

# ARCADE

Grant Gustafson  
11 E. Airport Road  
Billings, MT 59105

Bulk Rate  
U.S. Postage  
PAID  
Seattle, Wa.  
Permit No. 13571

The Northwest Calendar for Architecture and Design

Two Dollars

Vol. III, No. 6

February/March 1984



Barely hinting at what is yet to come, the early structure for the West Seattle Bridge is nearly lost in the scene in this recent photograph of the West Seattle approach to the construction site. More poetry than documentation, the work of K.L. Slusher commemorates the solemnity of construction process. See "The West Seattle Bridge" inside.

## MOVEMENTS In Structural Design

The typical "sidewalk superintendent" would probably claim that building structures haven't changed much over the years, that many of them are larger, but still use the same steel and concrete beams and columns. However, though not apparent to a casual observer, structural design has changed dramatically in the last twenty years. The computer, high-strength steel and concrete, and improved construction methods are resources that have become available. Advancements in structural design have occurred as the architect and engineer have found innovative ways to use these new resources. Many projects could not be built today without the cost savings which have resulted from use of advanced structural design concepts.

**Structural design has changed dramatically in the last twenty years.**

This article explains a few of these developments. Many of these have not yet received much publicity. Some examples of

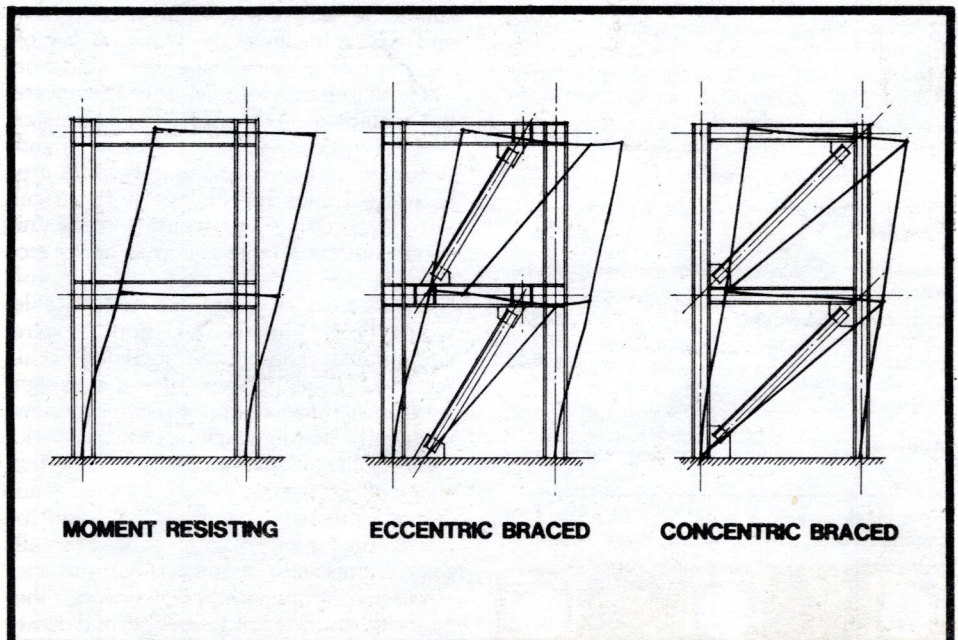
actual applications and influences on the building designs are included. Other concepts that are described are ideas looking for the right opportunity for implementation — maybe on your next project.

### STEEL AND CONCRETE COMBINATION SYSTEMS: Design Flexibility

Until recently, the beams and columns of high-rise buildings have been either all concrete or all steel. In 1978, the design of One Union Square by TRA, architects, and Skilling Ward Rogers Barkshire Inc. (SWRB), structural engineers, departed from this concept by using the combination of a slipformed concrete shear-wall core surrounded by steel floor-framing and steel exterior columns. Both the strength and stiffness of concrete and the light weight and speed of erection of structural steel were used to their individual advantages. Similar structural systems have been used by SWRB in Seattle's Marsh and McLennan Building and in the Veteran's Administration Hospital, both by The NBBJ Group.

... continued on page 4.

Comparison of three structural frames. Two, the moment-resisting frame and the concentric braced frame, are in common use. The third, the eccentric braced frame is a newly developed concept which accommodates bending locally rather than causing it to be transferred throughout the frame.





# ARCADE

February/March Issue:

## From the Editor:

So many of our standards for ourselves, as well as the public's expectations of us as members of the design professions, are derived from images of The Artist intensely in pursuit of an aesthetic idea. The Craft implicit in being an architect or designer is allowed to remain uncelebrated, if not unexamined. Yet the nitty gritty of things can be the source of deep personal satisfactions for many of us. This issue of ARCADE is a venture into the world of secret challenges and rewards of the less glamorous parts of architecture, without which there could be no greater whole.

**Editor:** Rebecca Barnes

**Contributors:** Marsha Back, Rebecca Barnes, Catherine Barrett, Frank Carroll, Steve Cecil, Richard Edmonds, Gene Edstam, Bill Gaylord, Jan Gleason, Jerry Hillis, Bill Hook, Jon Magnusson, Caroline Petrich, John Savo, Ken Slusher, David H. Wright

**Graphic Coordinator:** Jestena Boughton

**Production Coordinator:** Mark Ashley

**Production Assistance:** Dave Aynardi, Marsha Back, Catherine Barrett, Jestena Boughton, Bill Gaylord, Nora Jaso, Caroline Petrich, David Schraer, Rob Wallace

**Calendar Editor:** Tony Case; **Graphic Artist:** Mike Dowd; **Contributors:** Mark Ashley, Rebecca Barnes, Isabelle Irle, Sonya Ishii, Larry Leland, Brent Rogers, Jill Rullkoetter, Virginia Voorhees

**Advertising:** Bill Gaylord and Caroline Petrich

**Distribution:** **Coordinator:** Larry Leland; **Assistance:** Marsha Back, Jestena Boughton, Rob Wallace

**Circulation:** Marsha Back, Trina Deines

**Bookkeeping:** Mary Anne Perkowski

**Finance:** Rebecca Barnes, Bill Booth, Jestena Boughton, Tony Case, Clarissa Easton

**Editorial and Planning:** Rebecca Barnes, Catherine Barrett, Jestena Boughton, Tony Case, Nora Jaso

**Typesetting:** Western Typographers, Inc.

**Printing:** Consolidated Press

ARCADE is published with an all-volunteer staff six times a year in Seattle, Washington. Subscription rates are \$10.00 per year for individuals, \$15.00 per year for offices and organizations, and \$20.00 per year for foreign subscriptions. Individual copies are \$2.00. Although we cannot guarantee publication, letters and articles are welcomed. The opinions expressed in this paper are those of the authors. Consider lending a hand in the production or distribution of this paper. Address all correspondence to: ARCADE, 2318 Second Avenue, Box 54, Seattle, Washington 98121. © ARCADE 1983.

## SUBSCRIPTION

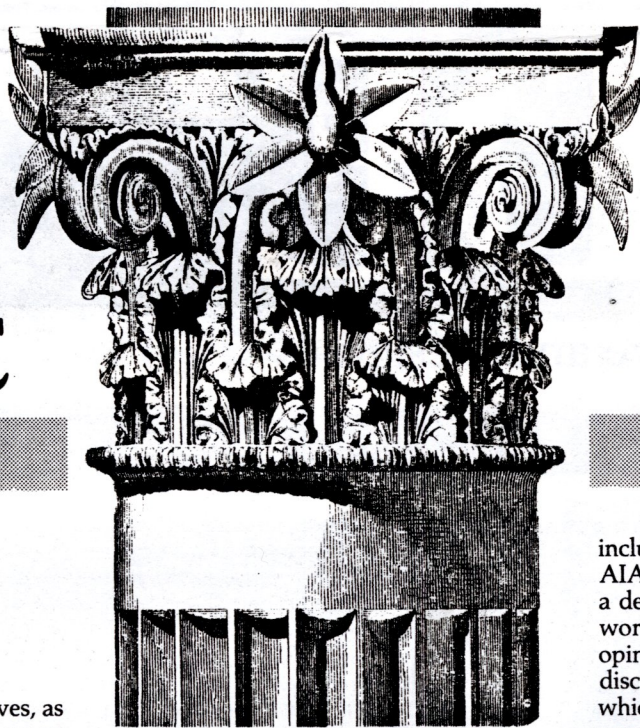
Please enter my subscription for one year (6 double issues).

Individual Subscription ..... \$10.00  
Office/Organization ..... \$15.00  
Foreign ..... \$20.00

Name \_\_\_\_\_

Address \_\_\_\_\_

Send check or money order to: ARCADE, 2318 Second Avenue, Box 54, Seattle, Wash. 98121.



## Column of Many Orders

**WOMEN AND MINORITY BUSINESS** people may find the business climate improving as a result of the new State of Washington requirement (SB 3230 - 1983) that state contracting be adequately shared among minorities (9.1% of the total base) and among women (3% of the base); these being 1983-84 goals. Two sources of information regarding these opportunities are the new state Office of Minority and Women Business Enterprises in Olympia and the Association of Washington Businesses, also in Olympia, which offers seminars of a how-to-do-business-within-the-state-purchasing-system nature.

### DEAR ARCADE:

We enjoy receiving ARCADE. We like the format and hope that you will not try to expand your readership to include all the world and become fashionable.

Henry Klein  
The Henry Klein Partnership, Architects  
Mount Vernon, Washington

**EARLY THIS FALL SEVERAL INDIVIDUALS** who represent the informal architectural networks of our community were asked to attend a meeting to plan the AIA monthly meeting for January, the intent of which was to focus on "young architects." The theme seemed to evolve from the accusation that the AIA was not meeting the needs of its younger members, the national drive to increase new memberships, and an expressed desire to begin a design dialog with the local architectural community. It was hoped that fresh new work would provoke a critical discussion that had been lacking regarding the larger and more public work of established design firms.

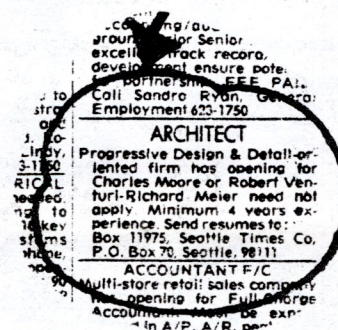
The newly formed program committee (a majority were non-AIA members) deliberated on several issues — how to generate dialog, the subject of "dialog," whose work should be shown, who to invite, and how and where to show the work. A list of "young offices" was made who would be asked to present work. Most of them were not members of the AIA. The hope was that the work would be of high quality and virtually unknown, and that it would provide a stimulus for dialog. A theatrical setting was chosen to encourage communication among a large group in an unlecture-like atmosphere, and possibilities for "provocateurs" — persons whose role would be to initiate discussion — were enumerated. The choices included architects as well as persons in related design professions in an attempt to find some new perspectives from which to view the work.

Of the list of "young offices" solicited, a group of eighteen architects, designers and design-builders met in early December to discuss the January AIA meeting. They all were enthusiastic about a show and the discussion of one another's work, but the majority decided not to exhibit under the auspices of the AIA for many reasons which

include the following: a concern about the AIA's motivation to sponsor this meeting, a desire to discuss other issues than their work with the AIA, and a disregard for the opinions of the AIA as an institution. The discussion was animated and lengthy, which was surprising considering that these people had never met as a group (or "non-group" as someone mentioned) before. It is hoped that this group will find a way to share their work and ideas more informally, with each other and with the design communities in Seattle.

The AIA meeting took place on January 18th at A Contemporary Theatre with eight practitioners presenting their work, which was discussed by three "provocateurs." More than 300 people attended — an indication of a lively interest in the discussion of design. Hopefully, other organizations, and the AIA, will take advantage of this energy to provide future opportunities to discuss local work and also address concerns about the organizations themselves.

### IT'S NOTHING PERSONAL, RICHARD



... Seattle Times, 1/15/84

**PRODUCTS IDENTIFIED BY BRAND** names in specs have a 90% chance of being installed, according to a recent study by Sweet's. And even when the specs are changed, it is the original architects or engineers who make the substitution 61% of the time, and probably to save \$\$\$.

**COCA'S "PUBLIC COMMENTS" EXHIBIT** has been extended through 2/18, at 2216 Western, Tu-Sat 11-6 and Th 11-8. "Public Comments" is a collection of works by seven artists presenting a remarkable variety of images and styles. A key to the show's energy is the tension created by the juxtaposition of art works presenting strong political imagery from both communist and capitalist perspectives.

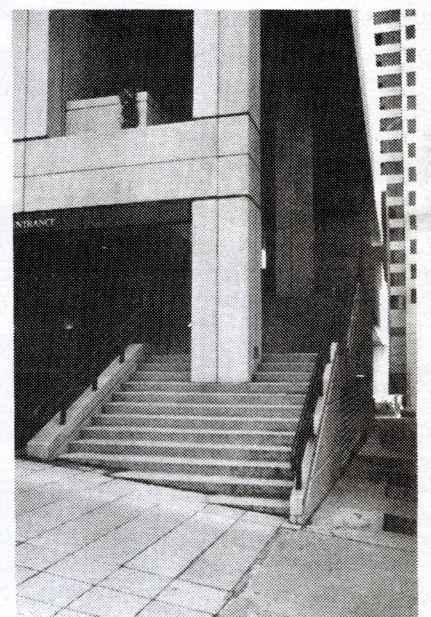
**SEATTLE'S URBAN PARK IMBROGLIO** (the infamous Westlake Mall) is about to be put into a new perspective by the apparent ease with which Bellevue (Seattle's counterpart to the east, rapidly maturing into a major urban center) has positioned itself to gain both national design status and a quality major public open space in the heart of its downtown. How? The Central Park Design Competition, sponsored by the Bellevue Parks Department and organized by Ed Wundram, the man who put together both the Portland Building and Tacoma Dome design competitions.

The site is a 17.5-acre area bisected by 102nd Ave. NE, immediately south of Bellevue Square, and part of the pedestrian core in the City's master plan. A survey of local residents and businesses elicited 5,000 responses which form the "program" for the competition: entrants will receive a fifteen-page document which presents survey results rather than a program which interprets them. Generally, the idea is that, in place of the existing School District Headquarters and High School facilities, a unique place for passive recreation will be developed, probably including an outdoor

performance space. Says Wundram, "Nothing will be rejected because of its contents. What we really want is a concept, to stretch the designers' and the judges' imaginations. . . . Bellevue wants the widest possible exploration of design solutions, and it wants public participation in the process — not a choice of one."

Vincent Scully will act as Advisor to the jury, commenting on the site's potential and on the "central park" in an historic context, and analyzing the entries. Jurors include UW Professors Norman Johnston and Sally Schuman, five Bellevue citizens appointed by City Council, the Director of the Parks Department, and the Director of Planning. Materials will be available February 15; the entry deadline (\$100 registration fee) is March 15; Phase I entries are due May 8. Three to five winners will be selected to develop their concepts in exchange for a \$10,000 fee. The ultimate winner will be commissioned to design the \$5 million Central Park in Bellevue's future.

### APPARENT CONTRADICTIONS

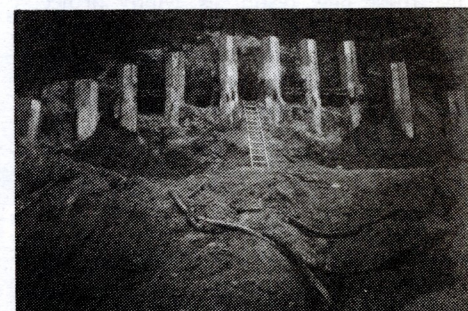


Part of the shopping arcade in the recent Madison Hotel, this column seems to have found its footing.

**IN AN UNPRECEDENTED DECISION**, eligibility for the National Register of Historic Places has been granted to the original of America's most visible fast food restaurants, McDonald's. The owners have declined actual registration, fearing limitations which would prevent them from destroying the building.

The McDonald's phenomenon began in 1955 and set standards for an entire industry. The famous golden arches, although never a structural element, were at one time a national symbol. They yielded to an emphasis on interiors as the franchise claimed inner-city buildings and modernized its image.

This individual building's strictly architectural and/or historic significance is questionable, yet it offers a wealth of information for behavioral and marketing studies. Its eligibility must either be questioned, or applauded as progressive, holistic thinking on the part of the National Register.



Now hidden in a concrete wall, these pilings help hold up the West Seattle Bridge. September, 1982.



Dear Reader of ARCADE,

Can you find the mistake on page 3? A line of type from the first column of the Energy Code article slipped down into the title of the Joint Design article, in an unsuccessful effort to leave the issue. Please cut out the line and glue it onto the correct spot on the page. Or pretend you did. Our apologies.

The ARCADE Staff



# ENERGY CODE TIGHTENS UP ON MAJOR PROJECTS



On December 12, 1983, the Seattle City Council passed a modification to the existing energy code which will influence the work of all developers and architects planning and designing buildings larger than 50,000 square feet.

**HISTORY.** The Seattle City Council drafted this new Ordinance because of its conviction that too few energy alternatives were being considered in the schematic phases of large projects, and too few alternatives were being presented in the projects' Environmental Impact Statements (EIS's). The Council also believed that there was a perception by the community that the commercial sector was not being required to conserve as much as the residential sector, a perception promoted by local residential electric rate advocacy groups. The Council responded by writing Ordinance 111460, the Major Projects Energy Analysis Ordinance.

Disagreement among design professionals on the Energy Code concentrates on the form it should take and on its equitable application. In passing this new Ordinance, the Council attempted to incorporate that

administer the new law be promulgated with the help of public input. Similar public input helped shelve the first draft of this same Ordinance, because the life-cycle costing of state-of-the-art energy conservation systems, which it would have required, was considered too difficult to apply.

**REQUIREMENTS AND EFFECTS.** The effect of the new Ordinance will be to increase both the development costs, due to increased design fees, and first costs, due to increased investments in energy conservation features for developers of new projects. Designers will have to provide the additional services required for the computer modeling and options analysis now called for in the Ordinance in both the schematic and design development phases of a project.

For each project, a "Building Forms Analysis" will be required. Its results will be presented at a meeting between project proponents and representatives of Seattle City Light and the Department of Construction and Land Use (DCLU) at the time of application for a Master Use Permit (MUP), and will also be disclosed in the

project EIS. This analysis involves computer modeling to predict the energy requirements of possible building forms — options primarily based on volume-to-surface-area ratios.

Each major project (50,000 square feet or more) also must undergo a computer modeling of its energy consuming systems, demonstrating a ten percent improvement in energy consumption when compared with the project as it would have been designed to meet the original version of the basic Energy Code.

**IMPLEMENTATION.** "Grandfather clauses" ease the transition for most new Ordinances, and this one should be no exception. Although specific rules have not been written, it is likely that certain requirements will be waived for projects which are in progress on the effective date, April 14, 1984. For example, projects whose MUP applications have been filed by April 14 will likely be considered vested and will be exempt from the Building Forms Analysis requirement. Projects further on in the permitting process, with a Building Permit Application filed, will likely be exempt from the ten percent improvement require-

ment. Projects that are on hold will probably be exempt within prescribed time limits.

Many technical aspects of the Ordinance remain to be determined. The primary issues that remain to be resolved are: 1) What computer programs will be used for the modeling requirements, and 2) What will constitute the "standard design" for the comparison for ten percent improvement?

Copies of the Ordinance are now available from DCLU, and copies of the Director's Rules will be available at DCLU after they are issued, probably in the first part of February. The prescribed public input will take place during a period for public comment sometime after the issuance of the Rules and before April 14.

**Richard Edmonds**

Richard Edmonds is a Mechanical Engineer at TRA. He is a U.W. graduate, a Registered Professional Engineer, a Certified Energy Manager (Association of Energy Engineers), and a member of the local ASHRAE Energy Committee.

## THE DESIGN OF JOINTS IN BUILDINGS: Regarding Responsibility

debate by stipulating that the rules used to

Joints in exterior walls, whether between like materials or at interfaces between different parts of the wall system, will, in spite of the best sealants, permit the entrance of water at some points. There is a myth current among those involved with making buildings that sealants, especially if liberally applied, will permanently seal these joints and that further considerations in the design of joints are therefore unnecessary. There are simply too many variables in the field, too many forces acting upon the joints, and too much knowledge available to architects to allow the luxury of subscription to such a myth.

Starting from the point of view that water will enter past the "first line of defense," a design for the joint can be developed based on a strategy to return such penetrating water to the exterior without harm to the inner, vulnerable parts of the building.

Part and parcel with the design of the water-shedding system is the decision the architect must make either to design the work or to charge the bidder with the design responsibility. When the architect elects to do the design, adequate control of the end result will, in all likelihood, be possible with details and specifications based upon experience and input from knowledgeable consultants who specialize in such systems. However, when the architect elects to have a bidder design a package, the architect still must face the difficult task of describing the requirements, if trouble is to be avoided. This task involves the preparation of a performance specification with complementary drawings showing controlling dimensions or desired profiles. It will demand that the architect have a thorough knowledge of the design principles for excluding water from the building. ALL of the requirements which are important to achieve successful performance of the watershed must be spelled out because the bidder is not obligated to any requirements which are not specifically addressed in the specifications. Furthermore, the architect must spell out the criteria by which the results will be judged.

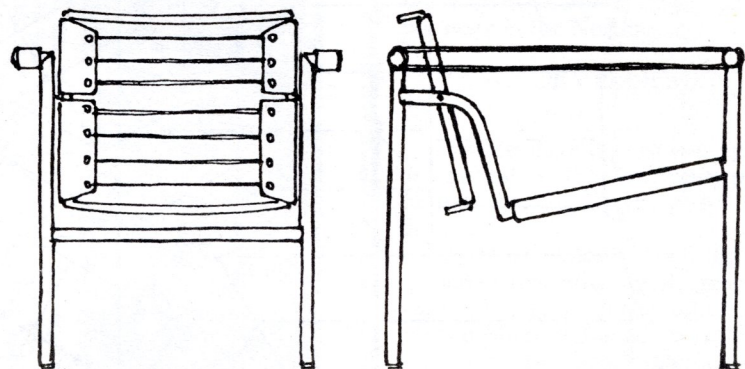
One or several reasons may convince an architect to shift the design responsibility to others with various results:

- To obtain the expertise of those who specialize in particular systems.* Depending upon the needs of the bidder, this may or may not be helpful in obtaining an adequate system. As a consultant, the bidder is probably able to provide helpful advice, but may not be in a position to provide unbiased advice.
- To try to insure the lowest cost for a specified performance level for a particular system by allowing the bidder to use familiar materials, techniques, and details he can economically buy and install.* This is a good approach only if the architect's performance requirements are well thought out, the criteria to measure performance are properly established, and the specifications can be enforced carefully.
- To try to avoid showing ignorance of particular building details and/or costs associated with those details.* Approval time will merely raise these unwelcome issues.
- To save on expenditures of the design fee, which can be avoided by having a bidder work it out and draw it up.* Much time will be required of the architect during the Contract Administration phase to check shop drawings and test results, particularly if the bidder did not plan to adequately cover costs associated with the required performance.

In the final analysis, for projects of large scope where the budget will allow, a full-scale mock-up is desirable to test, under laboratory conditions, the performance of the proposed system, as well as to allow the architect to observe the appearance of the designed system.

**Frank Carroll and Gene Edstam**

Frank Carroll and Gene Edstam are architects practicing at TRA, Frank as a Project Architect, and Gene as a Specifications Specialist.



*Le Corbusier*

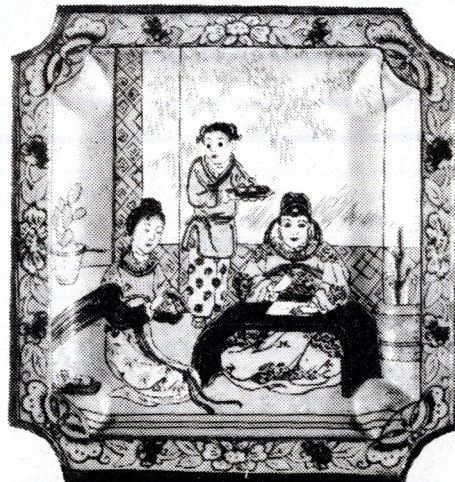
The Classics at



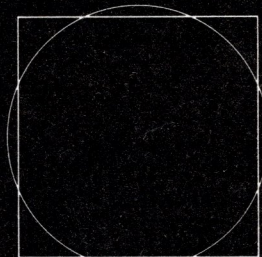
815 E. Thomas.

325-2995

DE MEDICI/MING • FINE PAPER



1222A FIRST AVENUE (206) 624-1983  
MONDAY-SATURDAY 10:00-5:30



**ARTECH**

FINE ARTS SERVICES

Installation, storage, crating and shipping of fine arts and antiques. Design and fabrication of custom sculpture stands. Seattle: 284-8822.



# MOVEMENTS In Structural Design

... continued from page 1.

The Watermark Tower by The Bumgardner Architects also uses a similar system.

In the summer of 1980, another major development in the use of combination systems occurred in the design of the seventy-six story Columbia Center building in Seattle by Chester Lindsey Architects with SWRB, structural engineers. The exterior of a building is often the most efficient location for either braced- or moment-resisting frames, because the full width of the building can be used to resist wind and earthquake loads. The unusual shape of this building with its setbacks and curved

surfaces was a given by the time structural engineers were involved.

It reduced wind-caused sway by as much as 50% because of the stiffness of the composite concrete columns. Due to the extra strength of the concrete columns, steel tonnage was reduced by 40% and structural construction costs, even including the cost of the special concrete columns, were reduced by 25%, as compared with stand-

ard all-steel designs.

prehensive "boundary layer" wind tunnel analysis. The engineers conducted wind engineering studies to analyze human sensitivity to building motion. The type of motion humans perceive is acceleration; if a person is moving at a constant speed, there may be no perception of motion. However, with acceleration or deceleration — for example, when an elevator starts

properties as the real building. This test, in which the model actually flexed in the same way as the Columbia Center will, confirmed that the building design produced acceptable acceleration levels. Nevertheless, the design team, in consultation with the owner, wanted to improve safety factors and tenant comfort by reducing the building's acceleration. (Damping is the measure of the length of time it takes for a structure to come to rest after it has been caused to sway. Shock absorbers act as dampers in a car.)

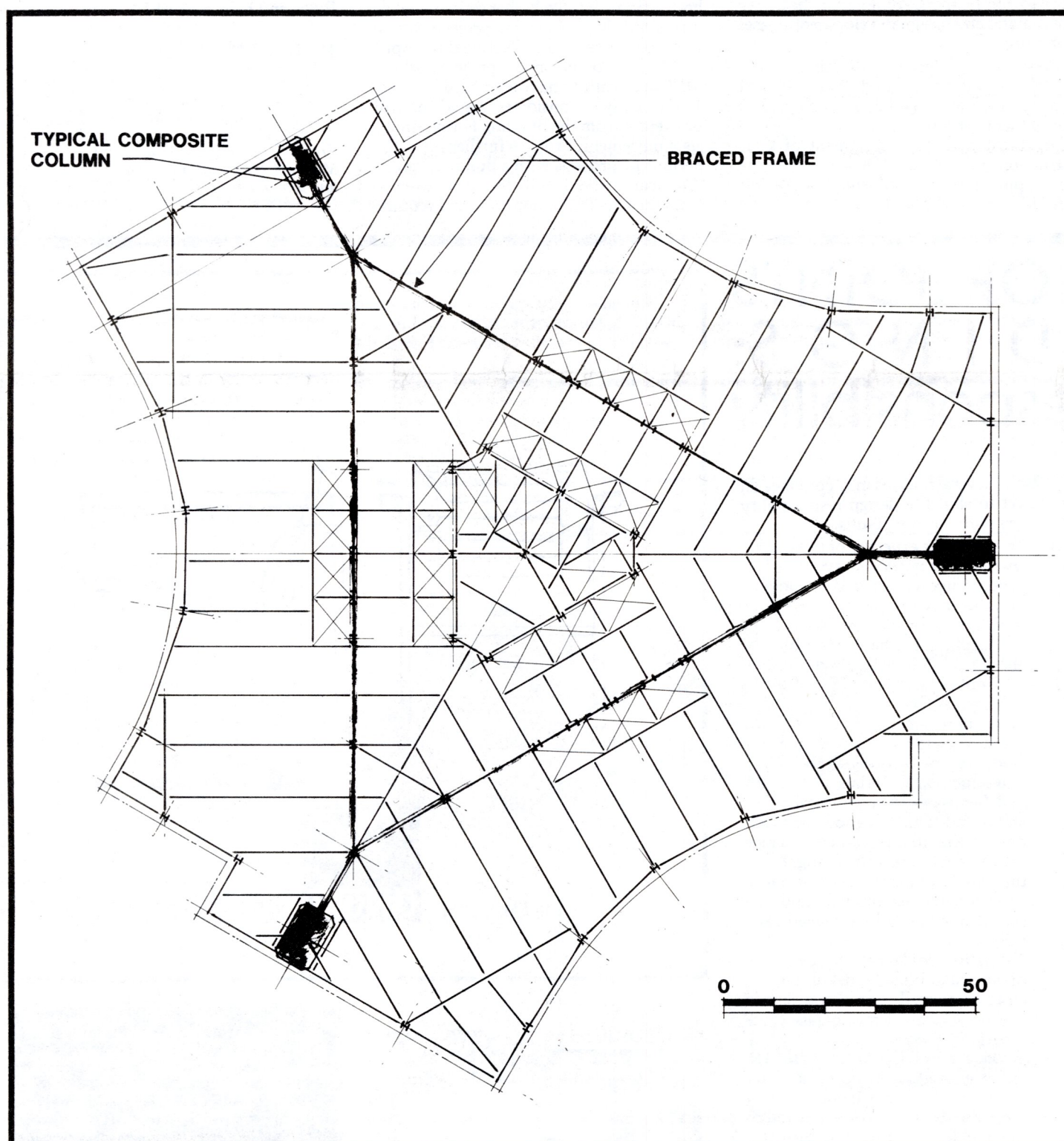
Relatively small reductions in building accelerations result from increasing the building's stiffness or weight, and both are costly. Large reductions can be achieved by increasing damping. In 1965, SWRB designed 13,000 small dampers, or shock absorbers, into the structure of each tower of the World Trade Center. For the Columbia Center, SWRB engineers worked with personnel from the 3M Company to invent a new, 100-times-larger damping unit. Each damper creates a small force opposite to the direction of building motion to reduce the building's acceleration. The dampers are a passive system requiring no mechanical assistance. In this, the first installation in the world of these large dampers, 260 such damping units are being attached to braces in the core frame.

The addition of these dampers multiplies the conventional level of damping by eight. Wind tunnel tests confirmed that this provides a very comfortable cushion for acceptable levels of acceleration. Based on their use in the Columbia Center, these units should find a wide application in high-rise structures.

## COMPOSITE FLOOR SYSTEMS: Their Vibration Problems

Composite construction of concrete slabs with steel beams is a system almost 30 years old. In the last 10 years, the use of thinner slabs placed on metal decks and high-strength steel in floor beams has increased. Both practices tend to reduce structural costs. However, inherent in them is the new problem of undesirable floor vibration induced by normal use of the building.

This problem has inspired new research to determine acceptable levels of floor vibration through such scientific means as the "heel drop test." A 200-pound person stands in the test area, rises up on tiptoes, and then drops heels, creating measurable vibrations in the floor system. Spans of less than 35 feet have been found to be most susceptible to annoying vibrations.



Typical floor framing plan of Columbia Center shows triangular braced core with 6 x 12 composite columns at each apex, a system designed to accommodate lateral loads cost-effectively.

Designing earthquake and wind resistance into the exterior of this building would have been difficult. To solve the problem, Columbia Center's structure is designed as a braced steel-frame core, triangular in plan. At each apex of the triangular frame is a concrete column measuring approximately six by twelve feet. Concrete in these columns is capable of bearing in excess of 9,500 psi, more than twice the allowable load of commonly specified concrete.

This structural solution freed the exterior walls of bracing and closely-spaced columns by utilizing bracing in the core's

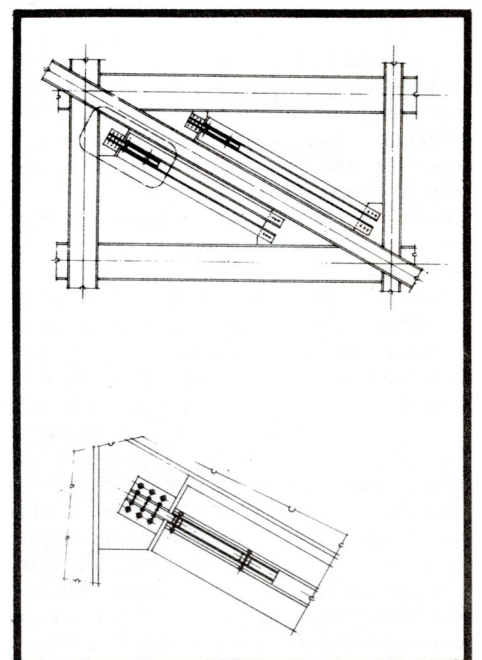
Similar systems have since been used on the recently completed Skyline Tower in Bellevue by TRA, with SWRB consulting on concepts, and on the forthcoming 580 California Building in San Francisco by Johnson/Burgee Architects with SWRB as structural engineers.

## WIND ENGINEERING: Dampers

Wind engineering, as it is currently practiced, began during the design of the World Trade Center in New York City (Minoru Yamasaki and SWRB). These twin towers were the first buildings to undergo a com-

or stops — motion becomes perceptible. In these studies, human perception levels were tested by placing people inside a special room that could be accelerated horizontally. The results established the criteria for acceptable levels of building acceleration now in practice.

Another extensive wind engineering study was conducted during the design of the Columbia Center building. One part of this study was the construction and wind tunnel testing of an "aeroelastic model," scaled to have the same proportional weight, flexibility, geometry, and dynamic



Dampers are used to absorb lateral movement in World Trade and Columbia Center towers. Damper mechanisms are located on each side of diagonal braces. Isolation of rod from angles (see detail) allows movement between them to be absorbed as energy by viscoelastic material (heavy black lines).



Frank Lloyd Wright used the concept of base isolation. He thought of the mud as isolating the building from earthquake action. Why not float the building on it?

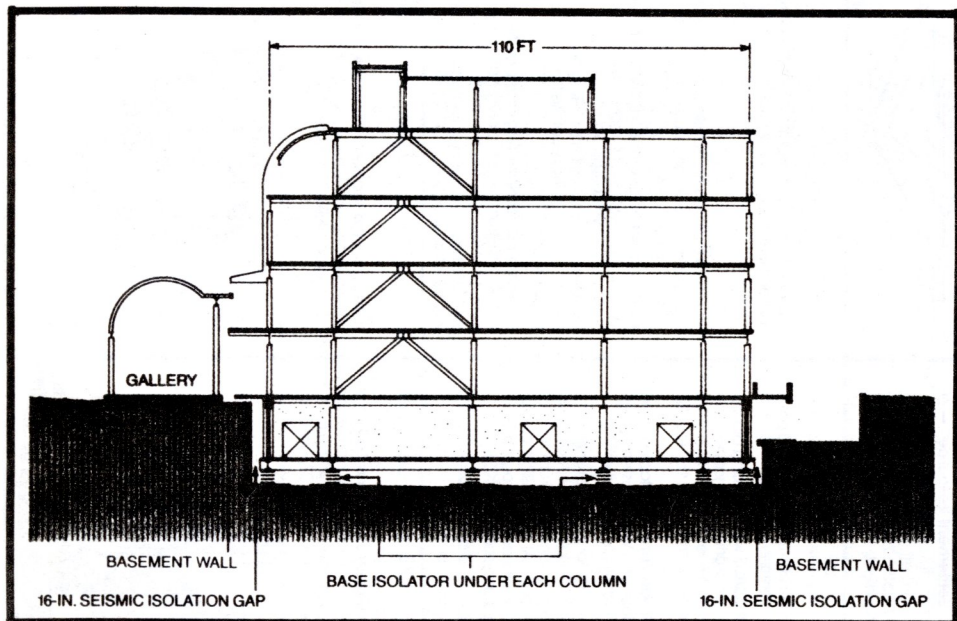


Diagram of "building base isolation" concept which allows building and ground to move independently of each other during earthquakes.

Designers can choose between two common alternatives to reduce such floor vibrations. One is to thicken the slab, which increases its weight. The other is to increase the beam size, which adds stiffness. Both reduce vibrations, but increase structural costs.

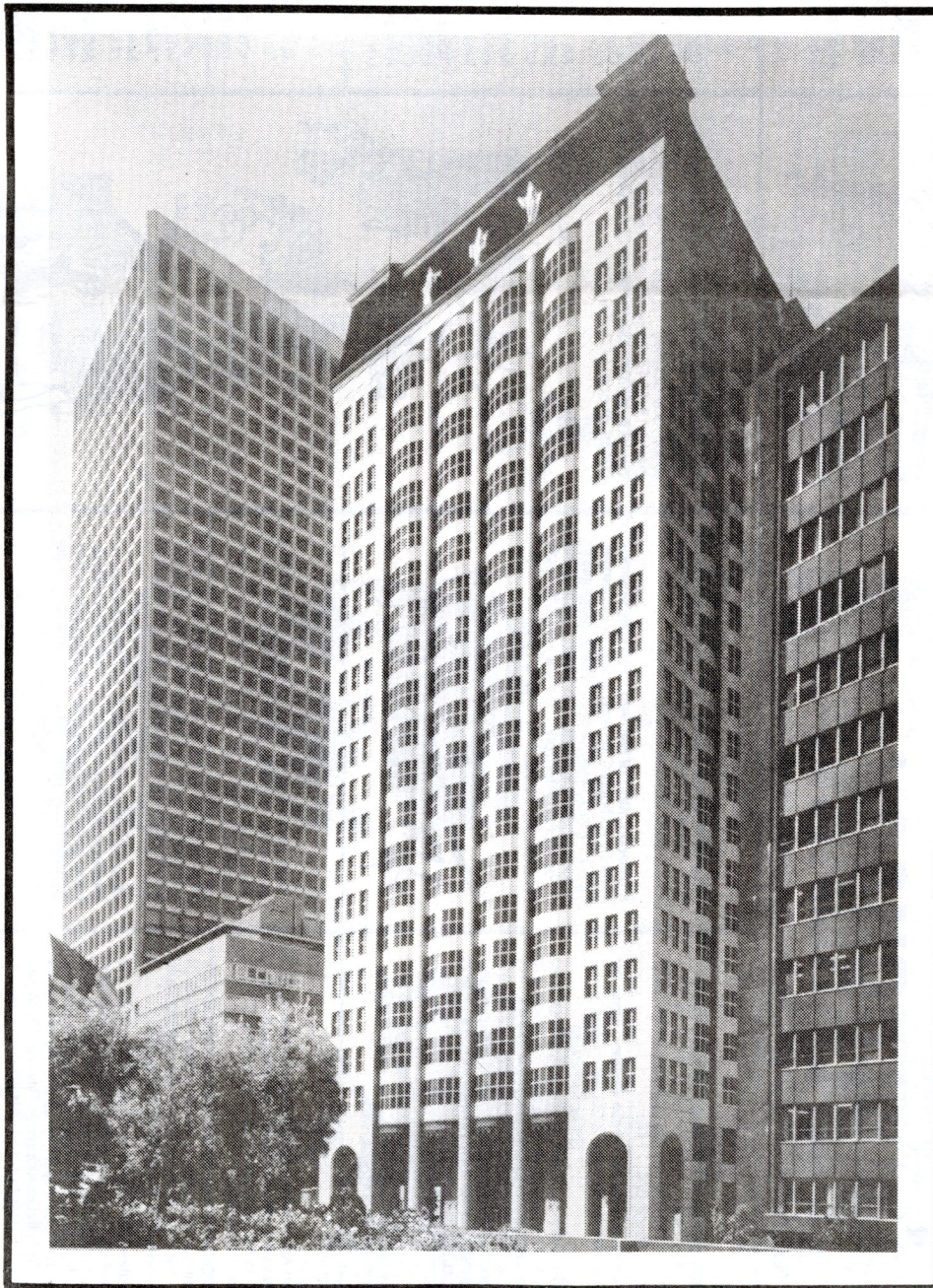
A third way to reduce vibrations is to add damping. Such a system is being developed in Oklahoma by a developer who claims it will increase damping at a low cost. If this proprietary product becomes a reality, it could make it possible to use minimal slabs and even higher-strength steel beams. The thickness of the floor would be minimized, allowing architects to increase floor-to-floor heights or lower story heights as desired.

**If a building were built on rollers, theoretically no earthquake loads would be transferred into the structure at all.**

#### BUILDING BASE ISOLATION: Seismic Invention

Structures designed to meet seismic code requirements must resist most earthquakes without major structural damage while being rigidly fixed to the ground. A building's first floor moves with the ground's movements, creating new loads throughout the structure. If a building were built on rollers so that the ground could move back and forth beneath it, theoretically no earthquake loads would be transferred into the structure at all. (Of course, in a wind storm, the building would roll away.) This idea is the basis of a design concept called "building base isolation," the goal of which is to reduce the coupling of the building motion and ground motion.

The concept of base isolation is not new. Professor J.M. Kelly of the University of California at Berkeley reported in the May 1982 *Shock and Vibration Digest*: "In his design for the Imperial Hotel in Tokyo, which was completed in 1921, Frank Lloyd Wright used the concept of base isolation. His design was in complete contrast to accepted practice and was a subject of great controversy. A layer of eight feet of fairly good soil and substratum of soft mud underlay the site of the hotel. Wright thought of the mud as isolating the building from earthquake action. The layer of soft mud below the upper layer of eight feet of surface soil was to Wright 'a good cushion to relieve the terrible shocks. Why not float the building on it?' He integrated the soil layer and the building with a set of closely spaced short piles that penetrated



580 California, Johnson/Burgee's latest in San Francisco, is composed of vertical composite construction designed by Seattle's SWRB Engineers.

only the soil stratum. The piles and the building were intended to float on the mud substratum. The Imperial Hotel was one of the few western-style buildings to survive the devastating Tokyo earthquake of 1923. Economics and the effects of air pollution on the soft stone used for the building brought about its demolition in the 1960s."

Contemporary designs for base isolation specify a foundation of thick, layered, lead-and-rubber or steel-and-rubber bearing pads. These pads act as springs to allow the structure to move from side to side. The system is "tuned" to reduce building motion in the frequency range common to

earthquakes in the region. The reduced building motion reduces the necessary lateral load resistance in the building design. Consequently, shear walls and other lateral force-resisting elements can be reduced, giving the architect a new degree of design flexibility. Associated cost savings help to offset the added costs of bearings and other structures at the base. However, reduction in the lateral system may be difficult for two reasons: the building may become too flexible to properly resist wind loads, and building department officials may hesitate to approve lateral systems with less strength than required by code, at least until there are more case histories to study. Isolation systems have been used on six buildings throughout the world, only one of which is in the U.S.: the Foothill Communities Law and Justice Center in Rancho Cucamonga, California.

While the concept is intriguing, it has physical limitations, one of which is the need to completely separate the building

#### ECENTRIC BRACED FRAMES: The Structural "Fuse"

Two types of steel frames are commonly used to resist wind and earthquake forces: the moment-resisting frame (MRF) and the concentric-braced frame (CBF). In a CBF, the centerlines of the braces, columns, and beams at a joint all intersect at a single, common point. In a MRF, there are no braces; the frame gains its "sway resistance" from rigid connections of the beams to columns.

In regions of seismic risk, building codes require a backup MRF for any CBF in buildings more than 160 feet high to improve their energy-absorbing characteristics and ductility. Even so, a CBF generally has a lower construction cost than an MRF.

Since 1976, Professor E.P. Popov of the University of California at Berkeley has been recognized for his research and advocacy of a new type of steel frame, the eccentric braced frame (EBF). An EBF is similar to a CBF, except that the braces in an EBF intersect the beams a short distance from the beam-column intersection. This offset, or eccentricity, causes bending in the beams. During a major earthquake, this bending, while causing localized damage, dissipates some of the destructive energy of the quake. The damaged area can then be repaired, much like a blown fuse in an electrical system. The EBF system is applicable to buildings of all heights.

The EBF appears to provide a new option between the cost and performance characteristics of the standard systems. An EBF has an advantage over a CBF: eccentricity and brace layout have more flexibility to meet architectural requirements. A few buildings in California employ this concept, but none in the Northwest.

#### FUTURE DEVELOPMENTS: More to Come

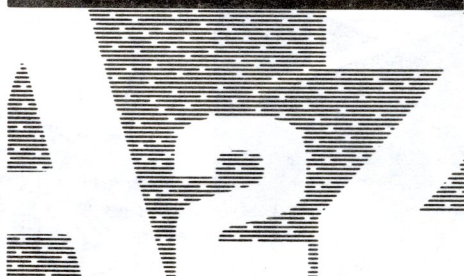
If the trends of the last twenty years are any indication, the next twenty promise to be dynamic, exciting times for structural design.

Common materials will be stronger. Concrete strengths should reach 12,000 psi, and steel strengths 60,000 psi. Improved fiber-reinforced concrete will find many new uses. Much research and development will be focused on new methods of resisting earthquake loads. Some of the most important work in this area will be in the upgrading of historic buildings and buildings built before 1970.

The future promises to be exciting as well for architects and designers whose work will gain an enlarged scope of possibilities as a consequence of developing principles and techniques in structural engineering design.

#### Jon Magnusson

Jon Magnusson, Senior Vice President at SWRB has worked on over fifty-eight projects as either Project Director, Project Manager, or Design Engineer. He is currently Project Director for the Convention Center in Seattle. He coordinated the wind tunnel studies for the Columbia Center office building.



RIES NIEMI SHELLA KLEIN NORMAN MILLAR ARCHITECT  
2516 4th Avenue Seattle, WA 98121 206 467-9703



# ARCADÉ



**1983 A.I.A. Honor Awards Exhibit.** Now through 2/15 at Design Concern, 1427 Western Ave.

**Entries for the Colorcore** "Surface and Ornament" competition due 2/15, write: Formica Corporation, 1 Cyanamid Plaza, Wayne, N.J. 07470 for more info.

**"The Deadly Playground and other Drawings"** by Art Garcia, now through 2/12 at the Graven Image Gallery, 311 S. Washington.



**On display** at Yuen Lui Gallery, photographs by Judy Dater. Through 2/28.

**Works by Shelley Moore** will be on display at the Virginia Inn through 2/12.

**When next you are in Bellingham**, be sure to see "The Seminary," a collaborative installation by Seattle artists Keith Beckley, Dennis Evans, and Jeffrey Bishop at the Whatcom Museum at Western Washington U (121 Prospect St.). The show runs through the end of the month.

**Wilhelm Holzbauer**, one of the more widely-published of a new generation of Austrian architects, speaks on his work tonight at Robson Square Media Centre, Vancouver, B.C., at 6 pm. (1983-84 Alcan Lectures Series)

**Recent architectural works in clay** by Geoffrey Pagen at Traver/Sutton Gallery, opening Thursday, 2/2, through 2/25.

**A mixed-media show** curated by Gary Reel opens tonight at Jackson Street Gallery, and runs through 2/14.

**"Fireart & Construction,"** ceramic and metal castings by Monica Squires Carter, and recent works in 2-D and 3-D by Raphael Daniels, opens at Studio/Gallery 75 2/2 and runs through 2/25. 624-3036 for details.

**Thomas Cole**, American landscape painter, was born today, 1804.

**BLUEPRINT: for Architecture** meeting, 6:30 pm at Gould Court, UW. Everyone's invited.

**Continuing reprise** at the SAM Volunteer Park Auditorium, the films of Vincente Minelli. More singing and dancing, for less apparent provocation, than you ever thought possible. Wednesdays at 7:30 through 3/8. Tickets at the door.

**"Little Fictions, Little Romances,"** an exhibit curated by Ron Glown, runs through 2/25 at Hodges/Banks Gallery.

**Tonight at UW:** A lecture by Susan Heikkala and Deborah Ebby entitled "Urban Waterfront Revitalization: A Tale of Four Cities." 207 Architecture Hall, 8:00 pm.

**Also continuing at Linda Farris Gallery** through 2/5, works by Randy Hayes. Catch 'em now. . .

**Programs III and IV of the Whitney Biennial Video Exhibition** will be screened tonight at Focal Point Media Center, 913 E. Pine St. Call 322-4304 for details.



*"It is only when the structural parts of a building, the forms logically derived from them, and the empirical knowledge are imbued with what we can seriously call the art of play that we are on the right road. Technology and Economy must always be combined with a life-enhancing charm." Alvar Aalto, born today, 1898.*

**A History and Nature Tour** of Discovery Park will be led by architect Fred Mann and Park Ranger Paul Frandsen. Sponsored by Friends of Seattle's Olmsted Parks, it starts from the Visitors Center at 10:30 am.

**Basic 16mm Filmmaking**, a three-part intensive course, begins today and runs the next two Saturdays, at the Focal Point Media Center. Call 322-4304 for details.

**Currently at Carolyn Staley Gallery:** works by the British caricaturist James Gillray (1756-1815) through 2/28.

**Applications** are due 2/25 for the Washington State Arts Commission's Cultural Enrichment Program. For more info, call Carolyn Eddington at the Arts Commission Office in Olympia, (206) 753-3860.

**Currently at Foster/White Gallery:** Rebar furniture by Parks Anderson, now through 2/26.

**Limited edition portfolios** by Peter de Lory, Michael Gesinger, David Hufford, and Ben Kerns, at Equivalents Gallery, through 2/26.

**"My forms are like successive layers of skin** that shed to mark the stages along my road. . . I see fiber as the basic element, the greatest mystery. . . It is from fiber that all living organisms are built. . . Handling fiber, we handle mystery." Magdalena Abakanowicz, Polish fiber artist, whose work is the subject of a retrospective exhibition at the Portland Center for Visual Arts, 2/1 through 3/18. Because of its large scale, work will also be hung at the Portland Art Museum and the Oregon School of Arts and Crafts.

**See the denizens of Boeing Surplus** re-assembled, and other works too, in a show by Don Hanlon at Two Bells Tavern, opening tonight and running through 3/4.

**Currently at Sacred Circle Gallery**, works by Joe Feddersen, through 2/25.

**Seattle Center is in the process** of writing a Use and Development Plan, the intent of which is to better define the future role of the Center. The Seattle Center Advisory Committee meets the second Tuesday of each month at 3:30 pm, and interested parties may attend after first calling ahead. 635-2447.

**Robert Maillart**, Swiss Engineer and Bridge-BUILDER Extraordinaire, born today, 1872.

**"The Work of Pietro Belluschi,"** a lecture by M.D. Ross, Emeritus Professor of Art History, at University of Oregon, 107 Lawrence, 7:30 pm.

**A Different Kind of Heaven**, a fantasy environment by Portland C.W. Potts which incorporates found objects, neon, and 3D fiberglass figures in a surreal environment, has been installed at Open Mondays Gallery. The show will run through February 20, 12-5 Sat. and Sun., 12-8 Mondays.



**Harvard Design School Summer Courses** for professional development, intensive two-to-seven-day courses, run this summer from 6/22 through 8/16. For more info, write or call: Continuing Education, 48 Quincy Street, Cambridge, Ma. 02138, or call (617) 495-9340.



**Cornelia Oberlander**, Vancouver landscape architect, will conduct a seminar in landscape architecture at the UW, Gould Hall Rm. 208, today from 12-1:15 pm.

**Opening tonight at Linda Farris Gallery:** New Paintings by Patrick Siler, Through 3/2.

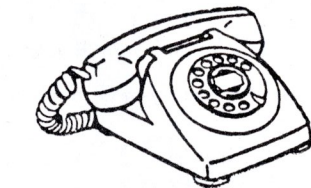
**An exhibition of turn-of-the-century French prints** entitled "La Belle Epoque" begins tonight at Davidson Galleries. Through 3/7.

**Kent Lovelace**, owner of the Stone Press Gallery, exhibits his own prints there in a show opening tonight and running through 3/17.

**"Land: a Strategic Settlement Resource"** — a review of recent policy developments of the U.S. Commission on Human Settlements. A Lecture by H. Peter Oberlander, Room 207 Architecture Hall, UW Campus, 8 pm tonight.

**Entries due today** in the Seattle Design Association's Fifth Annual 12x12 Art Auction. Finished works accepted between 10 and 6 pm at Traver/Sutton Gallery. Preview show March 18 and 19 at Traver/Sutton.

**Historic Seattle constituency meeting** this month. Call 622-6952 for details.



**BIG** send-off tonight for Seattle members of a volunteer workers Brigade to Nicaragua, at Jackson Street Gallery. Call the Gallery (623-0435 or CANTO (329-2769) for more info.



**Thomas Alva Edison** born today, (by kerosene lamp) 137 years ago.



**Auguste Perret** born today in 1874. His apartment at 75 Rue Franklin and his garage at Rue Ponthieu are outstanding early expressions of concrete frames.

**Allied Arts Downtown Committee** meets tonight (and every other Monday evening) at 5:30 to discuss the Downtown Plan. Get involved! 107 S. Main St. 624-0432.

**ARTSTORM - a free event** through February 29. Downtown concerts, a ten-day film festival at Pike Place Cinema, architectural walking tours, and more. Call 623-0340 for more info.

**Deadline for Registration is March 1** for the Columbus Carscape (Parking Lot) Competition. Requests for programs should be directed to: Theodore Liebman, AIA, Professional Advisor, Columbus Carscape Competition, c/o Director of Community Development, City Hall, 123 Washington St., Columbus, IN 47201. (float before 3/1)

**"Van Evera Bailey, a Northwest Architect,"** a lecture by Walter Gordon, past Dean, School of AAA, U of O. At University of Oregon, 107 Lawrence Hall, 7:30 pm.

**Opening Celebration at D'Art**, an artist's products store run by a dozen artists in the old Bizar Storefront at 105 Stewart St. Bargain-priced art, or art that makes bargains with you.

**ARCADE General Meeting.** The next in the continuing series of great ARCADE feeds (a potluck: bring good food) and talks. At Nora Jaso's, 510 Bellevue East, 6 pm. This is a good time to express your interest in joining the staff.



**BLUEPRINT: for Architecture** meeting, 6:30 pm at Gould Court, UW. Everyone's invited.

**Crit this issue of ARCADE** with new and old staff members, friends, and critics. Canatsey/Weinstein office at 2121 First Ave., 5:30 pm. Nora Jaso will entertain questions at 622-4115. ALL ARE WELCOME.

**"Administering Urban Form"** the topic of lectures by Ruthe Ridder and Wm. J. Justen, tonight at UW, Room 207 Architecture Hall, 8 pm.

**AIA Chapter Meeting** tonight, presenting the 1983 Seattle Times AIA Home of the Month Program in all its doggy splendor. William Turnbull, FAIA, featured speaker. At NW Design Center, 5:30 pm (no-host bar, dinner, and program). Call AIA Chapter office for details, 622-4938.

**Eighth Annual Artstorm Gallery Walk** tonight in Pioneer Square.

**Historic Preservation Committee of Allied Arts of Seattle** meets today at noon (and every other Friday after) at 107 S. Main. Get involved: 624-0432.

**Works by Colleen Trousdale** at the Clay Occasion Gallery in Stewart House at the Pike Place Market. Through 3/17.

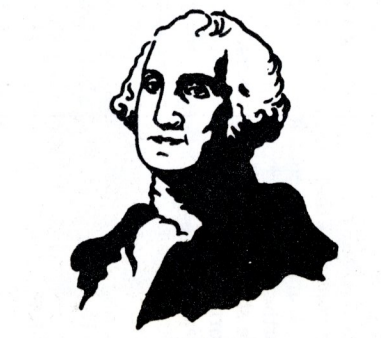
**Ceramic sculpture and drawings** by Annie Perrigo, Jean Behnke, Maggie Smith, at Jackson St. Gallery, now through 3/6.

**On display** at NW Gallery of Fine Woodworking through 3/18 — a display of the furniture-making process.

**An exhibit of outstanding work** by Northwest industrial designers opens tonight at Design Concern, 1427 Western Ave. The show, sponsored by the NW Chapter of the Industrial Society of America, runs through 3/31.



**Results of last year's photography competition** are on view at the Tacoma Art Museum. 2/19 through 3/4.



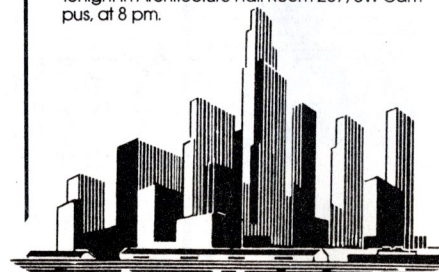
**"The Architecture and Gardens of John Yeon,"** a lecture by Wallace K. Huntington, Portland architect, University of Oregon, 107 Lawrence Hall, 7:30 pm.



**A meeting of Architects for Social Responsibility** at 7:30 tonight at AIA Chapter Offices downtown.



**"Planning and Design in Vancouver,"** a lecture to be given by Ray G. Spaxman of the Department of Planning, Vancouver, B.C., will be heard tonight in Architecture Hall Room 207, UW Campus, at 8 pm.



**Continuing at the Burke Museum**, University of Washington, "The Tiger's ear: Textile art of the Hmong and Mien." Through 3/9.



Opening 3/4 at Carolyn Staley Gallery, work.

"Lessons from the Work of Oregon Modernist

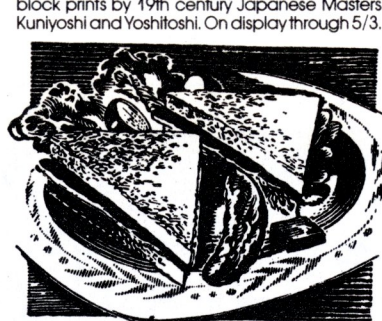
Lecture tonight at 911 (913 E. Pine St.) by Jeremy

Opening at the Pacific Science Center: "China:

At Hodges/Banks Gallery: constructions by Len-

Allied Arts in Wonderland Auction at the Mon-





**Architects:** "A History of Lake Washington Boulevard." Call 625-4503 for time and location.

**China: 7,000 Years of Discovery**, a spectacular exhibition of ancient Chinese science and technology. Features demonstrations by 18 practicing artisans from the People's Republic of China. Pacific Science Center, 3/1 through 8/31.

**Visual Art on Sport**, an invitational show with works concerning collegiate basketball, summer Olympics, and Northwest outdoor sports. Studio/Gallery 75, 3/1 to 3/31. 624-3036.

**Works by Paul Marioni, Clarice Dreyer, and Laine Hall**, at Traver/Sutton Gallery through 3/31, opening tonight.

**BLUEPRINT: for Architecture** meeting, 6:30 pm at Gould Court, UW. Everyone's invited.

**Works by Wm. Cumming and Jerry Scheide-man** will be exhibited at Foster/White Gallery beginning tonight and running through 4/1.

**Washington State Arts Commission** Artist-in-Residence Program deadline for sponsors is 3/15. Call or write the Wash. State Arts Commission, Attention: Lee Bassett, Mail stop GH-11, Olympia, Wa. 98504. Call (206) 753-5860 for further details.

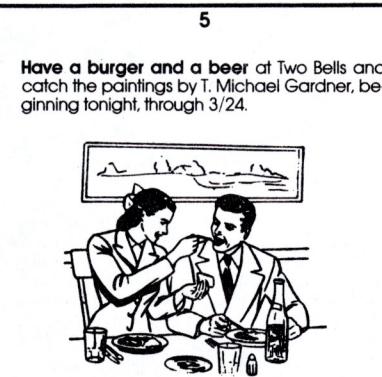
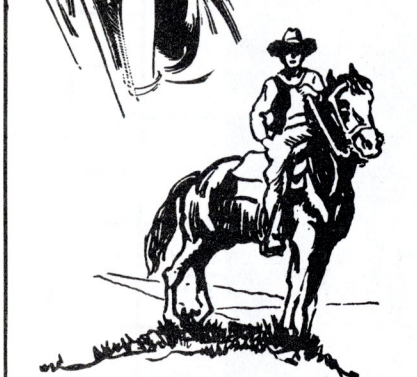
**Down Garden Paths**, an exhibition of floral paintings by turn-of-the-century American artists. Organized by the Montclair Art Museum, the exhibition will open at the Henry Gallery, University of Washington, on 3/3. Through 5/27.

through Allied Arts (\$22.50). Ticket price includes dinner and beverages and, for non-members, a free year's membership. For reservations, call 624-0432.

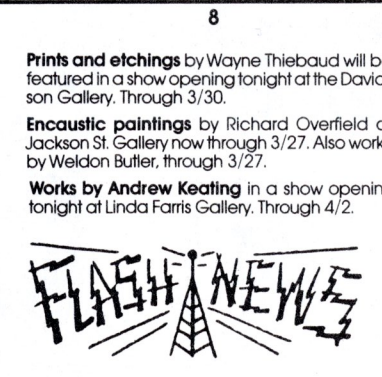
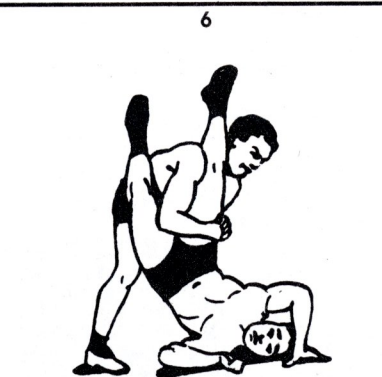
**Hmong Flower Cloths**, an exhibition of embroidered and appliqued textiles by Pacific Northwest Hmong women, opens 3/5 at the Museum of History and Industry.

**At last! A REAL competition** for a Real Local Site! The City of Bellevue, Wa. Downtown Central Park Design Competition. Deadline for registration, March 15, 1984; Phase 1 entries due April 3, 1984. Contact Marie O'Connell, City Clerk of the City of Bellevue, for details. (\$100 Entry Fee)

**American Trompe l'Oeil Painting and Sculpture**, at the Bellevue Art Museum, through 3/11.



**Have a burger and a beer** at Two Bells and catch the paintings by T. Michael Gardner, beginning tonight, through 3/24.



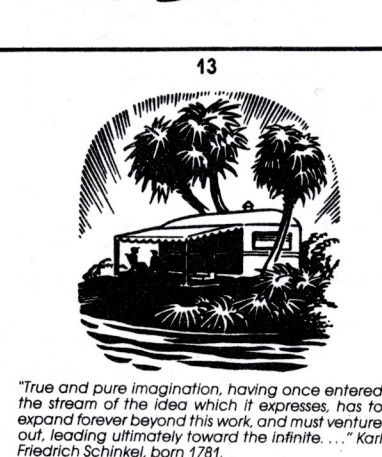
**Prints and etchings** by Wayne Thiebaud will be featured in a show opening tonight at the Davidson Gallery. Through 3/30.

**Encaustic paintings** by Richard Overfield at Jackson St. Gallery now through 3/27. Also works by Weldon Butler, through 3/27.

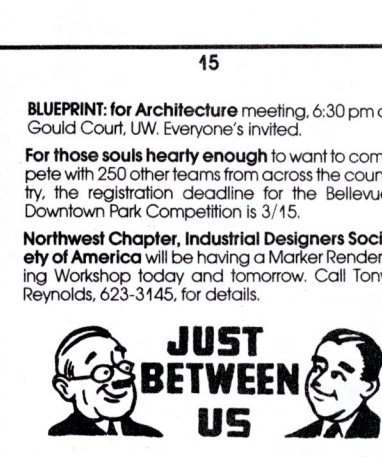
**Works by Andrew Keating** in a show opening tonight at Linda Farris Gallery. Through 4/2.



**Friends of Seattle's Olmsted Parks** presents an Olmsted Plan Update by landscape architect Grant Jones at Pratt Art Studio in Seward Park. 10:30 am.



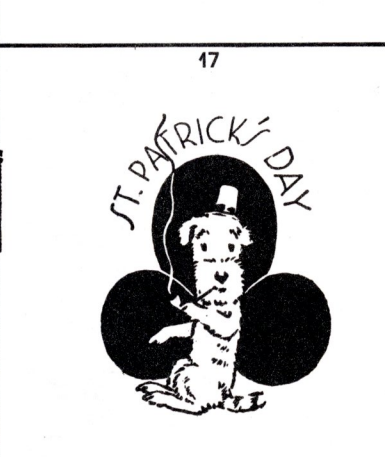
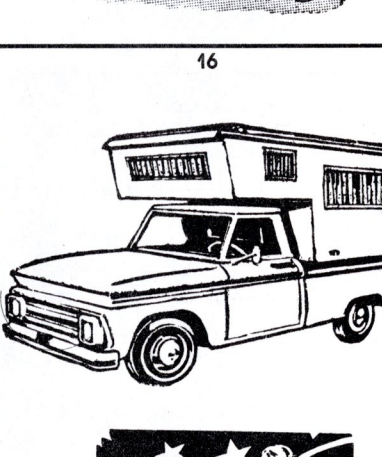
"True and pure imagination, having once entered the stream of the idea which it expresses, has to expand forever beyond this work, and must venture out, leading ultimately toward the infinite. ... Karl Friedrich Schinkel, born 1781.



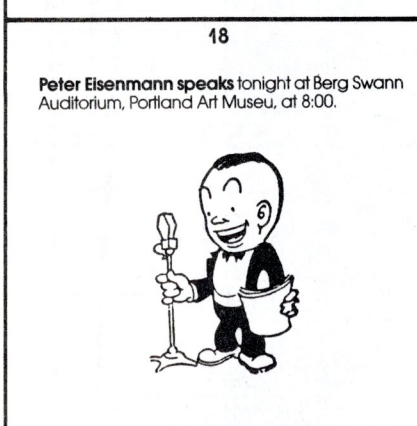
**BLUEPRINT: for Architecture** meeting, 6:30 pm at Gould Court, UW. Everyone's invited.

**For those souls hearty enough** to want to compete with 250 other teams from across the country, the registration deadline for the Bellevue Downtown Park Competition is 3/15.

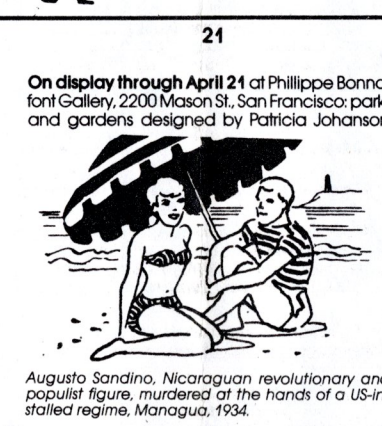
**Northwest Chapter, Industrial Designers Society of America** will be having a Marker Rendering Workshop today and tomorrow. Call Tony Reynolds, 623-3145, for details.



**ST. PATRICK'S DAY**

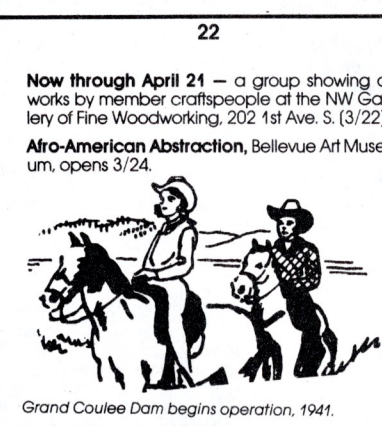


**Peter Eisenmann** speaks tonight at Berg Swann Auditorium, Portland Art Museum, at 8:00.



**On display through April 21** at Phillippe Bonnafont Gallery, 2200 Mason St., San Francisco: parks and gardens designed by Patricia Johanson.

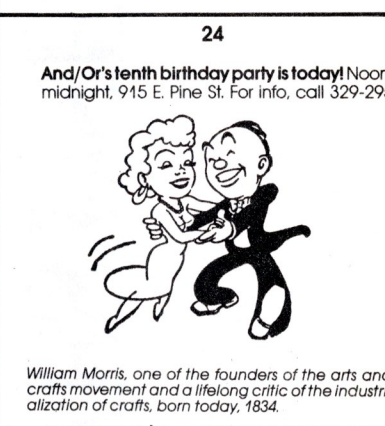
**Augusto Sandino**, Nicaraguan revolutionary and populist figure, murdered at the hands of a US-installed regime, Managua, 1934.



**Now through April 21** — a group showing of works by member craftspeople at the NW Gallery of Fine Woodworking, 202 1st Ave. S. (3/22)

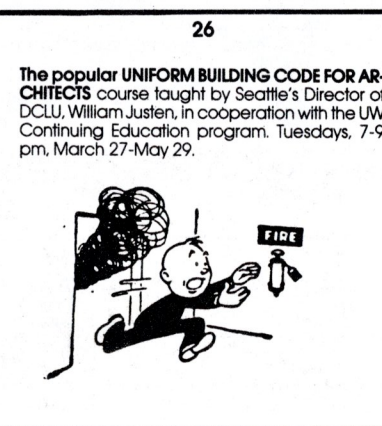
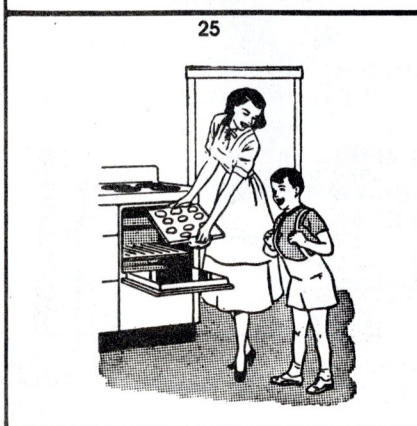
**Afro-American Abstraction**, Bellevue Art Museum, opens 3/24.

**Grand Coulee Dam** begins operation, 1941.

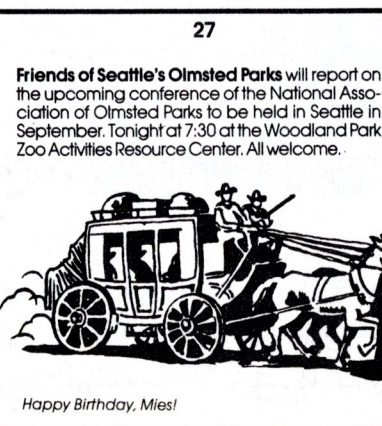


**And/Or's tenth birthday party is today!** Noon to midnight, 915 E. Pine St. For info, call 329-2950.

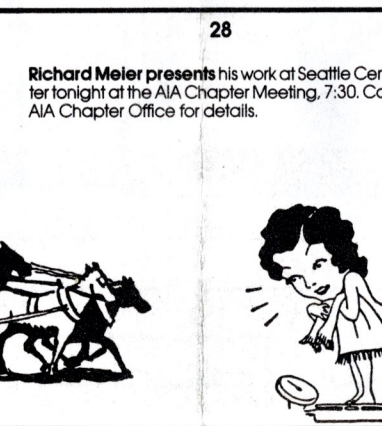
**William Morris**, one of the founders of the arts and crafts movement and a lifelong critic of the industrialization of crafts, born today, 1834.



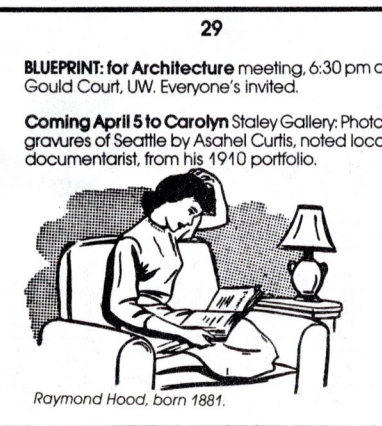
**The popular UNIFORM BUILDING CODE FOR ARCHITECTS** course taught by Seattle's Director of DCLU, William Justen, in cooperation with the UW Continuing Education program. Tuesdays, 7-9 pm, March 27-May 29.



**Friends of Seattle's Olmsted Parks** will report on the upcoming conference of the National Association of Olmsted Parks to be held in Seattle in September. Tonight at 7:30 at the Woodland Park Zoo Activities Resource Center. All welcome.



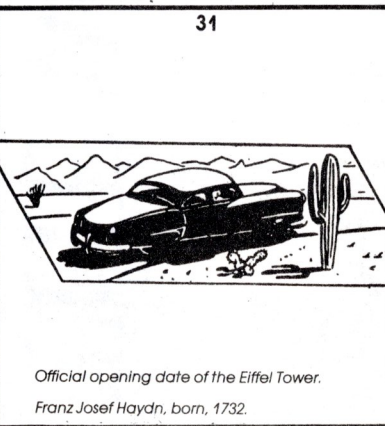
**Richard Meier** presents his work at Seattle Center tonight at the AIA Chapter Meeting, 7:30. Call AIA Chapter Office for details.



**BLUEPRINT: for Architecture** meeting, 6:30 pm at Gould Court, UW. Everyone's invited.

**Coming April 5** to Carolyn Staley Gallery: Photographs of Seattle by Asahel Curtis, noted local documentarist, from his 1910 portfolio.

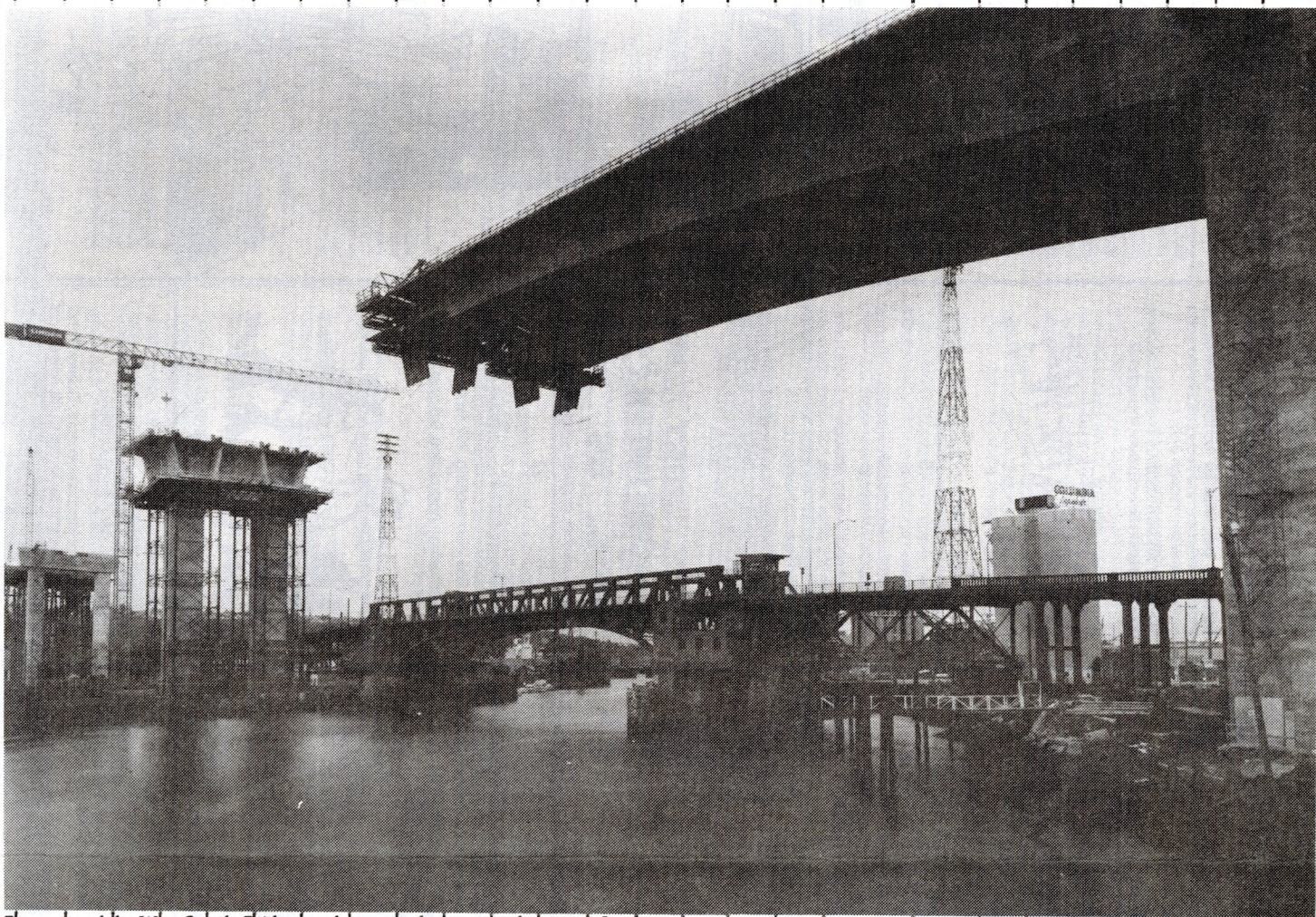
**Raymond Hood**, born 1881.



**Official opening date of the Eiffel Tower.** Franz Josef Haydn, born, 1732.



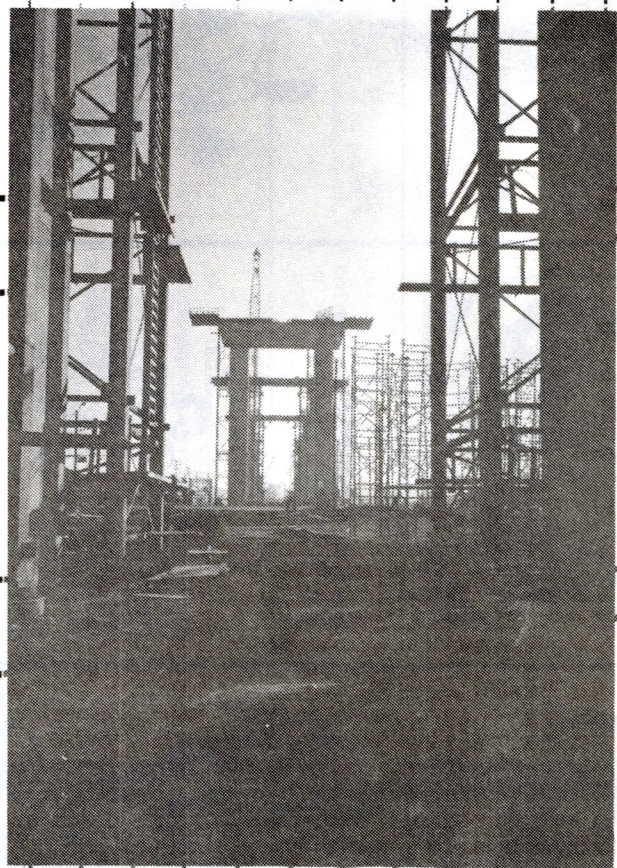
# THE WEST SEATTLE BRIDGE



*First span of the West Seattle Bridge reaches toward a structural support. January, 1982.*



*These columns support the West Seattle Bridge at its east side. February, 1982.*



*Scaffolding and structural fragments compose a temporary landscape. February, 1982.*

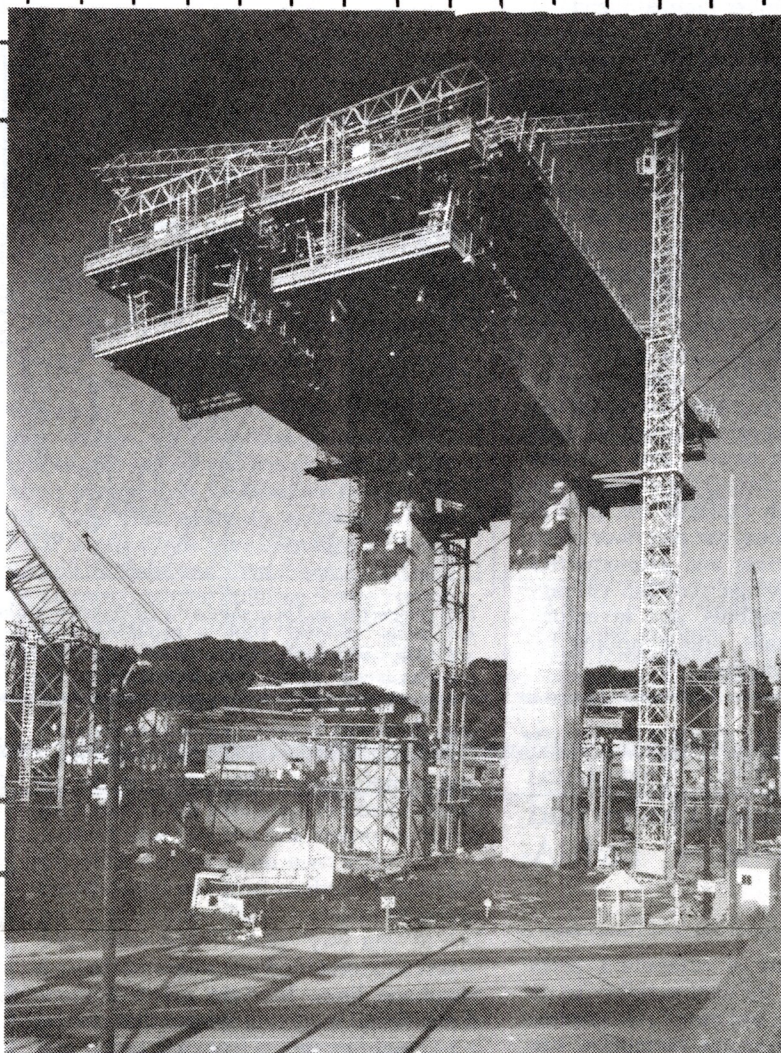


During the past five years I have been documenting the essence of Seattle's growth by photographing more than twenty of its downtown construction sites and the West Seattle Bridge. In my documentation I have responded to — and photographed — the power and the drama involved in building these monuments to technology.

—K. L. Slusher



*Pilings in silhouette: support for the Bridge's west span. February, 1982.*



*This stocky structure would become the support for two cantilevered roadway sections. April, 1982.*



*A second bridge span meets the first halfway. May, 1983.*

*Longitudinal elevation drawing of bridge by ABKJ*



# COMPUTERGRAPHICS

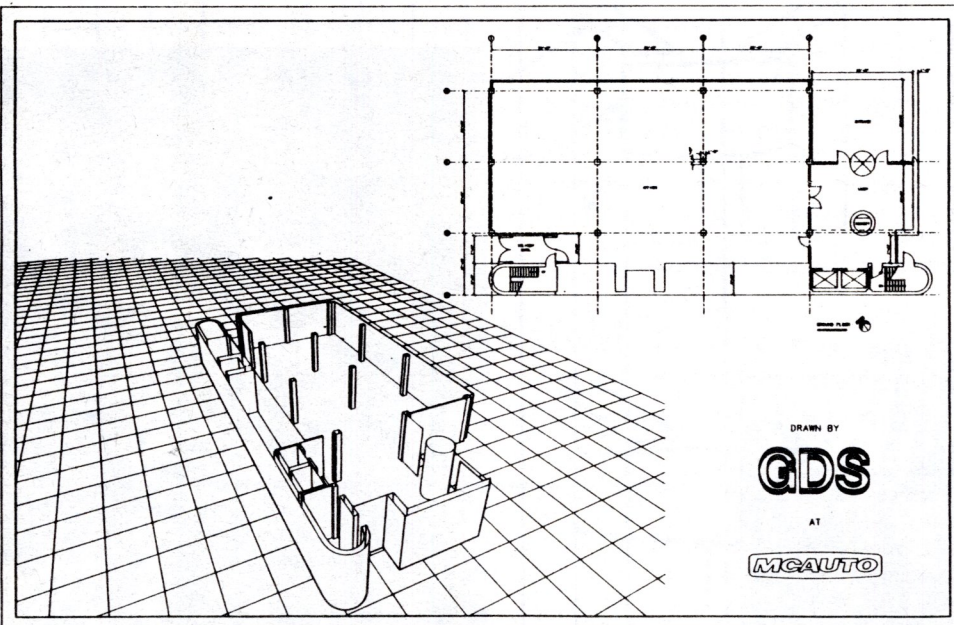
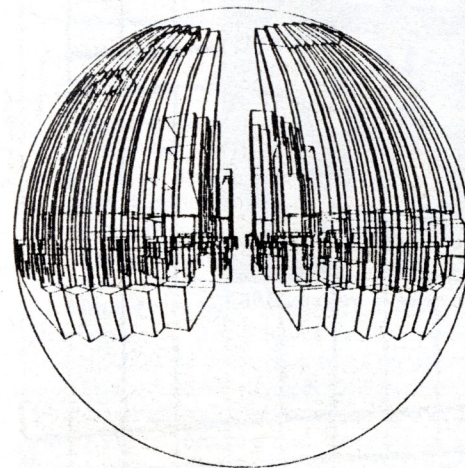
Do you remember Etch-A-Sketch? It was an 8½" x 11" x 1½" toy with a grey screen and two knobs for horizontal and vertical lines. Depending on your age and artistic inclinations, you could create masses of squiggly lines or lopsided renovations of your dollhouse. When you got bored with a picture, a shake or two would clear the screen. An ingenious toy for parents and kids: no paper, no crayons, no erasers. Perhaps the computer engineer who first imagined Computer-Aided Design (CAD, or Computer-Aided Design and Drafting, CADD) had been a hardcore Etch-A-Sketcher. CAD programs comprised of hardware (computer terminals, keyboards, and disk drives, which replaced the Etch-A-Sketch board) and software (floppy disks that instruct the computer on what to do, which replaced the Etch-A-Sketcher's inspirations) can plot floor plans, construct perspectives and axonometrics, create overlay drawings, maintain a library of architectural symbols, and inventory the nuts, bolts, nails, and plumbing fixtures in a set of drawings.

Perhaps the computer engineer who first imagined Computer-Aided Design had been a hardcore Etch-A-Sketcher.

Until the advent of computers, architects were limited by their inability to do everything at once, but now CAD systems, equipped with extensive memories, can control the details architects formerly lacked the time to consider. "On all but the smallest projects we cannot individually produce all the necessary drawings, in addition to talking to clients, constructing models of prototypes, paying bills, and so on," noted University of Washington architecture professor Brian Johnson who teaches computer graphics courses, in an article for ARCH, the college journal.

In Seattle, several local architecture firms and the College of Architecture use CAD systems. In most cases, Johnson says, they are used primarily for overlay drafting, working drawings and construction documents, chores traditionally reserved for young designers. The Callison Partnership was the first architecture office in the Northwest to incorporate CAD into its design process. They use a Calcomp program for word processing, accounting, specification writing, space planning, and management. The system's library of commonly-used symbols allows designers to quickly edit, reposition, or rescale parts of drawings or to update originals. This system will also

Data manipulated by VISIT can be studied from many different viewpoints. This fisheye view of the Bellevue Pedestrian Corridor shows no hidden line removal. Drawing by UW architecture students using Visual Simulation Technique (VISIT) software. Applications include wireframe perspectives, rendering underlays, and animation.



This perspective and plan shows the GDS system's ability to create a two-point perspective with hidden-line removal, from a two-dimensional drawing. McAuto Timeshare Service leases this software, which has applications including CAD/Drafting, perspective construction, presentation graphics, and an option analysis program.

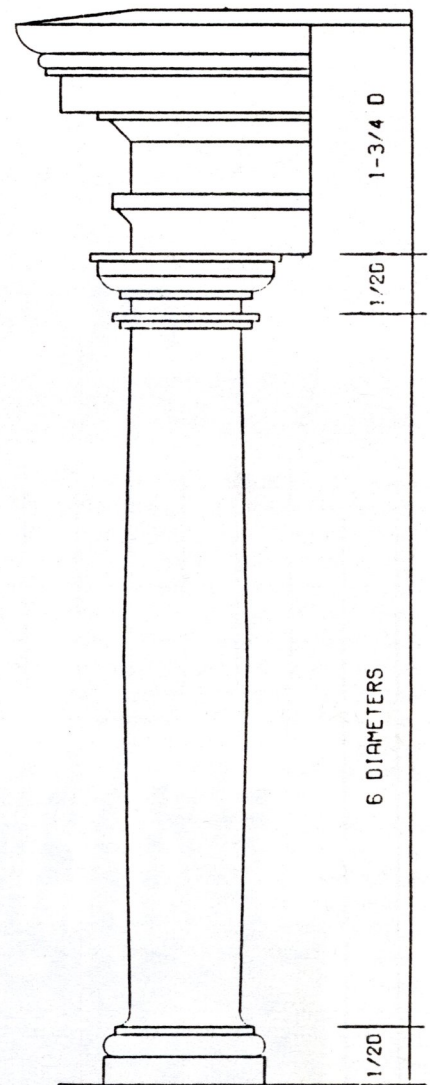
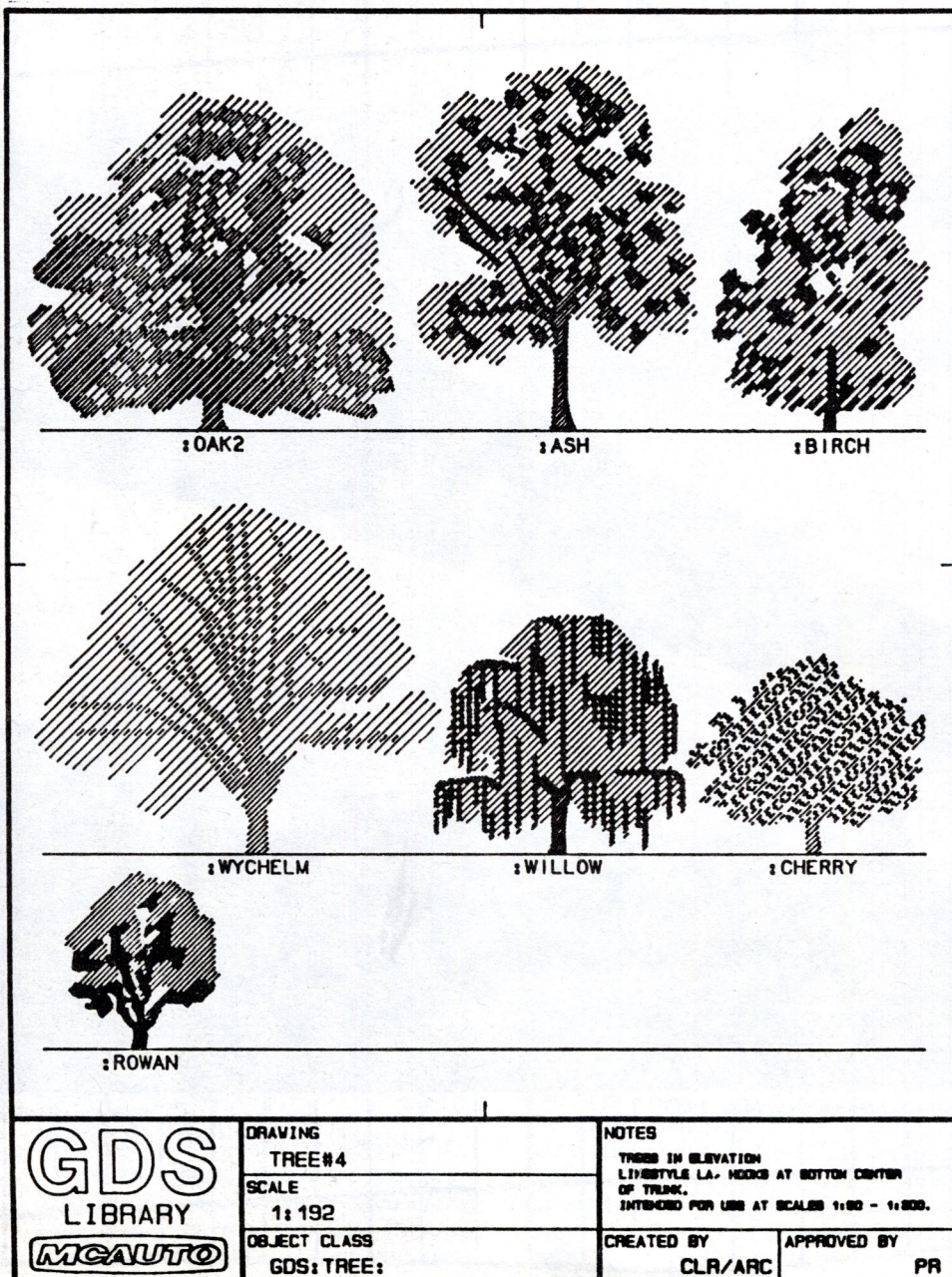
scan drawings to select a standard element like a chair, and list the size, color, quantity, and manufacturer. This simplifies the designer's tasks in compiling information for purchase orders and product schedules.

A different twist on access to CAD is the McAuto Timeshare program which leases access to its own CAD inventory in a "try before you buy" plan. Firms with hardware can access McAuto programs through telephone lines. McAuto offers a three-dimensional modeling system that creates a 3-D building model from a drawing and

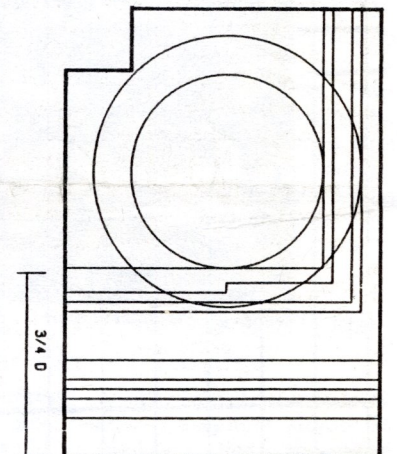
has the ability to convert this image into a two-dimensional finished drawing.

At the University of Washington College of Architecture, students work with several programs, their purpose being to teach students how to consider computers' capabilities rather than to give them technical training in computer technology. As the director of this program, Brian Johnson is firm in his opinion that computers can go only so far in assisting the design process. "We can calculate energy use, lighting levels, life cycle costs, and many other

Also by McAuto Timeshare, this is a sampling of the library of tree rendering types available to save designers from the repetition of reproducing tree after tree.



## TUSCAN PROPORTIONS



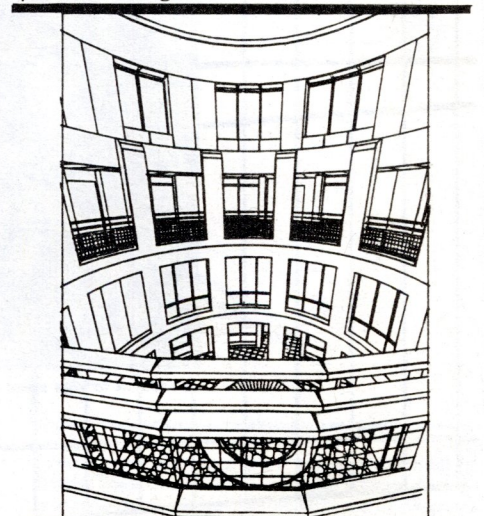
Though only two-dimensional, the CGRIP program can identify and draw the parts and proportions of a Tuscan column in plan, elevation, and detail. Drawing by UW architecture students.

'narrow focus' issues, but we are lost in the intricate, but only pseudo-quantitative relationships between the many subsystems of which buildings are composed. . . . In design, you rearrange the rules constantly to eventually resolve a problem."

CAD systems work well under constrained commands and still aren't sophisticated enough to exercise the human prerogative of changing their minds. "But I don't think it's impossible," Johnson says, adding that future programs will be able to analyze more complex questions about lighting and heat loss, and may even be able to help in the early stages of schematic design.

**Caroline Petrich**

Caroline Petrich, a journalist, works as a sales representative for DPEnterprises, a computer brokerage.



Drawing by CAD, Inc., using RUCAPS and AUTOPROD software.



# LAW: A Design Tool

*Were it not for a fortuitous set of circumstances, I might have become a lawyer.*  
—Studs Terkel

Architects are all too familiar with changes imposed on the development industry and on their profession by the legal innovations of the past decade. These laws have marked the development industry's conversion from a largely private one to one heavily dependent upon the governmental process. Private discretion in land use and building design is now heavily circumscribed by an increasing legal recognition of the legitimacy of public claims. Negotiations with governmental agencies, imposition of project design conditions by governmental officials, and public involvement in the approval of major developments are now the rule rather than the exception.

With these changes, increasing involvement between the architectural and legal communities is occurring. The constructive and creative role of the lawyer in the process of building design and land use approvals is, however, not perceived by many architects. Lawyers are generally seen as barriers to creative architectural design or as nay-sayers — and those are the complimentary labels!

Robert Venturi (a famous non-lawyer) has said that "Architects today are too educated to be either primitive or totally spontaneous, and architecture is too complex to be approached with carefully maintained ignorance." Perhaps to overcome a "carefully maintained ignorance" about the lawyer's role, a word on behalf of what a lawyer offers to this process is necessary.

Lawyers, unlike architects, act within an adversary system. That system often demands that lawyers act like adversaries in order to represent their clients' interests. But adversary resolution is only one part of a lawyer's responsibility. Lawyers should also function as counselors and problem-solvers for their clients and their clients' consultants. In the area of land use, this role often requires a lawyer to counsel a client on whether a change in a particular regulation is advisable.

**Codes and regulations are designed to be flexible and to change in response to new information.**

Many people perceive proposed changes to a zoning code or building regulation as manipulating the system. What is rarely understood is that such codes and regulations are in fact designed to be flexible and to change in response to new information or particular facts not anticipated by a general regulation. The legal justification for most land use regulations is that they are within the public's general welfare. The general welfare concept, however, is obviously subject to interpretation and cannot be defined in such a way to anticipate all

possible situations. Lawyers, through their training, attempt to define their clients' interests by measuring them against what may have been interpreted as being within the general welfare as reflected in a particular code or regulation.

**Despite increased regulation, creative development today is just as possible as it was in the past.**

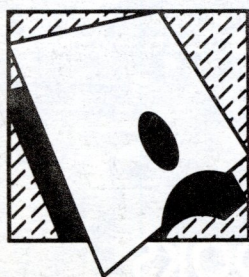
This process of analysis usually cannot be accomplished solely by a lawyer. In the land use area, architects, as well as other consultants, are essential in assisting a thorough analysis of what the general welfare ought to be in a particular situation. New building technology or creative design solutions not anticipated by a zoning code are examples of forces which produce change. Increased public involvement in project approval also requires different hearing processes than may have been anticipated by a general land use code adopted prior to such involvement. Specific information about a certain building site may also lead to the conclusion that a general zoning classification should be changed to reflect the particular conditions of that site. These types of changes are expected and needed if a land use code is to properly respond to the dynamics of the land development process.

**Lawyers are trained to question laws and regulations . . .**

Despite increased governmental regulation, creative development by architects is today just as possible as it was in the past. Lawyers, with their perspective on the law as a dynamic process, can assist other professionals who are dealing with regulations to better understand the purposes of those regulations and whether such purposes will be better served through a different approach. Lawyers are trained to question such laws and other regulations in light of the general welfare concept. Changes in such regulations are possible only when the general welfare can be demonstrated to be served by a solution other than the one contemplated by the particular regulation. This process then requires us to approach these issues with cooperative efforts in order to overcome our "carefully maintained ignorance."

**Jerry Hillis**

*Jerry Hillis is an attorney with Hillis, Phillips, Cairncross, Clark & Martin in Seattle.*



**Seattle Art, Inc.**

Your complete source for Graphic, Drafting, Architectural & Fine Art supplies.  
1816 8th Avenue Seattle 98101 (206) 425-0711 (800) 732-1129 toll free in WA



ORIGINAL HOUSEWARES, CLOTHING, GIFTS AND OBJETS D'ART  
105 STEWART MON-SAT 11 to 6 622-1555

**SOHO**  
**RESTAURANT**  
**& CLOTHING**



**BELLTOWN**

**SEATTLE**

**2214 SECOND AVENUE**

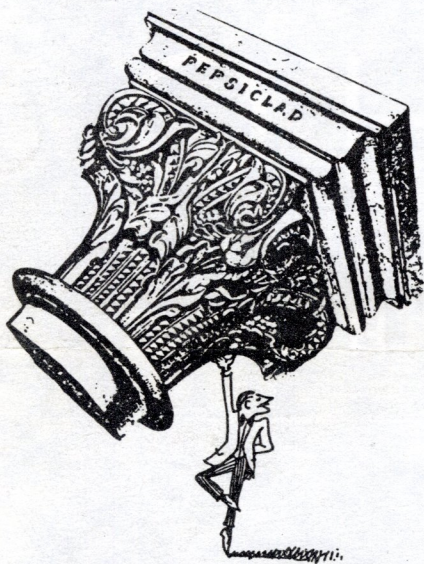
**LUNCH DINNER LATE NIGHT**

**622 5065**



# POST-HONESTY, or Material Messages

Shaping and assembling traditional materials brings immediate gratification. A curl of fragrant wood from a sharp blade, the comfortable heft of a fired brick, the solid bite of a 20-penny nail driven home — each experience of this kind teaches the essential quality of the material and points to its appropriate use. We believe that a brick wants to be an arch. Probably a cedar tree wants to be a shake roof (or a war canoe). But what about dryvit? What does it want to be? An ingenious energy-efficient sandwich panel, it is cheap, lightweight, quick and easy to install, and can be made to look like almost anything. Best of all, it will last longer than . . . ah . . . well, no one really knows its life expectancy, but examples around town seem to be holding up quite well. Unless a mating pair of dryvit beetles arrive hidden in a shipment of artificial flowers, the stuff should be around for a while. The problem for architects is how to use it.



It is useful when selecting materials to consider the sequence by which we come to fully recognize the substance of buildings. A distant structure appears as a silhouette against a backdrop of sky, landforms, or neighboring buildings. It is first perceived as a flat shape. Color, massing, light, and shadow emerge as one draws closer. Next, fenestration and major patterns reveal themselves. Closer still, texture and articulation become apparent, and finally, surfaces can be closely inspected and physically handled — the subtle patina of use, abuse, weather, and time can be observed. To the degree that this sequence

## A brick wants to be an arch. But what about dryvit?

holds true for a specific project context, materials should be chosen so that their inherent characteristics work to best advantage. Subtle variations of color, pattern, texture, and surface quality in natural materials often cannot be appreciated at a distance and the manufactured uniformity of machine-made materials lacks that added dimension when seen closely.

Edward Durrell Stone once decimated an entire quarry in order to sheathe a Chicago corporate tower in gleaming Carrara marble. The appropriateness of that lovely (and scarce) material five hundred feet above the street seems questionable. A less precious white skin would probably have been just as effective and would have preserved the marble for future generations of sculptors.

Copper, bronze, cut stone, brick, and wood can respond gracefully to use and aging. Because of that responsiveness, they are usually regarded as being "warm." Reflective glass, stainless steel, high-fired ceramics, and polished granite stubbornly remain perpetually new and bright. They seem "cold," and it's not even much fun to spray-paint graffiti on them. Unpainted concrete mellows and improves with expo-

sure to the weather and is in great favor with architects, but somehow the public is not as enthusiastic. Architects enjoy the sculptural variety and permanence it offers, but regular folks use words like "grey," "cold," and "unfinished." (The clouds.)

Synthetic materials, such as dryvit, glass-fiber reinforced concrete, and various plastics, often connote a compromise to low cost or maintenance — unless they emulate ("to rival successfully") a more familiar material. Two Seattle examples are the Bumgardner Architects' Market Place Office Buildings (dryvit as pre-cast concrete) and Bassetti/Norton/Metler's First and Pine project (dryvit as stucco on masonry). A good example of "warm" materials carefully used where they can be seen closely or touched are the pedestrian levels in and around Bassetti's new Federal Office Building. By contrast, Bud Schorr's "Hiram's" and various "Gretchen's Of Course" restaurants employ hard-surface industrial materials with such artistry and whimsy that they transcend "coldness" and reward users in their own way.

## Unabashed mimicry remains the hallmark of Hollywood and Las Vegas. But what is honest?

Frank Lloyd Wright welcomed new-technology veneers that could liberate patterns buried within slabs of wood and stone, but it is doubtful that even he, showman that he was, would have admired perfect photographic replications on plastic laminate. Unabashed mimicry remains the hallmark of Hollywood and Las Vegas. It just doesn't seem honest, and "honest" use of materials is equated with design integrity.

But what is "honest" when it comes to the choice and use of materials? Pre-modernists didn't seem particularly worried about it. Illusion is a universal ingredient in architecture. Since the Industrial Revolution, brick and stone have been commonly used as veneers (merely thick paint), and yet they are usually given the mannerisms of load-bearing masonry. Our cities surround us with crenelated cornices, rusticated joints, quoins, arches, and keystones in concrete, terra cotta, stucco, and wood. Are these charming anachronisms, legitimate responses to a cultural need for historic reference, or an expedient language with which to explain a structure?

The so-called Post-Modern movement seems, in part, to be a setting aside of old rules in favor of still older ones. The superficial application of ancient symbols, as in Michael Graves' Portland Building, may be an expression of frustration with the enormously difficult task of discovering systems of proportion, scale, ornament, and detail appropriate to new materials and methods.

Dryvit may not know what it wants to be, but it is only a first-generation material, the tip of the iceberg. As energy consumption becomes more critical and as the cost of traditional materials continues to escalate, an ever-increasing palette of substitutes will become available. Appropriate choices will be made according to social and economic contexts, avoiding Disneyland nostalgia and narrow intellectual judgments about "honesty." In the meantime, before the giant multinational conglomerates move in, we should prepare ourselves with potential trade names for the new all-purpose materials. I suggest: "Granoleum," "Brookshield," "Woops-bond," "Bumgard," "Copulite," and "Pepsiclad." The possibilities are endless.

David H. Wright, AIA

David H. Wright, AIA, is a principal of The Bumgardner Architects.

## NEW PROFESSIONAL AND REFERENCE BOOKS From VAN NOSTRAND REINHOLD



### ACCOMMODATING THE PEDESTRIAN

Adapting Town and Neighborhoods for Walking and Biking  
By Richard Untermann, 224 pages, 8½ x 11, 400 illustrations, \$34.50

This unique handbook is perhaps the first book to concentrate on small inexpensive developments and improvements in the streets of suburban communities, small towns, older neighborhoods, and downtown areas.

### THE SCOPE OF SOCIAL ARCHITECTURE

By Richard Hatch, approx. 320 pages, 8½ x 11, \$42.50

Worldwide achievements in social architecture over the last 15 years are clearly evaluated in this historically significant volume combining the expertise of architects and urban designers working in the United States, Mexico, Cuba, England, France, Italy, Holland, Austria, Belgium, and Spain. Extensive discussions of process, content, and form provide the reader with a solid base for assessing the pros and cons of Post-Modernism.



### ACCESS FOR THE HANDICAPPED

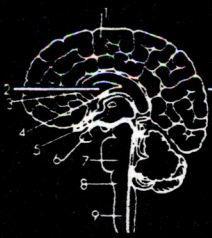
By Peter S. Hopf and John A. Raeber, 672 pages, 8½ x 11, illustrated, \$52.50

This easy-to-use source spells out the laws and regulations affecting building accessibility for the handicapped for all 50 states as well as those of the federal government. Full details on the national consensus standards — ANSI, BOCA, and UBC — that have been adopted by individual states.

### PERSPECTIVE DRAWINGS BY PROGRAMMABLE CALCULATOR A Method with Graphic Aids

By David Yue, 220 pages, 11 x 8½ oblong, illustrated, \$24.50

Perspective drawings made quickly, cheaply, and in any size by using inexpensive programmable calculators, a unique method for translating three-dimensional drawings directly onto two-dimensional surfaces, as well as for computing the position of the sun and shadow cast for any day, hour, or location.



### GRAPHIC COMMUNICATION AS A DESIGN TOOL

By Omar Faruque, 215 pages, 11 x 8½ oblong, illustrated, \$26.95 cloth \$14.95 paper

Drawing upon the latest research on the human brain, Omar Faruque explores the roles of problem-solving methodology, visual thinking, perception, and creativity in the design process.

## PETER MILLER BOOKS

ARCHITECTURE AND DESIGN BOOKS

1909 FIRST AVENUE • AT STEWART • 623-5563