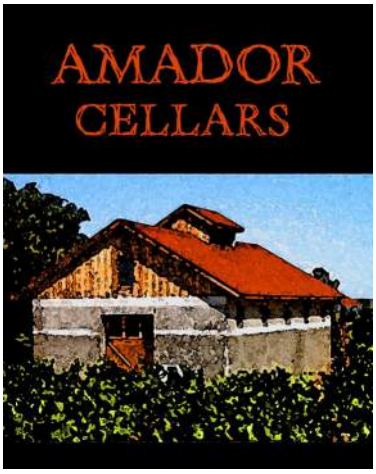


Signature wine label

Winery Building 2003

New Barrel Room 2016

Racking in the new brrl rm

AMADOR CELLARS

Location: Plymouth, CA
Client: Long Family (Larry and Linda, Michael and Ashley)
Design: Integrated Structures, Inc
Engineering: Integrated Structures, Inc.
Contractor: Owner Built
Category: Winery, Barrel Storgae

Nestled in the foothills of California's Sierra Nevadas at the heart of Amador County's lush Shenandoah Valley wine region, is Amador Cellars, early adopters of the Energy Mass™ wall.

The winery building was completed in 2003 and used the passive approach of night ventilation to cool the thermal mass and relies on the insulation to keep the building cool during the day. This first building was winery, tasting room and barrel storage all in the same barn like space. In 2016 the Long family expanded the winery with a 2,800 sf dedicated barrel room. This time opting for the Energy Mass™ active system for space conditioning

The EM active system is radiant cooling surfaces built integrally with the interior membrane of concrete , the system pumps chilled glycol through the concrete and maintains constant cellar temperatures and naturally high humidity levels. The system greatly reduces evaporative losses while using only a fraction of the energy required with conventional winery construction and cooling systems.

Reduced energy requirements and savings associated with less topping off in the high humidity barrel barn have already returned the investment in upfront construction costs and continue to go straight to the wineries bottom line.

Winery Building 2015

Interior of new barrel rm.

STORRS WINERY

Location: Santa Cruz County, CA
Client: Storrs Vinocole (Steve and Pamela Storrs)
Design: Integrated Structures, Inc
Engineering: Integrated Structures, Inc.
Contractor: Black Diamond Builders, Inc. Berkeley, CA
Category: Winery, Barrel Storage, Hospitality

Completed in 2014, the Storrs Winery was constructed in a high seismic zone. Constructed with the Energy Mass™ wall, The winery and barrel storage room was roofed with pre-cast, concrete-foam sandwich panels. The panels utilize radiant tubing in the underside concrete for heating and cooling the space.

Installing the roof panels

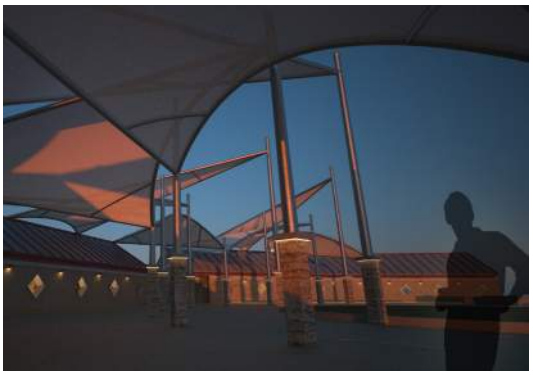
"One look at the towering grey-blue barn—which serves as winery, barrel cellar and tasting room—and you know this is something special. Located on the site of a former quarry, the 6,800 square foot structure was built with 2-foot thick walls made of soy-based foam insulation, held in place with steel rebar and covered in concrete.

It has ceilings so high it feels cathedral-like. Your neck strains to see the sconces Steve fashioned from metal found at a former vineyard property. Doors salvaged from that same property frame the upstairs offices, while other vintage treasures appear throughout."

Laura Ness
Edible Monteray Bay

Bridge Entrance to Galatea Winery

Interior view of wine makers office



Crush pad at dawn

Integral Solar Roof installation

GALATEA ESTATE WINERY

Location: Arroyo Grande, CA
Client: Rancho Arroy Grande L.L.C.
Design: Integrated Structures, Inc
Engineering: Integrated Structures, Inc.
Contractor: Fluid Resource Management, San Luis Obispo, CA
Category: Winery, Barrel Storage, Hospitality

An experiment in timeless architecture for a sustainable future envisioned on a 3,500 acre ranch in Central California, owned and operated by Conway Vineyards.

Galatea Estate Winery will process the fruit grown on site in the 230 acres of planted vineyards. The wine will be processed in small lots to produce high end Rhone blends, with total production topping out at 60,000 cases annually.

Phase one started constructed in 2007, 29,000sf of production facility, with ancillary offices. Unfortunately the global banking crisis hit in 2008 and temporarily stopped the project. Phase two was permitted and included an additional 50,000sf of barrel storage and production with hospitality and tasting rooms.

The winery is designed into a hillside to take utmost advantage of gravity in the wine making process.

All of the structures are built with an early version of the Energy Mass wall system. The roofs of the process buildings were constructed with pre-cast concrete insulated panels with integral hydronic tubing utilizing solar siphoning and night time emissive cooling. The energy of the sun and night sky is managed to maintain perfect temperatures in the barrel rooms offices and tasting room.

Awards and publications:
American Society of Interior Designers, Case studies in sustainable design.
"Rancho Arroyo Grande, a new standard for California wineries."

Sanctuary interior

Interior Pastors' office

Exterior of Sanctuary

School and Pastors' office wing

ST. ANDREW'S CHRISTIAN CHURCH

Location: Olathe, Kansas
Client: St. Andrew Christian Church
Design: Integrated Structures, Inc
Engineering: Integrated Structures, Inc.
Contractor: R.G. Black Consulting

St. Andrews Christian is an open and affirming community of diverse individuals. They have an affiliation with an El Salvadore church which led them to include an entry room constructed with the Energy Mass™ wall. The project is sited on a ten acre parcel adjacent to a nature preserve in a residential sub-urban neighborhood outside of Kansas City.

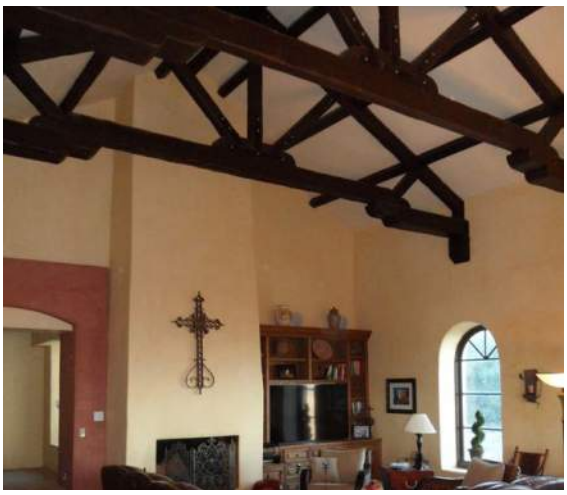
The sanctuary structure is a 3 dimensional structural net made from a series of exposed concrete lattice frames cast on site using tilt up technology to span 60ft.

The Hearth Room was designed and constructed using the earliest version of the Energy Mass™ wall system.

Phase one was completed in 1998 and was the first commercial building using the Energy Mass™ wall

Phase two was undertaken in 2003 and included a Fellowship Hall, class rooms and the administrative offices.

Awards and publications:
American Concrete Institute 2007
Board of Church Extension 1994.



GOUVION VINEYARDS

Murrueta, CA

Client: Dr. Wayne Gouvion
Designer:Integrated Structures, Inc.
Engineering:Integrated Structures, Inc.
Category:Winery, Residential and Hospitality

The Tuscan inspired vineyard 2500sf estate is located in the extreme fire and earth-quake zones of the southern California town of Murrieta, the plans underwent an exhaustive review for earthquake and fire safety by the building department in River-side County.

Built in the hundred degree plus summer days of the Murrieta wine country, the buildings (except the barrel barn) were not mechanically air-conditioned, relying solely on passive night flushing ,insulation and the thermal mass of the Energy Mass™ walls to maintain cool interior temperatures

View from vineyard

Entry to Barrel Storage

Cellar Tasting

LITORAI WINERY

Location: Sebastopol, CA
Client: Littorai Winery (Ted and Hiedi Lemon)
Design: Laurence Ferar and Associates, Portland Oregon
Engineering: Integrated Structures, Inc.
Contractor: Deeton Stanley General Construction, Healdsburgh, CA
Category: Winery, Barrel Storgae

Completed in 2008, the 8,800 SF winery was constructed using an early version of the Energy Mass™ wall. The winery capitalized on the natural diurnal temperature swings of the site using night cooling ventilation combined with thermal mass and insulation. There was a small mechanical system for the barrel storage space to insure consistent temperatures.

Littorai is a small, family owned producer focusing on Chardonnay and Pinot Noir. Ted Lemon had previously worked with some of Burgundy;s top producers, including Romanee-Conti, Dujac and Georges Roumier Ted was named "Wine Maker of the year" in 2010 by the San Francisco Chronicle.

The wines range in price from $49 to $124, consistently score over 90 points and frequently sell out. Ted and Heidi were early adopters of the Energy Mass™ wall, having worked with caves in Europe, they understood the wine making benefits of thermal mass, steady temperatures and humidity.

"**Using the night air cooling system, the average daytime temp in the fermentation hall has been approximately 66 F.**

Winemakers office, even with all those east and south windows has been fluctuating between 66 F and 70 F (the latter on the hottest days). We have never turned on AC. Both it and the lab (which has even less temp fluctuation) are very pleasant spaces."

Ted Lemon, Proprietor

Front elevation Kiler Ridge Frantoio

Western covered arcade

The doors of the Franoio

KILER RIDGE OLIVE FARM

Location: Paso Robles, CA
Client: Kiler Ridge Frantoio and Olive Farm
Design: Integrated Structures, Inc.
Engineering: Integrated Structures, Inc.
Contractor: Flying M Construction, San Luis Obispo, CA
Category: Olive Processing, cold storage and hospiatlity

The 3,500 square foot building was completed in 2010 and includes spaces for olive oil storage, olive oil pressing and a tasting room with a wood fired pizza oven.

The hammermills used to crush the olives operate at a painful 125 decibels – a noise level approximately equal to a jet engine at take-off or a very loud rock concert. In this project the Energy Mass™ wall was chosen not only for its earthquake and fire resistance, but also because of its acoustic qualities. The wall assembly was able to drop the ear-splitting 125-decibel level inside the building to 80 decibels outside (roughly equivalent to the volume of an alarm clock). This reduction in noise exceeded the requirements of zoning and the planning commission to achieve 85 decibels at the property line – over one hundred feet away and made the project possible.

Additionally, the project was initially required to have an automatic sprinkler system installed. After consultation with the building department and the Cal Fire Chief. The jurisdiction approved the project without a sprinkler system because of the four-hour rated exterior bearing walls. The building was designated as a place of refuge, to shelter-in-place should a wildfire sweep through the area.

Entry to Jubaea Estate

Cast Concrete columns and Beams

Night Breezes cooling in the residence

JUBAEA ESTATE

Location: Napa County, CA
Client: Sonoma Mission Farms, LLC
Design: Integrated Structures, Inc.
Engineering: Integrated Structures, Inc.
Contractor: Integrated Structures, Inc.
Category: Residential, Winery, Hospitality

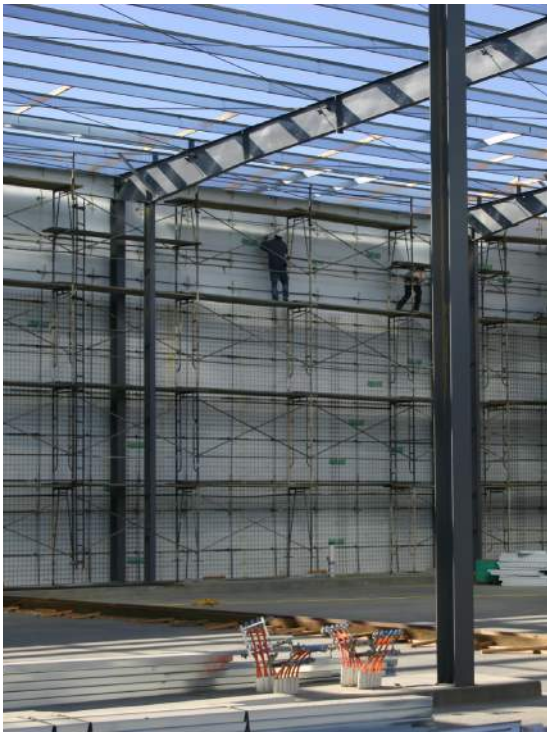
Located atop a ridge in the hills between Sonoma Square and Napa's Oak Knoll District the 7,200 square foot residence showcases many of the architectural, structural and energy efficient features of the Energy Mass™ smart building technology. The original estate residence was completed in 2001 and was the first residence constructed with Energy Mass™ walls.

The forty-acre farm produces an estate wine and olive oil. Uniquely the Estate was designed and constructed without mechanical air conditioning. Cooling was achieved with "night breezes," computer-controlled fans and vents to flush the thermal mass of the home's interior with cool night air. The buildings are heated with radiant technology during the winter.

The Estate experienced the 2014, Napa earthquake, which registered 6.0 on the Richter scale. without showing a single crack in the Energy Mass™ structural walls and no damage to any other part of the building.

In October of 2017 the Estate faced the full force of the Tubbs wildfire. Over $1.5 million dollars in damage was done to the landscaping, vineyard and orchards, much of the landscaping lost was planted around and directly against the walls of the Estate, The fire resistance of the Energy Mass™ walls allowed the buildings to emerge unscathed even where trees burned against the building for over five hours . The Estate is currently under permit to expand an additional 2,000 sf in the Spring of 2020.

Cold Storage bldg. under construction



Cold Storage, under construction

CEO Richard Collins with EM wall mock-up

CALIFORNIA ENDIVE FARMS, COLD STORAGE

Location: Rio Vista, CA
Client: CVS (California Vegetable Specialties)
Design: Integrated Structures, Inc.
Engineering: Integrated Structures, Inc.
Contractor: Modern Building Co., Chico, CA
Category: Cold Storage

Located in Rio Vista California, the California Endive Farms' cold storage facility, built with Energy Mass™ wall system, was completed in 2011 and became the most efficient cold storage building in America.

The building provides a constant 29 °F (+-.5 degrees) freezer storage for chicory roots.

"The first year's <2012> energy bills are in. Even though we were only able to shut down one of the five months during the peak energy windows we realized significant energy cost savings." California Endive Farms captured a 20% savings over the aggressive, internal energy budget and a 63% cost savings over PG&E's initial estimates for the facility."

Richard Collins President
California Endive Farms

The cold storage simulates a forced winter. The roots are then removed to an adjacent warehouse were they sprout a secondary leafy growth. The endive are packaged and sold to local produce distributors and large chains such as Trader Joes.

The Energy Mass™ R-100 walls are 38 feet tall and the facility contains 16,800 sf of storage space.

California Endive Farms remains the largest American producer and a leading worldwide innovator in improving the complex process of growing high quality endives. By reducing the amount of energy used annually and shifting loads to off-peak pricing, California Endive Farms recovered the upfront construction costs in just over four years.

Coke Farm Cold Storage Facility

Bio-phase change matts

COKE ORGANIC FARM COLD STORAGE EXPANSION

Location: San Juan Bautista, CA
Client: Coke Farm
Design: Integrated Structures, Inc.
Engineering: Integrated Structures, Inc.
Contractor: Ausonio Construction, Inc., Castroville, CA
Category: Cold Storage

Coke Farm has been growing organic fruits and vegetables since 1981, when Dale Coke began the farm with a ¼ acre of organic strawberries. Since then, Coke Farm has grown and evolved from an organic farming operation into a thriving organic produce aggregation company. They now work with more than 60 local growers, from 5 acre farms to 1000+ acre ranches.

The cold storage facility expansion, was designed and built with the Energy Mass™ wall active system with an additional, experimental, thermal storage solution. The cooler, provides a stable 34° F for storage of fresh organic produce, which arrives from the Salinas Valley fields, is processed and loaded into the cooler at the time of power utilities highest demand rates.

The high thermal mass storage of the Energy Mass™ wall delays the time when additional cooling is needed, and the R-100 insulation eliminates heat from the exterior skin of the building, reducing the amount of peak demand charges. The coolers' design received a significant grant from the "Rural Energy for America Program" (REAP) for its innovation. This grant, coupled with energy savings from time of use shifting, resulted in an estimated simple payback of 3.9 years. The interior wythe of concrete on the wall was fitted with mats of a bio-phase change material engineered to turn solid at 29 F greatly increasing the thermal storage capability of the wall. Chillers charge the mass during off-peak hours and discharge during the day, cutting cooling costs by as much as 75%.

COKE
FARM

Entrance, Robertson / Zvargulis Residence

Timber ceiling of the meditation studio

Residence from Castle Rock State Park

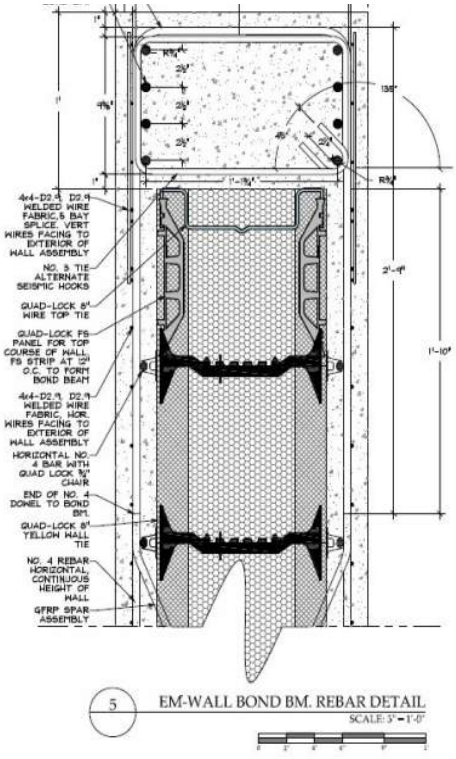
ROBERTSON / ZVARGULIS RESIDENCE

Location: Boulder Creek, CA
Client: Bill Robertson & Ieva Zvargulis
Design: Integrated Structures, Inc.
Engineering: Integrated Structures, Inc.
Contractor: Black Diamond Builders, Inc., Berkeley, CA
Category: Residential

Located several miles along a privately maintained road, perched on an outcropping near the ridge of a heavily forested slope in the Santa Cruz Mountains , the 4,400 SF residence is nestled between the Bear Creek Redwoods Preserve and Castle Rock State Park. The home is constructed with the Energy Mass™ wall system to take advantage of the energy efficient envelope and unparalleled fire-resistant construction. With no connection to the electrical grid possible, the house is 100% energy independent. Completed in 2008, the home anchors the community as a safe refuge in the event of disasters such as wild fires, earthquakes or mudslides

The home owners installed and maintain a helo-pad for Cal Fires emergency responders. The Energy Mass™ building system structure meets the performance standards for fire and earthquake safety required for first response buildings like hospitals and police stations. A radiant system of water tubing was installed integral with the concrete skin on the west facing walls to siphon off the intense late afternoon summer heat,. The sensors and pumps reduce heat load, helping maintain cool temperatures inside the building and the sun's heat energy is put to good use by pre-heating the water used for the domestic hot-water system.

Winery rendering tanks and PV panels, Turnbull Griffen & Haesloop Architects



LONG MEADOW RANCH ESTATE WINERY

Location: St. Helena, CA
Client: LMR Wine Estates, LLC
Design: Turnbull Griffen & Haesloop Architects.
Engineering: Integrated Structures, Inc.
Contractor: Centric General Contractors, Napa, CA
Category: Winery, Barrel Storage

Located in St. Helena, California, the 30,000 SF wine production and barrel storage facility has been designed using the "active version" of the Energy Mass™ Smart Building Technology.

Photovoltaics panels located on the roof generate power to make ice during the day. The ice is stored in a tank within the building and tempered with water.

This solution is run through hydronic tubing in the interior skin of the EM concretewalls, thus cooling the building's interior using a computer controlled radiant refrigeration system.

Silent and efficient, the technology is designed to produce a steady 58° F with no drying effects resulting in an estimated 1 to 2% evaporative loss from the wine barrels. The low energy demands required to run the cooling system gives the option for the winery to disconnect from the electrical grid entirely.

According to several independent sources this will be one of the greenest wineries in the Country. The winery is scheduled to break ground on construction in the Spring of 2020.

Winery rendering, "Vine walls" Turnbull Griffen & Haesloop Architects