and equipment shall be anchored to the structure. Anchorage of the components and equipment shall be designed to resist loads in accordance with the Los Angeles County Building Code and ASCE 7, except where the component is positively attached to the structure and flexible connections are provided between the component and associated ductwork, piping, and conduit; and either:

1. The component weighs 400 pounds (1,780 N) or less and has a center of mass located 4 feet (1.22 m) or less above the supporting structure; or

2. The component weighs 20 pounds (89N) or less or, in the case of a distributed system, 5 pounds per foot (73 N/m) or less.

SECTION 8. Table R302.1(2) is hereby amended as follows:

TABLE R302.1(2)
EXTERIOR WALLS—DWELLINGS *AND ACCESSORY BUILDINGS WITH AUTOMATIC RESIDENTIAL FIRE SPRINKLER PROTECTION*

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E119, UL 263 or Section 703.3 of the *California Building Code* with exposure from the outside	0 feet
	Not fire-resistance rated	0 hours	3 feet[a]
Projections	Not allowed	NA	< 2 feet
	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood[b, c]	2 feet[a]
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not allowed	NA	< 3 feet
	Unlimited	0 hours	3 feet[a]
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet[a]

For SI: 1 foot = 304.8 mm

a. Reserved. ~~For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with Section R313, the fire separation distance for exterior walls not fire-resistance rated and for fire-resistance-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.~~

. . .

SECTION 9. Section R337.1.1 is hereby amended to read as follows:

R337.1.1 Scope.

Section R337 and all subsections apply to building materials, systems and or assemblies used in the exterior design and construction of new buildings, and to additions, alterations, or repairs made to existing buildings, erected, constructed,

located, or moved within a Wildland-Urban Interface ("WUI") Fire Area as defined in Section R337.2.

SECTION 10. Section R337.1.3 is hereby amended to read as follows:

R337.1.3 Application.

New buildings, and any additions, alterations, or repairs made to existing buildings located in or moved within any Fire Hazard Severity Zone or any Wildland-Urban Interface (WUI) Fire Area designated by the ~~enforcing agency~~Los Angeles County Fire Department constructed after the application date shall comply with the provisions of this sSection. This shall include all new buildings, and any additions, alterations, or repairs made to existing buildings, with residential, commercial, educational, institutional or similar occupancy type use, which shall be referred to in this chapter as "applicable building" (see definition in Section R337.2), as well as new buildings and structures, and any additions, alterations, or repairs made to existing buildings accessory to those applicable buildings (see Exceptions 1 and 4).

Exceptions:

. . .

4. ~~New a~~Accessory buildings and miscellaneous structures, including additions, alterations, or repairs, as specified in Section R337.10 shall comply only with the requirements of that sSection.

5. ~~Additions to and remodels of buildings originally constructed prior to July 1, 2008.~~ Reserved.

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SECTION 11. Section R337.1.3.1 is hereby amended to read as follows:

R337.1.3.1 Application date and where required.

New buildings for which an application for a building permit is submitted on or after July 1, 2008, and any additions, alterations, or repairs made to existing buildings for which an application for a building permit is submitted on or after January 1, 2023, located in any Fire Hazard Severity Zone or Wildland–Urban Interface Fire Area shall comply with all sections of this ~~c~~Chapter, including all of the following areas:

. . .

Exceptions:

1. ~~New b~~Buildings located in any Fire Hazard Severity Zone within State Responsibility Areas, for which an application for a building permit is submitted on or after January 1, 2008, shall comply with all sections of this ~~c~~Chapter.

2. ~~New b~~Buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area designated by cities and other local agencies for which an application for a building permit is submitted on or after December 1, 2005, but prior to July 1, 2008, shall only comply with the following sections of this ~~c~~Chapter:

. . .

SECTION 12. Section R337.1.4 is hereby amended to read as follows:

R337.1.4 Inspection and certification.

. . .

10/31/24

1. Building permit issuance. The ~~local b~~Building ~~o~~Official shall, prior to construction, provide the owner or applicant a certification that the building as proposed to be built complies with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this ~~c~~Chapter. Issuance of a building permit by the ~~local b~~Building ~~o~~Official for the proposed building shall be considered as complying with this ~~s~~Section.

2. Building permit final. The ~~local b~~Building ~~o~~Official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this ~~c~~Chapter. Issuance of a certificate of occupancy by the ~~local b~~Building ~~o~~Official for the proposed building shall be considered as complying with this ~~s~~Section.

SECTION 13. Section R337.2 is hereby amended to read as follows:

R337.2 Definitions

. . .

FIRE PROTECTION PLAN.

A document prepared for a specific project or development proposed for a Wildland-Urban Interface (WUI) Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure. See ~~the California~~Title 32 – Fire Code – of the Los Angeles County Code, Chapter 49 for required elements of a Fire Protection Plan.

FIRE HAZARD SEVERITY ZONES.

Geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very-High, High, or Moderate in State Responsibility Areas or as Local Responsibility Areas in Very-High Fire Hazard Severity Zones designated pursuant to California Government Code Sections 51175 through 51189. See ~~California~~Title 32 – Fire Code – of the Los Angeles County Code, Chapter 49.

. . .

WILDLAND-URBAN INTERFACE (WUI).

A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with ~~the~~ Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the ~~enforcing agency~~Los Angeles County Fire Department to be at a significant risk from wildfires.

SECTION 14. Section R337.3.2 is hereby amended to read as follows:

R337.3.2 Qualification by testing.

Material and material assemblies tested in accordance with the requirements of Section R337.3 shall be accepted for use when the results and conditions of those tests are met. Product evaluation testing of material and material assemblies shall be approved or listed by the State Fire Marshal or the Building Official, or identified in a current report issued by an approved agency.

SECTION 15. Section R337.3.3 is hereby amended to read as follows:

R337.3.3 Approved agency.

Product evaluation testing shall be performed by an approved agency as defined in Section 1702 of the ~~California~~Los Angeles County Building Code. The scope of accreditation for the approved agency shall include building product compliance with the ~~California~~Los Angeles County Building Code.

SECTION 16. Section R337.3.5.2 is hereby amended to read as follows:

R337.3.5.2 Weathering.

Fire-retardant-treated wood ~~and fire-retardant-treated wood shingles and shakes~~ shall meet the fire test performance requirements of this sSection after being subjected to the weathering conditions contained in the following standards, as applicable to the materials and the conditions of use.

SECTION 17. Section R337.3.5.2.1 is hereby amended to read as follows:

R337.3.5.2.1 Fire-retardant-treated wood.

Fire-retardant-treated wood shall be tested in accordance with ASTM D2898 (Method A), and the requirements of Section 2303.2 of the ~~California~~Los Angeles County Building Code.

SECTION 18. Section R337.3.5.2.2 is hereby deleted in its entirety.

~~**R337.3.5.2.2 Fire-retardant-treated wood shingles and shakes.** Fire-retardant-treated wood shingles and shakes shall be approved and listed by the State Fire Marshal in accordance with Section 208(c), Title 19 California Code of Regulations.~~

SECTION 19. Section R337.3.6 is hereby amended to read as follows:

R337.3.6 Alternates for materials, design, tests and methods of construction.

The ~~enforcing agency~~Building Official is permitted to modify the provisions of this ~~c~~Chapter for site-specific conditions in accordance with Chapter 1, Section ~~1.11.2.4~~104.2.7. When required by the ~~enforcing agency~~Building Official for the purposes of granting modifications, a fire protection plan shall be submitted in accordance with ~~the California~~Title 32 – Fire Code – of the Los Angeles County Code, Chapter 49.

SECTION 20. Section R337.4.4 is hereby amended to read as follows:

R337.4.4 Alternative methods for determining ignition-resistant material.

. . .

2. Fire-retardant-treated wood. Fire-retardant-treated wood identified for exterior use that complies with the requirements of Section 2303.2 of the ~~California~~Los Angeles County Building Code.

~~3. Fire-retardant-treated wood shingles and shakes. Fire-retardant-treated wood shingles and shakes, as defined in section 1505.6 of the California Building Code and listed by State Fire Marshal for use as "Class B" roof covering, shall be accepted as an Ignition-resistant wall covering material when installed over solid sheathing.~~

SECTION 21. Section R337.5.2 is hereby amended to read as follows:

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R337.5.2 Roof coverings.

Roof coverings shall be Class A as specified in Section R902.1. Where the roofing profile has an airspace under the roof covering, installed over a combustible deck, a 72 lb. (32.7 kg) cap sheet complying with ASTM D3909 Standard Specification for "Asphalt Rolled Roofing (Glass Felt) Surfaced with Mineral Granules," shall be installed over the roof deck. Bird stops shall be used at the eaves when the profile fits, to prevent debris at the eave. Hip and ridge caps shall be mudded in to prevent intrusion of fire or embers.

Exception: Cap sheet is not required when no less than 1" of mineral wool board or other noncombustible material is located between the roofing material and wood framing or deck.

Alternately, a Class A fire rated roof underlayment, tested in accordance with ASTM E108, shall be permitted to be used. If the sheathing consists of exterior fire-retardant-treated wood, the underlayment shall not be required to comply with a Class A classification. Bird stops shall be used at the eaves when the profile fits, to prevent debris at the eave. Hip and ridge caps shall be mudded in to prevent intrusion of fire or embers. Wood shingles and wood shakes are prohibited in any Fire Hazard Severity Zones regardless of classification.

SECTION 22. Section R337.6.1 is hereby amended to read as follows:

R337.6.1 General.

Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed

where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical plane, shall be in accordance with Section 1202 of the ~~California~~Los Angeles County Building Code and Sections R337.6.1 through R337.6.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

SECTION 23. Section R337.10.3 is hereby amended to read as follows:

R337.10.3 Where required.

. . .

When required by the ~~enforcing agency~~Building Official, miscellaneous structures that require a permit, and accessory buildings that are 120 square feet (11 m^2) or less, when separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m), shall comply with either Section R337.10.3.4 or Section R337.10.3.3, respectively.

. . .

SECTION 24. Section R337.10.3.3 is hereby amended to read as follows:

R337.10.3.3 Accessory buildings 120 square feet (11 m^2) or less, located 3 feet (914 mm) or more but less than 50 feet (15 m).

When required by the ~~enforcing agency~~Building Official, accessory buildings 120 square feet (11 m^2) or less and separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m) shall be

constructed of noncombustible materials or of ignition-resistant materials as described in Section R337.4.2.

SECTION 25. Section R337.10.3.4 is hereby amended to read as follows:

R337.10.3.4 Miscellaneous structures located 3 feet (914 mm) or more but less than 50 feet (15 m).

When required by the ~~enforcing agency~~Building Official, miscellaneous structures that require a permit and are separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section R337.4.3.

SECTION 26. Section R401.1 is hereby amended to read as follows:

R401.1 Application.

. . .

Wood foundations in Seismic Design Category D_0, D_1, or D_2 shall ~~be designed in accordance with accepted engineering practice~~not be permitted.

Exception: In non-occupied, single-story, detached storage sheds and similar uses other than carport or garage, provided the gross floor area does not exceed 200 square feet, the plate height does not exceed 12 feet in height above the grade plane at any point, and the maximum roof projection does not exceed 24 inches.

SECTION 27. Section R403.1.2 is hereby amended to read as follows:

R403.1.2 Continuous footing in seismic design categories D_0, D_1 and D_2.

Exterior walls of buildings located in Seismic Design Categories D_0, D_1 and D_2 shall be supported by continuous solid or fully grouted masonry or concrete footings. ~~Other footing materials or systems shall be designed in accordance with accepted engineering practices.~~Required interior braced wall panels in buildings located in Seismic Design Categories D_0, D_1 and D_2 ~~with plan dimensions greater than 50 feet (15 240 mm) shall be supported by continuous solid or fully grouted masonry or concrete footings in accordance with Section R403.1.3.4, except for two-story buildings in Seismic Design Category D_2, in which all braced wall panels, interior and exterior,~~ shall be supported on continuous foundations.

~~Exception: Two-story buildings shall be permitted to have interior braced wall panels supported on continuous foundations at intervals not exceeding 50 feet (15 240 mm) provided that:~~

~~1. The height of cripple walls does not exceed 4 feet (1219 mm).~~

~~2. First floor braced wall panels are supported on doubled floor joists, continuous blocking or floor beams.~~

~~3. The distance between bracing lines does not exceed twice the building width measured parallel to the braced wall line.~~

SECTION 28. Section R403.1.3.6 is hereby amended to read as follows:

R403.1.3.6 Isolated concrete footings.

In detached one- and two-family dwellings located in Seismic Design Category A, B, or C that are three stories or less in height and constructed with stud bearing walls, isolated plain concrete footings supporting columns or pedestals are permitted.

SECTION 29. Section R403.1.5 is hereby amended to read as follows:

R403.1.5 Slope.

The top surface of footings shall be level. The bottom surface of footings shall not have a slope exceeding 1 unit vertical in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footings or where the slope of the bottom surface of the footings will exceed one unit vertical in 10 units horizontal (10-percent slope).

For structures located in Seismic Design Category D_0, D_1, or D_2, stepped footings shall be reinforced with two No. 4 reinforcing bars. Two bars shall be located at the top and bottom of the footings as shown in Figure R403.1.5.

SECTION 30. Figure R403.1.5 is hereby added to read as follows:

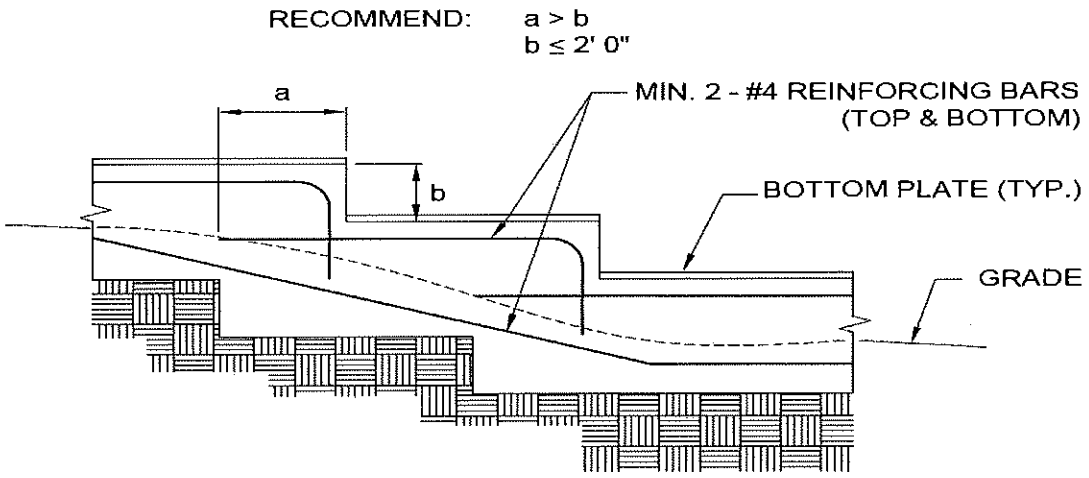


FIGURE R403.1.5
STEPPED FOOTING

SECTION 31. Section R404.2 is hereby amended to read as follows:

R404.2 Wood foundation walls.

Wood foundation walls shall be constructed in accordance with the provisions of Sections R404.2.1 through R404.2.6 and with the details shown in Figures R403.1(2) and R403.1(3). Wood foundation walls shall not be used for structures located in Seismic Design Category D_0, D_1, or D_2.

SECTION 32. Section R501.2 is hereby amended to read as follows:

R501.2 Requirements.

Floor construction shall be capable of accommodating all loads in accordance with Section R301 and of transmitting the resulting loads to the supporting structural elements. Mechanical or plumbing fixtures and equipment shall be attached or anchored to the structure in accordance with Section R301.2.2.11.

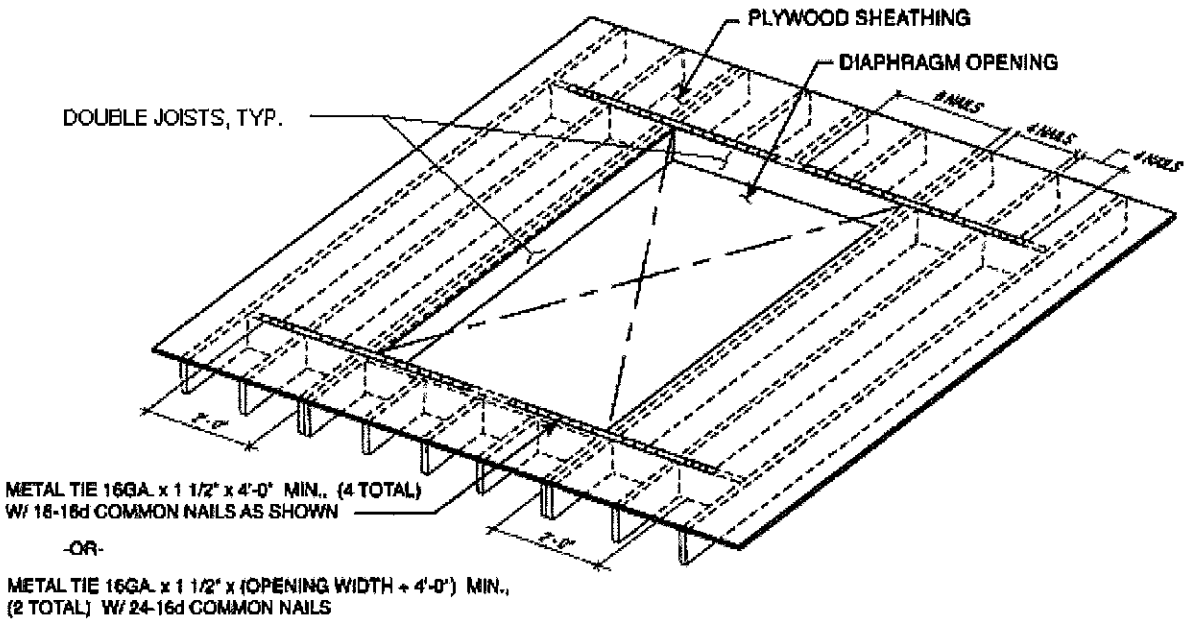
SECTION 33. Section R503.2.4 is hereby added to read as follows:

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R503.2.4 Openings in horizontal diaphragms.

Openings in horizontal diaphragms with a dimension perpendicular to the joist that is greater than 4 feet (1.2 m) shall be constructed in accordance with Figure R503.2.4.

SECTION 34. Figure R503.2.4 is hereby added to read as follows:



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

FIGURE R503.2.4

OPENING IN HORIZONTAL DIAPHRAGMS

Notes:

a. Blockings shall be provided beyond headers.

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b. Metal ties not less than 0.058 inch [1.47 mm (16 galvanized gage)] by 1.5 inches (38 mm) wide with eight 16d common nails on each side of the header-joist intersection. The metal ties shall have a minimum yield of 33,000 psi (227 MPa).

c. Openings in diaphragms shall be further limited in accordance with Section R301.2.2.6.

SECTION 35. Table R602.3(1) is hereby amended to read as follows:

TABLE R602.3(1)

FASTENING SCHEDULE

. . .

a. Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections are carbon steel and shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less. Connections using nails ~~and staples~~ of other materials, such as stainless steel, shall be designed by accepted engineering practice or approved under Section ~~R104.11~~104.2.8. Use of staples in roof, floor, subfloor, and braced wall panels shall be prohibited in Seismic Design Category D_0, D_1, or D_2.

. . .

SECTION 36. Table R602.3(2) is hereby amended to read as follows:

TABLE R602.3(2)

ALTERNATE ATTACHMENTS TO TABLE R602.3(1)

. . .

b. Staples shall have a minimum crown width of 7/16-inch except as noted. Use of staples in roof, floor, subfloor, and braced wall panels shall be prohibited in Seismic Design Category D_0, D_1, or D_2.

. . .

SECTION 37. Section R602.3.2 is hereby amended to read as follows:

R602.3.2 Top plate.

. . .

Exception: In other than Seismic Design Category D_0, D_1, or D_2, a~~A~~ single top plate used as an alternative to a double top plate shall comply with the following:

. . .

SECTION 38. Table R602.3.2 is hereby amended to read as follows:

TABLE R602.3.2
SINGLE TOP-PLATE SPLICE CONNECTION DETAILS

CONDITION	TOP-PLATE SPLICE LOCATION			
	Corners and intersecting walls		Butt joints in straight walls	
	Splice plate size	Minimum nails each side of joint	Splice plate size	Minimum nails each side of joint
Structures in SDC A-C; ~~and in SDC D_0, D_1 and D_2 with braced wall line spacing less than 25 feet~~	3″ × 6″ × 0.036″ galvanized steel plate or equivalent	(6) 8d box ($2^1/_2$″ × 0.113″) nails	3′ × 12″ × 0.036″ galvanized steel plate or equivalent	(12) 8d box ($2^1/_2$″ × 0.113″) nails
~~Structures in SDC D_0, D_1 and D_2, with braced wall line spacing greater than or equal to 25 feet~~	~~3″ × 8″ by 0.036″ galvanized steel plate or equivalent~~	~~(9) 8d box ($2^1/_2$″ × 0.113″) nails~~	~~3′ × 16″ × 0.036″ galvanized steel plate or equivalent~~	~~(18) 8d box ($2^1/_2$″ × 0.113″) nails~~

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

SECTION 39. Section R602.10.2.3 is hereby amended to read as follows:

R602.10.2.3 Minimum number of braced wall panels.

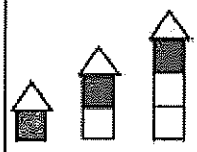
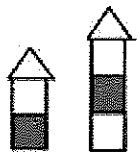
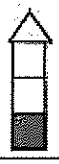
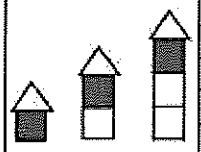
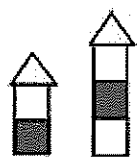
Braced wall lines with a length of 16 feet (4877 mm) or less shall have not less than two braced wall panels of any length or one braced wall panel equal to 48 inches (1219 mm) or more. Braced wall lines greater than 16 feet (4877 mm) shall have not less than two braced wall panels. In Seismic Design Category D_0, D_1, or D_2, no braced wall panel shall have a contributing length less than 48 inches in length or as required in Section R602.10.3, whichever is greater.

SECTION 40. Table R602.10.3(3) is hereby amended to read as follows:

TABLE R602.10.3(3)

BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

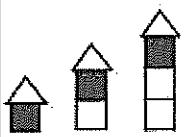
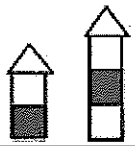
TABLE R602.10.3(3)
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

• WALL HEIGHT = 10 FEET • 10 PSF FLOOR DEAD LOAD • 15 PSF ROOF/CEILING DEAD LOAD • BRACED WALL LINE SPACING ≤ 25 FEET			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE[1,2,3]				
Seismic Design Category[5]	Story Location	Braced Wall Line Length (feet)[7]	Method LIB[4]	Method GB[4]	Methods DWB, SFB, PBS, PCP, HPS, CS-SFB[8]	Methods WSP, ABW[9], PFH[9] and PFG[9,10]	Methods CS-WSP, CS-G, CS-PF
C (townhouses only)		10	2.5	2.5	2.5	1.6	1.4
		20	5.0	5.0	5.0	3.2	2.7
		30	7.5	7.5	7.5	4.8	4.1
		40	10.0	10.0	10.0	6.4	5.4
		50	12.5	12.5	12.5	8.0	6.8
		10	NP	4.5	4.5	3.0	2.6
		20	NP	9.0	9.0	6.0	5.1
		30	NP	13.5	13.5	9.0	7.7
		40	NP	18.0	18.0	12.0	10.2
		50	NP	22.5	22.5	15.0	12.8
		10	NP	6.0	6.0	4.5	3.8
		20	NP	12.0	12.0	9.0	7.7
		30	NP	18.0	18.0	13.5	11.5
		40	NP	24.0	24.0	18.0	15.3
		50	NP	30.0	30.0	22.5	19.1
D_0		10	NP	~~2.8~~ 5.6	~~2.8~~ 5.6	1.8	1.6
		20	NP	~~5.5~~ 11.0	~~5.5~~ 11.0	3.6	3.1
		30	NP	~~8.3~~ 16.6	~~8.3~~ 16.6	5.4	4.6
		40	NP	~~11.0~~ 22.0	~~11.0~~ 22.0	7.2	6.1
		50	NP	~~13.8~~ 27.6	~~13.8~~ 27.6	9.0	7.7
		10	NP	~~5.3~~ NP	~~5.3~~ NP	3.8	3.2
		20	NP	~~10.5~~ NP	~~10.5~~ NP	7.5	6.4
		30	NP	~~15.8~~ NP	~~15.8~~ NP	11.3	9.6
		40	NP	~~21.0~~ NP	~~21.0~~ NP	15.0	12.8
		50	NP	~~26.3~~ NP	~~26.3~~ NP	18.8	16.0
		10	NP	~~7.3~~ NP	~~7.3~~NP	5.3	4.5
		20	NP	~~14.5~~ NP	~~14.5~~ NP	10.5	9.0
		30	NP	~~21.8~~ NP	~~21.8~~ NP	15.8	13.4
		40	NP	~~29.0~~ NP	~~29.0~~ NP	21.0	17.9
		50	NP	~~36.3~~ NP	~~36.3~~ NP	26.3	22.3

(continued)

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TABLE R602.10.3(3)—continued
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

• WALL HEIGHT = 10 FEET • 10 PSF FLOOR DEAD LOAD • 15 PSF ROOF/CEILING DEAD LOAD • BRACED WALL LINE SPACING ≤ 25 FEET			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE[a,g]				
Seismic Design Category[b]	Story Location	Braced Wall Line Length (feet)[c]	Method LIB[d]	Method GB[i]	Methods DWB, SFB, PBS, PCP, HPS, CS-SFB[e]	Methods WSP, ABW[f], PFH[f] and PFG[e,f]	Methods CS-WSP, CS-G, CS-PF
D_1		10	NP	~~3.0~~ 6.0	~~3.0~~ 6.0	2.8	1.7
		20	NP	~~6.0~~ 12.0	~~6.0~~ 12.0	4.0	3.4
		30	NP	~~9.0~~ 18.0	~~9.0~~ 18.0	6.0	5.1
		40	NP	~~12.0~~ 24.0	~~12.0~~ 24.0	8.0	6.8
		50	NP	~~15.0~~ 30.0	~~15.0~~ 30.0	10.0	8.5
		10	NP	~~6.0~~ NP	~~6.0~~ NP	4.5	3.8
		20	NP	~~12.0~~ NP	~~12.0~~ NP	9.0	7.7
		30	NP	~~18.0~~ NP	~~18.0~~ NP	13.5	11.5
		40	NP	~~24.0~~ NP	~~24.0~~ NP	18.0	15.3
		50	NP	~~30.0~~ NP	~~30.0~~ NP	22.5	19.1
		10	NP	~~8.5~~ NP	~~8.5~~ NP	6.0	5.1
		20	NP	~~17.0~~ NP	~~17.0~~ NP	12.0	10.2
		30	NP	~~25.5~~ NP	~~25.5~~ NP	18.0	15.3
		40	NP	~~34.0~~ NP	~~34.0~~ NP	24.0	20.4
		50	NP	~~42.5~~ NP	~~42.5~~ NP	30.0	25.5
D_2[h]		10	NP	~~4.0~~ 8.0	~~4.0~~ 8.0	2.5	2.1
		20	NP	~~8.0~~ 16.0	~~8.0~~ 16.0	5.0	4.3
		30	NP	~~12.0~~ 24.0	~~12.0~~ 24.0	7.5	6.4
		40	NP	~~16.0~~ 32.0	~~16.0~~ 32.0	10.0	8.5
		50	NP	~~20.0~~ 40.0	~~20.0~~ 40.0	12.5	10.6
		10	NP	~~7.5~~ NP	~~7.5~~ NP	5.5	4.7
		20	NP	~~15.0~~ NP	~~15.0~~ NP	11.0	9.4
		30	NP	~~22.5~~ NP	~~22.5~~ NP	16.5	14.0
		40	NP	~~30.0~~ NP	~~30.0~~ NP	22.0	18.7
		50	NP	~~37.5~~ NP	~~37.5~~ NP	27.5	23.4
	Three-story dwelling	10	NP	NP	NP	NP	NP
		20	NP	NP	NP	NP	NP
		30	NP	NP	NP	NP	NP
		40	NP	NP	NP	NP	NP
		50	NP	NP	NP	NP	NP
	Cripple wall below one- or two-story dwelling	10	NP	NP	NP	7.5	6.4
		20	NP	NP	NP	15.0	12.8
		30	NP	NP	NP	22.5	19.1
		40	NP	NP	NP	30.0	25.5
		50	NP	NP	NP	37.5	31.9

(continued)

For SI: 1 inch – 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

NP – Not Permitted

. . .

i. Methods GB and PCP braced wall panel h/w ratio shall not exceed 1:1 in SDC D_0, D_1 and D_2. Methods DWB, SFB, PBS, and HPS are not permitted in D_0, D_1 or D_2.

SECTION 41. Table R602.10.4 is hereby amended to read as follows:

TABLE R602.10.4

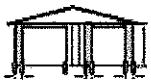
BRACING METHODS

TABLE R602.10.4
BRACING METHODS [1]

METHODS, MATERIAL		MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA[2]	
				Fasteners	Spacing
Intermittent Bracing Methods	**LIB** Let-in-bracing	1 × 4 wood or approved metal straps at 45° to 60° angles for maximum 16" stud spacing		Wood: 2-8d common nails or 3-8d (2½" long x 0.113" dia.) nails	Wood: per stud and top and bottom plates
				Metal strap: per manufacturer	Metal: per manufacturer
	DWB Diagonal wood boards	¾" (1" nominal) for maximum 24" stud spacing		2-8d (2½" long x 0.113" dia.) nails or 2 - 1½" long staples	Per stud
	WSP Wood structural panel (See Section R604)	~~7/16"~~ 15/32"	8d common (2 1/2"x0.131) nails 3/8" edge distance to panel edge	~~Exterior sheathing per Table R602.3(3)~~	6" edges 12" field
			8d common (2 1/2"x0.131) nails 3/8" edge distance to panel edge	~~Interior sheathing per Table R602.3(1) or R602.3(2)~~	~~Varies by fastener~~ 6" edges 12" field
	BV-WSP Wood structural panels with stone or masonry veneer (See Section R602.10.6.5)	⅜"	See Figure R602.10.6.5	8d common (2½" × 0.131) nails	4" at panel edges 12" at intermediate supports 4" at braced wall panel end posts
	SFB Structural fiberboard sheathing	½" or ⁹⁄₁₆" for maximum 16" stud spacing		1½" long × 0.12" dia. (for ½" thick sheathing) 1¾" long × 0.12" dia. (for ⁹⁄₁₆" thick sheathing) galvanized roofing nails	3" edges 6" field
	GB Gypsum board	½"		Nails or screws per Table R602.3(1) for exterior locations	For all braced wall panel locations: 7" edges (including top and bottom plates) 7" field
				Nails or screws per Table R702.3.5 for interior locations	
	PBS Particleboard sheathing (See Section R605)	½" or ⅝" for maximum 16" stud spacing		For ½", 6d common (2" long × 0.113" dia.) nails For ⅝", 8d common (2½" long × 0.131" dia.) nails	3" edges 6" field
	PCP Portland cement plaster	See Section R703.7 for maximum 16" stud spacing		1½" long, 11 gauge, 0.120" dia., ⅜" dia. head nails or ⅞" long, 16 gauge staples	6" o.c. on all framing members
	HPS Hardboard panel siding	⅜" for maximum 16" stud spacing		0.092" dia., 0.225" dia. head nails with length to accommodate 1½" penetration into studs	4" edges 8" field
	ABW Alternate braced wall	½"		See Section R602.10.6.1	See Section R602.10.6.1

(continued)

TABLE R602.10.4—continued
BRACING METHODS[f]

	METHODS, MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA[a]	
				Fasteners	Spacing
Intermittent Bracing Methods	**PFH** Portal frame with hold-downs	3/8"		See Section R602.10.6.2	See Section R602.10.6.2
	PFG Portal frame at garage	7/16"		See Section R602.10.6.3	See Section R602.10.6.3
Continuous Sheathing Methods	**CS-WSP** Continuously sheathed wood structural panel	3/8" 15/32"	8d common (2 1/2"x0.131) nails 3/8" edge distance to panel edge	~~Exterior sheathing per Table R602.3(3)~~	6" edges 12" field
			8d common (2 1/2"x0.131) nails 3/8" edge distance to panel edge	~~Interior sheathing per Table R602.3(1) or R602.3(2)~~	~~Varies by fastener~~ 6" edges 12" field
	CS-G[b,c] Continuously sheathed wood structural panel adjacent to garage openings	3/8" 15/32"		See Method CS-WSP	See Method CS-WSP
	CS-PF Continuously sheathed portal frame	7/16" 15/32"		See Section R602.10.6.4	See Section R602.10.6.4
	CS-SFB[d, f] Continuously sheathed structural fiberboard	1/2" or 25/32" for maximum 16" stud spacing		1 1/2" long × 0.12" dia. (for 1/2" thick sheathing) 1 3/4" long × 0.12" dia. (for 25/32" thick sheathing) galvanized roofing nails	3" edges 6" field

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad, 1 pound per square foot = 47.8 N/m^2, 1 mile per hour = 0.447 m/s.

a. Adhesive attachment of wall sheathing, including Method GB, shall not be permitted in Seismic Design Categories C, D_0, D_1 and D_2.
b. Applies to panels next to garage door opening where supporting gable end wall or roof load only. Shall only be used on one wall of the garage. In Seismic Design Categories D_0, D_1 and D_2, roof covering dead load shall not exceed 3 psf.
c. Garage openings adjacent to a Method CS-G panel shall be provided with a header in accordance with Table R602.5(1). A full-height clear opening shall not be permitted adjacent to a Method CS-G panel.
d. Method CS-SFB does not apply in Seismic Design Categories D_0, D_1 and D_2.
e. Method applies to detached one- and two-family dwellings in Seismic Design Categories D_0 through D_2 only.
f. Methods GB and PCP braced wall panel h/w ratio shall not exceed 1:1 in SDC D_0, D_1, or D_2. Methods LIB, DWB, SFB, PBS, HPS, and PFG are not permitted in SDC D_0, D_1, or D_2.
g. Use of staples in braced wall panels shall be prohibited in SDC D_0, D_1, or D_2.

SECTION 42. Table R602.10.5 is hereby amended to read as follows:

TABLE R602.10.5

MINIMUM LENGTH OF BRACED WALL PANELS

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TABLE R602.10.5
MINIMUM LENGTH OF BRACED WALL PANELS

METHOD (See Table R602.10.4)		MINIMUM LENGTH[a] (inches) Wall Height					CONTRIBUTING LENGTH (inches)
		8 feet	9 feet	10 feet	11 feet	12 feet	
DWB, WSP, SFB, PBS, PCP, HPS, BV-WSP		48	48	48	53	58	Actual[b]
GB		48	48	48	53	58	Double sided = Actual Single sided = 0.5 × Actual
LIB		55	62	69	NP	NP	Actual[b]
ABW	SDC A, B and C, ultimate design wind speed < 140 mph	28	32	34	38	42	48
	SDC D_0, D_1 and D_2, ultimate design wind speed < 140 mph	32	32	34	NP	NP	
CS-G		24	27	30	33	36	Actual[b]
CS-WSP, CS-SFB	Adjacent clear opening height (inches)						
	≤ 64	24	27	30	33	36	Actual[b]
	68	26	27	30	33	36	
	72	27	27	30	33	36	
	76	30	29	30	33	36	
	80	32	30	30	33	36	
	84	35	32	32	33	36	
	88	38	35	33	33	36	
	92	43	37	35	35	36	
	96	48	41	38	36	36	
	100	—	44	40	38	38	
	104	—	49	43	40	39	
	108	—	54	46	43	41	
	112	—	—	50	45	43	
	116	—	—	55	48	45	
	120	—	—	60	52	48	
	124	—	—	—	56	51	
	128	—	—	—	61	54	
	132	—	—	—	66	58	
	136	—	—	—	—	62	
	140	—	—	—	—	66	
	144	—	—	—	—	72	
METHOD (See Table R602.10.4)		Portal header height 8 feet	9 feet	10 feet	11 feet	12 feet	
PFH	Supporting roof only	~~16~~ 24	~~16~~ 24	~~16~~ 24	Note c	Note c	48
	Supporting one story and roof	24	24	24	Note c	Note c	
PFG		24	27	30	Note d	Note d	1.5 × Actual[b]
CS-PF	SDC A, B and C	16	18	20	Note e	Note e	1.5 × Actual[b]
	SDC D_0, D_1 and D_2	~~16~~ 24	~~18~~ 24	~~20~~ 24	Note e	Note e	Actual[b]

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.
NP = Not Permitted.

. . .

SECTION 43. Figure R602.10.6.1 is amended to read as follows:

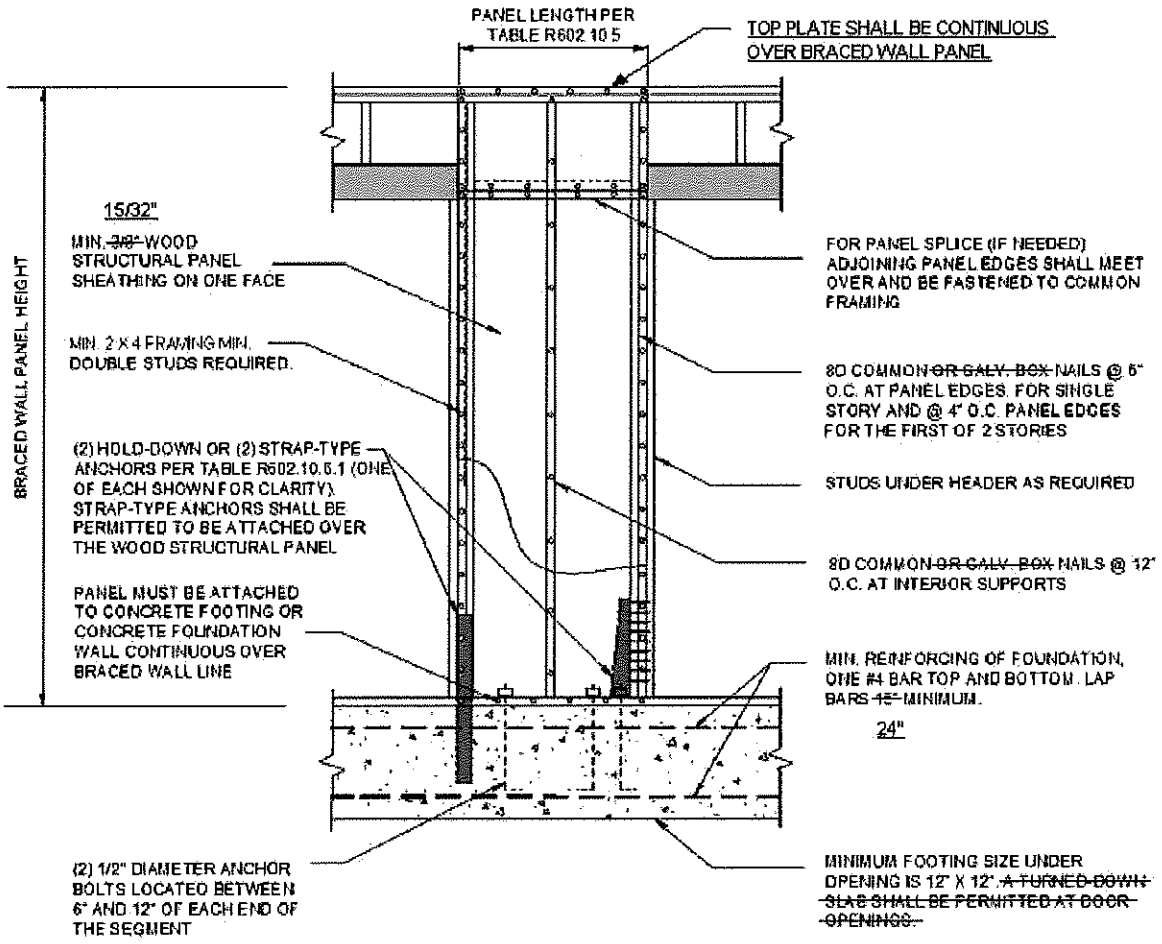
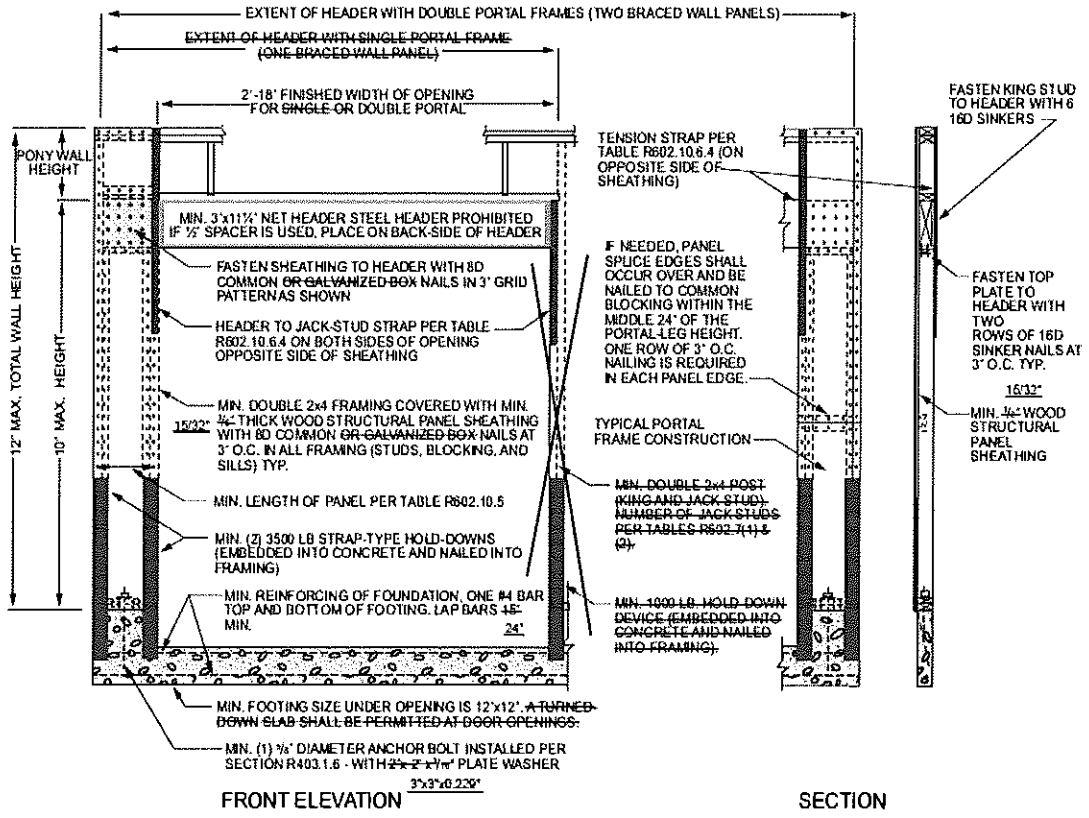


FIGURE R602.10.6.1
METHOD ABW—ALTERNATE BRACED WALL PANEL

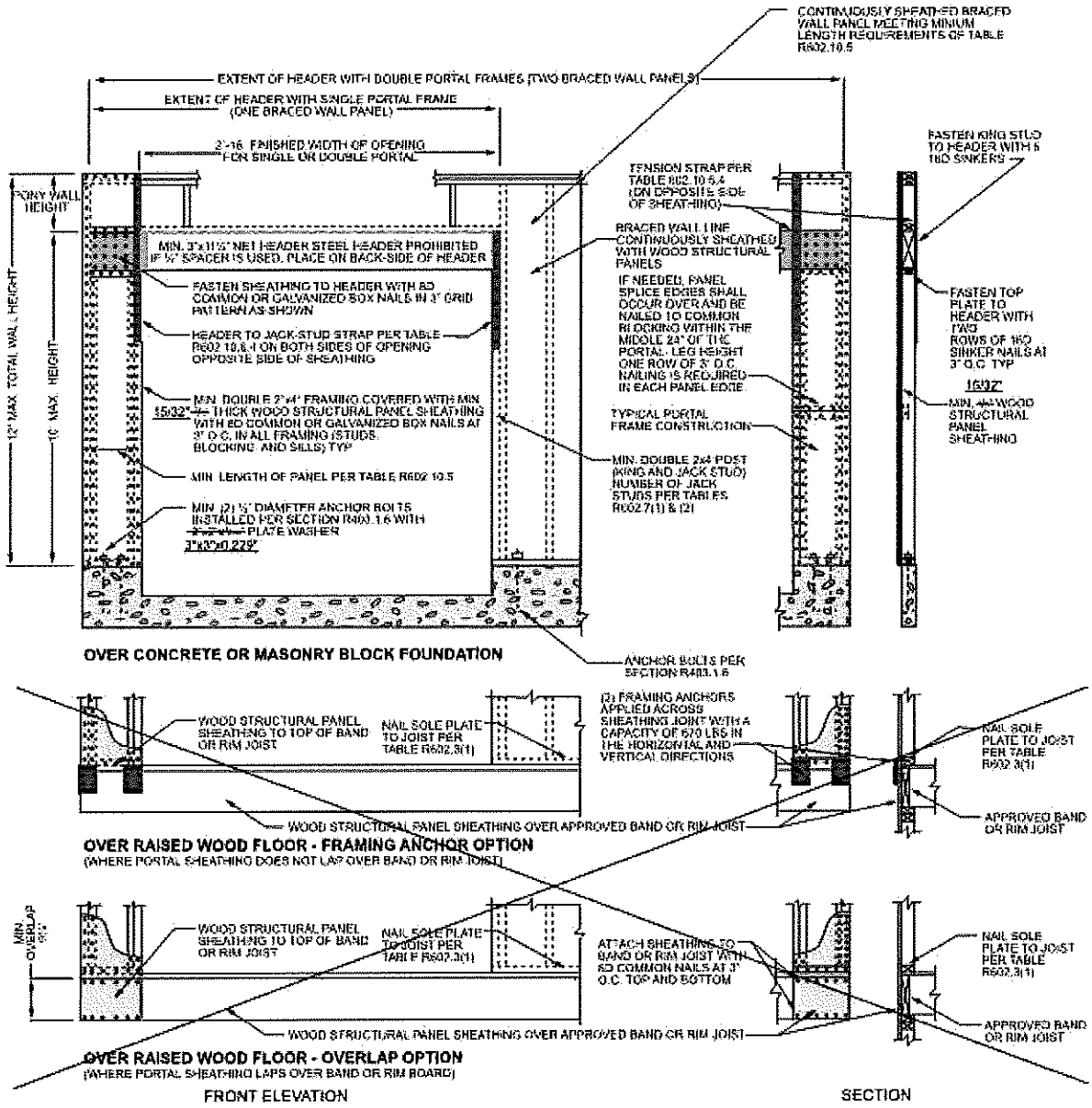
SECTION 44. Figure R602.10.6.2 is hereby amended to read as follows:



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

FIGURE R602.10.6.2
METHOD PFH—PORTAL FRAME WITH HOLD-DOWNS
AT DETACHED GARAGE DOOR OPENINGS

SECTION 45. Figure R602.10.6.4 is hereby amended to read as follows:



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

FIGURE R602.10.6.4
METHOD CS-PF—CONTINUOUSLY SHEATHED PORTAL FRAME PANEL CONSTRUCTION

SECTION 46. Section R606.4.4 is hereby amended to read as follows:

R606.4.4 Parapet walls.

Unreinforced solid masonry parapet walls shall not be less than 8 inches (203 mm) thick and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapet walls in areas subject to wind loads of 30 pounds per square foot (1.44 kPa), or located in Seismic Design Category D_0, D_1, or D_2, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

SECTION 47. Section R606.12.2.2.3 is hereby amended to read as follows:

R606.12.2.2.3 Reinforcement requirements for masonry elements.

Masonry elements listed in Section R606.12.2.2.2 shall be reinforced in either the horizontal or vertical direction as shown in Figure R606.11(2) and in accordance with the following:

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of ~~not less than two longitudinal W1.7 wires spaced not more than 16 inches (406 mm) for walls greater than 4 inches (102 mm) in width and not less than one longitudinal W1.7 wire spaced not more than 16 inches (406 mm) for walls not exceeding 4 inches (102 mm) in width; or~~ not less than one No. 4 bar spaced not more than 48 inches (1219 mm). ~~Where two longitudinal wires of joint reinforcement are used, the space between these wires shall be the widest that the mortar joint will accommodate.~~

Horizontal reinforcement shall be provided within 16 inches (406 mm) of the top and bottom of these masonry elements.

2. Vertical reinforcement. Vertical reinforcement shall consist of not less than one No. 4 bar spaced not more than 48 inches (1219 mm). Vertical reinforcement shall be located within ~~16~~8 inches (~~406~~203 mm) of the ends of masonry walls.

SECTION 48. Section R803.2.4 is hereby added to read as follows:

R803.2.4 Openings in horizontal diaphragms.

Openings in horizontal diaphragms shall conform with Section R503.2.4.

SECTION 49. Section R1001.3.1 is hereby amended to read as follows:

R1001.3.1 Vertical reinforcing.

For chimneys up to 40 inches (1016 mm) wide, four No. 4 continuous vertical bars adequately anchored into the concrete foundation shall be placed between wythes of solid masonry or within the cells of hollow unit masonry and grouted in accordance with Section R606. Grout shall be prevented from bonding with the flue liner so that the flue liner is free to move with thermal expansion. For chimneys more than 40 inches (1016 mm) wide, two additional No. 4 vertical bars adequately anchored into the concrete foundation shall be provided for each additional flue incorporated into the chimney or for each additional 40 inches (1016 mm) in width or fraction thereof.

SECTION 50. Section AS106.1 is hereby amended to read as follows:

AS106.1 General. In other than Seismic Design Category D_0, D_1, D_2, E, or F, p~~P~~lastered strawbale walls shall be permitted to be used as structural walls in accordance with the prescriptive provisions of this s~~S~~ection.

SECTION 51. Section AZ101.1 is hereby amended to read as follows:

AZ101.1 Scope.

This appendix ~~shall be applicable~~applies to emergency housing and emergency housing facilities, as defined in Section AZ102, when and to the extent that the County of Los Angeles Board of Supervisors ("Board") finds, by motion, resolution, or otherwise, that this appendix applies to a specific state of emergency, local emergency, or declaration of shelter crisis.

SECTION 52. Section AZ102.1 is hereby amended to read as follows:

AZ102.1 General.

. . .

ENFORCING AGENCY. The Building Official as defined in Section 104.3 of this Code.

. . .

SECTION 53. Section AZ103.1 is hereby amended to read as follows:

AZ103.1 General.

Emergency sleeping cabins, emergency transportable housing units, membrane structures and tents constructed and/or assembled in accordance with this appendix, shall be occupied only during the duration of the declaration of state of emergency, local emergency, or shelter crisis.

. . .

SECTION 54. Section AZ103.4 is hereby amended to read as follows:

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AZ103.4 Fire and life safety requirements not addressed in this appendix.

If not otherwise addressed in this appendix, fire and life safety measures, including, but not limited to, means of egress, fire separation, fire sprinklers, smoke alarms, and carbon monoxide alarms, shall be determined and enforced by the enforcing agency in consultation with the Departments of Public Health, Fire, and other pertinent County departments, as applicable.

SECTION 55. Section AZ106.1 is hereby amended to read as follows:

AZ106.1 General.

. . .

Tents and membrane structures shall be provided with means of ventilation (natural and/or mechanical) allowing for adequate air replacement, as determined by the enforcing agency.

SECTION 56. Section AZ107.1 is hereby amended to read as follows:

AZ107.1 General.

Emergency housing shall comply with the applicable requirements in Chapter 11B and/or the US Access Board Final Guidelines for Emergency Transportable Housing as determined by the enforcing agency.

. . .

SECTION 57. Section AZ110.1.1 is hereby added to read as follows:

AZ110.1.1 Backflow prevention.

Backflow prevention devices shall be provided in accordance with Section 602.3 of the Plumbing Code.

SECTION 58. Section AZ110.1.2 is hereby added to read as follows:

AZ110.1.2 Drinking fountains.

An adequate number of drinking fountains, bottle fillers or drinking facilities shall be provided as determined by the enforcing agency.

SECTION 59. Section AZ110.3 is hereby amended to read as follows:

AZ110.3 Toilet and bathing facilities.

. . .

The maximum travel distance from any sleeping and/or living area to the toilet facility shall not exceed 300 feet (91.4 m) or as determined by the enforcing agency.

SECTION 60. The provisions of this ordinance contain various changes, modifications, and additions to the 2022 Edition of the California Residential Code. Some of these changes are administrative in nature in that they do not constitute changes or modifications to requirements contained in the building standards published in the California Building Standards Code.

Pursuant to California Health and Safety Code sections 17958.5, 17958.7, and 18941.5, the Board of Supervisors hereby expressly finds that all of the changes and modifications to requirements contained in the building standards published in the California Building Standards Code contained in this ordinance are reasonably necessary because of local climatic, geological, or topographical conditions in the

10/31/22

County of Los Angeles due to the potential for seismic activity in the region, topographical conditions that contribute to the spread of wild fires, and climatic conditions that impact air quality and increase the risk of wild fires. Without limiting the foregoing, the County makes additional findings herein:

Code Section	Condition	Explanation of Amendment
R301.1.3.2	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. After the 1994 Northridge Earthquake, the Wood Frame Construction Joint Task Force recommended that the quality of woodframe construction needed to be greatly improved. The Task Force recommended that structural plans be prepared by the engineer or architect so that plan examiners, building inspectors, contractors, and special inspectors may logically follow and construct the seismic force-resisting systems as presented in the construction documents. For buildings or structures located in Seismic Design Category D_0, D_1, D_2, or E that are subject to a greater level of seismic forces, the requirement to have a California licensed architect or engineer prepare the construction documents is intended to minimize or reduce structural deficiencies that may cause excessive damage or injuries in woodframe buildings. Involvement of a registered professional will minimize the occurrence of structural deficiencies such as plan and vertical irregularities, improper shear transfer of the seismic force-resisting system, missed details or connections important to the structural system, and the improper application of the prescriptive requirements of the California Residential Code.

R301.1.5	Geological Topographical	Due to the local topographical and geological conditions of the sites within the greater Los Angeles region and their susceptibility to earthquakes, this technical amendment is required to address and clarify special needs for buildings constructed on hillside locations. A joint Structural Engineers Association of Southern California (SEAOSC) and Los Angeles City Joint Task Force investigated the performance of hillside building failures after the Northridge Earthquake. Numerous hillside failures resulted in loss of life and millions of dollars in damage. These criteria were developed to minimize the damage to these structures and have been in use by the City and County of Los Angeles for several years.
R301.2.2.6	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. Due to the high geologic activities in the Southern California area and the necessary higher level of performance required for buildings and structures, this local amendment limits the type of irregular conditions as specified in the 2022 California Residential Code. Such limitations are recommended to reduce structural damage in the event of an earthquake. The County of Los Angeles and cities in this region have implemented these extra measures to maintain the structural integrity of the framing of the shear walls and all associated elements when designed for high levels of seismic loads.
R301.2.2.11	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. Due to the high geologic activity in the Southern California area and the necessary higher level of performance required for buildings and structures, this local amendment limits the potential anchorage and supporting frame failure resulting from additional weight. There is no limitation for weight of mechanical and plumbing fixtures and equipment in the International Residential Code. Requirements from ASCE 7 and the International Building Code would permit equipment weighing up to 400 lbs. when mounted at 4 feet or less above the floor or attic level without engineering design. Where equipment exceeds this requirement, it is the intent of this

		amendment that a registered design professional be required to analyze if the floor support is adequate and structurally sound.
Table R302.1(2)	Climatic	This amendment will not allow unprotected openings (openings that do not resist the spread of fire) to be in the exterior wall of a residential building that is located on a property line. This amendment is necessary due to local climatic conditions. The hot, dry weather conditions of late summer in combination with the Santa Ana winds creates an extreme fire danger. Residential buildings with unprotected openings located on a property line may permit fires to spread from the inside of the building to adjacent properties and likewise from exterior properties to the interior of the building.
R337.1.1	Climatic	Extends the application of Chapter R337 to include additions, alterations, and/or relocated buildings. Many areas of Los Angeles County have been designated as Fire Hazard Severity Zones due to low humidity, strong winds, and dry vegetation. Additions, alterations, and/or relocated buildings have the same fire risk as new buildings.
R337.1.3	Climatic	Extends the application of Chapter R337 to include additions, alterations, and/or relocated buildings. Many areas of Los Angeles County have been designated as Fire Hazard Severity Zones due to the increased risk of fire caused by low humidity, strong winds, and dry vegetation. Additions, alterations, and/or relocated buildings have the same fire risk as new buildings.
R337.1.3.1	Climatic	Extends the application of Chapter R337 to include additions, alterations, and/or relocated buildings. Many areas of Los Angeles County have been designated as Fire Hazard Severity Zones due to the increased risk of fire caused by low humidity, strong winds, and dry vegetation. Additions, alterations, and/or relocated buildings have the same fire risk as new buildings.
R337.3.5.2	Climatic	Disallows the use of wood-shingle/wood-shake roofs due to the increased risk of fire in Los Angeles County caused by low humidity, strong winds, and dry vegetation in Fire Hazard Severity Zones.

R337.3.5.2.2	Climatic	Disallows the use of wood-shingle/wood-shake roofs due to the increased risk of fire in Los Angeles County caused by low humidity, strong winds, and dry vegetation in Fire Hazard Severity Zones.
R337.4.4	Climatic	Disallows the use of wood-shingle/wood-shake roofs due to the increased risk of fire in Los Angeles County caused by low humidity, strong winds, and dry vegetation in Fire Hazard Severity Zones.
R337.5.2	Climatic	Disallows the use of wood-shingle/wood-shake roofs and requires the use of Class A roof covering due to the increased risk of fire in Los Angeles County caused by low humidity, strong winds, and dry vegetation in Fire Hazard Severity Zones.
R401.1	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. Wood foundations, even those that are preservative-treated, encounter a higher risk of deterioration when contacting the adjacent ground. The required seismic anchorage and transfer of lateral forces into the foundation system necessary for 2-story structures and foundation walls could become compromised at varying states of wood decay. In addition, global structure overturning moment and sliding resistance is reduced when utilizing wood foundations as opposed to conventional concrete or masonry systems. However, non-occupied, single-story storage structures pose significantly less risk to human safety and may utilize the wood foundation guidelines specified in this Chapter.

R403.1.2 R403.1.3.6 R403.1.5 Figure R403.1.5	Climatic Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. These amendments require minimum reinforcement in continuous footings and stepped footings to address the problem of poor performance of plain or under-reinforced footings during a seismic event. These amendments implement the recommendations of SEAOSC and the Los Angeles City Joint Task Force resulting from their investigation of the 1994 Northridge Earthquake. Interior walls can easily be called upon to resist over half of the seismic loading imposed on simple buildings or structures. Without a continuous foundation to support the braced wall line, seismic loads would be transferred through other elements such as non-structural concrete slab floors, wood floors, etc. Requiring interior braced walls to be supported by continuous foundations is intended to reduce or eliminate the poor performance of buildings or structures.
R404.2	Climatic Geological	No substantiating data has been provided to show that wood foundations are effective in supporting structures and buildings during a seismic event while being subject to deterioration caused by the presence of water and other materials detrimental to wood foundations in the soil. Wood foundations, when they are not properly treated and protected against deterioration, have performed very poorly and have led to slope failures. Most contractors are typically accustomed to construction in dry weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic events and wet applications. With the higher seismic demand placed on buildings and structures in this region, coupled with the dryer weather conditions, it is the intent of this amendment to reduce or eliminate potential problems resulting from the use of wood footings and foundations.

R501.2	Geological	Due to the high geologic activities in the Southern California area and the necessary higher level of performance required for buildings and structures, this local amendment limits the potential anchorage and supporting frame failure resulting from additional weight. There is no limitation for weight of mechanical and plumbing fixtures and equipment in the International Residential Code. Requirements from ASCE 7 and the International Building Code would permit equipment weighing up to 400 lbs. when mounted at 4 feet or less above the floor or attic level without engineering design. Where equipment exceeds this requirement, it is the intent of this amendment that a registered design professional be required to analyze if the floor support is adequate and structurally sound.
R503.2.4 Figure R503.2.4	Geological	Section R502.10 of the Code does not provide any prescriptive criteria to limit the maximum floor opening size, nor does Section R503 provide any details to address the issue of shear transfer near larger floor openings. With the higher seismic demand placed on buildings and structures in this region, it is important to ensure that a complete load path is provided to reduce or eliminate potential damage caused by seismic forces. Requiring blocking with metal ties around larger floor openings and limiting opening size is consistent with the requirements of Section R301.2.2.2.5.
Table R602.3(1) Table R602.3(2)	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. In September 2007, limited cyclic testing data was provided to the ICC Los Angeles Chapter Structural Code Committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. The test results of the stapled wood structural shear panels demonstrated lower strength and drift than the nailed wood structural shear panel test results. Therefore, the use of staples as fasteners for shear walls sheathed with other materials shall not be permitted without being substantiated by cyclic testing.

R602.3.2 Table R602.3.2	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. The County of Los Angeles and cities in this region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads by eliminating single top plate construction. The performance of modern day braced wall panel construction is directly related to an adequate load path extending from the roof diaphragm to the foundation system.
R602.10.2.3	Geological	The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including, but not limited, to the 1994 Northridge Earthquake. Plywood shear walls with high aspect ratio experienced many failures during the Northridge Earthquake. This proposed amendment specifies a minimum braced wall length to meet an aspect ratio consistent with other sections of the California Residential Code, and to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the California Residential Code. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damage to property. This proposed amendment reflects the recommendations by SEAOSC and the Los Angeles City Joint Task Force that investigated the poor performance observed during the 1994 Northridge Earthquake.

10/31/07

Table R602.10.3(3)	Geological	Due to the high geologic activities in the Southern California area and the necessary higher level of performance of buildings and structures, this local amendment reduces or eliminates the allowable shear values for shear walls sheathed with lath, plaster, or gypsum board. The poor performance of such shear walls sheathed with other materials in the 1994 Northridge Earthquake was investigated by SEAOSC and the Los Angeles City Joint Task Force. The County of Los Angeles and cities in this region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads.
Table R602.10.4	Geological	3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. This amendment specifies minimum WSP sheathing thickness and nail size and spacing, so as to provide a uniform standard of construction to improve the performance level of buildings and structures, given the potential for higher seismic demands placed on buildings or structure in this region. This proposed amendment reflects the recommendations by SEAOSC and the Los Angeles City Joint Task Force following the 1994 Northridge Earthquake. In September 2007, cyclic testing data was provided to the Los Angeles Chapter Structural Code Committee showing that stapled wood structural shear panels underperformed nailed wood structural shear panels. Test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results.

Table R602.10.5	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. The poor performance of such shear walls sheathed in the 1994 Northridge Earthquake was investigated by SEAOSC and the Los Angeles City Joint Task Force. The County of Los Angeles and cities in this region have taken extra measures to maintain the structural integrity with respect to the "maximum shear wall aspect ratios" of the framing of the shear walls when designed for high levels of seismic loads. This amendment is consistent with the shear wall aspect ratio provision of Section 4.3.4 of AWC SDPWS-2015.
Figure R602.10.6.1	Geological	3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. The poor performance of shear walls in the 1994 Northridge Earthquake was investigated by SEAOSC and the Los Angeles City Joint Task Force. Box nails were observed to cause massive and multiple failures of the typical 3/8" thick 3 ply-plywood during the Northridge Earthquake. The County of Los Angeles and cities in this region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads. The performance of modern day braced wall panel construction is directly related to an adequate load path extending from the roof diaphragm to the foundation system.
Figure R602.10.6.2	Geological	3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. The poor performance of such shear walls in the 1994 Northridge Earthquake was investigated by SEAOSC and the Los Angeles City Joint Task Force. The County of Los Angeles and cities in this region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads. Box nails were observed to cause massive and multiple failures of typical 3/8-inch thick plywood during the Northridge Earthquake. This change to the minimum lap splice requirement is consistent with Section 12.16.1 of ACI 318-11. This amendment is a continuation of amendments adopted during prior Code adoption cycles.

Figure R602.10.6.4	Geological	3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. The poor performance of such shear walls in the 1994 Northridge Earthquake was investigated by SEAOSC and the Los Angeles City Joint Task Force. The County of Los Angeles and cities in this region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads. The proposal in which "washers shall be a minimum of 0.229 inch by 3 inches by 3 inches in size" is consistent with Section R602.11.1 of the California Residential Code and Section 2308.3.1 of the California Building Code. This amendment is a continuation of amendments adopted during prior Code adoption cycle.
R606.4.4	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. The addition of the word "or" will prevent the use of unreinforced parapets in Seismic Design Category D_0, D_1, or D_2, or on townhouses in Seismic Design Category C.
R606.12.2.2.3	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. Reinforcement using longitudinal wires for buildings and structures located in high seismic areas is not as ductile as deformed rebar. Having vertical reinforcement closer to the ends of masonry walls helps to improve the seismic performance of masonry buildings and structures.
R803.2.4	Geological	Section R802 of the Code does not provide any prescriptive criteria to limit the maximum size of roof openings, nor does Section R803 provide any details to address the issue of shear transfer near larger roof openings. With the higher seismic demand placed on buildings and structures in this region, it is important to ensure that a complete load path is provided to reduce or eliminate potential damage caused by seismic forces. Requiring blocking with metal ties around larger roof openings and limiting the size of openings is consistent with the requirements of Section R301.2.2.6.

R1001.3.1	Geological	Los Angeles County is prone to seismic activity due to the existence of active faults in the Southern California area. The performance of fireplaces/chimneys without anchorage to the foundation has been observed to be inadequate during major earthquakes. The lack of anchorage to the foundation results in overturn or displacement.
Appendix AZ AZ101.1, AZ102.1, AZ103.1, AZ103.4, AZ107.1	Administrative, Voluntary Appendix Climatic Geologic Topographical	Adoption of this appendix is necessary because strict compliance with state and local standards and laws would prevent, hinder, or delay the mitigation of the effects of a declared shelter crisis or other emergency. The modifications to this appendix are administrative in nature, to provide clarification of various provisions of the language of this voluntary Appendix.
AZ106.1	Climatic, Voluntary Appendix	Los Angeles County is subject to extreme temperatures, and many of these membrane structures will be erected and occupied during severe weather events. It is necessary to include this amendment to ensure the safety, health, and comfort of the occupants is maintained during extreme heat and cold.
AZ110.1.1, AZ110.1.2	Administrative, Voluntary Appendix	These sections are simply a cross reference to the State Plumbing Code requirement for user convenience and is not adding a new building standard nor enacting a more restrictive requirement. To the extent findings are requested, see prefatory language in this Section.
AZ110.3	Climatic, Voluntary Appendix	The County may utilize mobile restroom facilities that are physically separate from the living facilities. Due to the potential for severe local weather conditions, with extreme temperatures or torrential rain, the distance to the restroom facilities required for the comfort, safety, and health of displaced people should be reduced to 300 feet or as determined by the Building Official.

SECTION 61. This ordinance shall become operative on January 1, 2023.

[TITLE30RESIDENTIALCODE2022CSCC]

11/2/22

ANALYSIS

This ordinance repeals those provisions of Title 27 – Electrical Code – of the Los Angeles County Code that incorporate by reference portions of the 2019 California Electrical Code, and replaces them with provisions that incorporate by reference portions of the 2022 California Electrical Code. Unless deleted or modified herein, the previously enacted provisions of Title 27 continue in effect.

State law requires that the County's Electrical Code impose the same requirements as are contained in the building standards published in the most recent edition of the California Electrical Code except for changes or modifications deemed reasonably necessary by the County because of local climatic, geological, or topographical conditions. Any changes and modifications to requirements contained in the building standards published in the 2022 California Electrical Code that are contained in this ordinance (and are not administrative in nature) are based upon express findings, contained in the ordinance, that such changes are reasonably necessary due to local climatic, geological, or topographical conditions.

This ordinance also makes certain modifications to the administrative provisions of Title 27.

DAWYN R. HARRISON
Acting County Counsel

By Carole Suzuki

CAROLE B. SUZUKI
Senior Deputy County Counsel
Public Works Division

CS:rm

Requested: 7/26/22
Revised: 8/30/22

ORDINANCE NO. _____

An ordinance amending Title 27 – Electrical Code – of the Los Angeles County Code, by adopting and incorporating by reference portions of the 2022 California Electrical Code with certain changes and modifications, and making other revisions thereto.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Sections 89.102 through 89.114 of Article 89, Article 90, Chapters 1 through 9, and Annexes A, B, C, D, E, F, G, H, I, and J, of Title 27 of the Los Angeles County Code, which incorporate by reference and modify portions of the 2019 California Electrical Code, are hereby repealed.

SECTION 2. Section 80-1.5 is hereby amended to read as follows:

Sec. 80-1.5. California Electrical Code (CEC) Adoption by Reference.

Except as hereinafter changed or modified, Sections 89.102 through 89.114 of Article 89, Article 90, Chapters 1 through 9, and Annexes A, B, C, D, E, F, G, H, I, and J$_1$ of that certain Electrical Code known and designated as the ~~2019~~2022 California Electrical Code as published by the California Building Standards Commission are adopted and incorporated by reference into this Title 27 of the Los Angeles County Code as if fully set forth below, as Sections 89.102 through 89.114 of Article 89, Article 90, Chapters 1 through 9, and Annexes A, B, C, D, E, F, G, H, I, and J$_1$ of Title 27 of the Los Angeles County Code.

A copy of the ~~2019~~2022 California Electrical Code, hereinafter referred to as the CEC, shall be at all times maintained by the Chief Electrical Inspector for use and examination by the public.

SECTION 3. Section 220.41 is hereby added to read as follows:

Sec. 220.41. Energy Storage Readiness.

For all new one- and two-family dwelling units, the service panels and/or sub panels shall have the capacity of an additional load not less than 5 kVA for every 2,000 square feet of living space, or any fraction thereof, designated to accommodate future energy storage system(s). This load shall be considered continuous, and demand factors shall not apply. Additionally, the service panels and/or sub panels shall have space(s) reserved/dedicated to permit installation of the branch circuit overcurrent protective device(s) for the energy storage system.

SECTION 4. The provisions of this ordinance contain various changes, modifications, and additions to the 2022 California Electrical Code. Some of these changes are administrative in nature in that they do not constitute changes or modifications to requirements contained in the building standards published in the California Electrical Code.

Pursuant to California Health and Safety Code sections 17958.5, 17958.7, and 18941.5, the Board of Supervisors hereby expressly finds that all of the changes and modifications to requirements contained in the building standards published in the California Building Standards Code that are contained in this ordinance (and are not administrative in nature) are reasonably necessary because of local climatic, geological,

or topographical conditions in the County of Los Angeles, as more particularly described in the table set forth below.

TABLE

ELECTRICAL CODE AMENDMENTS		
CODE SECTION	**CONDITION**	**EXPLANATION**
220.41	Climatic	The County of Los Angeles is a densely populated area with varying and occasionally immoderate temperatures and weather conditions. This creates the need for highly efficient buildings to reduce demand on the electrical grid and, in turn, reduce the use of fossil fuels and improve air quality. The proposed amendment will provide a cost-effective means for homeowners to increase energy savings and reduce the demand on the electrical grid by requiring the installation of an energy storage system for current or future use, with minimal need for additional construction and modification of the existing electrical system.

SECTION 5. This ordinance shall become operative on January 1, 2023.

[TITLE27ELECTRICALCODE2022CSCC]

11/2/22

ANALYSIS

This ordinance repeals those provisions of Title 28 – Plumbing Code – of the Los Angeles County Code, that had incorporated by reference portions of the 2019 Edition of the California Plumbing Code and replaces them with provisions incorporating by reference portions of the 2022 California Plumbing Code, published by the California Building Standards Commission, with certain changes and modifications. Unless deleted or modified herein, the previously enacted provisions of Title 28 continue in effect.

State law requires that the County's Plumbing Code impose the same requirements as are contained in the building standards published in the most recent edition of the California Plumbing Code except for changes or modifications deemed reasonably necessary by the County because of local climatic, geologic, or topographic conditions.

The changes and modifications to requirements contained in the building standards published in the 2022 California Plumbing Code that are contained in this ordinance are based upon express findings contained in the ordinance that such changes are reasonably necessary due to local climatic, geologic, or topographic conditions.

This ordinance also makes certain modifications to the administrative provisions of Title 28.

DAWYN R. HARRISON
Acting County Counsel

Carole Suzuki

By

CAROLE B. SUZUKI
Senior Deputy County Counsel
Public Works Division

CBS:rm

Requested: 08/02/22
Revised: 10/11/22

HOA.103795022.3

11/2/22

ORDINANCE NO._____

An ordinance amending Title 28 – Plumbing Code – of the Los Angeles County Code, to adopt and incorporate by reference portions of the 2022 California Plumbing Code, with certain changes and modifications, and to make other revisions thereto.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Sections 119.1.2.0 through 119.1.14.0 of Chapter 1, Chapters 2 through 17, Appendices A, B, D, H, I, and J, of the Los Angeles County Code, which incorporate by reference and modify portions of the 2019 California Plumbing Code, and Appendix S, are hereby repealed.

SECTION 2. Chapter 1 is hereby amended to read as follows:

CHAPTER 1

ADMINISTRATION

100 ADOPTION AND INCORPORATION BY REFERENCE.

Except as hereinafter changed or modified, Sections 1.2.0 through 1.14.0 of Chapter 1, Division I, of that certain Plumbing Code known and designated as the ~~2019~~2022 California Plumbing Code, as published by the California Building Standards Commission, are adopted and incorporated by reference into this Title 28 of the Los Angeles County Code as if fully set forth below, and shall be known as Sections 119.1.2.0 through 119.1.14.0, respectively, of Chapter 1 of Title 28 of the Los Angeles County Code.

Except as hereinafter changed or modified, Chapters 2 through 17 and Appendices A, B, D, H, I, and J, of that certain Plumbing Code known and designated as the ~~2019~~2022 California Plumbing Code as published by the California Building Standards Commission, are adopted and incorporated by reference into this Title 28 of the Los Angeles County Code as if fully set forth below, and shall be known as Chapters 2 through 17, and Appendices A, B, D, H, I, and J, of Title 28 of the Los Angeles County Code.

A copy of the ~~2019~~2022 California Plumbing Code shall be at all times maintained by the Chief Plumbing Inspector for use and examination by the public.

. . .

103.19 Annual Review of Fees. The fees ~~contained~~ in this Code shall be reviewed annually by the ~~Department~~Director of Public Works. Beginning on July 1, 1992, and thereafter on each succeeding July 1, the amount of each fee in this Code shall be adjusted as follows: Calculate the percentage movement between March of the previous year and March of the current year in the Consumer Price Index (CPI) for all urban consumers in the Los Angeles-Long Beach-Anaheim, CA areas, as published by the United States Government Bureau of Labor Statistics; ~~then~~and adjust each fee by said percentage amount ~~and round off to the nearest ten (10) cents~~, provided, however, that no adjustment shall decrease any fee and no fee shall exceed the reasonable cost of providing services. When it is determined that the amount

reasonably necessary to recover the cost of providing services is in excess of this adjustment, the Chief Plumbing Inspector may present fee proposals to the Board of Supervisors for approval.

SECTION 3. Section 204.0 is hereby amended to read as follows:

204.0 – B –

. . .

Building Code. The most recent edition of Title 26 of the Los Angeles County Code.

. . .

SECTION 4. Section 206.0 is hereby amended to read as follows:

206.0 – D –

. . .

Demand Hot Water Recirculation System. A hot water recirculation system requiring manual activation and equipped with a thermostat that will automatically shut off the recirculation pump when the water temperature reaches a preset level at the point of use.

. . .

SECTION 5. Section 207.0 is hereby amended to read as follows:

207.0 – E –

. . .

Electrical Code. The most recent edition of Title 27 of the Los Angeles County Code.

. . .

SECTION 6. Section 210.0 is hereby amended to read as follows:

210.0 – H –

. . .

Hot Water Recirculation System. A hot water distribution system that reduces the time needed to deliver hot water to fixtures that are distant from the water heater, boiler, or other water heating equipment. The recirculation system is comprised of hot water supply and return piping with shutoff valves, balancing valves, and circulating pumps, and a method of controlling the circulating system.

. . .

SECTION 7. Section 215.0 is hereby amended to read as follows:

215.0 – M –

. . .

Mechanical Code. The most recent edition of Title 29 of the Los Angeles County Code.

. . .

SECTION 8. Section 301.2.2 is hereby amended to read as follows:

301.2.2 Standards. Standards listed or referred to in this cChapter or other chapters cover materials that will conform to the requirements of this cCode, where used in accordance with the limitations imposed in this or other chapters thereof and their listing. Where a standard covers materials of various grades, weights, quality, or configurations, the portion of the listed standard that is applicable shall be used.

Design and materials for special conditions or materials not provided for herein shall be permitted to be used only by special permission of the Authority Having Jurisdiction after the Authority Having Jurisdiction has been satisfied as to their adequacy. A list of plumbing standards that appear in specific sections of this eCode is referenced in Table 1701.1. Standards referenced in Table 1701.1 shall be applied as indicated in the applicable referenced section. A list of additional approved standards, publications, practices, and guides that are not referenced in specific sections of this eCode appear in Table 1701.2. Solar thermal energy systems and material standards are referenced in Tables S 18.1 and S 18.2 of Appendix S. AnIAPMO Installation Standards isare referenced in Appendix I for the convenience of the users of this eCode. It is not considered as a part of this eCode unless formally adopted as such by the Authority Having Jurisdiction.

SECTION 9. Section 301.3 is hereby amended to read as follows:

301.3 Alternate Materials and Methods of Construction ~~Equivalency~~ and Modifications.

301.3.1 Alternate Materials and Methods of Construction.

Nothing in this eCode is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this eCode. Technical documentation shall be submitted to the Authority Having Jurisdiction to demonstrate equivalency prior to installation. The Authority Having Jurisdiction shall have the authority to approve or disapprove the system, method, or device for the intended purpose on a case-by-case basis. [HCD 1] (See Section 1.8.7).

. . .

301.3.1.1 Testing.

. . .

301.3.1.1.1 Tests.

. . .

301.3.1~~.2~~.1.2 Request by Authority Having Jurisdiction.

. . .

301.3.2 Modifications. Whenever there are practical difficulties involved in carrying out the provisions of this Code, the Authority Having Jurisdiction shall have the authority to grant modifications on a case-by-case basis, upon application of the owner or the owner's authorized agent, provided the Authority Having Jurisdiction shall first find that a special individual reason makes the strict letter of this Code impractical, that the modification is in conformity with the spirit and purpose of this Code, and that such modification does not lessen any health, fire-protection, or other life-safety-related requirements. The details of any action granting modifications shall be recorded and entered in the files of the Authority Having Jurisdiction. Application for approval of a modification shall be in accordance with Section 103.12.2.

SECTION 10. Section 304.1 is hereby amended to read as follows:

304.1 General. Plumbing fixtures, drains, appurtenances, and appliances, used to receive or discharge liquid wastes or sewage, shall be connected properly to the drainage system of the building or premises, in accordance with the requirements of this ~~c~~Code.

Exception: *[HCD 1] Limited-density owner-built rural dwellings. Where conventional plumbing, in all or in part, is installed within the structure, it shall be installed in accordance with the provisions of this ~~e~~Code. Alternative materials and methods shall be permitted provided that the design complies with the intent of the ~~e~~Code, and that such alternatives shall perform to protect health and safety for the intended purpose.*

Dual waste piping shall be installed to permit the discharge from clothes washers, bathtubs, showers, and bathroom/restroom wash basins to be used for a graywater irrigation system. Partial connection of plumbing fixtures to the graywater system, based on accepted engineering practices and required volume of water for irrigation, shall be accepted. Graywater systems shall be designed and installed in accordance with Chapter 15 and other parts of this Code.

Exceptions:

(1) Buildings with a graywater system, rain catchment system, or recycled water system.

(2) Sites with landscape areas not exceeding 500 square feet.

(3) Projects where graywater systems are not permitted due to geological conditions.

(4) Additions and alterations that use the existing building drain.

SECTION 11. Section 601.2.3 is hereby added to read as follows:

601.2.3 Hot Water Recirculation Systems. A hot water recirculation system shall be installed, as defined in Chapter 2, and shall not allow more

than 0.6 gallons of water to be delivered to any fixture before hot water arrives. Hot water recirculation systems may include, but are not limited to, the following:

(1) Timer-initiated systems.

(2) Temperature sensor-initiated systems.

(3) Occupancy sensor-initiated systems.

(4) Smart hot water recirculation systems.

(5) Demand hot water recirculation systems.

(6) Other systems acceptable to the Authority Having Jurisdiction.

Exception: Minor additions and alterations as determined by the Authority Having Jurisdiction that use the existing water distribution pipe system and which does not contain a hot water recirculation system.

SECTION 12. Section 609.7 is hereby amended to read as follows:

609.7 Abutting Lot. Nothing contained in this eCode shall be construed to prohibit the use of all or part of an abutting or adjacent lot or lots to:

. . .

SECTION 13. Section 721.3 is hereby added to read as follows:

721.3 Public Sewer. If the public sewer does not extend to a point from which each building on a lot or parcel of land large enough to permit future subdivision can be independently served, the property owner shall construct a public sewer as required by Title 20 – Utilities – of the Los Angeles County Code, Division 2 (Sanitary Sewer and Industrial Waste), to provide adequate sewerage for each such possible parcel.

Exception: When the Authority Having Jurisdiction finds that the character of a lot is such that no further subdivision can be reasonably anticipated, or the use is such as to preclude subdivision, or where the owner has executed a covenant stating that the lot or parcel of land, together with all improvements thereon, will be maintained as a unit and that before any subdivision is made or any portion of said lot is transferred to another owner, separate sewerage facilities as hereinbefore required in this Section will be installed, the drainage system of all buildings may be connected to a common building sewer or private sewage disposal system. The covenant shall be recorded by the owner in the office of the Registrar-Recorder as part of the conditions of ownership of said property. Such agreement shall be binding on all heirs, successors, and assigns to said property.

This exception shall apply only while the whole of such lot remains in one undivided ownership. Upon the transfer of any portion of such lot other than the whole thereof to another owner, whether such transfer is made before or after the operative date of the ordinance adding this provision, the exception shall cease and a person shall not use or maintain any building or structure except in compliance with the provisions of this Code. As used in this Section, a sale, foreclosure, or contract to sell by the terms of which the purchaser is given the right of possession shall be deemed a transfer.

SECTION 14. Section 728.0 is hereby added to read as follows:

728.0 Building Sewer Connection Requirements.

728.1 Size. That portion of the building sewer extending from the public sewer to the property line shall be not less than 4 inches (100 mm) in internal diameter.

728.2 Depth. When laid within the limits of any public thoroughfare when the public sewer is sufficiently deep, no building sewer shall be less than 6 feet (1.8 m) below grade. Whenever practicable, the alignment and grade of each building sewer shall be straight from the public sewer to the property line.

728.3 Taps and Saddles. Whenever it becomes necessary to connect a building sewer to a public sewer at a point where no branch fitting has been installed in the public sewer, such connection shall be made as required by Title 20 – Utilities – of the Los Angeles County Code, Division 2 (Sanitary Sewer and Industrial Waste).

728.4 Connection to Trunks. Whenever required, an approved-type unvented running trap shall be installed in each building sewer, which is connected directly to a trunk sewer by any means whatsoever. Each such running trap shall be installed in the building sewer between the house drain or drains and the connection to the trunk sewer. A T-type cleanout shall be installed in the building sewer immediately below the running trap. This cleanout need not be extended to grade. Every running trap and cleanout shall be located on the lot served by the building sewer.

728.5 Street Widening. Where a future street or road-widening area has been established by the master plan of highways or in any other manner, all

work installed in such area shall conform to the requirements established in this or other related ordinances for work on public property.

728.6 Main Line Required. Building sewer construction shall conform to the requirements of main line sewers as set forth in Title 20 – Utilities – of the Los Angeles County Code, Division 2 (Sanitary Sewer and Industrial Waste), when either of the following conditions exists:

1. Where the Authority Having Jurisdiction requires such construction because of the character or quantity of the sewage or industrial waste to be discharged.

2. Where the sewer is designed to be, or proposed to be, dedicated to the County of Los Angeles at the present or any future time.

SECTION 15. Table H 101.8 of Appendix H is hereby amended to read as follows:

TABLE H 101.8
LOCATION OF SEWAGE DISPOSAL SYSTEM

MINIMUM HORIZONTAL DISTANCE	BUILDING SEWER	SEPTIC TANK	DISPOSAL FIELD	SEEPAGE PIT OR CESSPOOL
Building or structures[1]	2 feet	5 feet	8 feet	8 feet
Property line adjoining private property	Clear[2]	5 feet	5 feet	8 feet
Water supply wells[9]	50 feet[3]	50 feet	100 feet	150 feet
Streams and other bodies of water[9]	50 feet	50 feet	100 feet[7]	150 feet[7]
Trees[10]		10 feet		10 feet
Seepage pits or cesspools[8]		5 feet	5 feet	12 feet
Disposal field[8]		5 feet	4 feet[4]	5 feet
On-site domestic water service line	1 foot[5]	5 feet	5 feet	5 feet
Distribution box			5 feet	5 feet
Pressure public water main	10 feet[6]	10 feet	10 feet	10 feet

For SI units: 1 foot = 304.8 mm

Notes:

1 Including porches and steps, whether covered or uncovered, breezeways, roofed porte cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.
2 See Section 312.3.
3 Drainage piping shall clear domestic water supply wells by not less than 50 feet (15 240 mm). This distance shall be permitted to be reduced to not less than 25 feet (7620 mm) where the drainage piping is constructed of materials approved for use within a building.
4 Plus 2 feet (610 mm) for each additional 1 foot (305 mm) of depth in excess of 1 foot (305 mm) below the bottom of the drain line. (See Section H 601.0)
5 See Section 720.0.
6 For parallel construction -- For crossings, approval by the Health Department shall be required.
7 These minimum clear horizontal distances shall also apply between disposal fields, seepage pits, and the mean high-tide line.
8 Where disposal fields, seepage pits, or both are installed in sloping ground, the minimum horizontal distance between any part of the leaching system and ground surface shall be 15 feet (4572 mm).
9 Where special hazards are involved, the distance required shall be increased as may be directed by the Authority Having Jurisdiction.
10 The septic tank and seepage pit shall not be within the protected zone of an oak tree as defined by Section 22.14.150 of Title 22 – Planning and Zoning – of the Los Angeles County Code.

SECTION 16. Table H 201.1(1) of Appendix H is hereby amended to read as follows:

TABLE H 201.1(1)
CAPACITY OF SEPTIC TANKS[1, 2, 3, 4, 5]

SINGLE-FAMILY DWELLINGS - NUMBER OF BEDROOMS	MULTIPLE DWELLING UNITS OR APARTMENTS - ONE BEDROOM EACH	OTHER USES: MAXIMUM FIXTURE UNITS SERVED PER TABLE 702.1	MINIMUM SEPTIC TANK CAPACITY (gallons)
1 or 2	—	15	750
3	—	20	1000
4	2 units	25	1200
5 or 6	3	33	1500
—	4	45	2000
—	5	55	2250
—	6	60	2500
—	7	70	2750
—	8	80	3000
—	9	90	3250
—	10	100	3500

For SI units: 1 gallon = 3.785 L

Notes:

1 Extra bedroom, 150 gallons (568 L) each.
2 Extra dwelling units over 10:250 gallons (946 L) each.
3 Extra fixture units over 100: 25 gallons (94.6 L) per fixture unit.
4 Septic tank sizes in this table include sludge storage capacity and the connection of domestic food waste disposers without further volume increase.
5 Applies to mobile homes not installed in a mobile home park.

SECTION 17. Table H 201.1(2) of Appendix H is hereby amended to read as follows:

TABLE H 201.1(2)
DESIGN CRITERIA OF ~~FIVE~~SIX TYPICAL SOILS

TYPE OF SOIL	REQUIRED SQUARE FEET OF LEACHING AREA PER 100 GALLONS	MAXIMUM ABSORPTION CAPACITY IN GALLONS PER SQUARE FEET OF LEACHING AREA FOR A 24 HOUR PERIOD
Coarse sand or gravel	20	5.0
Fine sand	25	4.0
Sandy loam ~~or sandy clay~~	40	2.5
Sandy clay	60	1.66
Clay with considerable sand or gravel	90	1.1
Clay with small amount of sand or gravel	120	0.8

For SI units: 1 square foot = 0.0929 m^2, 1 gallon = 3.785 L, 1 gallon per square foot = 40.7 L/m^2

SECTION 18. Table H 201.1(3) of Appendix H is hereby amended to read as follows:

TABLE H 201.1(3)
LEACHING AREA SIZE BASED ON SEPTIC TANK CAPACITY

REQUIRED SQUARE FEET OF LEACHING AREA PER 100 GALLONS SEPTIC TANK CAPACITY (square feet per 100 gallons)	MAXIMUM SEPTIC TANK SIZE ALLOWABLE (gallons)
20-25	7500
40	5000
60	3500
90	~~3500~~3000
120	~~3000~~2500

For SI units: 1 square foot per 100 gallons = 0.000245 m^2/L, 1 gallon = 3.785 L

SECTION 19. Table H 201.1(4) of Appendix H is hereby amended to read as follows:

TABLE H 201.1(4)
ESTIMATED WASTE SEWAGE FLOW RATES[1, 2, 3]

TYPE OF OCCUPANCY	GALLONS PER DAY
Airports (per employee)	15
Airports (per passenger)	5
Auto washers – check with equipment manufacturer	-
Bowling alleys – with snack bar only (per lane)	75
Campground – with central comfort station (per person)	35
Campground – with flush toilets - no showers (per person)	25
Camps (day) – no meals served (per person)	15
Camps (summer and seasonal camps) – (per person)	50
Churches – sanctuary (per seat)	5
Churches – with kitchen waste (per seat)	7
Dance halls – (per person)	5
Factories – no showers (per employee)	25
Factories – with showers (per employee)	35
Factories – with cafeteria (per employee)	5
Hospitals – (per bed)	250
Hospitals – kitchen waste only (per bed)	25
Hospitals – laundry waste only (per bed)	40
Hotels – no kitchen waste (per bed)	60
Institutions – resident (per person)	75
Nursing home – (per person)	125
Rest home – (per person)	125

Laundries – self-service with minimum 10 hours per day (per ~~wash cycle~~machine)	3005~~0~~
Laundries – commercial check with manufacturer's specification	-
Motel (per bed space)	50
Motel – with kitchen (per bed space)	60
Offices – (per employee)	20
~~Parks – mobile homes (per space)~~	~~250~~
Parks (picnic) – with toilets only (per parking space)	20
Parks (recreational vehicles) – without water hook-up (per space)	75
Parks (recreational vehicles) – with water and sewer hook-up (per space)	100
Restaurants – cafeteria (per ~~employee~~seat)	502~~0~~
~~Restaurants – with toilet waste (per customer)~~	~~7~~
~~Restaurants – with kitchen waste (per meal)~~	~~6~~
~~Restaurants – with kitchen waste disposable service (per meal)~~	~~2~~
~~Restaurants – with garbage disposal (per meal)~~	~~1~~
~~Restaurants – with cocktail lounge (per customer)~~	~~2~~
Schools staff and office (per person)	20
Schools – elementary (per student)	15
Schools – intermediate and high (per student)	20
Schools – with gym and showers (per student)	5
Schools – with cafeteria (per student)	3
Schools (boarding) – total waste (per person)	100
Service station – with toilets for 1st bay	1000
Service station – with toilets for each additional bay	500
Stores – (per employee)	20

Stores – with public restrooms (per 10 square feet of floor space)	1
Swimming pools – (per person)	10
Theaters – auditoriums (per seat)	5
Theaters – with drive-in (per space)	10

For SI units: 1 square foot = 0.0929 m^2, 1 gallon per day 3.785 L/day

Notes:

~~1 Sewage disposal systems sized using the estimated waste/sewage flow rates shall be calculated as follows:~~

~~(a) Waste/sewage flow, up to 1500 gallons per day (5678 L/day)~~
~~Flow x 1.5 = septic tank size~~

~~(b) Waste/sewage flow, over 1500 gallons per day (5678 L/day)~~
~~Flow x 0.75 + 1125 = septic tank size~~

~~(c) Secondary system shall be sized for total flow per 24 hours.~~

~~2~~1 See Section H 201.1.

~~3~~2 Because of the many variables encountered, it is not possible to set absolute values for waste/sewage flow rates for all situations. The designer should evaluate each situation and, where figures in this table need modification, they should be made with the concurrence of the Authority Having Jurisdiction.

SECTION 20. Section H 301.1 is hereby amended to read as follows:

H 301.1 General.

. . .

(3) No excavation for a leach line or leach bed shall be located within 5 feet (1524 mm) of ~~the~~groundwater ~~table~~ nor to a depth where sewage ~~is capable of contaminating~~may contaminate the underground water stratum ~~that is useable for domestic purposes~~.

Exception: ~~In areas where the records or data indicate that the groundwaters are grossly degraded, the 5 foot (1524 mm) separation requirement shall be permitted to be reduced by the Authority Having Jurisdiction~~When approved by the Authority Having Jurisdiction, this distance may be reduced to 5 feet (1524 mm) from ocean water. The applicant shall supply evidence of groundwater depth to the satisfaction of the Authority Having Jurisdiction.

(4) The minimum effective absorption area in any seepage pit shall be calculated as the excavated sidewall area below the inlet exclusive of any hardpan, rock, clay, or other impervious formations. The minimum required area of porous formation shall be provided in one or more seepage pits. No excavation shall extend within 10 feet (3048 mm) of ~~the~~groundwater ~~table~~ nor to a depth where sewage ~~is capable of contaminating~~may contaminate the underground water stratum ~~that is useable for domestic purposes~~.

Exception: ~~In areas where the records or data indicate that the groundwaters are grossly degraded, the 10 foot (3048 mm) separation requirement shall be permitted to be reduced by the Authority Having Jurisdiction~~When approved by the Authority Having Jurisdiction, this distance may be reduced to 5 feet (1524 mm) from ocean water.

. . .

SECTION 21. Section H 401.3 is hereby amended to read as follows:

H 401.3 Absorption Rates. Where a percolation test is required, the proposed system shall have the capability to absorb a quantity of clear water in a 24-hour period equal to at least five times the liquid capacity of the proposed septic tank. ~~n~~No private disposal system shall be permitted to serve a building if that test shows the absorption capacity of the soil is less than 0.83 gallons per square foot (gal/ft^2) (33.8 L/m^2) or more than 5.12 gal/ft^2 (208.6 L/m^2) of leaching area per 24 hours. Where the percolation test shows an absorption rate greater than 5.12 gal/ft^2 (208.6 L/m^2) per 24 hours, a private disposal system shall be permitted where the site does not

overlie groundwaters protected for drinking water supplies, a minimum thickness of 2 feet (610 mm) of the native soil below the entire proposed system is replaced by loamy sand, and the system design is based on percolation tests made in the loamy sand.

SECTION 22. Section H 601.5 is hereby amended to read as follows:

H 601.5 Distribution Boxes. Where two or more drain lines are installed, an approved distribution box of sufficient size to receive lateral lines shall be installed at the head of each disposal field. The inverts of outlets shall be level, and the invert of the inlet shall be not less than 1 inch (25.4 mm) above the outlets. Distribution boxes shall be designed to ensure equal flow and shall be installed on a level concrete slab in natural or compacted soil. Distribution boxes shall be coated on the inside with a bituminous coating or other approved method acceptable to the Authority Having Jurisdiction.

SECTION 23. Section H 601.8 is hereby amended to read as follows:

H 601.8 Dosing Tanks. ~~Where the quantity of sewage exceeds the amount that is permitted to be disposed in 500 lineal feet (152.4 m) of leach line, a dosing tank shall be used. Dosing tanks shall be equipped with an automatic siphon or pump that discharges the tank once every 3 or 4 hours. The tank shall have a capacity equal to 60 to 75 percent of the interior capacity of the pipe to be dosed at one time. Where the total length of pipe exceeds 1000 lineal feet (305 m), the dosing tank shall be provided with two siphons or pumps dosing alternately and each serving one half of the leach field~~Automatic syphon or dosing tanks shall be installed when required or as permitted by the Authority Having Jurisdiction.

SECTION 24. Section H 701.2 is hereby amended to read as follows:

H 701.2 Multiple Installations. Multiple seepage pit installations shall be served through an approved distribution box or be connected in series ~~using watertight connection laid on undisturbed or compacted soil. The outlet from the pit shall have~~. When connected in series, the effluent shall leave each pit through an approved vented leg fitting extending not less than 12 inches (305 mm) ~~below the inlet fitting~~downward into such existing pit and having its outlet flow line at least 6 inches below the inlet. All pipe between pits shall be laid with approved watertight joints.

SECTION 25. Section H 1001.1 is hereby amended to read as follows:

H 1001.1 Inspection. Inspection requirements shall comply with the following:

(1) Applicable provisions of Section ~~105.0~~104.0 of this ~~e~~Code and this ~~a~~Appendix shall be required. Plans shall be required in accordance with Section ~~103.3~~102.1 of this ~~e~~Code.

. . .

(5) Disposal fields and seepage pits shall not be installed in uncompacted fill.

SECTION 26. Section H 1101.6 is hereby added to read as follows:

H 1101.6 Excavation. No excavation for an abandoned sewer or sewage facility shall be left unattended at any time, unless the permittee shall have first provided a suitable and adequate barricade to assure public safety.

SECTION 27. Appendix S is hereby added to read as follows:

APPENDIX S

SOLAR THERMAL ENERGY SYSTEMS

S 1.0 General.

In addition to the requirements of this Appendix, the provisions of this Code and Title 29 – Mechanical Code – of the Los Angeles County Code shall apply to the erection, installation, alteration, relocation, replacement, addition to, use, maintenance and repair of solar thermal energy systems, including, but not limited to, equipment and appliances intended to utilize solar thermal energy for water heating and swimming pool heating.

S 2.0 Definitions.

For the purpose of this Appendix, certain terms, words, phrases, and their derivatives shall be construed as set forth in this Section. Whenever terms are not defined, their ordinary dictionary meaning shall apply.

Absorber. That part of the solar collector that receives the incident radiation energy.

Absorptance. The collecting of heat, measured as percent of total radiation available.

Ambient Temperature. Surrounding temperature.

Aperture. The maximum projected area of a solar collector through which the unconcentrated solar radiant energy is admitted.

Area, Absorber. The total projected heat transfer area from which the absorbed solar irradiation heats the transfer media.

Auxiliary Heating System. Equipment using non-solar energy sources to supplement or back up the output provided by a solar thermal energy system.

Closed Loop System. A system where the fluid is enclosed in a piping system that is not vented to the atmosphere.

Collector. See Solar Collector.

Collector Cover (Glazing). The material covering the aperture to provide thermal and environmental protection.

Collector System. That section of the solar collector system that includes the collector and piping or ducts from the collector to the storage system.

Combustible Liquid. A liquid having a flash point at or above 100°F (38°C). Combustible liquids shall be divided into the following classifications:

(1) Class II liquids having a flash point above 100°F (38°C) and below 140°F (60°C).

(2) Class IIIA liquids having a flash point at or above 140°F (60°C) and below 200°F (93°C).

(3) Class IIIB liquids having a flash point at or above 200°F (93°C).

The classifications of combustible liquids do not include compressed gases or cryogenic fluids.

Concentrating Solar Collector. A solar collector that uses reflectors, lenses, or other optical elements to concentrate the radiant energy passing through the aperture onto an absorber of which the surface area is smaller than the aperture area.

Design Pressure. The maximum allowable pressure for which a specific part of a system is designed.

Design Temperature. The maximum allowable continuous or intermittent temperature for which a specific part of a solar energy system is designed to operate safely and reliably.

Distribution System. That section of the solar energy system from the storage system to the point of use.

Drainback System. A closed loop system which allows gravity draining of the heat transfer fluid into lower portions of the solar loop under prescribed circumstances.

Draindown (Drainback). An active solar energy system in which the fluid in the solar collector is drained from the solar energy system under prescribed circumstances.

Energy Collector Fluid. That fluid used to transfer energy from the collector to the storage system or point of use.

Energy Storage Fluid (or Media). That fluid (or media) used in the storage container for storing collected energy.

Energy Transfer Fluid. That fluid used within a closed system either from the collector to the storage system or from the storage system to the point of use.

Essentially Nontoxic Transfer Fluid. Fluid generally recognized as safe by the Food and Drug Administration (FDA) as food grade.

External Auxiliary Heating. Auxiliary heating device located outside the storage. The heat is transferred to the storage by direct or indirect charging via a charge loop.

Fail-Safe Freeze Protection. A freeze-protection method that does not rely on the activation or continued operation of any mechanical or electrical component.

Flammable Liquid. Any liquid that has a flash point below 100°F (38°C), and has a vapor pressure not exceeding 40 psi (276 kPa) at 100°F (38°C). Flammable liquids shall be known as Class I liquids and shall be divided into the following classifications:

(1) Class IA liquids having a flash point below 73°F (23°C) and a boiling point below 100°F (38°C).

(2) Class IB liquids having a flash point below 73°F (23°C) and a boiling point at or above 100°F (38°C).

(3) Class IC liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

Flash Point. The minimum temperature corrected to a pressure of 14.7 psi (101 kPa) at which a test flame causes the vapors of a portion of the sample to ignite under the conditions specified by the test procedures and apparatus. The flash point of a liquid shall be determined in accordance with ASTM D 56, ASTM D 93, or ASTM D 3278.

Freeze Protection. Any method for protecting solar thermal systems from damage due to freezing conditions where installed in locations where freezing ambient temperature conditions exist.

Heat Exchanger. A device that transfers heat from one medium to another.

Heat Transfer Medium. The medium used to transfer energy from the solar collectors to the thermal storage or load.

Immersed Heat Exchanger. Heat exchanger, which is completely surrounded with the fluid in the storage tank.

Instantaneous Efficiency. The amount of energy removed by the transfer fluid per gross collector area, during a specified time period, divided by the total solar radiation incident on the collector per unit area during the same test period, under steady state or quasi-steady state.

Integral Collector Storage. A solar thermal heating system that uses a solar collector that has all or most of its heat transfer medium inside the collector.

Langelier Saturation Index. A formula used to measure water balance or mineral saturation control of pool, spa, or hot tub water. Total alkalinity, calcium hardness, pH, water temperature, and total dissolved solids are measured, given a factor, and calculated to determine whether water has a tendency to be corrosive or scale forming.

Open Loop System. A system where the fluid is enclosed in a piping system that is vented to the atmosphere.

Out-Gassing. As applied to thermal energy, the thermal process by which materials expel gas.

Passive Solar Systems. As used in these requirements, are solar energy systems that utilize elements of a building, without augmentation by mechanical components such as blowers or pumps, to provide for the collections, storage, or distribution of solar energy for heating, cooling, or both.

Rock Storage. A bin, basement, or other container filled with rock to act as an energy reservoir for a solar energy system.

Solar Collector. A device used to absorb energy from the sun.

Solar Energy System. A configuration of equipment and components to collect, convey, store, and convert the sun's energy for a purpose.

Solar Energy System Components. Any appliance, assembly, device, equipment, or piping used in the conversion of solar energy into thermal energy for service water heating, pool water heating, space heating and cooling, and electrical service.

Solar Thermal Energy System. See Solar Thermal System.

Solar Thermal System. A complete assembly of subsystems which convert solar energy into thermal energy and utilize this energy for service water heating, pool water heating, space heating and cooling purposes.

Storage Temperature. Temperature of the storage medium.

Thermal Energy. The amount of sensible heat energy stored within a material or fluid. The product of the mass, specific thermal capacity, and temperature increase/decrease of the material or fluid. Also known as sensible heat energy.

Thermal Storage. A tank or vessel used in a solar thermal, hydronic, or geothermal system, in which thermal energy is stored.

Thermosiphon. The natural circulation of fluids due to temperature differential.

Total Alkalinity. The sum of all alkaline minerals in the water that is primarily in bicarbonate form, but also as sodium, calcium, magnesium, potassium carbonates, and hydroxides. It is a measure of the water's ability to resist changes in pH.

S 3.0 Permits Required.

It shall be unlawful for a person, firm, or corporation to construct, install, alter, repair, replace, or remodel a solar thermal energy system regulated by this Code or cause the same to be done without first obtaining a separate permit for each separate system or interconnected set of systems as specified in Section 103.0 of this Code.

S 4.0 Plans and Specifications.

Plans, engineering calculations, diagrams, and other data shall be submitted in one or more sets with each application for a permit. Where required by the Authority Having Jurisdiction, the plans, computations, diagrams, specifications, and other data shall be prepared by, and the solar thermal energy system designed by, an engineer, an architect, or both, who shall be licensed by the state to practice as such.

Exception: The submission of plans, calculations, or other data may be waived where the Authority Having Jurisdiction determines that the nature of the work applied

for is such that reviewing of plans is not necessary to obtain compliance within the Code.

S 5.0 Installation.

S 5.1 Listed Appliances. Except as otherwise provided in this Code, the installation of appliances regulated by this Code shall be in accordance with the conditions of the listing. The appliance installer shall leave the manufacturer's installation and operating instructions attached to the appliance. Clearances of listed appliances from combustible materials shall be as specified in the listing or on the rating plate.

S 5.2 Standards. Standards listed or referred to in this Appendix or other provisions of this Code cover materials that will conform to the requirements of this Code, where used in accordance with the limitations prescribed in this Code and their listing. Where a standard covers materials of various grades, weights, quality, or configurations, the portion of the listed standard that is applicable shall be used. Design and materials for special conditions or materials not provided for herein may be permitted as authorized by Section 301.3. A list of standards that appear in specific sections of this Appendix are referenced in Table S 18.1. A list of additional standards, publications, practices, and guides that are not referenced in specific sections of this Appendix appear in Table S 18.2. The documents indicated in Table S 18.2 shall be permitted in accordance with Section 301.3.

S 6.0 Inspection and Testing.

S 6.1 General. Solar thermal energy systems for which a permit is required by this Code shall be inspected by the Authority Having Jurisdiction. No solar thermal energy system or portion thereof shall be covered, concealed, or put into use until it first has been tested, inspected, and approved as prescribed in this Code. Neither the Authority Having Jurisdiction nor the jurisdiction shall be liable for expense entailed in the removal or replacement of material required to permit inspection. Solar thermal energy systems regulated by this Code shall not be connected to the water, the energy fuel supply, or the sewer system until authorized by the Authority Having Jurisdiction. Installation of a solar thermal energy system shall comply with other parts of this Code, including Section 104.0.

S 6.2 Required Inspection. New solar thermal energy system work and such portions of existing systems as affected by new work, or changes, shall be inspected by the Authority Having Jurisdiction to ensure compliance with the requirements of this Code and to ensure that the installation and construction of the solar thermal energy system is in accordance with approved plans. The Authority Having Jurisdiction shall make the following inspections and other such inspections as necessary. The permittee or the permittee's authorized agent shall be responsible for the scheduling of such inspections as follows:

(1) Underground inspection shall be made after trenches or ditches are excavated and bedded, piping installed, and before backfill is put in place.

(2) Rough-in inspection shall be made prior to the installation of wall or ceiling membranes.

(3) Final inspection shall be made upon completion of the installation.

S 6.3 Testing. Solar thermal energy systems shall be tested and approved as required by this Code or the Authority Having Jurisdiction.

S 6.3.1 Piping. The piping of the solar thermal system shall be tested with water, air, a heat transfer medium, or as recommended by the manufacturer's instructions, except that plastic pipe shall not be tested with air. The Authority Having Jurisdiction shall be permitted to require the removal of plugs, etc., to ascertain where the pressure has reached all parts of the system.

S 6.3.2 System Requirements. Prior to the installation of insulation and startup, a solar thermal system, including piping, collectors, heat exchangers, and other related equipment, shall be tested and proved airtight.

S 6.3.2.1 Direct (Open Loop) Systems. Direct (open loop) systems shall be tested under a water pressure not less than one and one-half times the maximum design operating pressure or 150 pounds force per square inch (psi) (1034 kPa), whichever is more. Systems shall withstand the test without leaking for a period of not less than 15 minutes.

S 6.3.2.2 Indirect (Closed Loop) Systems. Indirect (closed loop) systems shall be hydrostatically tested at one and one-half times the maximum designed operating pressure in accordance with the manufacturer's installation instructions. Systems shall withstand the test without leaking for a period of not less than 15 minutes.

S 6.3.3 Test Pressure for Storage Tanks. The test pressure for storage tanks that are subject to water pressure from utility mains (with or without a pressure

reducing valve) shall be two times the working pressure but not less than 300 psi (2068 kPa).

S 6.3.3.1 Pressure Type. Pressure-type storage tanks exceeding 15 psi (103 kPa) shall be tested in accordance with ASME BPVC Section VIII. Pressure-type storage tanks not exceeding 15 psi (103 kPa) shall be hydrostatically tested at one and one-half times the maximum design operating pressure.

S 6.3.3.2 Atmospheric-Type. Atmospheric-type thermal storage tanks shall be tested by filling with water for a period of 24 hours prior to inspection and shall withstand the test without leaking. No thermal storage tank or portion thereof shall be covered or concealed prior to approval.

S 6.3.4 Connection to Service Utilities. No person shall make connections from a source of energy or fuel to a solar thermal energy system or equipment regulated by this Code and for which a permit is required until approved by the Authority Having Jurisdiction. No person shall make connection from a water-supply line nor shall they connect to a sewer system regulated by this Code and for which a permit is required until approved by the Authority Having Jurisdiction. The Authority Having Jurisdiction shall be permitted to authorize temporary connection of the solar thermal energy system equipment to the source of energy or fuel for the purpose of testing the equipment.

S 7.0 Water Heating Systems.

S 7.1 Solar Water Heating System. Solar water heating systems shall be in accordance with IAPMO S1001.1 or ICC 900/SRCC 300. Where solar collectors

are capable of being isolated from the remainder of the system, a suitable pressure relief valve shall be installed in the isolatable section.

S 7.2 Auxiliary Heating System. An auxiliary heating system shall be installed in conjunction with the solar thermal system and shall be adequate to provide service in the absence of solar thermal energy input. An auxiliary heating system that utilizes electricity as the energy source shall be in accordance with Section S 15.0. Auxiliary heating systems that utilize solid fuel or fuel gas as the energy source shall be in accordance with Title 29 – Mechanical Code – of the Los Angeles County Code.

S 8.0 Abandonment.

S 8.1 General. An abandoned solar thermal energy system or part thereof shall be disconnected from remaining systems, drained, plugged, and capped in a manner satisfactory to the Authority Having Jurisdiction.

S 8.2 Storage Tank. An underground water storage tank that has been abandoned or discontinued otherwise from use in a solar thermal energy system shall be completely drained and filled with earth, sand, gravel, concrete, or other approved material or removed in a manner satisfactory to the Authority Having Jurisdiction.

S 9.0 Tanks.

S 9.1 Storage Tanks.

S 9.1.1 Plans. Plans for tanks shall be submitted to the Authority Having Jurisdiction for approval, unless listed by an approved listing agency. Such plans shall show dimensions, reinforcing, structural calculations, and such other pertinent data as required by the Authority Having Jurisdiction.

S 9.1.2 Atmospheric Tanks. Atmospheric storage tanks shall be vented to the atmosphere and installed in accordance with the manufacturer's installation instructions.

S 9.1.2.1 Overflow. Gravity tanks shall be installed with an overflow opening of not less than 2 inches in diameter. The openings shall be above ground and installed with a screened return bend.

S 9.1.2.2 Makeup Water. Makeup water from a potable water system to an atmospheric tank shall be protected by an air gap.

S 9.1.2.3 Draining. An overflow shall be provided for an atmospheric tank. The overflow shall be provided with a means of drainage in accordance with Section 303.0 of this Code. The overflow for an atmospheric tank containing nonpotable water shall be emptied into an approved container.

S 9.1.3 Prefabricated Storage Tanks. Prefabricated tanks shall be listed by an approved agency and labeled.

S 9.1.4 Pressure Vessels. A pressure-type storage tank exceeding an operating pressure of 15 psi (103kPa) shall be constructed in accordance with ASME BPVC Section VIII.1. Fiber-reinforced plastic storage tanks shall be constructed in accordance with ASME BPVC Section X.

S 9.1.5 Devices. Devices attached to or within a tank shall be accessible for repair and replacement.

S 9.1.5.1 Safety Devices. Pressure-type thermal storage tanks shall be installed with a listed combination temperature and pressure relief valve in accordance

with Section S 14.3.1. The temperature setting shall not exceed 210°F (99°C) and the pressure setting shall not exceed 150 percent of the maximum designed operating pressure of the system, or 150 percent of the established normal operating pressure of the piping materials, or the labeled maximum operating pressure of a pressure-type storage tank, whichever is less. The pressure and temperature setting shall not exceed the pressure and temperature rating of the tank or as recommended by the tank manufacturer.

Storage tanks and bottom fed tanks connected to a water heater shall be designed to withstand vacuum induced pressure, or shall be provided with a vacuum relief in accordance with Section S 14.3.4. The vacuum relief valve shall be installed at the top of the tank and shall have an operating pressure not to exceed 200 psi (1379 kPa) and a temperature rating not to exceed 250°F (121°C). The size of such vacuum relief valves shall have a minimum rated capacity for the equipment served. This Section shall not apply to pressurized captive air diaphragm or bladder tanks.

S 9.1.6 Separate Storage Tanks. For installations with separate storage tanks, a pressure relief valve and temperature relief valve or combination thereof shall be installed on both the main storage tank and auxiliary tank.

S 9.1.6.1 Isolation Valves. Storage tanks shall be provided with isolation valves for servicing.

S 9.1.7 Underground Storage Tanks. Tanks shall be permitted to be buried underground where designed and constructed for such installation.

S 9.1.8 Tank Covers. Tank covers shall be structurally designed to withstand anticipated loads and pressures in accordance with the manufacturer's instructions.

S 9.1.9 Drainage Pan. Where water heater, boiler, or other thermal storage tank is installed in an attic, attic-ceiling assembly, floor-ceiling assembly, or floor subfloor assembly where damage could result from a leaking water heater, boiler or tank, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater, boiler, or tank, with not less than 3/4 of an inch (20 mm) diameter drain to an approved location. Such pan shall be not less than 1 ½ inches (38mm) in depth.

S 9.1.10 Storage Tank Construction and Materials.

S 9.1.10.1 Construction. Storage tanks shall be constructed of durable materials not subject to excessive corrosion or decay and shall be watertight. Each such tank shall be structurally designed to withstand anticipated loads and pressures and shall be installed level and on a solid bed.

S 9.1.10.2 Concrete. The walls and floor of each poured-in-place, concrete tank shall be monolithic. The exterior walls shall be double-formed so as to provide exposure of the exterior walls during the required water test. The compressive strength of a concrete tank wall, top and covers, or floor shall be not less than 2500 pounds-force per square inch (psi) (lb/in^2) (1.7236 E+04, kPa). Where required by the Authority Having Jurisdiction, the concrete shall be sulfate resistant (Type V Portland Cement).

S 9.1.10.3 Metal Tanks. Metal tanks shall be welded, riveted and caulked, brazed, bolted, or constructed using a combination of these methods.

S 9.1.10.4 Filler Metal. Filler metal used in brazing shall be non-ferrous metal or an alloy having a melting point above 1000°F (538°C) and below that of the metal joined.

S 9.1.10.5 Insulation. Tank insulation shall have a thermal resistance not less than as shown in Table S 9.1.10.5. The temperature difference shall be calculated as the difference between the design operating temperature of the tank and the temperature of the surrounding air, or soil where the tank is installed underground. Where such data is not available, a temperature difference of 50°F (28°C) shall be used.

TABLE S 9.1.10.5

TEMPERATURE DIFFERENCE(°F)	THERMAL RESISTANCE (*R*)[°F•h•ft² /(Btu)]
50	6
100	12
150	18
200	24
250	30

For SI units: °C = °F(0.5555556), 1 degree Fahrenheit hour square foot per British thermal unit = [0.176 (m2•K)/W], 1 British thermal unit inch per degree Fahrenheit hour square feet = 0.1441 W/(m•K)* Based on thermal conductivity (*k*) of 0.20 [(Btu•inch)/(°F•h•ft²)] (0.03 W/(m•K)

S 9.2 Expansion Tanks.

S 9.2.1 Where Required. An expansion tank shall be installed in a solar thermal energy system as a means for controlling increased pressure caused by thermal expansion. Expansion tanks shall be of the closed type and securely fastened to the structure. Tanks shall be rated for the pressure of the system. Supports shall be

capable of carrying twice the weight of the tank filled with water without placing strain on the connecting piping.

Solar thermal energy systems incorporating hot water tanks or fluid relief columns shall be installed to prevent freezing under normal operating conditions.

S 9.2.2 Closed-Type Solar Thermal Energy Systems. Closed-type systems shall have an airtight tank or other approved air cushion that will be consistent with the volume and capacity of the system, and shall be designed for a hydrostatic test pressure of two and one-half times the allowable working pressure of the system. Expansion tanks for systems designed to operate at more than 30 pounds-force per square inch (psi) (207 kPa) shall comply with ASME BPVC Section VIII.1. Provisions shall be made for draining the tank without emptying the system.

S 9.2.3 Minimum Capacity of Closed-Type Expansion Tanks. The minimum capacity for a gravity-type hot water system expansion tank shall be in accordance with Table S 9.2.3(1). The minimum capacity for a forced-type hot water system expansion tank shall be in accordance with Table S 9.2.3(2) or Equation S 9.2.3(1). The minimum capacity for diaphragm tanks shall be in accordance with Table S 9.2.3(2) or Equation S 9.2.3(2).

Equation S 9.2.3(1)

$$Vt(\text{forced type}) = \frac{(C_1 t - C_2)V_s}{\left(\frac{P_a}{P_f} - \frac{P_a}{P_o}\right)}$$

Equation S 9.2.3(2)

$$\frac{(C_1 t - C_2)V_s}{\left(1 - \frac{P_f}{P_o}\right)} \quad Vt(diaphram) =$$

Where:
C_1 = 0.00041
C_2 = 0.0466
Vt = Minimum volume of expansion tank, gallons (L)
Vs = Volume of system, not including expansion tank, gallons (L)
t = Average operating temperature, °F (°C).
Pa = Atmospheric pressure, pounds per square inch (kPa)
Pf = Fill pressure, pounds per square inch (kPa)
Po = Maximum operating pressure, pounds per square inch (kPa)
For SI units: C_1 = 0.000738, C_2 = 0.03348, 1 gallon = 3.785 L, °C = (°F-32)/1.8, 1 pound per square inch = 6.8947 kPa

TABLE S 9.2.3(1)
EXPANSION TANK CAPACITIES FOR GRAVITY HOT WATER SYSTEMS[1]

INSTALLED EQUIVALENT DIRECT RADIATION[2] (square feet)	TANK CAPACITY (gallons)
Up to 350	18
Up to 450	21
Up to 650	24
Up to 900	30
Up to 1100	35
Up to 1400	40
Up to 1600	2 to 30
Up to 1800	2 to 30
Up to 2000	2 to 35
Up to 2400	2 to 40

For SI units: 1 gallon = 3.785 L, 1 square foot = 0.0929 m^2

Notes:

1 Based on a two-pipe system with an average operating water temperature of 170°F (77°C), using cast-iron column radiation with a heat emission rate of 150 British thermal units per square foot hour [Btu/(ft^2•h)] (473 W/m^2) equivalent direct radiation.

2 For systems exceeding 2400 square feet (222.9 m^2) of installed equivalent direct water radiation, the required capacity of the cushion tank shall be increased on the basis of 1 gallon (4 L) tank capacity per 33 square feet (3.1 m^2) of additional equivalent direct radiation.

TABLE S 9.2.3(2)
EXPANSION TANK CAPACITIES FOR FORCED WATER SYSTEMS[1]

SYSTEM VOLUME[2] (gallons)	TANK CAPACITY DIAPHRAGM TYPE (gallons)	TANK CAPACITY (gallons)
100	9	15
200	17	30
300	25	45
400	33	60
500	42	75
1000	83	150
2000	165	300

For SI units: 1 gallon = 3.785 L

Notes:

1 Based on an average operating water temperature of 195°F (91°C), a fill pressure of 12 psig (83 kPa), and an operating pressure of not more than 30 psig (207 kPa).

2 Includes volume of water in boiler, radiation, and piping, not including expansion tank.

S 10.0 Solar Collectors.

S 10.1 General. Frames and braces exposed to the weather shall be constructed of materials for exterior locations, and protected from corrosion or deterioration, in accordance with the requirements of the Authority Having Jurisdiction.

S 10.1.1 Construction. Collectors shall be designed and constructed to prevent interior condensation, out-gassing, or other processes that will reduce the transmission properties of the glazing, reduce the efficiency of the insulation, or otherwise adversely affect the performance of the collector.

S 10.1.2 Flat Plate Collector Glass. Flat plate collector glass shall be tempered.

S 10.1.3 Plastic. Plastic used in collector and other parts of the solar thermal energy system construction shall be installed in accordance with the manufacturer's installation instructions.

S 10.1.4 Listing. Collectors that are manufactured as a complete component shall be listed or labeled by an approved listing agency in accordance with ICC 901/SRCC 100, UL 1279, or equivalent standard.

S 10.1.5 Air Collectors. Materials exposed within air collectors shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke developed index not to exceed 50 where tested as a composite product in accordance with ASTM E 84 or UL 723.

S 10.1.5.1 Testing. Materials used within an air collector shall not smoke, smolder, glow, or flame where tested in accordance with ASTM C 411 at temperatures exposed to in service. In no case shall the test temperature be less than 250°F (121°C).

S 10.2 Solar Collector Installation.

S 10.2.1 General. Solar collectors shall be anchored to roof structures or other surfaces in accordance with the manufacturer's installation instructions and Title 26 – Building Code – of Los Angeles County. Collectors shall be mounted to minimize the accumulation of debris. Connecting pipes shall not be used to provide support for a solar collector.

S 10.2.2 Roof Installations. Anchors secured to and through a roofing material shall be made to maintain the water integrity of the roof covering. Roof

drainage shall not be impaired by the installation of collectors. Solar collectors that are not an integral part of the roofing system shall be installed to preserve the integrity of the roof surface.

S 10.2.3 Above Or On The Roof. Collectors located above or on roofs, and functioning as building components, shall not reduce the required fire-resistance and fire-retardance classification of the roof covering materials.

Exceptions:

(1) Collectors located on one- and two-family dwellings.

(2) Collectors located on buildings not exceeding three stories in height or 9,000 square feet (836.13 m^2) total floor area, or both, provided:

(a) The collectors are noncombustible.

(b) Collectors with plastic covers have noncombustible sides and bottoms, and the total area covered and the collector shall not exceed the following:

(i) Plastic CC1 – 33 1/3 percent of the roof area;

(ii) Plastic CC2 – 25 percent of the roof area; and

(c) Collectors with plastic film covers having a thickness of not more than 0.010 of an inch (0.25 mm) shall have noncombustible sides and bottoms, and the total area covered by the collector shall not exceed 33 1/3 percent of the roof area.

S 10.2.4 Ground Installations. Solar collectors shall terminate above finished grade to avoid obstruction by vegetation, snow, or ice. The supporting columns shall extend below the frost line.

S.10.2.5 Wall Mounted. Solar collectors mounted on a wall shall be secured and fastened in accordance with Section 313.0 of this Code.

S 10.2.6 Access. Access shall be provided to collectors and components in an approved manner. A work space adjacent to collectors for maintenance and repair shall be provided in accordance with requirements of the Authority Having Jurisdiction.

S 10.2.7 Stagnation Condition. The collector and other parts of the solar thermal assembly shall be capable of withstanding stagnant conditions in accordance with the manufacturer's instructions where high solar flux and no flow occurs.

S 10.2.8 Waterproofing. Joints between structural supports and buildings or dwellings, including penetrations made by bolts or other means of fastening, shall be made watertight with approved material.

S 10.2.9 Fasteners. Mountings and fasteners shall be made of corrosion-resistant materials. Carbon steel mountings and fasteners shall be classified as noncorrosive in accordance with ASME SA194.

S 10.2.10 Combustible Materials. Solar thermal energy systems constructed with combustible materials shall not be located on or adjacent to construction required to be of noncombustible materials or in Very High Fire Hazard Severity Zone as defined in Title 32 - Fire Code – of the Los Angeles County Code, unless approved by the Authority Having Jurisdiction.

S 10.2.11 Orientation. Collectors shall be located and oriented in accordance with the manufacturer's installation instructions.

S 10.3 Fire Safety Requirements.

S 10.3.1 Building Components. Collectors that function as building components shall be in compliance with Title 26 – Building Code – of the Los Angeles County Code.

S 11.0 Hazardous Heat Transfer Medium for Solar Thermal Energy Systems. Heat-transfer mediums that are hazardous shall not be used in solar thermal energy systems, except where approved by the Authority Having Jurisdiction.

S 11.1 Flash Points. The flash point of a heat-transfer medium shall be 50°F (10°C) or more above the design maximum temperature.

S 11.2 Discharge. The collector, collector manifold, and manifold relief valve shall not discharge directly or indirectly into the building or toward an open flame or other source of ignition.

S 12.0 Heat Exchangers.

S 12.1 General. Solar thermal energy systems utilizing heat exchangers shall protect the potable water system from being contaminated by the heat transfer medium. Systems that incorporate a single-wall heat exchanger to separate potable water from the heat transfer fluid shall meet all of the following requirements:

(1) The heat transfer medium is either potable water or contains fluids recognized as safe by the Food and Drug Administration (FDA) as food grade.

(2) A tag or label shall be securely affixed to the heat source with the word "CAUTION" and the following statements:

(a) The heat transfer medium shall be water or other nontoxic fluid recognized as safe by the FDA.

(b) The maximum operating pressure of the heat exchanger shall not exceed the maximum operating pressure of the potable water supply.

(3) The word "CAUTION" and the statements listed above shall have an uppercase height of not less than 0.120 of an inch (3.048 mm). The vertical spacing between lines of type shall be not less than 0.046 of an inch (1.168 mm). Lowercase letters shall be not less than compatible with the uppercase letter size specification.

Systems that do not comply with the requirements for a single-wall heat exchanger shall install a double-wall heat exchanger. Double-wall heat exchangers shall separate the potable water from the heat transfer medium by providing a space between the two walls vented to the atmosphere.

S 13.0 Valves.

S 13.1 General. Valves shall be rated for the operating temperature and pressures of the solar thermal energy system and shall be compatible with the type of heat transfer medium and piping materials. Valves shall be installed in accordance with this Section.

S 13.2 Heat Exchanger. Shutoff valves and isolation valves shall be installed on the supply and return side of the heat exchanger.

Exception: Where a heat exchanger is an integral part of a boiler or is a part of a manufactured boiler and heat exchanger packaged unit, and is capable of being isolated from the hydronic system by supply and return valves.

S 13.3 Pressure Vessels. Isolation valves shall be installed on connections to pressure vessels.

S 13.4 Pressure Reducing Valves. Isolation valves shall be installed on both sides of a pressure reducing valve.

S 13.5 Equipment, Components, and Appliances. Serviceable equipment, components, and appliances within the system shall have isolation valves installed upstream and downstream of such devices.

S 13.6 Expansion Tanks. Isolation valves shall be installed at connections to non-diaphragm-type expansions tanks.

S 13.7 Flow Balancing Valves. Where flow balancing valves are installed, such valves shall be capable of increasing or decreasing the amount of flow by means of adjustment.

S 13.7.1 Location. Balancing valves shall be installed at the outlet of each group of collectors.

S 13.8 Control Valves. An approved three-way valve shall be permitted to be installed for manual control systems. An approved electric control valve shall be permitted to be installed for automatic control systems. The installation and operation of automatic control valves shall comply with the manufacturer's instructions.

S 13.8.1 Mixing or Temperature Control Valves. Where mixing or temperature control valves are installed, such valves shall be capable of obtaining the design water temperature and design flow requirements.

S 13.9 Thermosiphoning. An approved type check valve shall be installed on liquid heat transfer piping to control thermosiphoning of heated liquids.

S 13.10 Air Removal Device or Air Vents. Isolation valves shall be installed where air removal devices or automatic air vents are utilized to permit cleaning, inspection, or repair without shutting the system down.

S 13.11 Closed Loop Systems. Closed loop systems, where hose bibbs or similar valves are used to charge or drain the system, shall be of loose key type; have valve outlets capped; or have handles removed where the system is operational.

S 13.12 Fullway Valves. A fullway valve shall be installed in the following locations:

(1) On the water supply to a solar thermal energy system.

(2) On the water supply pipe to a gravity or pressurized water tank.

(3) On the water supply pipe to a water heater.

S 13.13 Accessible. Required fullway or shutoff valves shall be accessible.

S 14.0 Piping and Cross-connection Control For Solar Thermal Energy Systems.

S 14.1 Cross Connection Control. No piping installation, or part thereof, shall be made in such a manner that it will be possible for used, unclean, polluted, or contaminated water, mixtures, or substances to enter a portion of the potable water system from a pipe, tank, receptor, or any other equipment by reason of backsiphonage, suction, or any other cause, either during normal use and operation thereof, or where such pipe, tank, receptor, or equipment is subject to pressure exceeding the operating pressure in the potable water system.

S 14.2 Materials.

S 14.2.1 Piping Materials. Piping, tubing, and fittings materials shall comply with Table S 14.2. Joining methods shall be in accordance with Section 605.0. Materials in contact with the heat transfer medium shall be approved for such use. Galvanized steel shall not be used for solar thermal piping systems containing antifreeze. Black steel shall not be used in systems with entrained air. Unions between dissimilar metals shall comply with Sections 310.6 and 605.15. The material used shall be capable of withstanding the maximum temperature and pressure of the system.

S 14.2.1.1 Plastic. Plastic used in the construction of a solar thermal system shall be installed in accordance with the manufacturer's installation instructions.

S 14.2.1.2 Combustible Materials. Combustible materials shall not be located on or adjacent to construction required to be of noncombustible materials or in fire areas, unless approved by the Authority Having Jurisdiction.

S 14.2.1.3 Adhesives. Adhesives used in a solar collector shall not vaporize at the design temperature.

S 14.2.1.4 Potable Water. Materials in contact with potable water shall comply with NSF 61. Piping in solar thermal systems designed to convey potable water shall be flushed and disinfected in accordance with this Code.

S 14.2.1.5 Racks. Dissimilar metals used for racking shall be isolated to prevent galvanic corrosion. Paint shall not be used as a method of isolation.

S 14.2.1.6 Fasteners. Mountings and fasteners shall be made of corrosion-resistant materials. Carbon steel mountings and fasteners shall be classified as noncorrosive in accordance with ASME SA194.

S 14.2.2 Storage Tank Connectors. Flexible metallic storage tank connectors or reinforced flexible storage tank connectors connecting a storage tank to the piping system shall be in accordance with the applicable standards referenced in Table S 18.1. Copper or stainless steel flexible connectors shall not exceed 24 inches (610 mm). PEX, PE-AL-PE, or PE-RT tubing shall not be installed within the first 18 inches (457 mm) of piping connected to a storage tank.

S 14.2.2.1 Flexible Connectors. Listed flexible connectors shall be installed in readily accessible locations, unless otherwise indicated in the listing.

S 14.3 Safety Devices.

S 14.3.1 Pressure Relief Valves. Solar thermal energy system components containing pressurized fluids shall be protected against pressures exceeding design limitations with a pressure relief valve. Each section of the system in which excessive pressures are capable of developing shall have a relief device located so that a section cannot be isolated from a relief device. Pressure and temperature relief valves shall be installed in accordance with the terms of their listing and the manufacturer's installation instructions.

TABLE S 14.2
MATERIALS FOR SOLAR THERMAL SYSTEM, PIPING, TUBING, AND FITTINGS

MATERIAL	STANDARDS	
	PIPING/TUBING	FITTINGS
Copper/Copper Alloy	ASTM B42, ASTM B43, ASTM B75, ASTM B88, ASTM B135, ASTM B251*, ASTM B302, ASTM B447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.23, ASME B16.24, ASME B16.26, ASME B16.29, ASME B16.51, ASSE 1061, ASTM F3226, IAPMO PS 117
Steel	ASTM A53, ASTM A106, ASTM A254	ASME B16.5, ASME B16.9, ASME B16.11, ASTM A420, ASTM F3226, IAPMO PS 117
Gray Iron	—	ASTM A126
Malleable Iron	—	ASME B16.3
Chlorinated Polyvinyl Chloride (CPVC)	ASTM D2846, ASTM F441, ASTM F442, CSA B137.6	ASSE 1061, ASTM D2846, ASTM F437, ASTM F438, ASTM F439, ASTM F1970, CSA B137.6
Polyethylene (PE)	ASTM D1693, ASTM D2513, ASTM D2683, ASTM D2737, ASTM D3035, ASTM D3350, ASTM F714, ASTM F2165, AWWA C901, CSA B137.1, NSF 358-1	ASTM D2609, ASTM D2683, ASTM D3261, ASTM F1055, ASTM F2165, CSA B137.1, NSF 358-1
Cross-Linked Polyethylene (PEX)	ASTM F876, ASTM F2165, ASTM F3253, CSA B137.5, NSF 358-3	ASSE 1061, ASTM F877, ASTM F1055, ASTM F1807, ASTM F1960, ASTM F2080, ASTM F2098, ASTM F2159, ASTM F2165, ASTM F2735, ASTM F3253, ASTM F3347, ASTM F3348, CSA B137.5, NSF 358-3
Polypropylene (PP)	ASTM F2165, ASTM F2389, CSA B137.11, NSF 358-2	ASTM F2165, ASTM F2389, CSA B137.11, NSF 358-2
Polyvinyl Chloride (PVC)	ASTM D1785, ASTM D2241, CSA B137.3	ASTM D2464, ASTM D2466, ASTM D2467, ASTM F1970, CSA B137.2, CSA B137.3
Raised Temperature Polyethylene (PE-RT)	ASTM F2165, ASTM F2623, ASTM F2769, CSA B137.18	ASSE 1061, ASTM D3261, ASTM F1055, ASTM F1807, ASTM F2159, ASTM F2165, ASTM F2735, ASTM F2769, CSA B137.18
Cross-Linked Polyethylene/Aluminum/ Cross-Linked Polyethylene (PEX-AL-PEX)	ASTM F1281, ASTM F2165, CSA B137.10	ASTM F1281, ASTM F1974, ASTM F2165, ASTM F2434, CSA B137.10
Polyethylene/Aluminum/Polyethylene (PE- AL-PE)	ASTM F1282, ASTM F2165, CSA B137.9	ASTM F1282, ASTM F1974, ASTM F2165, CSA B137.9
Stainless Steel	ASTM A269, ASTM A312, ASTM A554, ASTM A778	ASTM F1476, ASTM F1548, ASTM F3226, IAPMO PS 117
Chlorinated Polyvinyl Chloride/Aluminum/ Chlorinated Polyvinyl Chloride (CPVC/AL/CPVC)	ASTM F2855	ASTM D2846

Note:
* Only Type K, L, or M shall be permitted to be installed.

S 14.3.2 Pressurized Vessels. Pressurized vessels shall be provided with overpressure protection by means of a listed pressure relief valve installed in accordance with the manufacturer's installation instructions.

S 14.3.3 Discharge Piping. The discharge piping serving a temperature relief valve, pressure relief valve, or combination of both shall have no valves, obstructions, or means of isolation and comply with the following:

(1) The discharge pipe shall equal the size of the valve outlet and shall discharge full size to the flood level of the area receiving the discharge and pointing down.

(2) Materials shall be rated at not less than the operating temperature of the system and approved for such use or shall comply with ASME A112.4.1.

(3) The discharge pipe shall discharge independently by gravity through an air gap into the drainage system or outside of the building with the end of the pipe not exceeding 2 feet (610 mm) and not less than 6 inches (152 mm) above the ground and pointing downwards.

(4) The discharge pipe shall discharge in such a manner that does not cause personal injury or structural damage.

(5) No part of such discharge pipe shall be trapped or subject to freezing.

(6) The terminal end of the pipe shall not be threaded.

(7) Discharge from a relief valve into a water heater pan is prohibited.

(8) The discharge termination point shall be readily observable.

S 14.3.4 Vacuum Relief Valves. System components that are subjected to a vacuum while in operation or during shutdown shall be protected with vacuum relief valves. Where the piping configuration, equipment location, and valve outlets are located below the storage tank elevation, the system shall be equipped with a vacuum relief valve at the highest point.

S 14.3.5 Temperature Regulation. Where a system is capable of providing potable water at temperatures that exceed 140°F (60°C), a thermostatic mixing valve that is in accordance with ASSE 1017 shall be provided to limit the water supplied to the potable hot water distribution system to a temperature of 140°F (60°C) or less.

S 14.4 Protection of System Components.

S 14.4.1 Materials. System components in contact with heat-transfer mediums shall be approved for such use. Components installed outdoors shall be resistant to ultraviolet radiation.

S 14.4.2 Corrosion. Solar thermal energy systems and components subject to corrosion shall be protected in an approved manner. Metal parts exposed to atmospheric conditions shall be of corrosion-resistant material.

S 14.4.3 Mechanical Damage. Portions of a solar thermal energy system installed where subjected to mechanical damage shall be guarded against such damage by being installed behind approved barriers or, where located within a garage, be elevated or located out of the normal path of a vehicle.

S 14.4.4 Freeze Protection. Unless designed for such conditions, solar thermal energy systems and components that contain liquid as the heat transfer

medium shall be protected from freezing, by means of fail-safe freeze protection in accordance with this Section, where the ambient temperature may be less than 46°F (8°C).

S 14.4.4.1 Antifreeze. Antifreeze shall be used in accordance with the solar thermal system manufacturer's instructions.

S 14.4.4.2 Drainback. Drainback systems shall drain by gravity and shall be permitted to be installed in applications where the ambient temperature may not be less than -60°F (-51°C).

S 14.4.4.3 Integral Collector Storage. Integral collector storage systems shall be permitted to be installed in applications where the ambient temperature may not be less than 23°F (-5°C) and the duration of below-freezing episodes exceeding 18 hours. Exposed piping in a solar thermal energy system shall be protected with insulation having a thermal resistance of not less than R-5.0.

S 14.4.4.4 Indirect Thermosiphon. Indirect thermosiphon systems shall be permitted to be installed in applications where the ambient temperature may not be less than 23°F (-5°C). Exposed piping in a solar thermal energy system shall be protected with insulation having a thermal resistance of not less than R-5.

S 14.4.4.5 Air Heating Systems. Air solar heating systems shall be permitted to be used in accordance with the manufacturer's instructions.

S 14.4.4.6 Labeling. A label indicating the method of freeze protection for the system shall be attached to the system in a visible location.

S 14.4.4.7 Piping. Fittings, pipe slope, and collector shall be designed to allow for manual gravity draining and air filling of solar thermal energy system components and piping. Pipe slope for gravity draining shall be not less than 1/4 inch per foot (20.8 mm/m) of horizontal length. Collector header pipes or absorber plate riser tubes internal to the collector shall be sloped in accordance with the manufacturer's instructions. Where a means to drain the system is provided, a drain valve shall be installed.

S 14.4.5 Water Hammer Protection. The flow of the hydronic piping system shall be designed to prevent water hammer.

S 14.4.6 Heat Transfer Fluid. Solar thermal piping shall be identified with an orange background with black uppercase lettering, with the words "CAUTION: HEAT TRANSFER FLUID, DO NOT DRINK." Each solar thermal energy system shall be identified to designate the medium being conveyed. The minimum size of the letters and length of the color field shall comply with Table S 14.4.6.

Each outlet on the solar thermal piping system shall be posted with black uppercase lettering as follows:

"CAUTION: HEAT TRANSFER FLUID, DO NOT DRINK."

TABLE S 14.4.6
MINIMUM LENGTH OF COLOR FIELD AND SIZE OF LETTERS

OUTSIDE DIAMETER OF PIPE OR COVERING (inches)	MINIMUM LENGTH OF COLOR FIELD (inches)	MINIMUM SIZE OF LETTERS (inches)
½ to 1¼	8	½
1½ to 2	8	¾

2½ to 6	12	1¼
8 to 10	24	2½
Over 10	32	3½

For SI units: 1 inch = 25.4 mm

S 14.4.7 Insulation.

S 14.4.7.1 General. The temperature of surfaces within reach of building occupants shall not exceed 140°F (60°C) unless the surfaces are protected by insulation. Where sleeves are installed, the insulation shall continue full size through them. Coverings and insulation used for piping shall be of material approved for the operating temperature of the system and the installation environment. Where installed in a plenum, the insulation, jackets and lap-seal adhesives, including pipe coverings and linings, shall have a flame spread index not to exceed 25 and a smoke-developed index not to exceed 50 where tested in accordance with ASTM E84 or UL 723.

S 14.4.7.2 Heat Loss. Insulation shall be installed on interconnecting solar and hot water piping. The final 5 feet (1524 mm) of the cold water supply line, or the entire length where less than 5 feet (1524 mm), shall be insulated. The insulation thickness shall be in accordance with Table S 14.4.7.3(1) or Table S 14.4.7.3(2), or the insulation installed shall have an R-value of not less than R-2.6 degree Fahrenheit hour square foot per British thermal unit (°F•h•ft^2/Btu) (R-0.46 m^2•K/W). Piping, storage tanks, and circulating air ductwork shall be insulated. Ductwork and piping shall be permitted to not be insulated where exposed in conditioned spaces, and the heat loss from such ducts or piping does not otherwise contribute to the heating or cooling load within such space.

Exception: Low temperature, aboveground piping installed for swimming pools, spas, and hot tubs in accordance with the manufacturer's installation instructions unless such piping is located within a building.

S 14.4.7.3 Piping. Pipes and fittings, other than unions, flanges, or valves, shall be insulated. Insulation material shall be approved for continuous operating temperatures of not less than 220°F (104°C). [See Table S 14.4.7.3(1) and Table S 14.4.7.3(2)].

TABLE S 14.4.7.3(1)
MINIMUM PIPE INSULATION

NPS (inches)	PIPE O.D. (inches)	INSULATION I.D. (inches)	INSULATION O.D. (inches)										
			INSULATION NOMINAL THICKNESS (inches)*										
			½	¾	1	1.5	2	2.5	3	3.5	4	4.5	5
½	0.84	0.86	1.84	2.36	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
¾	1.05	1.07	2.06	2.36	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
1	1.315	1.33	2.32	2.88	3.50	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75
1¼	1.660	1.68	2.66	3.28	3.50	5.00	5.56	6.62	7.62	8.62	9.62	10.75	11.75
1½	1.900	1.92	2.78	3.50	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75	12.75
2	2.375	2.41	3.42	3.98	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75
2½	2.875	2.91	3.88	4.48	5.00	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00
3	3.500	3.53	4.50	4.96	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00
3½	4.000	4.03	4.96	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75	12.75	14.00
4	4.500	4.53	5.56	6.58	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00	15.00
6	6.625	6.70	7.80	8.12	8.62	9.62	10.75	11.75	12.75	14.00	15.00	16.00	17.00

For SI units: 1 inch = 25 mm
* Thickness values are applicable for calcium silicate, cellular foam plastics, cellular glass, mineral fiber, and perlite preformed insulation materials

TABLE S 14.4.7.3(2)
STANDARD TUBING INSULATION THICKNESS

TUBE SIZE (inches)	TUBE O.D. (inches)	INSULATION I.D. (inches)	INSULATION O.D. (inches)								
			INSULATION NOMINAL THICKNESS (inches)*								
			1	1.5	2	2.5	3	3.5	4	4.5	5
⅜	0.500	0.52	2.38	3.50	4.50	5.56	6.62	-	-	-	-
½	0.625	0.64	2.88	3.50	4.50	5.56	6.62	-	-	-	-
¾	0.875	0.89	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
1	1.125	1.14	2.88	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75
1¼	1.375	1.39	3.50	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75
1½	1.625	1.64	3.50	4.50	5.56	6.62	7.62	8,62	9.62	10.75	11.75
2	2.125	2.16	4.00	5.00	6.62	7.62	8.62	9.62	10.75	11.75	12.75
2½	2.625	2.66	4.50	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75
3	3.125	3.16	5.00	6.61	7.62	8.62	9.62	10.75	11.75	12.75	14.00
3½	3.625	3.66	5.56	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00
4	4.125	4.16	6.62	7.62	8.62	9.62	10.75	11.75	12.75	14.00	15.00
5	5.125	5.16	7.62	8.62	9.62	10.75	11.75	12.75	14.00	15.00	16.00
6	6.125	6.20	8.62	9.62	10.75	11.75	12.75	14.00	15.00	16.00	17.00

For SI units: 1 inch = 25 mm

* Thickness values are applicable for calcium silicate, cellular foam plastics, cellular glass, mineral fiber, and perlite preformed insulation materials.

S 14.4.7.4 Fittings. Fittings shall be insulated with mitered sections, molded fittings, insulating cement, or flexible insulation.

S 14.4.7.5 Installation. Insulation shall be finished with a jacket or facing with the laps sealed with adhesives or staples so as to secure the insulation on the pipe. Insulation jacket seams shall be on the underside of the piping and shall overlap in accordance with the manufacturer's installation instructions. Joints and seams shall be sealed with a sealant that is approved for both the material and environmental conditions. In lieu of jackets, molded insulation shall be permitted to be secured with 16 gauge galvanized wire ties not exceeding 9 inches (229 mm) on center.

S 14.4.7.5.1 Exterior Applications. Insulation for exterior applications shall be finished with an approved jacket or facing with the surfaces and laps sealed.

Jacketing, facing, and tape used for exterior applications shall be designed for such use. Where flexible insulation is used, it shall be wrapped and sealed against water penetration. Insulation used for exterior applications shall be resistant to extreme temperatures, UV exposure, and moisture.

S 15.0 Specific Requirements.

S 15.1 Electrical.

S 15.1.1 Wiring. Electrical connections, wiring, and devices shall be installed in accordance with NFPA 70. Electrical equipment, appliances, and devices installed in areas that contain flammable vapors or dusts shall be of a type approved for such environment.

S 15.1.2 Controls. Required electrical, mechanical, safety, and operating controls shall be listed or labeled by a listing agency. Electrical controls shall be of such design and construction as to be suitable for installation in the environment in which they are located.

S 15.2 Flow Directions. Flow directions shall be permanently affixed on the solar thermal energy system.

S 15.3 Attic Installations. An attic space in which solar energy system components are installed shall comply with Section 508.4 of this Code.

S 15.4 Connections to Drainage System Required. Receptors, drains, appurtenances, and appliances, used to receive or discharge liquid waste, shall be connected to the drainage system of the building or premises in accordance with the requirements of this Code.

S 15.5 Dry Storage Systems.

S 15.5.1 Waterproofing. The containment structure for dry thermal storage systems shall be constructed in an approved manner to prevent the infiltration of water or moisture.

S 15.5.2 Detecting Water Intrusion. The containment structure shall be capable of fully containing spillage or moisture accumulation that occurs. The structure shall have a means, such as a sight glass, to detect spillage or moisture accumulation, and shall be fitted with a drainage device to eliminate spillage.

S 15.5.3 Rock as Storage Material. Systems utilizing rock as the thermal storage material shall use clean, washed rock that is free of organic material.

S 15.5.4 Odor and Particulate Control. Thermal storage materials and containment structures, including interior protective coating, shall not impart toxic elements, particulate matter, or odor to areas of human occupancy.

S 15.6 Heat Pumps. Heat pumps shall be in compliance with Table S 15.6, as applicable. Heat pumps shall also be listed and labeled in accordance with UL 1995 or UL 60335-2-40. Heat pumps shall be fitted with a means to indicate that the compressor is locked out.

TABLE S 15.6

TYPE OF HEAT PUMP	STANDARDS
Water-to-Air	AHRI/ASHRAE/ISO 13256-1
Water-to-Water	AHRI/ASHRAE/ISO 13256-2
Air Source	AHRI 210/240

S 16.0 Solar Thermal Energy Systems for Swimming Pool, Spas, and Hot Tubs.

S 16.1 Water Chemistry. Where water from a swimming pool, spa, or hot tub is heated by way of circulation through solar collectors, the chemistry of such water shall comply with the requirements of Section S 16.2 and shall be filtered in accordance with Section S 16.3 and Section S 16.3.1 of this Code.

S 16.2 Parameters. Parameters for chemicals used within a swimming pool, spa, or hot tub shall be in accordance with Table S 16.2.

TABLE S 16.2
WATER CHEMISTRY

PARAMETER	ACCEPTABLE RANGE
Calcium hardness	200 – 400 parts per million (ppm)
Langelier Saturation Index	0 (+ or - 0.3 acceptable)
pH	7.2 – 7.8
TDS	< 1500 ppm
Total alkalinity	80 – 120 ppm

For SI Units: 1 part per million = 1 mg/L

S 16.3 Filter. A filter shall be provided to remove debris from the water entering the solar loop.

Exception: A solar swimming pool, spa, or hot tub heating system with a heat exchanger.

S 16.3.1 Location. A filter shall be located upstream of a pump used to direct water to solar collectors.

S 16.4 Corrosion Resistant. Glazed solar collectors made of copper shall not be used for solar pool, spa, or hot tub heating.

Exception: Where a heat exchanger is provided between the collector circuit and the swimming pool, spa, or hot tub water.

S 17.0 Certificate of Compliance. Upon completion of the solar thermal energy system, the permittee shall sign a Certificate of Compliance with this Code. The Certificate of Compliance shall also list the following information:

(1) Type of freeze protection;

(2) Mixing valve setting degrees Fahrenheit (° F);

(3) Subsystem working pressure (if applicable) pounds per square inch;

(4) Subsystem test pressure (if applicable) pounds per square inch;

(5) Heat exchanger make and model number (if applicable);

(6) Circulating pump over temperature protection shut-off setting degrees Fahrenheit (° F) for one-tank systems where the water heater controls utilize fusible-link type over temperature protection.

This Certificate shall be posted in a conspicuous location at or near the water heater.

S 18.0 General.

S 18.1 Referenced Standards. The standards listed in Table S 18.1 are referenced in various sections of this Appendix and shall be considered part of the requirements of this Code. The standards are listed herein by the standard number and

effective date, the title and application. The application of the referenced standard(s) shall be as specified in Section S 5.2.

TABLE S 18.1

REFERENCED STANDARDS

STANDARD NUMBER	STANDARD TITLE	APPLICATION
AHRI 210/240-2017	Performance Rating of Unitary Air-conditioning & Air- source Heat Pump Equipment	Air-Source Heat Pumps
AHRI 870-2016	Performance Rating of Direct Geoexchange Heat Pumps	Equipment
AHRI/ASHRAE/ISO 13256-1-1998 (R2012)	Water-Source Heat Pumps – Testing and Rating for Performance – Part 1: Water-to-Air and Brine-to-Air Heat Pumps	Water-Source Heat Pumps
AHRI/ASHRAE/ISO 13256-2-1998 (R2012)	Water-Source Heat Pumps – Testing and Rating for Performance – Part 2: Water-to-Water and Brine-to-Water Heat Pumps	Water-Source Heat Pumps
ASHRAE 34-2019	Designation and Safety Classification of Refrigerants	Refrigerant Classifications
ASHRAE 194-2017	Method of Test for Direct-Expansion Ground-Source Heat Pumps	Ground-Source Heat Pumps
ASME A112.1.2-2012 (R2017)	Air Gaps in Plumbing Systems (for Plumbing Fixtures and Water-Connected Receptors)	Backflow Protection
ASME A112.1.3-2000 (R2015)	Air Gap Fittings for Use with Plumbing Fixtures, Appliances, and Appurtenances	Backflow Protection
ASME A112.4.1-2009 (R2019)	Water Heater Relief Valve Drain Tubes	Discharge Piping
ASME B1.20.1-2013 (R2018)	Pipe Threads, General Purpose (Inch)	Joints
ASME B16.3-2016	Malleable Iron Threaded Fittings: Classes 150 and 300	Fittings
ASME B16.5-2017	Pipe Flanges and Flanged Fittings: NPS 1/2 Through NPS 24 Metric/Inch	Fittings
ASME B16.9-2018	Factory-Made Wrought Buttwelding Fittings	Fittings
ASME B16.11-2016	Forged Fittings, Socket-Welding and Threaded	Fittings

ASME B16.15-2018	Cast Copper Alloy Threaded Fittings: Classes 125 and 250	Fittings
ASME B16.18-2018	Cast Copper Alloy Solder Joint Pressure Fittings	Fittings
ASME B16.22-2018	Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings	Fittings
ASME B16.23-2016	Cast Copper Alloy Solder Joint Drainage Fittings: DWV	Fittings
ASME B16.24-2016	Cast Copper Alloy Pipe Flanges, Flanged Fittings, and Valves: Classes 150, 300, 600, 900, 1500, and 2500	Fittings
ASME B16.26-2018	Cast Copper Alloy Fittings for Flared Copper Tubes	Fittings
ASME B16.29-2017	Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings – DWV	Fittings
ASME B16.51-2018	Copper and Copper Alloy Press-Connect Pressure Fittings	Fittings
ASME BPVC Section VIII.1-2019	Rules for Construction of Pressure Vessels Division 1	Miscellaneous
ASME BPVC Section X- 2019	Fiber-Reinforced Plastic Pressure Vessels	Pressure Vessel Construction, Pressure Vessels
ASME SA194-2015	Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both	Mounting
ASSE 1013-2011	Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Pre-venters	Backflow Prevention
ASSE 1017-2009	Temperature Actuated Mixing Valves for Hot Water Distribution Systems	Valves
ASSE 1061-2015	Push-Fit Fittings	Fittings
ASSE 1079-2012	Dielectric Pipe Unions	Fittings
ASTM A53/A53M-2018	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	Piping
ASTM A106/A106M-2019a	Seamless Carbon Steel Pipe for High-Temperature Service	Piping

ASTM A126-2004 (R2019)	Gray Iron Castings for Valves, Flanges, and Pipe Fittings	Piping
ASTM A254/A254M-2012 (R2019)	Copper-Brazed Steel Tubing	Piping
ASTM A269/A269M-2015a (R2019)	Seamless and Welded Austenitic Stainless Steel Tubing for General Service	Piping
ASTM A312/A312M-2019	Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes	Piping
ASTM A420/A420M-2019a	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service	Fittings
ASTM A554-2016	Welded Stainless Steel Mechanical Tubing	Piping
ASTM A778/A778M-2016	Welded, Unannealed Austenitic Stainless Steel Tubular Products	Piping
ASTM B32-2008 (R2014)	Solder Metal	Joints
ASTM B42-2015a	Seamless Copper Pipe, Standard Sizes	Piping
ASTM B43-2015	Seamless Red Brass Pipe, Standard Sizes	Piping
ASTM B75/B75M-2019	Seamless Copper Tube	Piping
ASTM B88-2016	Seamless Copper Water Tube	Piping
ASTM B135/B135M-2017	Seamless Brass Tube	Piping
ASTM B251/B251M-2017	General Requirements for Wrought Seamless Copper and Copper-Alloy Tube	Piping
ASTM B280-2019	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	Piping
ASTM B302-2017	Threadless Copper Pipe, Standard Sizes	Piping
ASTM B447-2012a	Welded Copper Tube	Piping
ASTM B813-2016	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	Joints
ASTM B828-2016	Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings	Joints

ASTM C411-2019	Hot-Surface Performance of High-Temperature Thermal Insulation	Duct Coverings and Linings
ASTM D1693-2015	Environmental Stress-Cracking of Ethylene Plastics	Piping
ASTM D1785-2015^{e1}	Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120	Piping
ASTM D2241-2015	Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)	Piping
ASTM D2464-2015	Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Fittings
ASTM D2466-2017	Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40	Fittings
ASTM D2467-2015	Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Fittings
ASTM D2513-2019	Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings	Piping
ASTM D2564-2012 (R2018)	Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems	Joints
ASTM D2609-2015	Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe	Fittings
ASTM D2683-2014	Socket-Type Polyethylene Fittings for Outside Diameter- Controlled Polyethylene Pipe and Tubing	Fittings
ASTM D2737-2012a	Polyethylene (PE) Plastic Tubing	Piping
ASTM D2846/D2846M-2019a	Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems	Piping
ASTM D3035-2015	Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter	Piping
ASTM D3139-2019	Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals	Joints
ASTM D3261-2016	Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing	Fittings
ASTM D3350-2014	Polyethylene Plastics Pipe and Fittings Materials	Piping
ASTM E84-2019b	Surface Burning Characteristics of Building Materials	Miscellaneous
ASTM F437-2015	Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Fittings

ASTM F438-2017	Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40	Fittings
ASTM F439-2019	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Fittings
ASTM F441/F441M-2015	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80	Piping
ASTM F442/F442M-2019	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)	Piping, Plastic
ASTM F493-2014	Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings	Joints
ASTM F656-2015	Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings	Joints
ASTM F714-2013 (R2019)	Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter	Piping
ASTM F876-2019a	Crosslinked Polyethylene (PEX) Tubing	Piping
ASTM F877-2019	Crosslinked Polyethylene (PEX) Hot- and Cold-Water Distribution Systems	Piping
ASTM F1055-2016a	Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing	Fittings
ASTM F1281-2017	Crosslinked Polyethylene/ Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe	Piping
ASTM F1282-2017	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Compo- site Pressure Pipe	Piping
ASTM F1476-2007 (R2019)	Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Fittings
ASTM F1548-2001 (R2018)	Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications	Fittings
ASTM F1807-2019b	Metal Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps, for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings

ASTM F1960-2019a	Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings
ASTM F1970-2019	Special Engineered Fittings, Appurtenances or Valves for Use in Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Systems	Piping
ASTM F1974-2009 (R2015)	Metal Insert Fittings for Polyethylene/Aluminum/Polyethylene and Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene Composite Pressure Pipe	Fittings
ASTM F2080-2019	Cold-Expansion Fittings with Metal Compression-Sleeves for Crosslinked Polyethylene (PEX) Pipe and SDR9 Polyethylene of Raised Temperature (PE-RT) Pipe	Fittings
ASTM F2098-2018	Stainless Steel Clamps for Securing SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) to Metal Insert and Plastic Insert Fittings	Fittings
ASTM F2159-2019a	Plastic Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings
ASTM F2165-2019	Flexible Pre-Insulated Plastic Piping	Fittings, Piping and Tubing
ASTM F2389-2019	Pressure-Rated Polypropylene (PP) Piping Systems	Piping
ASTM F2434-2019	Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Cross-linked Polyethylene/Aluminum/Cross-linked Polyethylene (PEX-AL-PEX) Tubing	Fittings
ASTM F2620-2019	Heat Fusion Joining of Polyethylene Pipe and Fittings	Joints

ASTM F2623-2019	Polyethylene of Raised Temperature (PE-RT) Systems for Non-Potable Water Applications	Piping
ASTM F2735-2018	Plastic Insert Fittings for SDR9 Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings
ASTM F2769-2018	Polyethylene of Raised Temperature (PE-RT) Plastic Hot and Cold-Water Tubing and Distribution Systems	Piping, Fitting
ASTM F2855-2019	Chlorinated Poly (Vinyl Chloride)/Aluminum/Chlorinated Poly (Vinyl Chloride) (CPVC-AL-CPVC) Composite Pressure Tubing	Piping, Plastic
ASTM F3226/F3226M-2019	Metallic Press-Connect Fittings for Piping and Tubing Systems	Fittings
ASTM F3253-2019	Crosslinked Polyethylene (PEX) Tubing with Oxygen Barrier for Hot- and Cold-Water Hydronic Distribution Systems	Piping, Fittings
ASTM F3347-2019a	Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing	Fittings
ASTM F3348-2019	Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing	Fittings
AWS A5.8M/A5.8-2019	Filler Metals for Brazing and Braze Welding	Joints
AWWA C901-2017	Polyethylene (PE) Pressure Pipe and Tubing, 3/4 In. (19 mm) Through 3 In. (76 mm), for Water Service	Piping
CSA B137.1-2017	Polyethylene (PE) Pipe, Tubing, and Fittings for Cold-Water Pressure Services	Piping
CSA B137.2-2017	Polyvinylchloride (PVC) Injection-Moulded Gasketed Fittings for Pressure Applications	Fittings
CSA B137.3-2017	Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications	Piping, Fittings
CSA B137.5-2017	Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications	Piping

CSA B137.6-2017	Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing, and Fittings for Hot- and Cold-Water Distribution Systems	Piping, Fittings
CSA B137.9-2017	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems	Piping
CSA B137.10-2017	Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems	Piping
CSA B137.11-2017	Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	Piping
CSA B137.18-2017	Polyethylene of Raised Temperature Resistance (PE-RT) Tubing Systems for Pressure Applications	Piping, Fittings
CSA C22.2 No. 108-2014 (R2019)	Liquid Pumps	Pumps
CSA C448.1-2016	Design and Installation of Ground Source Heat Pump Systems for Commercial and Institutional Buildings	Ground-Source Heat Pumps
CSA C448.2-2016	Design and Installation of Ground Source Heat Pump Systems for Residential and Other Small Buildings	Ground-Source Heat Pumps
CSA/IGSHPA C448-2016	Design and Installation of Ground Source Heat Pump Systems for Commercial and Residential Buildings	Miscellaneous
CSA Z21.10.1-2019	Gas Water Heaters, Volume I, Storage Water Heaters with Input Ratings of 75,000 Btu Per Hour or Less (same as CSA 4.1)	Fuel Gas, Appliances
CSA Z21.10.3-2019	Gas-Fired Water Heaters, Volume III, Storage Water Heaters with Input Ratings Above 75,000 Btu Per Hour, Circulating and Instantaneous (same as CSA 4.3)	Fuel Gas, Appliances
IAPMO PS 117-2019	Press Connections	Fittings
IAPMO S1001.1-2013 (R2019)	Design and Installation of Solar Water Heating Systems	Solar Thermal Systems
ICC 900/SRCC 300-2015	Solar Thermal System Standard	Solar Thermal Systems
ICC 901/SRCC 100-2015	Solar Thermal Collector Standard	Collectors
NFPA 70-2020	National Electrical Code	Miscellaneous

NGWA-01-2014	Water Well Construction Standard	Geothermal
NSF 60-2019	Drinking Water Treatment Chemicals-Health Effects	Backfill
NSF 61-2019	Drinking Water System Components - Health Effects	Miscellaneous
NSF 358-1-2017	Polyethylene Pipe and Fittings for Water-Based Ground- Source "Geothermal" Heat Pump Systems	Piping, Fittings
NSF 358-2-2017	Polypropylene Pipe and Fittings for Water-Based Ground- Source "Geothermal" Heat Pump Systems	Piping, Fittings
NSF 358-3-2016	Cross-Linked Polyethylene (PEX) Pipe and Fittings for Water- Based Ground-Source (Geothermal) Heat Pump Systems	Piping, Fittings
NSF 358-4-2018	Polyethylene of Raised Temperature (PE-RT) Tubing and Fittings for Water-Based Ground-Source (Geothermal) Heat Pump Systems	Piping, Fittings
UL 723-2018	Test for Surface Burning Characteristics of Building Materials	Miscellaneous
UL 778-2016	Motor-Operated Water Pumps (with revisions through January 17, 2019)	Pumps
UL 834-2004	Heating, Water Supply, and Power Boilers – Electric (with revisions through July 17, 2019)	Appliances
UL 1279-2010	Outline of Investigation for Solar Collectors	Electrical
UL 1699B-2018	Photovoltaic (PV) DC Arc-Fault Circuit Protection	Electrical
UL 1703-2002	Flat-Plate Photovoltaic Modules and Panels (with revisions through November 25, 2019)	Electrical
UL 1741-2010	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (with revisions through February 15, 2018)	Electrical
UL 1995-2015	Heating and Cooling Equipment (with revisions through August 17, 2018)	Heat Pumps

UL 2523-2009	Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters, and Boilers (with revisions through March 16, 2018)	Fuel Gas, Appliances
UL 2703-2015	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels (with revisions through December 16, 2019)	Electrical
UL 2989-2016	Outline of Investigation for Tracer Wire	Tracer Wire
UL 3703-2015	Solar Trackers	Electrical
UL 4703-2014	Photovoltaic Wire	Electrical
UL 6703-2014	Connectors for Use in Photovoltaic Systems (with revisions through December 22, 2017)	Electrical
UL 8703-2011	Outline of Investigation for Concentrator Photovoltaic Mod- ules and Assemblies	Electrical
UL 60335-2-40-2017	Household And Similar Electrical Appliances-Safety-Part 2- 40: Particular Requirements for Electrical Heat Pumps, Air- Conditioners and Dehumidifiers	Heat Pumps
UL 61730-1-2017	Photovoltaic (PV) Module Safety Qualification - Part 1: Requirements for Construction	Electrical
UL 61730-2-2017	Photovoltaic (PV) Module Safety Qualification - Part 2: Requirements for Testing	Electrical
UL 62109-1-2014	Safety of Power Converters for Use in Photovoltaic Power Systems - Part 1: General Requirements (with revisions through April 30, 2019)	Electrical
ASHRAE 90.1-2019	Energy Standard for Buildings Except Low-Rise Residential Buildings	Energy
ASHRAE 93-2010 (RA2014)	Methods of Testing to Determine the Thermal Performance of Solar Collectors	Testing
ASHRAE 95-1981 (RA1987)	Methods of Testing to Determine the Thermal Performance of Solar Domestic Water Heating Systems	Testing
ASHRAE 96-1980 (RA1989)	Thermal Performance of Unglazed Flat-Plate Liquid-Type Solar Collectors	Testing, Collector

ASME A13.1-2015	Scheme for the Identification of Piping Systems	Piping
ASME B16.21-2016	Nonmetallic Flat Gaskets for Pipe Flanges	Joints
ASME B16.34-2017	Valves - Flanged, Threaded, and Welding End	Valves
ASME B16.47-2017	Large Diameter Steel Flanges: NPS 26 Through NPS 60 Metric/Inch	Fittings
ASME BPVC Section IV- 2017	Rules for Construction of Heating Boilers	Miscellaneous
ASME BPVC Section IX- 2017	Welding, Brazing, and Fusing Qualifications	Certification
ASSE 1010-2004	Water Hammer Arresters	Water Supply Component
ASTM A377-2018	Ductile Iron Pressure Pipe	Piping, Ferrous
ASTM A733-2016	Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples	Piping, Ferrous
ASTM D56-2016a	Flash Point by Tag Closed Cup Tester	Testing
ASTM D93-2019	Flash Point by Pensky-Martens Closed Cup Tester	Testing
ASTM D635-2018	Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position	Testing
ASTM D2235-2004 (R2016)	Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings	Joints
ASTM D2672-2014	Joints for IPS PVC Pipe Using Solvent Cement	Joints
ASTM D2855-2015	Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets	Joints
ASTM D3278-1996 (R2011)	Flash Point of Liquids by Small Scale Closed-Cup Apparatus	Testing
ASTM E136-2019a	Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C	Furnace
ASTM F480-2014	Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80	Piping, Plastic
ASTM F891-2016	Coextruded Poly(Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core	Piping, Plastic

AWS B2.2/B2.2M-2016	Brazing Procedure and Performance Qualification	Certification
AWWA C507-2018	Ball Valves, 6 In. through 60 In. (150 mm Through 1,500 mm)	Valves
BS EN 12975-1-2006 (R2010)	Thermal Solar Systems and Components – Solar Collectors – Part 1: General Requirements	Collector
BS EN 12976-1-2017	Thermal Solar Systems and Components – Factory Made Systems – Part 1: General Requirements	Solar Thermal Systems
BS EN 12976-2-2017	Thermal Solar Systems and Components – Factory Made Systems – Part 2: Test Methods	Solar Thermal Systems
BS EN ISO 9806-2017	Solar Energy – Solar Thermal Collectors – Test Methods	Collector
BS EN ISO 9488-2000	Solar Energy – Vocabulary	Miscellaneous
CSA Z21.22-2015	Relief Valves for Hot Water Supply Systems (same as CSA 4.4)	Valves

TABLE S 18.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
CSA Z21.24-2015	Connectors for Gas Appliances (same as CSA 6.10)	Fuel Gas
IAPMO IGC 332-2017a	Hydronic Radiators	Hydronic Systems
IEEE 937-2007	Installation and Maintenance of Lead-Acid Batteries for Photovoltaic (PV) Systems	Installation and Maintenance, Photovoltaic
IEEE 1013-2019	Sizing Lead-Acid Batteries for Stand-Alone Photovoltaic (PV) Systems	Photovoltaic, Sizing
IEEE 1361-2014	Selecting, Charging, Testing, and Evaluating Lead-Acid Batteries Used in Stand-Alone Photovoltaic (PV) Systems	Testing, Evaluation
IEEE 1526-2003	Testing the Performance of Stand-Alone Photovoltaic Systems	Testing, Photovoltaic
IEEE 1547-2018	Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces	Connections, Photovoltaic

IEEE 1562-2007	Array and Battery Sizing in Stand-Alone Photovoltaic (PV) Systems	Array, Battery, Photo-voltaic
IEEE 1661-2019	Test and Evaluation of Lead-Acid Batteries Used in Photovoltaic (PV) Hybrid Power Systems	Testing and Evaluation, Photovoltaic
MSS SP-58-2018	Pipe Hangers and Supports – Materials, Design, Manufacture, Selection, Application, and Installation (including Amendment 1, dated October 17, 2019)	Fuel Gas
MSS SP-80-2019	Bronze Gate, Globe, Angle, and Check Valves	Valves
NFPA 54/Z223.1-2018	National Fuel Gas Code	Fuel Gas
NFPA 274-2018	Test Method to Evaluate Fire Performance Characteristics of Pipe Insulation	Pipe Insulation
NSF 14-2018	Plastic Piping System Components and Related Materials	Piping, Plastic
UL 174-2004	Household Electric Storage Tank Water Heaters (with revisions through December 3, 2019)	Appliances
UL 873-2007	Temperature-Indicating and -Regulating Equipment (with revisions through February 6, 2015)	Electrical
UL 916-2015	Energy Management Equipment	Electrical
UL 1453-2016	Electric Booster and Commercial Storage Tank Water Heaters (with revisions through May 18, 2018)	Appliances
UL 60730-1 2016	Automatic Electrical Controls – Part 1: General Requirements	Electrical

ABBREVIATIONS IN TABLE S 18.1 AND TABLE S 18.2

AHRI	Air-Conditioning, Heating, and Refrigeration Institute, 2311 Wilson Boulevard, Suite 400, Arlington, VA22201.
ANSI	American National Standards Institute, Inc., 25 W. 43rd Street, 4th Floor, New York, NY 10036.
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329-2305.
ASME	American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.
ASSE	American Society of Sanitary Engineering, 18927 Hickory Creek Drive, Suite 220, Mokena, IL 60448.
ASTM	ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.
AWS	American Welding Society, 8669 NW 36 Street, # 130, Miami, FL 33166-6672.
AWWA	American Water Works Association, 6666 W. Quincy Avenue, Denver, CO 80235.
BSI (BS EN)	British Standard International, 389 Chiswick High Road, London, W4 4AL United Kingdom.
CSA	Canadian Standards Association, 178 Rexdale Boulevard, Toronto, ON, Canada M9W 1R3.
e1	An editorial change since the last revision or reapproval.
IAPMO	International Association of Plumbing and Mechanical Officials, 4755 E. Philadelphia Street, Ontario, CA 91761.
ICC	International Code Council, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001.
IEEE	The Institute of Electrical and Electronics Engineers, Inc., 3 Park Avenue, 17th Floor, New York, NY 10016-5997.
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street NE, Vienna, VA 22180.
NFPA	National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.
NGWA	National Ground Water Association, 601 Dempsey Road, Westerville, OH 43081.
NSF	NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.
SRCC	Solar Rating and Certification Corporation, 3060 Saturn Street, Suite 100, Brea, CA 92821.
UL	Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062.

SECTION 28. The provisions of this ordinance contain various changes, modifications, and additions to the 2022 California Plumbing Code. Some of those changes are administrative in nature in that they do not constitute changes or modifications to requirements contained in the building standards published in the California Building Standards Code.

Pursuant to California Health and Safety Code sections 17958.5, 17958.7, and 18941.5, the Board of Supervisors hereby expressly finds that all of the changes and modifications to requirements contained in the building standards published in the California Building Standards Code that are contained in this ordinance are reasonably necessary because of local climatic, geological, or topographical conditions in the County of Los Angeles due to the potential for seismic activity in the region, topographical conditions that contribute to the spread of wild fires, and climatic conditions that impact air quality and increase the risk of wild fires. Without limiting the foregoing, the County makes additional findings herein:

PLUMBING CODE AMENDMENTS

CODE SECTION	CONDITION	EXPLANATION
Section 304.1	Geological Topographical Climatic	The County of Los Angeles is a densely populated area with buildings constructed within a region where water is scarce and domestic water service is impacted by immoderate and varying weather conditions, including periods of extended drought. The proposed measures will require buildings to be more water efficient and allow greater conservation of domestic water due to these local conditions.

Sections 601.2.3	Geological Topographical Climatic	The County of Los Angeles is a densely populated area with buildings constructed within a region where water is scarce and domestic water service is impacted by immoderate and varying weather conditions, including periods of extended drought. The proposed measures will require buildings to be more water efficient and allow greater conservation of domestic water due to these local conditions.
Section 721.3	Geological Topographical	To allow for the proper operation of existing Los Angeles County sewer infrastructure and establish consistency with Title 20 – Utilities – of the Los Angeles County Code, Division 2 (Sanitary Sewers and Industrial Waste) due to local soil conditions and topography.
Sections 728.1 to 728.6	Geological Topographical	To allow for the proper operation of existing Los Angeles County sewer infrastructure and establish consistency with Title 20 – Utilities – of the Los Angeles County Code, Division 2 (Sanitary Sewers and Industrial Waste) due to local soil conditions and topography.
Table H 101.8	Geological Topographical	To establish more restrictive requirements for protection of local groundwater due to local soil conditions and to provide protections for native, protected oak trees that are consistent with Title 22 – Zoning and Planning – of the Los Angeles County Code, Chapter 22.174 (Oak Tree Permits).
Table H 201.1(1)	Geological Topographical	To establish more restrictive requirements for protection of local groundwater due to local soil conditions, sewer capacity, and sewage treatment.
Table H 201.1(2)	Geological Topographical	To establish consistency with requirements of the County Health Department for sewer capacity and sewage treatment due to local soil conditions.
Table H 201.1(3)	Geological Topographical	To establish consistency with requirements of the County Health Department for sewer capacity and sewage treatment due to local soil conditions.

Table H 201.1(4)	Geological Topographical	To establish consistency with requirements of the County Health Department for sewer capacity and sewage treatment due to local soil conditions.
Section H 301.1	Geological Topographical	To establish more restrictive requirements for protection of local groundwater due to local soil conditions.
Section H 401.3	Geological Topographical	To establish more restrictive requirements for protection of local groundwater due to local soil conditions.
Section H 601.5	Geological Topographical	To establish more restrictive requirements for protection of local groundwater due to local soil conditions.
Section H 601.8	Geological Topographical	To establish more restrictive requirements for protection of local groundwater due to local soil conditions.
Section H 701.2	Geological Topographical	To establish more restrictive requirements for protection of local groundwater due to local soil conditions.
Section H 1001.1	Geological	To establish more restrictive requirements to prevent earth movement based on local soil and seismic conditions.
Section H 1101.6	Geological	To establish more restrictive requirements to prevent earth movement based on local soil and seismic conditions.

Appendix S	Climatic	To establish requirements for solar thermal energy systems based on provisions in the Uniform Solar, Hydronics and Geothermal Code (USHGC), which is developed by the International Association of Plumbing and Mechanical Officials. The County of Los Angeles is a densely populated area, with elevated levels of greenhouse gas emissions. Standards to regulate the installation of solar thermal energy systems will facilitate safe and efficient installations of these systems to improve local air quality, thereby improving the health of the County's residents, businesses and visitors.

SECTION 29. This ordinance shall become operative on January 1, 2023.

[TITLE28PLUMBINGCODE2022CSCC]

ANALYSIS

This ordinance repeals those provisions of Title 29 – Mechanical Code – of the Los Angeles County Code, that incorporated by reference portions of the 2019 California Mechanical Code, and replaces them with provisions incorporating by reference portions of the 2022 California Mechanical Code, published by the California Building Standards Commission. Unless deleted or modified herein, the previously enacted provisions of Title 29 continue in effect.

State law requires that the County's Mechanical Code contain the same requirements as are contained in the building standards published in the most recent edition of the California Mechanical Code except for changes or modifications deemed reasonably necessary by the County because of local climatic, geological, or topographical conditions. The changes and modifications to the requirements contained in the building standards published in the 2022 California Mechanical Code that are contained in this ordinance are based upon express findings, contained in the ordinance, that such changes are reasonably necessary due to local climatic, geological, or topographical conditions.

This ordinance also makes certain modifications to the administrative provisions of Title 29.

DAWYN R. HARRISON
Acting County Counsel

By
CAROLE B. SUZUKI
Senior Deputy County Counsel
Public Works Division

CBS:lm

Requested: 07/12/22
Revised: 09/27//22

ORDINANCE NO. _____

An ordinance amending Title 29 – Mechanical Code – of the Los Angeles County Code, to adopt and incorporate by reference portions of the 2022 California Mechanical Code, with certain changes and modifications, and to make other revisions thereto.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Sections 119.1.2.0 through 119.1.14.0 of Chapter 1, Chapters 2 through 17, and Appendices B, C, and D, of this Title 29 of the Los Angeles County Code, which incorporated by reference and modified portions of the 2019 California Mechanical Code, are hereby repealed.

SECTION 2. Section 100 is hereby amended to read as follows:

100 -- ADOPTION AND INCORPORATION BY REFERENCE.

Except as hereinafter changed or modified, Sections 1.2.0 through 1.14.0 of Chapter 1, Division I, of that certain Mechanical Code known and designated as the ~~2019~~2022 California Mechanical Code as published by the California Building Standards Commission are adopted and incorporated by reference into this Title 29 of the Los Angeles County Code, as if fully set forth below, and shall be known as Sections 119.1.2.0 through 119.1.14.0, respectively, of Chapter 1 of Title 29 of the Los Angeles County Code.

Except as hereinafter changed or modified, Chapters 2 through 17, and Appendices B, C, and D, of that certain Mechanical Code known and designated as the ~~2019~~2022 California Mechanical Code, as published by the California Building Standards Commission, are adopted and incorporated by reference into this Title 29 of

the Los Angeles County Code as if fully set forth below, and shall be known as Chapters 2 through 17, and Appendices B, C, and D, of Title 29 of the Los Angeles County Code.

A copy of the ~~2019~~2022 California Mechanical Code shall be at all times maintained by the Chief Mechanical Inspector for use and examination by the public.

SECTION 3. Section 117.0 is hereby amended to read as follows:

117.0 Annual Review of Fees. The fees contained in this Code shall be reviewed annually by the Director of the Department of Public Works. Beginning on July 1, 1992, and thereafter on each succeeding July 1, the amount of each fee in this Code shall be adjusted as follows: Calculate the percentage movement between March of the previous year and March of the current year in the Consumer Price Index (CPI) for all urban consumers in the Los Angeles-Long Beach-Anaheim, CA areas, as published by the United States Government Bureau of Labor Statistics, and adjust each fee by said percentage amount ~~and round off to the nearest ten (10) cents~~; provided, however, that no adjustment shall decrease any fee and no fee shall exceed ~~this~~ the reasonable cost of providing services. When it is determined that the amount reasonably necessary to recover the cost of providing services is in excess of this adjustment, the Chief Mechanical Inspector may present fee proposals to the Board of Supervisors for approval.

SECTION 4. Section 204.0 is hereby amended to read as follows:

204.0 – B –

. . .

Building Code. The ~~building code that is adopted by this jurisdiction. **[HCD1, HCD 2, OSHPD 1, 1R, 2, 3, 4 &5, and SFM]** "Building Code" shall mean the California Building Code, Title 24, Part 2~~most recent edition of Title 26 of the Los Angeles County Code.

. . .

SECTION 5. Section 207.0 is hereby amended to read as follows:

207.0 – E –

. . .

Electrical Code. The ~~National Electrical Code promulgated by the National Fire Protection Association, as adopted by this jurisdiction. **[HCD 1 & HCD 2]** Whenever the term "Electrical Code" is used in this code, it shall mean the California Electrical Code, Title 24, Part 3~~most recent edition of Title 27 of the Los Angeles County Code.

. . .

SECTION 6. Section 218.0 is hereby amended to read as follows:

218.0 – P –

. . .

Plumbing Code. The ~~Uniform Plumbing Code promulgated by the International Association of Plumbing and Mechanical Officials, as adopted by this jurisdiction. **[HCD 1 & HCD 2]** Whenever the term "Plumbing Code" is used in this code, it shall mean the California Plumbing Code, Title 24, Part 5~~most recent edition of Title 28 of the Los Angeles County Code.

. . .

SECTION 7. Section 302.2 is hereby amended to read as follows:

302.2 ALTERNATE MATERIALS AND METHODS OF CONSTRUCTION ~~EQUIVALENCY~~AND MODIFICATIONS.

302.2.1 Alternate Materials and Methods of Construction.

Nothing in this ~~e~~Code is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this ~~e~~Code. Technical documentation shall be submitted to the Authority Having Jurisdiction to demonstrate equivalency. The Authority Having Jurisdiction shall have the authority to approve or disapprove the system, method, or device for the intended purpose on a case-by-case basis.

. . .

302.2.1.1 Testing.

. . .

302.2.1.1.1 Tests.

. . .

302.2.1.~~2~~1.2 Requests by the Authority Having Jurisdiction.

. . .

302.2.1.2 Application. Application for the use of an alternate material or method of construction shall be submitted in writing to the Chief Mechanical Inspector together with a filing fee of $285.60. When staff review exceeds two hours, an additional fee of $142.80 per hour shall be charged for each hour, or fraction thereof, in excess of two hours.

302.2.2 Modifications. Whenever there are practical difficulties involved in carrying out the provisions of this Code, the Authority Having Jurisdiction shall have the authority to grant modifications on a case-by-case basis, upon application of the owner or the owner's authorized agent, provided that the Authority Having Jurisdiction shall first find that a special individual reason makes the strict letter of this Code impractical, and that the modification is in conformity with the spirit and purpose of this Code, and that such modification does not lessen any health, fire-protection, or other life-safety-related requirements. The details of any action granting modifications shall be recorded and entered in the files of the Authority Having Jurisdiction. The application for approval of a modification shall be in accordance with Section 302.2.1.2.

SECTION 8. Section 501.1 is hereby amended to read as follows:

501.1 Applicability. This ~~c~~Chapter includes requirements for environmental air ducts, product-conveying systems, and commercial hoods and kitchen ventilation. Part I addresses environmental air ducts and product-conveying systems. Part II addresses commercial hoods and kitchen ventilation. Ventilation systems installed to control occupational health hazards shall comply with the requirements of the Health Officer.

SECTION 9. Section 510.1.6 is hereby amended to read as follows:

510.1.6 Bracing and Supports. Duct bracing and supports shall be of noncombustible material, securely attached to the structure, not less than the gauge required for grease-duct construction, and designed to carry gravity and lateral loads within the stress limitations of the ~~b~~Building ~~c~~Code. Bolts, screws, rivets, and other

mechanical fasteners shall not penetrate duct walls.

SECTION 10. Section 603.7.1.1 is hereby amended to read as follows:

603.7.1.1 Rectangular Ducts. Supports for rectangular ducts shall be installed on two opposite sides of each duct and shall be welded, riveted, bolted, or metal screwed to each side of the duct at intervals specified.

SECTION 11. Section 1114.4 is hereby added to read as follows:

1114.4 Approvals Required. The method of discharge of systems containing other than group A1 refrigerants shall comply with the pertinent requirements of Title 32 (Fire Code) and Division 2 of Title 20 (Sanitary Sewer and Industrial Waste) of the Los Angeles County Code.

SECTION 12. The provisions of this ordinance contain various changes, modifications, and additions to the 2022 Edition of the California Mechanical Code. Some of these changes are administrative in nature in that they do not constitute changes or modifications to requirements contained in the building standards published in the California Mechanical Code.

Pursuant to California Health and Safety Code sections 17958.5, 17958.7, and 18941.5, the Board of Supervisors hereby expressly finds that all of the changes and modifications to requirements contained in the building standards published in the California Building Standards Code contained in this ordinance are reasonably necessary because of local climatic, geological, or topographical conditions in the County of Los Angeles due to the potential for seismic activity in the region, topographical conditions that contribute to the spread of wild fires, and climatic

conditions that impact air quality and increase the risk of wild fires. Without limiting the foregoing, the County makes additional findings herein:

TABLE

MECHANICAL CODE AMENDMENTS		
CODE SECTION	**CONDITION**	**EXPLANATION**
501.1	Climatic	Additional Health Department requirements are necessary due to local air quality concerns.
510.1.6	Geological	High geologic activities, such as seismic events, in the Southern California area necessitate this local amendment for bracing and support.
603.7.1.1	Geological	High geologic activities, such as seismic events, in the Southern California area necessitate this local amendment for bracing and support.
1114.4	Geological	High geologic activities, such as seismic events, in the Southern California area necessitate this local amendment to reduce damage and potential for toxic refrigerant release during a seismic event caused by shifting equipment and to minimize impacts to the sewer system in such an event.

SECTION 13. This ordinance shall become operative on January 1, 2023.

[TITLE29MECHANICALCODE2022CSCC]

CITY OF LAWNDALE

Back to Agenda

14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200 ♦ www.lawndalecity.org

DATE: November 7, 2022

TO: Honorable Mayor and City Council

FROM: Sean M. Moore, City Manager

PREPARED BY: Raylette Felton, Assistant to the City Manager / Human Resources Director

SUBJECT: **Request to Authorize the Sale of Cable TV Video Production Van and Equipment**

BACKGROUND

In 2017, City Council approved the purchase of a Video Production Van and video camera systems to replace its obsolete technology and inoperable 32 year old van as part of a project to upgrade the City's video systems that support the City's government access television channel. Due to the underutilization of the City's Video Production Van and equipment, staff is recommending designating the video production equipment as surplus personal property eligible for disposal.

STAFF REVIEW

The City's custom built 2017 Ford Transit Video Production Van and four (4) Ikegami HD portable video camera systems were purchased in efforts to comply with the advancements in cable television broadcasting. The Video Production Van and equipment was primarily designed to record remote local school sports, games, legislative meetings and other events of community interest. Since mid/late-2017, the video production equipment has only been used on a few occasions and sitting idle in storage for over three (3) years. Recently, the City's Video Systems Integrator Consultant, Darren Doerschel, completed an inspection and found the video production equipment to be in great condition for sale.

As such, staff has designated the video production vehicle and equipment as surplus personal property eligible for disposal and recommending the sale of the property in accordance with City policy and procedures. With City Council's approval, staff will move forward with the disposal of the property by initiating the bidding process to sale the video production vehicle and equipment.

LEGAL REVIEW

N/A

FUNDING

There is no fiscal impact identified with the initiation of the bidding and selling of vehicle at this time. The value of the vehicle and equipment is currently unknown, but believed to be over $100,000. Staff is hopeful the City will receive the fairest market value for the property.

RECOMMENDATION

Staff recommends City Council approve the designation of the City's 2017 Video Production Van and four (4) Ikegami HD portable video camera systems to be surplus personal property and authorize the City Manager or designee to initiate the disposal of the property through a bidding process to sale the property.

CITY OF LAWNDALE

14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200 ♦ www.lawndalecity.org

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November 7, 2022

TO: Honorable Mayor and City Council

FROM: Sean M. Moore, City Manager

PREPARED BY: Diane Parsley, Executive Assistant

SUBJECT: **Local Travel Network Wayfinding Logo Survey – South Bay Cities Council of Governments**

BACKGROUND

The City of Lawndale (City) is a member of the South Bay Cities Council of Governments (SBCCOG), a joint powers authority based out of Torrance and serving the South Bay region. As a member, the City has a designated delegate to the SBCCOG Board of Directors, currently Councilmember Bernadette Suarez. The City's delegate attends the SBCCOG meetings of which a wide range of topics of interest to the South Bay region are discussed, and acted upon as may be necessary. At the request of Councilmember Suarez this item has been placed on the agenda for consideration.

In July 2021 the SBCCOG began work on implementing the South Bay Local Travel Network (LTN). The proposed plan of the Local Travel Network is a safe network of routes to accommodate a growing market of personal zero-emission slow-speed vehicles. The plan, funded by a Caltrans sustainability grant, examines the feasibility of more widespread adoption of a transportation concept known as micro mobility. Micro mobility refers to a range of lightweight vehicles operating at speeds below 25 mph. These include neighborhood electric vehicles, which appear similar to golf carts, e-scooters, e-bikes, electric skateboards and other personal transportation devices.

In May 2022 the SBCCOG approved a contract with a consultant to assist in developing the brand logo of the local travel network. In August and September 2022, the consultant held two (2) design charrettes of which a total of 16 different cities and agencies were represented. The second charrette produced three revised design ideas for the brand logo. The brand logo is important in that it will be used throughout the South Bay region for identifying the LTV by use of wayfinding signage, as well as other promotional information or material. The logo chosen will identify the Local Travel Network to the public.

STAFF REVIEW

City Manager Sean Moore met with the SBCCOG and confirmed with their staff that no Wayfinding signs for the LTN are being installed in Lawndale. Future consideration of any Wayfinding signs in Lawndale for the LTN would require a separate approval.

The SBCCOG Steering Committee met on Monday, October 10, 2022 and requested member cities discuss and rank, in order of preference, the three final design logo's for the Local Travel Network, and provide that ranking to the SBCCOG prior to the SBCCOG Board vote on November 17, 2022.

LEGAL REVIEW

None.

FISCAL IMPACT

None.

RECOMMENDATION

Staff recommends that the City Council

a.) Review the final three wayfinding design logo's for the Local Travel Network; and
b.) rank the three wayfinding design logo's in order of preference; and
c.) instruct City Delegate Councilmember Bernadette Suarez and/or the City Manager's Department, to relay the City of Lawndale's ranking in order of preference on the three Wayfinding design logo's to the SBCCOG Board prior to the SBCCOG meeting of November 17, 2022.

Attachments:

1. Local Travel Network Design Logo Option #1
2. Local Travel Network Design Logo Option #2
3. Local Travel Network Design Logo Option #3

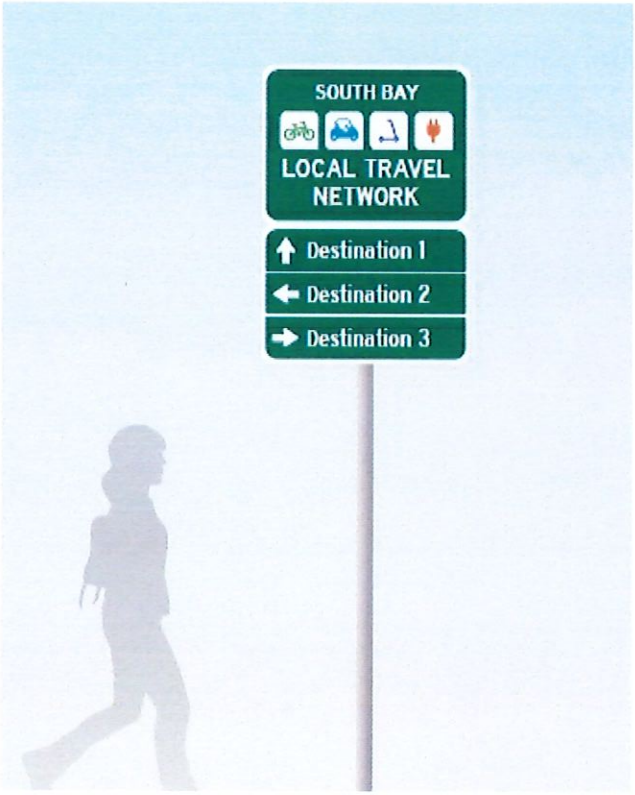
Attachment 1

Local Travel Network Design Option 1
"Multimodal"

OPTION 1

Multimodal





Attachment 2

Local Travel Network Design Option 2
"Wordmark"

OPTION 2

Wordmark





Attachment 3

Local Travel Network Design Option 3
"Rolling Turtle"

OPTION 3

Rolling Turtle





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CITY OF LAWNDALE
14717 BURIN AVENUE, LAWNDALE, CALIFORNIA 90260
PHONE (310) 973-3200 ♦ www.lawndalecity.org

DATE: November 7, 2022

TO: Honorable Mayor and City Council

FROM: Cynthia Rodriguez, Administrative Assistant II

SUBJECT: Mayor/Councilmember Report of Attendance at Meetings and/or Events

No supporting documentation was forwarded to the City Clerk Department for this item.