



Masonry in Hawaii

Can composite be used in shoring up a masonry wall that is not up to current building standards? Yes.

The following article was written by Mr. Paul Kane of Aloha Marketing concerning composite strengthening of concrete but it is applicable to concrete masonry structures.

Composite strengthening is growing in popularity and use with structural engineers throughout the State. One form of composite strengthening is the use of advanced composite like carbon fiber fabrics or fiberglass fabrics that are saturated with high modulus epoxy resins and while the epoxy resin is wet these fabrics are adhered to concrete areas that are in need of strengthening. Think of this as structural wallpapering for columns, beams and walls.

Another type of composite strengthening is using pre-cured carbon fiber plates and shapes and adhering them with an epoxy plate to concrete surfaces. Think of this like adding rebar without having to take up the space or adding the weight of reinforced concrete. This type of strengthening is done when reinforced concrete is being cut to add pipes or HVAC vents to an existing structure and there is no room steel to brace the holes and when the engineer is not looking to add more weight to the structure.



Sika has 2 jobs being done on Oahu utilizing both of these methods on composite strengthening.

ITTS 3rd Leveling Strengthening at the Honolulu International Airport was designed by Wilson Okamoto and is using carbon fiber fabric and carbon fiber strips/plates the strengthening and stiffen beams that support the roadway for the Wikiwiki buses. By using these materials the engineers at

Wilson Okamoto will be able to increase loads and add additional safety factor to the structure so that large buses and even more buses can be used on the roadways in the future.

At the Outrigger Reef Tower in Waikiki Allison-Ide's Brian Ide is using various lengths and widths of carbon fiber strips the brace concrete floors and ceilings prior the contractor cutting new holes in the concrete and existing reinforcing steel for new piping and HVAC.



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The Reef Tower was built in 1955 and code and strength requirements were far less than they are today. By using this method of externally bracing and reinforcing the concrete floors and ceilings at the Reef Tower Mr. Ide's design allows for a safer working condition prior to cutting old concrete where the alternative might have been add a lot of shoring and steel prior to cutting the concrete which would have added weight to the structure and created a maintenance issue maintaining the steel with coating to keep in from corroding in the future.

