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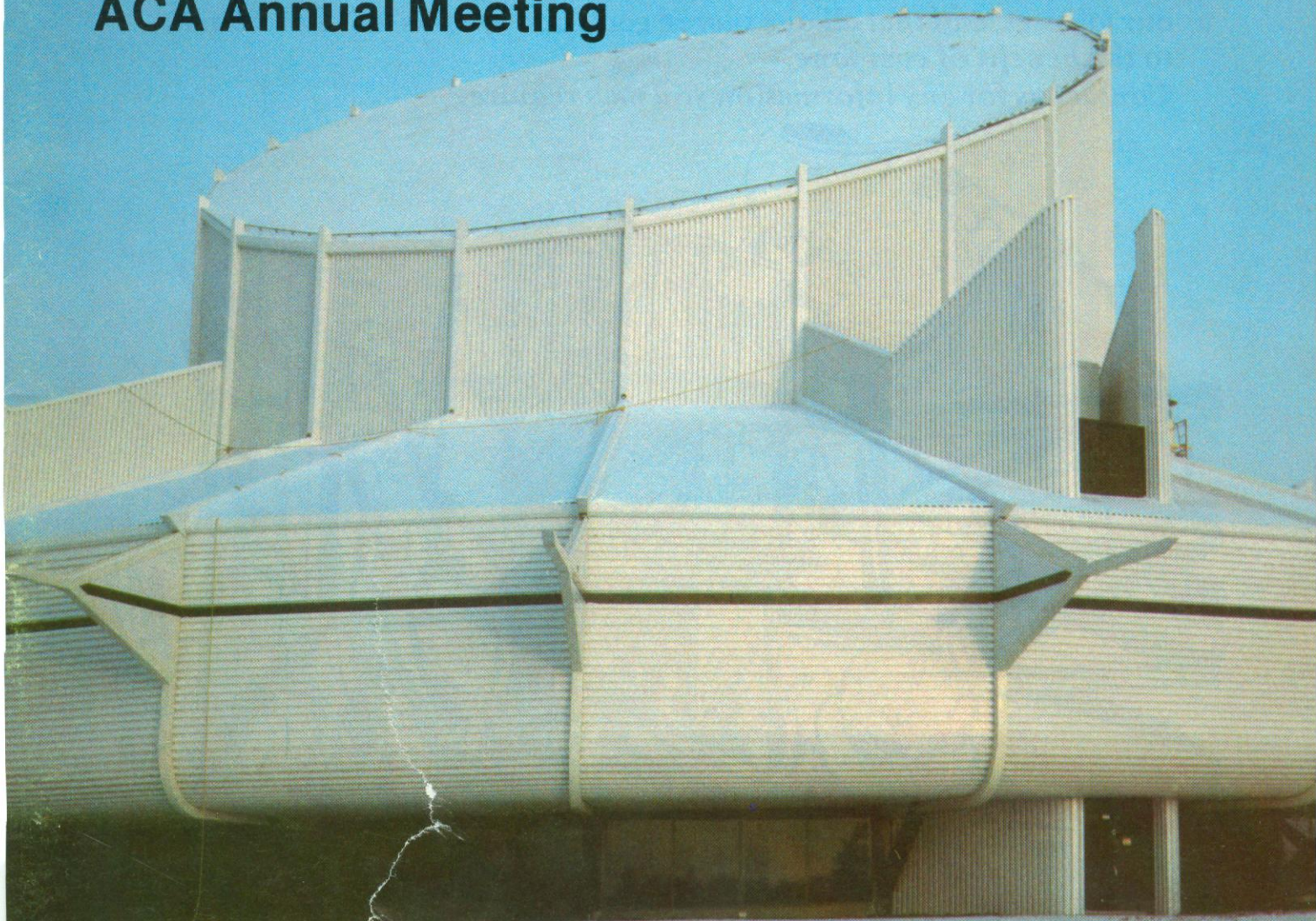
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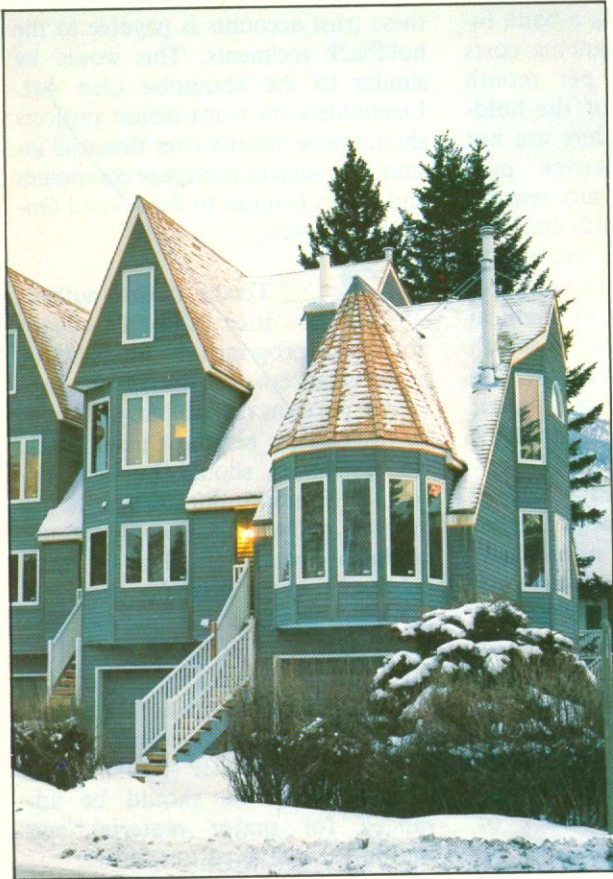
MARCH/APRIL 1984

Space Sciences Centre

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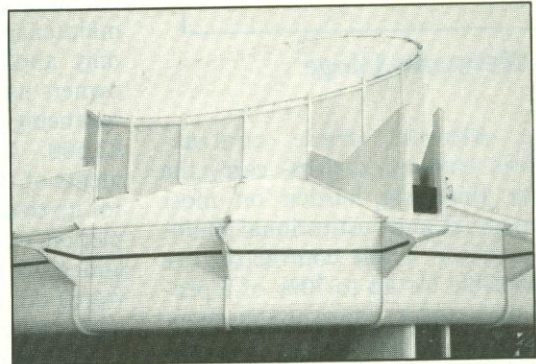
ACA Annual Meeting





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Cardinal's
triumph

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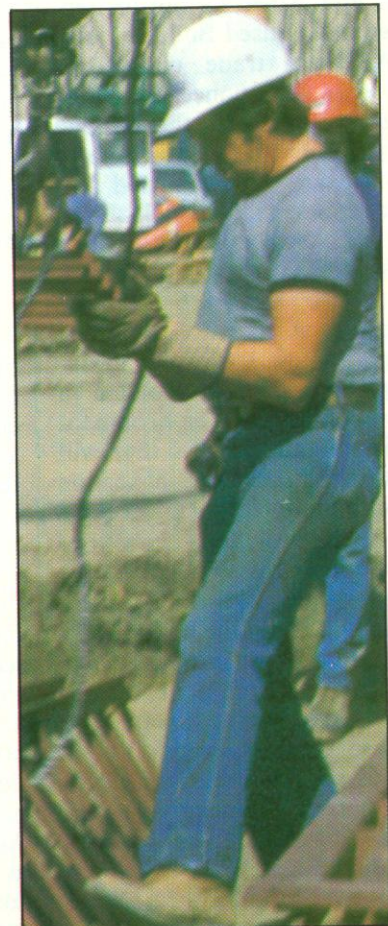
Peace River is one community we
examine in our regional focus.

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Site
preparation

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Alberta CONSTRUCTION '84

PUBLISHED MARCH 1984

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March/April 1984

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COVER PHOTO:

Edmonton's new Space Sciences Centre will open soon, ahead of schedule under budget. In this issue, we examine the unique design and construction process that brought this project to life. (Photo by Warwick Ashley). (Page 8).

Correction: In the last issue of Alberta Construction, we mistakenly put the headline 'Mechanical Contracting' on a story about commissioning. We apologize for any confusion this may have caused our readers. □

Alberta CONSTRUCTION '84

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Published by:
Naylor Communications Ltd.
304 - 10010 - 105 Street
Edmonton, Alberta
T5J 1C4
(403) 428-6164

Advertising enquiries:

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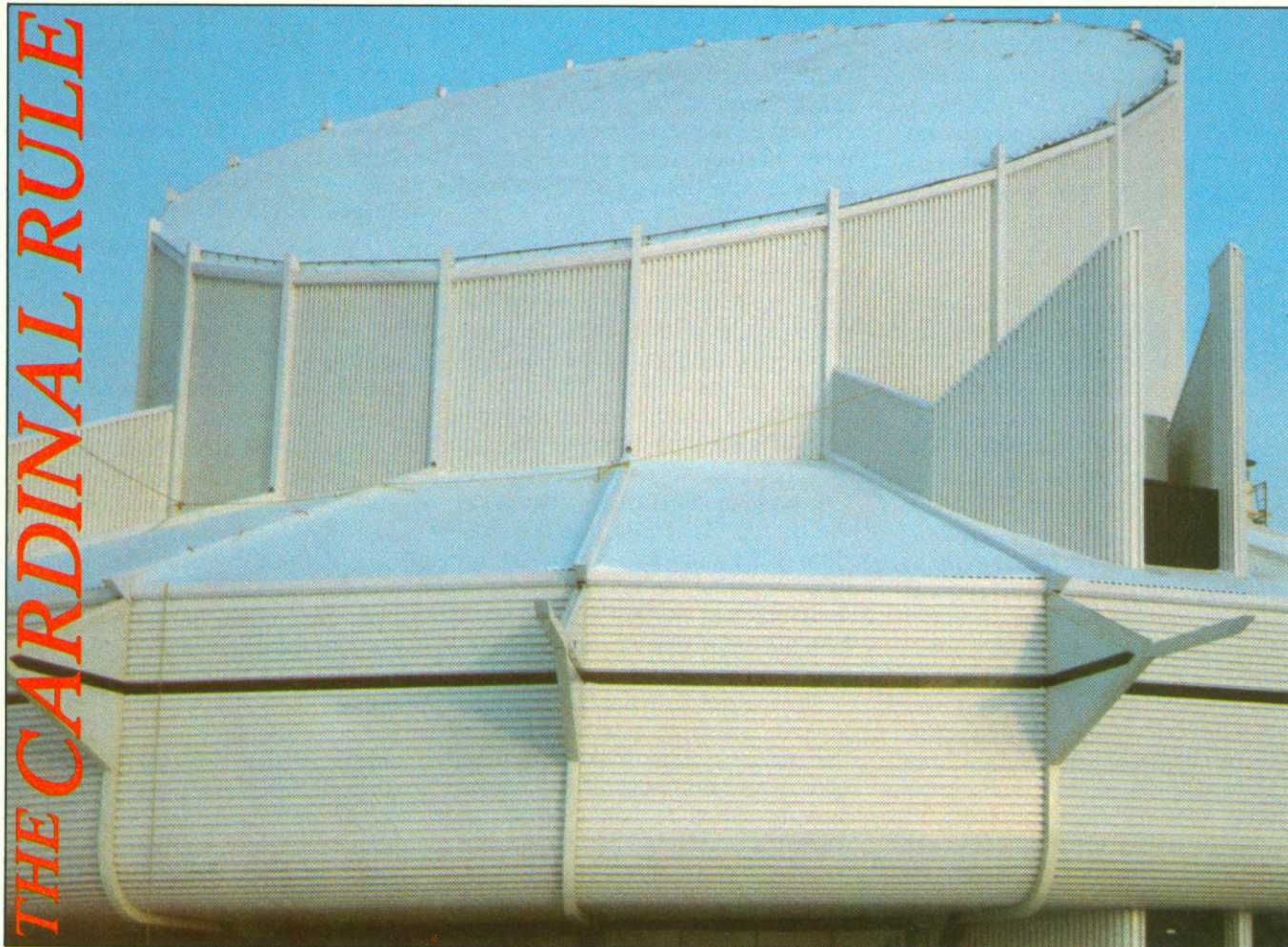
B.C.: Greg Lewis
124 West 8th Street
North Vancouver, B.C.
V7M 3H2
(604) 985-8711

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Annual subscription rate: \$15.00
Additional subscriptions: \$12.00
Address subscription enquiries and changes of address to: Circulation Department, Naylor Communications Ltd., 1494 Regent Avenue West, Winnipeg, Manitoba R2C 3A8 (204) 224-2267. Shipped at Winnipeg.

Second Class Mail Reg. No. 5981
ISSN 0709-2431





Warwick Ashley

Edmonton's Space Sciences Centre

An under-budget dream is realized for the architect and city

Sometimes the factions working on a construction project — architects, contractors, owners and trades — can be likened to Reagan and Andropov sitting down to discuss nuclear disarmament. In spite of similar responsibilities, financial concerns and future goals, each seems decidedly preoccupied with his own interests, partly because the dictates of history state it wise not to trust completely, and partly because it only makes sense to protect yourself.

So it has been in the past in Alberta's construction industry. In spite of sharing one obvious goal — putting up buildings — contractors, ar-

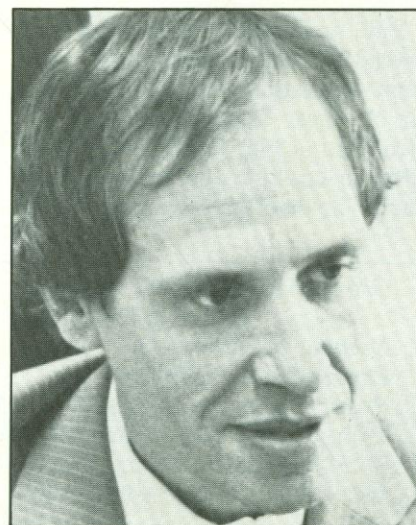
By Lynda Ashley

chitects and the rest have at times made wary bedfellows. However, recently in Edmonton a project was completed that just might alter how business is conducted in the province's industry. It is the new Edmonton Space Sciences Centre, a facility designed by Douglas Cardinal. The \$7.8 million centre is not only beautiful, it is mute testament to the success of an approach to design and construction that incorporates the talent and ideas of contractors and tradesmen, as well as the designer.

Michael Murphy of Bird Construction was the project coordinator for the centre. Having worked with Bird several times in the past, Cardinal approached the company asking for a budget based on his preliminary drawings of the building.

"A building should wrap itself around its user like a shell is wrapped around a sea urchin."

— Douglas Cardinal



PROJECT IN PROGRESS

"He had done a design for the city of Edmonton," Murphy explains, "and it had been priced out by two independent quantity surveyors. The price had come in at about \$14 million, which was considerably over the project budget. So it was in jeopardy of being cancelled because of that. It was a very difficult project to estimate, so I brought in the best people I knew in each of the major trades, and together we put together a price of \$7.8 million."

Satish Rao was project co-ordinator for Cardinal's office. He explains that while the city was impressed with the new, low budget, they were initially skeptical that the centre could be built for the \$7.8 million pricetag. "The city was afraid because of their accountability to the public," Rao says. "But the contractor is the last word. Bird was willing to sign a contract to the effect that the building would not go over the budget. You can imagine the silence in the room when they accounced that."

"We took another look at it," Murphy says, "and at that point confirmed that it could in fact be done for \$7.8 million, but it would have to be done under a very unique system."

Cardinal took the price to the city and resurrected the project. "We then spent six months in discussions with the city," Murphy says, "to be sure that we weren't just blowing smoke, that we meant what we said. It came down to Bird Construction making a firm commitment that the price would be \$7.8 million, and not one cent more."

The company then did the unheard of. "If it was one cent more," Murphy states, "it would be paid for by Bird Construction. We made that commitment, and then the project proceeded."

To insure that it stayed beneath the financial ceiling and fulfilled Cardinal's vision of the building, a new strategy was devised, enlisting the total involvement of all the components. "It was very unique, compared to just about any other project," Murphy explains. "We instituted what is known as a round table approach to design and construction. We basically hand-picked

the best contractors in the business, who in turn hand-picked those people within their organization, those who could deal with this kind of project.

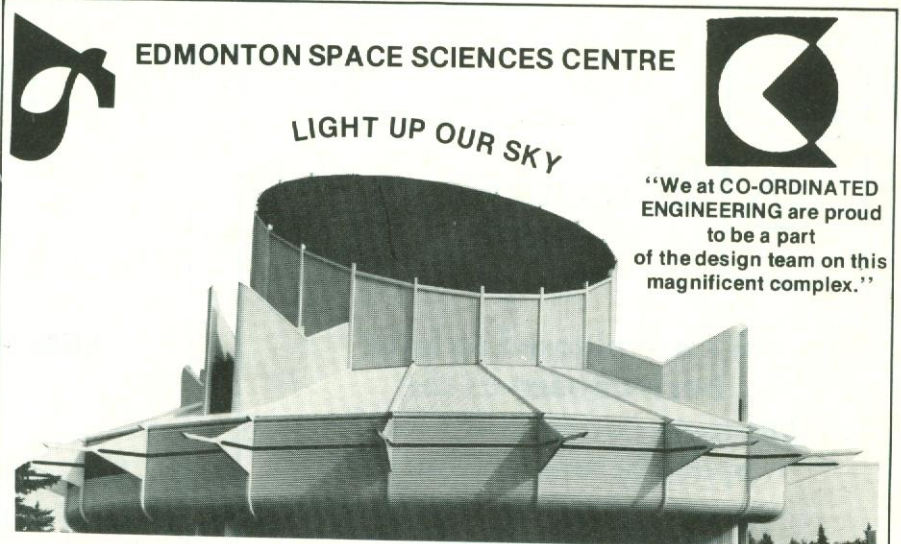
"It not only involved very tight budgets," he elaborates, "but very unique construction. It had to be people who could take a lot of stress over the period of a year, and contractors who could also enter into the design phase. We assembled these people, and all sat around a big table and designed the building. Douglas Cardinal got everything he wanted as far as design was concerned; every time he wanted something, we had a number of ways that particular thing could be done."

The group formed what in corporate circles is known as a think tank. The owner, the Edmonton Space Sciences Foundation, was involved in the process every step of the way.

Murphy admits that the process required "an impossible time schedule," but says it was man-

datory if the building was to be completed at or under budget. "You have to create a situation where there is very high productivity," he states, "and we said that this building had to be designed and built within one year, where normally, a building like that could be designed and built in three years. The owner, designers and contractors all understood that, and we were all prepared to put in that kind of energy. We had one of the best contractors in each field, and they in turn picked that kind of person as their foreman and tradesman."

Murphy has nothing but praise for the way Edmonton's officials handled the project. "The city of Edmonton's co-operation was super," he declares. "They had to make decisions on design approvals for building permits etc., and their co-operation matched ours. Essentially we had a spirit of enthusiasm; contractors that were for the first time sitting across a table from the designers when the building was being designed. And the designers



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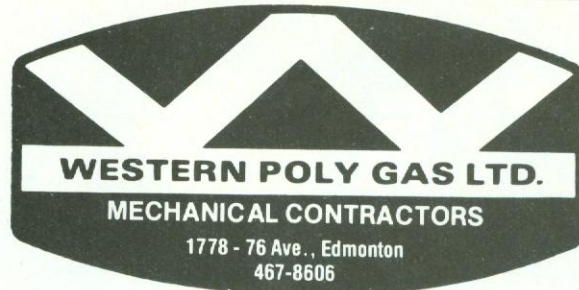
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were asking the contractors for their advice on how to do something."

When construction actually began in March of 1982, the design was not yet completed; another rare aspect of this remarkable project. But it got underway nonetheless, again because of the tight budget that with every passing month was shrinking in dollar value because of inflation.

"If you give a figure of \$7.8 million for a project in 1981 (when the budget was first presented to the city) that a lot of other people feel is worth \$14 million, go through six months of negotiations plus another year to design and build it, your price has to hold for about two years, so you have to accept the inflation too. That's another reason it had to be built quickly."

Murphy credits Jim Butler, the city official responsible for their administration of the project, with eliminating costly delays by expediting the approval of building permits and other necessary documents through the maze of city hall. "Jim was the project manager for the Real Estate and Housing department," explains Murphy, "and no



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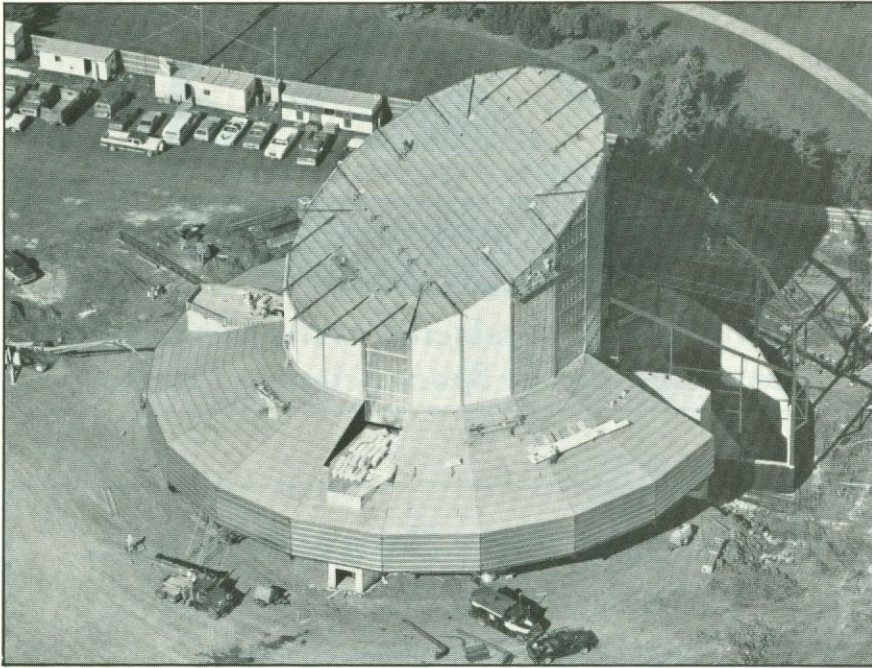
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Gordon Cook

matter what was asked of him, whether it be getting approvals in the time frame we needed them, he got them. And that is very difficult to do because a lot of these decisions involve many, many people."

The process could not have worked without the total support of each faction. "If you build a spirit of unity on a project," Murphy declares, "and you break down the barriers of the traditional adversary

situation between designers, owners and contractors, you can accomplish a hell of a lot. We met our deadline; it was ahead of when the Space Sciences Foundation required the building. They had initially set up their scenario for it to take two years, so basically we had it ready a year ahead of time."

Murphy is not telling inflated P.R. tales when he relates how enormously strong the spirit of unity and cohesiveness was on the project. Since money talks loudly in this day and age, he gives as evidence the example of a contractor on the job who preferred to turn money saved back into the centre, rather than taking it as profit for his firm.

"In the very beginning of the project, in 1981, one of the major contractors gave us an initial price, based on the preliminary drawings," Murphy elaborates. "He held that price through the whole job, and since then there had been a building code change, so there were new requirements that involved getting more materials from him. Besides that, the design that he was to work



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from at the beginning was a capital cost-efficient design, and in working with his consultants and the architect, they had evolved it into a very energy-conserving design.

"Towards the end of the project, I went to him and said, 'I assume you had extra costs that weren't envisaged,' and he said 'yes.' (Part of Bird Construction's commitment to the project included a promise to contractors that in case of financial difficulties, Bird would act as a safety net and help with the problems.) So I said that we should sit down and talk about it, since we had agreed to help. He told me that in his price, he had built in a 10% contingency, but that he was able to accomplish all the work without using it. Then he told me he wanted to give it back; he could have had \$52,000 in his pocket because he did a very good job, but he wanted it to go back into the centre. So I set up a meeting between him and Cardinal, who then had \$52,000 to add into the project because of this contractor. That was the kind of spirit that was on that job."

Murphy declines to name the generous contractor, as his action, while certainly commendable may not have been something his company would condone.

Ultimately the building was completed under budget and well ahead of schedule. "We gave them back \$1,000," Murphy says, "just so we could say we built it for less. But we also gave them 14% more square footage in the building than what was originally contracted for, and we gave them approximately \$450,000 in extras that they didn't have to pay for. That \$52,000 was part of it. So what happened was this: the original proposal may have cost \$14 million, but by sitting down with everyone, using the round table approach, we could do it. It's really a shame that this approach isn't used more. It's a very trusting relationship, because the owner and architect must trust the contractor, and vice versa, because a lot of the construction that went on on that job was not built from finished design plans. It was built from notes and information given to us by the architect in something other than finished form."

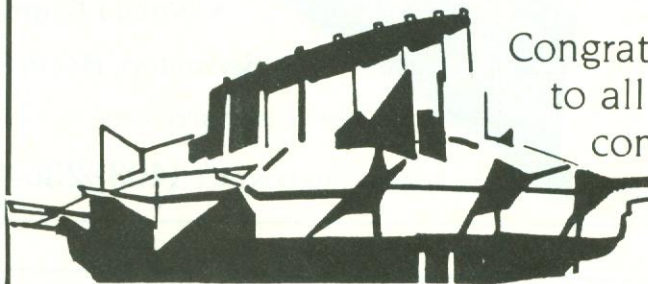
One simple rule was laid down at the outset. "There were going to be no losers on this job," Murphy says simply. "That meant that everyone was going to make a profit; everyone was going to be happy with what he was involved in on the job; happy with the involvement of the other people affecting him; the consultants had to be happy with the design; the owner had to be happy at the end of the job because that is his building and the city of Edmonton had to be hap-

py with it because of their responsibility in the project. And that includes the aldermen who supported it, because that is the first major project that the city of Edmonton has given to a contractor without tendering. They took a major responsibility doing that, using public money."

Murphy says everyone from the contractors to the architect felt a heightened responsibility "not to add to that mess" facing city hall. Personally and professionally, Mur-

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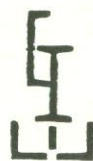
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phy has an enormous respect for Douglas Cardinal. "There is a special relationship between Bird and Doug Cardinal," he says. "We have an enormous respect for him as a designer. We try to give him what he wants; he can come up with a concept, and in many cases it may be very, very difficult, but we try and figure out how to give it to him."

As an example, Murphy mentions the stairwells in the centre. "They were designed five times," he relates, "and finally they were designed as pre-cast panels, and that's very unusual. Doug Cardinal went along with every one of those five designs, because every time we tried to make them better."

The contractors have great respect for Cardinal, enhanced by their close association with him throughout the project, as he does for them. "Douglas probably pushed the contractors farther than anyone has ever pushed them before," allows Murphy, "pushed them into developing ways of accomplishing things. And he has an enormous respect for them, because of the kind of work they did for him and the project."

"It's unfortunate that very large jobs can't always be done this way," Murphy laments. The obvious question is: why not? Given the runaway success of the new centre from all perspectives, it seems only natural that other firms would adopt the round table approach.

"We are the second worst industry for walking forward while looking behind us," says Murphy. "The only industry that is worse is the legal profession, who does everything on precedence. But the construction industry is right behind them. There is an adversary relationship between architects and contractors that has been in existence for a long time."

Rao is more hopeful that the technique will be used on future projects undertaken by other companies. "I believe we set an example," he says, "and many architects have been impressed by it. I think many of them would like to give it a try, although some worry they would have to surrender their position. But it's not a

one-man orchestra; the architect must be part of a team. It worked very naturally for us."

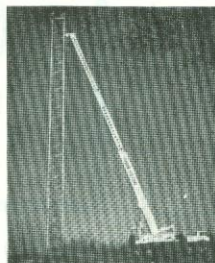
It has yet to be seen if the process can be duplicated on other projects involving different parties. It may be, as Murphy suspects, that it was largely because of the types of people working on the centre that the project succeeded. Hopefully those ingredients will conspire again, with new names and different faces, to help Alberta's buildings be built cost-effectively and co-operatively. □

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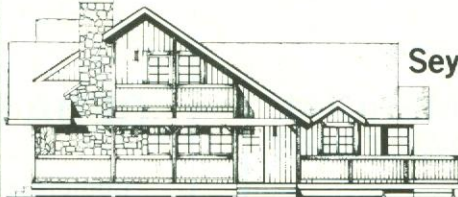
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Cardinal's colleague

A feminist slogan says 'the best man for the job is probably a woman'. In Jane Gehring's case, the phrase is perfectly true

By Lynda Ashley

The construction industry has often been the target of criticism for its apparent reluctance to allow women into its boardrooms and onto its jobsites. While the law promises to uphold a woman's right to choose any career she pleases, the frank reality has been that moving in male-dominated circles can be frustrating and disconcerting. It takes a special kind of woman to carve her place in the corporate world, particularly in architecture and construction, where the old-boy networks are still strongly entrenched.

Jane Gehring is just such a woman. As the manager of finance and administration for architect Douglas Cardinal, she has built her career over the last 14 years in what was then, and primarily still is, a man's field. Her wit and humour clearly help her through potentially awkward situations, and while there are fewer moments like that these days, she is still confronted periodically with men determined to make assumptions about her role, merely because she is a woman.

"It's getting better," Gehring says, "but sometimes I still go on trial for the first little while. Once I've proven myself, often the men become strong allies, they give more support. It's a protective thing, and I suppose you could look at that in a positive or negative way. I look at it in a positive one."

Her job entails managing all financial and contractual aspects of



Gehring at work

the office, including negotiations with clients. It has happened that when Gehring walks into a meeting with contractors and clients, for example, the assumption is that she is a secretary. The notion is quickly put to rest, if not by Gehring herself, then by Douglas Cardinal.

"He is very quick to react to it," she explains, "and he is very sensitive about it. A lot of the reason I've been able to do this is Doug; he has encouraged me and been very supportive. I don't know if other firms would allow it."

Although Gehring's professionalism has been proven repeatedly, she still encounters difficulties with some people unfamiliar with a woman in such a position. The Cardinal firm is now designing the new Museum of Man in Hull, Quebec; a project worth almost \$100 million and by far the largest one the company has handled. Initially, Gehring had some problems with her associates in that province.

"It took three months before they realized I was more than the bookkeeper," she laments. "But it was easier for me to handle this time; eventually it came through to them, but I spent more time being patronized. They simply couldn't relate to me, who is not an architect and a woman on top of that."

MAKING STRIDES

Gehring is becoming, by her own admission, better able to handle such blatantly unfair treatment. "It used to bother me more than it does now," she concedes, "because I've grown much more confident over the years. As a woman in this situation, it's going to happen. I only hope that when I am in a group of men, they can lose the feeling of being invaded by a foreign element."

Her husband's support has been imperative to her success, she says, and her two children consider it the norm to have their mother out working. "My kids ask me," she laughs, "why it is that Jimmy's mother, down the street, stays home and does nothing. They're used to it." While in Hull for meetings about the new museum, someone kidded her husband Ron about being "Mr. Jane Gehring," she says, "and we laughed about it. We each have a role play at times; I go out with him to functions related to work, and he comes with me. He drew the line at going to the spouses' lunch down east, though," she recalls, "because he would have been the only man there." Growing more serious, she states, "not every man has the capacity to be so supportive."

As times progress and attitudes change, Gehring finds fewer problems facing her because of her gender. Still, she becomes annoyed when explaining why she refuses to patronize places like the Petroleum Club, which has female members, but allows them in only at certain times.

"I refuse to take a client to lunch there and have to have someone else sign me in. Women aren't different than men, and nothing should be inhibited in our presence."

Much has been made of the superwoman ideal over the last decade; an idealized notion of a woman easily balancing her marriage, home and career without blinking an eye. When asked how

she has resolved herself to not being the perfect person in all those roles, Gehring sighs and says goodnaturedly, "I haven't resolved it, but I'm comfortable with it now. My work, my kids and my husband can each be number one, as they need it. My husband understands my career responsibilities, and Doug understands my family ones."

Still, Gehring admits to succumbing to what she refers to as "the guilts" once in a while; the feeling of being pressured by society to be more of a full-time mother and less a career woman. "Any woman who has a family and works feels it," she states, "because it is imposed by other people. But my children are no different than the children of mothers who don't work; they are very secure."

The economic independence her job brings is important to her, but Gehring says it is not the most rewarding factor. "It's making my own mark that is important," she

declares, "being something for myself. I had the chance to not work and chose not to. This is a very exciting job; every day there are new experiences and challenges. I'm learning something all the time." □

Women are making strides in the trades as well as management. What follows is a list of the number of female participants in the apprenticeship programs organized through the Apprenticeship Trade and Certification Branch.

Trade	Total
Appliance Serviceman	1
Autobody Mechanic	6
Baker	24
Cabinetmaker	19
Carpenter	26
Communication electrician ...	49
Cook	81
Electrician	37
Electronic technician	4
Glassworker	2
Heavy duty mechanic	5
Instrument mechanic	5
Insulator	32
Machinist	3
Millwright	5
Motor mechanic	12
Painter & decorator	15
Partsman	86
Power lineman	1
Power system electrician	1
Print-graph arts craftsman ...	42
Refrigeration mechanic	1
Sheet metal mechanic	12
Steamfitter	1
Tilesetter	1
Water well driller	1
Welder	26
Total	505



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