

LIGHTING

DIMENSIONS

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It was The Official 1980 Winter Olympic Lighting Team's job to light the indoor ice skating events being televised from Lake Placid, N.Y. This job required that two separate lighting systems be installed; one in the Olympic Fieldhouse and another in the Olympic Ice Arena. Both buildings presented a challenge to the team's imagination.

By Steve McKenna

Introduction

Recently LD had the opportunity to talk with Bill McManus, president of McManus Enterprises, a prominent stage lighting and production company. His company was one of three who provided television lighting for the indoor Olympic ice events. Together the three companies made up the Official Winter Olympic Lighting Team — Vanco, McManus, Mix.

Bill discussed the problems the lighting team encountered when designing the lights for the two Olympic ice arenas. Some of the problems they had to deal with were unusual building structure, long hours of light use, and deciding what equipment would most suit their purpose.

Bill painted the following picture of how the Lighting Team tackled the difficulties they faced.

The Olympic Fieldhouse

The first building the team tackled was the fieldhouse. They installed the TV lighting system in September, seven months prior to the start of the games. ABC requested that the lights be available for use early so that they could televise events being held in the fieldhouse as the Olympics approached.

The fieldhouse is a new building that posed some interesting problems for the lighting team:

1) The stands rise steeply with press boxes situated above, almost to the roof. Thus, the lights could only be positioned

at a very steep angle to the ice since positioning them where they would have been most efficient would have interfered with press and audience sight lines.

2) The main cameras were also positioned at relatively steep angles to the ice.

3) Whenever lights are positioned at similar angles to a camera with an ice surface point of source, reflection (the image of the source reflecting off of the ice and into the camera lens) becomes a major concern.

In addition to the problems caused by structural limitations, ABC was positioning a total of 14 stationary cameras at different angles to the ice floor. This many angles made the problem of point of source reflection even more critical.

In order to deal with these considerations the team thought it best to hang 300 par 64 fixtures outboard on each side of the ice and 20 fixtures at each end. The focus of these lights was such that a flat field of light was created over the entire ice surface minimizing shadows. This gave each camera positioned around the arena the best look possible. There was no key light or back light per se. All of the lights were key; this was the most efficient way to satisfy all cameras.

With so many fixtures necessary to effectively light the ice, it was impossible for the designers to omit point of source reflection from all cameras' views. Knowing this, they asked ABC which cameras they would most often go to. The team then focused the lights so that those cameras were not in the path of any one source's reflection.

For the main camera, which was at a similarly steep angle to the ice, the designers minimized point of source reflection by using 8 inch high hats. By placing these on the fixtures directly opposite the main camera, the reflected image of each source was narrowed. They then focused those instruments at cross-angles to the camera so that the lens would never see any source's reflection.

Hanging the Trusses

All fixtures in the Olympic Fieldhouse were hung on triangular steel truss. Each side had two 80 foot sections of truss containing 150 lamps each. The trusses were dead-hung from the ceiling with the help of CM-1 ton chain hoists.

The procedure for dead hanging the trusses was tricky. For each 80 foot section, the riggers first had to climb out onto the ceiling beams and hang three chains, climbing electric hoists spaced 30 feet apart just inboard of the dashers. The hoists were then attached to the trusses and raised to chest height in order that clamping on par cans and securing feeder cables to the truss might be done easily. The hoists were then raised to a height of approximately 40 feet where a second set of hoists which had been hung 25 feet outboard (over the seats) were pulled over and attached to the trusses. Then, as the first set of hoists was slacked off, the second set was pulled up bringing the truss smoothly to its plumb hang. The first set of hoists was then removed and the second set run up to approximately six feet above the final trim height.

The riggers then attached the four permanent rigging cables to the truss, and the hoists were slacked off until the load hung dead on the permanent cables. Finally, the hoists were disconnected from the truss and taken down. This process was repeated three more times.

The Olympic Ice Arena

The Lighting Team had even more drastic structural limitations to consider when designing the lights for the Olympic Ice Arena. This building is shaped much like a Navy Quonset hut. The peak of the roof is only 55 feet with the height above the perimeter of the rink arching down to 36 feet on the south side and 39 feet on the north side.

Unlike the problem of sight lines in the fieldhouse, height was the main limitation

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in the arena, limiting the positioning of the trusses on the outboard of the ice and forcing severely steep focus angles.

To further complicate matters the cameras were also at a similar angle. Fortunately, there were not as many camera positions to worry about as there were in the fieldhouse.

The designer, Bill McManus, decided to overcome the problem of point of source reflection by placing fixtures on four different lines across the ice as well as key and fill in the goal areas.

His concept was to focus the lamps on the half of the ice closest to the fixtures, then provide the complimentary light from

the nearest opposite side.

Point of source reflection was avoided because of the much steeper focus angle of the lights as compared to the cameras. The source reflections bounced off the ice and over the top of the camera lens. This design proved to be very effective for all but those lights directly across from the

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main cameras at mid-ice. This problem was overcome by cross-focusing the fixtures between the rink's blue lines. Cross-focusing turned the lamp barrels at such an angle that the camera could only see the side of the barrel, but not the source.

The 180 fixtures on the outboard sides of the ice were hung on two 190 foot sections of triangular truss. All of these fixtures were shipped to Lake Placid loose and clamped to the truss at set-up.

The fixtures on the inboard trusses were secured within 2 - 19" x 56' box beam grids. When the grid is disassembled all fixtures ride within the box beam sections. All the wiring stays intact and extension cables get coiled on top. The 16' sections, 30" x 30" x 14', that make up the grids stack neatly into one tractor-trailer.

The Proper Equipment

When the Team was developing their design they knew that they had to use durable fixtures and lamps to stand-up to the rigorous Olympic schedule. The lights in each of the two buildings were required to be on for a minimum of 18 hours a day, and at one point the lights were left on for a total of 2 1/2 days. Events and practices were held in these arenas for over three weeks. Therefore, bulb life was a major consideration.

The designers decided to use the Altman Par fixture containing the PAR 64 lamp since the fixture is rugged and durable. The bulb has a lamp-life of over 400 hours.

This set-up performed well for the duration of the games, even though there were quite a few burn-outs as the games progressed. Many of the bulbs had been used for events prior to the Olympics. Changing those burnouts had to be done by the crew in the air on the trusses. This was a tedious task made worse by the fact that maintenance could only be performed between the hours of midnight and six A.M. Events were being held all other times. There were over one-thousand lamps between the two arenas!

The Value of Experience

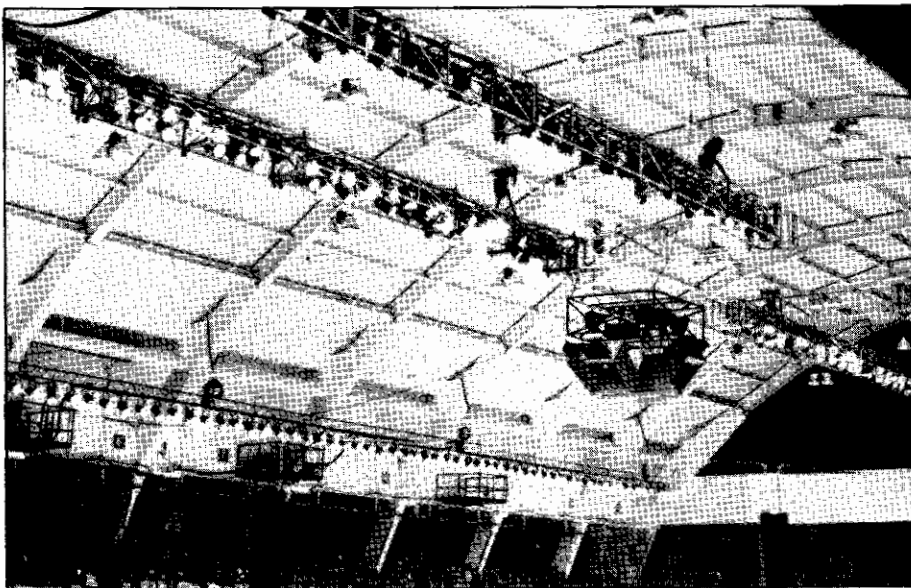
The three companies that made up the Official Olympic Lighting Team had prior experience in trooping equipment from one venue to another. In the case of the Olympic Ice Arena, they had to remove a system in 13 hours that required four days to install. Only a system packaged for touring could make this feat possible. All of the equipment they used was standard

touring stock: power disconnects and junctions, power cables, multi-feeder cables, twofers, fixtures, lamps, trusses, nuts and bolts, hoists, straps, steel cable and road boxes — an enormous amount of expensive equipment.

In addition to the lighting systems installed in the Ice Arenas, McManus Enterprises supplied ABC with TV location

lighting around the Olympic region. They made available two trucks with generators and an array of new HMI fresnels imported from RDS of Japan by the Great American Market.

The key to the overall operation was experience. Together the Official U.S. Lighting Team completed the job despite a number of adverse, unusual conditions. □



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