

Detroit Icon Finds New Life as Mixed-Use Attraction

Long dormant, Free Press building undergoes sweeping overhaul with broad system upgrades.

By RACHEL RUHL
Common Ground
Manheim PA

The 1920s were an era of dramatic social and political change. Al Capone and Babe Ruth reigned, and while the popularity of the radio grew rapidly, those newfangled boxes were still a luxury to many households.

Back in the day, nothing could unseat newspapers as sources of information. One of the biggest and most popular was the *Detroit Free Press*. Home to the daily newspaper was a 15-story, art deco building — now a monument to the Roaring Twenties — constructed in downtown Detroit, circa 1924.

In its prime, the Detroit Free Press building buzzed with excitement, day and night. It continued to do so until 1998, when the newspaper moved to join staffs and production with its sister publication, the *Detroit News*. The big building's been vacant ever since.

On all sides of the empty structure, the city continued to modernize. Skyscrapers rose steadily, but the beautiful limestone masterpiece remained untouched. It no longer towers over nearby structures, but the “Free Press” still retains a dignity that modern buildings never acquired.

Seen from a distance, a central tower is flanked on either side by six-story wings, each with a light well that offers daylight to most corners of the



Now in its 95th year, the 302,000-sq-ft, Art Deco building was once a journalism landmark.

building. An ornate, triumphal arch provides passage into a stately entry with vaulted ceilings, brimming with detailed stonework.

The 302,400-sq-ft. space was once added to a short list of possible sites to replace the Detroit Police headquarters. Another time, it was a candidate for the Michigan central station — both of which were some of the city's efforts at downtown redevelopment.

In 2016, the Detroit Free Press building was purchased by Bedrock, with renovation plans in store. When

fully complete, the building will feature retail, office and residential space.

Bringing on the A Team

For a project of this size, and with requirements to keep it historically sound, the experts involved were not chosen frivolously.

After a thorough bidding and review process, Bedrock chose Troy, MI-based Integrated Design Solutions (IDS) as the engineering firm to support Phase 1 of the project. The mechanical contractor selected for

the job was Lansing-based Limbach Inc. Supplying key mechanical systems for Limbach's work was Troy-based Michigan Air Products (MAP).

Engineers, contractors and suppliers put their heads together to address important historical needs: with its location in a historic district, the Free Press building's sightlines were a primary concern, especially when it came to the potential of any rooftop equipment.

Corey Watts, IDS engineer, says that, in addition to the building's sightline, there were a few other key historical considerations they kept in mind while planning restorations: the storefront area needed to maintain a 50s and 60s era design. On the interior – heating and cooling systems locations needed to be unseen from inside, outside or any other vantage point around the building.

The project was split into multiple phases:

- Phase 1: core and shell;
- Phase 2: residential.

Remaining phases have yet to be determined, as there are still unplanned spaces in the building's design.

From the Ground Up

Of course, to resuscitate any large structure after a 20-year abandonment entails real work — involvement that would require a total gutting of mechanical and electrical systems.

It helped immensely that the building has underground levels. A portion of the basement level is now dedicated to new mechanical systems. The second was chosen to serve as storage space.

The project's general contractor, the Detroit office of Turner Construction Co., called on IDS to handle design of the core and shell phase. The scope of engineering included all the plumbing, HVAC, controls, and clearing the technology and infrastructure "raceways" for lighting, power, and piping that serve the vast array of mechanical systems.



The rooftop units use an induced-draft, closed loop cooler that allowed them to be less prominent on the city skyline.

"The installation team did a phenomenal job accommodating some of those massive obstacles that just couldn't be moved or torn out," **Dominic Paone**, IDS senior vice president, said of Limbach Inc., which was awarded the pipefitting, plumbing and sheet metal trades for the project.

"The Detroit Free Press building is an entirely ducted facility," explained **Jason Mackay**, project manager at Limbach. "There's a large dedicated outside air system (DOAS) with energy recovery wheel. It brings in fresh air – continuously tempered and humidity-controlled – for distribution throughout the structure. It preheats the outdoor air in the winter and cools it on its way in during the summer months."

The entire building is set up as a four-pipe hydronic system – two for chilled water supply and return, and two for hot water. The chosen method for heating and cooling is with fan coil terminal units. All are installed within ducts; some provide heating and cooling while others are just for cooling. The 17 fan coil units installed for the

core-and-shell phase range in size from 14 MBH to 52 MBH for heating and 3 MBH to 146 MBH for cooling.

The fan coils do the brunt of interior space conditioning, an ideal arrangement that accommodates apartment and common space heating and cooling. They also provide plenty of flexibility to maintain continuous comfort around the buildings' shell.

Maintaining Historical Integrity – on the Roof

"When Bedrock put the project out for proposal, they requested one ton per 400 square foot, for a total of 679 tons of cooling," said Watts. Choosing the right rooftop cooler was one of the more important decisions for the mechanical systems team.

EVAPCO's eco-LRWB forced-draft systems increase the internal heat transfer coefficient of the coil and thus its cooling capacity. The spirally finned elliptical tubes increase both wet and dry capacity. A key attribute is water savings through significantly increased ambient dry bulb switchover temperatures.



The evaporative system allowed the contractors to use only three fluid coolers.

System design called for a cooling tower. Yet careful consideration was given to its prominence on the skyline, and the possibility of an evaporative plume.

“After looking at a number of options for the building, we chose an induced-draft, closed-loop cooler because an open system on the roof would occasionally have a visible plume and would also require a higher level of maintenance,” said Watts.

“With a closed-loop system, we’re also able to take advantage of the Michigan weather and utilize the EVAPCO equipment as a free cooling method during winter operation because we have a year-round cooling requirement.”

With sightlines the major concern, three eco-LRWB closed circuit fluid coolers were chosen for a total capacity of 13,458 MBH. Watts especially appreciates their lower profile, that they offer dry and evaporative modes of operation in addition to an integrated recirculating system for the coils.

“The spray pumps come pre-piped and mounted on the units,” said Mackay. “As heat is exchanged in the

chillers from the chilled-water side to the condenser-water side, the heated condenser water then flows to the coils in the fluid coolers to be rejected to the atmosphere.”

Mackay explained that the spray pumps circulate water from the basin of the units to spray over the coils. The module’s fan forces air over the wetted coils, helping to reject heat evaporatively. This process picks up latent heat, which then lowers the temperature of the fluid going back to the chillers.

“We went with the evaporative system because it allowed us to only have three fluid coolers — as opposed to four or five — which would have been an issue with adhering to the historical guidelines concerning the sightline of the building,” said Watts. “The evaporative system gives us the heat rejection we need in order to maintain the loads in the building.”

“With these systems, we get far more cooling than with traditional bare-tube draft coolers,” added Mackay. “The ‘eco’ coolers also save water — a substantial expense — through the significantly increased ambient dry-bulb switchover temperatures.”

The EVAPCO eco coolers arrived with integrated, factory-supplied SAGE® controls — technology that easily interfaces with BACNET for easy integration with the building management system. Limbach sub-contracted the controls work to local Johnson Controls experts.

Integrating the Mechanical Systems

Three 6,000 MBH Aerco Innovation condensing boilers provide hydronic heat for the fan coils and DOAS system. They offer high efficiency operation with 15:1 turndown ratio to help match fluctuating system loads. With each of the boilers running at 50 percent, if one boiler is down and being repaired, the other two can handle the heating load for the building.

There are also two commercial Aerco domestic hot water heaters. Dozens of Carrier modular chillers are grouped into three banks of eight chillers for closer proximity to their areas of responsibility. Each bank of chillers is partnered with an EVAPCO fluid cooler.

Another smart facet of the system design called for primary variable flow with a single, VFD-controlled system pump with secondary pumps to serve the fan coils.

“Aside from it being very efficient, a primary variable flow system also has a very low install cost — and allows us to vary the loads or the flow based on the loads of the building,” explained Watts.

“So, if we only need one fluid cooler with one bank of chillers — we can do just that — and have those pumps turned down to a point where we don’t have to run a system as a full load until the entire building is occupied.”

In its new life, the Detroit Free Press building is now one of many refurbished buildings in downtown Detroit, experiencing a new renaissance not unlike the Roaring Twenties of a century ago. **HPAC**