

# Project Profile

## *Infinity* Provides Unique Building Control for the Mall of America



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*—Rick Deer,  
Coordinator of  
Mechanical Projects,  
Mall of America*

When the doors opened at the Mall of America in the fall of 1992, visitors entered the largest enclosed shopping and entertainment complex in the United States. The Mall of America, a massive 4.2 million square foot facility spanning 78 acres (roughly 90 city blocks) in Bloomington, Minnesota, hosts more than 400 specialty stores and four major anchor department stores, including Bloomingdales, Macy's, Sears, and Nordstrom. And when not shopping, visitors can enjoy entertainment such as a "Camp Snoopy" amusement park, cinemas, nightclubs, a skating pond, bowling alley, batting cages, a 1.2 million gallon walk-through aquarium, and dozens of restaurants.

While the Mall's sheer size and scope delights its visitors, insuring a comfortable and safe climate that includes "hospital-quality" indoor air, poses a big challenge for the Mall's facility management staff—a challenge met successfully by an Andover Controls *Infinity* Building Automation System.

According to Rick Deer, coordinator of mechanical projects at the Mall of America, "The features we wanted in DDC were already incorporated in Andover's *Infinity* system. We were looking for complete control of the Mall with reasonable speed, ease-of-operation, user programmability, and increased operating efficiencies. *Infinity* could deliver all of these requirements. And Andover was also able to provide us with a strong local representative, *Control Services of Minnesota, Inc.*, without whom we would not have been able to pull the project off."

*Infinity* provides direct digital control of all HVAC equipment, lighting control, ramp and traffic control in the parking facilities, and complete integration of smoke and fire alarm systems. From distributed *Infinity* SX 8000 workstations (or from laptop computers plugged in anywhere on the network), operators can monitor and control over 13,000 points, communicating with more than 2,000 distributed stand-alone controllers. The Mall workstations, along with one at the headquarters of Melvin Simon & Associates, the Mall developer, are connected to a central file server to ensure a common database for all system changes and updates.

The Mall's facilities staff has control access to 33 custom rooftop penthouse units through a high-speed LAN. The rooftop system includes 33 evaporative condensing units, providing 13,161 tons of cooling, and 3.1 million cfm. Mall tenants are provided individual VAV box temperature control for their store units and can monitor their equipment via a modem connected to the Mall's LAN.

The *Infinity* system enables a number of unique control capabilities never implemented before in the retail mall industry.

In the 12,750 car parking decks, for example, *Infinity* monitors the traffic in and out of each area, keeping count of the cars and the occupancy percentage of different parking areas while automatically directing new visitors to available parking areas.

Smoke safety was a high priority with the mall owners, so a smoke removal system was interfaced with the fire alarm system. This means if a fire breaks out in the mall, smoke can be isolated within the affected area by pressurizing fresh air in the areas surrounding it. This keeps the smoke safely away from the occupants so they can vacate the area more easily. Elevator shafts and stairwells are also pressurized to provide safe escape routes.

Another unique capability is the specialized lighting control. *Infinity* operators can program the system to schedule lighting during retail hours, with special dimming control to match levels to the "mood" of each street-like shopping area.

Throughout the Mall, terminals are provided for janitorial services, allowing them to override the lighting control program as they work in different areas. This allows the lights to stay on for a programmed amount of time while they complete their work.

"The Mall of America is probably one of the few malls that is 100% direct digital controlled," says Mark Rammer, President of *Control Services of Minnesota*. "One of the benefits of using a DDC system is the high degree of flexibility. You usually don't find out the true characteristics of a building until it's up, so it's very unlikely you are 100% correct in your design the first time. With *Infinity*'s flexibility, we can change the system to meet the individual requirements of Mall tenants by simply changing the software we are programming. This really gives you a fine-tuned, custom building."

The Mall of America is another dramatic illustration of Andover Controls' ability to meet demanding, always changing customer needs.

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## PROJECT AT A GLANCE:

**Project Type:**

HVAC

**Project Name:**

Mall of America

**Location:**

Bloomington, Minnesota

**Market Segment:**

Retail

**Number Of Buildings:**

1

**Total Square Feet:**

4.2 million, spanning 78 acres

**Infinity Equipment Installed:**

36 – CX 9000 network controllers  
4 – SX 8000 workstations  
21 – SCX 900s  
10 – LCX 800s  
90 – LCX 810s  
1500 – TCX 850s  
2 – DCX 250s

**Network:**

4 miles of fiber optics; 21 miles of twisted-pair Infinet

**Applications:**

Temperature control  
Building pressure control  
Smoke removal  
Access control  
Lighting control  
Traffic/parking control

**Total System Points:**

13,000

**Andover Controls Representative:**

Control Services of Minnesota, Inc.

