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New school strong on storm safety

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OKLAHOMA CITY – When students arrived Aug. 16 for the first day of classes at the new Canyon Ridge Intermediate School, they entered a facility with five areas designed to withstand tornadoes.

The 104,000-square-foot school at 3600 S. Sara Rd. in Oklahoma City was designed with 5,000 square feet of hardened space, enough room for about 1,000 occupants, said Gary Armbruster, principal and architect with MA+ Architecture.

The school, part of Mustang Public Schools, was planned, designed and under construction before the tornado in May that destroyed two elementary schools in Moore.

Armbruster also designed a six-classroom, 8,000-square-foot expansion of Mustang Creek Elementary School in 2009 that included two classrooms designed as safe rooms.

The Mustang Creek project's safe rooms look similar to regular classrooms. The difference is that each room has a tornado-proof, steel door without windows that can be latched at the top, middle and bottom. There is also another steel door that can be closed and latched in three places in front of the one window in each room, Armbruster said.

Both rooms meet Federal Emergency Management Agency storm shelter requirement. The safe rooms at Mustang Creek were designed to withstand 250-mile-per-hour winds, he said.

The walls and ceilings of the two rooms are concrete.

Money for the Mustang Creek project came from a 2009 \$58 million bond issue.

Armbruster was able to design the safe rooms at Canyon Ridge Intermediate School as part of the original design, but he had to do it quickly.

"They wanted the design done in two months, you usually have six months," he said.

The safe rooms add about 15 percent to the cost, he said.

"It costs a little more but as we've seen it is priceless when you need it," said Sean McDaniel, Mustang Public Schools superintendent.

Canyon Creek's classrooms are designed in four pods. Each pod has one classroom that is also a safe room,



Construction at Canadian Valley Technology Center in Chickasha. COURTESY PHOTO

Armbruster said. When there is a tornado warning, students in each pod can go to the nearby safe room in that pod. The safe rooms also can be used if there is a security issue, he said.

Like the Mustang Creek safe rooms, each of the Canyon Ridge safe rooms has a steel door with no window that latches at the top, middle and bottom. The Canyon Ridge safe rooms have reinforced concrete masonry walls with a concrete lid that is independent of the main building's roof structure, Armbruster said.

Unlike Mustang Creek, which had steel doors that can be closed over the windows, the Canyon Ridge safe rooms have FEMA wind-rated coiling shutters to cover the windows, he said. The shutters are hidden in the ceiling and can be rolled up and down with a lever.

The coiling shutters allow natural daylight into the space for classroom use while still providing protection

from high winds during storms, Armbruster said.

The fifth safe room at Canyon Ridge is the music room. The vault in the administration wing also serves as a hard room.

The music room is adjacent to the cafeteria and near the gymnasium and serves as the safe room for those areas, he said.

MA+ Architecture, which is 45 years old, has included safe rooms in other school designs. Armbruster is a certified education facility planner and served on Lt. Gov. Todd Lamb's committee on school security.

Another MA+ Architecture project in progress is an addition to Canadian Valley Technology Center's health training building in Chickasha. The project includes two classroom with 3,500 square feet designed to FEMA 361 requirements.

The project, which is scheduled for completion in the fall of 2014, includes a

36,000-square-foot addition and remodeling 16,000 square feet of the existing building.

Armbruster said he is also working on the design for replacing the main Canadian Valley Technology Center building in El Reno that was destroyed by a May 31 tornado.

Canadian Valley's 43-year-old El Reno campus is now considered a construction zone and a temporary campus has been established at the former John Holt Chevrolet dealership building in Yukon. The 93,000-square-foot building will house Canadian Valley programs until the rebuilding process is complete in El Reno.

"We need only to look at our two campuses (El Reno and Chickasha) to see the damage that could occur and the value of a safe room," said Greg Winters, Canadian Valley superintendent. "We are committed to making our classrooms the most technologically safe in the country."