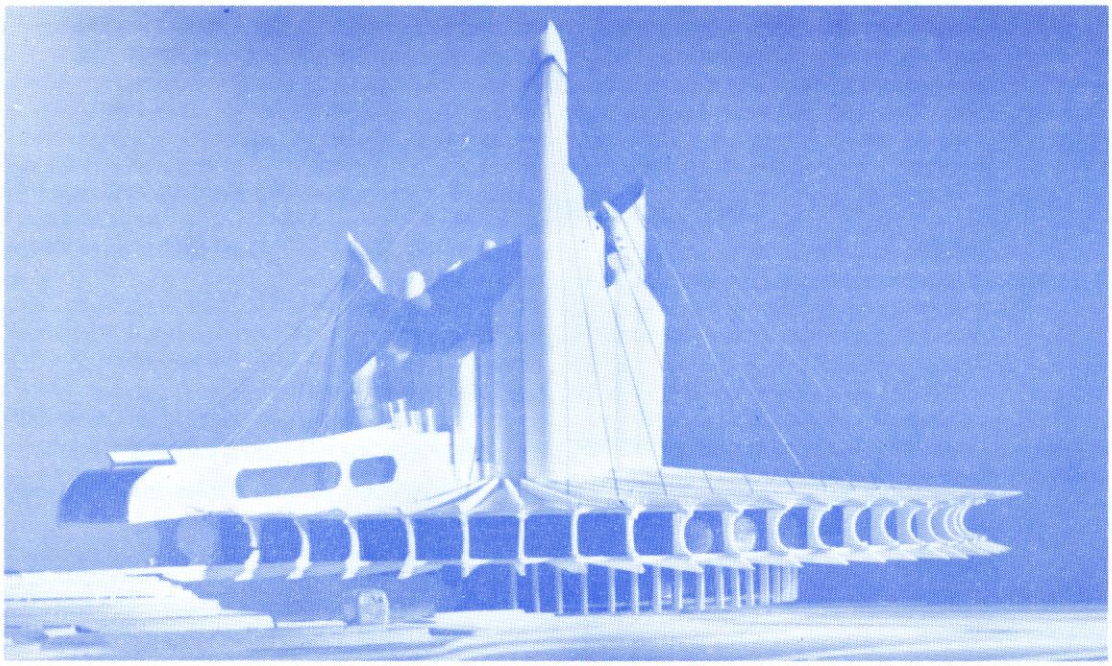

A MODERN CREATION

Douglas Cardinal's new CEADS-CADD effort will be this impressive Edmonton Space Sciences Center in Alberta, Canada. The challenge posed by this engrossing project was to resolve and house the complex and diverse functions of a space sciences center in a shell that captured the spirit of space exploration. At the same time it would give a form to the images of grandeur, intrigue and beauty conjured up in the minds of most people by the presence of space phenomena.

Cardinal Success Story Continues To Spread

(Note: The following is an H & A interview with architect Douglas Cardinal of Edmonton, Alberta Canada)

What method of drafting did you use prior to implementing CEADS-CADD?

"I used the conventional method with many draftsmen producing our ideas and our designs. As the principal designer/-architect, I would design the overall building and distribute it to my architects to develop. Our chief draftsman would allocate the drawing assignments to the various draftsmen. This hierarchy was very difficult to manage. A great part of my time was spent in trying to administer staff functions.

"As you hire more people, labor begins to rule management. You always hear about staff morale but no one talks about boss morale. In a manual enviroment, all of the creative process is channeled to a draftsman's mind and he is the one who actually interprets it to paper. No matter how many years of experience that we have as architects and engineers, there is always a draftsman who has the last say on our drawings ... and it became so frustrating because it was getting harder to produce the quality of work we demand. More people did not necessarily mean more production. Skilled designers and draftsmen are hard to find. Our production problems became worse as our staff requirements grew without the proper skills, experience or commitment. Manual drafting takes so much energy. Architectural drafting demands microscopic attention to countless details. In today's world of inflation and economic pressures, our problems are much more complex. You cannot affort to remain in a manual enviroment with its ever-increasing demands and liabilities."

What other problems were experienced with the drafting method you used *prior* to your implementation of CEADS-CADD?

"First of all, the lack of accuracy. Fudging in details and drawings (door swings that hit toilets); fudging in dimensions that require change orders on the job. Architects are liable for all errors and omissions, but it's impossible to supervise all of the actions of our staff. In a manual enviroment, the credibility of an Achitectural/Engineering firm is on a delicate balance. Management does not have total control. The hierarchy of staff functions does not produce a team effort of creative people. Labor and management seem to work against each other instead of developing proper communications and common goals. The tedious demands of a manual enviroment create a serious division between labor and management. You can never think, act or produce fast enough to stay ahead of our complex problems."

What were the most important factors that ultimately influenced your decision to purchase CEADS-CADD?

"In a building, there are about 50,000 decisions that an architect has to make. Even if you are 99% correct, you can make 500 errors ... and remember that these countless decisions have to be interpreted by your staff. You want to control each element of a design but you don't have the time. The most important factors were to gain this total control of my projects with 100% accuracy. CEADS—CADD could give me the best productivity gain for our return-on-investment con-

(continues on page 7)

Cardinal Success (continued from page 3)

siderations... but I was more impressed with the short learning cycle, the total control, the accuracy and the quality of the final product."

How did you prepare for installation?

"CEADS—CADD is a very powerful tool ... and it's a question of whose hands use this tool. Is it going to be the hands of management or labor? I know that in many firms that have been computerized, upper management doesn't even know what's happening ... and that's unfortunate. I was certain that if I wanted to gain proper control and results, I had to become the system's manager. I had to learn how to run the computer myself, *first*. I felt that if I delegated that responsibility, I would never regain control of my business. If I was going to make an effective change, it had to be a total commitment. When the CEADS—CADD installation was completed, I camped alone with the computer and the training manuals.

Architect Douglas Cardinal

My staff started calling it Doug's toy. In two weeks, I felt totally proficient with all of the CEADS—CADD operations. I called for a meeting with my staff and I gave them a complete demonstration. I declared the following policy statement: "From this day forward, you will never draft on a board again." Each member of my staff was given one week to learn the system ... which would be a non-productive week. In the second week, they would be assigned modular details to produce. I told them that I was only going to pay for one week of non-productive time. If they needed additional time, they must do it at their own expense. We were going to be in full production by the second week. I purchased a four-station system so we had to establish a shift schedule for our entire staff.

"We had a variety of projects in various stages of design development. I decided that we would do everything with CEADS—CADD. Thereby, we could evolve our organization and procedures by a pragmatic analysis of our results. I was confident that CEADS—CADD could do the total job. My entire design and drafting staff had to share this commitment. I was not going to leave part of my staff behind in a manual enviroment; the resultant friction and political division has destroyed the effectiveness of many firms that have computerized their operations in stages or with a piecemeal commitment."

How did you implement your system?

"I actually evolved an overlay system which conceived of a building as modular components and different overlays. Manually, I had been using a photographic process for putting drawings together; this process had saved considerable manual drafting time. We simply continued this proven technique. We even used the coding system that we developed for the overlay system. Thereby, we used the same library and techniques of the overlay system. Every part of a building is divided into modular components. Each element could be readily assembled to produce a detail or an entire floor. We only made one significant change. Recognizing the modular power of CEADS—CADD, we decided to break down our components even further for greater flexibility and usage in future projects. Since we were using the indentical procedures techniques, our staff was able to take CEADS—CADD and run with it. The CEADS—CADD manuals and techniques are excellent. If I could learn from the manuals, I knew that my entire staff could learn from the manuals. If I could change, they could change.

"Most of my people would rise to the occasion ... also, I discovered that *if people succeed in mastering something themselves, they have far more commitment.* In reality, I assisted them very little ... and even our new employees are learning on their own with the CEADS—CADD manuals."

In relation to the amount of time elapsed since installation, have you attained your expected productivity benchmarks? What is the maximum productivity ratio that you expect with CEADS-CADD?

"After a few weeks, you could not take CEADS—CADD away from us ... we will never go back to a manual enviroment. CEADS—CADD has total recall ... and I have never had that much power before. CEADS—CADD is our central brain. We don't have to carry thousands of details and design parameters in our heads. We put *everything* into CEADS—CADD and it never overflows or gets tired. In seconds, we can recall any element of stored information and produce it to any specifications. Today, I have total control and discipline. CEADS—CADD promotes precision and accuracy at every level of production. Before, I was always turning drawings back, saying "you're fudging here, this is inaccurate here, you must have discipline here, you must do this correct, and this drawing isn't the quality that my firm produces." Today, CEADS—CADD has freed us to become more creative ... and the most beautiful thing about those drawings is that the layout is accurate to microscopic precision.

"Most of the time, we are pushing a deadline, and our inflation rate in Alberta (Canada) is 1.2% per month. On a $10 million job, we lose over $100,000 per month to inflation ... our client loses $25,000 every week. Our increased productivity with CEADS—CADD is winning the fight against inflation.

First project

"Our first project on the CEADS—CADD system was the St. Albert Civic Center. This $20 million complex was completed within six months from the date of installation of the CEADS—CADD system ... and it was completed with half the staff normally assigned to this size project. Not only did we gain a significant return-on-investment on this first project, but we had a perfect mathematical model of our design. Using our overlay techniques, we caught a serious design error in the mechanical system which would have cost thousands of dollars to fix in the field. In our previous manual operations, the geometric calculations for the Civic Center would have taken at least two people a period of six months to complete. With

(continues next page)

Cardinal Success

CEADS—CADD, I completed these computations by myself in two weeks ... a 25 to 1 productivity gain.

"This St. Albert Center is a very futuristic design with extreme curvilinear layouts at all levels. The design and drafting parameters for this complex were especially severe when compared to the traditional structures."

Second project

"In this same time period, we received a $3 million school project from the Government. They needed this school project to be completed yesterday; they awarded us the job because of the timely results that we were achieving with CEADS—CADD. In a manual enviroment, this project would have required three to four month but the drawings would be filled with errors. *In a single month*, we turned out a beautifully accurate and complete set of plans ... and my staff had so much fun watching CEADS—CADD do most of the work. Needless to say, the Government was extremely pleased.

The future

"Our best work is just ahead of us. CEADS—CADD will continuously push us to get better and better. There is no other system like it in existence today. I know, because I carefully researched all CADD systems being offered in Canada and the United States. No other CADD system could have produced the Alberta Civic Center plans in the first six months of installation. I am thoroughly enjoying architecture again and I know that my most creative years are ahead of me.

Wang Sales Company Goes Software Resources, Inc.

Wang Sales Company was no longer an appropriate name for this division because of the addition of other hardware lines and the emphasis on software products. Software Resources, Inc. (SRI) is the new name.

CONGRATULATION To Susie and Oscar Ortiz:

Susie had a baby boy in January and his name is John Michael. Mother and baby and daddy are doing great .....

Bits 'N Pieces

SPECIAL ANNOUNCEMENT

Pattern Fill Is Coming. Using any number of pre-selected areas, CEADS—CADD users will be able to readily process any pattern in seconds ... to any scale and orientation. The example above was plotted using the new built-in thermal printer on the HP-2623A Terminal. Watch for the upcoming updates.

Presentations

Jonathan Evans and Hewlett-Packard teamed up in early April to make several presentation at a University of Wisconsin seminar.

Over 100 practitioners took part in the two-day course that included architects, engineers, contractors and educators. Mr. Evans, demonstrated his Shreveport, La. firm's production on an Holguin system.

Presentations made included: "Making the Transition From Overlay Drafting to Computer-Aided Drafting in a Small Firm" and "Transition to Computer-Aided Production".

The Holguin system will be an item of discussion this summer when the annual ASEE Conference is held at Texas A & M University.

A representative of the Walter P. Moore firm in Houston will take part in a panel discussion "What's Happening With Computer-Aided Design in Civil Engineering Practice and Education".

The meeting for the American Society for Engineering Education is set for June 21. Conference directors are assuring presentors that this session is sure to generate a great deal of interest among civil engineering educators desiring to incorporate CAD into their courses.

WELCOME: Federico Gonzalez

Federico (Fred) is joining the sales force, concentrating on Mexico. Fred is married to Maria Eugenia and they have a baby daughter.

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