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## Northwest Architect

In this Issue . . .

The new architect is like the new year. He has all the experience, the disappointments, the joys and the hopes of the past and now he realistically, carefully, cautiously but with zeal and with all the talent and ingenuity that are his, assumes broader responsibilities, provides greater service and contributes more effectively to the creation of a humane working and living environment. In this spirit the new architect is indeed the old master builder.

If architecture is the most persistent and permanent record that a society leaves behind, then it is also a record of that society's values, ambitions, priorities and accomplishments. It is also a record of that society's art and literature and commerce. The vitality and the dynamics of its economy are, after all, the enablers of the richness and diversity of its social and physical environment.

The new architect, the new master builder, whose genius is in the realization of the built environment, gives expression and satisfaction to his society's needs and ambitions. The dynamics of the marketplace — from the demands of labor, to the demands of the government, to the ecology of demands — now charge the architect with greater opportunities and greater commitments.

Since by training and experience the architect has learned that his work is also the realization of the art of the possible and since he has traditionally always heeded cost and time, he now readily and enthusiastically wants to articulate and manipulate these elements of his art. In some instances the architect is best as the owner of a development, in others he is best as the developer, in others still as the investor. The articles in this issue illustrate a diversity of such approaches. Sometimes a combination of methods is specifically warranted, sometimes a singular and specialized form of service is necessary. Then also, there is a need, at times, for the very personalized, caring, loving sort of attention in which certain architects excel. They are the new architects also.

Given the great spectrum of needs today, the profession's ability to respond to these needs is indicative of its vitality, vigor and strength.

Bernard Jacob

### Editor

Bernard Jacob AIA St. Paul Building Saint Paul 55102

Associate Editor Fred Miller, Jr.

Graphic Design Frank Kacmarcik

Northwest Architect is an official publication of the Minnesota Society of Architects.

Minnesota Society of Architects, AIA Executive Director, Daniel J. Sheridan 100 Northwestern National Bank Bldg. Saint Paul, Minnesota 55101

Frederick J. Bentz, FAIA, President George F. Klein, Jr., Commissioner of Public Affairs

#### Northwest Architect Editorial and Management Committee

Emerson Scholer, chairman, Bernard Jacob. Phillip Mac Millan James, James Lammers, James Lindberg, Thomas Martinson. Gene Peterson, Fred Richter, Edward A. Sovik, John Weidt, Eric Wheeler.

Published by Craftsman Press 2117 W. River Road, No. Minneapolis, Minnesota 55411 Advertising Director Gregory C. Johnson 529-9105

West Coast Representative J. E. Publishers' Rep. Co. 8732 Sunset Blvd., Fourth Floor Los Angeles, Cal. 90069

Northwest Architect and its publishers disclaim any and all liability for statements made by authors in contributed articles and by suppliers and others in advertisements.

Northwest Architect is published bi-monthly. Controlled circulation postage paid at Minneapolis, Minnesota. Subscription: one year, \$5.00.

Send subscription orders and address change to Northwest Architect, 2117 West River Road, No., Minneapolis, Mn. 55411.

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## The Business

## A Guide to Expanded Architec

**By Lois Ekeren** 

Virtually every individual and collective human activity - working, playing, shopping, learning, living itself - makes use of "built" facilities. The design/construction industry, one of the largest and most complex industries in the nation, is responsible for providing this built environment in a functional, economical, environmentally sensitive and beautiful manner. Many members of the industry recognize this as a serious and demanding responsibility. However, the design/construction industry is complex and fragmented - consisting of financial institutions, real estate companies, architects, engineers, other design professionals, general contractors, specialty contractors, a host of government user and regulatory agencies and the owner.

As the process for the design and construction of new facilities has become increasingly more complex, the traditional roles of these members of the industry have been under study and change. Individual segments of the industry have performed, and continue to perform, well in their traditional roles. But there has been increasing recognition that the entire process has lacked management and coordination for many projects. Responsible and concerned participants in the total process have developed new systems, assumed roles, responsibilities, and assembled more services in single or larger packages.

This issue is devoted to the changes that have been occurring in the practice of architects serving the upper mid-west in response to these concerns and industry problems.

For many projects the traditional roles and systems serve the owner well. In other projects you as the owner/client will have a wider latitude in selecting the approach and system which is most appropriate in realizing your objectives.

Lois Ekeren has written extensively for other publications in the construction industry as well as for the Northwest Architect.

## lding

## onsibilities and Services

If you are a prospective owner and you face the specific challenge of providing commercial, industrial or other new facilities in an era of construction complexities and crises, this issue of *Northwest Architect* is for you. Its objective is to present the options and opportunities that are available from architects to help make the design and construction of your building as satisfying and pleasant an experience as possible.

Major but separate roles in the design/construction process have been traditionally performed by design professionals and contractors. Architects, engineers, and other design professionals have performed the design functions. Contractors, (general, and other specialty contractors) have performed the construction functions. Frequently, this division of responsibility resulted in serious problems in achieving owner objectives. New facilities have too often exceeded budget limitations, and completion schedules have not been met. Many of the architects who are members of the MSA have expanded their role in the design and construction process in an attempt to minimize these problems.

Other firms have assumed the roles of developers, including financing, land assembly and acquisition, preparing feasibility studies and constructing buildings which an owner can lease. Some firms have formed joint ventures and others have become members of teams in an attempt to better manage the entire process.

### The Owner's Objectives

As owner, you have a series of objectives to consider within a four-part framework: program, budget, schedule and quality. All four are important; their relative significance in your situation will be weighed repeatedly as you make your decisions.

#### Program

What is the building's purpose? What specific needs and requirements must it answer? Your evaluation will include efficient operation, flexibility, compatibility with site and neighborhood, maintenance and life expectancy and potential for expansion. The program devised from these evaluations must answer your total purpose in erecting a building.

## Budget

How much money can you spend? Is the figure absolute or flexible? Whether these are private or public dollars, today's economic strictures press you to scrutinize closely the way they will be spent, in order to achieve most effectively your program and objective.

#### Schedule

When must your building be ready for occupancy? Ben Franklin's observation that "time is money" is true whether that money comes from rental, sales, expanded production, or interest saved. Therefore, the days, months, or years you commit to this project will exert their just influence on your decisions.

#### Quality

Will the building's impact and character reflect and enhance your image? Will it also embody practical values that will endure? Since quality is at once both specific and intangible, its determination is often subject to extremes. You will be called upon to make sensitive, balanced decisions as you weigh quality in relation to program, budget and schedule.

These objectives are not new to owners. They are inherent in the building process. But the complications of achieving them are intensified today because of money restrictions, shortages of materials, labor and energy, heightened environmental consciousness, and a host of new demands exerting their influence in the entire business world.

#### The Traditional Method

Traditionally, the process of producing a building has embodied four sequential phases: decision, design, bid and construction.

During the *decision* phase, the owner (whether an individual or a group) defines his needs, expectations and limitations. During this





phase, he may call upon consultants to assist in his preliminary research, and he usually engages his architect, who assists him in the decisionmaking.

Following the initial decisions, the *design* phase begins, and it includes three steps: *schematics, design development,* and *construction documents*.

The schematics define, by drawings and models, a general concept of the building in relation to its setting and requirements. Upon the owner's approval, the design is then developed by the architect and a team of experts in the field of structural, mechanical, and electrical engineering, landscaping and whatever other specialized skills are required. They make detailed refinements of the design and provide a more specific cost estimate. Again, the owner must make decisions and give approvals, this time of a nature that commit him to the specific, detailed work of the third design step, production of the construction documents. These are the working drawings and specifications that detail the precise construction elements (materials, structure and labor) entailed in erecting the building.

Who shall do the construction work has traditionally been determined by the bid process, in which general contractors secure estimates from subconstractors on specialized work, put together a dollar package reflecting their best estimate of the building's total cost, and submit it for competitive consideration. Sometimes for privately-owned buildings this step is negotiated rather than bid; publiclyfinanced buildings ordinarily require the bid process.

Up to this point, the architect has assumed full responsibility on the owner's behalf. The final phase, construction, has traditionally been the responsibility of the contractors, with the architect serving as owner-liaison to observe the construction process, handle any necessary alterations of the original specifications (change orders) and authorize payments for materials and labor.

Under the traditional method, the owner must assume the risk and responsibilities related to the individual performances of his architect and contractor (or contractors).

Where construction budget and time limits are critical, when owners have limited experiences in the construction process and when buildings are complex the traditional system can produce tension and problems:

1. Altered needs or reconsidation of early decisions may require redesign. This entails a backup to a phase already past, and a reprocessing of all the subsequent steps. It may enhance the objectives of program or value, but often proves disastrous to budget and scheduling.

2. The sequential nature of the traditional method requires that budgets and specific cost estimates be determined far in advance. This is fraught with danger in a market where the availability and cost of materials, labor and moneys change drastically from day to day. It also encourages contingency pricing by the bidders in an attempt to cover uncertainties.

3. The intricacies of bids and contracts on a large-scale project, and the difficulties of defining ultimate responsibility in each phase, may become unmanageable when they are not under the direct control of the owner or a competent professional representing his interests.

#### New Variations On An Old Theme

The options available to an owner today are not so much new ways to construct as they are the coordination and management of what someone somewhere in the industry already knows or does. They have developed in response to the expressed desire of owners for building packages that will speed projects, iower costs, improve building performance and reduce financial risks, all with a minimum of difficulty for the owner.

Each of the approaches described here can be applied in a variety of ways depending upon individual owner needs.

#### Turnkey

As originally proposed and used by federal agencies, turnkey was a contract to design, build and provide interim financing under a single contract, and to sell the project upon completion to an owner who had entered into a purchase agreement. Through the past decade, its use for owners in the private sector has been gradually modified so that the term now is used to refer to any singlecontract package to produce a completed facility for a pre-determined owner. Many specific variations are possible to accomodate specific needs and conditions. It may free the owner from all responsibility other than contract stipulations until the point of purchase and occupancy. It does not normally allow him the same degree of participation in ongoing planning and decision-making provided by other methods. Unless an owner has competence and experience in the design and construction process he may find it difficult to protect his interests without professional assistance.

Some architects have adapted and modified the turnkey concept to accomodate the owner's needs in a manner which will minimize the problems and risks present in the original system.

## Owner/Developer

Some architects today have elected to assume the real estate and financial responsibilities of becoming owners/developers of projects. They may tailor a facility to your needs if you deem it advantageous to lease rather than own. Or certain of them may consider casting their lot with you and others in a joint ownership where each benefits from the sharing of assets.

The problems of financing, budgeting, site acquisition, leasing, design and construction are thus shared by all who will also share the results. The architect's presence in such a group tends to assure that the building will be designed to fit its function, rather than that the function may be squeezed to accommodate an inadequately designed building.

A typical workable consortium would include financial, design, construction and management capabilities. However, some joint ventures are also practiced without financial commitments.

#### Construction Management

In recent years by far the most used term, one with different definitions and interpretations, is construction management. In simplest terms, the construction manager (CM) is the one charged with coordinating all phases of a given project for an owner.

It is a function originally conceived by a federal agency and has evolved in response to the need for better management and coordination of the entire design/construct process. Construction management firms have been formed to provide the service. Some MSA architectural firms have added to their staffs to provide CM services and integrated CM and design functions and have an impressive record of performance. It is a logical expansion of services, since both disciplines are involved from the inception of a project.

There is a difference in opinion as to the size of a project on which CM is practical. Some see it as feasible only on large projects. One local architectural firm states that it is a valuable Traditional approach





and feasible system for any project over \$250,000.

The CM is primarily responsible for keeping the project within the owner's budget and for coordinating and scheduling contract work in order to finish on time.

The CM applies control both to costs and to time. He supervises and coordinates contracts for materials and labor with each specialized contractor (otherwise sub-contractors) and manufacturer, rather than in a package through a general contractor. He thus eliminates contingency pricing by means of constant, direct communication with those providing goods and service. Each contract can be quickly scrutinized for its impact on the total operation.

To do this, a CM applies market analysis (local/national, materials/labor), determines contract strategy (bid/qualifying, bid/ negotiated contracts), and develops groups of bid packages determined by the critical aspects of time demands, knowledge of prices, and compatibility among various building elements.

He sets up a perpetual feedback system so that progress in terms of both labor and materials is always monitored, and adjustments can be made early before they become monumentally difficult and costly.

He may also use a design/ construct system popularly known as "fast-track", which is a telescoped version of the traditional sequential system. Fast-track is used on perhaps 60% of large buildings being erected today. It allows part of the job to be started before documents are completed on other segments. Actual construction time is the same, but more elements occur simultaneously. Because the CM can deal with contractors for separate segments or services independently, each can be plugged into the project at the earliest moment it is feasible for his work to begin. In most instances, the savings are dramatic, due to fewer work days, lower materials costs, and earlier occupancy and earning capability for the building. In some instances, project time has been cut in half, and it is not uncommon for good construction management to produce a building under budget — a minor miracle today. Each month of construction time saved, saves about one percent of construction costs per month, so the CM method is likely to save at least the cost of inflation.

The variations on the construction management approach are legion. There are adaptations to fit every need, and a grab bag of names to describe the service (contract management, project management, construcion coordination, etc.). The American Institute of Architects, recognizing the value of the CM method, has produced an Owner-Construction Manager Contract Form (Document B801), which delineates in detail the responsibilities assumed by both parties.

#### The Building Team

Most of today's answers to the construction challenge involve a team effort of some sort. The team concept allows each member to contribute his expertise early in the planning stages, where it can be the most valuable. The team concept is being promoted by the General Services Administration (GSA) of the federal government. GSA is the largest owner on the building scene today.

Its building team concept includes not only representatives of all the construction industry professional and labor skills, but manufacturers of the building materials as well.

GSA advocates an incentive program to encourage development of the most advantageous components possible to achieve the objectives. This concept uses construction management, and its principles may be creatively adapted to fit individual requirements on a privately-financed as well as publicy-financed project. Architectural firms with construction management capabilities become effective leaders of the team concept.

#### Helpful Tools

Today's construction approaches draw upon a variety of tools to aid their efficiency. Fast-track, sophisticated purchasing control, contract strategies, market analysis, real estate capabilities and the financial skills of securing mortgages, interim financing and leasing have been mentioned.

As an owner, you will also find your attention directed to *value engineering* and *life-cycle costing*, terms that refer to the belief that a dollar saved now may not necessarily mean a dollar earned later. They refer to the technique of evaluating a building's initial cost pro-rated against its Jurability and life expectancy, with design and materials decisions determined based on the long-term maintenance and operating cost.

You will also hear about *building* systems and their potential for saving time and dollars. A building system is a building component (perhaps a heating system, a wall, or even an entire room) that has been manufactured and assembled away from the construction site and can be ordered "off the shelf" in multiples for installation at the right moment. Poorly used, such systems can produce drab, uninspiring results. If selected and specified by creative, imaginative experts, they can be functional and contribute beauty and value.

#### How You Pay

In some way or another, you will pay for every professional service you require, whether planning, design, construction, or management. Any client/owner of a project is best assured of financial control and competent performance under systems where costs for design services and construction processes are not hidden.

Architects normally prefer to work directly for their client/owner with compensation paid to them by the owner for services performed. Under this relationship there is no conflict of interest and no profit from decisions he made on behalf of the owner.

Under turnkey and some other package systems where an owner contracts with a developer or firm which is not architect controlled, the architect's fees are hidden and his



performance cannot be controlled by the ultimate owner of the project.

Architects' fees are determined in four basic ways:

1. Fixed Fee — a lump sum fee which is the most predictable, but which requires precise definition of all services in advance.

2. Percentage of Total Cost — simple and flexible, but also unpredictable if early cost estimates prove inaccurate.

3. Multiple of Direct Personal Expense — great flexibility, but complex. It is based on professional payroll costs plus a multiplying factor for overhead and profit.

4. Professional Fee Plus Expenses -

a lump sum fee plus payroll costs, expenses and overhead.

Specialized consultants and services are usually under contract to the architect.

Owners today are more and more attracted to a simplified approach of agreeing upon a single appropriation for the entire project, which is administered by a single well-managed organization through concurrent design and construction processes. The sophisticated range of capabilities available makes this a practical approach when under the control of an organization or company which has capable management and experience in performing these functions.



# Serving The Needs of Our Clients

The Case Study of A Pioneer In Expanded Services

### By O. Reuben Johnson

Executive Vice-president Buetow and Associates, St. Paul

Buetow and Associates, Inc. has been in architectural practice in St. Paul for 50 years, and maintains a staff that has ranged from 20 to 50 during the last 10 years. Ten years ago the firm became a pioneer in exploring and offering services beyond the traditional scope. To provide the necessary capabilities it formed the Buetow Development Group, and later the Horizon Development Corporation and Gay Realty, Inc. Its projects are located in the five-state Upper Midwest area, Massachusetts, Illinois and Tennessee.

In 1964 our firm reached a decision that has significantly changed our practice. It was concluded that we were "hiding our heads in the sand", and the traditional relationships, processes and responsibilities were not serving the needs of our clients or the objectives of the design/construction industry. We then took the first step in a program of providing expanded services and accepting more responsibility in the design and delivery process for buildings for our clients. The "Construction Coordination System" (CC System) was conceived. It is in today's terms an architect controlled construction managerial system.

Within the first year, we completed construction of our first project, a turnkey processing plant for Land 'O Lakes in Albert Lea, using this system. It was not without the problems that typically accompany the use of new systems which attempt to solve long standing problems. However, it provided us with experience and insights that we have continued to benefit from and build on. The CC System has become the basic tool which has substantially increased our capacity to expand our services and accept greater responsibility in serving our clients.

In 1967, we reached the decision to design and build an office building in which B & A would be a tenant. The Buetow Development Group (BDG), a partnership consisting of the principals of B & A, was formed to develop, own, and manage the building. A six-acre site near the site for the then proposed Rosedale Shopping Center was acquired. All of the problems of site acquisition, financing, budgeting, and leasing, which had been those of our clients over the years, now were areas in which we developed an intimate first-hand experience.

BDG engaged B & A to design and construct the project as an

\* Office Building for Buetow & Associates and tenants Roseville, Minnesota. Owner: Buetow Development Group Approximate construction cost: \$300,000 Approximate construction time: 5 months First project financed, designed, constructed, and owned by B & A and BDG as an integrated process, including construction management and fast-track. Completed in 1967. economically sound investment, using the CC System for the construction process. Construction of a 16,000 square foot building started on approximately one acre of the six acre site in spring and three months later the staff of B & A moved its operations into the building.

## System Refinement and Expanded Application

During the time in which the CC System was initiated, we supplemented our staff with experienced construction personnel and an experienced construction cost estimator. We then set about to develop and refine the procedures and the system.

It became apparent that many potential B & A clients were interested in a system that would provide for a *single contractual relationship* with a firm that would accept responsibility for design and construction of a project within fixed cost and time limits. Furthermore, in our business development program we frequently approached businesses who were interested in leasing buildings for their operations rather than owning them.

An evaluation of these opportunities led to a decision to invest in a real estate acquisition program. In 1969, we acquired a 30 acre site and commenced developing it with roads and utilities, as the initial step in providing clients with the opportunity to build or lease office and light industrial facilities in an architecturally controlled environment. This acquisition was accompanied by the formation of two companies: the Horizon Development Corporation (HDC) and Gay Realty, Inc. (GRI), to provide the financial program.

Gay Realty, Inc., was created and organized by HDC which appointed R. T. Gay as its president to manage its affairs and perform functions related to long and short term financing, feasibility studies, real estate transactions and building management for HDC.

Our experience with joint ventures and multiple relationships with other organizations indicated that they compound the problem of determining responsibility and achieving management and control for us as well as the owner. The design/construction process, by its nature, is incredibly complex. We therefore decided to continue to develop an internal capacity and staff under centralized management, rather than attempting to organize teams or consortiums.

Through the formation of these companies, all owned and controlled by the principals of B & A, B & A has been able to accommodate the varying desires and needs of most clients.

1. If a client wants facilities constructed which he will lease or if he desires a single contractual relationship for the design and construction of a project which he will own, HDC contracts with the owner and HDC engages B & A for design and construction services, GRI for property transaction and other services related to feasibility and financing, and individual sub-contractors performing the construction activities under the CC System. These projects may be on sites owned by the client or acquired for the client.

2. For clients who desire to proceed with design and construction under a program using the CC System, B & A contracts with the owner for these services. For the construction process, the owner contracts directly with individual specialty contractors coordinated by B & A.

3. Where clients have a design, and documents for bidding, clients may engage B & A for the CC System services for bidding and construction only.

4. When a client wishes to use a pre-selected contractor or bid competitively by the General Contractor method, he may engage B & A to provide the traditional services for de-

#### Cheese & Whey Processing Plant Zumbrota, Minnesota

Owner: Mid-America Dairymen, Inc. Approximate construction cost: \$6,000,000 Approximate construction time: 24 months

Originally designed for two smaller cooperatives which were subsequently acquired by present owner and which resulted in need for increased capacity and redesign after start of construction. B & A construction management system made this process more manageable and at less cost than with traditional methods. Facility commenced operation in 1971.



sign, preparation of plans and specifications and contract administration.

During the past 20 years, B & A has performed services for clients and for its development programs under HDC and BDG totaling over \$30,000,000 in construction cost. They include three projects for public clients and several projects using industrial revenue bond financing which have unique and special limitations resulting from state statutes governing projects involving public funds. Projects have ranged in size from \$250,000 to several million dollars in construction cost.

With few exceptions, B & A engages in providing its services on a *fee for service basis*. Our clients pay for services rendered in either a negotiated amount or on an hourly basis.

On occasion, when a client prefers, we will accept an arrangement where our compensation is based on the concept of *profit for risk*. This arrangement normally results on projects for which HDC is constructing a facility under a lease arrangement for a client or where we are required to provide financing and accept other high risk obligations for the client.

#### The Construction Coordination System

Under the CC System the owner normally engages B & A to perform the normal design services, including preparing detailed plans and specifications for bidding by subcontractors, which is an essential function if contractors are to accurately estimate the work and its cost in preparing a bid. The plans and specifications when contracts are awarded, become the contract documents and form the basis on which the contractor's performance is judged and what the owner is entitled to receive when construction is complete.

For the construction process, under the CC System, the owner becomes, in essence, "the general contractor" but engages B & A as a professional organization to accept the responsi-

bility to provide the required services on his behalf. The type and



Single Contract Relationship

Contractors



Traditional Relationship

**Construction Management System** 

(Continued on page 172)

## The Architect As Developer

Broadening the Base

By Tom Van Housen

Vice-President of Landmark Development Corporation.

Landmark Development Corporation, a wholly-owned subsidiary of Ellerbe, was formed in 1970 to generate projects and provide real estate and property development capabilities on an ownership basis. Four architects, a financial advisor and two marketing consultants coordinate complete packages of finance, design and construction services. Although Landmark is set up to perform services apart from Ellerbe, it has not done so up to this point.

As the architectural field became more highly competitive in the late sixties, Ellerbe recognized an urgent need to diversify in order to continue to grow and prosper as one of the nation's major AEP firms. An important element in that diversification was the creation of Landmark Development Corporation, a wholly owned subsidiary.

Landmark was formed in 1970 and its purpose: first, generate projects for the Ellerbe professional services; second, serve as a legal entity for ownership of Ellerbe properties. The subsidiary was charged with the responsibility of the overall objective of providing real estate and property development for a profit.

When Landmark was being organized, the established general contractors, land developers and other types of speculators were taking advantage of the AIA Code of Ethics which, at that time, precluded architects from directly participating in such functions as site development, building construction, con-

Ellerbe Architects, founded in St. Paul in 1909, is a national leader in the architecture/engineering/planning field. Its headquarters are now in its new Appletree Square in Bloomington.



Appletree Square, Bloomington, Minnesota

struction management or management of property which also had been designed by the architect. Landmark, as a separate corporate entity, could offer finance/design/consumer services and contract with Ellerbe to perform the architectural and engineering design as well as related professional services.

Landmark applies Ellerbe's total service concept to the field of land acquisition and development. Although Landmark is geared to large, multimillion dollar complexes, it can handle smaller medical office buildings, apartment or commercial projects as well as sports and civic stadiums, ice arenas and hotels.

The original objectives of setting up Landmark were exceeded by subsequent involvement in the total development of sites and assembling development packages of major projects.

#### Landmark Development Corp. Services

Landmark coordinates complete finance, design, construct as a single package of services.

In addition to securing standard A & E services for a project Landmark also provides site location studies, market analyses, aerial photography, land use planning, environmental impact assessments, cash flow projections, project feasibility analyses, mortgage loan and investor presentations, leasing and management recommendations and procedures.

Landmark personnel include four architects, one financial advisor and two marketing consultants, in addition to the vice-president who directs operations of the subsidiary. The architects are project managers for development projects. They perform basic concept design only — Landmark buys architectural services from Ellerbe on a standard A/E contract.

Landmark is technically set up to perform work without services of Ellerbe, but this has not happened up to this point.

#### **Appletree Square**

The first major project undertaken by Landmark — a project that ideally suited the subsidiary's capabilities and goals — was Appletree Square in Bloomington, Minnesota.

Appletree Square is designed to provide a total environment in which a person can live, work and play without going beyond its boundaries. Landmark is developing the property for housing, commercial and recreational facilities that eventually will accommodate more than 3,000 persons.

The first structure (now completed) and succeeding ones will be integrated into the center's concept of providing an environment in which a person can enjoy nature in the area where he works and lives.

The first structure completed on the site is the 15-story Office Building I, now the corporate headquarters for Ellerbe and the offices of Landmark Development. In addition to this building, Appletree Square will consist of another office building, a highrise apartment building, a hotel, condominiums, parking facilities and also specialty shops, convenience stores and restaurants. The area will have hiking trails, tennis courts, swimming pools and other recreational facilities.

The complex is located on a 35-acre site, only one-third of which will be occupied by buildings. The natural beauty of the site is being preserved and also enhanced through the planting of several hundred flowering crabapple trees and other landscaping to create a park-like atmosphere. Landmark Development Corporation, and Ellerbe as well, are demonstrating that aesthetics can be effectively combined with commerce by preserving natural beauty and by imaginative landscape design.

Ellerbe, which acquired the land in 1968, is planning, designing and engineering various phases of Appletree Square. Landmark is financing, developing and managing the complex, completion of which is scheduled in 1978.





## Lexington Civic Center

The board of directors of the Lexington Center Corporation saw a need to develop services on their site to help pay for the arena and exhibit hall. They knew, as a result of research, that there was a demand for hotel and commercial space on the site, so they asked the architects and builders interested in the project to either find an investor or become investors in the project.

More than 30 firms formed the kind of team approach the Lexington Center Corporation wanted, and on December 15, 1972, nine teams submitted their credentials, experience and financial strength. Next, the corporation asked the three final teams selected to submit their design, construction cost figures and investment commitment. The team of Landmark and Johnson/Romanowitz, Architects, and Huber, Hunt and Nichols/Foster Creighton as builders was selected. Landmark and Huber, Hunt and Nichols have combined assets of over \$50 million and have guaranteed to develop and lease a 350 room hotel and approximately 70,000 sq. ft. of retail space.

The Lexington Civic Center is intended to meet the needs of central Kentucky.

Lexington Civic Center

## A Case History in the Health Care Field

By Carl D. Elving Partner, Horty, Elving and Associates, Inc. of Minneapolis

Our firm which is staffed by some 25 to 30 persons, had been a fullservice firm having the architectural, structural, mechanical and electrical disciplines in-house and it enjoyed a successful practice. We had learned to use the phrase "construction management" or "coordination" and learned to understand the concepts involved with these functions. It brought the image of a vast new organization having a great bank of data and other resources on which it could rely.

Subsequently we began to realize that much of the past work had been done by competent architectural firms through the years on a small scale or as an individual contribution to the success of a given project. The larger national firms were moving into the field and we could understand they had the organization and the resources to staff such a department. The question arose whether the small to medium sized office could provide services of this kind to its potential clients.

It was in the design of a health-care facility for the aging in the Twin Cities metropolitan area where our firm was seriously challenged to provide cost accountable services. The owner had a well-documented need for expansion of beds; he had a feasibility study from his financial advisors indicating that the market was good and that the contemplated number of beds would produce a cash flow which would take care of the debt service which he anticipated.

However, the lending institution that handled his previous building projects and had a control on subsequent financing, used their own formula in stipulating an amount that they would make available for the expansion of the facility. At the interest rates for money then current and at the building costs prevalent at that time, the maximum amount of money available was delineated. The problem then was to match available funds to building costs.

#### With the client's approval

(1) We selected a general, mechanical, and electrical contractor with whom we had worked and had good cooperation.

(2) We reviewed together the schematic drawings which we had made to fulfill the needs of the program and we reviewed available funds to determine what systems we could use.

(3) We set up the following four parameters: the building should provide for efficient functioning, the building should satisfy pertinent codes, the building costs should fit into the budgetary constraints and the building should be of a quality in which both the owner and designer could take pride.

Through the process of evaluation together with the contractors who were placing their own dollars on the line, we reduced the cost from \$900,00 to a budgetarily acceptable \$750,000 for the proposed addition.

The contract documents were then finished, costs firmed-up, financing arrangements completed, contracts were let and construction begun.

When the owner moved into his building upon completion, the four requirements mentioned above had been met. The contractors had received contracts for work on which they were spared the expense and trauma of competitive bidding in exchange for their initial input of information on component costs. The architect/engineer did his job efficiently, collected his fee, and had the satisfaction of putting together a project that had originally appeared infeasible. In this we took a great deal of pride.

This was the beginning of our decision to leave the traditional role of the architect and primarily there would be great value to certain potential clients to do so. Secondly, it would permit us to retain for the profession a growing volume of work which was going elsewhere.

We were very much aware of the heavy-handed influence of the money market on our designs. We were also aware of the various codes and regulations which reduced the options to our designs. However, we knew that these constraints applied to others who were not professionally trained in the arts as well as the skills of architecture. It was decided that professional pride in our work, together with the skills that we possessed, should give us an edge over our non-professional competition.

One other reason that we could do better than our "package health-care" competition was because we found our medical clients reluctant to accept a prefabricated solution to their particular functioning problems.

Some potential clients were ultimately willing to allow a predesigning building to dictate their operation. However, most physicians and hospital and nursing home administrators felt sufficiently confident in their grasp of their own problems and solutions. As a result, they would not settle for something not designed for them. For these clients we combined the best of two approaches: individual design and budget control.

We have therefore actively sought such opportunities where this expanded role could be a help to a client. Experiments have been conducted playing differing roles in an attempt to see if we should become rigid in the form of service we offer, or whether we should remain flexible. Up to this time we have been contract managers, construction managers and have served the multiple role of designer/developer/contractor/owner.

Today we seek a flexible stance where we will be able to coordinate our experience and capabilities to fit the client's needs. The client may be a potential owner or he may be only a potential user. This differentiation moves us into or out of the role of investor as well.

We soon discovered that we could not do our job well depending on

Horty, Elving and Associates, Inc. of Minneapolis is approaching its twentieth year of practice in the five-state area. In addition to its original architectural and planning capabilities, it has added the disciplines of mechanical, electrical and structural engineering, building a staff averaging 25 persons. Its subsidiaries are Construction Coordinators, Inc., a construction management firm, and Health System Operations, Inc., a consulting firm in the health care field.

others for cost input alone. While contractor sources are most helpful to us, there were many times when they were not available. When jobs were not in the area where we had built relationships with contractors, we were on our own. We therefore determined that we must have an inhouse estimating department as well as in-house personnel for supervising our construction process.

For the preliminary estimating, which is required to focus the design of the building to match the financial target, we have developed a system of take-off and pricing. A computerized quantity analysis program and cost data bank are invaluable in keeping current with today's cost. Subsequently the subcontractors will make their firm quotations, but knowing where a price ought to be gives us an advantage in analyzing the various component bids.

We believe that being able to zero in on the acceptable building systems consistent with the budget available is a mandatory requirement for today's and tomorrow's architect. This can only be accomplished if he has control of the cost of the job by system selection and construction management.

In this self-serving degree, the architect should save for himself a portion of the building market to which he is accustomed. He can then simultaneously offer to the client the most cost effective, least time consuming and aesthetically most pleasing building possible from any





## The Architect As Owner

By Richard F. Zedjlik President, Zedjlik, Harmala, Hysell and DeLapp Inc. Minneapolis

Many of our projects suffered from lack of understanding by the client over the financial aspects. They also suffered from the credibility gap of construction costs as related to architectural estimates and last but not least the always present problem of funding initial architectural work, i.e. fees paid to the architect contingent upon the continuing of the project.

These aspects forced us to take a look at the role of the client and the possibility of becoming the client. These same circumstances led us to take a new look at the role of the builder and the potential of assuming the role of the builder. Two things happened which actually forced new ventures and roles for our firm.

In the first instance, a client from private industry decided he wasn't going to pay our fee because the negotiated bid received on a project was too high and the blame for high costs was put on us. The second instance was the potential loss of an architectural commission which was the result of a small local housing authority being pressured to change from a conventional low rent program to a turnkey low rent program.

In the first instance, we bought out the client, released the contractor, rebid the project without redesign and built it ourselves acting as the contractor. We have been involved in the ownership and management ever since. This was accomplished by putting together an investment group of 12 people of whom only two were architects. Subsequently, several projects, privately owned and financed, have been developed using the same technique, in each case the architect's share of the ownership is minor.



Arbeiterdorf, Snowmass at Aspen



South High Housing Project, Minneapolis

These projects indicate that the architect can provide control of the design and building process.

The turnkey project illustrates that the architect can act as a developer and contractor in federally funded projects such as low rent turnkey and subsidized 2-36 projects.

During the first few years, the services that we performed as architect-developer were primarily in housing.

However, on occasion we have ventured into the commercial work. The build and own concept has carried through six projects, the largest of which is a housing project of 112 units. The build and develop for profit concept has been used in 8 projects. These experiences indicate that the concept of design, build of projects in which we have an equity is a valid objective.

We are presently starting a long term (10 to 15 years) project similar to Jonathan or Preserve, on a somewhat lesser scale. The experience and knowledge gained through the design and build process has recently afforded us the opportunity to become involved in such a project. This project consists of 400 acres to accommodate over 2,000 housing units and is programmed over a 12 to 15 year period.

Founded in 1960, the Minneapolis architectural firm of Zedjlik, Harmala, Hysell, DeLapp, Martinson, Inc. began to broaden its services in 1966 through the "build and own" concept, later adding the "build and develop for profit" approach. The firm's average staff capability is 15 (half of these being registered) and its geographical scope is primarily in the Upper Midwest, Illinois and Missouri. It has also done work in Colorado and Texas.

## Challenge Your Architect Two Examples

By John Ivey Thomas

Partner, Thomas and Vecchi, Inc., Duluth

## Bombardier Building Duluth, Minnesota

The Challenge: Our firm and other local business interests became aware of this company's intention to locate in new and more efficient quarters. We also learned they were negotiating with developers in the Twin Cities, the Brainerd Industrial Development group and others for possible relocation.

After the closing of the United States Steel mill, relocation of the bombardier plant in another community loomed as a serious crisis. Our firm and local industrial development authorities became active in a program designed to retain the plant. This included a revised and more attractive lease than had been earlier proposed.

The requirements included 20,000 sq. ft. of office space including a computer room and specialized areas plus 100,000 sq. ft. of warehouse space. The facility also required railway spur at dock height, dock height trailer loading dock and facilities for over 100 employees. The proper time of year for a move by this company was determined to be between June 15 and July 1, 1974, when its inventory would be at a low.

Our Services for this Client included finding a site for this facility that included two city blocks. Arrangements were made with the Housing and Redevelopment Authority to purchase and relocate over 50 families and businesses. The authority worked at a pace unprecedented in obtaining the property for this project.

It also included arranging financing and funding for over \$1,600,000 for building land, spur and services. This was accomplished by an arrangement with the Seaway Port Authority of Duluth to issue tax exempt revenue bonds in the amount of \$1,350,000 at



John Ivey Thomas began his architectural practice in Duluth in 1961, and was joined by Thomas Vecchi five years ago. They and their subsidiary, Design Engineering, have offered a highly flexible and imaginative approach to the needs of their clients who are mostly located in the northern parts of Minnesota, Wisconsin and Michigan, although one of the projects cited here is in Brownsville, Texas.



6% and the sale of these bonds to local banks. The railway spur was partially subsidized by the city of Duluth by a \$50,000 grant. In addition, the Housing and Redevelopment Authority utilized federal renewal funds for relocation and acquisition costs.

A third program involved leasing arrangements with the client who did not need the tax benefits of depreciation and interest or the corresponding arrangements with the investors who were able to use depreciation and interest deduction and who guaranteed the repayment of the bonds from the 5th year and the 20th year when bonds are completely repaid. These steps were accomplished during November, 1973.

We had to complete enough planning before entering into the financial arrangments and leases to be sure the project could be built for funds available. By the time we had reached this point, the legal fees had exceeded the full architectural fee for the project. We think the participants that worked to develop this project worked well together and each had a significant role in the early phases of the project. Our client moved in the warehouse areas on June 15, and into the offices on July 7, 1974.

There was not only the obvious benefits to our achitectural firm, there was a benefit to the client and the city of Duluth in being able to save a valuable industry.

The construction of the building was studied very carefully for economy, speed of construction, fire safety and lasting value. Precast concrete exterior walls were used in warehouse areas and exposed metal roof deck. While some consideration was made of the use of cold rolled channel or 2 section secondary roof framing the final study revealed considerable saving in using open web bar joints and screwing metal deck directly to these members.

The office section of 20,000 square feet is a two stories high, air conditioned space with the major executive offices overlooking the St. Louis River and an oval executive conference room, computer room, key punch, general office areas are on this second floor with parts and service offices, training areas, reception display on the first floor.

The interior color scheme has been developed by Gerald Calengor, a local artist who is employed by this client. He has used the Skidoo product line colors and developed this utilizing black carpeting and white walls with accepts of deep orange and yellow. Raked precast concrete and poured textured concrete are featured on the interior.

Our full analysis indicated that the most economical installation was electrical heating in the office portion of the building where the computer power, lighting power and air conditioning would create a steady demand factor and the use of oil heating in the warehouse areas where the demand factor would be very erratic, increasing power costs per BTU if electricity had been used as a fuel.

It was necessary to construct a 120 foot ramp to the second floor to comply with the State of Minnesota Handicapped Code.

We are proud of the building and hope we can develop the details and philosophy of this modern distribution center for the readers in later issues. *Contractors:* A. Hedenberg & Co., Ben Sundland Company, Nylund Electric and United Sprinkler.

General Partners: William Hedenberg, A. Hedenberg & Co.; Mitchell Sill, Road Machinery & Supplies — Duluth; Michael Sill, Road Machinery & Supplies — Minneapolis; John Ivey Thomas, John Ivey Thomas/Thomas A. Vecchi, Inc., Architects.

Special Credits to: City of Duluth Industrial Development Activities, Seaway Port Authority of Duluth, Housing & Redevelopment Authority of Duluth and the Duluth Clearinghouse.

## Villa Condesa

The Challenge: An established client of our firm, for whom we had completed extensive nursing home work, indicated that he had purchased land for a nursing home in Brownsville, Texas, near the Gulf. However, due to large expansion in the number of nursing homes in the area, they were not intending to build this nursing home and were contemplating some other development of their site.

Expanded Responsibilities and Services: Our client felt there was a market for condominium units in the area. Our first service for this client was to use the program we had prepared and preliminary studies for the condominium on this site as a basis for a pro format operating statement. It was also used to investigate possible sources of financing, utility requirements, code requirements and governmental restrictions.

The next step was to develop a working relationship, first on a preliminary basis, with a local contractor for estimates needed for the preliminary financial commitments. Our clients, the Hargests, were very interested in relating the project to the area, which is only blocks from the Mexican border, and we designed the project with an indigenous expression.

At this time, it was realized that, while our clients were ready and anxious to proceed, they would not authorize the proceeding with the working drawings until firm financing was arranged. Therefore, it was necessary to make arrangements to provide reasonably developed design development drawings and to work out a maximum cost contract with the builder. This was based on design development drawings and discussions allowing budgets for various items with a cost plus feature including incentives for savings to all parties.

We also negotiated with a second builder as back-up in the event the original contractor would be unable to meet our requirements.

Interim and permanent financing was arranged and architectural work completed. The client provided most



of the inspection, with close telephone contact with our office. Several visits were made to the site during the construction, but these were primarily for initial layout approval and final acceptance of the substantially completed facility.

Our services included the creation of the sales brochure for the project. This brochure was quite unique and has been useful to us as a sales tool for our work, as well.

While we did not provide project tenant management for this condominium project, we have provided services for the initial break-in periods on other apartment and condominium projects.

The construction contract negotiated for our client included a maximum price with savings distributed onethird to the contractor, two-thirds to owner. Over \$11,000 was returned to the client from this provision of the contract. Owners: Mr. and Mrs. Edmund Hargest

Contractor: Donald Fergeson, Inc.

*Mortgages:* Pan American Bank, Tropicana Savings & Loan

## Design/Construct Synergy

## By Harold J. Westin

## President,

Harold J. Westin and Associates, Saint Paul

It is now becoming widely accepted, as an ideal, that the professional advisor should provide his client, who is considered the prospective building owner, design data, including costs, which the owner can treat as essential truth in analyzing the feasibility of his proposed project.

As technology becomes more complex, architects and engineers need more and more specialized knowledge to design successful projects, whether medical facilities, mass housing, or shopping centers.

Under our system, design development proceeds in the traditional manner: programming, schematics, flow diagrams and single line preliminaries lead to project definition. However, even at this early stage, the *effectiveness* of the design is tested through (a) design optimization; and the *feasibility of the project is tested by (b) cost studies.* 

## **Design Optimization**

As a part of the functional design studies, precise comparative costs are calculated for each possible design and system concept: structures, floors, ceilings, partitions, exterior walls, mechanical systems and other major components. Design work proceeds with the highest Benefit Cost value determined for each step, including life-cycle costs.

Harold J. Westin is a registered structural and civil engineer. He is a graduate of the University of Minnesota and the St. Paul College of Law and has been a university lecturer on legal and technical problems in construction administration. Textbooks which he has written are currently being used as standard texts in Contracts, Specifications, and Construction Management courses in major universities.

The organization has projects in many areas of the United States and is experiencing continued growth.

Architects and engineers of the firm are registered in Colorado, Florida, Illinois, Iowa, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, New York, North Dakota, Ohio, South Dakota, Vermont and Wisconsin.

## **Cost Studies**

Cost data input, now more than ever before, must be considered in the preliminary design stages.

Early cost data is vital to the owner in projecting his budgets and for making value decisions at the various design phases. Early accurate costs avoid wasted effort for the owner and the designer. These costs must be prescient, predictable, and progressively more accurate, starting at the conceptual design stage.

It has been possible for us, through our in-house construction management experts, by very careful design assumptions and extremely accurate cost records, to set firm, accurate and guaranteed budgets based on the one-line drawings *before* working drawings are started. The owner's acceptance of the preliminary design and construction budget is required before proposed architectural, structural and mechanical systems proceed into final drawings.

### BENEFITS TO THE OWNER Budget Control

The client's decision which is so essential at each progressive design sequence, is simplified when he can know the firm comparative costs of each conceptual design alternative. If the budget is getting too costly, he can reduce the size; omit or revise some nonessential features; or if necessary, abandon the project while design costs are nominal. The owner has control of the budget all the way.

It is like furnishing his home itemby-item with a price tag on each piece; so he can make choices and keep the cost under control as he goes, instead of ordering the whole lot without a price list in the hope (often forlorn) that the final bill will be within his original expected costs.

## Savings to the Client

In order to maintain a professional relationship with the client (no hidden profits), construction savings below the budget go to the client. This means that a precise and certified audit system is provided and maintained by the design/construct professional as the project develops. These records are given to the client as the work progresses, for his review and permanent record. Conversely, excess costs over the guaranteed figure are absorbed by the professional.

This is a very demanding and responsible role for the professional. It requires accurate, up-to-the-minute data on market costs and conditions, and confidence realistically based on a high level of knowledge and experience in the field.

## Audited Construction Costs

The construction auditing system includes certified invoices for each item or service purchased; so the client will pay only the net actual construction cost. This requires a systematic budget code and allocation system for the hundreds of individual cost invoices incurred during construction. It also has the capability of early prediction of any expected final savings. The client then has an early opportunity to plan for the efficient use of savings under the budget. For example, one of our clients on a very tight budget saved higher future costs by installing a second elevator (which would be needed later when the traffic load increased). Another client added an additional urology suite plus another elevator with construction savings.

The confidence of the client in knowing all of the costs is also an important factor in building mutual respect and encouraging mutual cooperation.

#### More Efficient Building Systems

By coordinating design and construction, and particularly through the use of "design optimization", we have been able to synthesize a construction system which will permit an integrated design of structure, finished floors, ceilings, plenum and chases for HVAC in one low-cost system to save the multiple costs of several separate components and yet produce a better insulated, soundproof building.

Such a system can also save 25% in the gross cubage of a building with the same usable space, resulting in lower operating costs, substantially lower construction costs and better



The Physicians Clinic, St. Paul, Minnesota, an earlier project on which we are now doing a major design/construct addition.

quality in the buildings.

Under construction management procedures, the project manager accepts full responsibility for the work of all suppliers, subcontractors and labor employed in the construction. Otherwise the owner is simply crossing his fingers in hopes everyone will do well. For this reason, the organization places on each project a full staff of experienced supervisors who organize, schedule and supervise the work on a full-time daily basis.

The quality control and the continual follow-up by project construction management is reassuring to the client. He is spared the frustration of uncorrected problems, and avoids the dilemma of the architect or contractor blaming each other, with the result that nobody will do anything.

#### **Two Year Warranties**

We also establish full two-year warranties on all work performed on the project and require the same warranties from subs and suppliers, excluding only those manufactured stock items such as motors and switches which carry standard manufacturers' warranties of shorter duration.

The purpose of these broad postconstruction guarantees is to cover at

July-August, 1974

least two full heating and cooling seasons to permit fine balancing of mechanical systems and to check the performance of the building through several seasons. Moreover, contact is maintained with the client, along with an effective procedure for reporting and correcting any possible problems with a minimum of frustration all around.

## BENEFITS TO THE ARCHITECT/ENGINEER

Although the responsibilities for the Design/Construct Synergy involve risks, a decade of experience also points to some important benefits:

#### No Losses for Redesign

No project which has survived the first cost studies has ever been cancelled because of a construction cost over-run. The client has known every step of the way what his costs were going to be, and was given viable alternatives for every design decision. Only twice in 10 years was redesign required after working drawings were completed. Our losses due to project redesign have been almost negligible.

## **Better Work Inventories**

In our experience, larger volumes of work-on-hand in many different

locations in the United States have spread the risk and added to the comprehensive experience of our team in design and construction. This work also has provided access to the best choices of resources from many different regions, making the solution and control of potential problems a great deal easier.

#### **Better Relationships with Clients**

The client has an open book from us on all cost savings; and is consulted on all decisions which will affect quality, cost/benefit analyses and the selection of individual suppliers and subcontractors.

#### The Practical Test of the Client Relationship

Most importantly the walls of secrecy come down. There are no mysteries as to how the money is spent and who is being paid how much. The client can be confident, because the client, the architect/ engineer, and the professional constructor all benefit from the same achievement: the best quality at the lowest honest cost.

# Cost efficiency is one of the most important reasons for letting separate contracts

It's been proved over and over again. Both in privately financed construction and in public construction where funds come from taxes. In fact, many states and cities *require* separate bids. The mechanical portions must be separated from the general construction bids. The result is that competitive bidding for mechanical work reduces costs, increases efficiency. That's reason enough to let *all* mechanical contracts separately.



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Compare the energy conserving capability of masonry, for instance, with double-plate glass walls.

At 4:00 P.M. on a hot August day in Washington, D.C., the heat gain through a square foot of west-facing insulated brick and concrete block wall will be 2.2 Btus an hour.

The heat gain through a doubleplate glass wall in the same location will be 173 Btus a square foot in an hour. A big difference.

Project this differential over 10,000 square feet of wall. You come up with a heat gain through masonry of 22,000 Btuh, while the heat gain through double-plate glass is 1,730,000 Btuh.

In the case of the masonry wall, cooling equipment with a two-ton capacity can handle the heat gain. But with the double-plate glass wall, about 143 tons of cooling capacity will be needed.

An analysis of a typical 10-story building shows that over its useful life, the air-conditioning cost for a square foot of our masonry wall will be about 23 cents. For the double-plate glass wall, it will be \$7.60.

It takes a lot of money to buy, install and create space for all the extra air-conditioning equipment required by the double-plate glass wall. A lot of money and a lot of energy to run that equipment.

Compare the heat loss in winter. It has a dramatic effect on energy consumption and building operation costs.

Our masonry wall, for example, has a "U-value" of .12. The doubleplate glass wall has a "U-value" of .55. (U-values are used to determine heat loss through one square foot of wall area in Btuh per degree Farenheit differential across the wall.)

This means that the masonry wall is about 450% more efficient, on the average, than the glass wall in reducing heat loss.

Over the useful life of the building, the heating cost per square foot of wall area for masonry will be about 30 cents. For double-plate glass, about \$1.38. In a time of one energy crisis after another, masonry makes eminently good sense as a good citizen.

The masonry industry believes that the thermal insulating qualities of masonry are an important economic consideration to building designers, owners and investors, and all citizens.

Masonry walls save on airconditioning and heating costs. And just as important, they are less expensive to build. The masonry wall we've described would have a 38% lower initial cost than the doubleplate glass wall.

If you'd like to find out more, write to us and we'll send you a booklet comparing the thermal

insulating qualities of masonry walls with double-plate glass walls, metal panel walls and pre-cast concrete walls.

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## "What Do These Things Have In Common?"

Story Of A Young Firm Offering Broad And Unusual Design Services

By Jerry Allen

There are many directions a design office can choose in its beginnings. There are ideals that are simple, noble, complex; to be a service, a sound business, a form giver; the choices are many. *Criteria* too has a set of ideals which we feel are reflective of the type of service we offer.

*Criteria* is based upon selfdevelopment. Energy springs from individuals striving for his own maximum potential. At *Criteria* there are no salaries paid; instead, each person is responsible for his own clients, art or studies, and deadlines. Hence, vacations, hours, pleasant afternoons, overtime, etc. . . are their own choice. The quality of an individual's work becomes an active reflection of his or her own striving and selfdiscipline in meeting personal goals as well as the high standards and expectations of the group.

This direct relationship between an individual's efforts and the satisfaction and personal feeling of accomplishment in the high quality of his work, provides, to a greater and greater extent, the incentive for new growth and personal enhancement. The structure allows for a maximum degree of flexibility in the acceptance of responsibility, the level of involvement and movement between disciplines. In this way it can be responsive not only to how much responsibility a person can handle, but also the fact that one's capacity for responsibility is not a constant sort of thing, that it moves and changes with time and circumstance. People move in and out freely as a matter of personal choice.

This personal development leads to the involvement with other disciplines. We all have a desire to expand our knowledge, but to spend one's time always in school doesn't satisfy the desire "to do." Hence, *Criteria* is made up of biology, chemistry, environmental psychology, architecture, graphics,

Jerry Allen, founder of Criteria, Minneapolis, is also an instructor in the University of Minnesota's School of Architecture. sculpture, carpentry, experimental materials, animal behavior, pottery and photography. There are about 15 people engaged in a variety of areas from biochemical architecture to choreographing the city as a learning tool. Through this association and mutual education process, we have learned that no matter how diverse disciplines may seem, they are also dynamically interrelated.

One of the courses we offer is called the Web of Continuity, which deals specifically with finding these relationships. Other classes have also evolved out of this group, such as Creative Botany for Poets, Environmental Psychology, Advanced Sand Castles and Creative Problem Solving.

This composite of people also leads to a great variety of research; for example, the biologist is working with artificial soils in an attempt to reclaim some of the 15 basic functions a plot of ground performs if you leave it alone, many of which are violated if you build upon it. The chemist is working with permanent soap film to provide a new dimension to space frames. The sculptor is working with young children in humanizing spaces. An environmental psychologist, anthropologist, architect, animal behaviorist and a banker are currently working on a book called The Human Uniform Building Code.

This involvement with others has also led to a great variety of interesting projects: from town houses and apartments to tourist information trucks; from throw away handwarmers to designing a city event; and from writing school curriculums to planning university blimps.

Our process is not one of creating new knowledge but merely to test, integrate and communicate in the simplest forms that which already exists. For example when we design an environment one of the check lists we use is human basic needs. These needs have been explored, researched, pontificated and obscured in technical specialized language for centuries.

Our job is to decipher these and make them available for others to use







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because to dabble in narrow areas of concerns leads only to academic constipation. Instead, our desire is to do it, use and test it. The experiment is the important thing.

In other words, "if you know it works, don't do it." If you want a simple route to some of this information, play the game called "what do these things have in common?": an igloo in the arctic and a hut in equatorial Africa. Then use your answers as a check list in the apartment you are designing. Another way you can observe basic needs is to look at situations where some have been eliminated, such as prisons and rest homes, and observe the distortions in behavior.

So where does all this lead in terms of services as an office? Maybe with a

simple project we can illustrate where we are headed.

Project: Playground for preschoolers — Duluth, Minnesota.

*Client:* Department of Welfare — St. Louis County.

*Problem:* Design a playground with a low budget which will contribute to the experience of young children.

We have developed a process (not a new one but an existing one) where the students, staff and ourselves are involved in the programming, design, criticism, material gathering, construction, use and future change. The idea is to give young children the concept that things come from somewhere, can change form and become something else that is useable. Instead of the playground being closed for 2 weeks during construction, part of their play becomes the construction. The staff see the evolution of an idea they have about play and education and observe the process of how it becomes real. Then, in use, if it doesn't fulfill expectations, they know it can be changed and how to effect the change. This is considerably different from buying an \$800 piece of play equipment and then not have it function or bring delight as it should, although it still must be kept because of the expenditure.

Almost all of the elements used here will be "found" items; the children and staff will participate in the search. As an office, since we are involved in the program, design, education, scrounging and construction, this is not a real money making project; but it does fit the concept of self-development in terms of expanding our experiences, the children's introduction to environments, and the staff's understanding of the design process.

As designers we are concerned about new forms, but we feel these will evolve from the methods and areas we search. Here are two items to consider:

For example the first caveman confronted with his environment; it was totally overwhelming and he had no control over anything. He therefore used his ability to *learn* by dividing his situation into agriculture, mathematics, architecture, etc. but some time in his evolution he discovered that nature doesn't know it has a chemistry, biology, physics, etc. but instead operates in a total integrated whole.

A second good example is to study a person's body. If you were to study it from only a biological point of view, you wouldn't understand because it is also chemical, electrical, psychological; hence, if man is to understand, he must begin to integrate his point of view of the world.

As for our office's utilization of this process, only time can be the judge.

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Tomax is manufactured in sizes up to 12 feet by 24 feet, using standard size blocks in 6 inch, 8 inch and 10 inch by 12 inch widths.

For more information on the Tomax preconstructed wall panel, its uses and potential, call or write us. We'll be happy to give you the facts.

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**Before** – pool surface is cracking and peeling (see inset). Pool needs daily cleaning and filtering system maintenance once a week.

## CERAMIC TILE ELIMINATES HIGH COSTS OF SWIMMING POOL MAINTENANCE.

That's what officials at Park Senior High School, Cottage Grove, Minnesota, concluded when they totaled the cost of maintaining their painted pool from 1966 to 1972.

The maintenance and contracted work included sandblasting, painting, cleaning paint chips from the filtering system, daily pool cleaning, etc.

Officials decided to cut costs with Ceramic Tile early this spring. Now with work completed, they have a beautiful pool that will last indefinitely – *with minimum maintenance*.







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## (Continued from page 152)

extent of our services depends on the owner's experience, staff, and capacity to perform these services in his own interest.

Under the CC System, B & A, during the process of designing and preparing plans and specifications for bidding, carefully studies the project and divides the work into bid categories. There may be 20, 30, or more of these categories. This expands the number of contracts from the three traditional, general, mechanical, and electrical, categories. The number depends on the size, type of project and the building trades practices in the area. B & A receives bids in each category on behalf of the owner.

Most of the categories of construction work which are subbids under the traditional system are awarded as direct contracts between the owner and the contractor performing the work. Before an award is made, our staff tabulates and evaluates all bids followed by conferences with apparent low bidders. We then review the bids with the owner and make recommendations for awarding contracts in each of the categories.

Construction cost budgeting and cost control is an integral function under the CC System which is performed by our estimator as the design is developed and the plans and specifications are prepared. As this work progresses, the design proposals are periodically monitored for construction cost limitations, for construction techniques, and methods by the estimating and field operations department. This responsibility is often performed in consultation with specialty contractors who will be bidding the various categories of work as the drawings progress.

Under "fast track" programs, the first bid package results often provide an opportunity to reevaluate the design, methods, and materials for subsequent bid packages. A close relationship with the specialty contractors during the design process normally results in construction cost economies that cannot otherwise be achieved. With the CC System our construction operations department studies the scheduling of construction operations during the preparation of plans and specifications. When they are issued to bidders, a construction operations schedule is included in the documents, indicating the time frame in which they will be required to perform.

As the project progresses the schedule is reviewed, revised, and re-issued to all contractors to reflect any changes in conditions affecting the schedule.

When the completion requirements for a project demand occupancy in a compressed time frame and during periods of equipment and material shortages and long delivery times, the CC System is flexible. It is quite valuable in reducing the time required from project initiation to occupancy. Under these conditions the process includes issuing documents to bidders in two or more "bid packages". The plans and specifications are completed in stages to permit "fast track construction".

The first bid package might include site preparation work, concrete and masonry work, structural steel and other materials or equipment requiring early ordering to insure timely delivery. The first bid package work is then awarded and construction starts while the plans and specifications for the remaining work are completed and issued in later bid packages.

Once construction starts at the site under the CC System, one of our "Construction Coordinators" assumes the responsibility for coordinating, expediting and inspecting the work of all contractors performing at the site. His on-site responsibilities include evaluating the progress of the work in relation to the amounts each contractor claims is due for monthly progress payments. The Construction Coordinator's function is supported by the office staff for contract administration and other related functions. On large and complex projects the Construction Coordinator may



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ARCH: DYKINS HANDFORD INC. MPLS. CONTRACTOR: SWEITZER CONST. COMPANY, ST. PAUL be assisted by field personnel with expertise in specialized areas of the construction process.

Under the CC System, each contractor submits applications for payment on a monthly basis to our accounting department. They are checked by our staff and corrected if necessary. The applications are scheduled and summarized in a monthly submittal to the owner showing the status of the project in relation to the work performed and in relation to the owner's construction budget. The owner prepares monthly checks for each of the contractors and transmits them to our accounting department.

After receipts of lien waivers and other required documents, we release the checks to the contractors. When an owner wishes to avoid preparing the checks required under this procedure, we establish a trust account to which the owner makes a single payment monthly and from which we make disbursements to the contractors.

Soon after the facilities are occupied, B & A expedites and coordinates corrective work to achieve final completion. This service also takes place during the one year guarantee period.



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#### REWARD

for any information about Lavergna Lengthfirth or whereabduts Last seen leaving on assignment for Northwest Architect to interior of Minn. Iron Range to research source of Morasignment: a pictorial essay comparing the original, the first re-importation based on that first re-importation, and all the subsequent evolutions of these design motifs. The last sign of life from

motifs. The last sign of life from her was an enigmatic message on a postcard dated December 19, 1965. I have assembled many free gifts and will eagerly exchange them for any bits of information. or manuscripts or anything whatsoever about or by Lavergna. (One of my earliest free gifts is right in style with the Great Gatsby revival — of course that one will go for some substantial information only) The Editors of the Northwest Architect have assured me that they are still interested in her essay and that they too would consider rewarding the bearer of information leading to the whereabouts of either Lavergna or any written material of hers. Please rush any news that you may have to Salmendar Lengthfirth, in care of Northwest Architect.



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Sauk Centre High just made plans for the 1997 class reunion

When the class of 1972 meets for their 25-year reunion in 1997, chances are they'll be running into an old friend — Romany-Spartan<sup>®</sup> Ceramic Tile.

The planners at Sauk Centre were not only thinking of this year's classes, but classes for years to come. That's why they chose Romany-Spartan tile, a product that's been going to school just about as long as any other surfacing material.

Romany-Spartan tile has earned its Ph.D. (Phenomenal Durability) from school after school over the years. That's one of the reasons why some of today's leading educators and architects continue to specify it. There are many more reasons, too. Like versatility in design, color selection and minimum maintenance costs.

So if you're looking for a material that'll make it back to reunion after reunion still looking as young as the day it entered school, specify

Romany-Spartan ceramic tile.



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## Minnesota Designer Selection Board Created

Minnesota Governor Wendall Anderson (seated) recently signed one of the major good government bills of the just completed legislative session when he created the Designer Selection Board.

The board will act on all state contracts over \$250,000 and will be comprised of five members. Two will be appointed by the governor, and one each appointed by the Minnesota Society of Architects, the Consulting Engineers Council and the Minnesota State Arts Council.

Witnessing the signing were (from left) Jack Wilwerding, AIA; Rep. John Lindstrom (House of Representatives sponsor); Clark Wold, AIA; Fred Bentz, FAIA, president of the Minnesota Society of Architects; Saul Smiley, AIA; Daniel Sheridan, executive director, Minnesota Society of Architects; and Morgan Flemming (representing Sen. Nicolas Coleman, Senate sponsor and chief author).

## **Book Review**

The Architectural Index for 1973. The Architectural Index, P.O. Box 1168, Boulder, Colorado.

The Architectural Index, which appears annually, can be a handy tool for readers who subscribe to most of the 10 periodicals indexed and who don't mind stopping their research with last year's issues.

However, those who don't own an extensive magazine collection and who need more current information may as well go to the public library and use the Art Index. Art Index lists more than twice as many architectural, building and design periodicals, including foreign publications, as does Architectural Index and it is only about three months behind. Consequently, for a definitive study on any topic, Art Index is imperative.

Nevertheless, Architectural Index does have some advantages. Its users do not have to winnow through dozens of entries on art, artists, exhibitions and archaeological sites. Architects, designers and firms are indexed individually, along with their projects, under one heading, even though some of these entries might refer to the same article. Since the Art Index couldn't possibly include so much detail, this feature alone makes the Architectural Index well worth the investment. CEK





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# Expanded Services — The Sky's The Limit

## By Blakeslee T. Ryon

When G. W. Deactivated Accelerator Springs, Inc. (GWDAS) decided, in the spring of 1973 to diversify by adding a line of recycled piston reducers specifically designed for residential use, our first need was for a new building for the manufacture of these pesky little units. A building was needed that would maintain our unsullied 100-year reputation for quality and sober realism, achieve desired economies of function and process and cope with a severe employee morale problem attendant upon the peculiar nature of our product. (Without going into tiresome detail let me explain that the making of the recycled piston reducer is a rather earthy process. It involves the compression of vast quantities of bovine, a vital residue into the painstakingly crafted little cubes and spheres which go to make up this indispensable product).

Blakeslee T. Ryon says he is chairman of the board for G.W. Deactivated Accelerator Springs, Inc.



While searching for an architect, we learned at an early stage of new trends within this profession toward the provision of "expanded services." Contacting several noted giants in the field we settled upon one which seemed particularly suited to our purpose, and from that time on our experience has been most rewarding.

After considerable negotiation it was decided that a joint construction expansion consortium would be formed with the architect/builder/ manager/maintenance/realtor owning one-third of the private limited debentures outstanding and the client - Redupiston - a one-quarter owned subsidiary of GWDAS owning, in limited perpetuity, the unattached residium. This arrangement worked to the advantage of the expanded architect as well as ourselves. Never was there a moment that the architect, in one of his many functions, was not in command of the details of all necessary processes. The architect's team of expert constitutional lawyers worked full time defending the irritating spate of litiga-



tion growing out of the environmental aspects of our planned open air vital residue stockpile, while a team of skilled landscape architects created out of this necessary supply, a vision of breathtaking turn-of-the century beauty. The architect's cadre of skilled medical researchers and psychiatrists delved deeply into the employee morale problem, devising a unique, patented and *entirely architectural* solution to the complaints of queasiness and internal dubiety with which our personnel had been plagued.

Probably the most challenging aspect of the project was the public relations side, where teams of former high government officials blanketed the countryside with chalk talks and slide shows presenting the positive aspects of the new building, together with free, cheerfully decorated face masks and nose plugs emblazoned with the firm name. Meanwhile in the core operation, the architects acquired land (also, as a further service, the first year's supply of vital residue to form the demonstration stockpile) and designed, supervised and constructed a modern factory with a simple Georgian facade, which the architect's maintenance and management subsidiary contracted to service for a corporate lifetime or 10 to 15 years, whichever came first. The cost of this entire operation was financed by means of a special issue of short term nonbearing mutual interest bonds issued by the architect's Wall Street Office and underwritten by the architect's subsidiary Bank and Trust Conglomerate Enterprise of Hot Sulphur Springs, Ark.

Now, a year later, GWDAS is enjoying an unparalleled year of profittaking and sales receipts due. We must confess that this result is due to no small part to the architect's mobilization of the student bodies of several large universities to sell our product door-to-door during vacations, with a special line of red and green piston reducers for the holiday season, designed by the architect's industrial designer — a graduate of the Moscow Beaux Arts and a Ph.D. in his own right.

The outlook at this moment is even more promising. Although it cannot be announced officially at this time, we have it on unimpeachable authority that the architect himself is planning to run for president in 1976. Who knows what further services he can then perform!

Editor's Note: This unsolicited, unverified and irreverent story is printed here merely to provide balance to this issue.



## **New Products**



A Revolutionary System For Rapid Data Analysis

An electronic measurement system that can be linked with a computer to obtain rapid analysis of tests, surveys, or reports has been introduced by Minnesota Datronics, a subsidiary of 3M Co. The RST 5500 Data System consists of a data entry form, a reader-scorer and an interface unit that converts the raw data to computer language. The process requires no card or tape punching. For more information about the system, contact: 3M Co., Dept. VP4-4, Box 33686, St. Paul, Minn. 55113. (612)733-9534



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Plywood with a better-than-plywood surface is a capsule description of Simpson Timber Company's textured plywood siding, Ruf-Sawn 316. The siding has the desirable features of plywood plus a surface making it one of the best for solid color finishes on the market. Patterns, end use photos, finishing instructions and the economy of a plywood siding that accepts paint or color stains, are cited in this new, eight-page brochure by Simpson Timber Co., 2000 Washington Bldg., Seattle, Wash. 98101. 206-682-2828.



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## Letters . . .

I collect architectural magazine covers. Yours are the best. Enroll me for a two-year subscription. N.D., Cambridge, Mass

Your last issue of the Northwest Architect (May/June) was outstanding. It made me want to build a house. Hired an architect. Designed a wonderful house. Can't get a loan. Any advice?

L.C., Richfield, Minnesota

Why don't you print something about bicycle path planning? J.D., Minneapolis

Coming, Ed

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The frontier general store was the full-service retailer in its day. It sprang up and thrived wherever American civilization took it, from the early Jamestown settlements, to the California gold fields. From the Canadian fur territories to Texas cattle country. The general store was an institution out of which modern retail selling has developed.

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The completed Maid of Scandinavia building is a great source of pride for its owners and a convenience for its many customers. Project: Architect:

Engineers:

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Architectural plaster made the musically impossible possible for the Minnesota Orchestral Association. The objective was to create a hard reflective ceiling surface with many facets designed to diffuse sound. In addition, the ceiling had to be thick and heavy to contain the sound. Esthetics, durability, and minimum maintenance were important considerations.

Architectural plaster met all of these goals and the job itself was completed in just 41/2 months.

The project was begun by prefabricating the cubes in a separate building. Cubes were assembled of 2 inch channel iron, forming a grid. The cubes were then suspended from the roof and integrated with a neutral ceiling plane. Locating the cubes properly was strategically critical to optimal sound reflection.

The entire ceiling surface was lathed and plastered with a scratch, brown and finish coat. Total plaster thickness was 11/2 inches (double normal thickness) to achieve a ceiling weight of 15 pounds per square foot. The entire lathing and plastering job totaled 120,000 square feet which included ceiling, tiers, balconies, hallways and 54 foot high columns. Work was completed on schedule (without overtime) in just 41/2 months-music to everyone's ears.



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