Exterior elevator shaft requires fire protection. Tarp enclosure indicates area being fireproofed. Far left photo: Basic fire protection of structural steel on the Renaissance Center is achieved by spray applying the fireproofing to beams.

FIREPROOFING JOB: It’s Detroit’s Biggest

Three contractors joint ventured Detroit’s Renaissance Center fireproofing job, a project backed by 51 major U.S. corporations

It’s Detroit’s largest concrete application, Detroit’s largest fireproofing job, Detroit’s largest real estate project ever: the multimillion dollar Renaissance Center, a 33-acre downtown complex of offices, a hotel, restaurants, shops, and entertainment facilities. Owner is the Renaissance Center Partnership: 51 major corporations. General partner is Detroit Downtown Development Corporation, a subsidiary of Ford Motor Company.

The Center’s first phase is a group of live towers—a 70-story cylindrical, reinforced concrete hotel—tallest building in Michigan and four 39-story, steel-framed, concrete-floored, octagonal office buildings. Over 200,000 yards of lightweight concrete are being pumped into place. The office towers’ beams and columns are being sprayed with 130,000 bags of cementitious plaster structural fire protection.

The fireproofing is Zonolite Monokote, brought to the site in 44-lb. bags riding in flatbed trailers. Its application is a joint venture of three plastering contractors-The Berti Co. and Service Art Co., both of Detroit, and the Chicago-based McNulty Bros. Co. Jack Ferguson, vice president of Berti, is managing the fireproofing operation. A Berti tractor spots a trailer just inside the entranceway, where two men break the bags and pour the contents into two mixers.

Batching three bags to 31 gallons of water, the operators pour the mix into the hoppers of four 30-hp pumps, each of which supplies the gun. Each pump forces its 30 to 40 bag per hour yield through a 2” surge hose and a 2 x 3” bell reducer into a 90° 3” aluminum elbow and a 3” rigid conduit, up to the floor being sprayed. Here the slurry goes through another 90° elbow and reducer, and into a 2” floor hose, then a 1-1/2” whip hose, which brings the mix to a 1-1/4” nozzle with a 9/16” orifice. A parallel air system runs from its ground floor compressor up 1” pipe to a 3/8” hose, which brings air to the nozzle at 20 psi. This aerates the material and gives it the proper pattern. Its dry density is about 18 pcf.

Rolling Platforms

The plasterers spray the fireproofing from rolling platforms, building up to the specified thickness: 1 1/4” on columns of size W10 x 49 to W14 x 228; 7/8” on columns larger than W14 x 228; 1/2” on the beams. The flutes between beam (Continued on Page 31)
and deck above are filled with the fireproofing. To avoid dropouts, the 1-7/8" thickness is usually built up in three applications, the 7/8" in two applications and the 1/2" in one. Plasterers check thickness with depth gauges; foremen double-check. The fireproofing sets to form a hard protective coating, providing a two-hour fire rating on beams and a three-hour rating on columns. On a typical story, with 44 columns and 16,000 sq. ft. of floor, fireproofing was completed in two days, except in extreme weather.

The plasterers worked a few floors below the crews of Mayfair Construction Company, Chicago, which spread lightweight concrete 5" thick on the steel deck. The concrete was batched and mixed by Clawson Concrete Co., Detroit, in a portable plant on Renaissance Center property. Concrete pumpability was increased by the addition of a water-soluble polyethylene oxide polymer in dry powder form. Darex Pumping Aid is added at the batch plant.

The pumping aid is partially credited for achieving pumping heights up to 546 feet.