

ADDITIONAL OR MODIFIED ACCEPTANCE (MODULARS/PANELIZED)

This form is to be used only when the manufacturer is seeking acceptance of an additional model, modified model or model name change which uses a previously accepted building system.

C	urrent PFS Building System Acceptance #: 01170506
Ν	1odel Name/ No. SK715-M (S28-18805)
Ν	fanufacturer's Name: Champion Home Builders, Inc. (Skyline San Jacinto)
Р	lant(s) at which model will be produced #235

				F
Check One:	:	Х	NEW	MODEL

Daniard	M- J-1*
Revised	Model [*]

TECHNICAL DATA			
		Conforms	
Floor Plan Showing:	Yes	No	N/A
Braced Wall Method or Shearwalls	Х		
Building Size (LxW Dimensions)	Х		
Room Sizes, Light & Ventilation Schedule	Х		
Exit Requirements	Х		
Electrical Outlet Spacing & Smoke Detector	Х		
Location of Labels & Data Plates	Х		
Use Group, Type Const., Total Sq.Ft. Area	Х		
Plumbing System Design or Reference No. (MD-01054 / MW-01055 / MG-00864)	Х		
Heat Loss Calculations or Reference No. (HVAC -SK715-M)	Х		
HVAC/Furnace Size/Model No. (46,000 BTUH / HR min.)	Х		
Thermal Performance Calculations or Reference No. (Title 24 Sheet 15 series)	Х		
Electrical Load Calculations or Reference No. (Electrical Load Calculation Sheet 5	Х		
Service Size and Location (200 Amp. / Exterior)	Х		
Applicable Building Codes_California	Х		
Submit model to the followingstates:			
*Description of Modification:			
Requested by: Mike Neidlinger Date: 5/27/20			
(designer)			
For PFS Use			
Staff Plan Reviewer IBC Certification #: Date:			
Structural Calculation(s) Reviewed By: P.E. #: Date: Remarks:			
**(1) copy sent to IBC within 15 days of approval.			
VERBAL APPROVAL GIVEN By Whom:	_ Date:		

THIS FORM SHALL BE FILLED OUT COMPLETELY WITH EACH MODEL ACCEPTANCE OR MODIFICATION PRIOR TO SUBMITTAL TO PFS.



PFS Corporation Western Region 1536 W 25Th St. Suite 435 San Pedro, CA 90732 (310) 559-7287

APPLICATION FOR PLAN APPROVAL / RENEWAL

Factory-Built Housing/Components California Code of Regulations Title 25 Chapter 3 Subchapter 1

Complete a separate application for each plan approval / renewal requested. Expired plans and manuals shall not be considered for renewal.

Manufacturer:	Champion Home Builders - (S	kyline San Jacinto)
Address:	499 W. Esplanade	
City/State/Zip:	San Jacinto / CA / 92583	Phone: (951) 654-9321

I hereby certify that all structures/components will be manufactured in accordance with the plans, specifications and quality control manual on file with PFS Corporation. The construction, equipment and installations shall be in accordance with the provisions of the California Code of Regulations relating to the manufacture, sale, rent, or lease of factory-built housing or components, Title 25 Chapter 3 Subchapter 1.

Michael Neidlinger	5/27/2020
Authorized Signature	Date

	TYPE OF SUBMITTAL			TYPE OF UNIT
[X]	New Submittal	[]	Single Family Dwelling
[]	Resubmission	[]	Multi Family Dwelling
	Revision {provide written]]	Component
	instructions per 4876(e) }	[]	Other

Note: Based on it's location, does the building have to comply with 2019 CBC, Ch. 7A Wildfire Exposure: Yes [x] NO []

Model I. DIDescription of SubmittalSK715-M (S28-18805)58' x 28' two module single level placed on a permanent foundation.

For PFS use only:STATUS;[X] Approved[] DisapprovedApproved by:K. WALKERPlan Approval No.: PFS-20-002381Date Approved:5/29/2020Date Expires: 5/29/2023

* REV. 02 14 05 * CAFBH COMP. APP *

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OPROFESSION AL	CUMEL 6 701	N-11 A	CANE CIVIL	C OF CALIFU	5/11/2020		3TAO YE	1					CENTION	DEN DEN	N9	A BA: M	імаяд	<u> </u>		NOI	dW∀I	HЭ					/		5			ON	SHEET
	<u>ad:</u> 40 PSF	Load: 10 DCE		15 PSF	7-16. Dof dead load.		KI I EKIA ber below)	(based on 2018 IRC) sed of 2017 NEC)	based on 2018 UMC) ised on 2018 UPC)	y Measures (CALgreen)					ced on a permanent foundation.				. NOTES	2x6 exterior walls). all be located under the kitchen sink in	allabel (for the adjoining module) is to ie largest bedroom.	e a rire separation of not less than 5 ree hall have a common wall with not less	with not less than a 20-minute fire- f-latching devices.	ercut doors or a grille located above the	be designed and installed in accordance ode or the 2016 Edition of NFPA 13D. Th	prinkler designer. The sprinkler system ed personnel per the approved sprinkle	erence the Quality Assurance & kler checklists. See sheet 3 for						
DESIGN BASIS	Loads (G.S.L.): Floor Live L 30 PSF	(V3s): Floor Dead	.13 INFIT , EXP. C	D2	ied on V3s = 115 mph, Vult = 115 mph per ASC el weight is taken into consideration for total r	DECEN	UENELS UENELS UENELS Codes	art 2.5 -California Residential Code art 3 -California Electrical Code (ba	art 4 -California Mechanical Code l art 5 -California Plumbing Code (b:	art 6 -California Energy Code art 11 -Ch. 4 Residential Mandator	<u>Jse Group:</u> ingle Family)	<u> [ype:</u> Vood Frame - Unprotected)			inal two module single level home pla ing height standard				GENERAI	idels actual floor width is 27'-0" (with a, data plate and third party labels sh	is not readily removable. An addition in the closet (on the longest wall) of the comment of constructions chall have	is, openings & penetrations shall hav gned for a site-built attached garage :	fire-resistive rating & common door ing equipped with self closing and sel	provided to habitable rooms by und.	esidential fire sprinkler systems shall R313.3 of the 2019 CA Residential C	stem shall be designed by a qualified lled, tested and inspected by a qualif	ield connections and inspections, ref Manuals for the appropriate fire sprii	ıformation.					
	Ground Snow	*Wind Speed	L Seismic Desig		*Wind design is ba **Photovoltaic pan		Codes & Regu	2019 P. 2019 P.	2019 2019 P.	2019 P.	Occupancy / L R3 (S	Construction . VB (V		Ranch:	- 58' x 28" nom - 9'-0" flat ceil					 28' wide mc 2) State insign 	an area that be located i	3) Exterior wa	than 1-hour resistive rat	 Return air is door header 	5) Automatic r with Sectior	will be insta	design. For t Installation	additional ir					
MANUFACTURER			on Home Builders, Inc.			CATE OF CALIFORNIA	ALE UF CALIFURINIA >>>)LAND - URBAN INTERFACE		<u>'y Built Housing Model:</u>	/	NAVCJO 1000EV	(cnoot-070) MI-0		DESIGN OFFICE	Div. #235) Skyline Homes Michael Neidlinger (Engineer)	200 NIBCO Parkway, Suite 200 Elkhart, IN 46516	(574) 350-2281	ATION ENGINEERING OFFICE	T.R. Arnold Michael G. Tomko (Professional Engineer)	4703 Chester Dr. Elkhart IN 46516 Istan 244. 0745	C+/0-+02 (+/c)	INSPECTION AGENCY	PFS Corporation 1507 Matt Pass, Rd.	Cottage Groove, WI 53527 (608) 839-1393	email: pop.goneski@pisteco.com	C APPROVED	BASED ON THE REQUIREMENTS OF TITLE 25 CALIFORNIA CODE OF REGULATIONS CHAPTER SUBSCIAPTER 1 FACTORY BUILT HOUSING AND COMPONENTS	DATE 5/29/2020	EXPIRES 5/29/2023	APPROVAL # PFS- 20-002381	THIS ATTROVAL DOES NOT ALTHORE OR APPEND ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES	PPs CORPORTION - Los Angeles, Calfornia
			Champic	•			C >>>	MILE	1	Factor		CV71			PLANT (#235) LC	Champion - Skyline San Jacinto (Jeremy Ramsey (QA Manager)	499 W. Esplanade San Jacinto, CA 92583	(951) 654-9321	PROJECT LOC	APN # 583-12-010 San Jose, CA 95120													
DRAWING INDEX	DESCRIPTION Cover Sheet	Window & Door Schedule	Floor Plan	Electrical Legend	Electrical Load Calculation	Electrical Plan	Drain Line	Water Line	Gas Line	HVAC Plan / Application	Miscellaneous Specs	Elevations	Cross Section	Truss Details	Energy Calculations	WUI Specifications	Loading / Strapping	Roof System -Other Details	Calculations	On-site Installation													
	No. 1	2	£	4	5	9	7	∞	6	10-10A	11	12-12A	13	14-14A	15-15P	16	17	18	App. A	App. B													

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	<u>VENT -</u> (ft ²) 2.41		8.04	:	1.29	1	5.08	7.32	8.98	3.98	3.08	11.08		6.19 6 1 1	+	:	:	:			:	:	13.03	3.33	c/.£	:	8.03			<u>VENT - (ft*)</u>	ı	 15.65		ı	:	:			lider // DS - DI		ig to AAMA 10		ו. height) and s		or surface bel	sures the wind		ditional doors	ulations.	
	<u>LIGHT -</u> (ft ²) 4.65	1.65	3.70	5.25	2.35 2.88	1.41	9.48	13.77	17.01	7.31	1./2 6.03	21.11		11.65 12.15	7.11		:	:				:	24.90	6.59	7.40	7.38	22.95		.2	<u>LIGHT -</u> (ft [*])	I	31 10		1	:				S - Horizontal S		ed as conformir	i.	width, 24" mir		finished grade	manner that as		its are met. Ad	the energy calc	
WINDOW SCHEDULE	TYPE VS- SH 1500	PW 1500	VS- 5H 1500	PW 1500	VS- SH 1500 VS- SH 1500	PW 1500	VS- SH 1500	VS- HS 1500	VS- HS 1500	VS- SH 1500	PW 1500 V/S- SH 1500	V3- 311 1500 VS- HS 1500		VS-SH1500 (EG)	PW 1500	PW 1500	PW 1500	PW 1500	PW 1500	PW/ 1500	PW 1500	PW 1500	DS - HS 1500	VS- SH 1500	UUCT HC -CV	PW 1500	DS - HS 1500	DOOR SCHEDULE		E <u>AREA -</u> (ft ⁻)	1 Core 20.0	re (9-Lite) I/.8	h Door 42.7	ed Slider 48.0	ed Slider 64.0	(Fire Rated) 17.8			Hung // VS - Vertical Slider // H		olumn. All windows to be labele	ign Pressure (DP) rating of 30 p.	ictions. opening of 5.7 sq. ft. (20" min.		cated more than 72" above the	the home will be installed in a r	e below.	d light & ventilation requiremer	does not exceed that shown in the rearranged in kitchen area	
	ROUGH ROUGH CODE CALL SIZE WIDTH (in) HEIGHT (in) A 24-1/4 x 39-5/8 24.50 39.88	B 46-1/4 × 10 46.50 10.25 C 46-1/4 × 20 6 /8 46.50 20.00	D 46-1/4 × 58-5/8 46.50 58.88	E 30-1/4×30 30.50 30.25	F 14-1/4 x 39-5/8 14.50 39.88 G 24-1/4 x 27 24 50 27 25	H 30-1/4 x 10 30.50 10.25	l 30-1/4 x 58-5/8 30.50 58.88	J 62-1/4 x 39-5/8 62.50 39.88	K 62-1/4 × 48 62.50 48.25	L 24-1/4 × 58-5/8 24.50 58.88	M 36-1/4 X 10 36.50 10.25 N 30-1/4 × 39-5/8 30.50 39.88	P 62-1/4 × 53-5/8 62.50 58.88	σ	R 36-1/4 x 58-5/8 36.50 58.88 c 46-1/2 x 48 46 50 78 25	T 18-1/4 × 68-1/8 18.50 68.38	V 52/78 x 14	W 38x10/14/16/18	X 46x10/14/16/18	ل 100/ 22X12/15/18 ۲/21/21/20/19	ΔΔ 36×10/12/14/18 ΔΔ 36×10/12/14/16/18	BB 30x10/14/16/18	CC 24x10/14/16/18	DD 72-1/2 x 58-5/8	EE 36-1/4 × 36 EE 36-1/4 × 36 E/8	FF 36-1/4X 39-5/8 GG	HH 46-1/4 × 27 46.50 27.25	II 78-1/4 × 48 78.50 48.25		SIZE	CODE WIDTH HEIGHT TYPE	1 36" 80" Insulated	2 32 80" Insulated Col 3 72" 80" Vinvi Insulate	4 75" 82" Dbl. Frenci	5 72" 96" Vinyl Insulati	6 96" 96" Vinýl Insulati	7 32" 80" Insulated Core		A hboristions.	EG - Egress // PW - Picture Window // SH - Single H	Meteory	<u>Notes:</u> 1) Windows are Kinro series as listed in the type co	2) All windwos & doors shall have a minimum Desi	 Items to be installed per their installation instru- Egress windows shall have a minimum net clear 	height of not more than 44" above the floor.	5) Where the opening of an operable window is lot mart of the clear opening of the window shall be	documentation from the builder indicating that t	are less than 72" above finished grade or surface 6) Hallwave to be a minimum of 36" wide	7) Doors and windows may be moved if egress and	be added to the floor plan as long as their area c 8) Kitchen may your cabinetry and annilances may	



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BE CONNECTE FOR THIS OFT	20 AMP 25 AMP	20 AMP	e ratings. Nd Shall Be Receptacle	TO BE DECER	R ELECTRIC"	P x A) - A	d i SE	: Cran Devici	CABLE # OF	1	+ •	0 -		2 1 1		0 0		2 1	3 1		-		V E 25 CALIFORN BUILT HOUS			1 APPROVE AI 5 OR APPLIC. os Angeles,
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: HTS (0PTIONA LIGHT IN BOX ON EXTER	13 Electrical Sallon 6 Gallon	10/50 GALLON CS FOR SIZE	equipment in Receptacle 5 of receptac	UNDER FLOOR	RVED SPACE	MAX	-C TO DET 2.0 IF 14a	1 FOR ALL	SCRIPTION	ROUND	SINGLE	ROUND	JBLE 1 de	JBLE 2 de SINGLE	SINGLE	ROUND ROUND	AETAL HB	DOUBLE	TRIPLE	AETAL JB AFTAL JB						
NOTES NOTES 11) MHERE LIG TO THE CIC	3.) CIRCUIT # 20 0 30/4	30/ 30/	4.) Refer To 5.) Outdoor This Type	6.) DEDICATED	1.1 A UNDEL		CAI A=	: # {					8								_					
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EX RECEP- IRIC RANG	R RECEPT	PTACLE, G	PROTECTE	W FLOOR H	LE SWITCH	ILE SWITCH	E SWITCH	AG MOLINTE		CHAIN CE	CHED WALL	MOUNTED	VG VENT F	VG LIGHTEL	VG LIGHTEL	TIDIMUH/w	CH/RECEP	ER SWITCH	ACE SAFE	NCY SENS	ION MONO					
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Date



Electrical Load

SHEET 5 Model: SK715-M

4/30/2020	0	Calcula	ation (200	AMP)		58' x 27'							
	DESCRIPTION		LO	AD		WATTS							
Liahting	g at 3w/square foot	1566	x	3	w	4698							
Small A	Appliance	3	x	1500	w	4500							
Laundr	v Circuit	1	x	1500	w	1500							
Heat Ta	ape Outlet - 5A	5	х	120	v	600							
Bath Fa	- an + Kitchen Fan - 1.3A+1.9A	3.2	x	120	v	384							
Heat La	amps (800 w each)	0	х	800	w	0							
Dishwa	isher - 9A	9	x	120	v	1080							
Dispos	al - 5A	1	х	120	v	120							
Water I	Heater	0	х	4500	w	0							
Clothes	s Dryer - 24A	24	х	240	v	5760							
Power	Roof Vent - 3.3A	3.3	х	120	v	396							
Range		0	х	16800	w	0							
Electric	vehicle Circuit - 40A	40	х	120	w	4800							
Furnac	e (Gas & Oil) - 12A	12	х	120	v	1440							
Microwave - 11A 11 x 120 v 1320													
Freeze	r - 12A	0	х	120	v	0							
		-											
DRS	First 1	0KW at 1009	%, remaine	٦ :00 der at	Total Watts:	26598 watts							
NDUCTO	CONTROLS >>> Air Conditioning an	nd Cooling:	44.00A	at 100%:	10560	watts							
NDED CC	Electric Furnac	e at 65% x	0	watts	0	watts							
NGROUI			ΤΟΤΑ	AL WATTS:	27199.2								
		101		S / 240V =	113.3	amps							
	Minimum Feeder Size: Lighting, sm First	<u>1/0 CU</u> all appliance 3000 at 1009	at 75 degre e and laune %, remaine	ee C dry circuits: der at 35%: Appliance:	10698 5694.3	watts watts							
			1)	Heat Tape	600	watts							
DAD		2) B	ath and Ki	tchen Fans	384	watts							
			3) ⊢	leat Lamps	s 0	watts							
RA		4) Dishv	vaser and	Compactor	1080	watts							
5				5) Disposal	120	watts							
Z Z		6) C	lothes Dry	er (at 70%)	4032	watts							
E E			7) Power	r Roof Vent	t 396	watts							
		8) Co	ooking Uni	its (at 70%)	3360	watts							
		, 9)) Furnace	(Gas & Oil)	1440	watts							
		- ,	10)	Microwave	1320	watts							
				11) Freezer	0	watts							
			τοτα	L WATTS	18426.3								
		тот	AL WATT	S / 240V =	76.8	amps							
	Minimum Neutral Size	#4 CI	at 75 degre	e C									
Minimum Neutral Size: #4 CU at 75 degree C Notes: 1) Use a minimum 200 Amp. Panelboard. 2) Minimum Grounding Conductor is #6 CU 3) Minimum Factory installed Feeder receway is 1-1/2 in.													







SHEET 8







APPLICATION ENGINEERING FOR HEATING AND COOLING

235 SKYLINE HOMES 499 W Esplanade San Jacinto, CA 92583

Manufacturer's Model #: S-K715-M-S-28-18805 HVAC System Type: INFLOOR D.B. LOOP PER

4/21/2020 Prepared By LaSalle Air Systems {Method & Output 2020} All rights reserved: this information proprietary to LaSalle Bristol Co. and 235 SKYLINE HOMES

Calculations on this page are based on design standards set forth in ASHRAE and ACCA Manuals J Rev 8.2 and D Rev 1.1. System registers are located for best distribution based on Manual T. Design calculations are based on worst case orientation. Room loads may vary based on actual conditions.

ENTIRE HOUSE VALUES - DESIGN ZONE: CA, Region 3C (2019 Title 24 Part6) (2018) 33N Latitude

COOLING LOAD:	26,219 Btuh for Outside Temp/Humidity of	90 $~~^{\preccurlyeq}$ F (32 C)/ 36% and Inside reduced to	72 🛸 F (22 C)/ 50%
HEATING LOAD:	17,155 Btuh based on outside temp of	39 $\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	72 🦈 F (22 C)
Crawlspace is not heat	ted by the primary air handler.	Actual UA = 257.7 Max UA (Table Use net wall	e R402.1.2) = 285.4 area, not gross wall

CONSTRUCTION DETAILS & U / SHGC VALUES: (33+Non-ins Rim - 21 - 38)

Total Cond. Floor Area:	1566.00 s.f.	TRUE Outside F	Perimeter:	170.00	ft				
Level 1 Ceiling: 108	to 108 in. I	Level 2 Ceiling: 0 to 0) in.	Level 3 Ceiling:	0 to 0 in.	Net Roo	f Area (les	ss ducts): 1566 s.f.	
Primary Wall Area:	1252.25 s.f. (Net)	Dark Roof(U):	0.027	FLOOR DUCTS	S (U):	0.0292		Duct TEL	
Secondary Wall Area:	0.00 s.f. (Net)	Prim Wall (U):	0.056	ATTIC DUCTS	(U):	0.125		323.2 ft	
TOTAL Low-E window	196.75 s.f.	Sec Wall (U):	0.028	EXT. DUCTS (U):	0.125			
TOTAL French Door	40.00 s.f.	Exp Floor(U):	0.033	INFLOOR DUC	T AREA:	421.67	S.F. @ 4	6.6 TD/ 28 TD	
TOTAL Shaded Low-E wi	0.00 s.f.	Low-E wi 0.34	0 / 0.29	ATTIC DUCT A	REA:	0	S.F.(retu	ırn) @ 73 TD/ 88.3 Tl	D
TOTAL Shaded S.G.D.	0.00 s.f.	French D 0.34	0 / 0.31	EXT. DUCT AF	REA:	0	S.F. @ 7	'3 TD/ 46 TD	
TOTAL Door1 Area:	41.00 s.f.	Shaded L 0.34	0 / 0.05	PEOPLE:	5	3319.3 E	Btuh Total	Appliances	
TOTAL Door2 Area:	0.00 s.f.	Shaded S 0.34	0 / 0.06	FIREPLACES:		0			
All Glass % of Floor:	15.12 %	Door 1: 0.34	D	DUCT GAIN:	@ Semi-Tight	1088	Btuh		
All Glass % of Wall:	15.47 %	Door 2: 0.34	D	DUCT LOSS:		1936	Btuh		
LATENT GAIN:	3141 Btuh			Summer Infiltr (7.5 mph):	32.4	cfm		
Mech. Ventilation :	105.6 cfrr(49.8 L/s	s) Altitude: 30	D ft	Winter Infiltration	on (20 mph):	81.4	cfm	@ Semi-Tight	

ROOM BY ROOM VALUES:

1331.9 FPM, max velocity in trunk #: 4 Heat Exiting Furnace: 91 deg A/C Exiting : 47 deg 0.19 Max pressure at A/H Actual heating and cooling required in each room and Cooling Air Heating Air Maximum A/C capacity flow set to maximum of either heating or cooling Values for Values for 30 7.5 KW HEATING COOLING CEM 2.5 ton unit 90 % Gas/Oil Elec Calibrated Blower Test ROOM NAME LOSS (Btu) GAIN (Btu) DIST CFM Btub CFM Btuh E Btuh Btuh (alt adj) M. Bath B 1.491 2.258 72 140 4.002 134 3.445 3.265 5.357 M. Bedroom B 1,554 2,704 2,892 2,741 с 89 118 3,359 112 4,495 W.I.C. 2 285 13 316 С 1,775 2,761 Utility 917 925 38 72 2,062 69 1,683 h Bath #2 710 31 1,434 2,352 944 62 1,757 59 1,513 С Living Room С 3,767 6,312 204 247 7,042 236 6,063 5,746 9,423 Kitchen с 2 063 2.950 96 50 1,438 48 1.238 1.173 1.901 Dining Room с 1,710 3,198 102 104 2 9 5 9 99 2 547 2.414 3.911 Bedroom #2 с 1,243 1,871 61 79 2,255 75 1.941 1,840 2,980 2,679 M. Bedroom A 1.885 2,987 95 109 3.112 2,539 4.110 С 104 W.I.C. 1 1,475 49 1,270 1,204 1,949 884 881 36 52 h M. Bath A 645 875 29 55 1,559 52 1,342 1,272 2,059 С TOTALS 17,155 26,219 866 1,087 31,021 1,037 26,705 25,310 41,296











16023 Swingley Ridge Rd Chesterfield, MO 63017



WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITER REFERENCE PAGE MILTAT3 rev. 10/03/2015 BEFORE USE. Design valid for use only with MITEN® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building design. Brancing indicated is to prevent buckling of individual truss wee band/or chord members only. Additional temporary and permanent brancing is always required for stability and to prevent collapse with possible personal injury and property damage. For general guidance regarding the fabrication, storage, delivery, rection and bracing of trusses and truss systems, see ANSI/TPH Quality Criteria, DSB-89 and BCSI Building Component Safety Information available from Truss Plate Institute, 218 N, Lee Street, Suite 312, Alexandria, VA 22314.

SHEET 14A

Job	Truss	Truss Type	Qty	Ply	Skyline 382 CA
					40543310
100464	F0525003	FLOOR	1	1	F-527-DA Div#341
					Job Reference (optional)
Universal Forest Products,	Grand Rapids, MI - 49525	,	8	.240 e Feb	7 2020 MiTek Industries, Inc. Mon Mar 9 12:59:13 2020 Page 1

ID:iuL89F9GTd8K9kR3s2sUxOzh?x_-nsRHKhdcguqoV5KXTeTxJOXBDZNHhiGM5RvltVzcfcC



Plate Offsets (X,Y)- [1:Edge,0-1-8], [3:0-2-12,0-1-4], [5:0-1-8	3,Edge], [6:0-1-8,Edge], [8	:0-2-12,0-1-4], [14:0-2	-8,0-1-4], [17:0-2-8	,0-1-4]				
LOADING (psf) TCLL 40.0 TCDL 10.0 BCLL 0.0 BCDL 1.0	SPACING- 2-0-0 Plate Grip DOL 1.00 Lumber DOL 1.00 Rep Stress Incr YES Code IBC2018/TPI2014	CSI. TC 0.43 BC 0.89 WB 0.65 Matrix-R	DEFL. Vert(LL) -0.2 Vert(CT) -0.2 Horz(CT) 0.0	in (loc) l/defl 23 15-16 >670 29 15-16 >525 34 11 n/a	L/d 360 240 n/a	PLATES MT20 Weight: 48 Ib	GRIP 197/144 FT = 0%	%F, 0%E	
LUMBER- TOP CHORD 2x4 SPF BOT CHORD 2x4 SPF WEBS 2x4 SPF	⁻ No.2(flat) No.2(flat) - Stud(flat)		BRACING- TOP CHORD BOT CHORD	Structural wood except end vert Rigid ceiling dire	sheathing dir icals. ectly applied o	ectly applied or 6-0-(or 10-0-0 oc bracing.) oc pur l ins,	[P]	EVIATION
REACTIONS. (size) Max Gra FORCES. (lb) - Max. C TOP CHORD 1-20=) 20=0-3-8, 11=0-3-8 av 20=644(LC 1), 11=644(LC 1) Comp./Max. Ten All forces 250 (lb) or 638/0, 10-11=-638/0, 1-2=-1180/0, 2-3 065/0, 6-7=-2681/0, 7-8=-2681/0, 8-9 =0/2068, 17-18=0/2068, 16-17=0/3065, =0/2068 0/1315, 3-19=-9889/0, 3-17=0/683, 5-17 0/883, 6-14=-719/0	less except when shown. 1180/0, 3-42681/0, 4- -1180/0, 9-101180/0 15-16=0/3065, 14-15=0/3 =-719/0, 10-12=0/1315, 8-	5=-2681/0, 3065, 13-14=0/2068, •12=-989/0,					OVED THE 25 CALIFORMA CODE OF REGU	381 - Antrove ANY OMISSION OR D - ANS OR APPLICABLE LOCAL ORDI - A - Tas - Aneeles. California
NOTES- 1) Unbalanced floor live 2) The bottom chord dee added to the bottom of 3) This truss is designed 4) Recommend 2x6 stro Strongbacks to be att	loads have been considered for this de ad load shown is sufficient only to cove shord. in accordance with the 2018 Internation ngbacks, on edge, spaced at 10-0-0 o ached to walls at their outer ends or re-	esign. r the truss weight itself an onal Building Code sectior c and fastened to each tru strained by other means.	d does not allow for an 12306.1 and reference Iss with 3-10d (0.131"	ny additional load to ad standard ANSI/T X 3") nails.	o be PI 1.			PARTING A P R ANSID ON THE REQUIRAMENTS OF T CHARTER S SUBCILATIER I FACT DATE 5/29/2020	EXPIRES 3/20/20/3 APPROVAL # PFS. 20-002 THIS APPROVAL DOES NOT AUTHORD FROM THE REQUIREMENTS OF STATION <i>PFS CORPOSATION</i>
						+ REGION	C861	SSIONAL CHOMEER IG LILL 163 31/20	

March 10,2020

OFCALIFO

WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MII-7473 rev. 10/03/2015 BEFORE USE. Design valid for use only with MITeK® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building designer, Bracing indicated is to prevent buckling of individual truss we hand/or chord members only. Additional temporary and permanent bracing is always required for stability and to prevent collapse with possible personal injury and properly damage. For general guidance regarding the fabrication, storage, delivery, erection and bracing of trusses and truss systems, see Safety Information available from Truss Plate Institute, 218 N, Lee Street, Suite 312, Alexandria, VA 22314.

16023 Swingley Ridge Rd Chesterfield, MO 63017

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

S28-18805 APN: 583-12-010 San Jose, CA 95120

Project Designer:

Skyline Homes 200 NIBCO Parkway - Suite 200 Elkhart, IN 46516

Report Prepared by:

Edward Weber Skyline Corporation 200 NIBCO Parkway - Suite 200 Elkhart, IN 46516 5743502199

Job Number:

SK715-M

Date:

5/1/2020



The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2019 Building Energy Efficiency Standards.

This program developed by EnergySoft Software - www.energysoft.com.

TABLE OF CONTENTS	
Cover Page Table of Contents Form CF1R-PRF-01-E Certificate of Compliance Form RMS-1 Residential Measures Summary Form MF-1R Mandatory Measures Summary	1 2 3 13 14
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Calculation Description: Title 24 Analysis Project Name: S28-18805

Calculation Date/Time: 2020-05-01109:42:25-04:00 Input File Name: S28-18805.ribd19x

CF1R-PRF-01E (Page 1 of 10)

GENER	RAL INFORMATION			6
01	Project Name	S28-18805		6
02	Run Title	Title 24 Analysis		
03	Project Location	APN: 583-12-010		
04	City	San Jose	05	Standards Version 2019
90	Zip code	95120	07	Software Version EnergyPro 8.0
08	Climate Zone	4	60	Front Orientation (deg/ Cardinal) AllOrientations
10	Building Type	SingleFamily	11	Number of Dwelling Units
12	Project Scope	NewConstruction	13	Number of Bedrooms 3
14	New Cond. Floor Area (ft ²)	0	15	Number of Stories 1
16	Existing Cond. Floor Area (ft ²)	n/a	17	Fenestration Average U-factor 0.34
18	Total Cond. Floor Area (ft ²)	1566	19	Glazing Percentage (%) 14.56%
20	ADU Bedroom Count	0	21	ADU Conditioned Floor Area

_			 _				
	14.56%	0			CEC-approved HERS provider.		
	Glazing Percentage (%)	ADU Conditioned Floor Area			rtified HERS rater under the supervision of a		
	19	21			n by a cei		
			0	0	eld testing and/or verificatio	atures shown below	0,00
1	566			erformance	hat require fi	ore Special Fe	131313
	Total Cond. Floor Area (ft 2) 1	ADU Bedroom Count	ESULTS	Building Complies with Computer Pe	This building incorporates features t	This building incorporates one or mo	SIUL
			LIANCE RE	01	02	03	
9	18	20	COMF				

SHEET 15B

Registration Number:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

Report Version: 2019.1.100 Schema Version: rev 20190401

Registration Date/Time:

Report Generated: 2020-05-01 06:43:08

CERTIFICATE OF COMPLIANCE

Project Name: S28-18805

Calculation Description: Title 24 Analysis

 CF1R-PRF-01E

 Calculation Date/Time: 2020-05-01 09:42:25-04:00
 (Page 2 of 10)

 Input File Name: S28-18805.ribd19x

ENERGY DESIGN RATING		9.4	6	
	Energy Des	ign Ratings		
	Efficiency ¹ (EDR)	Total ² (EDR)	Efficiency ¹ (EDR)	Total ² (EDR)
Standard Design	47.3	24		
Proposed Designs		4		
North Facing	44.6	• 21.3	2.7	2.7
East Facing	47.3	24	0	0
South Facing	44.4	21.2	2.9	2.8
West Facing	46.6	23.3	0.7	0.7
	RESULT: ^{3:}	COMPLIES		
¹ Efficiency EDR includes improvements to the building envelope ² Total EDR includes efficiency and demand response measures si ³ Building complies when efficiency and total compliance margin:	and more efficient equipment uch as photovoltaic (PV) systems is are greater than or equal to zerc	and batteries		
Standard Design PV Capacity: 2.31 kWdc Proposed PV Capacity Scaling: North (2.31 kWdc) East (2.3	31 kWdc) South (2.31 kWdc) West	(2.31 kWdc)		



Report Generated: 2020-05-01 06:43:08

CERTIFICATE OF COMPLIANCE	Project Name: S28-18805

Calculation Description: Title 24 Analysis

Calculation Date/Time: 2020-05-01109:42:25-04:00 Input File Name: S28-18805.ribd19x

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Percent Improvement

Compliance Margin

Proposed Design

Standard Design 12.39 13.87

Energy Use (kTDV/ft²-yr) Space Heating Space Cooling

15, 6

ENERGY USE SUMMARY

SHEET 15D

Report Version: 2019.1.100 Schema Version: rev 20190401

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06:43:08	ed: 2020-05-01	Report Generate	-			Version: 2019.1.100	Report	Residential Compliance	andards - 2019	gy Efficiency S	CA Building Ener
		HERS Provider:	-			ation Date/Time:	Registr			iber:	Registration Nun
11	10	60	08	07	06	05	04	03		02	01
									•	TEMS	REQUIRED PV SYS
								/a			
3.8		1.73				43.37	45.1	0	oliance Total	st Facing Comp	We
n/a		0				0	n/a	0	n Credit	Self Utilizatio	
0		0				15.92	15.92	2	iting	Water Hea	
0		0				2.92	2.92		ation	IAQ Ventil	
1.4		0.2				13.67	13.87		ling	Space Coo	
12.3		1.53				10.86	12.39		ting	Space Hea	
15		6.77	-			38.33	45.1		oliance Total	th Facing Com	Sout
n/a		0				0	e/u		n Credit	Self Utilizatio	
0		0				15.92	15.92		iting	Water Hea	
0		0				2.92	2.92		ation	IAQ Ventila	
39.1		5.42				8.45	13.87		ling	Space Coo	
10.9		1.35				11.04	12.39		ting	Space Hea	
0.3		0.12	-			44.98	45.1		liance Total	t Facing Comp	Eas
n/a		0				0	n/a		n Credit	Self Utilizatio	
0		0				15.92	15.92		iting	Water Hea	
0		0				2.92	2.92		ation	IAQ Ventil	
-1.8		0.25	'			14.12	13.87		ling	Space Coo	
£		0.37				12.02	12.39		ting	Space Hea	
14.2		6.39	-			38.71	45.1		pliance Total	th Facing Com	Nor
n/a		0				S	n/a		n Credit	Self Utilizatio	
0		0				15.92	15.92		iting	Water Hea	
0		0				2.92	2.92		ation	IAQ Ventila	
31.5		4.37				9.5	13.87		ling	Space Coo	
16.3		2.02				10.37	12.39		ting	Space Hea	

CERTIFICATE OF CO	MPLIANCE					b		U	CF1R-PRF-01E
Project Name: S28-	18805			Calculation Dat	e/Time: 2020-05-01T	09:42:25-	04:00	-	(Page 4 of 10)
Calculation Descrip	tion: Title 24 Ana	alysis		Input File Name	:: S28-18805.ribd19x				
DC System Size (kWdc)	Exception	Module Type	Array Type	Power Electronics	CFI Azimuth (deg)	Tilt Input	Array Angle (deg)	Tilt: (x in 12)	Inverter Eff. (%)
2.31	NA	Standard	Fixed (roof mount)	none	true n/a	n/a	n/a	n/a	96
REQUIRED SPECIAL FE	EATURES								
The following are feat	ures that must be	installed as condition for	r meeting the modeled ϵ	nergy performance for this	computer analysis.				
 PV System: 2.3 Floor has high I Non-standard o 	1 kWdc evel of insulation luct location (any l	ocation other than attic)		S					
HERS FEATURE SUMIN	1ARY			2					
The following is a surdetail is provided in the	mary of the featur	res that must be field-ve elow. Registered CF2Rs :	rified by a certified HERS and CF3Rs are required t	Rater as a condition for me o be completed in the HERS	eting the modeled ener Registry	gy perform	nance for this con	nputer analysi	s. Additional
Building-level Verifica:	tions:								
 Quality insulation 	on installation (QII	(1		ģ					
 Indoor air quali 	ity ventilation								
Kitchen range h	nood								
Minimum Airfle	ations. JW								
 Verified EER 									
Verified SEER	ī								
Veritied Retrige Fan Efficacy Wa	erant Charge htts/CFM		0						
Heating System Verific	cations:		8						
 None 									
HVAC Distribution Sys	tem Verifications:		e						
Duct leakage te Verified low-lea	esting skage ducts in conc	ditioned space must mee	at maximum 25 cfm leak	age to outside (RA3.1.4.3.8)					
Domestic Hot Water 5 None	System Verification	ls:							
BUILDING - FEATURES	SINFORMATION	0							
01		02	03	04	05		90		07
Project Nam	e Condi	tioned Floor Area (ft ²)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Numb Co	er of Ventilatior oling Systems	n Numb Heati	er of Water ng Systems
S28-18805	*	1566	1	3	1		0		1
Registration Number				Registration Date/Time:		Т	IERS Provider:		
CA Building Energy Ei	fficiency Standards	s - 2019 Residential Com	pliance	Report Version: 2019.1.10 Schema Version: rev 2019	D 0401	æ	eport Generated	: 2020-05-01	06:43:08

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Project Name: S28-18805 Calculation Description: Title 24 Analysis

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Calculation Date/Time: 2020-05-01109:42:25-04:00 Input File Name: S28-18805.ribd19x

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ZONE INFORMATION				S		
01	02	03	04	05	90	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft ²)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
1st Floor	Conditioned	HVAC System1	1566	6	DHW Sys 1	N/A
				0		
OPAOUE SURFACES						

OPAQUE SURFACES				4			
01	02	60	04	50	90	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft ²)	Window and Door Area (ft2)	Tilt (deg)
Front Wall	1st Floor	R-21 Wall	0	F ront	522	87	06
Left Wall	1st Floor	R-21 Wall	06	Left	243	19	06
Rear Wall	1st Floor	R-21 Wall	180	Back	522	112	06
Right Wall	1st Floor	R-21 Wall	270	Right	243	52	06
Roof	1st Floor	R-38 Roof	n/a	n/a	1566	n/a	n/a
Floor	1st Floor	R-33 Floor Crawlspace	e/u	n/a	1566	n/a	n/a

ATTIC							
01	02	03	04	05	90	07	08
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic 1st Floor	Attic Roof1st Floor	Ventilated	0	0.1	0.85	Yes	No
		10-					
FENESTRATION / GLAZI	NG	S					

		9											
ENESTRATION / GLAZING		9											
01	02	63	04	05	90	07	08	60	10	11	12	13	14
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft ²)	U-factor	U-factor Source	SHGC	SHGC Sourc e	Exterior Shading
Window	Window	Front Wall	Front	0			1	87	0.34	NFRC	0.32	NFRC	Bug Screen
Window 2	Window	Left Wall	Left	06			1	19	0.34	NFRC	0.32	NFRC	Bug Screen
Window 3	Window	Rear Wall	Back	180			1	92	0.34	NFRC	0.32	NFRC	Bug Screen
Window 4	Window	Right Wall	Right	270			1	30	0.34	NFRC	0.32	NFRC	Bug Screen

Registration Number:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time:

Report Version: 2019.1.100 Schema Version: rev 20190401

Report Generated: 2020-05-01 06:43:08

HERS Provider:

SHEET 15F

CERTIFICATE OF COMPLI	IANCE		c				CF1R-PRF	-01E
Project Name: 528-1880 Calculation Description:	در Title 24 Analysis :		3 5	alculation Date/ Iin put File Name: S28	ne: 2020-02-02-02-02-02-02-02-02-02-02-02-02	:42:25-04:	UU (Page 6 0	
OPAQUE DOORS					S			
01		02			03		04	
Name		Side of B	uilding	Are	a (ft ²)		U-factor	
Door		Rear \	Nall	2	20		1	
Door 2	2	Right \	Wall	0	22		1	
				4				
OPAQUE SURFACE CONSTF	RUCTIONS							
01	02	03	04	05	90	07	08	
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers	
R-21 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. 0. C.	R-21	None / None	0.066	Inside Finish: Gypsum Board Cavity / Frame: R-21 / 2x6 Exterior Finish: Wood Siding/sheathing/decking	
Attic Roof1st Floor	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shing) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4	(ə
R-33 Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	💙 2x12 @ 24 in. 0. C.	R-30	None / None	0.032	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-30 / 2x12	
R-38 Roof	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. 0. C.	R-38	None / None	0.025	Over Ceiling Joists: R-28.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board	
RUILDING ENVELOPE - HER	RS VERIFICATION	0						
5					03		10	
Quality Insulation In	nstallation (QII)	Quality Installation of S	pray Foam Insulation	Building Envel	ope Air Leakage		CFM50	
Require	ed	Not Req	quired	Not R	equired		n/a	
Registration Number:			Registratio	n Date/Time:		HER	5 Provider:	
CA Building Energy Efficier	ncy Standards - 2019 R	esidential Compliance	Report Ver Schema Ve	sion: 2019.1.100 :rsion: rev 20190401		Repo	ort Generated: 2020-05-01 06:43:08	

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Calculation Description: Title 24 Analysis Project Name: S28-18805

Calculation Date/Time: 2020-05-01109:42:25-04:00 Input File Name: S28-18805.ribd19x

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HERS Verification

Compact Distribution

Solar Fraction (%)

05

90

07

	04	Water Heater Name (#)
	03	Distribution Type
S	02	System Type
WATER HEATING SYSTEM.	01	Name

n/a			12	Tank Location or Ambient Condition	n/a	
None			11	NEEA Heat Pump Brand or Model / Other	n/a	
			10	1st Hr. Rating or Flow Rate	n/a	
0			60	Standby Loss or Recovery Eff.	n/a	
-	Ļ		80	Tank Insulation R-value (Int/Ext)	0	
HW Heater 1 (1			07	Input Rating or Pilot	200000- Btu/Hr	
			90	Energy Factor or Efficiency	0.81-UEF	
ibution			05	Tank Vol. (gal)	0	
ard Distr System			04	# Units	1	
: Hot Water Stand HW)			03	Tank Type	Consumer Instantaneous	
Domestic (D			02	Heating Element Type	Natural Gas	
DHW Sys 1		WATER HEATERS	01	Name	DHW Heater 1	

	08	Shower Drain Water Heat Recovery	Not Required	
	07	Central DHW Distribution	Not Required	
	90	Recirculation Control	Not Required	
	05	Compact Distribution Type	None	
	† 0	Compact Distribution	Not Required	2
	03	Parallel Piping	Not Required	
VERIFICATION	02	Pipe Insulation	Not Required	
WATER HEATING - HERS	01	Name	DHW Sys 1 - 1/1	

SPACE CONDITIONIN	IG SYSTEMS							
01	02	03	04	05	90	07	08	60
Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name	Required Thermostat Type	Heating Equipment Count	Cooling Equipment Count
HVAC System1	Heating and cooling system other	Heating Component 1	Cooling Component 1	HVAC Fan 1	Air Distribution System 1	Setback	1	1
					-		-	

Registration Number:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

Report Version: 2019.1.100 Schema Version: rev 20190401

Registration Date/Time:

Report Generated: 2020-05-01 06:43:08

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Calculation Description: Title 24 Analysis Project Name: S28-18805

Calculation Date/Time: 2020-05-01109:42:25-04:00 Input File Name: S28-18805.ribd19x

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	05	Efficiency	95.1	
S	04	Heating Efficiency Type	AFUE	
	03	Number of Units	1	
	02	System Type	Central gas furnace	
HVAC - HEATING UNIT TYPES	01	Name	Heating Component 1	

HVAC - COOLING UNIT	TYPES			2			
01	02	03	04	05	90	07	80
Name	System Type	Number of Units	Efficiency EER	Efficiency SEER	Zonally Controlled	Mulit-speed Compressor	HERS Verification
Cooling Component 1	Central packaged AC	1	16.5	22.5	Not Zonal	Single Speed	Cooling Component 1-hers-cool
HVAC COOLING - HERS	VERIFICATION						

02 03	03	I		04			05		90
erified Airflow Ta	Airflow Ta		irget	Verified EEI	۶		Verified SEI	ER	Verified Refrigerant Charge
Required 350	350		0	Required			Required		Required
03 04 05	04 05	<u> </u>	90	07	08	60	10	11	12
Duct Ins.	Duct Ins.		Duct	Location	Surface	Area			

_					1
	12		HERS Verification	Air Distribution System 1-hers-dist	
	11		Duct Leakage	Sealed and Tested	
	10		Bypass Duct	No Bypass Duct	
	60	e Area	Return	n/a	
	08	Surface	Supply	n/a	
	07	cation	Return	Conditioned Zone	
	06	Duct Lo	Supply	Conditioned Zone	
	05	lns. Iue	Return	R-0.0	
	04	Duct R-va	Supply	R-0.0	
	03		Design Type	Non-Verified	5
	02		Type	Verified low-leakage ducts in conditioned space	31UJ
	01		Name	Air Distribution System 1	

Registration Number:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

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Project Name: S28-18805

Calculation Description: Title 24 Analysis

CF1R-PRF-01E (Page 9 of 10) Calculation Date/Time: 2020-05-01109:42:25-04:00 0 Input File Name: S28-18805.ribd19x

HVAC DISTRIBUTION	- HERS VERIFICATION				5*			
01	02	03	04	50	90	07	08	60
Name	Duct Leakage Verification	Duct leakage target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler	Low Leakage Ducts Entirely in Conditioned Space
Air Distribution System 1-hers-dist	Yes	ى	Required	Not Required	Not Required	Credit not taken	Not Required	Yes
				0				

HVAC - FAN SYSTEMS	0		
01	02	03	04
Name	Type	Fan Power (Watts/CFM)	Name
HVAC Fan 1	HVAC Fan	0.45	HVAC Fan 1-hers-fan
HVAC FAN SYSTEMS - HERS VERIFICATION			
01	02		03
Name	Verified Fan Watt Draw	Required Fan	Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required		0.45

0	1	0	2	03		
Nar	me	Verified Fan	Watt Draw	Required Fan Efficie	incy (Watts/CFM)	
HVAC Fan 1	1-hers-fan	Regu	lired	0.4	2	
Q (INDOOR AIR QUALITY) FAN	S					
01	02	03	70	05	90	
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness (%)	HERS Verification	
SFam IAQVentRpt	75	0.25	Default	0	Yes	

	90	HERS Verification	Yes	
	05	IAQ Recovery Effectiveness (%)	0	
	70	IAQ Fan Type	Default	
	03	IAQ Watts/CFM	0.25	
S	02	IAQ CFM	75	LPIS CEL
IAQ (INDOOR AIR QUALITY) FAN	01	Dwelling Unit	SFam IAQVentRpt	

Registration Number:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

Report Version: 2019.1.100 Schema Version: rev 20190401

Registration Date/Time:

CERTIFICATE OF COMPLIANCE		CF1R-PRF	01E
Project Name: S28-18805	Calculation Date/Time: 2020-05-0110	9:42:25-04:00 (Page 10 o	10)
Calculation Description: Title 24 Analysis	Input File Name: S28-18805.ribd19x		
DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	S		
1.1 certify that this Certificate of Compliance documentation is accurate and complete.			
bocumentation Author Name: Edward Weber	Documentation Author Signature:	ch, ilde	
^{company:} Skyline Corporation	Signature Date: 5/1/2020		1
Address: 200 NIBCO Parkway - Suite 200	CEA/ HERS Certification Identification (If applice 22BD-5E58-1CB2-95D5	ele): E269-4B3E-020E-2916-DC09-6574-6	312-05CA-,
^{city/State/Zip;} Elkhart, IN 46516	Phone: 5743502199		
RESPONSIBLE PERSON'S DECLARATION STATEMENT	0		
 I certify the following under penalty of perjury, under the laws of the State of California: 1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for 2. I certify that the energy features and performance specifications identified on this Certificate o 3. The building design features or system design features identified on this Complia 	the building design identified on this Certificate of C f Compliance conform to the requirements of Title 2 noe are consistent with the information provided on his building permit apolication.	ompliance. 4, Part 1 and Part 6 of the California Code of Regulations other applicable compliance documents, worksheets,	
Responsible Designer Name: Edward Weber	Responsible Designer Signature:	adden -	1
Company: Skyline Homes	Date Signed: 5/1/2020		T
Address:	License:		
200 NIBCO Parkway - Suite 200			
utvystate/zie: Elkhart, IN 46516	Prone:		
J.J.J. 33 S.I.U.		A P P R O V E D A P P R O V E D CIANTRE SEQUIRAMENTS OF TILLE 25 CALIFORGIA CODE OF RECU CIANTRE 35 SUBCHAPTER 17 ACTORY BULT HOUSING AND COMPON DATE 5/29/2020 EXPIRES 5/29/2023 APPROVAL # FPS. 20-002381 APPROVAL # FPS. 20-002381 THIS APPROVAL DOES NOT ATTHORE OR APPROVE ANY OMUSSION OR DI FINIS APPROVAL DOES NOT ATTHORE OR APPROVE ANY OMUSSION OR DI FINIS APPROVAL DOES NOT ATTHORE OR APPROVE ANY OMUSSION OR DI FINIS APPROVAL DOES NOT ATTHORE OR APPROVE ANY OMUSSION OR DI FINIS APPROVAL DOES NOT ATTHORE OR APPLICABLE LOCAL ORDIN PPS CORPORTING OF STATE LAWS OR APPLICABLE LOCAL ORDIN PPS CORPORTING OF STATE LAWS OR APPLICABLE LOCAL ORDIN	Trows Arrows Access
Registration Number:	stration Date/Time:	HERS Provider:	
CA Building Energy Efficiency Standards - 2019 Residential Compliance Sche	ort Version: 2019.1.100 ma Version: rev 20190401	Report Generated: 2020-05-01 06:43:08	

Project Name S28-18205 Project Address Projec	Proget Name S28-18206 Projet Address Projet Addres	D	IDENTIAL MEA	SURES SL	JMMARY			RMS-1	
Scyde J 2000	Side - Fedodo Data and and the second the second and the second and the second a	Project	Name		Building Type	e ☑ Single Family □	Addition Alone	Date	
HAVE SASTED STRATION OF Cavity (ft) Social Features CA Climate Zone 04 INSULATION Area CA Climate Zone 04 INSULATION INSULATION CA Climate Zone 04 INSULATION INSULATION INSULATION INSULATION CA Climate Zone 04 INSULATION INSU		SZ8-1	CUSS Address		California En			5/1/2020	
INSULATION Area Area Instruction Special Features Status Construction Type Cavity (ft ²) Special Features Status Town Wood Framed wCanad Space R 30 1.566 Add-R3.0 New Wood Framed MCanad Space R 30 1.566 New New Soor Opaque Door	INSULATION Construction Type Area Cavity Area (ff) Special Features Status Tice Wood Flamed WCaw Space R 30 1.500 Adver6.3.0 New New 1.200 New New New Name Door -no insulation 42 New Name R 38 r.588 New New FENESTRATION Total Area 226 Glading Percentage: 14.0% New/Attreed Average U-Factor: 0.34 Orientation Area 37.0 0.340 0.32 none none Bug Screen New Read With 15.0 0.340 0.32 none none Bug Screen New Read (W) 95.0 0.340 0.32 none none Bug Screen New Read (W) 95.0 0.340 0.32 none none Bug Screen New Read (W) 95.0 0.340 0.32 none none Bug Screen New New (HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status	APN:	583-12-010 San Jo	se	CA Clim	ate Zone 04	1,566 n/a	1	
Construction Type Cavity (ff) Special Features Status Poor Wood Framed R 30 1.566 Adder-3.0 New Weed Framed R 30 1.260 Adder-3.0 New Date Opaque Door - no rstaketon 42 New Read Wood Framed Attic R 38 1.566 New New Read Wood Framed Attic R 38 1.566 New/Attend Average U-Factor 0.34 Orientation Area(ff) U-Fac SHGC Overhang Sidefins Exterior Shades Status Front (8) 87.0 0.340 0.32 none none New New Ref (W) 19.0 0.340 0.32 none none New New Status 870 0.340 0.32 none none New New Status 90.0 0.340 0.32 none none New New Status 1 Gentral transmode New New New New Status 1	Construction Type Cavity (fr) Special Features Status Tool Framed Wood Framed With Wood Framed R 30 1.566 Add+R-3.0 New Dor Opeque Door -ro haudelion 42 New Dor Opeque Door -ro haudelion 42 New Rood Wood Framed Attic R 38 1.566 New/New Rood Wood Framed Attic R 38 1.566 New/New/New/New/New/New/New/New/New/New/	INSU	LATION			Area		•	
Ploor Wood Framed w/Cawl Space R 30 1.586 Add+R-3.0 New Wood Framed m R 21 1.20 New Wood Framed R 21 1.20 New Wood Framed R 21 1.20 New Wood Pramed Antic R 38 1.566 New Poor Opeque Door - no Insulation 42 New Press Contrast Contrast Contrast R 30 1.566 New FENESTRATION FENESTRATION Total Area (P) U-Fac SHGC Overhang Sidefins Exterior Shades Status Fort (8) 87.0 0.340 0.32 none none Bug Screen New Prof (8) 87.0 0.340 0.32 none none Bug Screen New Prof (9) 92.0 0.340 0.32 New Prof (9) 92.0 0.340 New Prof (9) 92.0 0.0 New Prof (9) 92.	Boar Wood Framed wiCrawl Space R 30 1,566 Add-R-3.0 New Mail Wood Framed R 21 1,280 New Openpue Door -ro instudetion 42 New Stod Wood Framed Antic R 38 1,566 New Stod Wood Framed Antic R 38 1,566 New FENESTRATION Total Area: 228 Glazing Parcentage: 14.95 New/Attored Average U-Factor: 0.34 Orientation Area(fr) U-Fac SHGC Overhang Sidefins Externor Shades Status Ference(f) 87.0 0.340 0.32 none none Bog Screen New add (N) 19.0 0.340 0.32 none none Bug Screen New add (N) 92.0 0.340 0.32 none none Bug Screen New add (N) 92.0 0.340 0.32 none none Bug Screen New Bug P(R) 30.0 0.340 0.32 none none New New	Cons	struction Type		Cavity	(ft ²) Spec	ial Features	Status	
Wate Wood Framed R 21 1.200 New Dorr Opaque Door -no insulation 42 New Road Wood Framed Attic R 38 1.566 New FENESTRATION Total Area 228 Glazing Percentage: 14.8% New/Attend Average U-Factor: 0.34 Orientation Area(ff) U-Fac SHGC Overhang Sidefins Exterior Shades Status Form(19) 87.0 0.340 0.32 none none Bug Screen New Word Framed 92.0 0.340 0.32 none none Bug Screen New Sidefins 87.0 0.340 0.32 none none Bug Screen New Side(W) 92.0 0.340 0.32 none none Bug Screen New Sight (E) 30.0 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status 1 Central Furnace 95% AFUE Packaged Air Condition 22.5 SEER Settack New HVAC DISTRIBUTION Location Locad Ducted <td< td=""><td>Wood Framed R 21 1.200 New Door Opaque Door - no insulation 42 New Wood Framed Attic R 38 1,566 New FENESTRATION Total Area 226 Glassing Percentage: 14.0% New/Altered Average U-Factor: 0.34 Orientation Area(ft) U-Fac SHGC Overhang Sidefins Exterior Shades Status Femeration Area(ft) 0.340 0.32 none none Bug Screen New Rev (N) 92.0 0.340 0.32 none none Bug Screen New Rev (N) 92.0 0.340 0.32 none none Bug Screen New Rev (R) 92.0 0.340 0.32 none none Bug Screen New Y Heating Min. Eff Cooling Min. Eff Thermostat Status 1 Central Furnace 95% AFUE Packaged Air Condition 22.5 SEER Seback New HVAC System Ducted Ducted Ducted Crawlpace<td>Floor</td><td>Wood Framed w/Crawl</td><td>Space</td><td>R 30</td><td>1,566 Add=R-3.0</td><td></td><td>New</td></td></td<>	Wood Framed R 21 1.200 New Door Opaque Door - no insulation 42 New Wood Framed Attic R 38 1,566 New FENESTRATION Total Area 226 Glassing Percentage: 14.0% New/Altered Average U-Factor: 0.34 Orientation Area(ft) U-Fac SHGC Overhang Sidefins Exterior Shades Status Femeration Area(ft) 0.340 0.32 none none Bug Screen New Rev (N) 92.0 0.340 0.32 none none Bug Screen New Rev (N) 92.0 0.340 0.32 none none Bug Screen New Rev (R) 92.0 0.340 0.32 none none Bug Screen New Y Heating Min. Eff Cooling Min. Eff Thermostat Status 1 Central Furnace 95% AFUE Packaged Air Condition 22.5 SEER Seback New HVAC System Ducted Ducted Ducted Crawlpace <td>Floor</td> <td>Wood Framed w/Crawl</td> <td>Space</td> <td>R 30</td> <td>1,566 Add=R-3.0</td> <td></td> <td>New</td>	Floor	Wood Framed w/Crawl	Space	R 30	1,566 Add=R-3.0		New	
Door Opengue Door - no insulation 42 New Root Wood Framed Attic R 38 1,566 New FENESTRATION Total Area 228 Glazing Percentage: 14.6% New/Attend Average U-Factor: 0.34 Orientation Area(tf ²) U-Fac SHEC Overhang Sidefins Exterior Shades Status From (S) 67.0 0.340 0.32 none forme Row Rew File 100 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status 1 Central Furnece 96% AFUE Packaged Air Condition 22.5 SEER Setback New HVAC DISTRIBUTION Ducted Crowlepace 0.0 New HVAC System Ducted Crawlepace <td< td=""><td>Doer Opague Door -no insulation 42 New Rood Wood Flammed Attic R 38 1,066 New FENESTRATION Total Area: 228 Glacing Percentage: 14.6% NewMathemed Average U-Factor: 0.34 Orientation Area(fr) U-Fac SHGC Overhang Sidefins Exterior Shades Status Fourientation Area(fr) U-Fac SHGC Overhang Sidefins Exterior Shades Status Fourientation Area(fr) U-Fac SHGC Overhang Sidefins Exterior Shades Status Fourientation Area(fr) U-Fac SHGC Overhang Registreen New Fourientation Area(fr) 0.340 0.32 none none Bug Screen New Regist (E) 30.0 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status 1 Central Furnice 80% AFUE Packaged Air Condition 22.5 SEER Setticek New HVAC DISTRIBUTION Ducted Ducted Crawkspace 0.0 New 1 Sma</td><td>Wall</td><td>Wood Framed</td><td></td><td>R 21</td><td>1,260</td><td></td><td>New</td></td<>	Doer Opague Door -no insulation 42 New Rood Wood Flammed Attic R 38 1,066 New FENESTRATION Total Area: 228 Glacing Percentage: 14.6% NewMathemed Average U-Factor: 0.34 Orientation Area(fr) U-Fac SHGC Overhang Sidefins Exterior Shades Status Fourientation Area(fr) U-Fac SHGC Overhang Sidefins Exterior Shades Status Fourientation Area(fr) U-Fac SHGC Overhang Sidefins Exterior Shades Status Fourientation Area(fr) U-Fac SHGC Overhang Registreen New Fourientation Area(fr) 0.340 0.32 none none Bug Screen New Regist (E) 30.0 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status 1 Central Furnice 80% AFUE Packaged Air Condition 22.5 SEER Setticek New HVAC DISTRIBUTION Ducted Ducted Crawkspace 0.0 New 1 Sma	Wall	Wood Framed		R 21	1,260		New	
Reef Wood Framed Attic R 38 1,566 New FENESTRATION Orientation Total Area 220 Glazing Percentage: 14.6% New/Altered Average U-Factor: 0.34 Orientation Area(tf) U-Fac SHGC Overhang Sidefins Exterior Shades Status *font (S) 07.0 0.340 0.32 none none Bug Screen New Reir (N) 19.0 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status<	New New FENESTRATION Orientation Area(<i>t</i> ²) Total Area: 220 Glading Percentage: 14.6% New/Altered Average U-Factor: 0.34 Orientation Area(<i>t</i> ²) 0.340 0.32 none Due and Bug Screen New FENESTRATION 0.340 0.32 none Due and Bug Screen New R(W) 19.0 0.340 0.32 none Due and Bug Screen New Regr (N) 92.0 0.340 0.32 none Due and Bug Screen New Regr (P) 30.0 0.340 0.32 none none Bug Screen New Right (E) 30.0 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status 1 Control Furnace 95% AFUE Packaged Air Condition 22.6 SEER Selback New HVAC System Ducted Crawlspace 0.0 New MATER HEATING 0.040 0.62 Status New 1 Small Instantaneous Gas 0 0.62 Standerd New	Door	Opaque Door		- no insulation	42		New	
FENESTRATION Total Area: 228 Glazing Percentage: 14.6% New/Altered Average U-Factor: 0.34 Orientation Area(<i>T</i>) U-Fac SHGC Overhang Sidefins Exterior Shades Status Font(S) 0.340 0.32 none Bug Screen New Rear (N) 0.340 0.32 none Bug Screen New Rear (N) 0.340 0.32 none Bug Screen New Rear (N) 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Qity. Heating Min. Eff Cooling Duct Duct New HVAC DISTRIBUTION Ducted Cooling Duct Location R-Value <th< td=""><td>Total Area: 220 Glazing Percentage: 14.6% NewAltered Average U-Factor: 0.34 Orientation Area(I/) 0.34 0.32 none Bug Screen New Status Status Orien none Bug Screen New Status New Reg Screen New New Status New Status New Status New Status None none Bug Screen New HVAC SYSTEMS Qty. Heating Min. Eff Cooling Min. Eff Thermostat Status New Duct Dott New HVAC System <th cols<="" td=""><td>Roof</td><td>Wood Framed Attic</td><td></td><td>R 38</td><td>1,566</td><td></td><td>New</td></th></td></th<>	Total Area: 220 Glazing Percentage: 14.6% NewAltered Average U-Factor: 0.34 Orientation Area(I/) 0.34 0.32 none Bug Screen New Status Status Orien none Bug Screen New Status New Reg Screen New New Status New Status New Status New Status None none Bug Screen New HVAC SYSTEMS Qty. Heating Min. Eff Cooling Min. Eff Thermostat Status New Duct Dott New HVAC System <th cols<="" td=""><td>Roof</td><td>Wood Framed Attic</td><td></td><td>R 38</td><td>1,566</td><td></td><td>New</td></th>	<td>Roof</td> <td>Wood Framed Attic</td> <td></td> <td>R 38</td> <td>1,566</td> <td></td> <td>New</td>	Roof	Wood Framed Attic		R 38	1,566		New
FENESTRATION Total Area: 228 Glaving Percentage: 14.6% New/Altered Average U-Factor: 0.34 Orientation Area(ff) U-Fac SHGC Overhang Sidefins Exterior Shades Status Ford (S) 87.0 0.340 0.32 none none Bug Screen New Rear (N) 92.0 0.340 0.32 none none Bug Screen New Rear (N) 92.0 0.340 0.32 none none Bug Screen New Rear (N) 92.0 0.340 0.32 none none Bug Screen New Rear (N) 92.0 0.340 0.32 none none Bug Screen New Rear (N) 92.0 0.340 0.32 none none Bug Screen New Rear (N) 92.0 0.340 0.32 none none Bug Screen New HVAC SystemS Min. Eff Cooling Min. Eff Thermostat Status t/VAC System Ducted Ducted Crawlspace 0.	FENESTRATION Orientation Total Area 220 Glazing Percentage: I 4.6% 14.6% New/Altered Average U-Factor: 0.34 Orientation Area(th) 97.0 0.340 0.32 none none Bug Screen New With 19.0 0.340 0.32 none none Bug Screen New Ref (N) 92.0 0.340 0.32 none none Bug Screen New Ref (P) 92.0 0.340 0.32 none none Bug Screen New Ref (P) 92.0 0.340 0.32 none none Bug Screen New Ref (P) 92.0 0.340 0.32 none none Bug Screen New Ref (P) 30.0 0.340 0.32 none none Bug Screen New HVAC SYSTEMS Min. Eff Cooling Min. Eff Thermostat Status 1 Central Furnace 96% AFUE Packaged Air Condition 22.5 SEER Setback New HVAC DISTRIBUTION Ducted Crooling Duct								
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APPROVAL # FFS. 20-002381 THIS APPROVAL DOES NOT AUTHORE OR APPLOARE LOCAL OR BEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL OR DINANCES PFS CORPORTTON - Los Angeles, California



<u>NOTE:</u> Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. *Exceptions may apply.

Building Envelop	pe Measures:		
§ 110.6(a)1:	Air Leakage. Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 cfm per square foot or less when tested per NFRC-400, ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.*		
§ 110.6(a)5:	Labeling. Fenestration products and exterior doors must have a label meeting the requirements of Section 10-111(a).		
§ 110.6(b):	Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from Tab 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather stripped.*	es	
§ 110.7:	Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caull gasketed, or weather stripped.	(ed,	
§ 110.8(a):	Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household and Services (BHGS).	Goods	
§ 110.8(g):	Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of Section 110.8(g).		
§ 110.8(i):	Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF) 1R.	
§ 110.8(j):	Radiant Barrier. When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consume	er Affair	S.
§ 150.0(a):	Ceiling and Rafter Roof Insulation. Minimum R-22 insulation in wood-frame ceiling; or the weighted average U-factor must not exceed Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attach insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not to placing insulation either above or below the roof deck or on top of a drywall ceiling.*	l 0.043. ed d in limited	
§ 150.0(b):	Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value.		
§ 150.0(c):	Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood fra have a U-factor of 0.071 or less, (R-19 in 2x6 or U-factor of 0.074 or less). Opaque non-framed assemblies must have an overall assembl factor not exceeding 0.102, equivalent to an installed value of R-13 in a wood framed assembly. Masonry walls must meet Table 150.1-A	ming or bly U- or B.*	r
§ 150.0(d):	Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*		
§ 150.0(f):	Slab Edge Insulation. Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone facings no greater than 0.3%; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).	withou I UV	t
§ 150.0(g)1:	Vapor Retarder. In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d).		
§ 150.0(g)2:	Vapor Retarder. In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.		
§ 150.0(q):	Fenestration Products. Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must ha maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.*	ve a	
Fireplaces, Deco	orative Gas Appliances, and Gas Log Measures:		
§ 110.5(e)	Pilot Light. Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.		
§ 150.0(e)1:	Closable Doors. Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox		
§ 150.0(e)2:	Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device."	1 area	
§ 150.0(e)3:	Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*		
Space Condition	ning, Water Heating, and Plumbing System Measures:		
§ 110.0-§ 110.3:	Certification. Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the Energy Commission.*		
§ 110.2(a):	HVAC Efficiency. Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-K.*		
§ 110.2(b):	Controls for Heat Pumps with Supplementary Electric Resistance Heaters. Heat pumps with supplementary electric resistance heat must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in whic cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature compression heating is higher than the cut-off temperature for supplementary heating.*	ters h the e for	
§ 110.2(c):	Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*		
§ 110.3(c)4:	Water Heating Recirculation Loops Serving Multiple Dwelling Units. Water heating recirculation loops serving multiple dwelling unit meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of 110.3(c)4.	s 3	ONENTS
§ 110.3(c)6:	Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 kBTU per hour (2 kW) must have isolation valves with bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.	h	ND COMP
§ 110.5:	Pilot Lights. Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (a ances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt); and pool and spa	pr H he H	OKNIA U OUSING A
§ 150.0(h)1:	Building Cooling and Heating Loads. Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.	ROV	CTORY BUILT H
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HIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION ROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES PFS CORPORATION - Los Angeles, California

EXPIRES DATE



§ 150.0(h)3A:	Clearances. Air conditioner and heat pump outdoor condensing units must have a clearance of at least 5 feet from the outlet of any dryer vent.
§ 150.0(h)3B:	Liquid Line Drier. Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)1:	Storage Tank Insulation. Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.
§ 150.0(j)2A:	Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation. All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of 1 inch or a minimum insulation R-value of 7.7: the first 5 feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than 1 inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.*
§ 150.0(j)3:	Insulation Protection. Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	Gas or Propane Water Heating Systems. Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle that is connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within 3 feet from the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; a condensate drain that is no more than 2 inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour.
§ 150.0(n)2:	Recirculating Loops. Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.
§ 150.0(n)3:	Solar Water-heating Systems. Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.
Ducts and Fans I	Aeasures:
§ 110.8(d)3:	Ducts. Insulation installed on an existing space-conditioning duct must comply with California Mechanical Code (CMC) Section 604.0. If a contractor installs the insulation, the contractor must certify to the customer in writing, that the insulation meets this requirement.
§ 150.0(m)1:	CMC Compliance. All air-distribution system ducts and plenums must meet the requirements of the CMC Section 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ½ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area."
§ 150.0(m)2:	Factory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	read-radicated Duct Systems. Field-tablicated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	Backdraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8:	Gravity Ventilation Dampers. Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.
§ 150.0(m)9:	Protection of Insulation. Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
§ 150.0(m)10:	Porous Inner Core Flex Duct. Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.
§ 150.0(m)11:	Duct System Sealing and Leakage Test. When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3.
§ 150.0(m)12:	Air Filtration. Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a 2 inch depth or can be 1 inch if sized per Equation 150.0-A. Pressure and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*
§ 150.0(m)13:	Space Conditioning System Airflow Rate and Fan Efficacy. Space conditioning systems that use ducts to supply cooling must have a h for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be \geq 350 CF per ton of nominal cooling capacity, and an air-handling unit fan efficacy \leq 0.45 watts per CFM for gas furnace air handlers and \leq 0.58 watts CFM for all others. Small duct high velocity systems must provide an airflow \geq 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy \leq 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*
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 ${\rm APPROVAL \ \# PFS-} \quad \textbf{20-002381}$

5/29/2023

EXPIRES



Requirements fo	r Ventilation and Indoor Air Quality:		٦
§ 150.0(o)1:	Requirements for Ventilation and Indoor Air Quality. All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1.	วท	
§ 150.0(o)1C:	Single Family Detached Dwelling Units. Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors w other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C.	ith	
§ 150.0(o)1E:	Multifamily Attached Dwelling Units. Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be \leq 0.3 CFM at 50 (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.	Ра 8.	
§ 150.0(o)1F:	Multifamily Building Central Ventilation Systems. Central ventilation systems that serve multiple dwelling units must be balanced to prov ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows mu within 20% of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance.	ride st be	,
3 150.0(o)1G:	Kitchen Range Hoods. Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.		
§ 150.0(o)2:	Field Verification and Diagnostic Testing. Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7. Kitchen range hoods must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.		Ţ
Pool and Spa Sy	stems and Equipment Measures:		٦
§ 110.4(a):	Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficie that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.*	ncy	
§ 110.4(b)1:	Piping. Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating.		
§ 110.4(b)2:	Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover.		
§ 110.4(b)3:	Directional Inlets and Time Switches for Pools. Pools must have directional inlets that adequately mix the pool water, and a time switch will allow all pumps to be set or programmed to run only during off-peak electric demand periods.	that	
§ 110.5:	Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot light.		
§ 150.0(p):	Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump sizing rate, piping, filters, and valves.*	flow	V
Lighting Measur	PS:		
§ 110.9:	Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirem of § 110.9.*	ents	
§ 150.0(k)1A:	Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A.		
§ 150.0(k)1B:	Blank Electrical Boxes. The number of electrical boxes that are more than 5 feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor contro fan speed control.	I, or	
§ 150.0(k)1C:	Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (labeling; air leakage; sealing; maintenance; and socket and light source as described in § 150.0(k)1C.	IC)	T
§ 150.0(k)1D:	Electronic Ballasts for Fluorescent Lamps. Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.		
§ 150.0(k)1E:	Night Lights, Step Lights, and Path Lights. Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens.		
§ 150.0(k)1F:	Lighting Integral to Exhaust Fans. Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).*		
§ 150.0(k)1G:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.*		
§ 150.0(k)1H:	Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the JA8 eleval temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.	ed	
§ 150.0(k)1I:	Light Sources in Drawers, Cabinets, and Linen Closets. Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, en more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed to consume the drawer.	it nc ed.)
§ 150.0(k)2A:	Interior Switches and Controls. All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.		1
§ 150.0(k)2B:	Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems.*	s)	rions .
3 150.0(k)2C:	Interior Switches and Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.*	2	REGULAT
§ 150.0(k)2D:	Interior Switches and Controls. Controls and equipment must be installed in accordance with manufacturer's instructions.		DE OF
§ 150.0(k)2E:	Interior Switches and Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed comply with § 150.0(k).	D	RNIA CO
§ 150.0(k)2F:	Interior Switches and Controls. Lighting controls must comply with the applicable requirements of § 110.9.	APPROV	REQUIREMENTS OF TITLE 25 CALIFO SUBCHAPTER 1 FACTORY RUIT HOI
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5/29/2023

EXPIRES



 Interior Switches and Controls. An energy management control system (EACS) may be used to comply with control requirements of \$100.002. Interior Switches and Controls. A multicence programmate control system (EACS) may be used to comply with dimmer requirements of \$100.002. Interior Switches and Controls. In lativocame programmate control may be used to comply with dimmer requirements of \$100.002. Interior Switches and Controls. In lativocame, paragement control system (EACS) may be used to comply with dimmer requirements of \$100.002. Interior Switches and Controls. In lativocame, parage, lauridy rooms, and suffix controls. In lativocame paragement control regularial dimensional lativace humans of simulations. In lativocame paragement controls and paragements of simulation of the controls. Used and controls. In lativocame, paragement parameters of lativocame paragement controls. Interior Switches and Controls. In lativocame, paragement paragement in the \$100.002. Interior Switches and Controls. Used the interior solutions and lativocame paragement paragement in the \$100.002. Interior Switches and Controls. Used the interior solution paragement paragement in the \$100.002. Interior Switches and Controls. Used the interior solution paragement paragement in the \$100.002. Interior Switches and controls in the energy with the or more diversity in an energy with eligibing multic activace and the interior Switches and paragement in the \$100.002. Interior Switches and paragement intering 100.002. Interior Switches and paragement intering 100.002.				
Ecology 21 Ecology 22 Ecology 22 Ecology 22 Ecology 22 Ecology 24 E	§ 150.0(k)2G:	Interior Switches and Controls. An energy management control system (EMCS) may be used to comply with control requirements if it: provides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of § 130.4; meets the EMCS requirements of \$ 130.4; meets the EMCS requirements of \$ 140.00/12		
 finder Switches and Controls: In bathooms, garages, juudy norm, and utility norms, it least one lumnaiterie action of please spaces must be initially configured to manual-oncepant sensor is available, it must be initially configured to manual-oncepant sensor is available, it must be initially configured to manual-oncepant sensor is used and controls. Interfor Switches and Controls: Unservices that are controlled by occupant sensor is used available. It must be initially configured to manual-oncepant sensor is used available. It must be initially configured to manual-oncepant sensor is used available. The initial control is used and controls is used and controls. It can be configured sensority from celling-installed ighting systems. fite OUX3AA (photoculi and them a motion sensor or automatic line switch control or § 15000/03Aii (astrommetal in excells). For angle-family material is mating with four or more dwelling units. cultor planting or private patios. fite OUX3AA (photoculi and them a motion sensor or automatic line switch control or § 1500/03Aii (astrommetal in excells). For anyot with a total or eight and material buildings with four or more dwelling units. cultor planting for private patios. fite OUX3AA (tab 2 and tab.). For low-tise residential buildings, and usor for more vehicles in succeed to prove as determined according to § 100.01, 100.1, 100.1, 100.1, 100.1, 100.1, 100.1, 100.2, 100.1, 100.2, or must consume no more than 5 weatts of the organized building with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.2, and 141.0. fite mathyli literitiang the state and tables and the state and tables and the state and tables and t	§ 150.0(k)2H:	Encoded interview of a society, and meets an other requirements in § 150.0(k)z. Interior Switches and Controls. A multiscene programmable controller may be used to comply with dimmer requirements in § 150.0(k) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(k)?		
Initially compared to manual-on operation using the manual control required under Section 150 (Np2C). S 150 (Np2C) F 150 (Np2C) R Excitation Controls. Limiters that are or controls segmently from colling-installed lighting systems. Residential Outdoor Lighting, F or single-family residential building, collocation (Jpting permanently monulited to a residential building, or to other \$ 150 (Np2C) Residential Outdoor Lighting, F or single-family residential buildings, collocation (Jpting permanently monulited to a residential building, or to other \$ 150 (Np2C) Residential Outdoor Lighting, F or knock ensidential buildings with four or more dwelling units, culotical provides parks, and proches, and residential buildings with four or more dwelling units, audioor lighting for private parks, ensidential buildings or the some sensitiential buildings with four or more dwelling units, audioor lighting for private parks, ensidential buildings with four or more dwelling units, audioor lighting for residential availings are some sensitiential buildings with four or more dwelling units, audioor lighting for residential availing as the some residential buildings with four or more dwelling units, audioor lighting for residential availing as the some residential buildings with the applicable requirements in Sections 110 (9, 130), 1302, 1302, 1302, 1402, 1402, and 1410, and	§ 150.0(k)2I:	Interior Switches and Controls. In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces m be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sensor is installed, it must be	ust	
dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls. ¹ § 150,016/2K. Interior Switches and Controls. Under grant be controlled separately from caling-installed lighting systems. Residential Outdoor Lighting, For the equirement in the site of \$150,016/3AII (astromotical line clock), or an EMCS. § 150,016/3K in the equirement in section in \$150,016/31 (All on do FF switch) and the requirements in entire § 150,016/3AII (balacitotical line) and the splicable requirements in section 510,9,130,0134II (astromotical line) clock), or an EMCS. § 150,016/3AII (balacitotic Lighting, For low-line residential buildings with four or more dwelling units, and youtdoor lighting for residential parking lots and carports with a table of light or more velicies per site must comply with ether Section 150,016/3AII. Control and of light or more velicies per site must comply with the applicable requirements in Sections 110,9, 130, 130, 21, 304, 140.7 and 141.0. § 150,016/3C intervals lighting for residential buildings with four or more dwelling units, any outdoor lighting for residential address signs must comply with the applicable requirements in Sections 110,9, 130, 130, 130, 1, 140, 1, and 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	8 150 0/k)2 l·	initially configured to manual-on operation using the manual control required under Section 150.0(k)2C. Interior Switches and Controls. Luminaires that are or contain light sources that meet Reference Joint Appendix JA8 requirements for		-
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§ 150.0(k)4. buildings on the same lot, must meet the requirements in leng § 150.0(k)4.0(k) and (2FF switch) and the requirements in either § 150.0(k)4. buildings on the same lot, must meet the requirements in leng § 150.0(k)4.0(k) and (2FF switch) and the requirements in either § 150.0(k)4.0(k) Residential Outdoor Lighting. For low-ise residential buildings with four or more dwelling units, outdoor lighting for private paties, entences, and esolution light or more wellokes pane site must comply with each costs. § 150.0(k)4.0(k) Residential Outdoor Lighting. For low-ise residential buildings with four or more dwelling units, outdoor lighting for residential parking loss or canorota with a total of eight or more welloke pare site and any outdoor lighting nor regulated by Section 1500.0(k)3B or Section 150.0(k)4B or canuet consume no more than a single building explicates. Lighting for residential parking parages for eight or more welloke must comply with the applicable requirements in Sections 110.9, 130.0, 140.1, 40.7 and 141.0. § 150.0(k)4. Internal with the applicable requirements in Sections 110.9, 130.0, 140.6, and 141.0. § 150.0(k)5. Residential Outdoor Lighting. For low-Sections 110.9, 130.0, 130.1, 140.6, 40.6, and 141.0. § 150.0(k)61. Internal Y esolutions with table 150.0(k). § 150.0(k)61. Residential Outdoor Lighting. For Wullfamily Residential Buildings. In low-ise multifamily residential Duilding where the total interior common areas in a single building equals more than 20 porend of the floor area, permanenty installed lighting for the intetoir common areas in that building must.	§ 150.0(K)2K:	Interior Switches and Controls. Under cabinet ignung must be controlled separately from ceiling-installed lignung systems.	othe	or.
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50.0(k)G: Fesidential Outdoor Lighting, For low-size residential buildings with four or more detelling units, any outdore lighting for realdential parking tos or carports with the tabl of eight or more whickage part is end any outdoor lighting for regulated by Section 150.0(k)30 must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0. Residential Garages for Eight or More Vehicles. Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonzes in Sections 110.9, 130.0, 130.1, 140.4, and 141.0. Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent lores of the floor area, permanently installed lighting for the interior common areas in that building must. Loronty with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6, and 141.0, and Lothrior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must. Loomyby with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0, and Lothry installed incorridors and staivells must be controlled by occupant sensors. Start Ready Buildings: Single Family Residences. Single family residences located in subdivisions with ten or more single family residences and where the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0, and i. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0, and i. Comply with the applicable requirements in sections with the normore single family residences and where the application for a tentative subdivis	§ 150.0(k)3B:	Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrance balconies, and porches; and residential parking lots and carports with less than eight vehicles per site must comply with either Sect 150.0(k)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.	es, ion	
Internally illuminated address signs. Internally illuminated address signs must compy with \$140.8; or must consume no more than 5 watts of power as determined according to \$130.0(c). Residential Carages for Eight of More Vehicles. Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.1, 130.4, 140.6, and 141.0. Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in a single building equals 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must. 1: Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0; and ii. Lighting installed in ordifors and stairvells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress. Solar Ready Buildings: Solar Ready Buildings: 110.10(a): Single Family Residences. Single family residences located in subdivisions with the or more single family residences and where the application for a terative subdivision may for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed. Inter Common accel is 110.10(b) through \$110.10(c). \$110.10(a): <td>§ 150.0(k)3C:</td> <td>Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by Section 150.0(k)3B or Section 150.0(k)3D complex with the carbicable regulation is Section 210.0, 120.2, 120.4, 140.7, and 141.0.</td> <td>lots mu:</td> <td>s st</td>	§ 150.0(k)3C:	Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by Section 150.0(k)3B or Section 150.0(k)3D complex with the carbicable regulation is Section 210.0, 120.2, 120.4, 140.7, and 141.0.	lots mu:	s st
§ 150.0(k): Residential Garages for Eight or More Vehicles. Liphting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0. § 150.0(k):6A Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed liphting for the interior common areas in a single building equals 20 percent of the floor area, permanently installed lighting for the interior common areas in single building equals 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must: 1. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0, and ii. Lighting installed in cordiors and stairvells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress. Solar Ready Buildings: Single Family Residences. Single family residences located in subdivisions with the more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed. must comply with the requirements of \$110.100.100 hrouch \$110.1026. § 110.102(a): Low-rise Multifamily Buildings. Low-rise multifamily buildings that do not have a photovoltaic system installed. must comply with the requirements of \$110.1010 hrouch \$110.1026. <	§ 150.0(k)4:	Internally illuminated address signs. Internally illuminated address signs must comply with § 140.8; or must consume no more than 5 wat power as determined according to § 130.0(c).	ts o	of
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Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total Interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must: i. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0; and ii. Lighting installed in corridors and staiwells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress. Solar Ready Buildings: Solar Ready Buildings: Low-rise Multifamily Residences located in subdivisions with ten or more single family residences and where the application for a tentative subdivision map for the residences has been decomplete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(a): Low-rise Multifamily Buildings. Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b). Minimum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other Parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area nusts be comprised of areas that have no dimension less than 5 feet and rea no less than 80 square feet each for buildings with roof areas greater than 10,000 square feet. For ingle family residences, the solar zone must be located on the roof or overhang of the building project, and have a total area no less than 126 square feet send for buildings the solar zone must be located on the roof or overhang of the building project, and have a total area no less than 15 percent of the building	§ 150.0(k)6A:	Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total inte common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in t building must be comply with Table 150.0-A and be controlled by an occupant sensor.	rior hat	
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 Single Family Residences. Single family residences located in subdivisions with ten or more single family residences and where the splication for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(e). Low-rise Multifamily Buildings. Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(e). Minimum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Tile 24, Part 9 or other Parts of Tile 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet. For solar feet ence, the solar zone must be located on the roof or overhang of the building and have a total area no less than 150 square feet cor no less than 50 square feet each for building with roof areas on less than 150 square feet ach for or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building, or on the roof or overhang of another structure located within 250 feet of the building or on covered parking installed with the building, or on the roof or sourchang of another structure located within 250 feet of the building and have a total area no less than 150 square feet or ho solar zone must ave a total area no less than 150 square feet or no bears to an 5 secret of the total roof area of the building any skylight area. The solar zone neguriement is applicable to the entire building nicuding mixed occupancy. \$110.10(b)/2 Azimuth. All sections of the solar zone located o	Solar Ready Buil			_
do not have a photovoltaic system installed, music compty with the requirements of § 110.10(b) through § 110.10(e). § 110.10(a)2: Low-rise Multifamily Buildings. Low-rise multi-family buildings that do not have a photovoltaic system installed music comply with the requirements of § 110.10(b) through § 110.10(d). Minimum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, P art 9 or other Parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for overhang of the building and have a total area no less than 250 square feet. For single family buildings the solar zone must be located on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building, including mixed occupancy. ¹ § 110.10(b)2: Azimuth. All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north. § 110.10(b)34: Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment. ¹ § 110.10(b)34: Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least tw	§ 110.10(a)1:	Single Family Residences. Single family residences located in subdivisions with ten or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which		
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 § 110.10(b)2: Azimuth. All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north. § 110.10(b)3A: Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment." Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane." § 110.10(b)4: Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents. Interconnection Pathways. The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system. § 110.10(c): Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant. § 110.10(e)1: Main Electrical Service Panel. The main electrical service panel must have a reserved space to allow for the installation of a double pole of breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric". 	§ 110.10(b)1:	Minimum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other Parts of Title 24 or in any requirements adopte by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single family residences, the solar zone must be located on the roof or overhang of the build and have a total area no less than 250 square feet. For low-rise multi-family buildings the solar zone must be located on the roof or overhang of or overhang the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building project, and have a total area no less than 15 percent of the total roof area of the building any skylight area. The solar zon requirement is applicable to the entire building, including mixed occupancy."	n ing g of	F
§ 110.10(b)3A: Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment." § 110.10(b)3B: Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane." § 110.10(b)4: Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents. Interconnection Pathways. The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system. § 110.10(d): Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant. Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps. § 110.10(e)2: Main Electrical service panel. The main electrical service panel must have a reserved space to allow for the installation of a double pole breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric".	§ 110.10(b)2:	Azimuth. All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north.		-
 Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.' § 110.10(b)4: Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents. Interconnection Pathways. The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system. § 110.10(d): Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant. § 110.10(e)1: Main Electrical Service Panel. The main electrical service panel must have a reserved space to allow for the installation of a double pole breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric". 	§ 110.10(b)3A:	Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof		
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§ 110.10(c): Interconnection Pathways. The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system. § 110.10(d): Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant. § 110.10(e)1: Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps. § 110.10(e)2: Main Electrical service rate. The main electrical service panel must have a reserved space to allow for the installation of a double pole obreaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric".	§ 110.10(b)4:	Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for ro dead load and roof live load must be clearly indicated on the construction documents.	of	
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THIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES PFS CORPORATION - Los Angeles, California

APPROVAL # PFS- 20-0023815/29/2023

EXPIRES
WILDLAND-URBAN INTERFACE FIRE AREA SPECIFICATIONS (REQUIRED RESISTANT MATERIALS FOR FIRE HAZARD SEVERITY ZONE PER CHAPTER 7A OF CBC) ROOFING Roof coverings: Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be firestopped with approved materials or have one layer of minimum 72-pound mineralsurfaced nonperforated cap sheet complying with ASTM D 3909 installed over the combustible decking. Roof valleys: Where valley flashing is installed, the flashing shall be not less than 0.019-inch No. 26 gage galvanized sheet corrosionresistant metal installed over not less than one layer of minimm 72-pound mineral-surfaced nonperforated cap sheet complying with ASTM 3909, at least 36-inch-wide running the full length of the valley. Roof gutters: Roof gutters shall be provided with the means to prevent the accumulation of leaves and debris in the gutter VENTS Requirements: Ventilation openings for enclosed attics, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, and underfloor ventilation openings shall be fully covered with metal wire mesh, vents, other materials or other devices that meet the following requirements: 1. The dimensions of the openings therein shall be a minimum of 1/16th inch and shall not exceed 1/8th inch. 2. The materials used shall be noncombustible. Exception: Vents located under the roof covering, along the ridge of roofs, with the exposed surface of the vent covered by noncombustible wire mesh, may be of combustible materials. The materials used shall be corrosion resistant. Ventilation openings on the underside of eaves and cornices : Vents shall not be installed on the underside of eaves and cornices EXTERIOR COVERING Exterior walls: The exterior wall covering or wall assembly shall comply with one of the following requirements: Noncombustible material. Ignition-resistant material Heavy-timber exterior wall assembly. Log wall construction assembly. Wall assemblies that meet the performance criteria in accordance with the test procedures for a 10-minute direct flame contact xposure test set forth in SEM Standard 12-7A-1 Exceptions: Any of the following shall be deemed to meet the assembly performance criteria and intent of this section: 1. One layer of 5/8-inch Type X gypsum sheathing applied behind the exterior covering or cladding on the exterior side of the framing. 2. The exterior poriton of a 1-hour fire resistive exterior wall assembly designed for exterior fire exposure including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual. Extent of exterior wall covering: Exterior wall coverings shall extend from the top of the foundation to the roof, dn terminate at 2 inch nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure Open roof eaves: None. Enclosed roof eaves and roof eave soffits / Exterior porch ceilings: The exposed underside of enclosed roof eaves having either a boxed-in roof eave soffit with a horizontal underside, or sloping rafter rails with an exterior covering applied to the underside of the rafter tails, and exterior porch ceilings shall be protected by one of the following: Noncombustible material. 2. Ignition-resistant material. One layer of 5/8-inch Type X gysum sheathing applied behind an exterior covering on the underside of the rafter tails or soffit or ceiling. The exterior portion of a h-hour fire resistive exterior wall assembly applied to the underside of the rafter tails or soffit and porch ceiling including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual. 5. Boxed-in roof eave soffit and exterior porch assemblies with a horizontal underside that meet the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3. Exceptions: The following materials do not require protection: 1. Gable end overhangs and roof assembly projections beyond an exterior wall other than at the lower end of the rafter tails. 2. Fascia and other architectural trim boards. Floor projections / Underfloor protection / Underside of appendages: None EXTERIOR WINDOWS AND DOORS Exterior windows and exterior glazed door assembly requirements: Exterior windows and exterior glazed door assemblies shall comply with one of the following requirements: 1. Be constructed of multipane glazing with a minimum of one tempered pane meeting the requirements of Section 2406 Safety Glazing, or 2. Be constructed of glass block units, or Have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 257, or 4. Be tested to meet the performance requirements of SFM Standard 12-7A-2. Structural glass veneer: None. Exterior doors: Exterior doors shall comply with one of the following: 1. The exterior surface or cladding shall be of noncombustible or ignition-resistant material, or Shall be constructed of solid core wood with stiles/rails not less than 1-3/8 in. thick and raised panels not less than 1-1/4 in. thick. 3. Shall have a fire-resistance rating of not less than 20 minutes when tested in according to NFPA 252. 4. Shall be tested to meet the performance requirements of SFM Standard 12-7A-1. DECKING Where required: The walking surface material of decks, porches, balconies and stairs shall comply with the requirements of this section when any portion of such surface is within 10 feet of the building. Decking surfaces: The walking surface material of decks, porches, balconies and stairs shall be constructed with one of the following naterials: 1. Ignition-resistant material that complies with the performance requirements of both SFM Standard 12-7A-4 and SFM Standard 12-7A-5. Exterior fire retardant treated wood. Noncombustible material Any material that complies with the performance requirements of SFM Standard 12-7A-4A when attached exterior wall covering is also either noncombustible or ignition-resistant material. Exception: Wall material may be of any material that otherwise complies withthis chapter when the decking surface material complies with the performance requirements ASTM E84 with a Class B flame spread rating.

PROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATIO THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES PFS CORPORATION - Los Angeles, California 20-002381 APPROVAL # PFS-

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UIREMENTS OF CHAPTER 1 FAC 5/29/2020

5/29/2023

EXPIRES DATE







Appendix 'A' - Calculations (CALIFORNIA)

San Jose, CA 95120

Model # - SK715-M Customer: (SURAJ) Site Install Address: APN# 583-12-010

Page Number:Calculation Description:A-0 thru A-1.5Seismic DesignA-2Wind Design PressuresA-3 thru A-3.3Wall Bracing (Wind)A-4Roof Diaphragm700-MS-001-001.1Lifting Analysis

Unit Specifications:

108 IN (SIDEWALL HT.) 9 FT (SIDEWALL HT.) 58 FT (BOX LENGTH) 324.00 IN (UNIT WIDTH) 27.000 FT (UNIT WIDTH) 3 Rise 12 Run 30 PSF (GSL ROOF) 45 IN (ROOF HT.) 12 IN (EAVE OVERHANG)



115 MPH - Vult - Exp. C 89 MPH - V3s - Exp. C ultimate wind speed based on ASCE 7-16. 3 second gust wind speed.

BASED ON THE REQUIREMENTS OF TITLE 25 CALIFORMIA CODE OF BEGULATIONS CHAFTER 5 SUBCHAPTER 1 FACTORY BULT HOUSING AND COMPONENTS DATE 5/29/2020 EXPIRES 5/29/2023 APPROVAL # FPS- 20-002381 THIS APPROVAL DOES NOT ALTHOUZE OR APPROVE ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES	FROM THE REQUIREMENTS OF STATE LAWS OR AFTLICABLE LOCAL ORDINANCES	THIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES	APPROVAL # PFS. 20-002381	EXPIRES 5/29/2023	DATE 5/29/2020	BASED ON THE REQUIREMENTS OF TITLE 25 CALIFORNIA CODE OF REGULATIONS CHAPTER 3 SUBCHAPTER I FACTORY BUILT HOUSING AND COMPONENTS	PS APPROVED PS	MPONENTS MPONENTS MPONENTS MPONENTS OR DEVIATION OR DEVIATION	Also on the Requirements of third 25 claireowide code of a clairent 3 subscienting is a subscienting in the code of the subscience of the subscinee of the
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Design References - ASCE 7-16 (Simplified Lateral Force Analysis) & California Residential Code

Occupancy Category: II Site Class: D Ss, per ASCE 7 Fig. 22-1: 1.500 S1, per ASCE 7 Fig. 22-2: 0.600 Fa, per ASCE 7 - Table 11.4-1: 1.20 R, per ASCE 7 Table 12.14-1: 6.5	Roof/Ceiling Dead Load (RDL): Floor Dead Load (FDL): Wall Dead Load (WDL): Roof Snow Load - Flat (RSL): Unit Width (UW): Box Length (BL): Framing Specific Gravity (SG):	15 10 7.5 23.1 27.00 58.00 0.42	psf psf psf psf
Calculate Seismic Design Category:			
Sds = 2/3 x Fa x Ss = 1.200	(per CRC Table R301.2.2.1.1).		
Seismic Design Category:	D2		
Calculate Seismic Weights:			
Floor Area (FA) = <u>1566</u> sq Roof Area (RA) = <u>1702</u> sq	. ft. W (roof dead) = RDL x RA = W (wall) = WDL x FA = . ft. W (floor) = FDL x FA = W (roof live) = 0.2 x RSL x RA =	25530 11745 15660 0	lbs lbs lbs lbs (since flat roof snow
Coloulota Saiamia Paga Shaaru	W (total) =	52935	lbs
		0770	
F = 1.0 (for one-story building	s) V = (F x Sas)/R x W =	9773	IDS
Calculate Vertical Force Distribution:			
Fx = (wx / Wtotal) x V	F1 (roof) = (Wrd + 0.5xWw + Wrl) / Wt x V = F2 (floor) = (0.5xWw + Wf) / Wt x V =	5797 3975	lbs lbs
Calculate Horizontal Shear Distribution:			
V1 = Shear load on top V2 = Shear load on top of fo	of shear walls = $0.7 \times F1 = 4058$ lbs undation = $0.7 \times (F1+F2) = 6841$ lbs		
Calculate Diaphragms:			
Right & Left:: Roof I Top & Bottom: Roof	Diaphragm Design Shear (RS1) = (V1/2)/UW = Diaphragm Design Shear (RS2) = (V1/2)/BL =	75 35	plf plf
Check Sheathing:			
Specific Gravity Adjustr	nent Factor (SGAF) = 1 - (0.5 - SG) = 0.92		
7/16" Roof Sheathir 7/16" Roof Sheathir	ng Shear Capacity = SGAF x 230plf = 212 ng Shear Capacity = SGAF x 170plf = 156	plf > RS [·] plf > RS2	1, therefore OK. 2, therefore OK.

BY: MGN DATE: 4/30/2020	LEFT ENDWALL SEISMIC WALL DESIGN (PERFORATED)	PAGE: A-1.1 I REF: SK715-M (RANCH)
Design References - NDS/ AWC SDPWS- 2008 Edition Wind & Seis Sidewall Height (H): 9.0 Max. Box Length (BL): 58 Endwall Unit Width (UW): 27.00 Perforated Shearwall Length (PL): 27 It Using a Min. F *Height	smic Design Table 4.3A Framing Specific Gravity (S Wall Sheathing (Pf ax. Shearwall Aspect Ratio (I Min. Full Ht. Section Win Full Ht. Shear Wall Section (Rf -Width Reduction Factor (Rf	G): 0.42 P1): 260.00 plf os): 2:1 psf dth: 4.5000 ft os): 3.8333 ft F1): 0.852
(*If section used is less than	the min. then use (RF1)=2(bs)/	н) -
Total full-height wall segments (L _i) = 8.7500' 3.8333' 8.08	33'	= 20.67'
Calculate Shear Loads:		
Vmax = V1 x 1/2 = 2029 lbs		
Check Shearwall Sheathing:		
Minimum Wall Sheathing: 3/8" sheathing (6"/	12" 8d nail spacing)	1-SIDE(S)
Specific gravity adjustment factor (SGAF) = 1 -	(0.5 - SG) = 0.92	
Max. Opening Height = 60.5000 in 5.042 ft	Percent full h Shear Capac	eight wall segments, FH% = 77% ity Adjustment Factor (C ₀) = 0.865
(See NDS/ AWC SDPWS- 2008 Edition Wind & Seismic Design Table 4.3.3.5 - Va	lue is interpolated)	
Shear capacity req'd = Vmax / (L_i) = 98.18 plf <	Effective Shear Capacity =	= PP1 x RF1 X SGAF x C_0 = 176.21 plf
Min. Sheathing Req'd = FH% x PL =20.6666 ft		
Check End Tiedowns for Overturning:		
$T = (Vmax. x H) / (C_o x L_i - eg / 12) =$	Stra 1051 lbs. avo	p location adjusted as needed to id perimeter joist endgrain (eg) = 6 in
Use - 18 Ga. x 1-1/4" steel strap - Capacity =	1343 lbs.	_
Fasten w/ 0.131"x1-1/2" nails - Nail Cap. = 82 x 1.6 =	131.2 lbs. / nail (Pe	r Table 11P NDS 2012 Edition)
W/ TO halls ea. end, Max. Nall cap. =	0.80 thus #readd strar	CONTROL
Number of nails required = T/ # straps / Nail Cap. =	8.01 thus, # nails req'd	= <u>9</u> - nails ea. end of ea. strap
Total Capacity = # straps x # nails ea. strap x nail cap. =	1181 lbs > T, thus OK	
Check Top & Bottom Plate Fastening:		
Use #8x3-1/2" screws - Top plate is toe-screwed		Toe-screw penetration:
Screw capacity = 78 lbs x 1.6 x 1.575" / 1.64" =	119.85 lbs. / screw	x = 1.167" + 0.5"/ COS 30 = 1.925"
Number required = Vmax. / (screw cap x 2) = Spacing = (PL*12) / number of screws =	8.46 # of screws 39 in o.c.	Pene. = 3.5" - 1.925" = 1.575" 1.575" > 1.640", NO - take reduction

BY: MGN DATE: 4/30/2020	L PAGE: A-1.2 GN REF: SK715-M (RANCH)	
Design References - NDS/ AWC SDPWS- 2008 Edition Wind & S Sidewall Height (H): 9.0 ft Max. Box Length (BL): 58 ft Endwall Unit Width (UW): 27.00 ft Perforated Shearwall Length (PL): 27 ft Using a Mi *Hei (*If section used is less th	Seismic Design Table 4.3A Framing Specific Gravity (S Wall Sheathing (P Max. Shearwall Aspect Ratio (Min. Full Ht. Section Wi n. Full Ht. Shear Wall Section (ght-Width Reduction Factor (R nan the min. then use (RF1)=2(bs))	SG): 0.42 P1): 380.00 plf bs): 2:1 psf dth: 4.5000 ft bs): 2.6666 ft F1): 0.5926 /H) -
Total full-height wall segments (L _i) = 7.3333' 2.6666' 2	.8333' 3.2500'	= 16.08'
Calculate Shear Loads:		
Vmax = V1 x 1/2 = 2029 lbs		
Check Shearwall Sheathing:		
Minimum Wall Sheathing: 3/8" sheathing	(4"/12" 8d nail spacing)	1-SIDE(S)
Specific gravity adjustment factor (SGAF) =	1 - (0.5 - SG) = 0.92	
Max. Opening Height = 82.5000 in 6.875 ft	Percent full h Shear Capac	eight wall segments, FH% = 60% city Adjustment Factor (C ₀) = 0.661
(See NDS/ AWC SDPWS- 2008 Edition Wind & Seismic Design Table 4.3.3.5	- Value is interpolated)	
Shear capacity req'd = Vmax / (L_i) = 126.16 plf <	Effective Shear Capacity	= PP1 x RF1 X SGAF x C_0 = 136.96 plf
Min. Sheathing Req'd = FH% x PL = <u>16.0832</u> ft		
Check End Tiedowns for Overturning:		
T = (Vmax. x H) / (C _o x L _i - eg /12)	0 = 1802 lbs. avc	ap location adjusted as needed to bid perimeter joist endgrain (eg) = $\begin{bmatrix} 6 \\ \end{bmatrix}$ in
Use - 18 Ga. x 1-1/4" steel strap - Capacity Fasten w/ 0.131"x1-1/2" nails - Nail Cap. = 82 x 1.6	y = 1343 lbs. 5 = 131.2 lbs. / nail <i>(Pe</i>	r Table 11P NDS 2012 Edition)
w/ 10 nails ea. end, Max. Nail cap.	= 1312 lbs. <<< NAILS	CONTROL
No. of required straps = T / Max. Nail Cap.	= 1.37 thus, # req'd stra	ps = <u>2</u> - strap(s)
Number of nails required = T/ # straps / Nail Cap.	. = 6.87 thus, # nails req'o	= <u>7</u> - nails ea. end of ea. strap
Total Capacity = # straps x # nails ea. strap x nail cap.	= 1837 lbs > T, thus OK	
Check Top & Bottom Plate Fastening:		
Use #8x3-1/2" screws - Top plate is toe-screwed		Toe-screw penetration:
Screw capacity = 78 lbs x 1.6 x 1.575" / 1.64"	= 119.85 lbs. / screw	x = 1.167" + 0.5"/ COS 30 = 1.925"
Number required = Vmax. / (screw cap x 2) Spacing = (PL*12) / number of screws	= 8.46 # of screws = <u>39</u> in o.c.	Pene. = 3.5" - 1.925" = 1.575" 1.575" > 1.640", NO - take reduction

BY: MGN DATE: 4/30/2020	TOP SIDEWALL SEISMIC WALL DESIGN (PERFORATED)	PAGE: A-1.3 I REF: SK715-M (RANCH)
Design References - NDS/ AWC SDPWS- 2008 Edition Wind & Ser Sidewall Height (H): 9.0 ft Max. Box Length (BL): 58 ft Endwall Unit Width (UW): 27.00 ft M Perforated Shearwall Length (PL): 46 ft Using a Min. *Heigh (*If section used is less than	smic Design Table 4.3A Framing Specific Gravity (S Wall Sheathing (Pf ax. Shearwall Aspect Ratio (I Min. Full Ht. Section Wi Full Ht. Shear Wall Section (t-Width Reduction Factor (RI the min. then use (RF1)=2(bs)/	G): 0.42 P1): 380.00 plf bs): 2:1 psf dth: 4.5000 ft bs): 2.0833 ft F1): 0.4630 H) -
Total full-height wall segments (L _i) = 2.0833' 2.5000' 4.33	333' 2.8333' 6.5833'	4.5000' = 22.8332'
Calculate Shear Loads:		
Vmax = V1 x 1/2 = 2029 lbs		
Check Shearwall Sheathing:		
Minimum Wall Sheathing: 3/8" sheathing (4"	/12" 8d nail spacing)	1-SIDE(S)
Specific gravity adjustment factor (SGAF) = 1	- (0.5 - SG) = 0.92	
Max. Opening Height = 82.0000 in 6.833 ft	Percent full h Shear Capac	eight wall segments, FH% = 50% Sity Adjustment Factor (C ₀) = 0.613
(See NDS/ AWC SDPWS- 2008 Edition Wind & Seismic Design Table 4.3.3.5 - V	alue is interpolated)	
Shear capacity req'd = Vmax / (L_i) = 88.87 plf <	Effective Shear Capacity	= PP1 x RF1 X SGAF x C_o = 99.21 plf
Min. Sheathing Req'd = FH% x PL = <u>22.8332</u> ft		
Check End Tiedowns for Overturning:		
T = (Vmax. x H) / (C _o x L _i - eg /12) =	1305 lbs.	
Use - 18 Ga. x 1-1/4" steel strap - Capacity =	1343 lbs.	
Fasten w/ 0.131"x1-1/2" nails - Nail Cap. = 82 x 1.6 =	131.2 lbs. / nail (Pe	r Table 11P NDS 2012 Edition)
w/ 10 nails ea. end, Max. Nail cap. =	1312 lbs. <<< NAILS	CONTROL
No. of required straps = T / Max. Nail Cap. =	0.99 thus, # req'd strap	os = <u>1</u> -strap(s)
Number of nails required = T/ # straps / Nail Cap. =	9.94 thus, # nails req'd	= <u>10</u> - nails ea. end of ea. strap
Total Capacity = # straps x # nails ea. strap x nail cap. =	1312 lbs > T, thus OK	
Check Top & Bottom Plate Fastening:		
Use #8x3-1/2" screws - Top plate is toe-screwed		Toe-screw penetration:
Screw capacity = 78 lbs x 1.6 x 1.575" / 1.64" =	119.85 lbs. / screw	x = 1.167" + 0.5"/ COS 30 = 1.925"
Number required = Vmax. / (screw cap x 2) =	8.46 # of screws	Pene. = 3.5" - 1.925" = 1.575"
Spacing = (PL*12) / number of screws =	66 in o.c.	1.575" > 1.640", NO - take reduction

BY: MGN DATE: 4/30/2020	F	PAGE: A-1.4 REF: SK715-M (RANCH)				
Design References - NDS/ AWC SDPWS- 2008 Edition V	Vind & Seisn	nic Design Tal	ble 4.3A			
Sidewall Height (H): 9.0 ft	F	raming Speci	fic Gravity (S	SG): 0.42		
Max. Box Length (BL): 58 ft		Wall S	Sheathing (P	P1): 260.00	plf	
Endwall Unit Width (UW): 27.00 ft	Max	. Shearwall As	spect Ratio ((bs): 2:1	psf	
Perforated Shearwall Length (PL): 58 ft		Min Full Ht	Section Wi	idth: 4,5000	ft	
	ing a Min Eu	II Ht Shear W	all Section ((bs): 3/166	ft	
	*Hoight \	Vidth Poductic	an Eactor (P	E1): 0.750		
(*If postion upod	in loss than th		DE1 2(ba)	//////////////////////////////////////		
(11 Section used		e min. men use	; (NFI)=2(03)	(1) -		
Total full-height wall segments (L _i) = 10.0000' 7.25	00' 3.416	6' 6.0833'	15.3333'			= 42.08'
Calculate Shear Loads:						
$V_{max} = V(1 \times 1/2 = -2020)$ lbs						
$\sqrt{11}ax - \sqrt{1}x \frac{1}{2} - 2029$ ibs						
Check Shearwall Sheathing:						
Minimum Wall Sheathing: 3/8" she	athing (6"/1	2" 8d nail spa	acing)	1-SIDE(S)	
Specific gravity adjustment factor (S	GAF) = 1 - (0.5 - SG) = (0.92			
Max. Opening Height = 82.0000 in 6.833 ft		F	Percent full h Shear Capa	neight wall seູ city Adjustme	gments, FH% = nt Factor (C _o) =	= 73% = 0.744
(See NDS/ AWC SDPWS- 2008 Edition Wind & Seismic Design Tab	le 4.3.3.5 - Valu	e is interpolated)				
Shear capacity req'd = Vmax / (L_i) = 48.22 plf	<	Effective She	ar Capacity	= PP1 x RF1	X SGAF x C _o =	= 135.07 plf
Min. Sheathing Req'd = FH% x PL = 42.0832 ft						
Check End Tiedowns for Overturning:						
$T = (Vmax. x H) / (C_o x L_i)$	- eg /12) =	583 lbs.				
Use - 18 Ga. x 1-1/4" steel strap - 0	Capacity =	1343 lbs.				
Fasten w/ 0.131"x1-1/2" nails - Nail Cap. =	$82 \times 1.6 =$	131.2 lbs./	nail (Pe	er Table 11P I	NDS 2012 Edit	ion)
w/ 10 nails ea end Max N	vail cap =	1312 lbs		CONTROL	2020/220	
No. of required straps = T / Max. N	ail Cap. =	0.44 thus.	# red'd stra	ps = 1	- strap(s)	
Number of nails required = T/ # straps / N	lail Cap. =	4.45 thus.	# nails reg	$d = \frac{1}{5}$	- nails ea. end	of ea. strap
		, , ,				
Total Capacity = # straps x # nails ea. strap x r	nail cap. =	656 lbs >	T, thus OK			
Check Top & Bottom Plate Fastening:						
Use #8x3-1/2" screws - Top plate is toe-scre	ewed			Toe-screw	penetration:	
Screw capacity = 78 lbs x 1.6 x 1.575	" / 1.64" =	119.85 lbs./	screw	x = 1.167"	+ 0.5"/ COS 30) = 1.925"
Number required = Vmax. / (screw	cap x 2) =	8.46 # of s	screws	Pene. = 3.5	5" - 1.925" = 1.	575"
Spacing = (PL*12) / number of	screws =	83 in o.o	C.	1.575" > 1.	640", NO - take	e reduction



Basic Parameters

Name	Value	Description
SS	1.5	MCE _R ground motion (period=0.2s)
S ₁	0.6	MCE _R ground motion (period=1.0s)
S _{MS}	1.8	Site-modified spectral acceleration value
S _{M1}	* null	Site-modified spectral acceleration value
S _{DS}	1.2	Numeric seismic design value at 0.2s SA
S _{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
Fa	1.2	Site amplification factor at 0.2s
Fv	* nul	Site amplification factor at 1.0s
CR _S	0.956	Coefficient of risk (0.2s)
CR ₁	0.932	Coefficient of risk (1.0s)
PGA	0.572	MCE _G peak ground acceleration
F _{PGA}	1.2	Site amplification factor at PGA
PGA _M	0.686	Site modified peak ground acceleration
TL	12	Long-period transition period (s)
SsRT	2.209	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2 . 311	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.81	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.868	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.572	Factored deterministic acceleration value (PGA)
* See Section	on 11.4.8	

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

While the information presented on this website is balleved to be correct. ATC and its sooneors and contributors assume to responsibility or liability for its accuracy. The material presented https://hazards.atcouncil.org/#/seismic?lat=37.3382082&Ing=-121.8863286&address=San Jose%2C CA%2C USA

4/30/2020

ATC Hazards by Location

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BY DATE	BY: MGN DATE: 4/30/2020 SKYLINE Design Wind Pressures 115 mph -Vult. Exp. C								PAGE: A-2 REF: Calcs.
<u>Design Var</u> Ei	<u>riables:</u> Height, h = nd Zone, 2a = Roof Pitch =	12.8 8.0 14.04	ft ft degrees	Rise /Run 3 12		Allowab	Importar Adjustme Fopographic le Stress De	nce Factor, I = ent Factor, F = c Factor, Kzt = esign Factor =	1.0 1.21 1.0 0.6
See Figure	28 6-1 for load	MAIN WINI	D FORCE RE	SISTING SY	STEM DESI	<u>GN (MWFRS</u>)) (METHOD	2) ASCE 7-16	
eee rigare	- Ps30 per Fig	ure 28.6-1		Ps = F x Kz	tt x I x Ps30		Design Wi	nd Pressure (P)	= Pnet x 0.6
CASE I	Zor	ne A - end	zone of wall =	<u>Ps30</u> = 25.8	<u>Ps</u> 31.2	psf x 0.6 =	<u>P</u> 18.7	psf	
< CONTROL	Zor	ne B - end	zone of roof =	-8.9	-10.8	psf x 0.6 =	-6.5	psf	
	Zone (C - interior	zone of wall =	= 17.2	20.8	psf x 0.6 =	12.5	psf	
	Zone [D - interior	zone of roof =	-5.1	-6.2	psf x 0.6 =	-3.7	psf	
	Zone E - end	zone of wi	indward roof =	-25.2	-30.5	psf x 0.6 =	-18.3	psf	
	Zone F - en	d zone of l	leeward roof =	-16.3	-19.7	psf x 0.6 =	-11.8	psf	
Zo	one G - interior	zone of wi	indward roof =	-17.5	-21.2	psf x 0.6 =	-12.7	psf	
:	Zone H - interio	or zone of l	leeward roof =	-12.4	-15.1	psf x 0.6 =	-9.0	psf	
Zo	one EOH - end	zone of ro	of overhang =	-35.3	-42.7	psf x 0.6 =	-25.6	psf	
Zone	GOH - interior	zone of ro	of overhang =	-27.6	-33.4	psf x 0.6 =	-20.0	psf	
CASE II	Zor	ne A - end	zone of wall =	<u>P</u> :	<u>s (min) per 28</u> 16.0	<u>3.6.4</u> psf x 0.6 =	<u>Р</u> 9.6	psf	
	Zor	ne B - end	zone of roof =	=	8.0	psf x 0.6 =	4.8	psf	
	Zone (C - interior	zone of wall =	-	16.0	psf x 0.6 =	9.6	psf	
	Zone [D - interior	zone of roof =	:	8.0	psf x 0.6 =	4.8	psf	



BY: MGN DATE: 4/30/2020 SKYLINE LEFT ENDWAL PERFORATE Dasign References A/DS/ AWC SDRWS 2008 Edition Wind & Sejemic Design Table 4.24	L PAGE: A-3 SIGN REF: SK715-M D) (RANCH)
Cidewall Usisht (U): 0.0 ft	O(1N/7), 10 F and
Sidewall Height (H): 9.0 ft wind Load Zone	C(WZ): 12.5 pst
Kingpost Height (K): 3.75 ft Wind Load at RP Zone	D (WR): -3.7 pst (Use, 0 pst)
Max. Box Length (BL): 58 ft Wind Load at Corner Zone A	A(WZ1): 18.7 pst
	3 (WR1): -6.5 pst (Use, 0 pst)
Perforated Shearwall Length (PL): 27 It Framing Specific Grav	$\pi(BB4) = 205, 00, \pi/f$
NDS / AWC SDPWS - 2008 Edition Wind & Seismic Design Table 4.3A - VVall Sheathin	g (PPT): 365.00 pli
min absertion nor NDS Table 4.2.4 (1/bs) Min. Full Ht. Socio	allo (DS). $3.3.1$
min. shear section per NDS Table 4.3.4 (π/bs) - With. Full Hit. Section	
Total full-height wall segments (L _i) = 8.7500' 3.8333' 8.0833'	= 20.67'
Calculate Shear Loads:	
$W = ((H/2 \times WZ) + (K \times WR)) = 56.04 \text{ plf}$ Shear load on the wall	(Vmax):
$W1 = ((H/2 \times WZ1) + (K \times WR1)) = 84.28 \text{ plf}$ $V1 = [(W1)]$	$(1.1.2.)^{1}$ (W x (BL-16-15)))] x 1/2 = 1431
$W2 = ((H/2 \times WZ) + (K \times WZ)) = 102.74 \text{ plf}$	$V2 = [(W2 \times 15 \times 2)] \times 1/2 = 1541$
Check Shearwall Sheathing:	Vmax = V1 + V2 = 2972 lbs.
Minimum Wall Sheathing: 3/8" sheathing (6"/12" 8d nail spacing)	1-SIDE(S)
Specific gravity adjustment factor (SGAF) = 1 - (0.5 - SG) = 0.92	
Max. Opening Height = 60.5000 in Percent 5.042 ft Shear C	full height wall segments, FH% = 77% apacity Adjustment Factor (C ₀) = 0.865
(See NDS/ AWC SDPWS- 2008 Edition Wind & Seismic Design Table 4.3.3.5 - Value is interpolated)	
Shear capacity req'd = Vmax / (L _i) = 143.80 plf < Effective Shea	ar Capacity = PP1 x SGAF x C_0 = 290.40 plf
Min. Sheathing Req'd = FH% x PL = 20.6666 ft	
Check End Tiedowns for Overturning:	
	Strap location adjusted as needed to
T = (Vmax. x H) / ($C_o x L_i - eg / 12$) =1540 lbs.	avoid perimeter joist endgrain $(eg) = 6$ in
Use - 18 Ga. x 1-1/4" steel strap - Capacity = 1343 lbs.	—
Fasten w/ 0.131"x1-1/2" nails - Nail Cap. = 82 x 1.6 = 131.2 lbs. / nail	(Per Table 11P NDS 2012 Edition)
w/ 10 nails ea. end, Max. Nail cap. = 1312 lbs. <<< N/	AILS CONTROL
No. of required straps = T / Max. Nail Cap. = 1.17 thus, # req'd	straps = <u>2</u> - strap(s)
Number of nails required = T/ # straps / Nail Cap. = 5.87 thus, # nails	req'd = <u>6</u> - nails ea. end of ea. strap
Total Capacity = # straps x # nails ea. strap x nail cap. = 1574 lbs > T, thus	OK
Check Ton & Bottom Blots Eastering	
Use #8x3-1/2" screws - Top plate is too screwed	
Use $\#0x^{-1/2}$ solews - 1 up plate is lot-sciewed Scrow conscient = 78 lbs x 1.6 x 1.575" / 1.64" = 110.95 lbs / correct	$v = 1.167" \pm 0.5"/COS 20 = 1.025"$
Number required = $Vmax/(scrow cap x/2) = -12.40 \# of corours$	$P_{\text{enc}} = 3.5" - 1.025" - 1.575"$
Spacing = (PL*12) / number of screws = 27 in o.c.	1.575" > 1.640", NO - take reduction

BY: MGN DATE: 4/30/2020 SKYLINE RIGHT ENDWALL SHEAR WALL DESIGN (PERFORATED)	PAGE: A-3.1 REF: SK715-M (RANCH)
Design References - NDS/ AWC SDPWS- 2008 Edition Wind & Seismic Design Table 4.3A	
Sidewall Height (H): 9.0 ft Wind Load Zone C (V	VZ): 12.5 psf
Kingpost Height (K): <u>3.75</u> ft Wind Load at RP Zone D (W	/R): -3.7 psf (Use, 0 psf)
Max. Box Length (BL): 58 ft Wind Load at Corner Zone A (W	Z1): 18.7 psf
Endwall Unit Width (UW): 27.00 ft Wind Load at RP at Corner Zone B (Wi	R1): -6.5 psf (Use, 0 psf)
Perforated Shearwall Length (PL): 27 ft Framing Specific Gravity (S	SG): 0.42
NDS / AWC SDPWS - 2008 Edition Wind & Seismic Design Table 4.3A - Wall Sheathing (P	P1): 365.00 plf
Max. Shearwall Aspect Ratio (bs): 3.5:1
min. shear section per NDS Table 4.3.4 (H/bs) - Min. Full Ht. Section Wi	dth: 2.571 ft
Total full-height wall segments (L _i) = 7.3333' 2.6666' 2.8333' 3.2500'	= 16.08'
Calculate Shear Loads:	
$M = (H/2 \times M/2) + (K \times M/2) = 56.04$ alf Shear load on the well (Mms	
$W_{1} = ((H/2 \times WZ) + (K \times WR)) = 50.04 \text{ prise}$	1X).
$VV = ((\Pi/2 \times VVZ) + (K \times VVZ)) = 04.20 \text{ pli}$ $V\Pi dx = ((VV + X + V))$	$V_{2} = [(N_{2} \times 15 \times 2)] \times 1/2 = 1541$
$VVZ = ((\Pi/Z \times VVZ) + (X \times VVZ)) = 102.74 \text{ pill}$	$\sqrt{2} = [(\sqrt{2} \times 15 \times 2)] \times 1/2 = -1041$
Check Shearwan Sheathing.	
Minimum Wall Sheathing: 3/8" sheathing (6"/12" 8d nail spacing)	1-SIDE(S)
Specific gravity adjustment factor (SGAF) = 1 - (0.5 - SG) = 0.92	
Max. Opening Height = 82.5000 in Percent full h 6.875 ft Shear Capac	eight wall segments, FH% = 60% city Adjustment Factor (C _o) = 0.661
(See NDS/ AWC SDPWS- 2008 Edition Wind & Seismic Design Table 4.3.3.5 - Value is interpolated)	
Shear capacity req'd = Vmax / (L _i) = 184.78 plf < Effective Shear Ca	spacity = PP1 x SGAF x C_0 = 222.00 plf
Min. Sheathing Req'd = FH% x PL = <u>16.0832</u> ft	
Check End Tiedowns for Overturning:	
$T = (V_{max} \times H) / (C \times L - eq /12) = 2640 \text{ lbs}$	ap location adjusted as needed to
$(\sqrt{100}, \sqrt{10}, \sqrt{10}, \sqrt{10}, \sqrt{10}, \sqrt{10}, \sqrt{100}, $	$\frac{\partial \partial g}{\partial t} = 0$
Use - 18 Ga. x 1-1/4" steel strap - Capacity = 1343 lbs.	
Fasten w/ 0.131"x1-1/2" nails - Nail Cap. = 82 x 1.6 = 131.2 lbs. / nail (Pe	er Table 11P NDS 2012 Edition)
w/ 10 nails ea. end, Max. Nail cap. = 1312 lbs. <<< NA/LS	CONTROL
No. of required straps = 1 / Max. Nail Cap. = 2.01 thus, # req'd strap	$ps = \frac{3}{2} - strap(s)$
Number of nails required = $1/\#$ straps / Nail Cap. = 6.71 thus, $\#$ nails requ	a = nails ea. end of ea. strap
Total Capacity = # straps x # nails ea. strap x nail cap. = 2755 lbs > T, thus OK	
Check Top & Bottom Plate Fastening:	
Use #8x3-1/2" screws - Top plate is toe-screwed	Toe-screw penetration
Screw capacity = 78 lbs x 1 6 x 1 575" / 1 64" = 119 85 lbs / screw	x = 1.167" + 0.5"/COS 30 = 1.925"
Number required = $Vmax / (screw cap x 2) = 12.40 \# of screws$	Pene = 3.5" - 1.925" = 1.575"
Spacing = (PL*12) / number of screws = 27 in o.c.	1.575" > 1.640", NO - take reduction





SKY	Li	,	

By: MGN

Date: 4/30/20	20 <u>DKyline</u>			115 mph -Vult. Exp. C	Ref: SK715-N
	Minimum Wall Sheathing:	7/16" APA	a rated	sheathing roof decking	Roof Pitch: 3.00
	Wind Speed:	115	MPH	ExpC, Vult wind speed b	based on ASCE 7-10
	Wind Load Zone C (WZ):	12.5	psf		
	Wind Load at RP Zone D (WR):	-3.7	psf	(Use, 0 psf)	
	Wind Load at Corner Zone A (WZ1):	18.7	psf		
Wi	nd Load at RP at Corner Zone B (WR1):	-6.5	psf	(Use, 0 psf)	
	Sidewall Height (H):	108	in		
	Kingpost Height (K):	45	in		
	Max. Box Length (BL):	58	ft		
	Roof Sheathing - Strong (PP1):	230.00	plf		
	Roof Sheathing - Weak (PP2):	170.00	plf		
	1/2 -Unit Width (UW):	162	in		
	Framing Specific gravity (SG):	0.42			
	Calc. Max. Diaphragm Shear (Str	ong Dir.):			
	W = ((H/2 x WZ) + (K x WR)) x 1/144 =	3.505	pli	, = 42.05917 plf	
W1	= ((H/2 x WZ1) + (K x WR1)) x 1/144 =	5.002	pli	,= 60.02184 plf	
Vma	ax. = [(W1 x 16) + (W x (BL-16))] x 1/2 =	1363	lbs.		

Calc. Max. Shear on Roof Sheathing (Strong Dir.):

Specific gravity adj. factor SGAF = 1 - (0.5 - SG) = 0.92

> V1 = PP1 x SGAF x 1/12 x UW /2 x 2 = 2857 lbs. > Vmax., therefore OK.

Calc. Max. Diaphragm Shear (Weak Dir.):

Vmax. = lbs. (per Sidewall Shearwall calculation) 1492

Calc. Max. Shear on Roof Sheathing (Weak Dir.):

V1 = PP2 x SGAF x BL = 9071 Ibs. > Vmax., therefore OK.



Roof System:							Sheet 1 of 5
Trusses:							
Assumed True	ss weigh	for 7/12 32' wide truss	s: 69	lbs/truss			
Assume 1 ex	tra truss	needed every 10 feet,	and trusses	16" o.c.			
((10 x 12" /16")	+ 1) x 7,	12 weight = 586.5	lbs.			0.04	
				586.5 lbs / 10	' / 15' =	3.91	_pst
Roof Deckin	g:			7/16"	OSB = _	1.10	_psf
Ceiling Boar	d:			5/8	" gyp. =_	2.40	psf
Fascia:							
Wood Densit	y (lbs/ft^3	3) = 62.4 x [G / (1+ (G >	x 0.009 x MC	;))] x [1 + (MC/	[(000]		
Spe	cific Grav	vity of SPF lumber, G =	0.42				
	I	Moisture Content, MC =	= 19	%			
Density =	20 008	$lbs/ft^3 = 0.0168$	lbs /in ^3				
Density -	20.000	Fascia weight (sidewa	$(0.5.7)^{(1.5)} = 5.5^{(1.5)} / 12$	x 0 75"/12 x De	ensity =	0 834	plf
		Fascia weight (endw	vall) = 5.5''/12	2 x 1 5"/12 x De	ensity =	1 667	-pii plf
		r usola weight (end)				1.007	
Ridge Beam	:						
5/8" plywood							
Assume 3 ful	l layers a	t 22-7/8" Plywo	od weight =	1.8 psf			
			22.8	75"/12" x 3 x 1	.8 psf =	10.29	_plf
Insulation:						4.00	
Assume R38	DIOWN W	100		R-38 blown	wool =	1.30	psr
Shingles:			Fiber	rglass shingles	& felt = _	2.50	psf
	_						
Endwall Ove	rhangs:						
Assume 18" I	1000 2 75	pof v upit width					
Boof deck -	3.75 1.65	psi x unit width		End overband	16 V 2 -	10.8	nlf
NOOI deck -	1.05				<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	10.0	
Sidewall eav	e:						
Assume 18" e	eave						
Shingles & felt =	3.75	psf x box length					
Roof deck =	1.65	psf x box length		Sidewall	eave = _	5.4	_plf
Misc.:					Misc. =	0.75	psf
Totals:	0.04	<i>r</i>	_ ·	0.004			
l russes =	3.91	pst Di		0.834 plf			
Ceiling board =	1.10 2.40	psi Ri nef Side		10.29 plf			
Inculation -	2.40 1 20	poi Olut		16 527			
Chinalos -	1.30	pol		10.527			
Sningles = Misc =	∠.50 0.75	psi nsf Endwall	overhana =	10.8 nlf			
	11 06	=	Fascia v 2 -	333 nlf			
	11.90	poi		14.12 plf			
			10tal 3 –	14.13 pli			

Total Basic Roof Weight = [Total 1 x (BL x UW)] + (Total 2 x BL) + (Total 3 x UW)



Exterior Walls:		Sheet 2 of 5
Sidewall Studs:		
2x6s 16" o.c., 108" sidewall	Density = 0.0168 lbs/in^3	
Weight = Density x 1.5 x 5.5 x 103.5"		
Stud weight = 14.345 lbs.	Weight = Stud weight x 12" / 16" o.c. =	.759_plf
Top plate:		
Double 2x6	Weight = 2 x Density x 1.5 x 5.5 x 12" =3.2	326plf
Bottom plate:		
2x6	Weight = Density x 1.5 x 5.5 x 12" = 1.0	663 plf
Sidewall Interior Sheathing:		
3/8" gyp. = 1.2 psf	Weight = 9.0' x 1.2 psf = 10).80 plf
Sidewall Exterior Sheathing:		
7/16" OSB = 1.1 psf	Weight = 9.0' x 1.1 psf =9.	.90 plf
Sidewall Fiber-Cement Siding:		
Weight = 2.1 psf	Weight = 9.0' x 0.30 psf = <u>18</u>	8.90 plf
Sidewall Insulation:		
R-19 fiberglass = 0.92 psf	Weight = 9.0' x 0.32 psf =8	.28 plf
Endwall Studs:		
2x6s 16" o.c., 108" sidewall		
Weight = Density x 1.5 x 5.5 x 108"	Density = 0.0168 lbs/in^3	
Stud weight = 14.969 lbs. V	Veight = Stud weight x 12" / 16" o.c. x 2 = 22.	.453 plf
Endwall Interior Sheathing:	· · ·	
1/2" gyp. = 1.6 psf	Weight = 9.0' x 1.2 psf x 2 = 28	8.80 plf
Endwall Exterior Sheathing:		
7/16" OSB = 1.1 psf	Weight = 9.0' x 1.1 psf x 2 = 19).80 plf
Endwall Fiber-Cement Siding:		I
Weight = 2.1 psf	Weight = 9.0' x 0.30 psf x 2 =37	7.80 plf
Endwall Insulation:		
R-19 fiberglass = 0.92 psf	Weight = 9.0' x 0.32 psf x 2 = <u>16</u>	6.56 plf
Windows:		
Dual glaze vinyl insulated = 3.5 psf		
Assume glazing area is 15% of floor a	area: Weight = 3.5 x 0.15 = <u>0.</u>	525_psf
Misc.:	Misc. =).5plf
Totals:		
Sidewall Studs = 10.759 plf	Endwall Studs = 22	.453 plf
Sidewall top plate = 3.326 plf	Endwall top plate = 6.	653 plf
Sidewall bottom plate = 1.663 plf	End bottom plate = 6.0	653 plf
Sidewall Int. sheathing = 10.800 plf	Endwall Int. sheathing = 28.	.800 plf
Sidewall Ext. sheathing = 9.900 plf	Endwall Ext. sheathing = 19.	.800 plf
Sidewall Vinyl Siding = 18.900 plf	Endwall Vinyl Siding = 37.	800 plf
Sidewall Insulation = 8.280 plf	Endwall Insulation = 16.	.560 plf
misc. = 0.500 plf	misc. = 1.	000_plf
Total 2 = 64.128 plf	Total 3 = 139	0.719 plf
- 1		
Windows = 0.525 psi	r	

Total Basic Exterior Wall Weight = (Total 1 x BL x UW) + (Total 2 x BL) + (Total 3 x UW)

Total 1 = 0.525 psf

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Sheet 3 of 5

By: ELW *Date:* 7/10/2012

	Floor Decking:				3/4" plywood = <u>2.2</u>	psf
	Floor framing: 2x10 joists 16" o.c.	Density =	0.0168	lbs/in^3	Assume 1 extra joist for every 10) feet.
Joist	wt. = 1.5 x 9.25 x 176" ((10 x 12" / 16") +1) x	x density = k joist wt. =	41.026 348.718	lbs lbs.		
	Rim Joists: double 2x10 joists		Weigh	it = 1.5 x 9.2	$348.72 \text{ lbs / } 10^{\circ} / 15^{\circ} = 2.325$ $25 \text{ x Density x } 12 \text{ x } 4 = 11.189$	_psf _plf
	Insulation:				R-19 fiberglass = 0.92	psf
	Carpet:				Carpet Weight =0.40	psf
	Frame I-Beams: 12" - M12x10.8			I-Beam	Weight = 10.8 plf x 2 =21.6	_plf
	Crossmembers: Assume 3" x 1-1/2" x 1 Steel Volum Crossmember wt. = volu	-1/2" channe e = 6" x 0.10 Steel ume x densit	l every 8 1 5" x 99" = Density = y / 1728 =	feet 62.37 490 17.686	12Ga. = 0.105" in^3 lbs/ft^3 lbs. 17.686 / 8' =2.211	_plf
	Assume 2 outriggers er Steel Volume = 1 Outrigger wt. = volu	very 8 feet 9" x 12" x 0. Steel ume x density	090" / 2 = Density = y / 1728 =	10.26 490 2.909	13Ga. = 0.090" in^3 lbs/ft^3 lbs.	
					2.909 / 8' x 2 = <u>0.727</u>	_plf
	Misc.:				Misc. weight = <u>1.50</u>	_psf
Floo Floo	Totals: or Decking = 2.20 or Framing = 2.32 Insulation = 0.92 Carpet = 0.40 Misc. = 1.50 Total 1 = 7.34	psf psf psf psf psf psf	F Frame Cross (Rim Joists = e I-Beams = smembers = Dutriggers = Total 2 =	= 11.189 plf = 21.60 plf = 2.211 plf = 0.727 plf = 35.727 plf	

Total Basic Floor Weight = [Total 1 x (BL x UW)] + (Total 2 x BL)



Interior Walls:

Partitions: Studs				
2x4s 16" o.c., A	ve. stud height = 105"			
Weight = Densit	y x 1.5 x 3.5 x 105"	Density =	0.0168	lbs/in^3
Stud we Weight =	eight = 9.261 lbs. Stud weight x 12" / 16" o.c. =	6.946	plf	
Top plate & Bott Weight = 1	tom plate: 2x4 .5 x 3.5 x Desnity x 12" x 2 =	2.1168	plf	
Sheathing:	1/2" gyp. = 1.6 Weight = 9.0' x 2.0 psf x 2 =	psf 28.80	plf	
Misc.:	Misc. =	0.50	plf	
	Total =	38.363	plf	

Assume 1 partition for every 10' of box length.

Partition Weight = Total / 10' = <u>3.836</u> psf

Marriage Wall:

Studs:							
2x4s, 16" o.c.,	108" mar	riage wall		Density =	0.0168	lbs/in^3	
Weight = Dens	sity x 1.5 x	3.5 x 103	3.5				
Stud v	veight =	9.129	lbs.				
	-	Weig	ht = Stud we	eight x 12" /	16" o.c. =	6.847	plf
Top plate:							
double 2x4		Weigh	nt = Density >	k 1.5 x 3.5 x	12" x 2 =	2.117	plf
Bottom plate:							
2x4		W	eight = Dens	sity x 1.5 x 3	.5 x 12" =	1.058	plf
Sheathing:							
3/8	3" gyp. =	1.2	psf				
			Weight	= 108"/12 x	2.0 psf =	10.80	plf
Missi				N 41		0.5	
IVIISC.:				WISC.	vveignt =	0.5	
			Total Ma	arriage Wall	Weight =	21.322	_plf
Total 1 =	3.836 p	osf		Total 2 =	21.322	plf	

Total Basic Interior Wall Weight = [Total 1 x (BL x UW)] + (Total 2 x BL)



Double Wide Weight Analysis

Other Standard Weights:

Sheet 5 of 5

Add for Kitchen:			Other Appliances:		
Kitchen cabinets -	500	lbs.	Furnace -	150	lbs
Kitchen Appliances -			Water Heater -	100	lbs
Range -	210	lbs	Clothes Washer -	160	lbs
Refrigerator -	220	lbs	Clothes Dryer -	120	lbs.
Dishwasher-	100	lbs	_		_
Total =	1030	lbs	Total =	530	lbs
Summary					
-	Total 1	_	Total 2	Total 3	_
Roof system:	11.96	psf	16.53 plf	14.13	plf
Exterior Walls:	0.53	psf	64.13 plf	139.72	plf
Floor system:	7.34	psf	35.73 plf	0.00	plf.
Interior Walls:	3.84	_psf	21.32plf	0.00	plf
-	23.67	-	137.70	153.85	=
<u>Basic Wt. = (</u>	(23.67 x E	<u>3L x U\</u>	N) + (137.70 x BL) + (153.85 x	<u>(UW)</u>	
BL = Box ler	igth	UW :	= Unit Width		

Add Kitchen weight and other appliance weight to basic weight as required.

Maximum Wt. = Basic Wt. + Kitchen Wt. + Appliance Wt.





Center Beam Lifting Analysis PAGE: 700-MS-001.1 REF: Inst. Manual



ASSUMPTIONS:

It is assumed that the center beam (at the centerline of a unit half) is the critical location to be analyzed for point loads incurred from straps used for lifting the home on to a permanent foundation. The same load occurs at the sidewall, but the sidewall is fully sheathed w/ 7/16" OSB which distributes the load as if the entire wall were a deep beam. The double 2x10 center beam always has a steel support frame which eliminates the load at the beam.



Appendix 'B' - On-Site Installation for SK715-M

Page Number	Installation Description:
B-1	Installation Overview
B-2	Typical Foundation Layout (Fig. 1)
B-3	Crawl Space Cross Section (Fig. 2)
B-4	Foundation Notes (Fig. 3)
B-5	Crane Lift Guidelines



App. B-1

ON-SITE INSTALLATION - Ranch

- A. Prior to Set-Up
 - 1. Install pressure treated 2x6 (min.) sill plate 8" min. above grade at all foundation walls.
 - 2. See Figures 1 thru 3 for all foundation details.

B. Set-Up

- 1. Remove temporary closure materials and temporary supports at mating wall.
- 2. See "Addendum to Installation Instructions Crane Lift Guidelines" for typical module weights and lifting information.
- 3. Fasten ridge beams together w/ 3/8"x6" lag screws @ 24 " o.c. (In the absence of ridge beams, fasten 2x6 rails together w/ 2-#8x3-1/2" screws @ 24" o.c.)
- 4. Fasten floor girders together w/ 3/8"x6" lag screws @ 24" o.c.
- 5. Fasten end walls together w/ 20d nails @ 24" o.c.
- 6. Fasten mating wall columns together w/ #8x4" screws @ 16" o.c.
- 7. See Figure 32 for details on completing the roof.
- 8. Install sheathing and shingles at the mating line.
- 9. Install HVAC ductwork, gas lines and DWV lines below the floor.
- 10. Install heat duct, electric, water supply, drain line and gas line crossovers at the mating line.
- 11. Install exterior finish materials (siding, fascia, exterior lights, etc.).
- 12. Install interior finish materials.

C. Final

- 1. After electrical supply and ground connections have been made, conduct the following tests:
 - a. Continuity Test of Circuit Conductors.
 - b. Polarity Test.
 - c. Continuity Test of Electrical Ground System.
 - d. Operational Test of GFI Curcuit Breaker and each Smoke Alarm.
- 2. Test the water distribution system.
- 3. Test the drain and vent system.
- 4. Test all plumbing fixtures.
- 5. Test the gas piping system.
- 6. Test all gas appliances.



REFER TO SKYLINE MODULAR HOME INSTALLATION MANUAL FOR ALL SPECIFICATIONS AND DETAILS FOR ON-SITE INSTALLATION.



Dimensions vary: See individual supplement enclosed with this supplement.

Note: This is a typical permanent foundation layout. Other engineered designs may apply. See approved prints for any loading and or design restrictions.



HIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION ROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES

PFS CORPORATION - Los Angeles, California

FIGURE 1 - TYPICAL PERMANENT FOUNDATION LAYOUT - Ranch

NOTES:

1) Modular homes constructed by Skyline Corp. are designed to be installed on a site-built permanent foundation and manufactured to comply with state or national building codes (which excludes them from coverage under the Manufactured Housing Construction and Safety Standards Act). 2) Doublewide units are composed of two modules and contain one centerline. Triplewide units are composed of three modules and contain two

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ADDENDUM TO INSTALLATION INSTRUCTIONS -**CRANE LIFT GUIDELINES**

Iominal				Basi	ic Wei	ght for	One I	Module	Unit	(lbs)							
Unit					10		40	Box L	ength	(feet)			=0	=0			
Width	24	28	32	36	40	44	48	52	56	60	64	68	72	76	-		
10	10401	11883	15364	14846	16327	20403	19290	20772	22253	23735	25216	20525	28179	29661	{		
14	13051	14880	16700	18538	20367	20403	22090	25854	20404	20512	20030	30525	3/000	36828	1		
16	14254	16241	18228	20215	22202	24188	26175	28162	30149	32136	34122	36109	38096	40083	1		
	1	11							1						J		z
	Othe	r Stanc	lard V	/eights	s (lbs)					Other	Optio	n Weig	ghts (ll	os)	VIIS		VIATIO
	Add	l to ea.	half as	applic	able					Add to	ea. ha	lf as ap	oplicab	le	MPONE		OR DE'
		Kitc	hen		1030						Clothes	Washe	•	160	ND COF		LOCAL
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											Furi	nace		150	V F		ROVE A APPLIC
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Typ Liftii	o. Crane ng Strap	Ŷ	Ţ											Тур.		EXPIRES	APPROVAL THIS APPROVAL FROM THE REV
															Typ. H	lome	Module
		4'-0	,n		12'-	-0"				<u>12'-0"</u> max.			4'-0"] -			
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- 1) exceed the maximum span between lifting points.
- 2) The builder is responsible for the crane lift operations. He may choose to use any system of lifting the home which is safe, lifts the modules without causing any damage and complies wit all regulations. The spreader bar shall be of sufficient width to ensure that lifting straps clear the home's eaves.
- 3) A lifting strap should not be located at a stairwell location. An additional strapping point may need to be added to avoid this from occurring. 4) The builder is responsible to properly prepare the unit for lifting. Where straps are located along portions of the marriage wall where no walls or posts
- occur, supply and secure temporary posts (or double 2x4s) extending from floor to ceiling beam and strap the top and bottom.
- 5) It is emphasized that the information is estimated and should be verified by the builder. In particular, the estimated center-of-gravity may not be at the mid-point of the module. This estimated center-of-gravity should be checked and improved by centering the lift straps at this location, lifting the module 3-4 feet and observing if the floor remains level from front to rear. If one end drops lower than the other, relocate the straps as needed.
- 6) The maximum load incurred at a lifting point (on each side of the module) is 5000 lbs. The maximum weight incurred on one strap is10000 lbs.



VALLEY FIRE SPRINKLER 16211 N. SCOTTSDALE RD., STE A6A #431 SCOTTSDALE, AZ 85254

HYDRAULIC CALCULATIONS

SKYLINE SJ SN 20-131M QT1597 Suraj AREA 1

FILE NUMBER: DATE: MAY 19, 2020

-DESIGN DATA-

OCCUPANCY CLASSIFICATION:	RESIDENTIAL
DENSITY:	.05 gpm/sq. ft.
AREA OF APPLICATION:	2 HEADS
COVERAGE PER SPRINKLER:	16 X 16 FEET
NUMBER OF SPRINKLERS CALCULATED:	2 sprinklers
TOTAL SPRINKLER WATER FLOW REQUIRED:	26.3 gpm
TOTAL WATER REQUIRED (including hose):	31.4 gpm
FLOW AND PRESSURE (@ BOR):	26.4 gpm @ 33.3 psi
SPRINKLER ORIFICE SIZE:	7/16 inch
NAME OF CONTRACTOR:	VALLEY FIRE SPRINKLER
DESIGN/LAYOUT BY:	SPRINKLER PLANS



SPRINKLER SYSTEM HYDRAULIC ANALYSISPage 2DATE: 5/19/2020C:\HASS78\DATA\SKYLINE SJ SN 20-131M QT1597 SURAJ-1.SDFJOB TITLE: SKYLINE SJ SN 20-131M QT1597 Suraj - AREA 1

WATER SUPPLY DATA

SOURCE	STATIC	RESID.	FLOW	AVAIL.	TOTAL	REQ'D
NODE	PRESS.	PRESS.	@	PRESS. @	DEMAND	PRESS.
TAG	(PSI)	(PSI)	(GPM)	(PSI)	(GPM)	(PSI)
BR	40.0		35.0	40.0	31.4	33.3

AGGREGATE FLOW ANALYSIS:

TOTAL	FLOW	AT	SOUF	RCE				31.4	GPM
TOTAL	HOSE	STR	EAM	ALI	LOWANCE	AT	SOURCE	5.0	GPM
OTHER	HOSE	STR	EAM	ALI	LOWANCES	3		0.0	GPM
TOTAL	DISCH	IARG	E FF	ROM	ACTIVE	SPF	RINKLERS	26.4	GPM

NODE ANALYSIS DATA

ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
0.5	SOURCE	33.3	26.4
5.0		27.2	
5.0		30.2	
9.5		23.9	
9.0	K= 4.90	7.0	13.0
9.0	K= 4.90	7.4	13.3
9.0		9.4	
9.5		7.7	
9.5		9.2	
9.5		12.7	
9.5		16.9	
9.5		21.2	
	ELEVATION (FT) 0.5 5.0 9.5 9.0 9.0 9.0 9.0 9.0 9.5 9.5 9.5 9.5 9.5 9.5	ELEVATION NODE TYPE (FT) 0.5 SOURCE 5.0 - - 9.5 - - 9.0 K= 4.90 9.0 K= 4.90 9.0 - 9.5 - 9.5 - 9.5 - 9.5 - 9.5 - 9.5 - 9.5 - 9.5 -	ELEVATION (FT) NODE TYPE (PSI) PRESSURE (PSI) 0.5 SOURCE 33.3 5.0 27.2 5.0 30.2 9.5 23.9 9.0 K= 4.90 7.0 9.0 K= 4.90 7.4 9.0 9.4 9.5 9.2 9.5 9.2 9.5 12.7 9.5 16.9 9.5 21.2



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SPRINKLER SYSTEM HYDRAULIC ANALYSISPage 3DATE: 5/19/2020C:\HASS78\DATA\SKYLINE SJ SN 20-131M QT1597 SURAJ-1.SDFJOB TITLE: SKYLINE SJ SN 20-131M QT1597 Suraj - AREA 1

PIPE DATA

PIPE EI NOI	TAG ND DES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. V (GPM)	Q(GPM) VEL(FPS)	DIA(IN HW(C) FL/FT	I) LENGTH (FT)	PRE SU (PS	SS. M. SI)
1 4	Pipe:	: 1 9.0 9.5	4.9 0.0	7.0 7.7	13.0 0.0	-13.0 4.4	1.101 150 0.031	PL 13.58 FTG 2E TL 27.58	PF PE PV	0.8 -0.2
2 4	Pipe:	: 2 9.0 9.5	4.9 0.0	7.4 7.7	13.3 0.0	-13.3 4.5	1.101 150 0.032	PL 8.50 FTG E TL 15.50	PF PE PV	0.5 -0.2
4 5	Pipe:	: 3 9.5 9.5	0.0	7.7 9.2	0.0	-26.3 8.9	1.101 150 0.113	PL 8.83 FTG T TL 13.83	PF PE PV	1.6 0.0
3 5	Pipe:	: 4 9.0 9.5	0.0	9.4 9.2	0.0	0.0	1.101 150 0.000	PL 5.50 FTG E TL 12.50	PF PE PV	0.0 -0.2
5 6	Pipe:	: 5 9.5 9.5	0.0	9.2 12.7	0.0	-26.3 8.9	1.101 150 0.113	PL 22.00 FTG T4R TL 31.00	PF PE PV	3.5 0.0
6 7	Pipe:	: 6 9.5 9.5	0.0	12.7 16.9	0.0	-26.3 8.9	1.101 150 0.113	PL 4.00 FTG 4ET TL 37.00	PF PE PV	4.2 0.0
7 8	Pipe:	7 9.5 9.5	0.0	16.9 21.2	0.0	-26.3 8.9	1.101 150 0.113	PL 15.83 FTG 2ET3R TL 37.83	PF PE PV	4.3 0.0
8 TR	Pipe:	: 8 9.5 9.5	0.0	21.2 23.9	0.0	-26.3 8.9	1.101 150 0.113	PL 11.00 FTG ETR TL 24.00	PF PE PV	2.7 0.0
TR F1	Pipe:	9 9.5 5.0	0.0	23.9 27.2	0.0	-26.3 8.9	1.101 150 0.113	PL 5.00 FTG E TL 12.00	PF PE PV	1.4 1.9
F2 F1	Pipe:	: 10 5.0 5.0	0.0	30.2 27.2	0.0	FI: 3.	XED PRE O psi,	SSURE LOSS 26.3 gpm	DEVIC	Έ
F2 BR	Pipe:	: 11 5.0 0.5	0.0 SRCE	30.2 33.3	0.0 (N/A)	-26.4 8.9	1.101 150 0.113	PL 5.00 FTG CG TL 10.00	PF PE PV	1.1 1.9



SPRINKLER SYSTEM HYDRAULIC ANALYSISPage 4DATE: 5/19/2020C:\HASS78\DATA\SKYLINE SJ SN 20-131M QT1597 SURAJ-1.SDFJOB TITLE: SKYLINE SJ SN 20-131M QT1597 Suraj - AREA 1

NOTES:

(1) Calculations were performed by the HASS computer program

HRS Systems, Inc. 4792 LaVista Road Tucker, GA 30084

- (2) The system has been calculated to provide an average imbalance at each node of 0.013 gpm and a maximum imbalance at any node of 0.139 gpm.
- (3) Total pressure at each node is used in balancing the system. Maximum water velocity is 8.9 ft/sec at pipe 11.
- (4) PIPE FITTINGS TABLE

Pipe Table Name: STANDARD.PIP

PAGE: E	MATERIAL	: PVC150	HWC:	150			
Diameter	E	quivalent	Fitting	Lengths	in Feet		
(in)	Ε	T L	С	В	G	Ν	R
	Ell	Tee LngE	ll ChkVl [.]	v BfyVlv	GatVlv	NPTee	Runtee
1.101	7.00	5.00 12	.00 4.	00 3.00	1.00	39.00	1.00

APPROVED	UUREMENTS OF TITLE 25 CALIFORNIA CODE OF REGULATIONS BCHAPTER I FACTORY BUILT HOUSING AND COMPONENTS	29/2020	29/2023	ss. 20-002381	ES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION EMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES	l CORPORATION - Los Angeles, California
AI	EREQUIRED 3 SUBCHAP	5/29/:	5/29/	# PFS-	L DOES NOT	PFS COR
PFS	BASED ON THI CHAPTER	DATE	EXPIRES	APPROVAL	THIS APPROVA FROM THE REQ	

VALLEY FIRE SPRINKLER 16211 N. SCOTTSDALE RD., STE A6A #431 SCOTTSDALE, AZ 85254

HYDRAULIC CALCULATIONS

SKYLINE SJ SN 20-131M QT1597 Suraj AREA 2

> FILE NUMBER: DATE: MAY 19, 2020

-DESIGN DATA-

OCCUPANCY CLASSIFICATION:	RESIDENTIAL
DENSITY:	.05 gpm/sq. ft.
AREA OF APPLICATION:	1 HEAD
COVERAGE PER SPRINKLER:	16 X 16 FEET
NUMBER OF SPRINKLERS CALCULATED:	1 sprinklers
TOTAL SPRINKLER WATER FLOW REQUIRED:	13.7 gpm
TOTAL WATER REQUIRED (including hose):	18.7 gpm
FLOW AND PRESSURE (@ BOR):	13.7 gpm @ 20.0 psi
SPRINKLER ORIFICE SIZE:	7/16 inch
NAME OF CONTRACTOR:	VALLEY FIRE SPRINKLER
DESIGN/LAYOUT BY:	SPRINKLER PLANS



SPRINKLER SYSTEM HYDRAULIC ANALYSISPage 2DATE: 5/19/2020C:\HASS78\DATA\SKYLINE SJ SN 20-131M QT1597 SURAJ-2.SDFJOB TITLE: SKYLINE SJ SN 20-131M QT1597 Suraj - AREA 2

WATER SUPPLY DATA

SOURCE	STATIC	RESID.	FLOW	AVAIL.	TOTAL	REQ'D
NODE	PRESS.	PRESS.	@	PRESS. (DEMAND	PRESS.
TAG	(PSI)	(PSI)	(GPM)	(PSI)	(GPM)	(PSI)
BR	40.0		35.0	40.0	18.7	20.0

AGGREGATE FLOW ANALYSIS:

TOTAL	FLOW	AT	SOUF	CE				18.	7	GPM
TOTAL	HOSE	STR	EAM	ALI	LOWANCE	AT	SOURCE	5.0)	GPM
OTHER	HOSE	STR	EAM	ALI	LOWANCES	5		0.0)	GPM
TOTAL	DISCH	IARG	E FF	MOX	ACTIVE	SPF	RINKLERS	13.	7	GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
BR	0.5	SOURCE	20.0	13.7
F1	5.0		14.7	
F2	5.0		17.7	
TR	9.5		12.4	
1	9.0		8.2	
2	9.0		8.2	
3	9.0	K= 4.90	7.8	13.7
4	9.5		8.0	
5	9.5		8.0	
6	9.5		9.0	
7	9.5		10.3	
8	9.5		11.6	


SPRINKLER SYSTEM HYDRAULIC ANALYSISPage 3DATE: 5/19/2020C:\HASS78\DATA\SKYLINE SJ SN 20-131M QT1597 SURAJ-2.SDFJOB TITLE: SKYLINE SJ SN 20-131M QT1597 Suraj - AREA 2

PIPE DATA

PIPE El NOI	TAG ND DES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. N (GPM)	Q(GPM) /EL(FPS)	DIA(IN HW(C) FL/FT	N) LENGTH (FT)	PRESS. SUM. (PSI)
1 4	Pipe:	: 1 9.0 9.5	0.0 0.0	8.2 8.0	0.0	0.0	1.101 150 0.000	PL 13.58 FTG 2E TL 27.58	PF 0.0 PE -0.2 PV
2 4	Pipe:	: 2 9.0 9.5	0.0	8.2 8.0	0.0	0.0	1.101 150 0.000	PL 8.50 FTG E TL 15.50	PF 0.0 PE -0.2 PV
4 5	Pipe:	: 3 9.5 9.5	0.0	8.0 8.0	0.0	0.0	1.101 150 0.000	PL 8.83 FTG T TL 13.83	PF 0.0 PE 0.0 PV
3 5	Pipe:	: 4 9.0 9.5	4.9 0.0	7.8 8.0	13.7 0.0	-13.7 4.6	1.101 150 0.034	PL 5.50 FTG E TL 12.50	PF 0.4 PE -0.2 PV
5 6	Pipe:	5 9.5 9.5	0.0	8.0 9.0	0.0	-13.7 4.6	1.101 150 0.034	PL 22.00 FTG T4R TL 31.00	PF 1.0 PE 0.0 PV
6 7	Pipe:	: 6 9.5 9.5	0.0	9.0 10.3	0.0	-13.7 4.6	1.101 150 0.034	PL 4.00 FTG 4ET TL 37.00	PF 1.2 PE 0.0 PV
7 8	Pipe:	7 9.5 9.5	0.0	10.3 11.6	0.0	-13.7 4.6	1.101 150 0.034	PL 15.83 FTG 2ET3R TL 37.83	PF 1.3 PE 0.0 PV
8 TR	Pipe:	: 8 9.5 9.5	0.0	11.6 12.4	0.0	-13.7 4.6	1.101 150 0.034	PL 11.00 FTG ETR TL 24.00	PF 0.8 PE 0.0 PV
TR F1	Pipe:	9 9.5 5.0	0.0	12.4 14.7	0.0	-13.7 4.6	1.101 150 0.034	PL 5.00 FTG E TL 12.00	PF 0.4 PE 1.9 PV
F2 F1	Pipe:	: 10 5.0 5.0	0.0	17.7 14.7	0.0	FI 3.	XED PRE O psi,	ESSURE LOSS 13.7 gpm	DEVICE
F2 BR	Pipe:	: 11 5.0 0.5	0.0 SRCE	17.7 20.0	0.0 (N/A)	-13.7 4.6	1.101 150 0.034	PL 5.00 FTG CG TL 10.00	PF 0.3 PE 1.9 PV



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NOTES:

(1) Calculations were performed by the HASS computer program

HRS Systems, Inc. 4792 LaVista Road Tucker, GA 30084

- (2) The system has been calculated to provide an average imbalance at each node of 0.001 gpm and a maximum imbalance at any node of 0.011 gpm.
- (3) Total pressure at each node is used in balancing the system. Maximum water velocity is 4.6 ft/sec at pipe 11.
- (4) PIPE FITTINGS TABLE

Pipe Table Name: STANDARD.PIP

PAGE: E	MATERIAI	L: PVC15	O HWC	C: 150				
Diameter	E	Iquivale	nt Fitti	ng Len	gths ir	n Feet		
(in)	Ε	Т	L	С	В	G	N	R
	Ell	Tee Lno	gEll Chł	Vlv Bf	yVlv Ga	atVlv	NPTee	Runtee
1.101	7.00	5.00	12.00	4.00	3.00	1.00	39.00	1.00

 A P P R O V E D A P P R O V E P R O V E D A P P R O V E P R O V E D A P P R O V E P R O V E D A P P R O V E P R O V E D A P R O V E D A P P P R O V E D A P P P R O V E D A P P P P P P P P P P P P P P P P P P P	PFS CORPORATION - Los Angeles, California
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Worldwide Contacts

www.tyco-fire.com

RAPID RESPONSE Series LFII Residential Sprinklers 4.9 K-factor Pendent Wet Pipe and Dry Pipe Systems

General Description

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY2234) are decorative, fast response, frangible bulb sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels. When aesthetics and optimized flow characteristics are the major consideration, the Series LFII Residential Sprinklers (TY2234) should be the first choice.

The Series LFII Residential Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

The recessed version of the Series LFII Residential Sprinklers is intended for use in areas with finished ceilings. It employs a two-piece Style 20 Recessed Escutcheon. The Recessed Escutcheon provides 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush ceiling position. The adjustment provided by the Recessed

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely. Escutcheon reduces the accuracy to which the pipe drops to the sprinklers must be cut.

The Series LFII Residential Sprinklers have been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

Dry Pipe System Application

The Series LFII Residential Pendent and Recessed Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY2234) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/ area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R. Non-water filled pipe will permit options for areas sensitive to freezing.

NOTICE

The Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY2234) described herein must be installed and maintained in compliance with this document and the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.



The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Sprinkler Identification Number (SIN)

TY2234



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For details on these approvals, refer to the Design Criteria section.

Maximum Working Pressure 175 psi (12,1 bar)

Discharge Coefficient K=4.9 GPM/psi^{1/2} (70,6 LPM/bar^{1/2})

Frame	Brass
Button	Copper
Sealing Assembly	Beryllium
	Nickel w/TEFLON
Bulb (3 mm)	Glass
Compression Screw	Bronze
Deflector	Bronze
Ejection Spring	Stainless Steel

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and flow water.

Design Criteria

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY2234) are UL and C-UL Listed for installation in accordance with this section.

Residential Sprinkler Design Guide

When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the local authority having jurisdiction.

System Types

Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Refer to Technical Data Sheet TFP485 for the use of residential sprinklers in residential dry pipe systems.

Ceiling Types

Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)

For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)

For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in Tables A or B as a function of temperature rating and the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/ft² over the "design area" comprised of the four most hydraulically demanding sprinklers for actual coverage areas protected by the four sprinklers.

The number of "design sprinklers" specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery

When using the Series LFII Residential Sprinklers (TY2234) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution

Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity

Sprinklers are to be installed with a deflector-to-ceiling distance of 1-1/4 to 4 inches.

Sprinkler Spacing

The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

Installation

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY2234) must be installed in accordance with this section:

General Instructions

Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm).

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in an Escutcheon Plate by under- or overtightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Series LFII Residential Pendent Sprinklers

The Series LFII Residential Pendent Sprinklers must be installed in accordance with the following instructions.

Step 1. Install pendent sprinklers in the pendent position with the deflector parallel to the ceiling.

Step 2. With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 3). With reference to Figure 1, apply the W-Type 6 Sprinkler Wrench to the wrench flats.

Series LFII Residential Recessed Pendent Sprinklers

The Series LFII Residential Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. Install recessed pendent sprinklers in the pendent position with the deflector parallel to the ceiling.

Step B. After installing the Style 20 Mounting Plate over the sprinkler threads and with pipe thread sealant applied to the pipe threads, handtighten the sprinkler into the sprinkler fitting.

			WE Minimum Flow	T PIPE SYSTE	M Pressure ^(b, c)			
Max. Coverage Area ^(a)	Ordinary Te 155°F	emp. Rating (68°C)	Intermediate 175°F	Temp. Rating (79°C)	Deflector to Ceiling Type		Minimum	
Ft. x Ft. (m x m)	Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		Ft. (m)		
12 x 12 (3,7 x 3,7)	13 (49,2)	7.0 (0,48)	13 (49,2)	7.0 (0,48)	Smooth Ceilings	Recessed using Style 20 Escutcheon or 8 non-recessed (2,4) per NFPA 13D, 13R, or 13		
14 x 14 (4,3 x 4,3)	13 (49,2)	7.0 (0,48)	13 (49,2)	7.0 (0,48)	1-1/4 to 4 inches		Recessed using Style 20 Escutcheon or non-recessed	8 (2,4)
16 x 16 (4,9 x 4,9)	13 (49,2)	7.0 (0,48)	13 (49,2)	7.0 (0,48)	Beamed Ceilings per NFPA 13D			
18 x 18 (5,5 x 5,5)	17 (64,3)	12.0 (0,83)	17 (64,3)	12.0 (0,83)	or 13R 1-1/4 to 1-3/4 inches below			
20 x 20 (6,1 x 6,1)	20 (75,7)	16.7 (1,15)	20 (75,7)	16.7 (1,15)	bottom of beam.			

(a) For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

(b) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.

(c) For NFPA 13 residential applications, the greater of 0.1 gpm/ft² over the design area of the flow in accordance with the criteria in this table must be used.

TABLE A WET PIPE SYSTEM

SERIES LFII RESIDENTIAL PENDENT AND RECESSED PENDENT SPRINKLERS (TY2234) NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Maximum			DR Minimum Flow	Y PIPE SYSTE and Residual	M Pressure ^(b, c)			
Coverage Area ^(a)	Ordinary Te 155°F	emp. Rating (68°C)	Intermediate 175°F	Temp. Rating (79°C)	Deflector to Ceiling Type	lu stall sti su	Minimum	
Ft. x Ft. (m x m)	Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		Ft. (m)		
12 x 12 (3,7 x 3,7)	13 (49,2)	7.0 (0,48)	13 (49,2)	7.0 (0,48)	Smooth Ceilings	Recessed using Style 20 Escutcheon or non-recessed per NFPA 13D, 13R, or 13		
14 x 14 (4,3 x 4,3)	14 (53,0)	8.2 (0,57)	14 (53,0)	8.2 (0,57)	1-1/4 to 4 inches		Recessed using Style 20 Escutcheon or non-recessed	8 (2,4)
16 x 16 (4,9 x 4,9)	15 (56,8)	9.4 (0,65)	15 (56,8)	9.4 (0,65)	Beamed Ceilings per NFPA 13D			
18 x 18 (5,5 x 5,5)	18 (68,1)	13.5 (0,93)	18 (68,1)	13.5 (0,93)	or 13R 1-1/4 to 1-3/4 inches below			
20 x 20 (6,1 x 6,1)	21 (79,5)	18.4 (1,27)	21 (79,5)	18.4 (1,27)	bottom of beam.			

(a) For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

(b) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.

(c) For NFPA 13 residential applications, the greater of 0.1 gpm/ft² over the design area of the flow in accordance with the criteria in this table must be used.

TABLE B DRY PIPE SYSTEM SERIES LFII RESIDENTIAL PENDENT AND RECESSED PENDENT SPRINKLERS (TY2234) NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Step C. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 4). With reference to Figure 1, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step D. After the ceiling has been installed or the finish coat has been applied, slide on the Style 20 Closure over the Series LFII Residential Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

Care and Maintenance

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY2234) must be maintained and serviced in accordance with this section:

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.) The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assembly

Specify: Series LFII (TY2234), K=4.9, Residential Pendent Sprinkler, (specify) temperature rating, (specify) finish, P/N (specify).

155°F (68°C)

Natural Brass
Natural Brass P/N 51-201-1-175 Pure White (RAL 9010)* P/N 51-201-3-175 Signal White (RAL 9003) P/N 51-201-4-175 Chrome Plated P/N 51-201-9-175
Fastern Hemisphere sales only

*Eastern Hemisphere sales only.

Recessed Escutcheon

Specify: Style 20 Recessed Escutcheon with (specify*) finish, P/N (specify*).

*Refer to Technical Data Sheet TFP770.

Sprinkler Wrench

Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387.

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001.

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GLOBAL HEADQUARTERS | 1400 Pennbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700





Worldwide Contacts

www.tyco-fire.com

Rapid Response Series LFII Residential 4.9 K-factor Concealed Pendent Sprinklers, Flat Plate Wet Pipe and Dry Pipe Systems

General Description

The TYCO RAPID RESPONSE Series LFII Residential 4.9 K-factor Concealed Pendent Sprinklers (TY3596) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels.

The cover plate assembly conceals the sprinkler operating components above the ceiling. The flat profile of the cover plate provides the optimum aesthetically appealing sprinkler design. In addition, the concealed design of the Series LFII Residential Concealed Pendent Sprinklers (TY3596) provides 1/2 inch (12,7 mm) vertical adjustment. This adjustment provides a measure of flexibility when cutting fixed sprinkler drops.

The Series LFII Residential Concealed Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely. The Series LFII Residential Concealed Pendent Sprinklers (TY3596) has been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed for installation, and then it can be replaced to help protect the sprinkler while the ceiling is being installed or finished. The tip of the Protective Cap can also be used to mark the center of the ceiling hole into plaster board, ceiling tiles, etc. by gently pushing the ceiling product against the Protective Cap. When the ceiling installation is complete the Protective Cap is removed and the Cover Plate Assembly installed.

Dry Pipe System Application

The Series LFII Residential Concealed Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Concealed Pendent Sprinklers (TY3596) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/ area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Concealed Pendent Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R. Nonwater filled pipe will permit options for areas sensitive to freezing.



NOTICE

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Sprinkler Identification Number

TY3596





Technical Data

Approvals:

UL and C-UL Listed. NYC Approved under MEA 44-03-E-2 NSF Certified to NSF/ANSI 61

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers are only listed with the Series LFII Concealed Cover Plates having a factory applied finish.

Maximum Working Pressure: 175 psi (12,1 bar)

Discharge Coefficient: K=4.9 GPM/psi^{1/2} (70,6 LPM/bar^{1/2})

Temperature Rating:

160°F (71°C) Sprinkler with 139°F (59°C) Cover Plate

Vertical Adjustment: 1/2 inch (12,7 mm)

Finishes:

Refer to Ordering Procedure section

Physical Characteristics:

BodyBrass
Cap Bronze
Saddle Brass
Sealing Assembly Beryllium
Nickel w/ IEFLON
Soldered Link Halves Nickel
Lever Bronze
Compression Screw Brass
DeflectorCopper or Brass
Guide Pin Housing Bronze
Guide Pins Stainless Steel
or Bronze
Support Cup Steel
Cover Plate Copper
Retainer Brass
Cover Plate Ejection Spring
Stainless Steel

Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Support Cup at three points, falls away to expose the Sprinkler Assembly. At this point the Deflector supported by the Arms drops down to its operated position. The fusible link of the Sprinkler Assembly is comprised of two link halves that are soldered together with a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate allowing the sprinkler to activate and flow water.

Design Criteria

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) are UL and C-UL Listed for installation in accordance with this section.

Note: When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the authority having jurisdiction.

System Types

Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Refer to Technical Data Sheet TFP485 about the use of residential sprinklers in residential dry pipe systems.

Ceiling Types

Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)

For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)

For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in Tables A and B as a function of temperature rating and the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/ ft² over the "design area" comprised of the four most hydraulically demanding sprinklers for actual coverage areas protected by the four sprinklers.

The number of "design sprinklers" specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery

When using the Series LFII Residential Concealed Pendent Sprinklers (TY3596) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution

Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity. The sprinklers are to be installed relative to the ceiling mounting surface as shown in Figure 3.

Sprinkler Spacing. The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Ref. Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

The Series LFII must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup could delay sprinkler operation in a fire situation.

Maximum		WET PIPE SYSTEM Minimum Flow and Residual Pressure ^(b, c)						
Coverage Area ^(a)	Maximum Spacing Ft.	Ordinary Temp. Rating 160°F (71°C)		Deflector to	Installation	Minimum		
rt. x rt. (m x m)	(m)	Flow GPM (L/min)	Pressure PSI (bar)	Ceiling	Туре	Ft. (m)		
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings		8 (2,4)		
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49,2)	7.0 (0,48)	inches				
16 x 16 (4,9 x 4,9)	16 (4,9)	13 (49,2)	7.0 (0,48)	Ceilings per NFPA 13D or 13R, or 13.	Concealed			
18 x 18 (5,5 x 5,5)	18 (5,5)	17 (64,3)	12.0 (0,83)	Installed in beam 7/8 to 1-1/8				
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,15)	bottom of beam				

(a) For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

(b) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.

(c) For NFPA 13 residential applications, the greater of 0.1 gpm/ft² over the design area of the flow in accordance with the criteria in this table must be used.

TABLE A WET PIPE SYSTEM

SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT-PLATE CONCEALED PENDENT SPRINKLER (TY3596) NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Maximum			DRY PIPE SYSTEM Minimum Flow and Residual Pressure ^(b, c)					
Coverage Area ^(a)	Maximum Spacing Ft.	Ordinary Temp. Rating 160°F (71°C)		Deflector to	Installation	Minimum		
(m x m)	(m)	Flow GPM (L/min)	Pressure PSI (bar)	Ceiling T	Туре	Ft. (m)		
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings				
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	8.2 (0,57)	inches Beamed	Concealed	8 (2,4)		
16 x 16 (4,9 x 4,9)	16 (4,9)	15 (56,8)	9.4 (0,65)	Ceilings per NFPA 13D or 13R, or 13.				
18 x 18 (5,5 x 5,5)	18 (5,5)	18 (68,1)	13.5 (0,93)	Installed in beam 7/8 to 1-1/8				
20 x 20 (6,1 x 6,1)	20 (6,1)	21 (79,5)	18.4 (1,27)	bottom of beam				

(a) For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

(b) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.

(c) For NFPA 13 residential applications, the greater of 0.1 gpm/ft² over the design area of the flow in accordance with the criteria in this table must be used.

TABLE B DRY PIPE SYSTEM

RAPID RESPONSE SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT-PLATE CONCEALED PENDENT (TY3596) NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Installation

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be installed in accordance with this section.

General Instructions

Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler by the support cup only (i.e., do not apply pressure to the fusible Link Assembly).

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Cover Plate/Retainer Assembly by under-or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

Step 1. The sprinkler must only be installed in the pendent position and with the centerline of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the Protective Cap.

Step 3. With pipe thread sealant applied to the pipe threads, and using the W-Type 18 Wrench shown in Figure 2, install and tighten the Sprinkler/Support Cup Assembly into the fitting. The W-Type 18 Wrench will accept a 1/2 inch ratchet drive.

Step 4. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Guide Pins during ceiling installation and/or during application of the finish coating of the ceiling. It may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Cap.

Note: As long as the protective Cap remains in place, the system is considered to be "Out Of Service".

Step 5. After the ceiling has been completed with the 2-1/2 inch (63 mm) diameter clearance hole and in preparation for installing the Cover Plate Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely.

If the Sprinkler has been damaged and the Deflector does not move up and down freely, replace the entire Sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler. **Step 6.** Screw on the Cover Plate Assembly until its flange comes in contact with the ceiling.

Do not continue to screw on the Cover Plate Assembly such that it lifts a ceiling panel out of its normal position.

If the Cover Plate Assembly cannot be engaged with the Mounting Cup or the Cover Plate Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

Care and Maintenance

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Absence of a Cover Plate may delay the sprinkler operation in a fire situation.

When properly installed, there is a nominal 1/8 inch (3,2 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 3. This air gap is necessary for proper operation of the sprinkler by allowing heat flow from a fire to pass below and above the Cover Plate to help assure appropriate release of the Cover Plate in a fire situation. If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted units. Non-factory applied paint may adversely delay or prevent sprinkler operation in the event of a fire.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or over heated sprinklers must be replaced. Care must be exercised to avoid damage -before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, nonoperation in the event of a fire or inadvertent operation may result.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Ordering **Procedure**

When placing an order, indicate the full product name. Contact your local distributor for availability.

Sprinkler Assembly:

Series LFII (TY3596), K=4.9, Resi-dential Concealed Pendent Sprinkler without Cover Plate Assembly, P/N 51-112-1-160

Cover Plate Assembly:

Cover Plate Assembly having a (spec-ify) finish for the Series LFII (TY3596), K=4.9, Residential Concealed Pendent Sprinkler, P/N (specify)

Ivory (RAL1015) P/N 56-202-0-135
Beige (RAL1001) P/N 56-202-2-135
Pure White (b) (RAL9010) P/N 56-202-3-135
Signal White (a) (RAL9003) P/N 56-202-4-135
Grey White (RAL9002) P/N 56-202-5-135
Brown (RAL8028) P/N 56-202-6-135
Black (RAL9005) P/N 56-202-7-135
Brushed Brass P/N 56-202-8-135
Brushed Chrome P/N 56-202-9-135
Custom Paint P/N 56-202-X-135
(a) Previously known as Bright White.

(b) Eastern Hemisphere sales only.

Note: All Custom Cover Plates are painted using Sherwin Williams Interior Latex Paint. Contact

TYCO Customer Service with any questions related to custom orders.

Sprinkler Wrench: Specify: W-Type 18 Sprinkler Wrench, P/N 56-000-1-265

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