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INNOVATION

Preplanning Installation of Door and Window Openings
Proves High-Quality Treatment on California Hospital

By M.B. Matthews



PREVENTION IS OFTEN the key to ensuring a clean bill of health later. The same can be said for the construction of the new West Wing of Huntington Hospital in Pasadena, whose aesthetic and physical demands place it at a high level of diagnostic scrutiny.

With six stories, 237,734 square feet of floor space and 128 beds, the new wing nearly doubles the facility's size. Appointed in the style of Old Town Pasadena with ornate cornices, extenuated corbels and finales fit for a hotel, its structure was designed with equal attention.

As a hospital in the state of California, it must comply with the Office of Statewide Health Planning and Development, which aims to ensure the safety of healthcare patients and employees. OSHPD is requiring healthcare facilities to meet seismic standards that are even higher than those used for other buildings in the state.

A particular challenge in complying with these requirements is in the area of steel-framed headers over windows and doors and in shaft walls over mechanical equipment, where traditional methods have become a pain for contractors who

must deal with OSHPD inspections. In Huntington Hospital, the job falls on wall and ceiling contractor The Raymond Co., of Orange, Calif.

In addition to the project's 240,000 lineal feet of steel framing, Raymond is installing the interior drywall, the exterior insulation and finish system (a synthetic stucco), the cementitious fireproofing, and the lath and plaster.

Rich Holloway, Raymond's project manager on the Huntington Hospi-

face will also bulge at those locations, leaving a poor quality finished product.

"If there is a wave in the framing, you see it in the EIFS and in the drywall," Holloway says. "Any time you have a rigid substrate, keeping the framing as smooth as possible is a big victory."

To keep the wall smooth, the individual installer must again take matters into his own hands, typically relying on skill and preference

ProX Header, combines a recessed channel and offset tabs on its internal mounting clips. The header's finished surface is aligned with the adjacent studs so that there is no overlap of material beyond the face of the stud.

"The only place you have to screw them is in the recessed channels," says Raymond's Director of Project Management Jeff Shriver. "So you have a smooth surface to attach your drywall to."

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tal job, says that when installing traditional headers the installer must create a multi-piece combination of studs and tracks, known as a built-up configuration. The makeup of the assembly typically depends on the skill level or preference of the individual handling the stud.

It's Got to Be Smooth

Built-up headers, as the name implies, include overlapping C-shape steel stud and track sections, multiple dog-eared tabs, multiple screws and excessive welding, which combine to create a bulge of material at the corners, Holloway says. When interior drywall or exterior finishes are installed, the finished wall sur-

rather than a standard method of construction, he says. This can mean carving (notching) or rasping out the backside of the drywall 1/8 inch to 1/4 inch to accommodate the protrusion or pounding on the drywall with a hammer until the protrusion penetrates the backside of the substrate.

Holloway says some OSHPD inspectors are interpreting this as damage to the fire-rated substrate and failing the assemblies.

To lose the bulge and pass OSHPD inspections on the Huntington Hospital project, Raymond turned to an all-in-one header solution. The particular assembly chosen, the

The header was invented by Todd Brady, a 25-year veteran of steel-stud framing and drywall installation. He designed it for use on headers with spans longer than 2 feet. His headers will be used on Huntington Hospital's interior construction and another 1,000 will be used on the exterior.

The signature component of the single-piece header is its clip, fabricated from 54-mil (16-gauge) 50 ksi steel. It screws to the jamb and fits within the "W" shaped header, which leaves flush framing members for the following drywall and finishing trades.

Shriver says the Raymond crew



Studs and tracks are commonly hand-cut to size, dog-eared on each end, fastened with multiple screws and often welded, depending on the skill and preference of the installer.

has been more efficient using the single-piece headers—only one or two pieces, depending on the span or load conditions. Once the clips are installed, the header snaps into place, reducing the crew's onsite production time.

A single-piece header has eliminated other problems associated with traditional header construction on the Huntington Hospital project. In addition to reduced on-site header fabrication time and providing a su-

perior-quality smooth finished product, the header also makes for easier inspections, Shriver says.

A Head for Sequencing

Shriver reflects on another of Raymond's current hospital projects, typical of many, in which crew members have welded the headers together in traditional box sections before installing them into the openings. Then, to properly attach the hollow metal door frame to the

metal-stud-framed opening, it was necessary to drill access holes into the welded box sections and make attachments through the holes' drilled headers and into the HMF attachment clips.

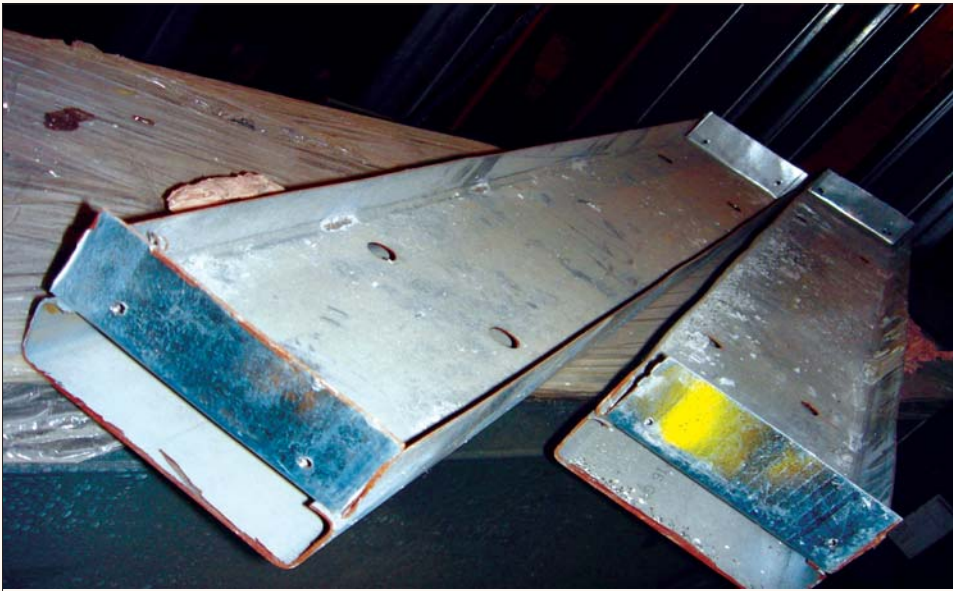
"Inspectors found it difficult to verify that the attachment to the HMF was tight or fully made," he says, "so they stopped passing inspection on this assembly."

In an attempt to solve this inspection problem, the inspectors stopped the construction process around the openings. No more pre-welded assemblies could be installed; instead the components would be installed one piece at a time and the connections would be inspected one piece at a time during the installation process. Once all the attachments and other trades work was completed and inspected the headers would then be welded in place.

"This really delayed things and got them severely out of sequence," Shriver says.

"Now we have deal with the extra fire protection, burned-out door frames and a significant loss of production," Shriver says. "It creates a massive ripple effect and a huge mess. The electrician can't proceed. The insulator can't proceed. Other following trades get even further out of sequence. It has resulted in excessive loss of production for us and other trades, too."

The headers used on the Huntington project are a 54-mil thickness and are required to be only one piece, an open W-shape header, with easy



“Raymond has come out to this project and been proactive in the development and modification of the wall design,” says Birch, who works from the St. Louis, Mo., company’s Newport Beach, Calif., office. “They have teamed up well with the architect and presented all supporting documentation and the reasons for the modifications. All the modifications they have made have been for the betterment of the final product and the progress of the job.”

“The recessed header made for easier installation for the contractor and a more aesthetic appearance over the doors and windows,” says Lorraine Haines, project architect, explaining the material substitution by HDR Inc., the Pasadena firm that designed the new wing of the hospital.

It’s an aesthetic appearance that should endure through the life of the hospital, Brady says. Throughout his career he has seen many walls show early signs of stress and age prematurely at door and window openings, particularly if the drywall substrate has been damaged during the installation. Cracks appear over the doors’ top corners causing unsightly finish problems.

“Over time, a building’s maintenance crew will spend a lot of time adjusting doors and hollow metal frames that were not properly installed, or positively attached, during the construction process,” he says. “The header must be designed and installed to do the job over the life of the building.”



Access holes are drilled in the welded box sections to attach the HMF into the metal-stud framed opening.

access for screw connections and inspection viewing. “This has prevented a lot of delays and problems,” he says.

“Even when the header is used as a two-piece assembly it’s designed in a way that allows you to attach the header to the HMF and wait for the inspection without holding up any adjacent construction,” Brady explains. “Once the inspection is

complete you simply snap the internal insert into the header, without welding.”

The header was one of five material substitutions Raymond was allowed to make on this project. General contractor McCarthy Building Cos. Inc. Senior Project Manager John Birch says Raymond’s innovative modifications have made the difference on this hospital project.



The headers' finished surface is aligned with the adjacent studs so there is no overlap of material beyond the face of the stud.

No Substitute for Raymond

Birch cites the header application as the highlight of Raymond's innovative use of materials.

Undoubtedly Raymond's use of innovative materials is helping it meet an ambitious timeline. Construction began in June 2005 and is expected to conclude in late 2007, with a move-in of early 2008.

"Raymond as the exterior-skin and interior-framing contractor is the driving force in reference to main-

taining schedule," Birch says. "To date, they have performed their duty admirably and appear to continue to do so, hence keeping the project on track."

Former framer Brady also commends Raymond for its forward-thinking use of materials. "Any time you have the opportunity to improve quality and production," he says, "you have to give it a try."

About the Author

M.B. Matthews is a free-lance writer based in Southern California.

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