

DUBLIN GETS DOUBLE

THE GREEN *Alameda County Fire Department's Dublin Stations 17 and 18 were Built From the Ground Up*



When the City of Dublin set out to

build two new fire stations to serve its rapidly expanding eastern section, they put a priority on energy efficiency, resource conservation and healthier materials. To help

achieve these goals, the City enlisted the assistance of StopWaste.Org and its green design consultants to help develop a unified set of green building measures for both stations.

The design built on the successes of the Alameda County Fire Department's first green building project, San Leandro Fire Station 10 (see companion case study, "Saving Lives, Protecting the Planet"). This time around, green measures were recommended fairly early in the design process, but this was the general contractors' first green building project, and concerns arose over availability of certain materials. But what initially appeared to be a stumbling block became a valuable learning experience: sourcing green building materials sometimes requires a little extra research or persistence in the beginning, but the challenges are manageable when the whole team supports the green goals.

FAST FACTS

LOCATION

Station 17: 6200 Madigan Avenue
Dublin, CA

Station 18: 4800 Fallon Road
Dublin, CA

PARCEL SIZE

Approximately 0.75 acres
per station

BUILDING TYPE

Emergency services

SIZE

Station 17: 11,000 sq. ft.

Station 18: 8,900 sq. ft.

COST

\$4 to \$4.5 million per station

COMPLETION DATE

Station 17: October 2003

Station 18: August 2003

OWNER/DEVELOPER

City of Dublin and Alameda County
Fire Department

ARCHITECT

BSA Architects
San Francisco, CA

GENERAL CONTRACTOR

Station 17: Blackshear
Construction, Benicia, CA

Station 18: W.A. Thomas Co.
Martinez, CA

CONTACT FOR MORE INFO

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Early in the project, for example, medium-density fiberboard (MDF) made with no added formaldehyde was assumed to be unavailable when one of the contractors learned that their usual suppliers didn't carry it. With the help of StopWaste.Org's research team, the contractor was able to find multiple local suppliers, but at a much higher price than standard MDF. As a result, no-added formaldehyde MDF wasn't used for these two fire stations. But a good conversation ensued about the benefits of avoiding formaldehyde and the true cost of cabinets that don't pollute the air. Two years later, this same contractor easily sourced the MDF and other green materials for a new LEED-Gold rated fire station in Pleasanton, spending just a few hundred dollars more for the preferred MDF (see companion case study, "Livermore-Pleasanton Fire Station 4 Gets the Gold").

■ What Makes it Green ■

ENERGY EFFICIENCY & REDUCED CARBON FOOTPRINT

To reduce energy consumption, the two fire stations have highly efficient lighting and heating, ventilation and air conditioning (HVAC) equipment. The systems were commissioned to ensure maximum performance and efficiency. The air conditioning systems have an efficiency rating of 15 to 16 SEER, which exceed California's energy code requirements. Automatic occupancy sensors with photocells control the fluorescent lights so that only occupied rooms are illuminated—and only when needed. In many areas of the station, "electric lights are not on during the day," says assistant chief Brian McKenna, "and when the lights are turned on, the photocells only allow certain banks of lights to be turned on."

Skylights provide additional natural daylighting. All windows have high performance tinting to reduce summer heat gain, along with low-e coatings on the south and west walls for further energy savings, and all are operable to allow for natural cooling on temperate days. Ductwork is insulated and exterior bay and roll doors have weatherstripping for added insulation.

RECYCLING & MATERIALS CONSERVATION

As is now required on all Alameda County municipal projects, 50% of the fire stations' construction waste was kept out of landfills and recycled. Workers sorted materials on the jobsite; regularly scheduled pick-ups and deliveries of recycling boxes facilitated the process.

Both fire stations were built with many recycled-content materials, which reduces the consumption of natural resources and the energy used to process them. The structural concrete contains 30% flyash, a byproduct of coal-fired electricity production. The concrete slabs and driveway bases contain recycled aggregate. Carpets and/or backing contain a minimum of 24% recycled fibers. Flooring in the exercise rooms is made of rubber with recycled content. The ceiling tiles are both recyclable and contain high recycled content.

GREEN at a GLANCE

ENERGY & CLIMATE CHANGE

- HVAC systems exceed California Title 24 requirements (Carrier 38TDB air conditioners, 15 and 16 SEER; Carrier 58 MVP heaters, 94.1% AFUE)
- High efficiency gas domestic water heater (Bradford White 50 gal., 40kBtu with 0.63 energy factor)
- ENERGY STAR® refrigerators (KitchenAid KBRC36FKS) and dishwashers (KitchenAid WhisperQuiet KUD10)
- Compact fluorescent lamps and linear fluorescent T8 lamps with electronic ballasts
- Infrared occupancy sensors for lighting (Watt Stopper)
- High performance windows (PPG Solargreen tint; some low-e coatings)
- Daylighting, skylights and operable windows throughout
- Ducts in unconditioned spaces insulated to at least R4
- Commissioning of HVAC and lighting systems with City staff
- Sub-surface irrigation system (Evaporative Control Systems)

RECYCLING & MATERIALS CONSERVATION

- 50% of jobsite construction and demolition waste recycled
- MDF contains SCS-certified 51% post-industrial recycled wood fiber, 49% recovered wood fiber (Roseburg's Ultrablend)
- Acoustic ceiling tiles have 69% recycled content and are recyclable (Armstrong's Cirrus)
- 30% flyash in concrete
- Recycled aggregate used for slab and driveway base material (Vulcan Materials)
- Exercise room flooring contains recycled content rubber (EcoSurface's Eco Earth Tile)
- Carpets contain minimum 24% recycled fibers and/or backing (Bentley Mills' Mercator)
- Natural linoleum flooring (Forbo Marmoleum with low-VOC adhesive)

IMPROVED AIR & QUALITY

- Low-VOC interior paints (Frazee's Envirokote)
- Water-soluble latex exterior paints (Frazee's Mirro Glide)
- Ozone-friendly air conditioner refrigerant (Puron R-410A)
- Oil/water separator in parking areas (Jensen 320EE, 320 gal.)
- Bio-filtration of parking lot runoff

IMPROVED AIR & WATER QUALITY

The design team selected materials formulated to create less pollution during manufacturing and in the fire stations. Interior surfaces were painted with low-VOC interior paints that reduce harmful fumes, while the buildings' exteriors were painted with water-soluble exterior paints that eliminate the need for toxic solvents for clean-up. Carpets were installed with low-VOC adhesives. Some non-carpeted floors were covered with natural linoleum instead of vinyl. Linoleum is made from renewable resources, and doesn't have the pollution hazards associated with vinyl manufacturing. In other areas, ceramic tile was chosen over vinyl for its durability and low environmental impact compared to vinyl.

Pollutants in the parking lot runoff are kept out of stormwater drains thanks to oil/water separators in the parking areas, as well as a natural biofiltration system that allows rainwater runoff to percolate into vegetation and soil. McKenna notes that the department has had good success with the oil/water separators. "Part of the success that goes along with new systems is educating people as to how the systems are supposed to work and what their environmental benefits are," he notes. "It's very encouraging to see the enthusiasm of folks once they realize what's being accomplished by these green building efforts."

WATER EFFICIENCY

The landscaping around both stations includes lawns to help them fit in with nearby residential neighborhoods. To reduce water use, the lawns are watered with subsurface irrigation, a fairly new technology that reduces water use by irrigating the lawn from underneath. Trays are buried below ground, grass is planted in the trays, and water is injected into the trays at low pressure. This waters the roots without the evaporation waste associated with conventional surface irrigation.

