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Alpine Refrigeration  
1025 S. Greenwood Ave.  
Montebello, CA 90640

RESEARCH REPORT: RR 25532  
(CSI # 13030)

Attn: Jorge Melendez  
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Expires: August 1, 2019  
Issued Date: October 1, 2017  
Code: 2017 LABC

**GENERAL APPROVAL** – Renewal and Clerical Modification - Alpine Refrigeration Panels for Walk-In Coolers and Freezers.

**DETAILS**

Alpine Refrigeration panels are 47 inches wide and are fabricated in thickness ranging from 3 ½ to 6 inches. The core material is BASF Autofroth 9589 polyurethane (LARR 24943). The panel facings are 26 gauge galvalume metal ASTM A-653. The perimeters of the panels are formed with a kiln-dried Douglas fir No. 1 two by four on the top and bottom and high-density foam studs on the side. The panels are joined together with cam-activated locking devices. The maximum spacing of the devices is 36 inches. Flame spread and smoke density rating per ASTM E84 are 35 and 430. Density of the foam is 2.5 pcf.

The panels may be used as load bearing walls, ceilings panels, shear walls, and diaphragms. However, fasteners for shear wall uplift, anchorage loads perpendicular to the walls at the top and bottom, and other loads not specified shall be designed for each job.

**Alpine Refrigeration walk-in coolers and freezers constructed of panels described above are approved subject to the following conditions:**

1. Use of the panels shall be limited to locations where combustible construction is permitted by the 2017 Los Angeles City Building Code.
2. The panels shall be fabricated in a shop of a licensed fabricator approved by the Los Angeles City Building Department. Fabrication in unlicensed shops will invalidate this approval.
3. The panels foam shall be separated from the room in which it is located and from the interior of the cooler and freezer by ½-inch thick gypsum wallboard or other approved thermal barrier material that will limit the average temperature rise of the unexposed

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surface to not more than 250°F after 15 minutes of fire exposure when tested in accordance with ASTM E119 or UL263. Sections 2603.4.1.2 and 2603.4.1.3 of the 2017 Los Angeles City Building Code may be utilized where applicable.

4. Complete plans and calculations, signed and stamped by a civil or structural engineer or architect registered in the State of California, shall be submitted to the Structural Plan Check for their approval for each job.
5. A separate approval from the Electrical Testing Laboratory shall be required for electrical installations within the panels.
6. Design of building utilizing the panels shall be in accordance with the requirements of the 2017 Los Angeles City Building Code and the design data specified below:

A. Panel Height Limitation (feet) and Maximum Concentric Axial Loads (plf):

<b>Thickness (in.)</b>	<b>Wall Height (ft.)</b>	<b>Maximum Axial Load (PLF)</b>
3.5	25	195
4.0	28	200
5.0	30	275
6.0	30	400

B. Maximum Allowable Loads for Ceiling Panels (psf)

<b>Span (ft.)</b>	<b>t = 3.5 in.</b>	<b>t = 4 in.</b>	<b>t = 5 in.</b>	<b>t = 6 in.</b>
10	29	34	42	50
12	24	28	35	42
14	21	24	30	36
16	15	18	26	32
18	12	15	20	27
20	9	12	16	22
22	8	9	13	18
24	6	8	11	15
26	4	6	9	12
28	-	5	8	10
30	-	4	7	9

C. Maximum Allowable Shear Load of Wall Panels (plf):

<b>Shape Factor Height:Width Ratio</b>	<b>Allowable Shear (ppf)</b>
0.5:1	57
1:1	113
1.5:1	170
2:1	226

D. Maximum Allowable Ceiling Diaphragm Shear

The maximum end shear of ceiling diaphragms is based on the ceiling to wall connection capacity as determined by tests. For the cam-lock connection at a maximum 23-inch spacing, this value would be 451 lbs divided by 23 in. or 235 ppf. A similar lag bolt connection will have a capacity 519 lbs divided by 23 in. or 271 ppf.

E. Ceiling panel to wall panel connections are made with 3/8 "dia. x6" lag bolt @24" on center or the cam-locking system (See attachment 1).

Wall panels to concrete slab connections are made with 20 gauge 7/8-in. by 7/8-in. angle and a 1-inch by 7/8-in. plywood keyway. The wall panel is attached to the floor assembly with #14 sheet metal screws (See attachment 2).

Shear and tension values of this connection are 424 lbs and 139 lbs respectively.

The angle and plywood shall be attached to the floor with an approved fastener.

Accurate alignment of adjacent panels is required for satisfactory workability.

F. Maximum Allowable Loading for the Cam-Locking Devices:

<b>Connection</b>	<b>Shear</b>	<b>Tension</b>
Panel to Panel	216 lbs	314 lbs
Ceiling to Wall	451 lbs	329 lbs

7. Locations of connectors must be detailed on approved plans.

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8. Allowable loads for shear walls and diaphragms are not applicable to buildings incorporating structural steel framing.
9. No increase in allowable stresses is allowed for the values indicated above for short duration of loads due to wind or seismic forces.
10. All design values and methods not included in this report shall be in accordance with requirements of the 2074 Los Angeles City Building Code.

## DISCUSSION

The report is in compliance with the 2017 City of Los Angeles Building Code.

The approval is based on tests on the foam per requirements of Sec. 2603 of the 2017 Los Angeles City Building Code, tests conducted in accordance with ASTM E-84 on the finished panels, and load tests conducted in accordance with ASTM E-72.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this Approval have been met in the project in which it is to be used.

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Attachments: Panel Connection Detail (2 Pages).