Combining Functions in Panels

Flutes routed into the insulation layer of a precast concrete insulated sandwich wall panel can be seen in this panel example, which was used for a university dormitory project in Wisconsin.

Q How can I best minimize component pieces and construction time while creating a rainscreen, insulated thermal wall, and vapor barrier with precast concrete wall panels?

A. Specifying noncomposite precast concrete insulated sandwich wall panels provides a number of benefits for a building. These include high energy efficiency, fast construction of load-bearing components to finish the shell quickly, a finished interior wall that requires no additional completion to provide an insulated room, and a durable interior that can withstand impacts. The panels also can be used to create a rainscreen for the building by adding features to the internal insulation layer.

Typically, insulated panels include approximately 3 in. of interior insulation, with an exterior wythe of architectural precast concrete and an internal wythe of structural precast concrete in varying thicknesses according to the specific building functions and specifications. Clients who request a rainscreen format can be provided with that function in the same way that a brick-and-block wall does with the addition of drainage paths and weep holes added to the insulation layer of the precast concrete.

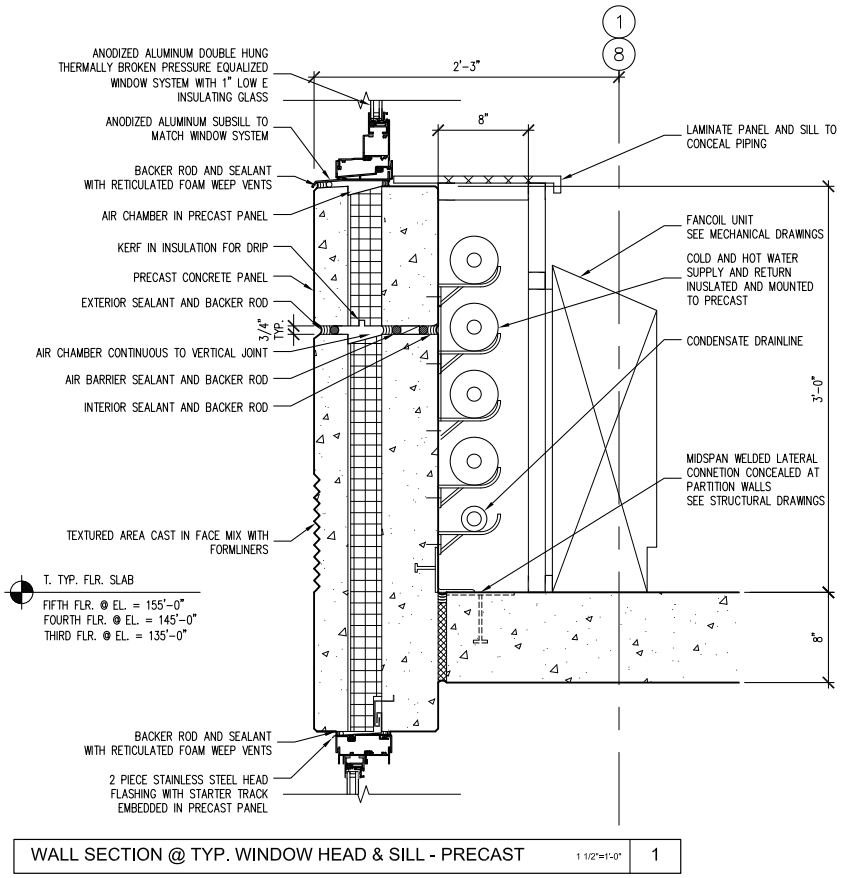
An example can be seen in a college dormitory project created by Booth Hansen, an architecture and planning firm in Chicago, Ill., which collaborated with architect of record Uihlein Wilson Architects in Milwaukee, Wis. A cavity wall was created with a layer of insulation that provided the needed thermal protection as well as the drainage system.

The moisture-carrying system was provided by creating routed flutes in the foam insulation to create drainage channels that direct water toward reticulated foam weeps located in the sealant joints between panels. The filter fabric prevents concrete from filling the drainage channel during the casting process while allowing water to flow through.

Should any water infiltrate into the wall panel through sealant joints or cracks, the water is directed into the flutes and drawn down to weep out at the flashing locations.

If significant articulation is used on the exterior panel, the thickness of the veneer face of the precast concrete panel must be made deeper to completely cover the reinforcement. This is true in any type of panel, and especially so in insulated panels.

This rainscreen application can be created for a variety of building types where owners request it, based on the budget available. The ability to combine these various functions into one component produces time and material savings, which equate to potentially significant cost savings for the project.



This diagram shows the addition of flutes and reticulated weep vents that help the insulated precast concrete panels act as a rainscreen.

More Information

This column answers frequently asked questions about designing, casting, and erecting precast concrete components. This issue's response was provided by George Halik, principal/project manager, and John Birazzi, principal and technical director at Booth Hansen in Chicago, Ill. (www .boothhansen.com). If you have a question about precast concrete components, please send it to Managing Editor Craig Shutt at craigshutt@ameritech.net.