Quality of Hawaiian Homes Improves

By Dave Sherman, Vice President, California Expanded Metal Products Company (CEMCO)

Hawaii is the perfect environment to exploit the many benefits that light gage metal offers: sound structural integrity, seismic integrity, reduced shipping costs due to less volume and weight, material cost savings, dimensional stability in heat and changing humidity conditions, labor savings during construction, non-combustible fire resistance, termite resistance, choice of facing finishes and limitless design considerations.

That was the thinking of Ev Flanders when his established Maui-based gypsum board and steel framing subcontracting firm, Upcountry Interiors Inc., reorganized and created Consolidated Builders, Inc. (CBI), a general contracting company specializing in light gage metal structures. Their first project would be a 5,400 sq ft residence with all the intricacies and custom finishes typically found in the most elaborate homes being built today.

California Expanded Metal Products Company (CEMCO), in the City of Industry, CA, manufactured all of the light gage steel precut according to the contractor’s cut list, greatly reducing any excess waste and costs. The steel framing was produced from “prime steel” with ASTM A 525 G-60 and G-90 corrosion-resistant, galvanized coatings which are essential in the Hawaiian marketplace.

With a knowledgeable light gage framing crew as a basis, the task of constructing the two-winged house was underway by establishing the second floor elevation with the exterior 3-5/8 in. cs 18 ga track and walls.

The design of the structure was based on conventional framing in order to facilitate the many offsets and cantilevers. Wall framing proceeded with the construc-
tion of the first floor “public wing” of the house and moved over the slab on grade past the living room to the “private” wing consisting of three bedrooms and two baths. The 12 in. cs 16 ga floor joists were quickly set on the laser-leveled wall track and cross-braced using Simpson TB27’s at the mid-spans exceeding 8 ft 0 in. and third-spans greater than 16 ft 0 in.

Exterior headers for windows and doors were prefabricated on the site using double cs studs facing (open) towards the other and capped top and bottom by 3-5/8 in. deep leg track creating a box beam. These were also laser-leveled into place, ensuring accurate header heights around the entire perimeter. Engineered shear walls were constructed of 3-5/8 in. x cs 16 ga studs with 2-1/2 in. 16 ga flat strap welded on each side in opposing diagonal directions from the top to bottom tracks. Standardizing the stud size while changing the gage produced walls of the same thickness throughout, which kept all windows and door throat openings to one size, thus producing more savings.

The second floor walls were assembled in place and the plate line established for the roof. The on site truss fabrication table built thirty “Howe” trusses in a number of configurations and sizes with spans as long as 30 ft 6 in. The 19 hips and five valleys of the four independent roofs were box beams made of a single 6 in. cs 14 ga studs and sistered with 6 in. dlt 16 ga track. The roof components were surprisingly light, and placing was accomplished with only a crew of four! The trusses were carried by two men into position and then lifted with ropes (upside-down by the bottom chord) by the other two framers straddling the plate line. Trusses were then rotated about their center axis into position and temporarily braced until final setting.

The interior walls were 25 gage partition steel. All rooms received extensive ceiling and soffit work light soffits in the bedrooms and in the dining room, a barreled ceiling in the kitchen and stair step drops in the living room. Foam shapes were drawn on the contractor’s computer and used abundantly inside and outside of the house, the most striking being the multi-radius facia with its continuous and unbroken line. The facia was plastered and commands the eye upon approach to the residence. Additional applications of foam extrusions were utilized for column capitals and bases, handrail caps and exterior light valances.
In completing the residence, 5/8 in. Type X gypsum board was applied exclusively on the interior and a cement board system to the exterior to obtain a one hour fire rating for the structure. Finally, a class A fire-rated roof was installed to complete the envelope. An inspection by the County Fire Inspector in conjunction with the owner’s insurance company resulted in a remarkable savings of 80 percent on the fire insurance premiums.

The small amount of steel scrap left from the custom fabrications in the construction phase was recycled. Ev Flanders noted that 80 percent of this home’s construction products could be recycled. Such products like scrap steel framing can be sold for some recovered value. Since much of Hawaii’s land is leased instead of fee simple, there could be an added benefit to the recyclability of construction products. (He also noted that they had recently completed a steel framed structure with a future move and portability in mind.)

All of the savings resulting from the use of light gage steel, from the design through the completion of the residence, were ultimately passed on to the client. This residence was a successful initial undertaking which has resulted in many similar projects currently under construction plus future projects on the books.

Cameli Plastering Inc. of Kailua-Kona recently completed a unique 12,000 sq ft custom home on the Kona coast on the Island of Hawaii. The house completion date was rescheduled to cut three months from the construction schedule. The project had numerous and frequent architectural changes. Moving walls, applying custom shapes and changing details were timely and easily accommodated using steel framing. Track and studs were unscrewed and attached in the new locations without delay. The designs incorporated the studs and track that were previously removed without damage.

The home’s electrical system required miles of wiring for security systems, monitors, complex lighting systems, intercom and sound systems. The electrical wiring combined with the plumbing, air conditioning, and various other entities were all accommodated in the wall systems and ceilings. The pre-punching at the studs, 24 in. on center provided a neat and easy raceway for the plumbing and electrical systems. The other respective trades benefitted from this feature of steel framing.

It was a requirement that all work be straight and true. The long hallways have 10 ft high smooth gypsum board walls painted with semi-
the home was finished with an EIFS system comprising foam board, Georgia Pacific Dens-Glass and Stolit .75.

Dominic Cameli, President of Cameli Plastering Inc., was very pleased to announce that the project was completed on time and very much to the satisfaction of the clients and the general contractor.

The net results for both owners of these residences was satisfaction in the quality, safety and durability of their homes, in a place many of us call paradise.

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