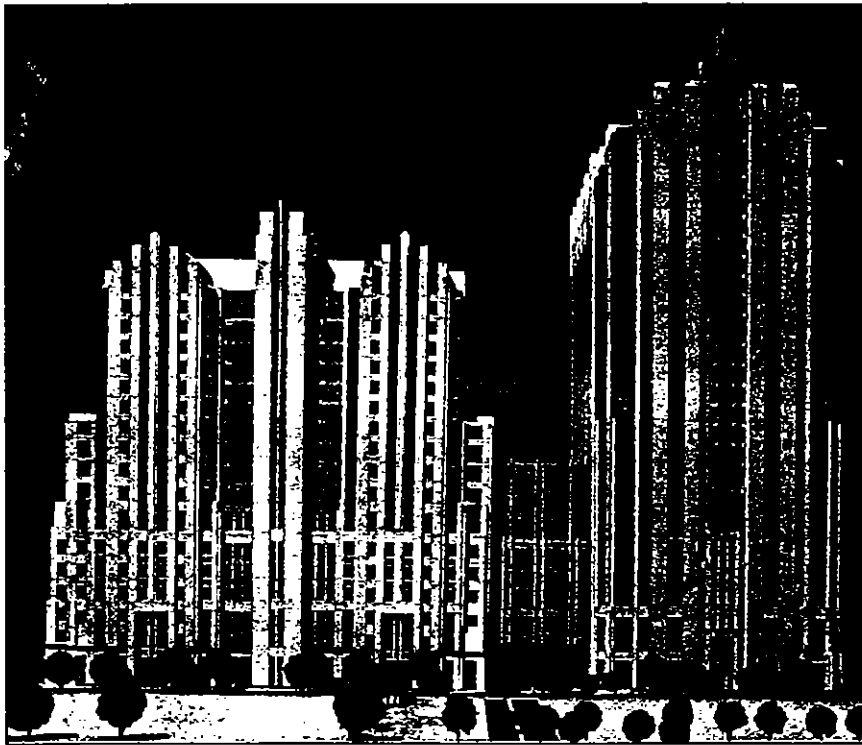


# Northwestern Memorial caring for today, building for tomorrow



Looking south from Huron St., the 17-story Feinberg Pavilion for inpatient care is shown on the left, and to the right is the 22-story Jack and Dollie Galter Ambulatory Care Pavilion. (Rendering courtesy NMH)

by Tom Hale

**T**he largest private construction project in Illinois and one of the largest medical center construction projects in the nation is taking place in downtown Chicago.

Northwestern Memorial Hospital (NMH), in cooperation with Northwestern University, Northwestern University Medical School and the Northwestern Medical Faculty Foundation, is constructing a new two-million-square-foot, state-of-the-art hospital and ambulatory care center that will be equipped to deliver advanced inpatient and outpatient services. NMH says the new center will serve as a model for health care delivery in the next century.

The \$580 million redevelopment

project — being constructed within the existing six-block medical center campus on a three-acre site bordered by Fairbanks Court and Erie, Huron and St. Clair streets in the heart of Chicago's Streeterville neighborhood — will replace medical facilities dating back to the 1920s.

The new medical center will consolidate in a single location inpatient and outpatient services currently offered at three major buildings and at more than 20 satellite sites on the Streeterville campus.

"We are transplanting existing capabilities from the buildings and the satellites into one new, integrated facility, which has some flexibility built into it to respond to future changes in health care," says John Westcott, vice president of NMH's redevelopment project.

Power/CRSS, a project-specific joint venture of Power Contracting & Engineering Corp., Schaumburg, Ill. and CRSS Constructors, Inc., a subsidiary of Jacobs Engineering, Denver, is the construction manager.

Power/CRSS is facilitating and coordinating the work of approximately 400 construction professionals and workers. This workforce is expected to increase to 700 members by fall 1997, according to Pat Newman, project director for Power/CRSS.

Newman adds, "Power/CRSS is utilizing a state-of-the-art project control system, developed in house specifically for this project — to manage the monumental volume of paperwork generated by this project."

Construction — involving about 60 prime contracts — is proceeding toward a late 1998 completion date. NMH anticipates a spring 1999 grand opening.

The redevelopment project is taking shape, with three Link-Belt tower cranes hovering over the site. Construction workers are putting up over 17,000 tons of steel to create the building's steel structure. That's equal to the amount of steel in three average Chicago skyscrapers. When the last steel beam is set in place this fall, the Feinberg Pavilion for inpatient care on the east end of the site will be 17 stories high, and the Jack and Dollie Galter Ambulatory Care Pavilion on the west will tower 22 stories.

Newman says the medical center is being built with a composite structural system. "In addition to the thousands of tons of steel, we are using shear studs to fuse the concrete floor slab to the steel frame, — thereby creating a structural diaphragm per floor," he says. "On the exterior, we are installing precast

panels (sand color) and curtain-wall."

Steel erection, which began in mid-February, is scheduled to be topped out before Thanksgiving, and concrete work will finish shortly after that. "We want to have the first 10 floors enclosed by December 1996 so that the interior finish trades can proceed through the winter months," Newman says. "The project will be completely enclosed by April 1997."

Existing Streeterville architecture influenced the design of the facility, which is a blend of neo-gothic and contemporary elements. What Ellerbe Becket/HOK (a joint venture of Ellerbe Becket, Minneapolis, and Hellmuth, Obata & Kassabaum, Inc., St. Louis) designed and Power/CRSS is building is an eight-story base topped by two towers.

The base of the building will comprise three floors mainly devoted to administrative offices and public spaces, and another five floors of diagnostic and therapeutic services.

On top of the eight-floor base will sit two towers: a nine-floor inpatient tower with 400 medical-surgical beds and 96 intensive care beds; and a 14-story ambulatory care tower that will house the Northwestern Memorial Faculty Foundation, a 400-member physician group, along with 200 other Northwestern Memorial physicians.

Northwestern Memorial is the primary teaching hospital for the



Pat Newman, project director for Power/CRSS, and John Westcott, vice president of Northwestern Memorial Hospital's redevelopment project.



Link-Belt tower crane lifts material on the downtown Chicago site. (Photo by Tom Hale)

Northwestern University Medical School. It is a member of the Northwestern Healthcare Network and is widely recognized as one of the nation's pre-eminent academic medical centers. NMH's one-million-square-foot inpatient pavilion will support more than 26,000 annual patient admissions, and the one-million-square-foot ambulatory care facility will support more than 800,000 annual patient visits.

Special features of NMH's new medical center include: all new diagnostic and treatment facilities supporting comprehensive ambulatory surgery, transplantation, clinical research, trauma center, clinical oncology, cardiology, neurosciences and a blood donor center.

The architectural team of Ellerbe Becket/HOK, along with Chicago affiliates and associates VOA Associates Inc., Johnson & Lee Architects/Planners and Environmental Systems Design Inc., designed the building to be as flexible as possible.

On the diagnostic and therapeutic floors, the separation between inpatient and outpatient care can easily be moved if and when outpatient activity grows beyond current expectations. Also, medical-surgical

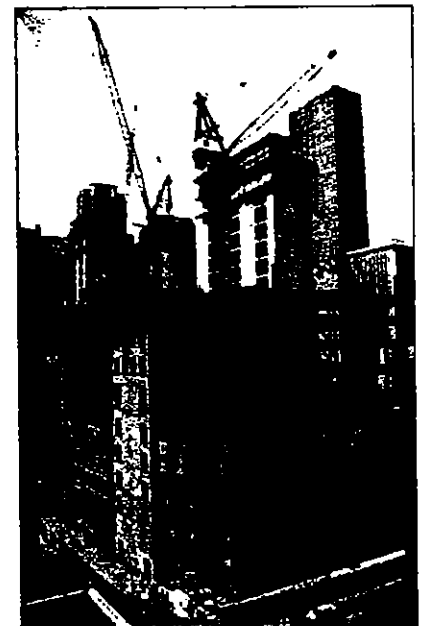
units on one inpatient floor are being built according to the intensive care unit floor plan, so that they can easily be converted if patient acuity increases.

NMH chose to build the medical center out of steel rather than concrete (concrete is the norm for most other buildings in Chicago) because "it is more flexible," Westcott says. "It is a lot easier to reconfigure a floor with a steel building."

The center will include features like fiber-optic cabling and ample room above ceilings and between walls to ensure that NMH will be able to accommodate the kinds of medical and building system technologies it may need in the future.

NMH officials decided to build a replacement hospital in 1988. "We looked at how we were keeping pace with current and anticipated health care trends," states Westcott. "We recognized the growth in outpatient care and the reduction in lengths of stay. Within inpatient care, we saw the emphasis shift toward non-invasive and less-invasive procedures."

"Health care," he continued, "has changed enormously. We are now



Mid-August construction perspective — looking west from Erie St. — of the new medical center. (Photo by Tom Hale)



Ironworkers are erecting over 17,000 tons of steel on the structure. (Photo by Tom Hale)

performing 60 to 70 percent outpatient surgeries, compared to 30 percent 10 to 15 years ago. So, we needed to have the right physical envelope to handle this change in the delivery of health care, plus provide for the new technologies that we are seeing today."

Existing facilities, such as the Passavant and Wesley pavilions, constructed in 1926 and 1941, respectively, were limited by mechanical systems and insufficient capacity for future expansion.

So, in 1990-91, Westcott and other members of his staff visited 17 hospitals from coast to coast to study models for the redevelopment project. "We talked to owners and architects about construction management, equipment procurement, and about what seemed to work and what didn't seem to work concerning the operational

## A level playing field

**F**air and consistent is the description of the bidding process for Northwest Memorial Hospital's (NMH) redevelopment project.

"Getting the right people to bid the job," says Pat Newman, project director for Power/CRSS, construction manager for the project, "is why we prequalify each contractor. Our goal from this process is to gain a high level of confidence going into the bid, knowing that we would be willing to contract with any of the bidders."

Newman says three to five companies are prequalified to bid on each contract. "We make extensive efforts to prequalify the contractors, studying many issues such as relative experience, financial capabilities, minority participation programs, safety rating," he says.

Then, "we make it a level playing field for everyone. During the bid process, Power/CRSS con-

sults with all the contractors to ensure that all contractors are bidding the same job. This extra effort reduces the contractor's uncertainty about putting their bids together. "We facilitate the bid process by providing the job, not changing it," Newman says.

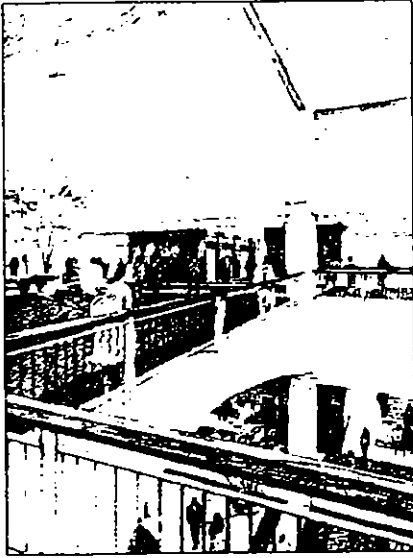
"On bid day, we call in all the bids for correct scope and call in the low bidder for scope review. We do not call in the third bidder to play off the second low bidder to play off the first low bidder for a lower number. The number is the number, and we do not share bid information with any of the other bidders," Newman says.

Newman says, "Some people at the beginning of the process didn't believe that we were going to be consistent with the process. For instance, one of the local favorites on one of the bids wasn't the low bidder. They wanted to negotiate their price, and found out they

couldn't. After that, word hit the streets pretty quickly that we don't play that game."

In addition to the bidding process, NMH and Power/CRSS believe in treating the contractors fairly across the board—through change orders and payments. "My project management and engineers go through change orders with every prime contractor once a month before we pay out," says Newman. "The contractor knows what we are going to approve, what we are going to pay for, and what we are not going to pay for."

Newman says he has heard reports that some contractors have been very pleased with the fair and equitable manner in which they have been treated. "NMH and Power/CRSS have a plan," Newman says, "I have never heard a complaint from contractors about the way we are doing this project that we are only going to build one in Chicago." □



Overlooking the main lobby, Galter Pavilion. The vaulted ceilings here and in the Feinberg Pavilion recall Wesley Pavilion. The vaults also divide the large spaces into smaller, more comfortable areas, while the three-story atrium creates light and openness. (Illustration courtesy NMH)

characteristics of their hospitals."

In 1993, work was initiated on the redevelopment project, with construction of two 12-story parking garages — one directly north of the new medical center site between Huron and Superior streets, and the other further east at 321 E. Erie. The garages, which are operated by Northwestern University, can accommodate 3,200 cars.

Garage construction was completed in September 1994 by Stein & Co. — the construction manager, and James McHugh Construction Co. — the general contractor. Walker Parking Consultants Engineers Inc. served as the parking facilities architect.

Following an October 1994 groundbreaking, Power/CRSS began work on the medical center site, removing an existing parking structure. "The garage took three to four months to demolish," says Newman. "After we knocked it down and cleaned up everything,

the first thing we did was to start the slurry wall, followed by excavation and foundation work."

Bencor Corp., Dallas, built a massive slurry wall around the entire site to shield the new medical center from the waters of Lake Michigan and the Chicago River. The 1,600-foot-long by two-foot retaining slurry wall reaches down 40 feet below ground level, and required 5,000 cubic yards of concrete — about 600 truck loads.

Lindahl Bros. performed excavation on the big site. "We had a 42- to 44-foot cut, removing approximately 120,000 square feet," Newman says. "During excavation we had a truck in and out of this site every

five minutes. At our peak, we were running about 130 to 140 trucks a day here."

The medical center will be supported by 197 caissons that range from four to nine feet in diameter and extend about 80 feet into the ground, according to Newman. Case Foundation Co. completed this work in mid-1995, and excavation was finished shortly after that.

"Then, we awarded the steel, pre-cast and cast-in-place concrete in August 1995," says Newman.

He adds, "We are running the job within the schedule and budget parameters formulated in 1992."

During an early August visit by *Construction Digest*, steel, concrete

## Good neighbor policy

**N**orthwestern Memorial Hospital and the contractors building the new medical center are doing everything possible to keep Streeterville clean, safe and orderly during construction. Here's how:

- **Barricade:** A barricade around the project protects passersby.

- **Trucks:** Trucks bringing material on or off the site are covered with tarps. "This is part of our good neighbor policy of trying to keep the city streets clean," points out John Westcott, vice president for Northwestern Memorial's redevelopment project. Before leaving the site, trucks pass through a high-pressure wheel-washing system, and the streets are regularly swept and hosed down to take care of dirt or mud.

- **Traffic:** A construction lane inside the barricade gets trucks off the streets faster, helping reduce congestion. To help keep traffic flowing smoothly, construction vehicles are prohibited from double-parking on the streets surrounding the site. "We have 40 trucks, minimum, coming into

this job a day, and on some days over 100 trucks," says Pat Newman, project director for Power/CRSS. "There are no trucks staged on the side streets. They are all staged inside."

- **Safety program:** All construction workers receive safety training before beginning work on the project, and there are safety directors on site to enforce the rules. "We control the safety aspect of the job," Newman says. "Workers have to adhere to very strict guidelines."

Every single worker — well over 5,000 people — receives an extensive (an hour-and-a-half-long) safety orientation, conducted not only by the contractor's safety director but also by the owner's safety director as to what the expectations are for a safe project.

- **Work hours:** Crews do not work before 8 a.m. or after 9 p.m., although they frequently are on the site before or after hours making preparations or shutting down the day's activities. Noise levels are kept at permissible levels. □

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and mechanical crews were on site, with the total workforce totalling about 340 workers.

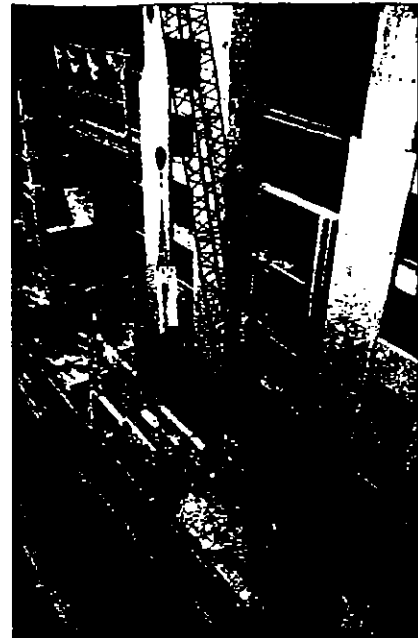
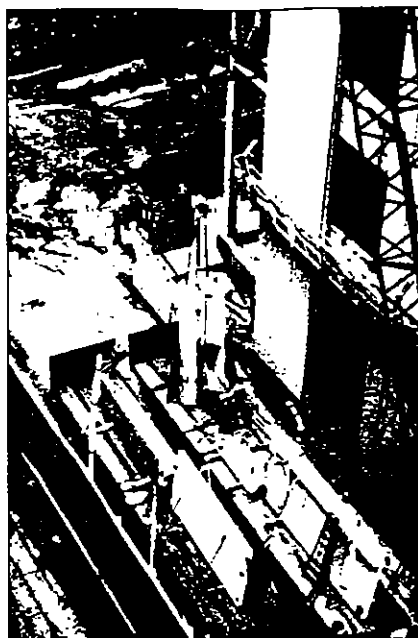
The project is a "semi" fast-track job. "A lot of people like to use the word fast-track on projects," explains Newman. "In many cases they are, but on other projects they aren't — they are normal jobs. This project falls somewhere in-between. We put out bid packages on systems that are completely designed, such as slurry walls, caissons, structural steel, etc., while finishing up the design on other areas."

Crews are on the job six days of week, working between the hours of 8 a.m. and 9 p.m. "Most of our steel and concrete crews are working 10- to 12-hour shifts," says Newman. "They come in early and start gearing up to hit the ground running at 8 a.m. and they will work most of the daylight hours."

Power/CRSS and its primes are working as a team on the redevelopment project. "Teamwork is essential," says Newman. "The attitude is: we want to get the job done."

It is a big job. The dimensions of NMH's project can be difficult to visualize, so Power/CRSS offers these details: the foundation will support 500 million pounds — the equivalent of 40,000 elephants; the building contains the floor area of 44 football fields; and the concrete being poured in the project could build a sidewalk from Chicago to Minneapolis. Also, upon completion, the project will have created over four million hours of construction labor, not including the related off-site manufacturing hours necessary to make all the required materials.

To coordinate the work, Power/CRSS conducts formal coordination meetings between 9 a.m. and 12 noon every Monday morning. A major Monday afternoon meeting is held each week among the owner, architects and all the contractors.



*With assistance from a Manitowoc crane, workers carefully hoist a precast panel into the air and position it on exterior of building.*

In addition, Power/CRSS, NMH representatives and the architects talk on a daily basis since their offices are conveniently located in a building at 259 E. Erie St. — directly across from the jobsite.

Partnering has played a key role in the project. Sixty-four project personnel attended an early spring partnering session. "Partnering gave us a chance to meet each other and

to discuss schedules so that we could better facilitate the work," Newman says. "The session allowed us to see the big picture, and understand the importance of working together — one guy giving a little bit here and another guy giving a little bit there, so that the job can progress."

Newman says an additional partnering session will be scheduled in the future.

# An investment in affirmative action

**T**he Federation of Women Contractors named Northwestern Memorial Hospital's (NMH) redevelopment project as the recipient of its 1996 Project of the Year Award.

The redevelopment project "serves as a model for both the public and private sectors of the success which results from creative approaches to affirmative action and prompt payment," the federation said in its award.

Through the award, the federation recognized the leadership of Ricky Langford, NMH's managing director of the project. She was instrumental in developing several innovative measures to ensure the highest possible participation by women contractors, including a direct pay system that ensures a steady stream of payment to contractors.

The federation also recognized Pat Newman, project director for Power/CRSS, construction manager for the project, for diligently working to ensure that women are involved in a wide range of construction contracts.

NMH says the redevelopment project is expected to generate more than 5,000 construction jobs during the duration of the project. And, the hospital will award more than \$100 million in contracts to minority- and women-owned construction firms

"A key element in the development of our new medical center is an aggressive affirmative action policy to ensure that minority- and women-owned businesses are given a fair chance to participate in the project," says Kathleen Murray, the hospital's executive vice president and chief operating officer. "We do this because it makes good business sense, because it is good for the community and because it is the right thing to do."

The hospital has set minimum participation levels of 25 percent minority- and five percent women-owned businesses. "We're running ahead of those goals," says John Westcott, vice president for NMH's redevelopment project.

Specific on-site goals include: 25 percent minority journeyworkers, 30 percent minority laborers, five percent female journeyworkers and seven percent female laborers.

The hospital has developed an extensive outreach program and has been working closely with minority and women construction associations to promote opportunities on the redevelopment project. As part of its initiatives, Northwestern Memorial has engaged Seaway National Bank of Chicago, the largest

African-American-owned bank in the country, to manage a unique \$300 million account for paying the hundreds of contractors and subcontractors working on the project.

This innovative financial arrangement — the first of its kind in Chicago — is speeding up payment processing times by allowing direct payment from the hospital's account to the contractors and subcontractors. This arrangement, points out project officials, ensures firms are paid promptly, leveling the playing field between larger firms and smaller businesses that may lack the financial resources to absorb payment delays.

"It is really an attempt not only to help minorities and women, but also to assist subcontractors in general in the City of Chicago," says Westcott. "When we were in the early stages of thinking about the project, we discovered through some of our contacts that some of the subcontractors in town were getting very slow payments. The primes were using their money to pay off suppliers, etc., from their last jobs. Therefore, subs were going out of business or they couldn't get bonding — they didn't have the financial capability to function.

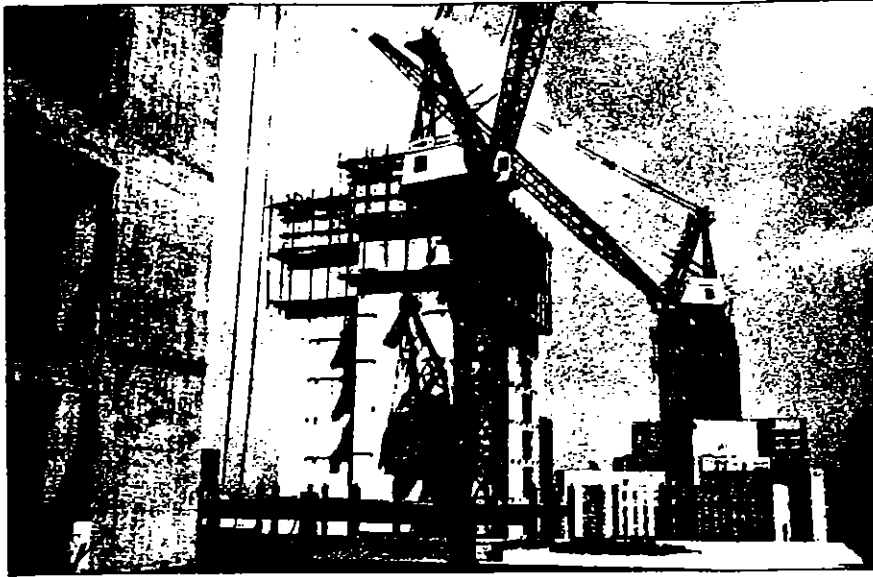
"So, we invented something that is rather unique in the City of Chicago. We pay a sub directly based upon the prime's certified invoice."

Contractors, both primes and subcontractors, "get their money in an account in their name within 10 days after receiving an approved invoice. I don't think anybody in Chicago is paying like that, and that is a great carrot," he adds.

"The subs love it and go the extra mile in performance because they are getting their money much faster than they would normally get it," Newman says.

Northwestern Memorial has also established an owner-controlled insurance program to help small businesses. The program provides worker's compensation and liability for all contractors on the site, so smaller firms do not have to underwrite their own insurance costs and can better compete with larger firms.

Westcott says this program is especially helpful on a project like Northwestern's, which features a multiple prime system with 30 or so contractors on site at one time. "It avoids a whole bunch of finger-pointing if there is a claim," explains Westcott. "Several carriers aren't involved with the project. We have a single carrier. We pay the bill, and the contractors give us lower bids because we are paying the bill." □



View of two of the three Link-Belt tower cranes being used on the project.

The new medical center will be more efficient for patients and visitors, as well as for physicians and employees. It will be much easier for visitors to navigate. Elevators in both towers are in the front of the building, so that when people get off the elevator they can look out a window and see from whence they came, and have a sense of where they are.

The center will also offer people a weather-protected skyway to the parking garage. Each of the two towers will be connected to the parking structure between Huron and Superior streets.

NMH says the new emergency department will be larger and designed for efficient patient flow, with more space for ambulance traffic and additional patient treatment areas. Vital laboratory and radiology services will be immediately available within the emergency room.

The hospital's surgical area has been designed to accommodate major operations and ambulatory surgeries alike. The layout will allow outpatients to move efficiently through check-in, pre-operative care, surgery, recover and discharge, all in one area.

In comparison, Westcott says the existing NMH layout "makes for a

very inefficient delivery" of health care. "For instance," he says, "our magnetic resonance imaging center is about 5-1/2 blocks away from our main buildings — which means that inpatients have to take an ambulance to get an MRI."

The setup is inconvenient for outpatients as well. "If you come in to get a procedure, you might end up

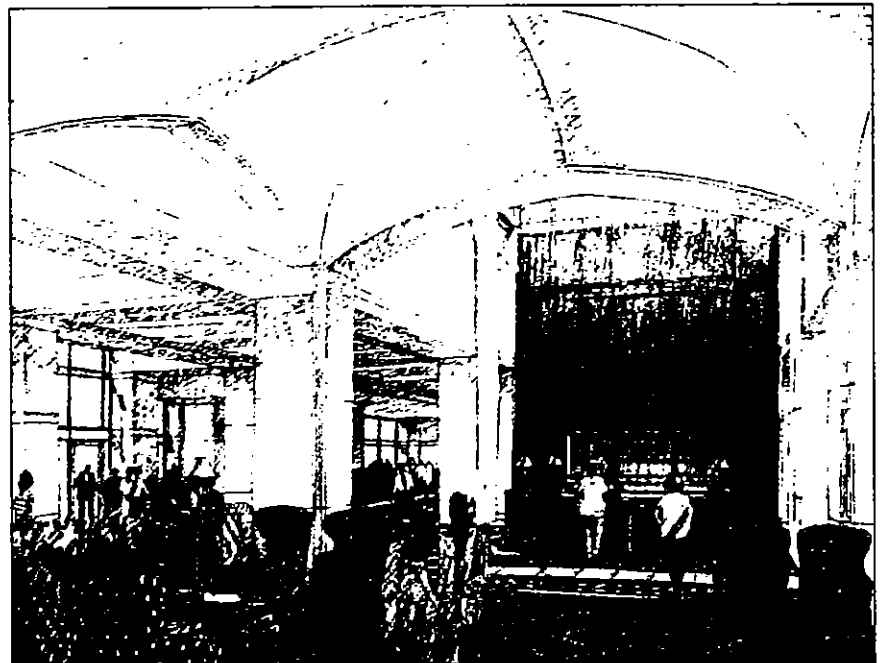
at three different buildings to see your doctor and get tests," he says.

The new ambulatory care pavilion will have 12 floors of physicians' offices," says Westcott. "So, physicians are going to be in the same building — where they can see their patients in their own offices. If the patient has to be referred for radiology or any other testing work in a diagnostic area, it is within the same building. Or, if the patient has to be admitted to the hospital, the physician can visit the patient without ever going outside."

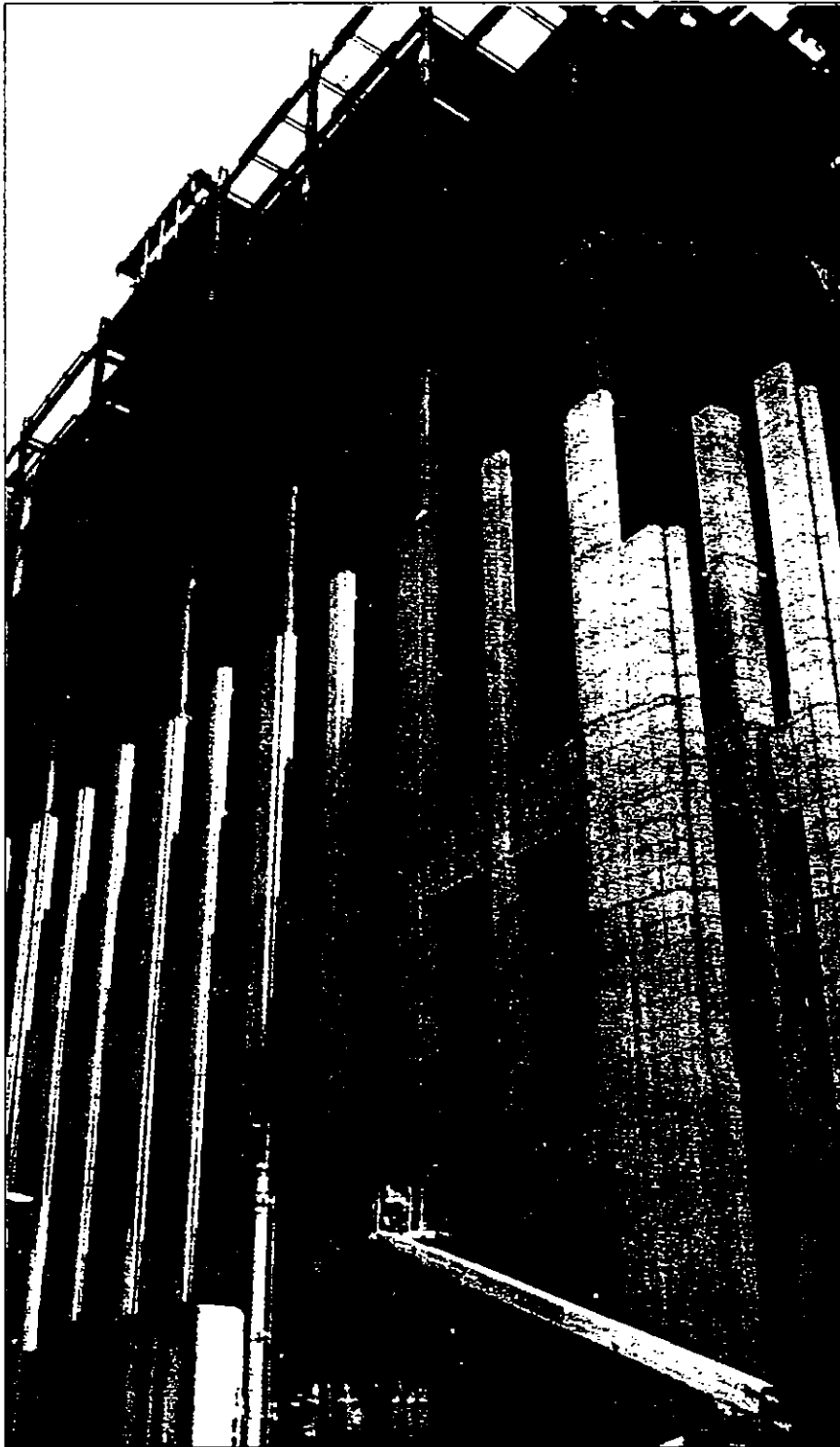
When NMH's new medical center opens in 1999, project participants — such as Newman and Westcott — will see the product of their hard work. Westcott, who previously was NMH's vice president of facilities and engineer for seven years, has been working on the redevelopment project since 1988. He assumed full-time responsibility for it in 1992. Newman, a 30-year construction veteran, has been on the job since early 1992.

Other key members of the redevelopment team are:

- For NMH: Ricky Langford —



As patients and visitors enter the 496-bed Feinberg Pavilion for inpatient care, they will be greeted by a friendly face at an information desk. Wood and carpeting create a feeling of warmth around the desk and in the waiting areas. (Illustration courtesy NMH)

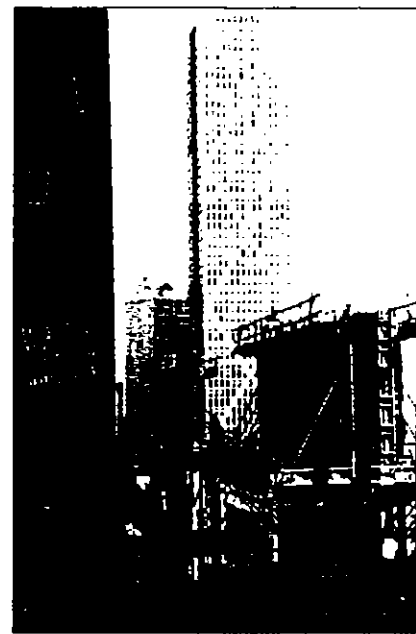


responsible for the day-to-day management of the construction management/architect interface; Bob Hrubka, financial director; and Jim Bicak, manager of design and construction.

• For Power/CRSS (which has an on-site staff of 34): Mel Cramm, Gene Liss, Mike Smagur, Marty Paape, Shari Ralish, Bill Campanel-

la, Ramesh Chojar, Jay Meyer, Kirby Cannon, and Mike McKinnon.

Numerous contracts have been awarded to date, including: Bencor Corp., slurry walls; Bradco/Cassidy/McHugh, drywall/masonry; Climatemp Inc., ventilation/insulation; Concrete Technology/Pre-Con Corp. Joint Venture, precast con-



*The redevelopment project takes shape. Power/CRSS plans to enclose the first 10 floors by December so that interior finish trades can proceed through the winter months. (Photos by Tom Hale)*

crete/stone; Fisher, Albright & Masters, site barricade; Gibson Electric Co. Inc., temporary power and electrical power; Great Lakes Plumbing & Heating Co., plumbing/insulation; Gurtz Electric Co., lighting and power distribution; Harmon Contract WSA Inc., curtainwall; Johnson Controls, fire alarm and FMS; Lindahl Brothers Inc., excavation; McHugh/Riteway Joint Venture, CIP concrete; National Wrecking Co., demolition; Network Security Inc., site security; Otis Elevator, conveying systems; PDM/DEI/MTC/BSSI Inc., structural steel frame; Perini Building Co., general conditions; Ragnar Benson, finish carpentry; Scott Co. Mechanical Contractors, hydronic piping/insulation; Skymaster Inc., window washing; Spray Insulations/R.S. Bailey Joint Venture, spray fireproofing; Superior Mechanical Systems Inc., fire protection; and Trans Logic Corp., pneumatic tube system. □