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Top Quality Concrete
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In the construction of General Motors Technical Center—one of the world’s great industrial research facilities—Pozzolith was employed in the more than 150,000 cubic yards of structural concrete as an aid in producing uniform, top quality concrete.

The use of Pozzolith both improves concrete quality, and provides this better quality concrete at a lower cost in place. These benefits result from:

1. control of water content . . . Pozzolith makes possible lowest water content for a given workability.

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General Motors Technical Center—25-building research facility near Detroit.
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NOW! All The Beauty of Polished, Crushed Stone In The Cushioned Comfort of Luxurious Rubber!

NEW TERRAZZO RUBBER FLOORING

by GOODYEAR—In 14 stunning colors!

Before you write the specs for flooring in another job—you owe it to yourself to see this new Terrazzo Rubber by Goodyear.

It attains styling never quite achieved before in a resilient floor patterning that has all of the richness of true terrazzo—combined with the buoyant underfoot comfort and the sound-deadening qualities which have made Goodyear Rubber Flooring the standout in luxury for 30 great years.

And, you will discover, its price is a pleasant surprise!

Beyond all this, Goodyear Rubber Flooring is famed for long wear and beauty that endures. Countless installations—made more than a quarter-century ago—remain today in fine condition, lasting testimonials to the good judgment of those who specified this highest-quality material.

See actual samples of this brilliant new Goodyear Terrazzo Rubber—WRITE: GOODYEAR, FLOORING DEPT. J-8325, AKRON 16, OHIO.
Duriron corrosion resisting drain pipe generally outlasts the building. Duriron is high silicon iron throughout the thickness of the pipe wall. It’s the one permanent piping specified by architects and engineers for corrosive waste disposal systems for more than 30 years! Insist on Duriron.

Duriron pipe and fittings are available from stock from leading plumbing jobbers in principal cities.

THE DURIRON COMPANY, Inc.
Dayton, Ohio
Landscape Study by James C. Rose

It's the Law by Bernard Tomson

Mechanical Engineering Critique by William J. McGuinness

Architectural Samples Exhibits Now Big Business—Part I
By Rosalind Cohen

Views

Offices and Studios for CBS, St. Louis

News Bulletins

To Mark Mexican Satellite City

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Introduction

Planning Southeastern Gardens by Lewis Clarke

Architectural Landscaping on Long Island

Factory for Packard Motor Car Company—1905
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Albert Kahn, Architect; Ernest Wilby, Associate

Plastic Design in Steel by William J. McGuinness

Footcandles in Lighting Design by J. L. Tugman

Branch Department Store: North Miami, Florida
Office of Meyer Katzman, Building Design
Gamble, Pownall & Gilroy, Architects-Engineers

Memorial Hospital: St. Lo, France
Paul Nelson, Architect

Selected Detail: Operating Room

Let's Omit "or equal" by Harold J. Rosen

Remodeling—3 by Louise Sloane

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It's the Law
by Bernard Tomson

P/A Office Practice article discussing measurement of professional compensation through determination of building costs.

When compensation under a construction contract is to be measured by a determination of costs, disputes are often engendered by terminology which permits of conflicting interpretations. A recent decision of the New York Court of Appeals (Bethlehem Steel vs. Turner Construction Company and Mutual Life Insurance Company) involves a unique situation, but is illustrative of the problems that may arise in this area. Although this case involved the construction of an "escalator" clause contained in a "fixed fee" construction subcontract, the issues involved are pertinent to "cost plus" contracts as well.

In the New York case, the Contractor entered into a subcontract with a steel company for the furnishing, fabrication, and erection of the structural steel for a 20-story office building in New York. The subcontract provided that the Contractor was to pay $182.00 per net ton for the steel, subject to a price adjustment or "escalator" clause. This clause provided:

"The price or prices herein stated are based on prices for component materials, labor rates applicable to the fabrication and erection thereof and freight rates, in effect as of the date of this proposal. If, at any time prior to completion of performance of the work to be performed hereunder, any of said material prices, labor rates and/or freight rates shall be increased or decreased, then in respect of any of said work performed thereafter there shall be a corresponding increase or decrease in the prices herein stated."

The fabrication and erection division of the steel company purchased the steel to be used for the building from the parent company. When, subsequent to the making of the subcontract, the company increased its price for steel to its own erection and fabrication division, as well as to all of its customers, it demanded an increase in its fee under the subcontract as provided by the "escalator" clause. It was established in the litigation that the steel company, prior to the increase in price to its customers, had charged uniform and regular prices to all purchasers, including its own fabrication and erection division.

It was the contention of the Subcontractor that the plain steel which it sold to its own division for fabrication and erection of the structural steel for the office building was a "component material" within the meaning of that term as used in the "escalator" clause. The Contractor and the Owner, however, contended that the term "component materials" referred only to those materials from which the plain steel was produced, and that only an increase in price to the steel company of those raw materials, could justify the application of the "escalator" clause.

The New York Court of Appeals, in a divided opinion, found in favor of the steel company, ruling that the "escalator" clause was unambiguous, and that it clearly provided that an increase in the price of steel which was to be used for fabrication and erection (as distinguished from an increase in the price of raw materials from which the steel was produced), would entitle the Subcontractor to an increase in the subcontract price. The majority opinion was based in part upon the fact that the price-adjustment clause, although referring to an increase in labor rates applicable to the fabrication and erection of the structural steel, did not include the subcontractor labor costs at the mill. The Court stated:

"The basic issue, then, is the meaning of the term 'prices for component materials' as used in the price adjustment clause of the contract. . . . If 'component materials' means raw materials used in the production of steel, escalation on account of labor rates would not be limited to those specifically mentioned in connection with design, fabrication, and erection, but would have included labor costs at the mill as well. However, it does not. The formula employed referred to the computation of 'prices for component materials, labor rates applicable to the fabrication and erection thereof and freight rates.' A normal and reasonable meaning of that clause has the word 'thereof' referring to the term 'component materials' so that component materials signify the materials that Bethlehem contracted to provide in performing the work 'furnishing, delivering, erecting and painting all structural steel work in accordance with AISC Class 'A' material, AISC Code of Standard Practice, ' & c.'"

In answer to the argument that the steel company had an unrestricted and unilateral power to increase the prices it was to receive under its subcontract, by increasing its own price for steel, the Court held:

"Appellants argue that unless the escalation clause has the meaning attributed to it by them, Bethlehem has an arbitrary unilateral power to change the price terms of the Bethlehem-Turner contract. In other words, appellants are saying that the contract lacks requisite mutuality and that an escalation clause, in order to be valid, must be based on some extrinsic standard by which escalation can be determined. However, this escalation provided for increases or decreases in accordance with changes in Bethlehem's regular prices to all purchasers of plain steel products and such a provision does not give Bethlehem undue power of determination of the contract price."

The dissenting judges in their opinion, stated that the interpretation urged by the Subcontractor sought "to impress technical and uncommon meanings upon general, every-day words." The minority opinion concluded that the "escalator" clause was ambiguous, and that it was susceptible of the interpretation that "component materials" refers only to the raw materials from which the plain steel was produced. The minority stated:

"As the appellants point out, the usual purpose of an escalation clause is to protect substantially the bargain unduly harsh. An escalation clause is not ordinarily intended to enable one party to render the bargain more profitable to himself. It seems to me that the words 'prices for component materials' taken in their ordinary meaning can reasonably be understood to refer to the additional prices which Bethlehem would be required to pay in order to obtain and furnish the materials necessary for the performance of the contract work. In other words, those words could reasonably mean that the contract price was to be increased pursuant to the escalation clause, if Bethlehem's costs and expenses increased."

As in all legal relationships, the more skillfully a construction contract is drafted, the more likely that it will be interpreted to reflect the intentions of the parties making it. Under contracts where the rights and liabilities of both parties are dependent upon the calculation of cost, the manner in which this term is described and defined is particularly important.
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Norman Gas-Fired Forced Air Schoolroom Heating and Ventilating System

If you're planning a new school or adding rooms to an old one, be sure to check into the advantages of the Norman Schoolroom System—quality engineered after years of research and study in school heating and ventilating requirements. Outside air only is used for combustion.

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Please send literature and specifications on the Norman Schoolroom System and the all-new Norman Three Sixty.

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STATE
Mechanical Engineering Critique by William J. McGuinness

P/A Office Practice column on mechanical and electrical design and equipment, devoted this month to the cost and value of air conditioning in commercial buildings.

In buildings that must produce income, it is quite logical to appraise the value of any added facility with respect to the amount by which the annual operating expenses will be increased. If it is an improvement like air conditioning—which may increase the efficiency of the staff—the savings due to this increase in productivity may well be expected to pay for the cost of installing and operating the new system.

A comprehensive national study of these costs has just been completed by Minneapolis-Honeywell Regulator Company, aided by Carrier Corporation. It shows that a very slight increase in worker efficiency will easily defray the cost of owning and operating an air-conditioning system. The results have been tabulated (below).

Line A of the table lists the costs to own and operate an air-conditioning system expressed in dollars per year for each sq ft of floor area. A period of 20 years has been allowed for the amortization of the original cost of the system. The figure of 65¢ for adding this improvement to existing office buildings can be spot checked by an example of the Cunard Building in New York, where tenant rental was increased 57¢ per sq ft per yr after air conditioning was added. The basic cost for this improvement in industrial buildings is less because of the simplicity of distribution, despite the fact that the figures include the cost of operating the plant for 10 hrs per day. In the patient areas of hospitals, the cost is greatest because of a more intricate installation and because the plant is operated 24 hrs per day.

In line B other costs are added and totals are given. These totals include payrolls of the staff in each case. Line C expresses the yearly cost of amortizing and operating the air conditioning as a percentage of the total cost, including payroll. The fact that this does not exceed two percent is quite surprising. Finally, line D relates the air-conditioning cost to the cost of the payroll for the business involved. This may be considered the efficiency index. It is obvious that this percentage is the one by which the staff efficiency must be raised to carry out the cost of the improvement. In the case of hospitals it is higher than in other types of buildings because the relative amount of the payroll is less. This is due to the added cost of supplies and equipment. This fact may be one of the contributing reasons why air conditioning has been slower to appear in hospitals.

It almost appears that air conditioning has been chosen in keeping with its numerical index as listed in Line D, office buildings being most commonly chosen to receive the improvement.

Unfortunately there is no complete, nationwide survey that shows the amount of improvement in productivity resulting from air conditioning. The current report, however, gives a few examples of improved efficiency all of which justify the cost of the air conditioning. In each the percentage is far greater than the minimum listed in the table.

The Detroit Edison Company, after the installation of air conditioning, found that drafting room efficiency improved by 51 percent.

A Federal government study of stenographic work showed a 24 percent improvement with air conditioning.

A manufacturing plant in Tennessee reported a 29 percent increase in productivity after air conditioning.

Benefits to the employee are also seen. A survey of 75 manufacturing plants in New York City revealed a drop of 30 percent in absenteeism after conditioning was adopted.

Each owner must judge the amount by which he feels productivity may be increased by air conditioning. Minneapolis-Honeywell and Carrier have provided us with data to set up an approximate budget for the improvement.

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<tr>
<th>Costs of owning and operating an air-conditioning system</th>
<th>Type of building</th>
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Costs are per sq ft of building area per year. Table adapted from a report by Minneapolis-Honeywell Regulator Company and Carrier Corporation.

Mechanical Engineering Critique, November 1955 P/A.
HEAVIER
STRONGER
TIGHTER . . . THAT'S WHY ARCHITECTS SPECIFY

CUPPLES
ALUMINUM WINDOWS
FOR NEW BUILDING IN MEDICAL CENTER

High on the list of outstanding features in the seven-story addition to the Maine Medical Center are Cupples' Series 500 fixed and double-hung aluminum windows. This is another example of the wide acceptance of Cupples Aluminum Windows where sound design and precision fabrication are of prime importance.

The Cupples' 500 is proved to be stronger, heavier, more monumental and massive than other commercial double-hung windows, yet is competitively priced. Weather-tight, never needs painting or maintenance, operates silently—easily.

Cupples is a foremost designer and manufacturer of many types of commercial and residential aluminum windows, curtain walls, doors, Alumi-Coustic grid systems and special ornamental products. Our catalogs are filed in Sweet's.
P/A Office Practice article reporting the current boom in architectural samples exhibits, and related building-business activities.

As a result of the tremendous building boom following World War II, more and more enterprises incorporating an "architectural samples exhibit" are appearing on the American scene. From New York to Los Angeles, from Washington, D.C., to Miami, reports have been received, describing super-showrooms, multistory headquarters buildings, and multibuilding construction centers—all of which include sample exhibits as primary or supplemental sources of income.

The original venture of this type, in the 101 Park Avenue building, New York, began in 1913 and is now a thriving business enterprise. The prime functions are to show architects and builders the products they can purchase or specify and to provide technical information on these. The newer projects, many still in the conceptual stage, differ from the original mainly in matters of scale, manner of display, and direction of appeal; they offer broader, more elaborate services to the building trade, manufacturing concerns, and consumer; they occupy more space and promise to gain a wider audience. Because the trend indicates an ever-increasing growth of such projects, it seems important to attempt an evaluation of them—both as an architect's tool and as a sound financial endeavor. We find that several of the most extensive projects—each representative of a type—combine with a sample exhibit one or several of the following: offices for architects, engineers, builders, and manufacturers' representatives; meeting halls; information bureau; technical library; consumer service; promotion and publicity department; hotel accommodations.

Our prototype, the Architects Samples Corporation, first displayed samples consisting primarily of basic building materials—ordinarily stored by architects in haphazard fashion. The idea of a centralized, sample location caught on immediately. Following World War I, the samples, hitherto filed in cabinets and shelves were gradually shifted to professionally designed displays which included various types of plumbing, heating, lighting, and kitchen equipment, as well as the usual building materials. As the Architects Building at 101 Park Avenue included among its tenants leading architectural, engineering, and contracting firms along with building-material manufacturers, it was not long before similar firms were attracted to the area—in the bustling Grand Central section of Manhattan amid clubs, convention halls, business offices, hotels, and major transportation facilities.

During the Depression, a sufficient number of manufacturers continued their displays because of the prominence that the sample room had gained by then, and absorbed the cost in their national advertising budgets. Hence the ASC survived this period and was well on the way toward enjoying its former success, when World War II started. By that time, other exhibits had appeared in New York, including one sponsored by the Rockefeller interests and maintained at Radio City. That exhibit, along with others, closed at the start of the war due to impending building curtailment. However, the ASC display facilities continued to function for architects and engineers who had transferred from private to military practice.

At present, the ASC exhibit occupies two levels in the Architects Building, covering 25,000 sq ft. The information center is a counter installation maintained by a technically trained staff which handles personal or phoned inquiries and distributes manufacturers' catalogs. Sales representatives are permitted on the floor only by direct appointment with a prospect. The displays themselves must meet a standard set by the organization and are generally the work of professional designers chosen by exhibitors. As the showroom is designed to serve professionals, products are neither installed with lavish accessories (which would attempt to glorify the product), nor arranged in "model rooms" (which would appeal to novices)
Even in this big and busy railroad station **maintenance is reduced with Honeylite.**

It takes an army of 200 men to keep New York's Pennsylvania Station clean. Every 24 hours they remove more than 25 tons of scrap paper, refuse and dust. An ordinary light-diffusing ceiling would be a maintenance headache with this amount of dirt and dust. Not so with Honeylite! This 7,000 square foot canopy of light over the Pennsylvania Railroad's new TV ticket sales counters means fewer hours of tedious and expensive cleaning time. Dirt and dust just fall through Honeylite's open hexagons. Furthermore, Honeylite is all-aluminum, which means that it is non-static, so it does not attract dust, nor does it require de-staticizing after handling. Removing smoke stains and grease from Honeylite under normal conditions is not difficult... rinse it off in ordinary detergent and put it back to air dry. And, of course, all this ease of maintenance is but one of Honeylite's advantages. For efficiency in diffusing soft, even light, for ease of installation, for glare elimination, and for beauty Honeylite is unexcelled.

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*A DEVELOPMENT OF HEXCEL PRODUCTS INC.*

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primarily to amateur decorators); they are, rather, displayed as individual units and grouped according to type. Income from the showroom is derived through the rental of display space.

According to H. C. Nancken, Executive Vice-President of the firm, ASC has endured for more than 40 years due to several basic factors, foremost of which is its location in New York, where the showroom is frequented by out-of-town visitors as well as local architects who specify products for out-of-town buildings; therefore manufacturers regard this as a national advertising medium. In addition, many manufacturers maintain showrooms or offices in the general vicinity—a factor which facilitates business transactions for the buyer.

The most ambitious venture to follow the lead of ASC, is Construction Materials Center, envisioned by Designer Victor M. DiSuvero. If fully realized, the project would become a chain of merchandising-information centers for the building industry, established in 18 of the largest metropolitan areas throughout the nation.

In 1954, a two-year pilot operation was begun in San Francisco. Increased sales by exhibiting manufacturers and an impressive flow of inquiries during the first year encouraged rapid expansion of the original COMAC plan to include office facilities for architects and builders, manufacturers' showrooms, meeting halls, dining rooms, and in some cases, hotel accommodations.

Basically, a COMAC unit will be an information and exhibit center like ASC, organized on a grander scale and aspiring to astronomical importance in merchandising and communication. Its aims are threefold: to facilitate purchase of materials for consumers and professionals alike; to provide a central merchandising facility for the building industry; to effect a means of bridging technological lag between organizations and individuals throughout the country.

The first building of the project, a 12-story structure in San Francisco providing 45,000 sq ft of area per floor, is expected to be completed this year. Products and materials will remain on permanent exhibition in a main display room where a patented display system will permit hundreds of manufacturers to be represented in a bank of panels 70 feet long. Elsewhere, full-scale model kitchen, bathroom, classroom, and other interior exhibits will show equipment and materials installed, integrated, and in actual use. There will also be a gallery area for diagrammatic displays, and a separate exhibit of new products.

An elaborate variety of free services is offered. These include: distribution of specification sheets summarizing all local-level information on products; an architects' service; a consumer service department which helps an architect's client choose materials (this department, we were informed, will work closely with the architect in an attempt to influence the client's attitude toward certain products); a research service to provide comparative abstracts on competitive products; a building-data library. Another featured attraction is the monthly Round-Table Conference, a series of panel discussions bringing together representatives from building trade associations, faculty members from universities, and manufacturers who present new products or technical innovations which serve as basis for discussion. (Summaries of these conferences will be prepared and distributed by COMAC at a nominal fee.)

To make the public aware of building developments, a vigorous publicity and promotion department is prepared to use radio, television, and periodicals. Service fees paid by manufacturers participating in the COMAC program will constitute the main source of income for this project, which is otherwise privately financed.

From a business standpoint, the COMAC venture differs radically from that of its New York predecessor. Whereas the latter evolved slowly out of propitious circumstances (i.e., strategic location, vitality of local building industry, support of local manufacturers and distributors), the COMAC project would spring full-blown upon the scene, without the assurance of continuing local patronage. Such a scheme is most feasible during a period of great national prosperity; under stricter economic controls, however, support would depend upon the prosperity of local building industry. As it is, this project-type, aiming to attract any and every audience, is based on statistics, estimations, predictions, and the dream of ever-increasing, limitless building activity as well as ever-expanding prosperity. In addition, such projects exemplify the peculiar American genius for invention of monstrous multipurpose, multifunction devices which are splendid in theory.
Jamison announces flexidor*...

NEW flexible batten door

All-neoprene batten door designed for use with power trucks

Flexidor is light and resilient to absorb and dissipate the shock of impact; reinforced door noses add strength, prevent buckling or wrap around on impact. Freeswinging door suspension provides minimum impact resistance. Jamison two-way gravity cam hinges assure fast closing.

Flexidor is available in a full range of sizes for use in new construction or to replace rigid battens. Complete information is available from the Jamison Cold Storage Door Co., Hagerstown, Md.
Dear Editor: Harold J. Rosen has a good idea, but his trial balloon (page 154, July 1957 P/A) fails to meet his own objectives because: (1) it is incomplete; and (2) it is adapted only to the needs of a single Government Agency.

Rosen's Veterans Administration classification does not include Demolition, which is an important element of most present-day construction. It also omits Plumbing, Heating, Electric Work, and Elevators, which collectively account for approximately one quarter of all building costs. A building might also require open or pressure caissons, spread footings, grade beams, or a full mat foundation, instead of piling.

I am enclosing corresponding specifications classifications used by Public Housing Administration and New York City Housing Authority (both of which are deficient as a trade standard, for the same reasons that Rosen's published list is incomplete).

Most people take for granted the standards which contribute so much ease and convenience to modern living, and do not realize that standard railroad widths, standard screw threads, and standard automobile tires (to mention but a few examples) did not always exist, but had to be established by collective trade action, trade agreement, and trade acceptance—exactly as Rosen is now trying to do for his Specifications Classification.

Most people also overlook the standardizing axiom: that a standard, to catch on and succeed, must be tied in with existing trade practice.

The metric system, despite its indisputable functional advantages, is not used in American construction because it was not co-ordinated with the existing American and English practice of building in feet and inches. Decimlization, which is the essence of the metric system, is, however, standard American railroad practice because the foot, instead of a theoretic fraction of the equatorial circumference of the earth (which later, fuller knowledge has proved wrong), was continued as the measuring unit. A railroad construction "station" is 100 ft. Similarly, a "square," the American standard roofing unit, is 100 square ft. A "module," to cite one further example, is 4 inches.

The metric system is, however, standard in the electric industry because electric science evolved after the establishment of the metric system, so that in electrical development the metric system did not have to compete and replace an established competing trade practice.

The three most widely used present building specifications classifications are the AIA and Sleeper classifications, mentioned by Rosen, and Sweet's Catalog classification (listed below) which he overlooked. Any proposed specifications classification that hopes to survive must be tied in with these existing established construction folkways.

My only personal contribution to this discussion—for the above comments are a reiteration of information available to any sincere investigator—is that the basis of the specifications classification should be the normal construction sequence, so that the classification can also be used for scheduling progress and controlling construction—which are more important than specification format and filing convenience.

Fortunately, the normal construction sequence is the order in which specifications are written and used for estimating, for subcontracting, and for building.

Regardless of the kind, size, or nature of a building the normal construction sequence is:

(normal construction sequence)
Even a printmaking expert cannot look at these two prints and tell which original drawing was made on Phantom Ruled Blutex. Still, there were hours of drafting time required to make the two identical drawings from which these prints came. Write today for a free sample of Phantom Ruled Blutex and see the proof for yourself.

Phantom ruled vellum leaves more time for creative drafting

Working with scaling aids often takes valuable time from the basic job of creative drafting. Add the wasted hours spent drawing guide lines, lettering and handling similar routine drafting problems, and you have the reasons why POST developed Phantom Ruled Blutex.

This new vellum is basically POST’S Blutex, unchanged except for the addition of phantom grid lines. The result is a combination of all the time-saving advantages of grid paper with all the drawing and reproduction advantages of famous Blutex vellum.

By using the grid lines, a draftsman works quickly to scale without constantly reaching for scaling instruments. Proportioning and resizing are easier and faster. Freehand drawing truly becomes a rapid, highly creative method of recording ideas. Even lettering and dimensioning are transformed into simpler, less time-killing jobs.

In printmaking, the grid lines disappear completely, leaving a sharp, contrasty print.

More about Blutex

The carefully controlled, uniform tooth on Blutex’s surface easily “takes” dense, opaque pencil lines that resist smudging and smearing. Those sharp lines, plus Blutex’s excellent transparency, assure fast printback and sharp reproductions.

Due to its carefully selected 100% rag content base, Blutex stands up well under prolonged handling. Even when alterations are done years after an original drawing is completed, Blutex still retains its fine ghost-free erasing qualities and easy erasability.

Free sample offer

For a test sample, write to the Reader Service Division of Frederick Post Company, 3642 V. Avondale Ave., Chicago 18.

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(Continued from page 13)

1. Site Preparation
1.1 Demolition
1.2 Shorting
1.3 Sheet Piling
1.4 Underpinning
1.5 Soil Stabilization
Etc.

2. Excavation, Backfill & Grading
2.1 Preservation of Top Soil
2.2 Rock Excavation

3. Foundations
3.1 Spread Footings
3.2 Concrete Piles
3.3 Steel Piles
3.4 Open Caissons
3.5 Pneumatic Caissons
3.6 Waterproofing
3.7 Damp-proofing
3.8 Foundation Drains
Etc.

4. Structural Framework
4.1 Stone
4.1.1 Modern Structural-Stone Supports
4.1.2 Egyptian Masonry (Historical)
4.1.3 Greek & Roman Stonework (Historical)
4.1.4 Romanesque (Historical)
4.1.5 Gothic (Historical)
4.1.6 American Colonial (Historical)
4.2 Concrete
4.2.1 Plain
4.2.2 Reinforced
4.2.3 Prestressed
4.2.4 Air Entrained
4.2.5 Prestressed
4.2.6 Precast Floor and Roof Slabs
4.2.7 Cement-Work and Flooring
4.2.8 Concrete and Cinder Blocks
4.2.9 Concrete and Sand Lime Brick
4.3 Ceramic Bearing Walls and Piers
4.3.1 Common Brick
4.3.2 Face Brick
4.3.3 Fire Brick and Clay
4.3.4 Chimney Construction
4.3.5 Architectural Terra Cotta
4.3.6 Structural Terra Cotta
4.3.7 Back-up Blocks
4.3.8 Floor Arches
4.3.9 Osmotic Arches
4.3.10 Structural Facing Tile
4.3.11 Ceramic Veneer
4.3.12 Mortar
4.4 Structural Steel
4.4.1 Rivet Connected
4.4.2 Bolt Connected
4.4.3 Weld Connected
4.4.4 Lally Columns
4.5 Steel Joists
4.6 Structural Cast Iron (Now rare, but very important, historically)
4.7 Structural Wood
4.7.1 Small House Construction
4.7.2 Rough Hardware
4.7.3 Mill Construction
4.7.4 Timber Trusses
4.7.5 Laminated Arches
4.7.6 Honeycomb Arches
4.7.7 Plywood
4.7.8 Wood-Preserving Treatments

5. Roof Cover (Topping Out)
5.1 Composition Roofing
5.2 Sheet Metal
5.3 Skylights and Louvers
5.4 Tin
5.5 Copper
5.6 Lead
5.7 Aluminum
5.8 Galvanized Iron
5.9 Asphalt Shingles and Siding
5.10 Asbestos Shingles and Siding
5.11 Slate
5.12 Tile
5.13 Wood Shingles
Etc. (Swiss Chalet sod roofs)

(Continued on page 16)
SUPERVISORY DATACENTER*

Starting point for centralized automation in buildings

New ideas that significantly affect building design are rare—and important. The Supervisory DataCenter control panel perhaps represents such an idea. For by completely centralizing air conditioning control, it shows the way to similar economy and integration of many another mechanical function. Conception, housing and installation of the DataCenter involve creative design factors that are of first concern to the architect. Your local Honeywell man has full details.

Minneapolis-Honeywell Regulator Company

Visualized at right is a DataCenter as it might be integrated into the design of a modern airport terminal. On public display, it oversees comfort, gives the engineer a constant picture of air conditioning system operation, provides major operational economies. For passengers, the panel might show weather conditions in major cities. A DataCenter similarly displayed is planned for the Queen Elizabeth Hotel, Montreal, Quebec. Architect: G. F. Drummond, Chief Architect, CNR; Engineer, N. S. B. Watson, CNR.
How will it look when it's finished? That's always the question in everyone's mind when planning a new (or refurbishing an old) library. With Sjöström's "LIFE LIKE" Planning Service, this question is answered photographically, even before plans are drawn up.

Sjöström's Planning Department uses 1/2" scale models, photographs the set-up, and sends the photo to you upon request. This service plus our complete collection of library furniture, with many exclusives, will solve your library problems from the start.

Sjöström
OF
PHILADELPHIA

Designers and Manufacturers of

New Life
LIBRARY FURNITURE

6— Wall Enclosure (Closing In)

6.0 Stone Veneer and Ashlar
   6.01 Granite
   6.02 Marble
   6.03 Limestone
   6.04 Sandstone
   6.05 Bluestone
   6.06 Alberene
   6.07 Artificial Stone

6.1 Cavity Walls
   6.10 Design
   6.11 Back Up Blocks
   6.12 Anchors and Bonds
   6.13 Spandrel Waterproofing
   6.14 Calking

6.2 Curtain Walls
   6.20 Glass Blocks
   6.21 Aluminum
   6.22 Stainless Steel
   6.23 Porcelain Enamel
   6.24 P Lastics
   6.25 Heat Insulation
   6.26 Vapor Seal

6.3 Stucco

6.4 Exterior Wall Boards
   6.41 Mineral Base
   6.411 Gypsum
   6.412 Glass
   6.413 Mineral Wool
   6.42 Wood Chip and Vegetable Fiber Base

6.5 Wood Exterior Finish
   6.51 Shingles
   6.52 Clap Boards
   6.53 Novelty Siding
   6.54 Exterior Millwork
   6.55 Wood Columns

6.6 Exterior Doors & Door Frames

6.7 Windows
   6.71 Wood
   6.72 Steel
   6.73 Aluminum
   6.74 Bronze
   6.75 Weatherstriping
   6.76 Glass and Glazing
   6.79 Store Fronts

7— Interior Finish and Trim
   7.01 Furring, Lathing, and Plastering
   7.01 Metal Lath
   7.01 Metal Base
   7.01 Plastering
   7.01 Slatwood
   7.02 Sound Insulation and Control
   7.03 Dry-Wall Finish and Wallboards
   7.04 Interior Glass Blocks
   7.04 Interior Marble and Stone
   7.05 Terrazzo
   7.07 Ceramic Tile
   7.08 Composition and Plastic Tiles
   7.09 Linoleum
   7.10 Ornamental Iron, Aluminum, and Bronze
   7.11 Metal Stairs and Fire Escapes
   7.12 Metal Doors, Doors and Trim
   7.13 Metal Partitions
   7.131 Toilet Partitions
   7.132 Office Partitions
   7.14 Metal Cabinets and Built-In Furniture
   7.15 Wood Stairs
   7.16 Wood Finish Floors
   7.17 Interior Wood Doors
   7.18 Wood Borrowed Lights
   7.19 Interior Wood Trim and Paneling
   7.20 Wood Cabinets and Built-In Furniture
   7.21 Bathroom Accessories
   7.22 Finish and/or Builders' Hardware

8— Painting and Decorating
   8.0 Paints and Protective Coverings
   8.1 Wallpaper
   8.2 Fabrics and Hangings
   8.3 Shades
   8.4 Venetian Blinds
   8.5 Carpets
   8.6 Movable Furniture

9— Mechanical Equipment
(Co-ordinate All Roughing With Structural Framework)
   9.0 Power Plants
   9.1 Heating, Ventilating, and Air Conditioning
   9.2 Plumbing
   9.3 Electrical Work
   9.4 Lighting Fixtures
   9.5 Kitchen Equipment
   9.6 Laundry Equipment
   9.7 Inductors
   9.8 Elevators

10— Occupational Equipment
    10.0 Domestic
    10.01 Mail Boxes (usually included in hardware or electric subcontracts)
    10.1 School
    10.2 Hospital
    10.3 Religious
    10.4 Theatrical
    10.5 Musical
    10.6 Office
    10.61 Mail Chutes
    10.62 Movable Partitions
    10.7 Factory and Industrial

11— Utilities
    11.1 Sewers
    11.2 Water
    11.3 Gas
    11.4 Electricity
    11.5 Steam (piped steam is available in N. Y.)
    11.6 Telephone Service
    Etc.

12— Site Improvements
    12.0 Grading
    12.1 Drainage
    12.2 Roads
    12.3 Walks
    12.4 Fences
    12.5 Playground Equipment
    12.6 Play Poles
    Etc.

13— Landscaping (Lawns and Planting)
    13.0 Design
    13.1 Grass, Lawns, and Playing Fields
    13.2 Plants
    13.3 Vines
    13.4 Shrubs
    13.5 Trees
    13.61 Tree Moving

(Continued on page 22)
for distinction

There's dramatic appeal in the dark finish of Bruce Fireside Plank...a low-cost solid oak floor with charm for any home. Alternating 2¾” and 3¾” strips create the interesting plank effect that is accentuated by wide but shallow side bevels. Bruce Fireside Plank is completely finished at the factory for beauty, durability, and on-the-job cost savings. Write for color booklet. See our catalog in Sweet's Files.

E. L. BRUCE CO.
Memphis 1, Tennessee

Dark

Bruce
Fireside Plank
Floor
Naturally Beautiful
HOPE’S WINDOW WALLS HELP WIN ARCHITECTURAL DISTINCTION

Conceiving this High School as a group of special purpose buildings on a campus site of natural beauty, the architect used modern construction with Hope's Window Walls to obtain many extra benefits:

1. A novel and beautiful outdoors-indoors relationship with extra value for the social and educational aims of the school;
2. Building units located to serve the educational plan and improve communications without congested corridors;
3. Such units as gymnasium and auditorium available for community use at different hours without heating or lighting the whole plant;
4. Shops and music rooms separated from study and recitation halls;
5. Room and facility for expansion without strain;
6. Lower first cost than for a single multi-story building;
7. Low maintenance and upkeep charges.

This school is one of six buildings chosen by the American Institute of Architects for the highest honors in its ninth annual competition. In all its buildings Hope's Window Wall Units are constructed of Hope's Pressed Steel Sub-frames with Hope's Heavy Intermediate Ventilators. Stationary glazing and porcelain enameled insulated panels are inserted as required by the design.

Hope's engineering and layout assistance is always available to you when you have in mind a building with an interesting window problem. Write for catalog 152-PA for your files.

HOPE’S WINDOWS, INC., Jamestown, N. Y.
THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS
The new larger sizes of glazed ceramic wall tile are gaining increasing acceptance for corridors in schools, hospitals and other buildings. Lowest maintenance cost, permanence, and moderate initial cost are significant factors. And with American-Olean tile you have 50 colors to choose from.
 WHEN YOU SPECIFY

ROOMAIRE®

CONDITIONERS BY

Young

... you can
choose from
4 MODELS
in 4 SIZES
each with
individual
unit control

Young Roomaire Conditioners provide complete, economical air conditioning for the General Green Motel, Greensboro, N. C. Note how the attractive design blends into the modern decor in this fine motel.

Young Roomaire conditioners provide year 'round air conditioning of individual rooms in multi-room installations—motels, hotels, homes, schools, hospitals, offices, etc. Each unit, subject to individual control, circulates, filters, dehumidifies, heats or cools the air to the desired temperature.

Chilled water is circulated through the unit coil for cooling; hot water for heating. In operation all recirculated air, or a mixture of recirculated and fresh air, is drawn through filters by quiet blower fans, blown over the heat transfer coil surface and discharged into the conditioner space. Only three pipes serve each unit—water, water return and drain.

For sizes, styles and complete information about Roomaire Conditioners see your nearest Young representative, or write to Young Radiator Company, Dept. 247-K, Racine, Wisconsin.

YOUNG SECTIONAL DESIGN
AIR CONDITIONING UNITS

For year 'round service for cooling, heating, filtering, circulating, humidifying and dehumidifying in any combination. Nine sizes: capacities from 400 to 22,000 cfm. Horizontal and vertical types.

YOUNG HEATING AND COOLING COILS

Young manufactures a complete line of heating and cooling coils for central heating or cooling systems.

Young Radiator Company
Racine, Wisconsin

Creative HEAT TRANSFER ENGINEERS
Executive Office: Racine, Wisconsin, Plants at Racine, Wisconsin, Mattoon, Illinois

For beautiful, lifelong floors that require little care specify terrazzo made with ATLAS® WHITE cement

- Terrazzo has the beauty of marble and the durability of concrete.
- Floor design and color possibilities are virtually unlimited.
- Terrazzo is economical to install—easy to clean—costs less to maintain.
- Terrazzo is further enhanced by the consistently uniform quality of Atlas White cement—in color, performance and strength.

Write for a copy of our brochure, “For Fine Terrazzo”:
Universal Atlas, 100 Park Avenue, New York 17, N. Y.
Dear Editor: Harold J. Rosen's article, "Standardization of Specifications Trade Sections," will undoubtedly provide food for thought for many of your architectural readers. I trust you will not consider it premature for me to comment on the article in question.

Specifications can be the most controversial subject ever devised, if one wishes to be contrary. I believe we should at all times keep clearly in mind that specifications are designed in the first place for the clients' protection as part of the contract documents, and in the second place for the convenience of the contractors and subcontractors who estimate and bid the work to be performed.

Sections of specifications should therefore follow trade divisions as closely as possible, for the contractors' convenience. How many sections there will be depends on the design of the building. Some buildings require as few as 15 different trade groups, others as many as 40 or more. When one considers the different types of buildings, from churches all the way through to prisons, it is possible that 70 or more trade divisions could be listed. Also, the work done by the different trades might vary to some extent in different parts of the country.

The order in which the sections are listed is not too important, although I think it is logical to try and list them in approximately the same order as the trades appear on the job. The important thing is to have a very complete index to serve as a check list and to see that the specifications are also well indexed. I can see no point in making a general practice of listing any sections that are not included in a specification for a particular job.

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The question of trade divisions is one that must be resolved promptly.

(Continued on page 902)
Design Possibilities... Astronomical!

HAUSERMAN MOVABLE WALLS OF REYNOLDS ALUMINUM

When Hauserman and Reynolds, together, offer you the versatility of aluminum for interior walls, design scope is almost limitless. You choose from any number of embossed textures...multiplied by innumerable colors and countless panel arrangements. Aluminum extrusions provide still another multiplier...joining wall sections with hairlines or narrow beads or wide posts in any profile and in any finish, including brilliant anodizing.

Total possibilities...astronomical!

And all this beauty is combined with the basic advantages of Hauserman Movable Walls...earliest occupancy, lowest maintenance, lifetime service. Write for literature. Or consult the Yellow Pages (under PARTITIONS) and call your nearby Hauserman representative.

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MODULAR SIGHTRON by LIGHTOLIER

A bold new design concept, Modular Sightron is the ideal solution for office, store, school and hospital corridor and utility area lighting. Smooth white injection molded polystyrene diffusers provide efficient, glarefree illumination. These 2 foot modules fit tightly together in 2, 4 or 8 foot steel housings which may be used individually or in rows for flowing lines of continuous light. They snap out easily with fingertip pressure for easy relamping and trouble-free maintenance. Smooth, uninterrupted right angle turns for pleasing geometric patterns, corridor and perimeter lighting are obtained by using the new Modular Sightron corner bracket. Also available are accessory reflectors for additional downlight when required, and matching wall brackets. For a folio of Sightron lighting by Lightolier, write today on your professional letterhead to Jersey City 5, New Jersey or see the authorized distributors listed at left.
Every bit of metal in a Kohler fitting, underneath the chromium plating, is brass, of high copper content. This includes handles and escutcheons.

Brass has no equal for serviceable and satisfactory plumbing fittings.

- Brass is superior in wearing qualities.
- Brass has maximum resistance to corrosion.
- Brass is the easiest and most economical to maintain.

Better than any other metal or alloy, brass takes and holds chromium plating, giving Kohler All-Brass fittings their long-lasting bright, jewel-like beauty.

Kohler Co. Established 1873 Kohler, Wis.
Kohler of Kohler
Plumbing Fixtures • Heating Equipment • Electric Plants
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Above is one type of application of Mahon Long Span M-Deck in the construction of a unique roof on the new practice session field house for Ohio State University, Columbus, Ohio. Howard Dwight Smith, architect, State of Ohio. Barber & Magee, structural engineers. Joseph Skilken & Co, gen. contrs.

Mahon M-Floors provide electrical availability in every square foot of floor surface—safeguard buildings against electrical obsolescence in years to come.

Electrified M-Floors

Concrete floor forms

Acoustical and Troffer forms

Provide an effective acoustical ceiling with recessed troffer lighting—serve as permanent forms in concrete joist and slab construction of floors and roofs.

This cross-sectional view shows another application of Mahon Long Span M-Deck in which the M-Deck section provides the structural unit, the roof deck, and the finished acoustical ceiling—all in one package. Mahon Troffer sections are included here for recessed lighting.
to New Concepts in both Structural Design and Function of a Modern Roof!

In M-Decks the architect is given a versatile building product that permits him to design a simple roof in which the structural supporting members, the roof deck, the finished ceiling material, and the acoustical treatment can all be contained in one light weight, quickly erected unit.

In auditoriums, armories, sports arenas, field houses, churches, or any type of building where rigid frame or exposed truss construction is employed, Mahon Cellular Steel M-Decks provide the structural roof and the finished ceiling material combined. Many arrangements are possible and many ceiling effects are obtainable.

The long span structural M-Deck Sections span from wall to wall or from truss to truss. This eliminates roof beams and the cluttered effect of roof purlins, and produces a neat, continuous beamed or flat metal ceiling surface which is virtually indestructible. If recessed lighting is desired, Mahon Troffer Sections can be included in this type of roof-ceiling construction in any ratio to meet specific lighting requirements. Exposed metal surfaces of both M-Deck and Troffer Sections, which form the ceiling, can be readily painted to harmonize with any interior decor.

All Mahon cellular, Long Span M-Deck Sections can be furnished with bottom metal perforated and sound absorbing material inserted to provide a highly effective acoustical ceiling. Noise Reduction Coefficients range up to .85 in ceilings constructed with Mahon Sections recommended for this use.

Some of the newer Mahon Sections do not appear in the current Sweet’s Files. Why not have a Mahon sales engineer call and bring you up to date on new Mahon Sections now available for Electrified Sub-Floor, Roof, and Combined Roof-Ceiling Construction.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
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ACOUSTI-STRUCTURAL
LONG-SPAN M-DECK SECTIONS

MAHON
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INSULATED METAL WALLS
Three Distinctive Patterns with “U” Factor Superior to that of Conventional Masonry Wall with Lath and Plaster. Erected up to 60 Ft. in Height without a Horizontal Joint.

UNDERWRITERS’ RATED FIRE WALLS
Mahon Metalclad Fire Walls carry two Hour Rating by Underwriters’ Laboratories, Inc., for Use as Either an Interior Dividing Fire Wall or an Exterior Curtain-Type Fire Wall.

ROLLING STEEL DOORS
Standard Manually, Mechanically or Power Operated Rolling Steel Doors and Grilles, Underwriters’ Labeled Automatic Closing Rolling Steel Fire Doors and Fire Shutters.
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Now BETTER THAN EVER with
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... the new microseal surface-treating process that gives REZO doors a finish so satin smooth you'll hardly believe your fingertips as you feel it!

Paine REZO Super Satin Surface Doors are now available factory-treated with this new Super Microseal process. This amazing new process uses special equipment to apply a precision-controlled, penetrating solution of additives which is followed by the application of heat and pressure. By "fusing" the wood lignin and additives, the result is a Super Microsealed door surface that resists soiling ... prevents grain and fiber raising ... has a uniform surface texture that is hand rubbed in appearance ... enhances the natural beauty of the wood, and should a higher gloss be required, it takes paste wax, penetrating stain, varnish, lacquer, or paint with better results than you've ever known before. It's a fact—words cannot describe the difference this new process makes. You have to feel it yourself to believe it! Write for full details of the Paine REZO "Triple S" Doors today.

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America's finest flush doors are Rezo doors with all wood grid core

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Below are two of many reasons why Paine REZO Doors, with air-vented, all-wood grid core, are America's finest doors for residential or institutional installation.

Air vents in Rezo Doors help equalize moisture content inside.

Rezo's all wood grid core assuages rigidity, strength, light weight.
This is where Sanymetal now offers you another first in styling, value, engineering...it's the **NEW Sanymetal 8800 concealed LATCH**

**CONCEALED LATCH ASSEMBLY**— mechanism is concealed within the door, has mortised face plate, stainless steel bolt. Flush-mounted, finger-tip-control latch handle has back set of 2¾". Escutcheon and latch made forever theft-proof without the use of nuts or bolts.

**VIEW FROM OUTSIDE OF THE COMPARTMENT** — the handsome escutcheon plate is flush with the door. Exposed parts, made of strong non-ferrous castings heavily chrome-plated, will keep their beautiful lustre for the life of the compartment.

**SEEN FROM INSIDE OF COMPARTMENT** — latch presents smooth flush lines and minimum projections. Latch handle operates with smooth cam action, has no springs; (tested to 300,000 cycles of operation without noticeable wear).

**KEEPER AND DOORSTOP** — of universal design, for in- or out-swinging, left or right doors. Keeper quickly applied with one theft-proof bolt, aligning positively without adjustment. Full ¾" rubber bumper held with concealed theft-proof device absorbs closing shock without vibration.

Write for Sanymetal 8800 Concealed Latch brochure, now being prepared, and for Catalog 94, which gives other important details of quality toilet compartment construction.

**LOOK FOR THIS NAMEPLATE** WHICH IDENTIFIES EVERY SANYMETAL INSTALLATION.

**Sanymetal PRODUCTS COMPANY, INC.**
1683 Urbana Road, Cleveland 12, Ohio
6433 E. Canning St., Los Angeles 23, Calif.

October 1957 75
and the Beasts

Twist! Here the "beast" (a jack) forces one corner of the door off the table until the insides begin to snap. The Fenestra Door took 240 lbs. of twisting pressure without damage! One competitive door snapped at 90 lbs., another at 130.

Slam! Here the "beast" (a door slamming machine) has already slammed the Fenestra Door 382,000 times! No damage to door or hinges. Competitive doors shook loose hours before.

Bang! Here the "beast" (a pendulum weight with a force equal to 1200 inch-pounds) crashed against this door 1000 times without even leaving a mark! One competitive door gave way after 50 blows, another after 100.

New Fenestra 1½" Hollow Metal Flush Doors outlast all others in torture tests!

Beneath the sleek "seamless" beauty of the new 1½" Fenestra Hollow Metal Flush Door is a rigid, rugged structure that withstood the toughest torture tests shown here.

This strength comes from Fenestra's exclusive multi-rib reinforcement.

And here are three other important extras:
1. You buy a complete package: door, frame, hardware. All fitted at the factory for fast, economical erection.
2. Fenestra's famous Lock Miter joint frames provide extra strength and smooth finished appearance.
3. You buy these custom-quality doors at stock prices. Fast delivery is standard.

Call your local Fenestra representative—listed in the Yellow Pages—or mail the coupon below for complete information.

Fenestra Incorporated
Dept. PA-10, 5400 Griffin Street
Detroit 11, Michigan
Please send me complete information on New Fenestra 1½" Hollow Metal Flush Door-Frame-Hardware Units.

NAME
FIRM
ADDRESS
CITY STATE

October 1957 77
"Fenestra Steel Windows’ No Painting feature
alone saved us $500 in only two years"

... says Riverside School Staff

Principal*: “We are more than pleased with our Fenestra® Intermediate Steel Windows. No maintenance work on them has been required in the two years we have occupied Riverside, nor have they warped or jammed.

"Keeping Fenestra Windows clean is an inside job all the way. Our maintenance man is able to wash the windowpanes inside and out while standing inside the school building. Windows are washed and polished 35% quicker.

"Lack of corrosion, alone, has saved us approximately $500.00 because, normally, windows have to be painted every two years. There is no indication that the windows will require painting in the near future.

"It is significant to us that the architect who designed our building has planned 14 others and specified Fenestra Steel Windows for all."

Teacher*: “The windows in my classroom operate as easily now as they did two years ago. Opening and closing them is so easy, even the smallest of our students can handle them.”

Librarian*: “We are especially impressed with the excellent ventilation we’re getting. Each window remains open at the angle selected—can be readily adjusted to regulate the amount of air entering the room, and will not slip out of position.”

Fenestra Intermediate Steel Windows provide more and better daylight for school classrooms. Their slim, but strong, steel sections give you more glass area and clear-vision view per window opening. Fenestra Windows are engineered and precision built to be rigid and rugged without excess bulk. Sturdy hardware and steel-strong window members assure years of trouble-free service. Cleaning and screening are done safely and economically from the inside!

NEW FENESTRA FENLITE FINISH

Fenestra Intermediate Windows are now available with the New FENLITE Finish that gives longer window life without painting plus a distinctive window beauty. The FENLITE process is an exclusive Fenestra development based on years of experience and research with corrosion-resistant finishes for steel windows. It saves the cost of maintenance painting year after year.

For modern window beauty, for more daylighting and better ventilation, specify Fenestra Intermediate Steel Windows. Mail coupon, today, for complete information or call your local Fenestra representative—listed in the Yellow Pages.

*Names upon request.

Fenestra Incorporated

YOUR SINGLE SOURCE OF SUPPLY FOR
DOORS • WINDOWS • BUILDING PANELS

Fenestra Incorporated
Dept. PA-10, 3409 Griffin Street
Detroit 11, Michigan

Please send me complete information on Fenestra Intermediate Steel Windows for school design and construction.

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FIRM ______________________________
ADDRESS ___________________________
CITY _______________ ZONE ___________ STATE ________
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SAVE TIME AND MONEY ON CONCRETE CONSTRUCTION

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Architects: Place & Place, Tucson, Arizona
Contractor: James Stewart Co., Tucson, Arizona

How Fenestra Holorib Reinforcing Forms

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CBS offices in St. Louis and Studios KMOX-AM-FM-TV will be housed in this new building designed by Minoru Yamasaki, of the firm of Yamasaki, Leinweber & Associates, Architects, of Royal Oak, Michigan. Four studios, two for radio and two for TV, will occupy a basement level. The bi-nuclear scheme planned for the upper level will be arranged around a landscaped courtyard. In the rear portion of the reinforced-concrete structure (above) will be the cafeteria; the two-story mass at the front, covered with thin-shell concrete vaulting (left) will contain offices—radio executives on the first floor, TV executives on the floor above. This raised pavilion will be reached from the street by steps and a bridge across a reflecting pool.
p/a news bulletins

- Newest U. S. contribution to Berlin's 1957 International Building Exhibition (NEWS SURVEY, August 1956 P/A; NEWS BULLETINS, September 1957 P/A) is Congress Hall (right), erected as a memorial to Benjamin Franklin. Designed by Hugh Stubbins, structure will be turned over to West German government for cultural use when exhibition is closed. Main feature of building is arched steel-concrete shell roof. Steel structure is anchored in bridge piers at ends of building—from piers extend two arches, forming edges of roof. Cables supporting dip in roof swing from piers; concrete bows are hollow. Circular building has concrete and glass walls; platform is white stone. Height of roof bows is 8 meters to provide stabilization and allow for heat expansion. Included in building are: exhibition hall, double-story reception hall, studio theater, main auditorium, conference rooms, restaurants, offices.

- Milton S. Osborne, on year's leave from Department of Architecture, Pennsylvania State University, is now Acting Director of School of Architecture, University of Toronto, Toronto, Canada. ... James W. Elmore has been named head of new architectural division in Arizona's State's College of Applied Arts and Sciences. ... Newly appointed instructors in architectural engineering department of California State Polytechnic College are R. L. Graves, Anatol Helman, Robert E. Williams, W. R. Phillips.

- International competition for new City Hall and Square, Toronto, Canada, will be in two stages. Eight winners at end of first stage will receive $7500, complete in final stage; winner of second stage will be architect for building, receive $25,000 in advance of fees. Conditions of the Competition now available. Write: Prof. Eric Arthur, c/o City Hall, Toronto, Canada. Application fee of $5.00 will be returned to those who actually submit drawings for competition.

- 1957-58 officers of Instrument Society of America will be Robert J. Jeffries, President; Henry C. Frost, President-Elect-Secretary; Philip A. Sprague, Dr. Ralph H. Tripp, Vice-Presidents. District Vice-Presidents: Carl W. Gram, Jr., John T. Elder, Gordon D. Carnegie, John F. Draffen, Adelbert Carpenter.

- Frank P. Brown Medal given each year by The Franklin Institute will be awarded to Dr. Pier Luigi Nervi, Architect and Professor of Structural Design, University of Rome, for his work in reinforced-concrete construction, at ceremonies, Oct. 16. ... Paul McCobb, designer of U.S. Pavilion at 1957 Triennale di Milano, will be featured speaker at Art Directors Society of Pittsburgh symposium, Oct. 5.

- American Academy in Rome will offer limited number of Fellowships for students capable of doing independent work in architecture, landscape architecture, history of art, sculpture, painting. Open to U.S. citizens for one year beginning Oct. 1, 1958, fellowships have stipend of $1250, may be renewed. Write: Executive Secretary, American Academy in Rome, 101 Park Ave., New York 17, N. Y.

- Effective Oct. 1, Dr. Robert F. Oxnam, Vice-President for Administrative Affairs at Boston University, will assume Presidency of Pratt Institute, Brooklyn, N. Y., succeeding Dr. Francis H. Horn who recently resigned. ... Paul Nelson will be Visiting Professor at Pratt this year, announces Dean Olindo Grossi of School of Architecture.
• New CBS Laboratories, designed by Gordon Bunshaft of Skidmore, Owings & Merrill, will be erected in Stamford, Conn., by summer 1958. One-story air-conditioned building (above) will provide additional research facilities for fields of audio and visual techniques, electronics, industry. Structure is designed to blend with rural landscape of 11-acre site. Important feature is open-air inner court in center of building to be used as rest area for employes. Construction will be of steel and aluminum, with glass-wall modular face. Translucent blue glass will form walls for three sides, while fourth side will have conventional clear plate glass. Flat over-hang roof will be supported by skeletal steel columns standing outside of modular frame. Steel framing and canopy at front entrance will have black finish. Site will have parking, recreational areas, in addition to laboratories, offices provided in main structure.


• National Institute for Architectural Education will aid New York's State Division of Housing's research program to find ways to reduce high costs of home building. Plans include conducting nationwide competitions open to architectural students for best suggestions. Awards will be in three categories: typical apartment, by student of elementary design; entire building by intermediate design student; project and site plan, by advanced student.

• A representative view of Venezuelan Architecture today is seen in current exhibition, "Architecture in Venezuela," co-sponsored by The Venezuelan Society of Architects and Creole Petroleum Corporation, which has been at World Affairs Center, New York. Exhibit will tour major colleges, museums—first stop is Pan-American Union, Washington, D. C., Sept. 20-Oct. 20. Included in exhibition are large mounted photographs, stereos, transparencies. Examples of various types of buildings are included: single-family houses, civic, educational, commercial centers. Structures feature use of concrete, porches, porch roofs; brilliant colors, local materials where possible; importance of interior spaces stressed. Pictured below and acrosspage are works included in exhibition (left to right)—typical low-income housing project, Caracas; School of Architecture, University City, Caracas—Carlos Raul Villanueva, Architect; Hotel Alto Llano, Barinas—Oscar Carpio, Guillermo A. Suarez, Architects, with Ramon Burgos; night club "Casa Monagas," Caracas—Martin Vegas, Jose Miguel Galia, Architects; ancient Santa Teresa Church, Caracas.
TO MARK MEXICAN SATELLITE CITY

Five concrete pylons will mark the entrance to a new city currently taking shape in the vicinity of Mexico, DF. The large-scale sculpture is to greet visitors arriving via a new freeway linking the two cities, to provide a dramatic point of interest for the residents of the town, and to attract home builders to the new development, intended to offer relief from the congestion of the capital. The towers (left) are wedge-shaped forms, their sharpest edge pointed toward the City of Mexico. They will be placed on a tri-level base carpeted with lawn. A reflecting pool will mirror their great height. Originally meant to be 300 ft tall, the towers have now been redesigned in the interest of economy, to measure 110 ft and 170 ft in height. One of the spires will serve as an observatory, the others may be used for the storage of water. Designer of the towers is Mathias Goeritz, whose wood sculpture portraying San Gimignano and Manhattan (above left) motivated the monumental composition. Luis Barragán is the Collaborating Architect and Landscape Architect; Mario Pani, General Co-ordinator of the master plan for the Satellite City.
This building, designed to accommodate the Congress of Brasil, is the second one to be erected in Brasilia, the new national capital in the State of Goyás. First to get under way is the Presidential Residence (April 1957 P/A). The Congress Building will be located at the apex of an elevated plaza, triangular in plan. The Supreme Court and the Chief Executive Building, housing the offices for the President and his staff, will occupy the other corners. This triangle is the main feature of the plan by Lucio Costa, who won the competition for the master plan of the newly established capital (May 1957 P/A). The main elements of the Congress Building (plan below) are: the House of Representatives (1); the Senate (2); an office building (3) rising from an immense pool (5); a monumental ramp (6) and esplanade (7). The circulation of officials and public has been separated. The project was established under Oscar Niemeyer who is the Chief Architectural Director for the Authority responsible for the building of the new capital.
Inauguration of the Connecticut General Life Insurance Company's building in suburban Hartford last month was occasion for a stimulating symposium, "The New Highways: Challenge to the Metropolitan Region," in which two Federal programs, roads and redevelopment, were involved. Despite the interest provided by the symposium, the building itself remained easily most important, as well as a concrete example of the decentralization of modern cities. This is the culmination of the architecture of Skidmore, Owings & Merrill, and its outstanding Design Partner Gordon Bunshaft. It is also, as the Company proudly claims, "the first building to make the fullest preparation for modern office technology," as well as one profoundly oriented to its awareness of the human factors in today's large-scale organization, recognizing that you live where you work, as well as where your home is.

The fact of the conference was hardly less impressive than the meeting itself. As Lewis Mumford observed in his thoughtful concluding remarks, this event not only exemplified the company's leadership and showed its recognition of its public responsibilities; but also stamped an intellectual character on the building and its handsome auditorium as a conference center. Among many meetings of a similar nature, this was remarkable because of its audience—typically composed of community leaders whose position allows them to do something about the problems discussed, rather than made up of planners, architects, and technicians. For many such leaders, drawn from all parts of the country, this was an introduction to new ideas, and the influence of the meeting will be correspondingly wide. As one who has been bored, and not infrequently disgusted, by openings of hotels, ocean liners, bridges, and other structures, I commend with enthusiasm Connecticut General's flight from the time capsule, the starlet, and the other conventions of the press agent.

As for the symposium, it succeeded (as such ventures, at best, succeed) in impressing its participants more by enlarging their understanding of the great and continuing opportunities of a better relationship between new superhighways and the evolving shape of our metropolitan areas, than by providing any ready-fitted conclusions or solutions. The new highways are the 41,000 miles of high speed, dual-lane, limited access expressways which are to be constructed over the next 16 years. Some 6000 miles of these are located in metropolitan areas (although representing nearly one-third of the total cost of the system, which is over $100 billions). As they slice through the hearts of cities, the displacement of population is enormous—some 90,000 persons annually. The roads themselves become major barriers, the potential dividers of primary land uses or of city neighborhoods and districts. The possibility of using this great building effort to aid slum clearance and redevelopment, and thus to co-ordinate highway building with other municipal objectives, is a very promising one. The need for such co-ordinating two Federally aided programs is explicit. This was concretely illustrated by the symposium's discovery that, until they were introduced a few weeks before in the course of planning this conference, the Federal highway and housing administrators had not even met each other!

In the larger view of expanding metropolitan areas, the new highways are already powerful instruments in relocating industry, business, and suburban growth. In Boston, the

300 ATTEND BRI PLASTICS STUDY GROUP IN ST. LOUIS

St. Louis, Mo.—Almost 300 members of Building Research Institute met here, September 17 and 18, at Brown Hall Auditorium on the campus of Washington University, for the Fourth Meeting of Plastics Study Group. Sponsored jointly with The School of Architecture and The University College of Washington University, the two principal subjects of the work conference were "Plastics in Roof Construction" and "Plastics in a New Building." Tuesday morning's sessions included papers on phenolic and thermoplastic foams as thermal insulation, discussions of vapor barriers and flashing, and a report of architectural requirements for roofing materials by Architect Anthony Ferrara, in which he quoted a reference to the roofing industry as being (as a whole) "complacent" and challenged all manufacturers—old and new—to develop new roofing products that architects may use with confidence and appropriateness. At luncheon in the Student Center, The School of Architecture's Dean Joseph R. Passonneau—holder of degrees in both architecture and engineering—spoke of tomorrow's roofing concepts in an informal talk on plates and shells, demonstrating his ideas
completion of Route 128 has illustrated how a circumferential expressway can attract to the sites it has made newly accessible, virtually the entire industrial growth of the area over the past half-dozen years (a disorderly, sprawling, unplanned mess of future problems for the State of Massachusetts). In the growth of outlying regional shopping centers, the new highways are of decisive importance. For business, the conference had to look no farther than the Connecticut General building itself for an example of a structure "well served by today's roads and even better by the projected highways of the future." But these fortuitous adjustments to highway planning are short of what the symposium clearly felt was needed: a highway network planned not solely within its own criteria but as part of a comprehensive transportation plan conceived as furthering the organization and growth of large metropolitan regions.

What the new highways can accomplish in the traffic-congested central business districts was brilliantly illustrated by Victor Gruen's show-stopping slide presentation of his Fort Worth plan. By enlarging further his experience with the plan since it was first published two years ago, the architect produced a general theory of urban planning which struck the imagination of the conference. We are planning superhighways, of course, like a railroad system without terminals or depots. Nowhere is this more evident than in the parking problem. But turning what has been regarded as a necessary evil into a first-rate planning opportunity is Gruen's accomplishment. It is encouraging that Fort Worth is proceeding with its realization.

That other cities are co-ordinating highway planning with their broader development programs would have been more evident had the conference been held several months later, when plans now in the works are published. But enough of such efforts was reported to establish that while there is much cities can do on their own initiative, not enough of them are doing it. The greatest shortcomings are the failure to integrate highways with other forms of transportation, and to take a broad metropolitan view of the future city rather than to look at the central city alone. Action at Federal and state, as well as at municipal, levels of government is needed if the new highways are to be unifying rather than disorganizing influences, destructive rivers of cement creating more problems than they solve.

Some steps which the conference suggested will undoubtedly find their way into legislation. As a response to the most substantial paper presented to the symposium, that by the geographer Edward A. Ackerman, raising questions about the national distribution of urban population, the Congress will be asked to re-establish the National Resources Planning Board. Amendments to Federal roads legislation requiring mandatory referral of highway plans to local planning agencies are also probable. Some changes in Federal grants-in-aid for local planning to insure their strengthening rather than obstructing metropolitan regional planning efforts will also be sought. By such measures to co-ordinate the highway and urban development programs at Federal and local levels, some of the present shortcomings can be overcome.

All this reflects a pragmatic concern with means, methods, and business machinery. What was lacking, despite the efforts of such figures as Mumford, Gruen, Feiss, Stein, Bacon, and Burchard, was an equivalent concern with the human purposes of cities today and the corresponding needs which highways must serve. The quality of city life, the vitality of cities, the visual and tactile order of cities—such questions of the end-result of planning efforts were relatively overshadowed, and with them the equally great question of what will motivate people toward the measures of urban reconstruction that are needed.

with cardboard models of imaginative roof forms. The afternoon session offered talks on surfacing materials and skylights. Wednesday's case study was devoted entirely to Monsanto's new Inorganic Chemicals Laboratory in suburban Creve Coeur.* Specific aspects of the study were fabrication and erection of plastic components (the plastic curtain wall, 1), architectural design and co-ordination, building-code-acceptance, job management and organization of the work, and management objectives and supervision. A tour of the Laboratory Building in the afternoon revealed more than 80 different practical applications of plastic products —virtually a catalog of what is commercially available today. For the lobby, Artist Robert Harmon has created a decorative screen, using an entirely new technique, by embedding stained glass in glass-fiber-reinforced polyester resins. Backlighted by more than 100 lights and located in a 9' x 20' alcove, the screen tells the story of phosphorus—the basic product of the Inorganic Chemicals Division. Although not a part of the tour, visitors to Creve Coeur could not miss the adjacent, stunning new office buildings, 2, designed by Architect Vincent G. Kling to be occupied by Monsanto employees in October.

Le Corbusier: 70-Years-Young Designer

Le Corbusier, who celebrated his 70th birthday, October 6, continues with remarkable vigor to lead the search for 20th Century design expression. His National Museum of Fine Arts of the West (above) is a center commissioned by the Japanese Government for Tokyo's "museum park."

* Pronounced "Creeve Core," if one hopes to get there by taxi.

BURTON H. HOLMES
Tight money talk, like rumors of Mark Twain's death, is decried in high quarters as "grossly exaggerated." However, among banks, opinions differ. American Bankers Association's Department of Monetary Policy has polled some 1400 commercial banks and found that nearly a third of them consider bank credit "readily available," and not quite half report it as "somewhat tight." The net result is that banks have become seriously more selective in their lending policies. Of special interest to architects is the revelation that bankers have slowed down on mortgage loans more markedly than on any other type of credit. The shortage of savings in relation to long-time money demand is chiefly blamed for this move. Other reasons mentioned in the survey are: less call for housing; unattractive VA-FHA interest rates; high construction costs and decreasing liquidity of bank assets.

"Slowdown" is also used in connection with the whole business "boom" by no less an authority than First National City Bank of New York. A minus sign supporting its thesis is found in the industrial-equipment area, which shows symptoms of fatigue. Machine tools and heavy structural-steel shapes are among the items listed as pointing to this condition—although the former showed a late summer improvement. "A strong spurt in business-ordering is needed" to stimulate output, the bank concludes. It centers its hopes on the automobile industry. The whole atmosphere lacks the sparkle of 1956, but may presage what some foreseers term "a healthy readjustment."

- Copper provides the most basic of trend-indicators as it continues to slip and slide. That metal, so strategic in building construction, is quoted at a 41/2-year low of 27 cents in the United States as we go to press. Spot copper at London has dropped to 247/8 cents. We are still of the opinion expressed on this page two months ago that a decline in copper is an anti-inflationary factor. Copper scrap has now joined the downward drift; Calumet & Hecla is on point of closing Michigan operations.

Last minute flash: Further sharp declines in copper are reported, also price cuts in the heavy aluminum field.

- Fears respecting the accumulation of sufficient individual savings to stem inflation and provide capital for construction are currently allayed by the results of a Federal Reserve Board survey. Heads of families, and other spending units, have increased their savings-plus-checking balances, and their median liquid assets are about $750. Holdings of U. S. Savings bonds, however, show a decline. Currently, Federal Reserve Bank of Chicago reports a net deposit shrinkage of $187 millions at 38 major banks in its highly industrial Seventh District, during the last week in August. The Federal Reserve of Kansas City meanwhile cites the renaissance of the "commercial paper" market (short-time borrowings of large business concerns from groups of lenders) as a mechanism whereby the shortage of construction and expansion capital is being bridged for the present.

- "Service is the yardstick" by which FHA seeks to aid lower income families to buy more and better homes, writes Federal Housing Commissioner Norman P. Mason in a personal letter to the editor of "Banker & Tradesman." The Commission's aim of assuring "the even flow of essential mortgage funds" has been helped, he implies, by FHA's low loss record.

- Construction firms topped the failure list for 1955-56 in percentage points of number, though not of total liabilities, the figures being 31 and 21 respectively, a Dun & Bradstreet, Inc., official reveals. "Failures are also rising rather rapidly among retailers of lumber and building materials," he adds. As in other business fields, "incompetence" rather than general conditions is most likely diagnosis. In its bulletin for the final week of August, Dun & Bradstreet reports over-all numerical failure rise of 17% from the preceding week and nearly 20% from a year ago.

- Mid-year pessimism is tapering off as 1957 enters the third quarter. Among the factors that are lightening the gloom may be listed the $345.5 billions seasonally adjusted annual rate of personal income reported by the Department of Commerce. This tops all previous records; it is close to $1 billion above the figures for June and $20 billions more than in July '56. Apparently, personal income is increasing faster than cost of living, which rose 1/2 of 1% in July '57, according to Consumers' Price Index of Bureau of Labor Statistics. Such upward tendency should go far toward supporting August all-time high of total construction—$4.6 billions—up 4% above the previous month. Public schools continue at top level, partly offsetting the lag in residential building. To sum up: Things look better because in some sectors they are not quite so good.
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THE Adams & Westlake COMPANY, Elkhart, Indiana
This, the fourth in a series of Case Study Seminars held at the time of the announcement of results of the P/A Design Awards Seminar last January, edited from tape recordings, is the last of this new type of architectural critique to be published this year. The Editors hope that the 1958 Design Awards Program, now underway, will produce more of the same sort of critical, analytical discussion.

**Project:** Public Library  
**Client:** New Orleans Library Board  
**Location:** New Orleans, Louisiana  
**Architects:** Curtis & Davis, Architects-Engineers; Goldstein, Parham & Labouisse, Architects; Favrot, Reed, Mathes & Bergman, Architects

I'm really a little embarrassed to present this building with a plain old flat roof. Seriously, the building is a relatively simple block, and it grew almost completely out of the needs of the client. The Librarian had very definite ideas about the philosophy of a library and had seen only one other downtown main library which had come near to what he wanted: that was the Cincinnati Public Library, designed by Woodie Garber (December 1955 P/A). Basically, he was impressed with the idea that the library should be something appealing, which would draw people in; his best comparison was that it should be as close as possible to a department store in concept. He wanted this for two reasons: one was to achieve flexibility (he happens now to be in a 1900 building which allows no flexibility in arrangement); and two, he wanted a library that would appeal to everyone in the community who passed by. He wanted them to come in because the building looked inviting and because they saw other people in there reading and would think that it might be a good idea to read a book once again. These were basic concepts of the client, and we thought they were very sound. The site, which is in the new Civic Center, was very limited. In fact it was so small that we had to take $300,000 out of our budget to allow for the purchase of more land in the back of the building. One of the requirements was to get as many of the main departments as possible on the first floor, and in order to achieve that we had to have a certain amount of area which required a larger site than the original one.

The building is a simple, reinforced-concrete structure. The stacks are in the basement, the main reading space is on the first floor, and the second main reading level is bisected by a mezzanine. The main entrance is off the Mall of the Civic Center, and there is a second entrance to the library from another main artery. In section, there are open perforations in the roof where...
two patios give direct access to outdoor space to all of the upstairs reading rooms and provide a pleasant outdoor reading area.

On the main first floor of the library the intent was to give as large an unobstructed usable space as possible. In order to achieve this we placed carefully all the furniture features of the plan from his point of view. The main cataloging space is accessible to all of the principal departments of the library.

The mezzanine, (indicated by a dotted line on plan) is accessible either by the elevator or by the very open sculptural stair. The mezzanine contains display and exhibition space, and reading areas for fiction, juvenile and children's books. It is enclosed by glass so that it becomes a separate sound zone. There are secondary exits in the corners, permitting children to go to and from their department under supervision so as not to interfere with the main operation of the library. There is a main vertical circulation stack for books, utilities, and other functions, and in addition there are similar stacks in each corner so that the staff will have to walk a minimum distance to get to a vertical means of transportation.

The north side of the building faces toward the back of a bus station in a very unsightly area. This is completely closed off as a solid wall and along that wall all of our utility runs—air conditioning, piping, plumbing, etc.—are brought up to different levels and from there run through the building. The other sides of the building are open and are protected by a screen which we hope will actually control the rays of the sun but at the same time will have transparency so that one will get a feeling of being in the surroundings and yet will have a sense of protection. The sunshade can also be justified on the basis of economy in air conditioning. Since the client desired to have the building an open, we figured the cost of the sunshade and the number of tons of air conditioning which it would eliminate and on that basis we calculated a saving of about $60,000 by using the sunshade. The sunshade in detail is aluminum, and we set up a model of it in our offices and by using a sun machine we checked out the solar angles and were able to give the librarian assurances that he would have no sun from 9:30 a.m. on, except for certain areas along the west wall.

One small point: The little roof deck over the main checking-in and checking-out desk was a bit of concern to us from an esthetic point of view; we weren't sure of its appearance but it was quite necessary. We now have a commitment from the Japanese consul to transport from Japan a Japanese stone garden, which will be located out there on your roof. I believe that this will be a very attractive thing as one arrives at the mezzanine level.

Discussion: Gordon Bunshaft

I think that this is a very beautiful building. In fact I had my eye on it all through our Jury judgment. I think that it is very clean and crisp and the quality of translucency in the interior of the building would be very pleasant. It's the sort of architecture I would like to do myself. I think however that the success of a building like this depends a great deal on the quality of "how it's built." This building could look either razzle-dazzle or could be as elegant as the Taj Mahal, depending on, first, the detailing, and second, the manufacture of its parts. I hope that the budget allows getting the best sort of construction.

Also, I think it is unfortunate that a building like this has to be three-sided. It's the sort of building that you wish could be set alone in a park.

There is always a problem, in a design of this sort: how do you stop the building when it comes to the property line? In this scheme there is in each corner a staircase group which, it seems to me, could have acted as a stopping point for the grillage. Instead, the sunshade grillage goes on and is just cut off by the property line. In fact I believe that the grillage does "shield" some opaque walls.

One other thing that bothers me is that there has been a great deal of study given to the sunshade to protect the upper two-thirds of the building. On the remaining lower third one has the impression that in that area something different is happening in plan, from what is happening on the other floors. Actually, in studying the sections, there doesn't appear to be much difference. On the south side this lower floor is protected by the loggia or walkway, but on the west and east it would have been fine if there were space (of course I gather that there wasn't) to express the ground floor by setting it back on these sides also. You would then have a clear expression of an area protected by overhangs and another area above protected by the grillage. Of course it's very easy to do that when you don't have a client sitting on your lap telling you how much area he needs.

These are not criticisms on a broad basis; I can criticize only parts that I see. I think, broadly speaking, that the building is a terribly handsome thing. It is a credit, it seems to me, to the architects and to the people in New Orleans who are sponsoring it.

One other question: I don't know if there was enough space but I think that the patios above and the circulation on the mezzanine could have been made more dominating features of the whole concept, and perhaps could have penetrated the volume more. It would have been nice also to have that Japanese garden on the inside of the court rather than on the front appendage.

Thomas Creighton: Mr. Davis, do you want to respond to any of the detailed points that Gordon Bunshaft has raised—for instance, the question of the grillage running past some opaque walls?

Davis: I don't think that this is anything serious; it happens only on the western wall. Generally, the sun-screen comes down below the second floor line to a point where it can shield all the way to the ground except for certain late afternoon periods. We recognize that and take care of it by mechanical or technical means.

Robert Elkington: One thing that concerns me a little; you spoke of putting a Japanese garden on top of the entrance canopy. In view of the crispness of the whole design this seems a little like putting flowers on an aluminum pan. It doesn't seem appropriate.

Davis: Well, of course that is a matter of taste. I think that there is nothing more beautiful than a Japanese stone garden.

Minoru Yamasaki: I think that this is a fine building and we are talking about a detail. However, I have just been in Japan and the best Japanese gardens are always inside a wall and not bothered by a whole lot of extraneous things. I think there is a real danger of inappropriateness with that garden there.

Davis: That may well be.

John Lawrence: What provisions have been made for parking?

Davis: Absolutely none.

Creighton: How about the Civic Center otherwise? Are they going to have parking facilities elsewhere in this area?

Davis: About two blocks away, just about at the end of the Civic Center, there is parking provided for City employees in a small garage behind the City Hall.

Victor Gruen: Is it really possible
that architects are not powerful enough to get to the proper city Commissions and influence them by really strong action in such a situation? What's the sense of a public library when no one can stop? Shouldn't the architects of this city now really get together and impress on your city government that their beautiful buildings need this additional facility to make them completely usable and attractive. Surely here is a chance, here is an opportunity, to show that an important investment is being made by the city and that this investment should be protected by proper planning of the entire area round it. Otherwise, it is an empty monument, creating additional traffic problems. A building of this size would probably have a calculated need of a parking field for about 300 to 400 cars. I think that it is about 160,000 square feet. Now if that were a department store—and it probably will have about as many customers as a department store would have—it would require 150 to 200 parking spaces only for the purpose of the store itself. That is probably what you should have as a minimum for this library and there is probably already a deficit for other buildings around it.

Harry Weese: If I have any quarrel with this building I presume it should be with the clients, or perhaps I am out of the main stream of thinking about how libraries are used today. To me it is a sort of supermarket of culture, in which you see all parts from each room, which would be very distracting. I don't think I would study very well in this building. I wonder whether I wouldn't come to see people rather than to read books. It certainly doesn't seem to have any correspondence with, let us say, some of the inner recesses of the British Museum or the Boston Public Library, places where I know that people find themselves working very happily.

Davis: Well, as I have said, that was the basic desire of the librarian. I think that he was very frankly trying to stimulate use of the research areas, which are on the first level (mostly in the back, under the mezzanine) and which could be fairly well isolated for quiet reading. Of course, this is not the type of building that you describe at all.

Creighton: I think this is a basic question that Harry Weese has raised, which is puzzling a great many people. The desire for openness and an inviting aspect has been carried to so many building types that it may sometimes be questionable.

Yamasaki: I think we might express this thought further. We (my firm) are doing a building in a very dense
urban area and we are putting a 20 ft high brick wall around it. Perhaps that is a solution that should be considered. By doing this you could have your glass and openness, and it is sensible because you are looking only at your own garden. Otherwise, there is the problem of people being afraid of crime and traffic by, which might be very distracting.

Creighton: What you're suggesting, Yama, is opening up a building for the reasons for which buildings were originally opened, in a contemporary sense: we wanted more light, more air, and we were using structure and materials which did not require an opaque wall. Then you suggest, very sensibly, building a wall around it to prevent the public from looking in. However I think that this building, and many others, are opened up for another point of view: the library is considered a supermarket, and it is opened from the point of view of inviting public participation and almost, I think, commercial participation. Your reasons for openness are then very different, and putting a wall around the building would actually defeat those very reasons.

Davis: Certainly the thought here was that people would come and shop for books. There are areas where they could isolate themselves for research, but if they will come because they are interested in them and might see other people using it—the old incentive buying method—and they take the books home, that may be even more important.

Actually, this particular building is meant to be seen from three sides, and two of them face on a park. That is, there is a big plaza in front and another large plaza on one side, which can be seen and enjoyed by the people in the building and will provide a green surround. We must admit that there is a main traffic artery on the third side, and traffic circulation there may be distracting. However, we have designed screens of this sort before (not in aluminum, but in perforated masonry), and there is a certain amount of lightness and airiness about the building, and yet, inside, you do have a feeling of a definite enclosure beyond the glass wall. This is subtle, perhaps, but I think everyone would feel sure that beyond the glass wall there was a sort of screen between them and the outside world. Again, we've got to see it and live with it but I think that it will work.

Bunshaft: Perhaps if the architects were willing to give up a few of the penetrations inside the building on the upper floors we might achieve what we are talking about. The building gives the impression that it is very open on the ground floor and perhaps what ought to be on that floor are things that are noisy and casual. Perhaps the children's library should be there, and perhaps the meeting rooms should be brought down from the third floor to the first floor, in the dark space. Then you could get your main reading rooms, which I think should be quiet, on an upper level, where they could be quiet. The building to me almost expresses that. I am somewhat surprised (I don't know too much about libraries) to find the main reading rooms right down on the street. Doesn't this call for the casual in-and-out sort of business, as you might call it, on the street level, with the more tranquil things on an upper level? This could probably have been done if somebody wanted to give up the interlocking of volumes up above.

Creighton: And yet, wasn't it largely that "interlocking of volumes" that attracted you to the project in the first place?

Bunshaft: Yes, we liked it very much but now that we are learning about these other problems . . .

Nathaniel Curtis: I want to make one more observation about this open supermarket idea versus the cloistered concept that Mr. Weese brought up. Someone mentioned that different librarians may have different ideas. I can tell you that probably 95% of the librarian experts in the field believe that the type of building which we contemplate here—with its in-and-out sort of business, as you might call it, on the street level, with the more tranquil things on an upper level? This could probably have been done if somebody wanted to give up the interlocking of volumes up above.

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Creighton: And yet, wasn't it largely that "interlocking of volumes" that attracted you to the project in the first place?
gardens for the east

The control of space is the concern of both architect and landscape architect. While the architect uses walls and partitions to define interior space, the landscape architect employs plant material, fences, and trellises to define open-air space and dramatize depth in vistas. Evaluation of the total design then depends on the successful relation of internal and external space. Two examples are presented in which, to our mind, an almost perfect balance has been achieved. Atrium (above), terraces (right), and a wealth of plant material make the house in Baltimore, Maryland, "a mere incident in the landscape." Continuity between house and garden is equally well resolved in the residence at Lawrence, New York, where "walls run through the house and out into the garden, creating terraces and changes of level and integrating the interior and exterior." That an indigenous landscape architecture of the East is emerging, as Lewis Clarke implies in his article which follows, seems to be well demonstrated by these examples from the East Coast.
planning southeastern gardens

by Lewis Clarke *

Without question, outside living is essential and necessary for a true appreciation of contemporary living. A garden is designed for a house and a complete house cannot exist without a garden. In fact, one can think of the house as the heated and cooled part of the garden and the garden as the unheated or noncooled portion of the house (diagrams below). When both house and garden are designed and utilized as an entity, each will be used when most appropriate, one reciprocating the other.

In the past generation, the best and perhaps most important contribution to the progress of landscape design in this country has been made on the West Coast—particularly in the San Francisco or Bay Region. Unfortunately, the design thought developed there has frequently been adopted without consideration, question, or understanding, and used throughout the country. What is good and appropriate for the West Coast is not necessarily true for other areas, although it is obviously true that the design principles and theories are constant and are, certainly, applicable anywhere.

As it is possible to feel the stirrings of a developing garden landscape along the southeastern seaboard, this article has been written in the hope that it might stimulate thought, energies, and action toward the rapid creation of a landscape that is of, and for, the area—one that will fit its location beautifully and easily, just as the present and past design work suits the Bay Region.

* Associate Professor of Landscape Architecture, North Carolina State College.

In order to find the basis for such a development in this coastal region, it is essential that its growth and development to date be considered and analyzed. In the past, the house was the focal and physical nucleus of the “plantation,” set within a cleared area of heavy deciduous and coniferous woodland. It was surrounded by clearings which held the houses of “retainers,” plantation buildings, barns, and crops, etc. The ground, generally flat or gently undulating, provided intermittent—or very occasionally, extensive—views through the forest area. Living outside was pleasant in spring and summertime, under dense shade cooled by occasional breezes. The fall held its perpetual attack of insects. Though winter sunshine warmed the clearings, much time was spent inside the house during the cold periods. Houses were generally built on the “dog-run,” or “breezeway” type of plan—allowing fireplaces at each end to adequately heat the room; in the hot days, the insulated central section directed and controlled the passage of cooling air.

Due to their aroma, the stable and animal houses were sited some distance away from the main living areas so that the carriage, after dropping its passengers at the house, rolled down the driveways through the woodland and clearings to the stable and coach house.

Unlike the 18th Century European landscapes, the visual aspects were not considered or contrived, the “Grand Tours” were not taken here. Plantation landscapes grew naturally from the farming needs of the people, resulting
in an "unconscious," logical, land utilization. Making a living, in its barest essentials, off the land was often the preoccupation of life; once this had been established, the cultural approach could follow.

Today, many of the same factors remain in the landscape appearance—the topography is the same and the woodland is still, generally, in pine growth. Now, however, the "garden" is no longer necessary to support life, but to supplement and enrich it. Design principles have been evolved and may assist and guide the understanding designer in creating a contemporary landscape.

The southeastern coastal region—and particularly certain areas within it—is very fortunate in being at the commencement of much expansion and development and in possessing, within its boundaries, one of the most extensive and varied collections of indigenous plant growth. Such a tremendous plant wealth, with its unique requirements for garden design, can and should result in a landscape design which is eminently suitable to the area.

Some of the factors which produce these unique design requirements are listed (overpage) and compared with those that produced and influenced the garden design of the West Coast. It is interesting to note that California and the area under consideration have only a few design influences in common.

To illustrate briefly the effect and influence these few factors have had in California, and should have in this region, and in order to compare their relative results, two typical schematic garden designs are considered.
gardens for the east

<table>
<thead>
<tr>
<th>Bay Region</th>
<th>Southeastern Coastal Region</th>
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</thead>
<tbody>
<tr>
<td><strong>topography</strong></td>
<td>Very hilly, often rugged terrain</td>
</tr>
<tr>
<td></td>
<td>Usually small sites</td>
</tr>
<tr>
<td><strong>aspects</strong></td>
<td>Views negligible, nonexistent or frequently very extensive</td>
</tr>
<tr>
<td></td>
<td>Little heavy tree growth</td>
</tr>
<tr>
<td></td>
<td>Care, maintenance, irrigation necessary</td>
</tr>
<tr>
<td></td>
<td>Brown appearance of vegetation in summer due to severe drought</td>
</tr>
<tr>
<td><strong>plant cover</strong></td>
<td>Warm, coolish winters</td>
</tr>
<tr>
<td></td>
<td>Warm, cool summers</td>
</tr>
<tr>
<td></td>
<td>Pleasant warm springs</td>
</tr>
<tr>
<td></td>
<td>Severe summer droughts</td>
</tr>
<tr>
<td><strong>climate</strong></td>
<td>Little heavy tree growth</td>
</tr>
<tr>
<td><strong>bugs</strong></td>
<td>Little insect problem</td>
</tr>
<tr>
<td><strong>tradition</strong></td>
<td>Some historical help</td>
</tr>
<tr>
<td><strong>people</strong></td>
<td>Rapid population growth with understanding, acceptance, demand for outside living</td>
</tr>
<tr>
<td><strong>existing &quot;style&quot;</strong></td>
<td>Accepted landscape &quot;style&quot; or principles</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>miscellaneous</strong></td>
<td>Automobile travel</td>
</tr>
<tr>
<td></td>
<td>Minimum of servant help</td>
</tr>
<tr>
<td></td>
<td>Less and less time for maintenance</td>
</tr>
</tbody>
</table>

California

These sites (acrosspage) are usually small and expensive. Due to their hilly character, the terrace must be placed adjacent to the graded level area necessary for the house. Though visual and physical connection is immediately achieved, a uniform atmosphere through the terrace and living room is difficult to avoid and must, therefore, be exploited as a design influence. The adjacent terrace allows sunlight and heat to be reflected indoors. The extensive view over the bay, experienced from the living room and from the terrace, is a common advantage. Frequently, the proximity of neighboring properties has resulted in the development of the “California” screen which, needed to secure privacy on the terrace, produces the typical spatially enclosed atmosphere.

Lawn areas and most plants requiring irrigation during the summer months, demand much care and maintenance. In order to reduce the maintenance problems, plants are frequently grown in tubs and pots, and paving is substituted for lawns. This produces the typical visual aspects of the California garden—somewhat architectural in appearance.

Few walks of changing character are possible through the garden because the terrace or outdoor living area must serve a multipurpose function—for sitting, conversing, dancing, relaxing, outdoor cooking, and playing, etc. Evening illumination often assists in increasing the spatial feeling and variety of the area.

In an attempt to obtain variety and a desirable seasonal change, new plants are exploited to advantage and specimen planting against the architectural enclosure is empha-
sized. It is essential that terrace furniture be carefully chosen, arranged, and changed because it frequently appears permanently in view. Sometimes it is impossible to decide whether one is inside or outdoors, unless it rains— which it seldom does during the summer months.

In contrast, the landscape designer of the southeastern coastal region is able to use the natural climatic and vegetational change, and he should make every effort to do so as a local design influence. Maintenance of a balanced indoor-outdoor relationship must be preserved in a climate and region which is most desirable and eminently suitable for outdoor living.

**southeastern coastal region**

The house (above) is still located as the nucleus; its views from within vary in character in each direction over planting and lawns in the garden. These are easily grown and maintained, especially with the introduction of various new grass strains and partial irrigation. No garden furniture or terrace impediments need intrude permanently into view. Few garden screens are needed for privacy, due to the continued use of fairly large sites and the presence of second to third growth woodland.

Immediate physical access should be achieved from indoors, at all times, into the different areas of the garden.
This access onto an all-weather paving would lead to various sections of the garden, allowing year-round and all-weather use. This paving, in small areas, need not reflect sun glare or heat indoors, which should be avoided in this region. The sitting area or terrace can then be located in a place which is easily accessible to the house; densely shaded during the summer months; allowing the penetration of sunlight for warmth during the winter months; and preferably shielded from winter winds. Access may be provided to other garden areas and features such as an isolated, outside cooking area. A real "picnic" atmosphere may be secured away from the house amidst the surrounding woodland screen.

Walks through woodland shade, sunlit clearings, and past the various garden areas lead to the "screened porch" which is so essential for fall relaxing. In the past, the screened porch was the converted "dog-run" or "breeze-way," and it developed eventually as a separate attachment to the house. Drawing upon this tradition of dispersed buildings, this "breeze house" (below) may now be located as a utilitarian and visual feature in the garden, sited so that cooling breezes may be directed through it by cutting wind channels through the woodland.

As in California, the car has taken over the role of the horse and no odors or aromas remain. The carport is now placed near the kitchen to facilitate food delivery and entry into the house in inclement weather.

All of the garden sections described are utilitarian and most necessary, and their visual influence results in a landscape which should be suitable to this area. To these may be added facilities such as: kitchen gardens, play areas, swimming pools, and other recreational tools. Many may be added or omitted for economy, but few factors should demand a multipurpose area, as one finds in the Bay Area. Here, instead, the whole site should be used.

This design should allow family and guests to stroll after dinner, from the dining room into the garden, across the summer terrace, through the cool shadows of the enclosing woodland, past the picnic spot, crossing the main garden vistas, through the woodland again, and into the isolated breeze house. Here coffee is heated, liqueurs are sipped, and everyone reclines in the breeze, protected from the encircling insect attackers. Eventually, the return is made to the house where music listening may be continued, within view of the illuminated lawn and garden. Such a garden becomes part of, and a way of life.
architectural landscaping on Long Island

The following explanatory notes are by Robert L. Zion, Landscape Architect for this residence. William Breger and Stanley Salzman were Architects; Harold Pivnick, General Contractor.

**Entrance garden (above).** Here the first impression of a house is made. This is a raised, evergreen garden (pachysandra, vinca, boxwood) for year-round interest. Bulbs appear in the spring and various foliage plants show themselves in the summer (acrosspage). Summer color is attained by plants in pots (geraniums in shades of pink and white). Large elm tree growing at original level was walled and preserved as a design feature. Lighting in the well makes of this tree a piece of sculpture—equally interesting in summer and winter.

**Driveway** is made long in feeling by planting heavily on both sides with weeping willows to create narrow tunnel effect. Gives feeling of seclusion.

**Parking forecourt (below)** was designed as a piazza for viewing the house. In addition to a parking area, this court serves as an auxiliary terrace for large parties.
garden for the east

Sweeping view of golf course and water is kept from visitor until he enters the front door, by heavy planting and walls in the parking court and by the absence of windows on the north and west sides.

Walls. There are over 300 ft of retaining walls on an originally level site. Primary reason was to raise the house in order to get maximum view. These walls run through the house and out into the garden, creating terraces and changes of level, and integrating the interior and exterior.

Bedroom garden. Paved with brick. Wall painted blue to discourage insects, also good background for green foliage of espaliered grapes. There is a pool with vertical jet, and night illumination. This garden is the result of a setback made necessary by the desire of the owner to have floor-to-ceiling glass in the bedroom and yet have the security and privacy afforded by the masonry wall. This space also becomes a suntrap, a pleasant place to breakfast late into fall and in early spring.
gardens for the east
Path system. Since evergreen ground cover does not tolerate foot traffic, a path system through the property became a necessity; and since such a system of paths would be under constant view from within the glass-walled house, something more interesting than the conventional, straight-line path was called for. Also, with such a sweeping view beyond, the area in the foreground might appear quite static; hence movement was introduced into the design of the path system. The material was chosen to match—in color—the sand traps of the golf course, thus strengthening the illusion that the fairways and greens are part of this property. The path system is also important in encouraging one to circulate through the property and view the house from various pleasing angles.

Living terrace. This terrace was made especially commodious, as much for purposes of entertaining as for the restful visual effect upon the guest immediately upon entering the house. It is made to appear as an extension of the floor of the house. This terrace, which is the center of the outdoor living activities is equipped with night-lighting, telephone outlets, a speaker extension of the indoor phonograph, and a television outlet.
Outside areas designed as a series of rooms: Parking court (piazza), service court, entrance garden, living terrace, dining terrace, sheltered living area (screened pavilion), bedroom garden, retreat, kitchen garden.

Planting. An absolute minimum of maintenance. Complete elimination of grass in favor of evergreen ground covers of different shades and textures (ivy, pachysandra, vinca, etc.) Heavy use of flowering trees, in preference to shrubs. Spring and fall bulbs in huge quantities (these appear year after year without any care, need little or no cultivation and are planted among the ground cover).

Photos: Alexandre Georges
FACTORY FOR PACKARD MOTOR CAR COMPANY—1905
Detroit, Michigan
Albert Kahn, Architect
Ernest Wilby, Associate
The factory is one of America’s most significant contributions to the history of building. Its structure and form, dictated by that peculiarly American phenomenon—mass production—have influenced almost every phase of contemporary architecture. The simplicity and flexibility of the industrial plant—its open areas, wide spans, glass walls, unit construction—the particular emphasis on space, light, and air that it introduced, have become basic elements of design; the endless repetition of its standardized exterior patterns has supplanted the classically organized façade and revolutionized the man-made scene. Scarcely a school, hospital, market, office or administration building, apartment house, or large-scale structure of any kind exists that does not bear the mark of the factory style.

Commonplace now, these were revolutionary innovations at the turn of the century. When Henry B. Joy commissioned Albert Kahn to design the first Detroit building for Packard Motor Car Company, industrial architecture was in its infancy. There had been some use of iron and steel in connection with traditional brick-and-wood construction, and Ernest Ransome had already erected sizable factories in reinforced concrete. Slow-burning mill construction, however, was still the general rule, with its heavy timbers, masonry walls, myriad columns, and small windows. Kahn’s initial building for Packard, in 1903, has long been denoted as the first industrial plant to introduce reinforced concrete to the automobile industry and to factory design. The present research establishes that Building 10, erected two years later, in 1905, actually was the first of the Packard group to use this construction. The Kahn office had meantime completed nine Packard buildings, all of the conventional, slow-burning type, before this departure was made; and several important reinforced-concrete plants had preceded it in other parts of the country. Since the decade from 1900 to 1910 was equal to a century, in terms of previous progress, the correct identification and dating of this factory changes the story of American structural development.

Even in the revised chronology, the 1905 Packard plant stands as a major landmark in more ways than one. Although it must now postdate the Ransome concrete factories in Beverly, Massachusetts, and East Rochester, New York, it still remains one of the pioneer achievements in industrial design. It was a first for the automobile industry—and the automobile industry revolutionized the factory plan. Where 16- to 20-foot spans had been sufficient in mill-construction buildings, automobile production needed clear spans of at least 30 feet. Because the manufacture of automobiles was experimental, methods were constantly changing, as were the specifications of the physical plant. Efficiency and speed were the only consistent rules of the business. Few architects could have met the challenge, and fewer still were interested in the pressures and dubious prestige of factory design. Albert Kahn had no such compulsions! With his practical training, strong business sense, engineering knowledge, and respect for human structures, he successfully transferred the aims and achievements of these industrial pioneers into a new kind of building. In close collaboration with the industry’s production managers and engineers, he and his associates developed the specialized solutions that were to have such an extraordinary impact on the architecture of the world.

The design of the Packard factory incorporated a notable structural advance. Albert Kahn’s brother, Julius, had developed a trussed-bar reinforcement against shearing stresses, which he had successfully incorporated in War College buildings in Washington, just prior to the construction of the new plant. Julius Kahn’s method stressed the value of consistently attaching the vertical stirrup reinforcements to the horizontal tension bar, for the most efficient transfer of stresses to the member best capable of carrying them. He did this in an ingenious, practical, economical manner by using a bar with two projecting wings, the wings sheared and bent at an angle of about 45 degrees, to pass the plane of rupture at nearly right angles, forming stirrups rigidly connected to the main tension rods. This substituted a scientific system of vertical reinforcement for the rather empirical methods of the time.

There was a direct relationship between the new factory construction, increased efficiency, and improved working conditions. The simple slab-girder-beam reinforced-concrete structure gained additional floor space, greater strength and rigidity, and a maximum of light and air, permitting the larger window areas that introduced the “daylight factory.” Although iron and steel had already achieved similar results, reinforced concrete eliminated the considerable amount of wood still in use at that time in metal-framed structures. It was fireproof, firm against vibration, clean, bright, easy to maintain, and its cost was less than structural steel. Kahn’s 1905 Packard plant was a deceptively simple solution to a complex problem, based on an early understanding of the principles of economic production and the possibilities of a revolutionary kind of standardized structure. This formula was to have a deep and surprising influence on all phases of contemporary design.

ADA LOUISE HUXTABLE

Particular thanks are due Albert Kahn Associates for photographs and for assistance in research of original documents pertaining to the Packard plant.
Although a few structures in this country have been designed by the plastic theory, the method has yet to be generally accepted by building codes. The American Institute of Steel Construction, after 10 years of research, has now officially recognized plastic design in steel and has conducted conferences at a number of universities throughout the country to present the theory to architects and engineers. This article analyzes the plastic theory, lists its benefits, and shows—by example—that it is actually easier to use and provides more savings in steel than the elastic design of continuous beams.

Plastic Design in Steel  
by William J. McGuinness*

Continuous frames of structural steel are stronger than we once thought. Studies of their behavior—under working loads as well as under loads that cause permanent deformation and, finally, failure—have given rise to the belief that such frames can support greater safe-working loads than assigned to carry by designs based on conventional elastic theory. Conversely, for fixed-design loading, lighter sections may be chosen. Investigation has revealed that a new kind of analysis, based on the "Plastic Theory," is valid and has now been accepted.\(^1\) England has some 200 buildings designed by the plastic method; the 1953 National Building Code of Canada permitted plastic design; several plastic-designed buildings are now being built in the United States where codes have recognized the new theory. Before the new theory is understood, however, a number of questions may be immediately suggested.

1. We have been building continuous-steel frames for a long while. Why is it that plastic design was not thought of earlier?
2. Deflection is often a limiting factor in design. If lighter sections are used, won't deflections be excessive?
3. Is it intended that structures will be designed with an expectancy of permanent deformation under working loads?
4. Will the new theory apply to all structures and thus constitute a revolutionary and permanent change in structural design?
5. Will working stresses be within the elastic range, or above the yield stress and in the plastic range?
6. With the help of Hardy Cross, and others, design procedures for continuous structures have been simplified. They are still, however, a bit more difficult than those for statically-determinate structures. Will the new theory add a design burden that may increase engineering fees?
7. To what extent has plastic design been applied to buildings now completed?
8. Is it accepted by building codes?
9. What is plastic design? Perhaps it would be better to consider the last question first. In doing so, answers to some of the other questions may appear. A simple definition or statement of the theory is not possible; therefore, a discussion seems most appropriate. Plastic design is based on the fact that steel is a ductile material; if a load in excess of a certain value is applied, yielding will occur at locations of greatest stress. Beyond this point, there is a redistribution of stresses which forces other locations, previously understressed, to assume a greater share of the load. In the end, under increasing load, the structure ap-

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*Chairman, Department of Structural Design, School of Architecture, Pratt Institute, Brooklyn, N. Y.
1 The American Institute of Steel Construction will issue a design manual on the subject, this year.

Figure 1—structural origins (from a report by Prof. Bruce G. Johnston in the Proceedings of the AISC National Engineering Conference of 1956).
Plastic design in steel

Plastic theory approaches a condition in which most of the structure is working to advantage to sustain a total "ultimate load." This condition will not necessarily cause a collapse, but it is assumed to be the largest load that the structure can carry. The lesser load under which the frame will eventually operate bears a fixed relationship to this ultimate load. This factor of safety or load factor is the relation of ultimate to working load of the structural assembly. This is different from the elastic theory in which the flexural stress, at yield point, bears a fixed relationship to the specified working stress at the point of maximum moment only. Usually this is 1.65, because 33,000 psi is the guaranteed-minimum yield stress of steel, and 20,000 psi the AISC Specifications for allowable working stress at extreme fiber due to bending. The plastic theory, in frames, depends on continuity and does not apply to simply supported, discontinuous beams. To be applicable, there must be a number of points of positive and negative bending moment.

A glance at Figure 1, which places the steel frame against the background of structural history, will dispose of Question 1. We really have not been building the steel frame for a long time. The fully continuous steel frame involving welding has an even shorter history, comprising only a few decades. Moreover, the number of fully continuous steel buildings now being erected, as a part of the total volume of steel frames, is an extremely small percentage. Finally, the theory was thought of earlier. General research and study began 25 years ago, almost concurrent with the adoption of welding for structures. An intensive program of investigation sponsored by Welding Research Council, American Institute of Steel Construction, Navy Department, and American Iron and Steel Institute has been in progress for 10 years at Lehigh University. Results of this program are the basis of a proposed manual of design.

Terminology

Each new theory creates its own language. An abridged vocabulary will help in discussing the plastic theory.

Plastic hinge. Due to yielding of all fibers in the cross section, a beam is able to rotate as if pinned, with a constant restraining moment.

Plastic modulus (Z). A measure of the plastic moment value of a cross section. Unlike the conventional section modulus (S), this is the static moment of area of the beam section about its neutral axis.

Plastic moment (M_p). The plastic moment is the bending moment that occurs at the location of all plastic hinges. It is the product of the yield stress and the plastic modulus: M_p = σ_y x Z.

Shape factor. The ratio of the plastic modulus to the section modulus Z/S. It varies from 1.09 to 1.23 for WF and I sections and averages about 1.14.

Elastic range. The range of stresses, less than the yield stress, within which the steel will resume its original shape after removal of the load.

Plastic range. Range of stresses where permanent deformation occurs without increase in load (Figure 2). Under usual working loads, these stresses are not reached in either elastic or plastic design.

Strain-hardening range. In this range,

Figure 2—stress ranges shown on familiar stress-strain diagram for structural steel.
the steel shows an increase in strength due to cold working in the plastic range.

Mechanism. Similar to a linkage in mechanics (Figure 4) where the moment at critical points is equal to, but not in excess of, the plastic moment $M_p$.

When a plastic hinge forms, stresses at the extreme fibers have exceeded the yield stress and enter the plastic range. This shifts part of the burden to the fibers nearer the neutral axis. Finally, when all fibers are carrying approximately equal stresses and within the plastic range, the stress pattern resembles the outline, B, shown (Figure 3). This changes the stress-bending relationship which previously (within the elastic range) had been $M = f \times I/c = fS$. This formula uses the section modulus (S) as a shape index which weighs the value of stresses further from the neutral axis more heavily and reduces the importance of those nearer the axis in accordance with the stress pattern, A, shown (Figure 3). In the plastic range, the stresses become uniform and the static moment of area, which is the plastic modulus ($Z$), becomes the proper index. The suggested load factor includes the effect of two terms. One, already discussed, is the ratio of the yield stress to the previous working stress. This is $33/20 = 1.65$. The other is the shape factor which expresses the ratio of the plastic modulus to the section modulus. This is about 1.14 for WF or I sections. The product or load factor is $1.65 \times 1.14$ or 1.88. When the working load is known, the load factor is used at once to establish the ultimate load. Actual load $\times 1.88 =$ ultimate load.

The redistribution of stresses in the

---

**Figure 3**—stresses in beams due to bending.

- **A**
  - Stresses within the elastic range
  - $M = f \times S$ (elastic section modulus)
  - Moment value = $M = f \times S$

- **B**
  - Stresses in plastic range as the plastic hinge forms
  - Plastic moment value = $M_p = f \times Z$

- **C**
  - Method of computing the plastic modulus
  - $M_p = f \times Z$
  - $Z = 2\left[A \times y_s + B \times y_t\right]$
  - Ratio of $\frac{Z}{S}$ is the shape factor which averages 1.14 for rolled sections
plastic design in steel

plastic hinge is followed by a redistribution of bending moments. How this affects the final design can be illustrated by a simple example; at the same time, an opportunity may be taken to compare sections chosen for the same load with simple, continuous, and plastic designs (Figure 4). Since simple and continuous designs are familiar, let us consider the plastic method. The moments, as determined by elastic analysis, are shown in order to establish a basis for the ultimate load. The load is now assumed to increase. At the ends, where moment is greatest, the outer fibers yield and plastic hinges begin to form. When the plastic moment $M_p$ exists, the ends rotate. Next, a plastic hinge forms at mid span. The beam is now a mechanism. It is also bearing its ultimate load and points of maximum moment are all at the value of $M_p$. We can now equate $W_u L / 8$ to $2M_p$. Then, $M_p = W_u L / 16$. But $W_u = 1.88W$ and it is possible to find the value of the plastic moment. By dividing this plastic moment by the yield stress, the plastic modulus is found. This is reduced to the section modulus by dividing by 1.14. A section can then be selected. In the new manual, plastic moduli will be available in tables.

Designs of simple and continuous beams under the same loading are also demonstrated (Figure 4) and a comparison of the results is given (Figure 5). It is important to notice in the plastic design that the actual working stress at the ends is 25,000 psi—greater than the standard 20,000 psi, but well within the yield stress 33,000 psi.

For some time, the AISC Specifications, Part III, Section 15 has allowed a stress of 20 percent greater than 20,000 psi (24,000 psi) under circumstances similar to that of the example given—namely, negative moment at points of interior support. This is tacit recognition of the effects formally recognized by the plastic theory and now having wider application. Weight savings and deflections are tabulated (Figure 5). The savings of 33.4

Figure 4—comparison of beam designs: simple, continuous, and plastic.
percent over simple beams and 10.5 percent over elastically designed continuous beams are specific for this example only. General savings are to be expected.

Deflection, like stress, is greater than in continuous elastic design, but less than the deflection in simple beam design. While the presentation of plastic design (Figure 4) makes it appear longer, because of the explanatory material, it is actually simpler than the elastic design of continuous beams. One of the reasons for this is that, in concept, simple beams form as plastic hinges are created.

The foregoing design comparison illustrates the major differences in design thinking. It can be visualized that the sequence of forming and the alternate possible combinations of plastic hinges will vary in more intricate structures, such as multispan frames of unequal loading and spans; also portal frames. This problem is solved by trial and comparison, or by charts and formulas.

When critical moments coexist with axial load, a reduction of the plastic moment value is experienced. Predictions of ultimate load have been justified by full scale tests (Figure 6). This is one of many tests described in Interim Report No. 30: The Plastic Behavior of Structural Members and Frames, by George C. Driscoll and Lynn S. Beedle, concerning work in the Fritz Engineering Laboratory at Lehigh.

The plastic theory is applied, at present, only to one-story structures or single-tier layers of beams, although work is in progress to extend it to multistory frames. One of the first buildings in North America to be completed on the basis of a plastic design is shown (Figure 7). In this case the load factor was 1.90 and the multispan, unequal loading is illustrated. The continuous beam is considered as one unit, with $M_p$ evident at points of negative and positive moment. A light member was chosen and strengthened at locations where the ultimate moment exceeded $M_p$. A splice was made at a point of contraflexure. The columns were connected above and below. Savings in steel over simple-beam design were 22 percent. No comparison was made with continuous.

### Materials and Methods

<table>
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<tr>
<th>Condition</th>
<th>Section chosen</th>
<th>Weight saving, based on simple</th>
<th>Deflection 1/360 span actual</th>
<th>Extreme fiber stress, actual</th>
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<td>Simple</td>
<td>27 WF 102</td>
<td>0</td>
<td>1.67&quot;</td>
<td>19,600 psi</td>
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<td>Continuous</td>
<td>24 WF 76</td>
<td>25.5%</td>
<td>1.67&quot;</td>
<td>20,000 psi</td>
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<tr>
<td>Plastic</td>
<td>21 WF 68</td>
<td>33.4%</td>
<td>1.67&quot; (Less than 1/360 span)</td>
<td>25,000 psi (Within yield stress)</td>
</tr>
</tbody>
</table>

**Figure 5**—comparison of economy and deflections for beam designs shown in Figure 4.

**Figure 6**—tests at Lehigh, sponsored by AISC, verify calculated predictions of behavior under ultimate load.

![Portal Frame Test](image)
summary

(1) Plastic design saves steel.
(2) It is more economical than elas­
tic-designed continuous frames and
much more so than simply supported
structures.
(3) Deflections are greater than in con­
tinuous design, but not as great as
in simple-beam design.
(4) Design procedure is simpler than in
the case of continuous elastic design.
(5) Tests have verified its validity.
(6) Buildings here and abroad have
proved safe when designed by this
theory.
(7) It has not yet been applied to multi­
story frames.
(8) Working stresses are usually above
20 ksi but still within the elastic
range.
(9) The ultimate load is only a hypo­
thestical one on which the working
load is based.
(10) The theory really represents a truer
picture of what happens in steel
frames. A number of sections of the
AISC Specifications recognize plastic
effect. A new manual will make its
appearance this year, indicating offi­
cial approval by the AISC.

The author is indebted to T. R. Higgins,
Director of Engineering and Research,
and Edward R. Estes, Jr., Research Engi­
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Much of the information discussed here
is also based on work of Drs. Lynn S.
Beedle, Bruno Thrulimann, and Robert
Ketter, of Lehigh.

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Figure 7—one of the first plastic-designed
buildings in North America, built at King­
ston, Ontario. Design was by Prof. Donald
T. Wright, Queens University, Kingston.

Figure 8—as a result of a bombing during
World War II, the involuntary removal of
two columns forced this steel frame to redis­
tribute its stresses without collapse.
The idea of rating interior lighting by the number of footcandles originated more than 40 years ago, when levels were very low. Then, the number of footcandles had a rough correspondence to the number of dollars spent. That sort of reference, of course, has little relationship at today's levels. Lighting ought to be specified and judged on its appropriateness to the function of the space that it serves. Footcandles in current lighting practice are discussed in this article and specific recommendations for commercial interiors, public buildings, and homes are tabulated.

Footcandles in Lighting Design by J. L. Tugman*

Now is a good time to take a new look at footcandles. In the last five years, important uses have been discovered for them at much higher levels. We are making such applications effective with as much comfort as we do the more familiar ones, which are also strongly affected by the freer use of lighting in more advanced application. In scores of ways, footcandles at the new levels are giving us a new look at practically every type of seeing activity.

A few general reasons why footcandles (representing standards in practice) have been rapidly gaining ground are:
1. Footcandles are available at lower cost than ever before—one of the rare items cheaper in a period of rising costs.
2. The rapid advance in all fields of technology provides many occasions where more light is needed to see more detail promptly and accurately.
3. Improved lighting techniques, responsive to the needs of applied science in business and industry, are enlarging the variety of application types.
4. Rising costs, especially for labor, make the scientific application of footcandles an efficiency tool which increases safety and heightens morale.

Anyone comparing the 1957 Footcandles in Modern Lighting Practice† (Table I includes commercial interiors, public buildings and homes) with its 1952 predecessor will see that recommended levels in many fields have advanced sharply. The new reference shows many different applications in commercial and public buildings where practice calls for 100 or more ft-c.

There are assembly lines and inspection operations involving fine discrimination where 500 ft-c are recommended. The same level is suggested for feature displays in self-service stores, while show windows may go to 1000 ft-c for special displays. (Illumination three ft away from a common 150-watt project spotlight comes to 1000 footcandles.)

For specialized tasks, where supplementary lighting is required on localized areas, levels of as much as 2000 ft-c are recommended. A surgical operation may require five times that much light. Welders who have to follow the intense brightness of an arc through a dense filter in their hoods can compensate for the

---

* Lamp Division, General Electric Company, Nela Park, Cleveland, Ohio.
† Published by General Electric Company.
brightness of the arc with 2000 ft-c on the task.

The work world has scores of activities where the success of the job depends on 100 ft-c of general lighting. For printing plants, today’s recommendations for imposing stones and proofreading call for 150 ft-c. The same level is standard for the finishing of photoengravings. Examples from the world of recreation may be even higher, although for different reasons. Many tasks require supplementary illumination, to the extent of 1000 to 2000 ft-c.

Satisfactory telecasting depends upon studio installations delivering up to 150 ft-c for black and white and 700 ft-c for color programs. Night baseball games require a 200 ft-c level.

An architect, recalling the average and subaverage lighting conditions he frequently encounters, may wonder what significance to attach to new footcandle recommendations. How are they relevant to the best over-all interests of his clients?

The simple answer is that by far the largest amount of space is accounted for in the new footcandle reference at levels under 50. For example, hotel and hos-

2 Bank interior, New York, has 55 ft-c lighting level at teller locations. Dropped luminous ceiling, slightly arched, has springings about seven ft from side walls. Around perimeter of ceiling, reflector lamps are recessed in square units.

3 Airline ticket office, San Francisco, maintains average illumination level of 75 ft-c. Contains luminous ceiling, surface-mounted fixtures, and concentric-louvered adjustable spots.

4, 5, and 8 At Cleveland Art Institute, both natural and artificial illumination were provided to serve the particular tasks for the various types of instruction offered. Luminous ceiling in silversmithing classroom provides 70 ft-c of diffuse light—more preferable for this type of work than light from small or concentrated sources. Painting classroom, however, has combination of fluorescent and filament equipment, since occupants are less concerned with uniformity and diffuse quality. Smaller filament units suit individual needs and provide accents and differences in general level. Average maintained is 50 ft-c.

6 Experimental office, at Nela Park, is equipped with two-lamp 40-w rapid-start troffer units, cross-louvered. Three rows of this equipment cover the ceiling and give it the name “trofferall.” Although lighting level is variable (as high as 450 ft-c) occupants and visitors are said to invariably prefer levels near upper limits for working conditions.

7 From 2000 to 10,000 ft-c may be required in the operating room—according to the delicacy of the surgery. Tasks are difficult and may change with each sequence of operation. Near-daylight value can be provided at the actual locus of the operation.
pital corridors call for five ft-c. Church and club auditoriums are listed at 10 ft-c while bank lobbies, court rooms, and many types of service areas take 20 ft-c. Fifty ft-c are recommended for class­rooms and general offices.

It is toward this category of levels that the general situation progresses. The principle of creative destruction operates in the building industry as it does else­where. Obsolete structures are torn down to make more profitable parking lots; managements seek to salvage older space with air conditioning, new elevators, and better lighting. Of these improvements, lighting by advanced techniques changes appearance most. The full implementation of these lighting techniques is an integral part of contemporary design and decoration.

The most efficient use of interiors today depends on how one sees and feels in those environments. The growth of air conditioning indicates, in part, how comfortable we want to feel. Lighting relates to both senses—and is most effective when designed for a specific service. As this idea influences more people making lighting decisions in business and industry, standards advance.
footcandles in lighting design

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<th>Footcandles Maintained in Service</th>
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<td>Corridors</td>
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<td></td>
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<td></td>
<td>Near Operating Rooms</td>
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<td></td>
<td>Emergency Rooms</td>
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<td>General</td>
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<td>Supplementary on Operating Table</td>
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<td>2000-10,000</td>
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</table>

| churches                        | offices and drafting rooms        |
| Auditoriums                     | Conference Rooms                  |
|                                  | Corridors                         |
| Sunday School Rooms             | Consultation Rooms                |
| Pulpit or Rostrum—Supplementary Illumination |  |
| Art Glass Windows—Lighted from Interior |  |
| Light Color                     |  |
| Medium Color                    | General                           |
| Dark Color                      | Supplementary                      |
|                                  | Laboratory                         |
|                                  | Special Displays                   |
|                                  | — Supplementary Illumination       |
|                                  | executives                         |
|                                  | Office, Library, Consultation Rooms, Kitchen, Utility Rooms, Nurses Stations, Pharmacy, Solaria, Sterilizing Rooms and Therapy |
|                                  | General                           |
|                                  | Supplementary on Operating Table  |
|                                  | 2000-10,000                       |

| gymnasiums                      | museums                           |
| Exhibitions and Matches         | General                           |
| General Exercising              | Supplementary for Intermittent Reading |
| Lockers and Shower Rooms        | Supplementary for Examinations    |
| Assemblies                      | 100                              |
| Dances                          | 50                               |
|                                  |                                 |
| homes                           | offices and drafting rooms        |
| Dining Room, Living Room, Library, Sunroom, Entrance Hall, Stairways and Landings, Bedrooms and Bathrooms— | Conference Rooms                  |
| General Illumination            | Corridors                         |
| Supplementary Illumination as follows: |  |
| Reading—Casual Periods          | Consultation Rooms                |
| Reading—Small Type, Prolonged Periods |  |
| Reading Piano Scores            |  |
| Elementary                      | General                           |
| Intermediate                    | Supplementary                      |
| Advanced                        | Laboratory                         |
| Writing                         | Special Displays                   |
| Children’s Study Tables         | — Supplementary Illumination       |
| Sewing                          | executives                         |
| Average for Casual Periods      | Office, Library, Consultation Rooms, Kitchen, Utility Rooms, Nurses Stations, Pharmacy, Solaria, Sterilizing Rooms and Therapy |
| Average for Prolonged Periods   | General                           |
| Dark Goods and Fine Needleswork | Supplementary for Intermittent Reading |
| Mirrors                         | Supplementary for Examinations    |
| Dressing Table—Light on Face    | 100                              |
| Bathroom—Light on Face          | 20                               |
| Game Tables                     |                                 |

1 Taken from "Footcandles in Modern Lighting Practice," a brochure published by General Electric Company, Large Lamp Department, Cleveland 12, Ohio. Additional recommendations for typical specialized industries and sports lighting are also included in the brochure.
for Commercial Interiors, Public Buildings, and Homes

**Footcandles Maintained in Service (Not Initial Values)**

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| Footcandles Maintained in Service (Not Initial Values)**

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<td>Feature</td>
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<td>Nighttime Lighting</td>
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<td>Main Business districts—highly competitive areas</td>
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<td>General</td>
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<td>Feature</td>
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<td>Secondary Business districts, small towns</td>
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<td>General</td>
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<td>Feature</td>
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<td>studies</td>
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<td>Broadcasting</td>
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<td>Commercial Photography</td>
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<td>General</td>
<td>20</td>
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<td>Black and White Film</td>
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<td>Color Film</td>
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<td>Portrait Photography</td>
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<td>General</td>
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<td>Illumination on Photographed Area</td>
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<td>Fast Film</td>
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<td>Television *</td>
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<td>Studio</td>
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<td>General</td>
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<td>Black &amp; White Studio</td>
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<td>Color Studio</td>
<td>350-700</td>
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<tr>
<td>Industrial, Sports, and Special Events</td>
<td>25-200</td>
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<td>Black &amp; White</td>
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<td>Color</td>
<td>250-1000</td>
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<td>* Value selected depends on lens aperture and effect desired; scene often is not uniformly lighted.</td>
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<td>theatres and motion picture houses</td>
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<td>Auditoriums</td>
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<td>During Intermission</td>
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<td>During Picture</td>
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<td>Foyer</td>
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<td>Lobby</td>
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<td>transportation</td>
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<td>Cars</td>
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<td>Baggage, Day Coach, Dining, Pullman</td>
<td>50</td>
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<td>Mail</td>
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<td>Bag Racks and Letter Cases</td>
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<td>Storage</td>
<td>5</td>
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<td>Street Railway, and Subway Cars</td>
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<td>Depots, Terminals and Stations</td>
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<td>Waiting Room</td>
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<td>Ticket Offices</td>
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<td>Ticket Rack and Counters</td>
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<tr>
<td>Other Areas</td>
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<td>Rest Rooms, Smoking Rooms</td>
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<td>Baggage Checking Office</td>
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<td>Storage</td>
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<td>Concourse</td>
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<td>Platforms</td>
<td>5</td>
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<tr>
<td>Toilets and Washrooms</td>
<td>20</td>
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</tbody>
</table>
branch department store

location | North Miami, Florida
building design | Office of Meyer Katzman
architects-engineers | Gamble, Pownall & Gilroy
interior design | Office of Meyer Katzman
associate-in-charge | Richard Katzman
This colorful department store is one of two competing stores located at opposite ends of the mall of the 163rd Street Shopping Center. One of the most noteworthy aspects of the design, other than its bold use of tropics-keyed color, is the exploitation of the interior space, both horizontally and vertically.

The central well, where moving stairs connect the two levels, extends the full 36-ft height of the interior to a luminous ceiling and provides dramatic and luring views from either level. Most partitioning and departmental subdividing are handled with pierced or see-through screens or separators that minimize the walls and invite the shopper along. This pierced-screen device also occurs on the exterior in panels alternating with open areas which border the 10-ft, covered walkway that surrounds the store. This walkway serves the three main entrances—the one to the east facing the mall; the other two opening from parking areas. The store was planned to provide maximum selling space; in this instance, perimeter reserves in the 165'x244' building were not of major importance in the plan, as the architects tell us “the warehouse is only a short distance away.” East and west walls of the fully air-conditioned, reinforced-concrete structure are surfaced with sand-colored brick with a cross pattern projecting in relief; north and south walls are of cast stone. The exterior colonnade, “bird-in-flight” canopies, and pierced tile are white. General Contractor was Frank J. Rooney.

Photos: Alexandre Georges
Asphalt-tiled and carpeted areas of shops on the ground floor (below right and across page) are a gold color, and ceilings are painted to match. A darker, ceramic tile is used in the men's shop (above). Full-height, moving-stair well is a dramatic, central element.
On the upper floor, ceilings and most floor areas are deepsea blue. An interesting aspect of the design is that the dropped ceilings float free from the perimeter walls, forming a light cove that brilliantly illuminates the entire perimeter area. Along with the various types of see-through partitions, this creates a sparkling, highly keyed surround for selling. Plaster fascias, exposed columns, and enclosure of moving stairs are white—either painted or of plastic wall material, where maintenance is a problem. The suspended planters in the central well are copper, 5 ft in diameter.
memorial hospital

location | St. Lô, France
architect | Paul Nelson
associated architects | Roger Gilbert, Marcel Mersier, Charles Sebillotte

Constructed with funds provided by the French Government, local authorities, and American Aid to France, this 400-bed general hospital is a memorial to the United States soldiers who gave their lives in World War II Liberation of France.

A former hospital, destroyed in the war, had 350 beds; a temporary Red Cross Hospital of 200 beds was found to be too small. Careful analysis finally determined the 400-bed figure, with 80 beds set aside for tuberculosis patients, and 20 beds for patients with contagious diseases.

In developing the skilful plan, the architects adapted to the particular conditions at St. Lô many of the standards established by U. S. Public Health Service. It is interesting to learn that the late Fernand Leger, the artist, was much concerned with the development of the hospital, and contributed the symbolic mosaic panel near the entrance (across-page).

One of the most successful plan elements of the reinforced-concrete structure is the separation of the several channels of traffic and their relation via corridors to the central bank of five elevators—two reserved for patients' exclusive use; three for general use. Since the site slopes away to the north, truck docks
Memorial Hospital

For delivery of food and supplies and the entrance for the hospital staff are at a basement level. Here also are located the main kitchen and a variety of storage and supply rooms.

In the ground-floor plan, separate entrances around the perimeter are provided for inpatients; outpatients; visitors; nurses; emergency cases; isolated patients (communicable diseases) and their visitors. Thus, the various traffic lanes are segregated outside the building, though all communicate with the central elevator block by means of corridors. Several interior courtyards are introduced at this level and many of the rooms—administrative offices; a portion of the clinic area; the nurses' lounge; and isolation wing—look out on landscaped areas. Other interior spaces are daylighted through plastic skylights. A truly remarkable design innovation is the egg-shaped operating room (selected details), four of which are grouped around a central sterile zone. Their multiplicity of lighting possibilities gives surgeons the greatest freedom of choice.

A very special provision is included for visitors to patients in the isolation wing—sealed, glass-enclosed booths between each pair of rooms, where visitors may talk to patients by microphones. To reach these, visitors pass from the main
waiting room along a corridor, through the elevator lobby, downstairs to the lower level, and so up to the booths by separate stairs. The maternity accommodations occur on the second floor and include two delivery rooms, egg-shaped like the operating rooms on the ground floor. Nurseries for four babies are located between each pair of patients' rooms. The nurses' residence occupies the block at the western end of the building.

Each typical nursing-unit floor (below) contains two units, with 30 beds each, with elevators at the center and each unit controlled from a central nurse's station. Patients' rooms occupy the south side of the floors; service rooms line the north wall.

The top floor (plan overpage) is designed with outside balconies for each room, and is reserved for tuberculosis patients or patients who must stay at the hospital for long periods.

A factor of the design that unfortunately is not apparent in the black-and-white photographs is the considered use of color. The three walls that a patient faces are pale gray; the wall behind the beds is some strong, though not insistent, color. The reflected light from the colored wall creates a changing pattern of tones on the gray walls and, we are told, promotes a patient's recovery. One visitor to the hospital was heard to remark: "But where are the sick people?"
Window areas are composed of a modular grid, panels of which may be fitted with operable panes, fixed glass, clear or obscure glass. On the maternity floor (above) nurseries for four babies occur between pairs of rooms.

Photos: Etienne Bertrand Wellin

A typical laboratory (right) looks out on a landscaped courtyard.

Between each pair of the egg-shaped operating rooms is a clean-up room (below).
Balconies adjoin the rooms of the topmost floor, which is chiefly for tuberculosis patients.
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1/8" Scale

ST. LO HOSPITAL, Normandy, France
Paul Nelson, Architect

October 1967
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BRANCHES AND WAREHOUSE STOCKS IN PRINCIPAL CITIES

148 Progressive Architecture
Let's Omit "or equal"

by Harold J. Rosen

Having spent a good many years writing specifications for the Federal Government, I had been led to believe that you could not exclude anyone from bidding on public work. Therefore when Federal Specifications were not available to which you could reference materials, you specified about three brand names and then quoted the "or equal" clause, which would permit everyone to bid. This same philosophy was used with respect to private work that I performed. However, a goodly number of specifications writers on nonpublic projects use the term "or equal" after specifying several brand names.

Some specifications writers have long insisted that the "or equal" clause be dropped from specifications but no concerted effort has been made to get all specifications writers to conform to this standard. The evils inherent in using an "or equal" clause have not really been pointed up sufficiently to expose its shortcomings. Nor has there been a satisfactory substitute which would have permitted an easy break from this habit.

Having spent a year now in private practice, I can see more clearly the disadvantages of using the "or equal" clause and fortunately a satisfactory substitute has been recommended by the Building Research Institute's first Specifications Workshop, which was held in February, 1957. In permitting the term "or equal" to be used in the specifications, it leads to a conflict between the Architect and the Contractor as to who should determine the equality of materials proposed for substitution. If the Architect modifies the language to say "or equal in the opinion of the Architect," the difficulty is still not resolved since the Bidder might be able to secure a lower price on some material other than that specified but in doubt as to whether the Architect will approve it. If the Bidder takes a chance on this lower-priced material, he risks being forced to buy the higher-priced material specified. If the Bidder did not take this chance he would lose the advantage of the lower price which might make the difference between winning or losing the contract.

The "or equal" clause also increases the amount of office work the Architect must perform in order to chase down all of the "or equal" substitutions which are submitted by Contractor for approval. Many difficulties are avoided if the "or equal" clause is dropped. The Contractor cannot claim that his bid was predicated on the use of another material, which the Architect refuses to accept as an "or equal." By basing their bids on the materials specified, the Bidders are competing on the same level—making for fairness on competitive bidding.

The Architect has better control of the job when the "or equal" clause is omitted. With an "or equal" clause the Contractor is constantly striving to use other materials, especially if there is a price advantage to him after the contract is let. In many cases, the Owner does not benefit from these price differentials, the substitution being made solely on the basis of "or equal without change in contract price." The Architect should insist that the products which he has specified and with which he is familiar and has confidence in, should be used.

At the meeting of the Building Research Institute's Specification Workshop, the following paragraph was recommended for inclusion in the Special Conditions of the Specifications.

"VARIATIONS FROM MATERIALS SPECIFIED:

"Materials or products specified by name of manufacturer, brand, trade name, or catalog reference shall be the basis of the bid and furnished under the contract, unless changed by mutual agreement. Where two or more materials are named, the choice of these shall be optional with the Contractor. Should the Contractor wish to use any materials or products other than those specified, he shall so state, naming the proposed substitutions and what difference if any will be made in the contract price for such substitution, should it be accepted."

It was further emphasized by the Workshop that reference to a single name or product in private work should be discouraged, except in the case of an Owner's firm desire in private work, because it tends to eliminate competition.

There is a fallacy about the use of the "or equal" clause in public work. On the Federal Government level, I believe that the Comptroller General has ruled that at least three names of Manufacturers be used when no Federal Specifications exist for a given material. The ruling has not required the use of an "or equal" clause to open up the bidding, although Federal Agencies have included the "or equal," in order to be aboveboard. Bidding in public work is a privilege—not a right—and the Government, as an Owner, has a right to protect its own interests by demanding that it receive a dollar's worth of value for a dollar spent. A Bidder on public work should prove that his material is equal to that specified and it should not be incumbent upon the Government to test every substitution to determine its equality.
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Both of the remodeling projects that we present this month are concerned with the virtual reclaiming of out-worn factory-storage buildings; with limited budgets; and with specialized uses, since one building became a clinic, the other a photographic studio.

The Bedford Williamsburg Medical Group Clinic, in Brooklyn, New York, was planned, designed, and completed in about four months, as a working center for a new group of young doctors with a time limit in which to begin practice. To Basil Yurchenco, two intriguing aspects of the problem were: the changeover of an 1870 shack building, built originally as a blacksmith shop then used for various manufacturing and storage purposes; and the need for giving this building (occupied on the second floor by a garment factory) a positive quality—on a very low budget—in a negative slum environment. Architect Yurchenco’s diversified skills (including the design of some of the furniture, the improvisation of a mural) achieved strikingly successful results.

The photographic studios of Jason Hailey and Dale Healy in Los Angeles, California, provide the ultimate in function and efficiency as a result of Architect Craig Ellwood’s carefully planned conversion of a building occupied, at one time or another since its 1920 construction, by a silent film theater, a garage, a factory, a store, and a warehouse. With minimum structural changes, and depth research into the client’s functional needs, Ellwood has planned interior space that fulfills the complex demands made by the activities conducted in a photographic studio.

Posterlike color and linear design serve to set the clinic front boldly apart from its less sightly neighbors, as well as to bring it easily to the attention of neighborhood patients.

Photo: Louis Boxer

October 1957 151
client: Bedford Williamsburg Medical Group
location: Brooklyn, New York
architect: Basil Yurchenco

p/a interior design data
remodeling
Colorful and diverting highlights of the clinic's reception area are the architect-designed mosaic tile panels on the appointment desks, and the architect-improvised mural, along one entire wall. "Confetti" asphalt-tile floor repeats vitalizing primary colors; warm off-white walls and ceiling offer agreeable contrast.

Photos: Louis Reene
p/a interior design data

remodeling

Medical Group Clinic (continued)
Waiting room supplements functional overhead lighting with Noguchi's sculptural paper lantern and uses decorative fabrics at windows, white-painted brick walls, cork-toned tile in stripe pattern for warmth and color effect. Architect-designed desks contrast natural woods and metal with leather and textured upholstery materials.

data

cabinetwork
All: architect-designed counters, appointment desks, plywood boxes with Formica "Realwood" veneers, metal legs, mosaic tile panels/ executed by Cuevas Martinez, 2150 Amsterdam Ave., New York, N. Y.
doors
All: flush/ mahogany veneer/ United States Plywood Corp., 55 W. 44 St., New York 36, N. Y.
equipment
Heating: McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago 18, Ill.

furniture, fabrics
Sofas, Desks, Counters: modular/walnut/ Lehigh Furniture Corp., 16 E. 53 Str., New York 22, N. Y.
Occasional Chairs, Stack-up Coffee Table: Bonnier's Inc., 605 Madison Ave., New York 22, N. Y.
Draperies: Laverne, Inc., 160 E. 57 St., New York 22, N. Y.

lighting
Fixtures: recessed, incandescent and fluorescent/ Uttercraft Mfg. Corp., 8 E. 36 St., New York 16, N. Y.
Sculptured Lantern: Noguchi/ Bonnier's Inc.

walls, ceiling, flooring
Walls: painted in Colorizer paints/ Brooklyn Paint & Varnish Co., Inc., 50 Jay St., Brooklyn, N. Y.
Ceiling: perforated wood fiber tiles/ U. S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill.
cabinetwork
Job-Built: Philippine mahogany, natural.
Countertops: Formica Co., 4633 Spring Grove Ave., Cincinnati 32, Ohio.

doors, partitions, windows
Wood Slab Doors: General Veneer Mfg. Co., 8658 Otis St., South Gate, Calif.
Glass Entry Door Frames: Acme Metal Molding Co., 1923 S. Los Angeles St., Los Angeles, Calif.
Hinges: "Pittco"/ Pittsburgh Plate Glass Co.
Partitions: 2x3 and 2x4 wood studs, 16" o.c., with lath-and-plaster finish/ U. S. Gypsum Co., 2222 W. Third St., Los Angeles, Calif.
Sliding Steel Sash: Arcadia Metal Products, 601 S. Acacia St., Fullerton, Calif.

equipment
Plumbing Fixtures and Trim: Crane Co., 321 E. Third St., Los Angeles, Calif.
Forced-Air Heating & Ventilating: The Lennox Furnace Co., 2941 Saybrook St., Los Angeles, Calif.
Door Lockets: Schlage Lock Co., 3467 W. Eighth St., Los Angeles, Calif.
Door Hinges: Stanley Works, 784 Lake St., New Britain, Conn.

furniture, fabrics
All: Herman Miller Furniture Co., Zeeland, Mich.

lighting
Wall Brackets: Lightolier, Inc., Jersey City 5, N. J.
Hanging Ceiling Fixture: Gruen Lighting Co., 8336 W. Third St., Los Angeles 48, Calif.
Recessed Ceiling Fixture: Pryne & Co., 526 E. 12 St., Los Angeles, Calif.

walls, ceilings, flooring
Walls, Ceilings: plaster/ painted light beige/ U. S. Gypsum Co.
Reception Room: Douglas Fir Siding/ stained gray.
Floors, Reception Room and Offices: terrazzo/ black and beige chips in white cement.
Other Flooring: asphalt tile/ white base, black and white spatter/ Mastic Tile Corp. of America, 2340 E. Artesia, Long Beach, Calif.

accessories
Clock, Reception Room: The Howard Miller Clock Co., Zeeland, Mich.
Metal Sign Letters: A. J. Boyer Co., P. O. Box 58283, Vernon Branch, Los Angeles 56, Calif.
Assembly-line efficiency for a photographic studio's complex of processes dictated interior area planning in the conversion of a 37-year-old building, 35'x60'. Deliberately unobtrusive color plan uses only white, black, gray, and natural woods. Surfaces in "wet" areas are judiciously finished in such moisture-protective materials as painted marine plywood, Fiberglas reinforced-plastic coating, and Formica. Perforated sheet-metal panel displays unframed prints, gum-label-attached to facilitate frequent changes.

Photos: Hailey-Healy Studio
"Orpheus" (below left): linen and viscose cement fabric in open woven construction/ 52" wide, all-white/ retail: $5.40 yd

"Olympia" (below right): linen, goat hair, and Egyptian cotton/ 52" wide, off-whites/ retail: $18 yd/ Jack Lenor Larsen, Inc., 16 E. 55 St., New York, N. Y.

"Ribbons" (right): crimson, yellow, turquoise, ultramarine, gray on white linen/ retail: $6.50 yd; umber, crimson, magenta, ultramarine, sepia on poplin/ retail: $8.40 yd; magenta, Emerald, orange, turquoise, brown on batiste/ retail: $6.45 yd; violet, Emerald, yellow, orange, gray on silk organdy/ retail: $8.85 yd.

"Names" (far right): on linen/ retail: $5.25 yd; on silk gauze/ retail: $7.80 yd; on cotton batiste/ retail: $5.40 yd/ designs by Alexander Girard/ Herman Miller Furniture Co., Zeeland, Mich.


"Stacked Tiles" (far left): Emerald, olive, lime on cream linen/ retail: $9.75 yd; yellow, Mustard, gold on white linen/ retail: $9 yd; Charcoal, gold, blue on semi-sheer of goat hair/ retail: $9 yd; white, off-white, silver on Champagne silk and Fortisan gauze/ retail: $10.50 yd.

"Scattered Beads" (left): on cotton taffeta/ retail: $10.50 yd; on gauze/ retail: $10.50 yd; on Belgian linen/ retail: $10.50 yd/ designs by Gere Kavanaugh/ Isabel Scott Fabrics Corp., 515 Madison Ave., New York, N. Y.
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New Miles, Illinois, office and warehouse building of Rohm & Haas Company shows use of PLEXIGLAS spandrel and louver panels in modern curtain-wall construction.
Editor's Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.

air and temperature control

129. Air Engineering Data File, AIA 30-D-1, 24-p. bulletin discusses engineering and testing facilities for propeller fans. Specifications, construction, maintenance, installation are covered. Charts and tables show how to estimate air-handling requirements, including duct resistance, elbow losses, weather cap losses. Special application equipment specifications included. Aeroveant Fan Co., Inc., Piqua 61, Ohio.


131. Fitzgibbons 7700 Series Boiler-Burner Unit, AIA 30-C-1, 4-p. brochure concerning oil-fired unit for forced hot-water heating systems. Suitable for homes and small buildings. Features easily installed enclosed jacket extension, low-voltage controls, new shipping package. Specifications and necessary equipment included in data. Diagram illustrations, Fitzgibbons Boiler Company, Inc., 101 Park Ave., New York 17, N. Y.

Offering the first complete data and information about plywood diaphragms, The Douglas Fir Plywood Association has recently released a booklet, Basic Facts About Fir Plywood Diaphragms. Of interest to architects, engineers, builders, the publication—which represents several years' research—presents facts about the use of this relatively new design method.

Some advantages of fir plywood for diaphragm construction are its shear strength, large panel size, shock resistance, light weight, and appearance. Material is said to offer easy way to precisely engineer structures of all sizes and designs to withstand lateral loads caused by windstorm or earthquake.

Importance of diaphragms and description of how a diaphragm works are featured. Tables show relative performance of plywood and other materials to deflection under shear stress. Design data is illustrated by tables and construction details. Cost, building code acceptance, and specifications are included, as well as photos of existing examples of application.

Copies of Basic Facts About Fir Plywood Diaphragms may be obtained by writing directly to The Douglas Fir Plywood Association, 1119 A St., Tacoma 2, Wash.

construction

236. Calking—Pointing, Filling and Sealing, AIA 7-D, 4-p. booklet describing new synthetic-rubber calking and sealing compound. Called Sonolastic, compound consists of sulfurized, synthetic-rubber polymers, plus an activator which makes the liquid a rubberlike substance. Product is nonshrinkable and impervious to weather. Recommendations state where and how to use compound; complete instructions for application; specification data. L. Sonneborn Sons, Inc., 404 Fourth Ave., New York 16, N. Y.


Two catalogs describing easily erected metal partitions—for factories, offices, stores—and adjustable metal racks for a variety of applications. Partitions have a number of framing patterns; are movable, durable, and reusable. Any paneling material may be used. Typical units are illustrated with photos and diagrams. Easily assembled racks require no welding; can be reused, providing excellent temporary or permanent storage space. Basic fittings are shown. Types of installations shown by photos. Design data and specifications included. Unistrut Products Co., 933 W. Washington Blvd., Chicago 7, Ill.


241. C-B-R-III, 12-p. illustrated bulletin published by S. A. Cemeteries & Briquettes Reunies, Brussels, Belgium, present-
ing detailed information, test reports, strength diagrams, engineering data on a new Belgian high early strength portland cement. Cement complies with ASTM C 150-1955 specifications, sets normally, hardens rapidly. Strength due to fine grind of special type of chinker. Cement is stable; meets Le Chatelier test and ASTM and AASHO-M-AASHTO standards; low alkali content. Indusia Corporation, 511 Fifth Ave., New York 17, N. Y.

242. Masonry Wall Reinforcement, p. 131. AIA-18C, 20-p. folder containing reports of independent study on masonry wall reinforcement conducted by Edwin L. Saxer, Chairman, Engineering Dept., University of Toledo. Purpose of study was to obtain information on behavior of horizontal joint reinforcing in concrete masonry construction. Results include reports on effectiveness of deformation of steel side rods, design comparison, mortars, distribution of wall stresses. Flexural tests illustrated by diagram. Suggested specifications given. Dur-O-Val, P. O. Box 89, Cedar Rapids 29, Iowa.

243. Davidson Architectural Porcelain, p. 132. AIA 17-A, 20-p. reference catalog with data on porcelain-enamel panels for commercial and institutional buildings. Section on curtain walls provides details and elevations showing installation of single and double-wall panels via mechanical connections. Section on facing panels shows clip attachment for new connections and gasket-type joints. Given typical trim and opening details. Illustrates variety of panel surface patterns and channel letter designs. Photos and drawings show installation of decorative facing panels and louver inserts; exterior remodeling job; installation of checker-paned panel. Davidson Enamel Products, Inc., 1104 E. Kibby St., Lima, Ohio.


245. Suggestions For The Installation and Care of Northern Hardwood Flooring, p. 133. 8-p. booklet gives suggestions for laying hardwood floors to reduce moisture problems. Factors include laying floor last, allowing for expansion, damp-season ventilation, heat under flooring. Precautions to be taken on the job site also discussed. Maple Flooring Manufacturers Association, 55 E. Wacker Dr., Chicago 1, III.


249. Suggested Preservatives for Masonry Structures, p. 137. 4-p. booklet gives general rules for structural design and installation of valance, cornice, and cove faceboards. Materials for faceboards, construction detail sketches, dimensions for location of wiring channel and light source included. Lighting effects obtainable using each of these types are discussed. Dimming equipment reviewed. Photos of installations illustrate principles. Copies available at $3.00 per copy. Write direct to: Westinghouse Lamp Division, P. O. Box 388, Bloomfield, N. J.

250. Architectural Floodlighting, p. 138. Modern Outdoor Lighting, p. 139. Two bulletins dealing with exterior lighting applications illustrate numerous examples. Dramatic effects of highlighting building forms and surfaces are shown in first booklet, which provides suggestions for selection and location of floodlights; recommends footcandle levels for particular surface materials. Second bulletin serves as guide for planning attractive lighting installations in parking areas around shopping centers or suburban businesses. Discusses costs, requirements, appearance. Shows luminaire designs and accessories. General Electric, Schenectady 5, N. Y.

251. Electric Generating Plants, 38-p. book of general information concerning selection of engine-driven electric generating plants. Three general groups of plants—alternating current, direct current, and battery charging—and operation of each is described. Prime movers for driving generator—gasoline, diesel, and gas engines—are discussed, with cost of operation and installation included. D. W. Onan & Sons, Inc., 2500 University Ave., S. E., Minneapolis 14, Minn.

252. Philithe Troffers, 4-p. bulletin illustrating complete line of troffers. Featured are hinged shielding and curved translucent side panels. Rapid start and slimline units available. Special series for schools, hospitals, factories, and display.
Spacious open areas... 40' x 40' bays... yet no projecting beams.

Steeldomes form smooth concrete surfaces.

CECO STEELDOME CONSTRUCTION

Wide 40' x 40' bays can be built with savings up to 30%

How to get wide open space in buildings and yet meet a budget is a problem faced by architects and structural engineers. This is difficult to achieve—but there is a solution—two-way slab construction formed with Ceco's new one-piece Steeldomes.

Employing this method, 40' x 40' bays supporting 150 lb./sq. ft. live load were built economically through the teamwork of Friedman, Alschuler & Sincere, architects-engineers, and contractor Wm. E. Schweitzer in constructing the plant and warehouse for Crescent Industries, Inc., Niles, Ill. A pilot study showed Ceco Steeldome construction was the most economical of all. Savings up to 30% were indicated.

Dome construction is essentially flat slab design with voids. The voids reduce deadload—the joists provide rigidity. Erection is fast and economical, on simple one-way open wood centering. With Steeldomes, the exposed waffle pattern presents a high-quality finish. Added to that, you get the advantages of wide open space and lower cost. On the Crescent project Ceco also supplied reinforcing steel and hollow-metal doors and frames. Ceco Steel Products Corporation. Sales offices, warehouse and fabricating plants in principal cities. General Offices: 5691 West 26th Street, Chicago 50, Illinois.

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

Steelforms / Concrete Reinforcing / Windows, Screens / Hollow-Metal Doors / Metal Lath / Steel Joists / Roofing Products
Today's smartest floors wear KENTILE

This is KENTILE vinyl asbestos tile

So much easier to care for!
So much longer-wearing!
And grease-proof, too!

KENTILE FLOORS

available in Vinyl Asbestos, Solid Vinyl, Cushion-back Vinyl, Rubber, Cork and Asphalt tile...over 150 decorator colors.

SPECIFICATIONS

SIZES AND THICKNESSES:

- Marbleized 9"x9" 1/16", 1/8"
- Carnival 9"x9" 1/16"
- Corktone 9"x9" 1/16", 1/8"

COLORS:

- Marbleized 19
- Carnival 16
- Corktone 3

INSTALLATION

Kentile vinyl asbestos tile (KenFlex®) may be installed over any smooth interior surface, including concrete in contact with the earth.

October 1957 165
lighting. Selector guide included. Ruby-Philite Corp., 30-02 Queens Blvd., Long Island City, N. Y.

418. Mainliner Luminaires, 12-p. guide to large area lighting. Features recessed and surface types in a variety of widths, lengths, and shielding styles—including plastic diffusers, lenses, and louvers; glass lenses; or steel louvers. Shallowness of units aids installation in difficult areas. Luminaires may be combined with any type of square ceiling material and offer many pattern variations. Westinghouse Lighting Division, MacArthur Ave., Bloomfield, N. J.

333. Materials for Construction and Maintenance, 20-p. product guide describing properties and advantages of compounds for joining, protecting, strengthening, and repairing construction materials. Products include: brickwork calking, ma-

Finishers and protectors

533. Del Synthetic Rubber Compound, 8-p. brochure stresses versatility and effectiveness of seal. A paste compound, material is easily applied to any surface; sets quickly, providing permanent, weather-tight seal. Typical uses listed. Various formulations described, including directions for application. Photos of installations, drawings of window details and typical joints featured. Other tapes and compounds mentioned. David E. Long Corp., 220 E. 42 St., New York 17, N. Y.

534. “City of Tomorrow” Protected Today, 4-p. booklet discussing application of Presstite No. 1175.1 sealing compound in Dallas Exchange Park, Dallas, Texas. A Thiokol LP-base sealing compound, Presstite is recommended for setting glass and panels, sealing metal joints, metal windows to masonry walls, and sealing concrete, tile and masonry expansion joints. Brochure gives detail photos and diagrams of particular applications in Dallas. Characteristics, application method and suggested specifications are included. Presstite-Key-

stone Engineering Products Co., 39 & Chouteau Aves., St. Louis 10, Mo.


sanitation, water supply, plumbing

The Corrosion of Iron in Water, 8-p. technical paper discusses the electrochemical process and describes how to inhibit corrosion in hot water and other metal tanks. Closed and open systems, cathodic protection, bi-metallic corrosion, and new materials are reviewed. Tables and illustrations. Tank capacity table is featured. Write direct: How E. Baker Co., 4248 Whiteside St., Los Angeles 63, Calif.

Ballast Sound-Rating Calculator, 4-p. chart-folder with dial indicator attached will aid specifiers in determining sound level of fluorescent-lighting layout prior to installation. Using sound level stamped on case of ballasts, number of ballasts installed, size and acoustical characteristics of room, and room’s ambient sound level, specifier can predict whether or not sound problem will result and select proper rating accordingly. Room constant chart, calculator instructions, ambient sound level guide included. Send request directly to: General Electric Co., Section 1662, Schenec-
tady 5, N. Y. $1

(Continued on page 173)
Edward Martin, partner in Bayshore Construction Co., Oakland, Calif., is sold on Celluflor. Here's what he writes:

“The use of Milcor Celluflor permitted all trades to work simultaneously instead of one trade following another. We saved over six months on the job schedule for the El Dorado Building in downtown Oakland and permitted occupancy of 40,000 sq. ft of office space for our major tenant, The Pacific Telephone Co., six months after ground breaking.”

Construction time savings are dollar savings — in overhead, financing and insurance. Earlier occupancy means faster investment returns.

But the greatest saving from Celluflor accumulates over the years because of the electrical flexibility it provides. Service outlets can be installed anywhere on the floor. They may be re-located or new ones added to meet changing requirements without expensive alterations.

Write for Catalog 270, or refer to Sweet's — Section 2a/In.
These and many, many more incandescent fixtures are included in this new Brascolite Catalog by Guth. A complete working tool, it contains all information needed to figure any incandescent lighting job.

Write on your letterhead for your complimentary copy.

THE EDWIN F. GUTH COMPANY
2615 Washington Blvd. • St. Louis 3, Mo.
Behold! My New Name:

SEEMORE

In response to my pleas for a name, many splendid suggestions were presented. After much thoughtful consideration, I have chosen the name "Seemore", submitted by

MR. WILLIAM J. MAGILL
Lighting Consultant
Southern California Edison Co.
P. O. Box 410
Long Beach 1, California

To Mr. Magill, and to the others listed below, whose suggestions were also deemed worthy of reward, I am dispatching a bottle of Metaxa—that most excellent Greek brandy. My warmest thanks to all of you who so kindly assisted in my quest for a name.

p/a manufacturers' literature

(Continued from page 166)

specialized equipment

884. Methods for Plant Layout, 44-p. catalog showing materials and methods for making plant layouts or scale models without preliminary drafting. Describes two-dimensional system using grid sheets, templates, and tapes to create layout from which blueprints are made in usual manner. Drawings show available replicas of piping sections with brass-pin connections; pumps; compressors; ladders and stairs; laboratory furniture; refinery equipment and even scale figures for building miniature assembly lines and fully equipped model plants to facilitate visualization. F. Ward Harmon Associates, Halesite, Long Island, N. Y.

885. Waste King Pulverator, 8-p. pamphlet discusses major features of Waste King commercial garbage disposers. Five basic models are illustrated and described. Cutaway drawing shows basic interior of pulverator. Operation and assembly features shown. Sizes for various applications illustrated. Waste King Corp., 3300 E. 50 St., Los Angeles 58, Calif.

886. Whirlpool Built-in Gas Range, AIA 35-C-11, 6-p.

888. Time Saving Tips for the Draftsman and Engineer, 40-p. booklet contains 59 shortcuts to speed drafting and computation work. Compiled from suggestions of engineers and draftsmen, these tips cover drafting shortcuts, engineering data ideas, board timesavers, and calculating methods. Most suggestions illustrated by diagram or drawing. New approaches to old problems featured. Frederick Post Company, 3650 N. Avondale Ave., Chicago 18, Ill.

surfacing materials

968. Micarta, AIA 35-C-12, 22-p. architects' reference manual on high-pressure laminated-plastic surfacing material for decorative applications in schools, restaurants, and offices. Technical data chart lists types, grades, characteristics, uses, and sizes. Describes fabrication process; supplies construction details for material applied to walls, window stools, countertops, sinks, doors, and partitions; photos show completed installations; sketches suggest further applications. Specifications, color and pattern chart, United States Plywood Corp., 55 W. 44 St., New York 36, N. Y.
America's foremost plants* feature

New Lambert-Hudnut plant, one of the nation's "top ten", brightens the landscape with a LUPTON Curtain-Wall System

Voted one of this country's most efficient and beautiful new industrial installations, the Lambert-Hudnut building at Lititz, Pa., makes interesting and practical use of LUPTON Aluminum Curtain Walls and Windows.

The light green porcelain-enamed spandrels of this LUPTON curtain-wall system are visually pleasing, permanently clean and attractive, and in keeping with the impeccable atmosphere desired for a proprietary-cosmetic products manufacturing plant.

In combination with the wide curtain-wall areas and the masonry construction, the use of LUPTON Aluminum Projected Windows gives the final touch of modern functional beauty to this outstanding new building. On approaching
the Lambert-Hudnut plant, one feels that an exterior of such striking design must shelter an efficient, well-run office and production operation.

The wide range of LUPTON curtain walls offers great freedom of design to the architect, low-cost installation and maintenance to the owner. And leaving the entire job to LUPTON—from manufacture to erection—often effects additional benefits. If you wish, skilled LUPTON crews can install custom or standard LUPTON aluminum curtain-wall systems—quickly, economically. LUPTON's undivided responsibility for the job assures exact compliance with your instructions.

Why not investigate the variety and economy of LUPTON Aluminum Windows and Curtain Walls? See the Michael Flynn catalogs in Sweet's (Sec. 3a and 17a), and speak with your nearest LUPTON representative (listed in the Yellow Pages under "Windows—Metal"). Or write or wire for more information.

Of the "top ten" plants of 1957—chosen by the Editors of Factory Management and Maintenance from nominations by leading architects and builders—three feature LUPTON curtain walls and windows: Lambert-Hudnut at Lititz, Pa.; Leeds & Northrup at North Wales, Pa.; and Owens-Corning Fiberglas at Barrington, N.J.
Rich's, Inc., one of the world's finest and most progressive department stores, was the first to recognize what the Wind-O-Washer offered in cost-saving and safety.

ECONOMY

Wind-O-Washer

A machine designed by Economy engineers for servicing buildings exteriors.

The architect can now exercise complete freedom in the design of building exteriors, unrestricted by the necessity of specifying movable glass for window washing.

The Wind-O-Washer is electrically operated from the working platform by push button controls for both up and down and horizontal movements. The machine travels on a track, and when not in use, is backed out of sight by means of a turntable or transfer car.

Economy representatives, located in all principal cities, can give personal engineering service on your problems and make recommendations with estimates. Each installation is individually engineered.

Write E. W. McDonnell for Catalog.

For interior maintenance, Economy Hi-Reach Telescopers are the answer to the problem of servicing overhead lighting and hard-to-reach interior maintenance work. For many years these Hi-Reach Telescopers have been widely used throughout industry and by institutions.

ECONOMY ENGINEERING CO.
4538 W. Lake St., Chicago 24, Ill.


Model PUL
10'9" to 15'

Model LB
20' to 35'

Custom
up to 100'
Doors that shut tightly with a click that's barely audible, resilient floors, sound-deadening walls and ceilings... each in its way contributes towards the elimination of distracting noises. Each reflects the functionalism of modern architecture. Russwin Unilocs equipped with Pullman-Type Latches require only the gentlest pressure to operate. They permit doors to be closed silently and securely. This feature of Unilocs accounts in no small measure for their selection wherever the luxury of silence is as much in demand as the economy of quality.

Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

A SYMPHONY IN LOCK MAKING

WHERE SILENCE IS LUXURY
How high velocity provides maximum comfort for schools

The Anemostat All-Air High Velocity system of draftless air distribution offers many important advantages for heating and ventilating schools. • High velocity units, used with smaller than conventional ducts, save space and money. They substantially reduce sheet metal required, can be installed faster, at less cost. Since there are no coils in All-Air HV units, clogging and odors are eliminated. • Anemostat All-Air HV operate entirely with air processed in the main equipment room; there is, therefore, no need to break through the walls of the building for prime air make-up. The Anemostat All-Air HV units eliminate fans, filters, and electric motors in the school rooms. Units are quiet, need a minimum of maintenance from custodians. • On these pages are typical installations in which the Anemostat All-Air High Velocity system has been used successfully. Application data on your specific school heating, ventilating or air conditioning problem is available from Anemostat representatives or from the home office.

Architects—attention please:

Anemostat round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.
In this schoolroom Anemostat Type E Square Air Diffusers are installed in the ceiling.

Here Anemostat SLW Straightline Air Diffusers on the high sidewall provide draftless comfort.

Note the Anemostat UTW Straightline Air Diffuser located under the window in this classroom.

Anemostat UTW Straightline Air Diffusers are placed under the windows in this school laboratory.

Write on your business letterhead for your copy of New Anemostat Selection Manual 60 to Anemostat Corporation of America, 10 East 39th Street, New York 16, N. Y.

ANEMOSTAT: The Pioneer of All-Air High Velocity Systems
Styrofoam helps maintain even temperatures in new barns at Cornell veterinary school

The New York State Veterinary College at Cornell University, Ithaca, New York, recently built ten new experimental barns. As cleanliness and temperature consistency were prime considerations, the construction materials selected were concrete block, structural tile and Styrofoam®, a Dow expanded polystyrene.

Styrofoam is the insulation of choice in many applications by many different companies—and for many good reasons. It has a constant low thermal conductivity and is resistant to the passage of water vapor. It has high structural strength, will not rot, mold or deteriorate. Styrofoam is lightweight and easy to handle. It can be cut with ordinary tools such as a saw or jackknife. These facts add up to a low in-place cost and lifetime insulating efficiency. For more information, contact the nearest Styrofoam distributor, or write to THE DOW CHEMICAL COMPANY, Midland, Mich., Plastics Sales Dept. 1731N.

YOU CAN DEPEND ON DOW

*Styrofoam is a registered trademark of The Dow Chemical Company.
Quick Delivery

Brown & Grist

Million dollar Simmons Plant put to bed in only seven months!

Custom Design at Stock Prices
Uses any Panel Material
Simple, Speedy Erection
Prompt Shipment
Light Weight—high strength
Ideal for schools, churches,
small office buildings, general
commercial structures

130,000 square feet of manufacturing plant completed seven months after ground-breaking!
And Brown & Grist played an important part in this fast-moving project.

With Sagebrush Green Mirawal panels installed at the factory, the Brown & Grist aluminum window walls were delivered as complete units exactly on schedule. Their simple construction features assured fast erection without special crews. Let our engineers work with you to solve your problems—at no obligation to you. And write for Brown & Grist’s Sweets Catalogs today!

Brown & Grist, Inc.

25 Tyler Avenue, Warwick, Virginia
No shadows or glare in this large office area. Fixtures are Day-Brite Mobilex®

No "OR EQUAL" can match it!

Comfortable . . . compatible . . . Day-Brite lighting. Specify it. Stick with it. You'll never be sorry. For, in quality of lighting and construction, no other fixture on the market can match Day-Brite. There are no "or equal's."

Strong words . . . and we can back them up. Ask your Day-Brite representative to arrange a demonstration. He's listed in the Yellow Pages. See, compare Day-Brite fixtures—side by side—with any other fixtures at any price.


Isn't that the best way to select lighting . . . to satisfy clients . . . to uphold your own reputation? It's the best way to see Day-Brite superiority for yourself!

FOR FURTHER INFORMATION SEE OUR CATALOG IN SWEET'S

DAY-BRITE LIGHTING, INC.
5405 Bulver Ave., St. Louis 7, Mo.
Day-Brite Lighting, Inc., of California,
530 Martin Ave., Santa Clara, Calif.
71162

NATION'S LARGEST MANUFACTURER OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT
Think of Day-Brite lighting fixtures as a hard-working production tool. Here they make seeing easier, increase worker efficiency, reduce turnover and absences, encourage cleanliness and order.

Day-Brite lighted executive office looks modern, reflects prestige, welcomes visitors and customers.
The HUSH-HUSH story of INSULROCK or, How Architects Specify "Hush"

One big reason why modern architects specify Insulrock is that Insulrock helps hush up noises.

The underside of Insulrock Building Slabs—which have been used as a weather-resistant, easily laid, sturdy, strong roof decking—provides a good-looking, off-white exposed acoustical ceiling that absorbs up to 85% of the incident noise in an Insulrock-ceilinged area. This helps kill clatter, calm nerves, increase everybody’s efficiency.

Insulrock can absorb so much sound because Insulrock Building Slabs are made of long, chemically treated, pressure-bonded, portland-cemented wood fibers arranged at random, honeycombed with thousands of sound-deadening air spaces.

Other Insulrock economies especially appeal to architects:

- **Incombustibility** (listed by Underwriters’ Laboratories) . . .
- **Good-Looks**, with attractive off-white random texture . . .
- **Easy Application**, as roof decking to wood or steel framing . . .
- **Long, Long Service**, with excellent resistance to weather, moisture, fungi, insects . . .
- **Notable Savings**, in application and labor time, in heating and air-conditioning insulation costs, in upkeep costs, in lighting costs.

Send for the new Insulrock folder

Division of The Flintkote Company

INSULROCK COMPANY
Sales Office: EAST RUTHERFORD, NEW JERSEY
Plants: LINDEN, NEW JERSEY • RICHMOND, VIRGINIA • NORTH JUDSON, INDIANA

184 Progressive Architecture
Using 90°-18% core - 1/2” cell size - interfacings of phenolic impregnated kraft panel in horizontal position - heat flow upward

Heat flow upward (above); heat flow downward (below).

Panel thickness "4" - (inches)
Thermal characteristics of panels - aluminum faced
Using 90°-18% core - 1/2" cell size - interfacings of phenolic impregnated kraft panel in horizontal position - heat flow downward

Loading Table: Aluminum-faced Sandwiches (3003-H14 Alloy)

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<th>Weight lbs/sq ft</th>
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P/F Core type: (Color code) [B4 - 99 (18) 1/2] A4 - 90 (18) 1/2 B4 - 99 (18) 3/4 A6 - 80 (18) 3/4

Notes: Minimum bearing 2". Loads shown are limited by longitudinal stress carried capacity of facings; total safe load includes weight of sandwich; when holes are made in facing member, the safe load shall be reduced accordingly; factor of safety = 2.

Just announced! Taking a tip from jet-aircraft technology, Panelfab Products, Inc. has completely researched, developed, and now announced a structural-panel material claimed to have the greatest strength-weight ratio available for building construction (sketch above). A welcome addition to the architects' and engineers' resources of multi-use contemporary materials, these stressed-skin structural sandwiches can have countless uses in architecture—from small-home construction (including exterior walls, interior partitions, and flush doors) to portable-school construction and multistory commercial buildings; for folded-plate roofs, lightweight hangar doors, even solar walls; and, as well, many other enclosing and separating applications.

Panelfab's development of a flush-type connector (note detail) for structural sandwich constructions contributes substantially to economy of erection time and helps to make possible the many applications appropriate for this material. Now possible is a new look in panel curtain-wall construction which eliminates the conventional grid- or mullion-type systems—which in themselves may be as expensive, if not more so, than the panels. Stressed-skin walls of this kind also have the advantage of being able to avoid through-wall metal contact thus adding to thermal efficiency (compare charts for upward and downward heat flow). Also inherent in these skin-core laminates are remarkable properties in bending for both simple and cantilever designs (loading table, left). Allowable shearing stresses permit minimum bearing areas for required design load. Investigation has further shown that the panels can be employed satisfactorily as loadbearing columns. Units can be combined with practically any traditional or contemporary surfacing material, natural or manufactured—marble, ceramic mosaics, vinyl, porcelain enamel, stainless steel, aluminum, etc.

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Dallas Federal Savings & Loan Building
Architect: George L. Dahl
General Contractor: Robert E. McKee
Electrical Contractor: Ling Electric, Inc.

The Vaughn Building
Architect: Wyatt C. Hedrick
General Contractor: Henry C. Beck Co.
Electrical Contractor: Ling Electric, Inc.

Southwestern Medical School, Clinical Science Building
Architect: Mark Lemmon
General Contractor: George A. Fuller
Electrical Contractor: Ling Electric, Inc.

Arthur Kramer Elementary School
Architect: Harwood K. Smith
General Contractor: Yates Construction Co.
Electrical Contractor: Ling Electric, Inc.

REPUBLIC
World's Widest Range of Standard Steels

186 Progressive Architecture
"Give me a building today designed to meet tomorrow's demands." This common request is the reason why more and more architects, designers, and electrical engineers specify Electrical Metallic Tubing (E.M.T.) for America's foremost commercial, institutional, public, and industrial buildings.

And in over-all Electrical Metallic Tubing (E.M.T.) economies, the *best costs less installed!* When using E.M.T., every coupling is a union... the galvanized finish is not cut away as in a threading operation. Republic E.M.T. may be bent with ease and the galvanized coating will not chip or flake.

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This functional advantage—plus installation features—is why Republic ELECTRUNITE E.M.T. is used throughout the construction of four major commercial buildings in the Dallas area. Republic ELECTRUNITE E.M.T. is "INCH-MARKED"... easy to measure—"GUIDE-LINED"... easy to bend—"INSIDE-KNURLED" for easy wire-pulling.

With Republic ELECTRUNITE E.M.T. quality, you can give your clients true wiring-system economy, reduce over-all construction costs, and get the job done on schedule. Be sure to specify Republic ELECTRUNITE E.M.T. with your next new building recommendations. Only genuine Republic E.M.T. is "INCH-MARKED" and "GUIDE-LINED".

Write today for handy reference booklet giving complete facts.

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Truscon "O-T" Steel Joists for floor and roof supports are light, strong, and fire-resistant. A product of Republic's Truscon® Division, they're easy to handle, lessen the time and labor required for erection, save material in supporting frame-work and foundations. Send for illustrated booklet with complete information and facts.

Truscon Vision-Vent® Window Walls make any building bright, light, and weathertight. Truscon also offers window types and sizes for every type of construction. All are engineered to the application. All enjoy Republic's reputation of quality. Send for illustrated catalog with complete facts—or contact your nearest Truscon representative.

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☐ Truscon "O-T" Steel Joists
☐ Truscon Steel Windows

Name____________________________ Title____________________________
Company__________________________
Address____________________________
City_________________ Zone____ State____________________

October 1957 187
air and temperature control

GS Winter Air Conditioner: new gas-fired winter air conditioner uses no floor space, may be installed in crawl spaces, attics, or suspended from basement ceilings. Automatic furnace can be used with natural, mixed, or manufactured gases; set directly on combustible flooring. Features include: all-welded heavy-gage steel heat exchanger of section design and large multiblade centrifugal blower, self-lubricated bearing, adjustable speed control and cast-iron drill port burner. Available in four models. Thatcher Furnace Co., Garwood, N. J.

doors and windows

Structoglas “A” Translucent Plastic Windows: glass-fiber reinforced plastic panes developed particularly for industrial and commercial use. Shatterproof, waterproof, and resistant to heat penetration, this glass reduces maintenance costs and aids climate control. Light provided is bright, diffused, glare-free. Material is available in standard glazing sizes; colors: green, blue, transparent; smooth or grain surface effect. Structoglas Div., International Molded Plastics, Inc., Cleveland 9, Ohio.

CONSTRUCTION DETAILS

for LCN Overhead Concealed Door Closer Installation

Shown on Opposite Page

The LCN Series 500 Closer’s Main Points:

1. Efficient, full rack-and-pinion, two-speed control of the door
2. Mechanism entirely concealed; arm visible on inside of an out-swinging door
3. Hydraulic back-check prevents door’s being thrown open violently to damage door, walls, etc.
4. Double lever arm provides maximum power to overcome wind and drafts
5. Arm may be hold-open type, 90°–140° or 140°–180°

Complete Catalog on Request—No Obligation or See Sweet’s 1957, Sec. 18e/la

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario
MODERN DOOR CONTROL BY LCN - CLOSERS CONCEALED IN HEAD FRAME

HAZEL PARK JUNIOR HIGH SCHOOL, SAINT PAUL, MINNESOTA

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page
To the architect working with both Celotex Acoustical Products and an Acousti-Celotex Distributor . . . comes a steadily broadening range of design potential. And not just in the ceilings alone. Entire area layouts take on remarkable new flexibility, allowing the architect new opportunities to exercise design initiative.

Consult your Acousti-Celotex Distributor in the planning stage of your next project . . . and see how his new products, plus his service and experience, can aid you.

FOR INFORMATION and specification data on Celotex Acoustical Products and translucent panels, write The Celotex Corporation, 120 S. LaSalle St., Dept.C-107, Chicago 3, Illinois.
p/a products

(Continued from page 188)

4512 Spring-Door Unit: new box offers safe, simple duplex outlet operation in all areas exposed to outside elements. Unit features two hinged covers firmly attached to box—covers open easily, shut automatically. One half of outlet may be used when other is shut. Rubber gaskets form watertight seals—wire is brought through wall into rubber grommet. Hinge pin and cover cast in one piece for extra strength. Plate covers: aluminum with lacquer finish; box: cast-aluminum. Unit is surface-mounted, easily installed. Pass & Seymour, Inc., Dept. S.C.U., Solvay Station, Syracuse, N. Y.

Ualco Aluminum-Awning Windows: lifetime rigidity of awning windows is due to exclusive hollow sill (right). Sill resists torsion forces as box girder of bridge with electrical equipment, lighting

"Tromobolite": new lighting unit rotates readily into various working positions. In addition to flexibility of movement, unit features combination incandescent-fluorescent lighting for improved illumination over working areas. Applications include scientific and professional use; especially adapted to draftsmen, engineers, architects who need flexible high-powered light. Amplex Corp., 111 Water St., Brooklyn 1, N. Y.

Photoelectric Light Control: new photoswitch-type 21BJ3—designed for highways, airports, industrial areas. On-off control reacts automatically to actual daylight intensity, provides light when necessary, unaffected by seasonal changes. Advance circuitry containing single amplifier tube makes operation reliable. Electronic components mounted on printed circuit base: fuse and sensitivity control can be reached without removing cover. Photoswitch Div., Electronics Corp. of America, Cambridge 42, Mass.

specialized equipment

X-Panda Shelf: new 12" metal shelf can be expanded to fit most home closet and wall shelf applications. Qualities include ease of installation, high strength, adaptability. Shelving is 1" thick and light weight. Three finishes available: aluminum, linen, or gray-tone. Home Comfort Manufacturing Co., 3300 N. E. Adams, Peoria, Ill.

Formica Chalkboard: recently developed chalkboard is said to be washable, resistant to carbon tetrachloride and other solvents, gives minimum glare and allows even deposit of chalk. Will last minimum 20 years. Two grades available: standard high pressure laminatesurfacing 1/32" thick in sizes 3' x 5' to 4' x 10'; special grade with same surface but on thin steel sheet to allow magnetized posting devices —1/16" thickness. Material can be installed over worn-out chalkboard without backing materials. Formica Corp., 4630 Spring Grove Ave., Cincinnati 32, Ohio.
TWA OFFICE BUILDING—Kansas City, Missouri; Architects, Bales & Schecter; Erected and Sold by Nichols Engineering & Material Company, Dallas, Texas.

M.I.T. AUDITORIUM—Cambridge, Massachusetts; Architects, Eero Saarinen & Associates; Associate Architects, Anderson & Beckwith; General Contractors, George A. Fuller Company.

HENRY M. FILER JUNIOR HIGH SCHOOL—West Hialeah, Florida; Architects, Peterson and Shufflin; Contractor, Thompson and Polizzi.

UNIVERSITY OF ARKANSAS MEDICAL CENTER—Architects, Ehtort, Eichenbaum & Rau; Edward D. Stone, Associate.

Curtainwall
by
WARE

Proven in use...custom-designed to meet your needs. Why not send us your requirements, today?

Write Dept. PA-10

Aluminum WARE Windows
Ware Laboratories, Inc., 3700 N.W. 25th St., Miami, Florida
At IBM's handsome offices in Washington, D. C., comfort never takes a holiday, with Marlo equipment on duty around the calendar.

Summer cooling and winter heating in this modern structure are provided by three types of Marlo equipment: three multi-zone air conditioners, the versatile units that can perform several different conditioning functions simultaneously; a remote room unit, horizontal recessed style; and an evaporative condenser.

Mechanical contractor on the project was John C. Grimberg Company. Architect was John Hans Graham & Associates, general contractor was Blake Construction Company, and mechanical engineer was Shefferman & Luchenburg.

Write today for complete information on the Marlo quality line of air conditioning and heat transfer equipment.
With Youngstown Steel Pipe on the job
new Lamson & Sessions plant gets
dependable, life-time piping system

To keep pace with the growing demand for their complete line of industrial fasteners, Lamson & Sessions Co. are erecting this new, beautiful, highly functional plant on Cleveland's Tiedeman Road. Providing dependability and long life for the plant's all-important piping system will be tons of quality Youngstown Steel Pipe.

For years leading architects, as well as progressive plumbing and heating contractors, have specified Youngstown Steel Pipe because it's been their guarantee of trouble-free water piping systems.

Youngstown Steel Pipe is made of only the finest steel with exacting attention given to all sizing, threading and finishing processes. Close quality control of every step in Youngstown's fully integrated operations—from ore mining to finish threading—produces the best pipe obtainable—anywhere.

Your Youngstown Pipe Distributor is only a phone call away—why not contact him today?

Specify Youngstown and secure these 7 Points of uniform goodness

uniform ductility uniform wall thickness
uniform lengths uniform size
uniform threading uniform strength and toughness
uniform weldability uniform roundness and straightness
human bias


This is a good-looking book with a pleasant, easy to read layout, and with few of those stunt typographical arrangements which spoil so many good books today. Maxwell Fry established his reputation as the leading English modern architect when modern architecture was new, way back in the 20's; and his wife, Jane Drew, have since had wide experience with tropical building in many parts of the world. Perhaps the most significant aspect of the Frys' approach to architecture—and this was the real significance of the modern movement before the recent formalistic reaction—is their human and sociological bias; not architecture for architecture's sake but architecture to serve the needs of man, to make him more at home in his environment, to make working life easier and social life more successful. These they consider to be the paramount problems, as did Gropius and his follow workers at the Bauhaus.

A natural result of this sociological approach is a special interest in the building as part of a group of buildings, and the group as part of a town. Just as our modern transport and communication systems have reduced old national frontiers to absurdity, so our dependence on highly elaborate community services like sewage, water supply, fire protection, education, and so on, means that buildings are no less dependent on each other and on the whole urban complex than are individuals upon society in general. The whole problem of urban and rural development is therefore implicit in the discussions in the present volume, and, moreover, it gives them breadth as well as substance.

Finally, the authors' experience with conditions in underdeveloped areas—and their own humanity—have forced them to see the problem of tropical architecture not only as a technical exercise in insulation, ventilation, and termite protection, but also as one of the great social and political problems of our time, the problem of the peaceful integration of the vast but technically backward populations of the tropics into...
Mark of Dependability…

IN AIR CONDITIONING • REFRIGERATION • HEATING

Members of the Dunham-Bush family have been serving the air conditioning, refrigeration and heating industries for an amazing total of 167 years.

This more than a century and a half of heat transfer experience is your assurance of dependable products.

And you can depend on the man behind the product... the Dunham-Bush sales engineer. He's ever available... near your town... to assist you. His technical skills aid you in three great industries.

May we send him your way to talk about the "CR" line and other great dependable products by Dunham-Bush!

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FROM WROUGHT
During the past three generations, a great transition has taken place in architectural metal work as we have moved into the age of the light metals. But even the achievement of the most modern expression of this age—the curtain wall—owes a debt to the earlier artisans of the forge.

We, at FLOUR CITY, recognize the rich heritage left us by the art blacksmiths. Over the years, their experience and knowledge of the plastic possibilities of metals has been inherited by our new generation. Our metal fabricators of today, now aided by modern machinery, fit and assemble curtain walls for multi-story buildings with the same care and skill that has distinguished our products for the past sixty-five years.

FLOUR CITY was one of the first fabricators of curtain walls. For us, it was not a change of direction, but rather another step forward in the use of our human and material resources.

Obviously, the architect with an imaginative and creative design must rely upon skilled and experienced fabricators to assist him in advancing the frontiers of architecture. We, of course, cannot predict what the walls of tomorrow will be, but we can and do assure you... if those walls are made of metal, the finest will be fabricated by FLOUR CITY.

The FLOUR CITY Ornamental Iron Company

2637 27th Avenue South, Minneapolis 6, Minnesota
a world society which is becoming industrialized everywhere. Can the change from age-old ways of living, primitive but in many ways satisfying ways of life based upon simple agriculture and handicrafts, can this change to a sophisticated existence, dependent upon elaborate machine techniques, be brought about with neither the harshness of the Russian Revolution nor the squalor of the Industrial Revolution in England and America?

Today tropical architecture is high politics: the peace and well-being of the fortunate nations of the West may well depend upon how quickly and smoothly the transition from a simple to a complex life can be made, and the smoothness of the transition will to an important degree depend upon the quality of the homes, villages, and towns that are provided for the awakening populations. The greatest danger is during the interim when the good old ways are lost and the good new ways not yet properly learned and especially when—as is happening everywhere—the change is accompanied by large-scale migrations from the country to the town, from the village with its intimacy and its social restraints to the impersonal and chaotic city.

The authors are well aware that satisfactory solutions to these problems will emerge only when the minds and hearts of the local peoples are willing to accept "the new ways"; but, in the meantime, one of the best auguries for the future is that there are men and women like Max Fry and Jane Drew who are willing to give their skill with humility and their sympathy without condescension. The peoples of underdeveloped countries need help from the West but they have long ago decided that arrogance and exploitation are too big a price to pay for such help.

As the authors say, Tropical Architecture does not set out to be a textbook, although it includes detailed information on such varied items as the kind of fastenings to use for doors and windows in hurricane areas and the habits of those cockroaches for whom the glue on the spines of books is a special delicacy. But the chief value of the volume is in demonstrating the right kind of approach and reminding us that the architect's problem is pre-eminently a problem of human needs, habits, and customs, of the availability of building materials and building skills, and of the fight against pests and the weather.

This is a pleasant and useful book which to my mind would be even better than it already is if it were pruned of a certain amount of elementary information of no particular relevance to the special problems of tropical architecture.

DENIS WINSTON
Professor of Town & Country Planning
University of Sydney
THE BIG DIFFERENCE IN ROOFING

may be in the bond that backs it!

See Sweet's 1957 Industrial Construction File: 4a/Fr

A bond that insures payment for roofing materials only, or for any amount less than cost of materials PLUS labor, in the event of roof failure, is called a "penal sum" bond. Fry Roofing is backed by FULL VALUE bonds, covering cost of roofing materials AND their application, under conditions specified in each bond.

FRY ROOFING

FULL-VALUE Bonded for 20 YEARS!

FRY—world's largest manufacturer of asphalt roofing and allied products—is the only roofing manufacturer who can truthfully claim: "Over 20 years without a single roof failure." That's one reason why FRY takes a long step further than other manufacturers in bonding its roofing. The FRY bond—whether for 10, 15 or 20 years—covering both asphalt shingle and built-up roofing—provides FULL VALUE coverage, includes labor costs as well as cost of materials.

There you have two good reasons why FRY Roofing—1016 squares of it—was chosen for the beautiful new Texas school pictured above. May we suggest that you specify a Fry FULL VALUE Bonded Roof on your next job? For condensed specifications on FRY built-up or asphalt shingle roofing, see your Sweet's. For complete details and specimen BOND, write FRY today!

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World's Largest Manufacturer of Asphalt Roofing and Allied Products

19 Roofing Plants Strategically Located Coast-to-Coast

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ROOFING PLANTS: Summit, Ill. • Portland, Ore. • Houston, Texas

Morehead City, N.C. • Compton, Cal. • Kearny, N.J. • Detroit, Mich. • Irving, Texas • Minneapolis, Minn. • York, Penn. • N. Kansas City, Mo. • Brookville, Ind. • Jacksonville, Fla. • San Leandro, Cal. • Stroud, Okla. • Memphis, Tenn. • Robertson, Mo. • Waltham, Mass. • Fort Lauderdale, Fla.
if the work of the Technical Committees which this Chapter and other Chapters have established is to proceed smoothly and uninterruptedly.

H. T. J. MARTIN, President
Dallas Chapter, CSI
Dallas, Texas

Dear Editor: We read with interest Rosen's article, "Standardization of Specifications Trade Sections." We, in this area, have been using such a system for several years and we find that it does simplify the writing of specifications as well as preparation of estimates.

The development and promulgation of our system was a project of Kansas Builder's Forum. The active committee included representatives from the builders as well as an architect. It has been well received and is in quite general use.

A briefed copy of the list of section headings, with some elaboration to clarify the usage of certain sections, is appended. You will note that this list reflects our geographical and climatic conditions to some extent as well as some construction trends, which were in effect at the time it was compiled.

For instance, we have no section on waterproofing, which, when it occurs, is usually placed with other bituminous materials in Section 17: Roofing, etc. Also, Section 8: Cement Finishes is hardly of sufficient importance to justify a section unless there is architectural concrete on the job. We find that Section 15: Metal Specialties and Section 30: Miscellaneous Equipment are most useful in keeping the specialty items out of the basic sections such as miscellaneous metals and carpentry. This is most helpful to the sub-bidders and while it puts the responsibility for these specialty items on the general contractor, it does call his attention to them as a group.

We are very sure that the use of the standardized list is helpful in the preparation and use of specifications. We trust that you may find our list and comments useful in your study of a universally acceptable list.

(Continued on page 206)
KASHMIR... BY DOROTHY LIEBES

The fourth design in Pomona Tile's "Distinguished Designer Series" is Dorothy Liebes' Kashmir, an exciting new concept in decorative ceramic tile. Miss Liebes has suggested Kashmir as both a floor and wall treatment in a unique new application. An extra-hard glaze makes Kashmir ideally suitable for either residential or light commercial installations. It is available in three beautiful color schemes—blue-green, red-orange, and multi-color. For further information, consult your nearest contractor or visit one of Pomona's convenient showrooms.

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POMONA TILE
Scott Towers, Long Branch, N.J., was designed by Erwin Gerber and A. Pancani, architects of Newark, N.J. General contractor: Lawrence Builders, Inc., Long Branch, N.J.

STEEL JOISTS IN APARTMENT ROOF STRUCTURE
HELP KEEP MAINTENANCE COSTS DOWN

These two attractive apartment houses built on an ocean-front property in Long Branch, N.J., are known as Scott Towers. Only a step from the beach, Scott Towers also has its own swimming pool in a court between the buildings, and plenty of private parking space.

Both buildings are steel-framed, and both have Bethlehem Steel Open-Web Joists in their ceiling structures. The use of these steel joists will contribute to economical building maintenance because they won't warp or sag. Joints and corners remain tight throughout. In addition, the use of Bethlehem Open-Web Steel Joists reduces the amount of combustible material in the building's construction, thereby helping to promote fire-safety for up to four hours.

There were other advantages in using Bethlehem Joists. They were delivered to the job site tagged and ready for immediate placing, with no delays to the construction schedule. They required only field welding to secure them permanently in place, forming a rigid, permanent floor structure.

Bethlehem Open-Web Steel Joists, Shortspan Series, conform in all respects to the Steel Joist Institute Standard Specifications for Open-Web Steel Joist Construction and they are fully approved by the Steel Joist Institute. They conform, also, to the Simplified Practice Recommendation R94-53 of the Department of Commerce.

BETHLEHEM OPEN-WEB STEEL JOISTS
A hillside is always a challenge . . . one which offers real opportunity for creative design, construction and integration.

Now—with Wolmanized® pressure-treated lumber the limitations of using wood in hillside designing have been eliminated!

Moisture, masonry contact, nearness to the ground— are no longer restrictive factors. Wolmanized pressure-treated lumber offers complete protection against termite and decay damage . . . not only in residential construction, but in light and heavy commercial construction, too.

Wolmanized lumber, whether in dimension or as glulam timber, retains all of the versatility and flexibility of wood. And most important, it has built-in protection against decay and termites!
Gerber's sensible prices give full value for every plumbing dollar. Two Gerber lavatories cost no more than 1 of most makes of comparable high quality.

**Design a more interesting bathroom without increasing costs**

Distinctive bathroom beauty is largely a matter of smart architectural design. And you can design more interesting bathrooms for less when you specify Gerber Plumbing Fixtures.

Gerber offers a complete line of smartly styled fixtures that carry the Good Housekeeping Seal. They have the deluxe features usually found only in the most expensive plumbing fixtures, and they are specially designed for easy installation. Yet they are so sensibly priced, the money you save can be used to design a more distinctive bathroom without increasing total costs.

Gerber offers fixtures in 5 colors and white to fit most decorating schemes. Why not see a Gerber representative before you specify plumbing fixtures for your next building or remodeling job?

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Write for catalog No. G-7, a 96 page catalog with specifications, photographs, and complete information on Gerber brass, vitreous china, and steel enamel ware.

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**p/a views**

(Continued from page 206)

29 Painting and Finishing
30 Miscellaneous Equipment
   Chalkboards
   Folding Doors
   Fire Extinguishers
   Basketball Backstops
   Seating
   Kitchen Equipment
   Etc.
31 Alternates
40 Electrical Work
50 Plumbing
60 Heating and Air Conditioning

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Williamson, Lochbaum & Associates
Topeka, Kansas

*Dear Editor:* There is undoubtedly some merit in John W. Foster's suggestion (VIEWS, May 1957 P/A) relative to the standardization of section numbers in construction specifications. However, it occurs to me that such a standardization should include all of the trade sections in reasonably common usage, and that those not applicable to any particular specification could be deleted or noted "omitted." This procedure seems to me to be far more desirable than the use of a short standard list with many and unrelated additional sections appended to fit the particular case involved.

I am also of the opinion that the numbering of specification sections should begin with the Bid Documents and General Conditions, rather than having those features excluded from the standard numbering. It is also my opinion that the listing of trade sections in the approximate order of their appearance on the job is more desirable than trying to group sections which might possibly be awarded to a single contractor.

I have taken the liberty of preparing a revised suggested list of standard specification sections, which is enclosed for such use as you may care to make of it. It may be considered too all-inclusive, or it may be too short. At any rate, I believe it is more realistic than the 31-section list suggested in Rosen's article.

1 Bid Documents: Notice to Bidders
   Form of Proposal
   Form of Contract
   Form(s) of Bond(s)
2 General Conditions: Special Conditions
   Supplementary Conditions
3 Inspections and Testing
4 Demolition and Site Clearing
5 Excavating, Filling, and Grading
6 Filing
7 Concrete and Cement Finish

(Continued on page 211)
FROM INDIANA-

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Smoke Box Photos Prove Light Distribution Qualities of MISSISSIPPI GLASS

CLEAR GLASS—Actual photograph of "smoke box room" with its window glazed with clear glass. Note high concentration of light near window.

DIFFUSING GLASS—Smoke box photo—window glazed with diffusing glass. Note uniformity of lighting and its distribution to far side of room.

In these photographs the box is built to a scale of 1" = 1' to represent a room 12' high, 12' wide and 24' deep. The "window", centered in one end, is 4' square, 3' above the floor.
nearly 400 doors pivotal hung offset style ... an achievement in modern uniformity

In keeping with the contemporary design of this outstandingly well planned high school, all of the doors have a uniform simplicity in hanging style. Regardless of the door's function or size, a suitable offset style RIXSON floor type closer or pivot set was specified. Many more RIXSON offset style closers and pivot sets are available for doors ranging from the heaviest lead lined x-ray room door to the lightest interior door. And with each, a variety of top and side jamb pivots for varying problems in construction and material.

write for details and templates of offset type closers

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Dear Editor: I have read with much interest “Standardization of Specifications Trade Sections” by Harold J. Rosen as well as the letter of John W. Foster to which he refers. Uniformity in the specifications is highly desirable and if it is possible to arrive at a standardized listing of trade sections applicable to all conditions I would strongly favor its adoption by all.

(Continued from page 206)

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p/a views
(Continued from page 218)

architects. There are many factors, however, which will make this difficult to achieve.

Any standardized listing of trade sections must be extensive enough to cover all conditions without becoming too voluminous for use in the typical job. Rosen's suggested list, for example, contains no provision for a section on "Radial Brick Chimney," yet when one is required it should not be "lumped in" with other general masonry, since it is almost always a separate subcontract.

The suggestion that each section be assigned a permanent number and a blank page inserted in the specifications for each section omitted does not seem a feasible one. There are at least 150 separate trades or specialties which, when they are to be included in a complex building project, should be made the subject of a separate section of specifications. The typical job of the average-size architectural office, however, will require only about 30 of these. Thus most specifications would carry the excess bulk of 120 blank pages.

Contractor's estimators tell us that it is better to have too many trade sections rather than too few. Much confusion can be eliminated in the preparation of a bid estimate if each trade or specialty is treated as a separate section. It is easy for the estimator to compare and select from sub-bidders' quotations if they are itemized by specification section headings that are limited in scope, but extremely difficult if based on "catch-all" sections with some sub-bidders excluding one or more portions of the work.

I have recently spent considerable time in developing a check list of as many trade section headings as possible. I have made use of many published lists of section headings as well as specifications from our own office files. Among the references found valuable were the following:

Specifications, by H. Griffith Ed-
In kitchens where speed and capacity are demanded, a Hobart flight-type dishwasher is the complete answer for making your kitchen layouts work economically and efficiently. Completely automatic fresh water scraping, power washing and rinsing...dishes are racked in the conveyor in one amazingly fast operation...no need for constant supervision. Flight-type sizes range from 12 to 26 feet long, with conveyor speeds from 5 to 12 feet per minute. Check the features above that assure you of trouble-free operation. In the complete line of Hobart dishwashers there are over 50 different models...one is exactly right for any operation, regardless of size or volume.

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EASY TO PLACE. Galvanized corrugated Tufcor sheets arrive at the job site conveniently bundled and pre-cut to fit structural framing. No measuring or cutting is required. Three men can easily place and weld 5000 to 7500 sq ft of Tufcor in a single day. Low dead load of the finished Tufcor roof system (4 to 6 psf less than most types of roof construction) offers pronounced savings in the structural steel requirements.

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October 1957 219
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p/a views

(Continued from page 216)


Also, an article by Emil M. Pollak, President, Non-Ferrous Division, National Association of Architectural Metal Manufacturers, appearing in the January 1957 issue of Architectural Metals, which suggested a grouping of metal work sections in the specifications. I would be interested in having Rosen's comments in regard to this check list, a copy of which is appended.

Headings are grouped into 19 principal divisions designated by capital letters, A thru S. The first 16 of these will generally serve as a list of the sections required for a small job such as a residence or small commercial building. Each of the 19 divisions comprises from one to 28 related section headings designated by numerals. Many of the numbered sections are further subdivided into from two to ten headings, designated by lower case letters. These may become separate sections on large jobs when required. By using this check list, an outline of section headings required for specifications of the job of any size can be rapidly prepared without a great deal of reshuffling to preserve a logical sequence of related trades.

It is hoped that the Construction Specifications Institute can come up with suggestions for a reasonable standardization of section headings. Should this be accomplished, it should then be followed up with a uniform outline of the paragraph headings of the subject matter in each section.

A

Contractual
1. General Conditions
   a. Special Conditions
   b. Schedule of Drawings
   c. Alternates
   d. Demolition

B

Earth-Work
1. Earth Work
   a. Clearing, Grubbing
   b. Excavation, Backfilling, Grading

(Continued on page 224)
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<th>City</th>
<th>State</th>
</tr>
</thead>
</table>

pj/a Views

(Continued from page 220)

C
Concrete

1. Structural Concrete
   a. Pile Foundation
   b. Caissons

2. Concrete Floors

D
Masonry

1. Masonry Work
   a. Mortar Materials, Mortar Mixing
   b. Brickwork
   c. Radiant Brick Chimney
   d. Structural Clay Tile
   e. Concrete Unit Masonry
   f. Structural Facing Tile
   g. Glass Block
   h. Gypsum Block

2. Exterior Stone
   a. Limestone, Granite
   b. Marble
   c. Cast Stone
   d. Terra Cotta

E
Waterproofing

1. Waterproofing, Tile Drains
   a. Exterior Dampproofing
   b. Interior Dampproofing

F
Structural

1. Structural Steel
   a. Steel Joists
   b. Cellular-Steel Sub-Floors

2. Wood Structural Members
   a. Gypsum-Laminated-Wood Structural Members
   b. Wood Trusses

3. Roof Decks
   a. Steel Roof Decks
   b. Structural Wood Decking
   c. Pre-Cast Concrete Decks
   d. Gypsum Roof Decks

G
Roofing, Siding, Sheet Metal

1. Roofing
   a. Built-Up Roofing
   b. Shingles
   c. Slate Roofing
   d. Tile Roofing

2. Siding
   a. Cement-Asbestos Roofing, Siding
   b. Corrugated-Metal Roofing, Siding

3. Sheet Metal Work
   a. Skylights

H
Metalwork

1. Miscellaneous Metal
   a. Metal Stairs
   b. Fire Escapes

2. Architectural Metalwork
   a. Nonferrous Products
   b. Entrances
   c. Storefronts
   d. Metal Signs, Letters
   e. Flagpoles
   f. Mail Chutes

3. Metal Doors, Frames, Trim
   a. Metal Frames, Trim
   b. Hollow-Metal Doors
   c. Industrial Steel Doors
   d. Fire Doors
   e. Steel Rolling Doors
   f. Overhead Doors
   g. Vault Doors
   h. Hanger Doors
   i. Aluminum Doors
   j. Bronze Doors

4. Metal Partitions
   a. Metal Toilet Partitions
   b. Metal Office Partitions
   c. Industrial Steel Partitions
   d. Wire Work

5. Metal Windows
   a. Steel Windows
   b. Aluminum Windows

6. Metal Curtain Walls
   a. Porcelain Enamel

7. Metal Specialties

I
Carpentry, Hardware

1. Carpentry Millwork
   a. Rough Carpentry
   b. Finish Carpentry
   c. Millwork

2. Builders Hardware
   a. Rough Hardware
   b. Finish Hardware

(Continued on page 228)
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Kinnear Steel Rolling Grilles

p/a views

(Continued from page 224)

J
Plaster, Stucco, Wallboard
1. Lathing, Plastering
   a. Furring, Lathing
   b. Plastering
   c. Stucco
2. Wallboard
3. Acoustical Treatment

K
Tile, Marble, Slate
1. Ceramic Tile
2. Interior Marble, Stone
3. Travertine
4. Toilet-Room Accessories

L
Flooring
1. Resilient Flooring
   a. Asphalt Tile
   b. Linoleum
   c. Rubber Flooring
   d. Cork Tile
   e. Vinyl-Asbestos Tile
   f. Vinyl Flooring
2. Wood Flooring—Laid In Mastic

M
Glazing, Caulking, Insulation, Weather-stripping
1. Glass, Glazing
   a. Structural Glass
2. Caulking
3. Insulation
4. Weatherstripping

N
Painting, Finishing
1. Painting
2. Fabric Wall Covering
3. Painted-Plastic Wall Covering
4. Interior-Finish Schedule

O
Mechanical
1. Plumbing
   a. Gas Fitting
   b. Sprinkler System
   c. Compressed Air System
   d. Piped-Oxygen System
   e. Vacuum System
   f. Outside Utilities
2. Heating, Ventilating
3. Air Conditioning
4. Refrigeration

P
Electrical
1. Electrical Work, Lighting Fixtures
   a. Telephone System
   b. Nurses’-Call System
   c. Doctors’- Paging System
   d. Public-Address System
   e. Fire-Alarm System
   f. Fire-Detection System
   g. Luminous Ceilings
   h. Outside Electrical Distribution

Q
Special Equipment
1. Shades, Venetian Blinds
2. Hospital Casework
3. Curtains Tracks & Cubicles
4. Sterilizer Equipment
5. X-Ray Equipment
6. X-Ray Protection
7. Laboratory Equipment
8. Laundry Equipment
9. Incubators
10. Food Service Equipment
11. Built-In Refrigerators
12. Chalkboards & Tackboards
13. Home Economics Equipment
14. Stage Equipment
15. Folding Partitions
16. Gymnasium Equipment
17. Folding Bleachers
18. Locker Room Equipment
19. Library Bookshelves
20. Metal Lockers, Shelving
21. Pews, Pulpit Furniture
22. Post-Office Equipment
23. Mail Boxes
24. Jail Equipment
25. Auditorium Seating
26. Bank Fixtures
27. Store Fixtures
28. Movable Equipment

(Continued on page 230)
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(Continued from page 928)

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While the profession of architecture, through public relations, tries to be better understood by the public, it is still necessary, from time to time, to "explain" it to those much closer to its activities. For instance, the manufacturer of building products produced for construction does not always solve too well his problem of attracting the interest of the specifier. We are no longer in the period when obvious basic materials and equipment were specified and used in buildings, when design was simply a stylistic variation on certain conventional basic themes, when specifications were produced for a new job by a few interpolations in a previous set, when competition among manufacturers was based on selection between brands (cost, friendliness, prestige), and when an architect's catalog file was easily divided into a few familiar trade categories. Today, new producers push the older ones and more complicated criteria govern the selection. A producer who doesn't attempt to study this changed building-design contract market in some depth, it would seem to me, is very likely to misuse his advertising and sales promotion budget—and, which is more dangerous, to misdirect development and research activities.

Much has been written recently on the "science" of motivational research—the attempt to study underlying reasons for consumer response and then either cater to them or manipulate them. Although the architectural specifier is a consumer in a large sense, it is an indirect act of consumption—he tastes, so to speak, and perhaps predigests for the ultimate consumption. I doubt whether the psychoanalytic Dichter-type study of the architect's emotional responses and personal neurotic impulses would indicate his likely specifying tendencies. Perhaps it could be shown that one man's childhood need for comfort leads him to specify resilient rather than hard flooring, that deep-rooted conflicts are the reason for another's preference for rough textures, or that a subconscious desire to hide is the real reason for so many pierced-screen walls. But I doubt whether useful general conclusions—that might indicate a sales campaign—could be drawn from such speculations.

No, it is rather the motivation of the architectural specifier as architect that deserves study. Without the benefit of any research beyond the many talks I've had with professional conferences on the subject, and the continuing opportunity an editor has to know and study rather intimately the practitioners in his field, I would list those motivations in the choice of materials, products and equipment as: (1) a deep-rooted desire to be a fine designer; (2) an impelling urge to be a technical expert; (3) a basic need to contribute to social development.

These three motivations, with varying relative importance, are the reasons boys go to architectural schools. And they exist, again with varying emphasis, in the famous designer, the technical researcher, the general community practitioner and the big-business operator. Obvious? Of course; and yet how many advertisements in this issue of P/A, I wonder, are based on studies of (1) what the architect wants today for what he considers good design; (2) what technical reasons would impel him to recommend a given product to his client; (3) what valid social contribution (in price, speed, better planning, better space use, or other assists) does the product allow the architect to pass on to the community?

Any one of these three subjects would make a fascinating study "in depth" for a manufacturer. Let's mention just a few of the possible avenues to be explored:

**Design.** Here you would have to go beyond the superficial "let's show pictures of well designed buildings in our ads" to such questions as basic standards in architectural esthetics vs. fads, styles, fashions, and clichés. One material may be used because it is innately a good architectural material, by tradition, association, solidity, dignity, texture, color, or other timeless value-measures. (Good building stone might be an instance.) Another product might have a more topical, evanescent, fashionable appeal: it fits well with current design clichés. Should it be promoted this way? Or should an attempt be made to translate its qualities into more basic, permanent terms? Glass profited from the early solar-house design concepts; it remains today an improved basic design component.

And speaking of components, what would a study show about use of materials in the modular-assembly approach to design (see next month's issue of P/A)? vs. the interest in forms and shapes, plasticity and broken surfaces (see last January's issue of P/A and, probably, next January's publication of Design Awards results)—Illinois Tech vs. Ronchamps; Runshult vs. Yamasaki; last year's Philip Johnson vs. this year's Philip Johnson? Lucky the product that can fit both concepts. They do exist, because the folded slab can be modular; Candela's umbrellas can be prefabricated; and if anyone really wanted to, he could mass-produce the finials on Paul Rudolph's Wellesley job.

Are manufacturers not interested in this approach? Well, I can remember when the curtain wall was too esoteric an idea for any but a few producers to be concerned. And never forget that the architect who "isn't interested in these abstract design matters"—the practical, feet-on-the-ground man—is really eating his heart out to be up there with (or just a few months behind) the design leaders.

**Technics.** The studies that need to be made in this area are obvious, and of course much research is under way. It would be interesting, however, to translate it into terms of specification motivation. It seems clear that a product cannot appeal today just because it works (as bricks form walls which bear loads); it must work in a calculable manner, demonstrably performing functions which can be measured (as brick manufacturers can demonstrate thermal and acoustic factors, modular adaptation, and controlled manufacture). For instance, it is no longer enough for a material to provide "insulation"; architectural specifiers will be attracted to it on the basis of comparative technical details of design and engineering results.

Obvious again? Sure! But, again, I wonder how many advertising appeals in this very issue are couched in "technical" terms so vague—so obvious—as to have no appeal whatsoever to today's architect.

**Social purpose.** I doubt whether the general public realizes at all that architects are strongly motivated by a desire to produce more and better socially useful structures. And the producers who want to persuade architects to specify deserve to be included in the general public if they consider this a long-hair approach. Architects want more commissions for purely business reasons, of course. But they are also interested in materials, methods, and systems which will help solve the need for more schools, better hospitals, adequate housing. To illustrate with some obvious examples: Victor Gruen is deeply concerned about downtown congestion; Chuck Goodman really worries about the low-cost house problem; Isadore Rosenfield is seriously interested in better health care; John Lyon Reid is as much involved in the problem of space for education as any educator. And there are thousands of others, not so well known, not as often publicized, who are equally concerned with these problems.

In this area of motivation, specifications result when a producer can demonstrate (a) economic contributions, so that primary cost or speed in erection can help the designer help the community get more classrooms, for instance, or (b) a more productive use of space so that, as an example, a school classroom can adapt itself to changing theories of education.

Today's architectural man is not a simple person. He deserves to be understood, not be understood as a designer, a technician, and a molder of the environment, with motivations as complex as they are reasonable.

*Harold W. Langdon*