Aluminum on the Skyline

ALCOA invites your attention

to a new order of utility, economy and beauty

in twentieth century building construction

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ALUMINUM COMPANY OF AMERICA • PITTSBURGH 19, PA.
Before We Step Inside

This, in simple words, is the story of a building—a very special building that has as yet no counterpart in the world.

The 410-foot Alcoa Building is a thirty-story demonstration of aluminum’s architectural usefulness, economy, and beauty. Some of it is innovation. But by no means all. The majority of its light metal components—ranging from exterior walls to reversible windows, from electrical wiring to thousands of pounds of interior trim—are time-tested applications showing aluminum to be at once practical and economical in almost every phase of building construction.

Rising impressively in the heart of Pittsburgh’s Golden Triangle, it is the fruition of planning supported by many months of laborious designing and field testing. The end product of these labors—an aluminum-sheathed skyscraper of unmatched beauty and utility—is dramatic proof of aluminum’s acceptance by the building trades. It serves further as a milestone in the growth of a Pittsburgh-born company and a major American industry.

You are cordially invited to be our guest through the following pages on a guided tour of this building of tomorrow. You’ll see why architectural aluminum was able to save precious man hours and materials, reduce interior and exterior maintenance costs to a minimum, usher in a whole new concept of multistory design and construction. You’ll see how the building’s double-glazed aluminum windows are reversed to permit cleaning from inside. How an aluminum panel radiant ceiling heats offices in winter, helps cool them in summer. How exclusive use of aluminum wiring distributes power less expensively than traditional materials. How thin, weather-tight curtain walls increase usable office space while retaining their ability to withstand high wind loads.

Literally a thirty-story “showcase” of aluminum construction innovations, the Alcoa Building goes far to confirm a statement made more than a decade ago by the editors of LIFE magazine. They said: “Light, strong and versatile, aluminum is, by all odds, the theme metal of the 20th century.”
down. More uses were found for aluminum as an ideal architectural metal... for windows, roofing, sills, thresholds, building hardware, store fronts, gutters and downspouts, spandrels, foil for insulation, and a score of other products.

Alcoa, meanwhile, was expanding. Offices which had easily accommodated its Pittsburgh headquarters personnel soon became overcrowded. More and more office space was leased in metropolitan Pittsburgh, until, shortly after World War II, the Company was occupying space in eight buildings in the Golden Triangle.

All over America, scores of buildings were by then utilizing aluminum in one way or another. In New York, the Empire State Building presented a bright new face in the architecture of the Eastern seaboard with more than 6,000 aluminum spandrels, store-fronts and ornamental trim. In Cincinnati, the city's giant Union Terminal was re-roofed with 65,000 pounds of aluminum. On thousands of farms all over the land, barn roofs, outbuildings, silos, and even the farmhouses themselves, were donning corrugated aluminum roofs, made competitive with traditional roofing materials by the tremendous expansion of aluminum rolling facilities during the war years.

Then, in 1948, Alcoa dedicated a new sheet and plate rolling mill at Davenport, Iowa—world's largest at the time. It was an aluminum project from the very beginning. Literally miles of insulated aluminum siding, window sash and aluminum roof decking were utilized on mill buildings. Thousands of feet of electrical wiring and conduit were installed. And the modern, 4½-story administration building at this Midwestern works was sheathed with 962 cast aluminum panels, fitted snugly into place over the building's lightweight steel frame. The Davenport Works administration building was, in effect, a "pilot" skyscraper—built to prove beyond further doubt the economy, durability and architectural versatility of aluminum. Principles of design tested
there, coupled with an outstanding record of performance, paved the way for Alcoa’s spectacular home office building in Pittsburgh.

Early in 1949, Alcoa acquired the old Nixon Theater site in the heart of Pittsburgh’s Golden Triangle. The existing building was razed and land cleared during the months of May, June, and July, 1950. Bordered by a corrugated aluminum barricade during the demolition phase, the site was literally an Alcoa “proving ground.” It soon became one of the liveliest corners of downtown Pittsburgh.

A spectators’ gallery, erected on the corner of Sixth Avenue and William Penn Way, permitted scores of standees to evaluate daily progress of excavation and foundation work. An illuminated “shadow-box,” which featured an artist’s rendering of the completed building and described many of its aluminum components, was installed midway along the Sixth Avenue fence. Bulletin boards posted up-to-date news photographs of the construction work.

During the noisiest period of erection, blotter cards were distributed to building occupants nearby, regretting the unavoidable racket and inconvenience to future neighbors.

The Alcoa Building was a local showpiece from its very inception, and Pittsburghers proudly pointed to the site and the 410-foot wonder that was soon to rise from orderly confusion.

Plans—embryo to execution

PLANNING A MULTISTORY OFFICE BUILDING is no simple matter. Planning one in aluminum on a 30-story scale involved a long and painstaking period of gestation. Hundreds of design and production problems had to be worked out. And Alcoa was confronted with a problem few building designers have experienced—namely, finding manufacturers to design and construct for the first time many new building components in aluminum.

A few basic requirements had been decided upon before even the earliest plans were made. The building would be sheathed with weather resistant aluminum—be it castings, sheet or extrusions. Its aluminum windows would be cleaned from the inside—eliminating this hazard of building maintenance on all floors above the lobby. All thirty business floors would be heated and cooled from the ceilings. Finally, the skyscraper’s curtain or exterior wall—completely weather-tight without calking—would, by its thinness, make available much more usable office space within the building’s outer walls.

These early plans called for the erection of a 30-story office building containing slightly more than 300,000 square feet of rentable floor space above the lobby floor. Alcoa’s own general offices would occupy all floors of the building from the sixth to the thirtieth, inclusive. Lower floors would be made available to other tenants, and

Making way for the new! Mae West bowed out when building wreckers began.
parts of the lobby floor would be rented for store occupancy.

Another requirement called for the building to be set back about 14½ feet from the lot line on one side, about eight feet from the property line on the other. The building’s designers thus provided for more light and air around the building, at the same time allowing for future widening of William Penn Way. Meanwhile, the plan permitted the planting of colorful shrubs and flowers along two sides of the lot.

Scores of tests for a lightweight, fireproof curtain wall, radiant ceilings, reversible windows and more than a dozen other building elements were accordingly carried out by Alcoa, its architects, its consulting engineers and its general contractor. A two-story mock-up of the building was erected in Astoria, Long Island, where tests for strength, exposure and other qualities were made. A half-dozen reversible windows of various types were hand-fabricated by several window manufacturers and tested for weather-tightness, operating efficiency and resistance to weathering. The “Climatometer” laboratories at Pennsylvania State College were retained to make sure, by hundreds of readings, that this wall construction would be resistant to the severest extremes of temperature and humidity.

Alcoa’s Aluminum Research Laboratorites at New Kensington, Pennsylvania, provided valuable data through experiments with radiant-heating ceilings. From the foregoing, as well as from a number of similar laboratories and test centers, design data on America’s most extensive aluminum skyscraper began taking shape.

Literally dozens of designs for the curtain wall panels were submitted until a 6’ x 12’ aluminum section, mechanically stamped from ½-inch aluminum sheet, was finally decided upon and placed in production. A few experimental panels, fashioned with the architecturally pleasing, inverted-pyramid pattern eventually adopted, were mounted atop one of the building’s at Alcoa’s New Kensington Works for observation. Special problems involving color, design and installation were finally worked out by a specially appointed building committee.

Reversible aluminum windows, fitted with a special inflatable (and readily replaceable) rubber gasket for weather-tightness, were meanwhile subjected to the mechanical tortures of a “rain room” to measure their resistance to leakage in winds approaching hurricane force.

Drawing upon past experience and dozens of new tests, Alcoa and its architects were thus able to hurdle most of the design and performance obstacles posed in the erection of the Alcoa Building. By the time actual construction work began late in 1950, practically all of the most worrisome problems had been attacked and solved.
Foundations

Whereon to stand

PRELIMINARY FOUNDATION WORK at the 100 x 192 foot building site involved 17 core borings probing to a depth of 120 feet. Open caisson concrete piers were installed, reaching down 90 feet below street level. Steel sheeting was then pile-driven around the lot boundaries to enclose the building site completely. To the casual observer, the Alcoa Building’s foundation work was not unusual. To the trained engineer, however, there was a significant difference: foundation piers were smaller, and consequently less expensive, than in typical foundations, owing to the lighter weight they would be required to support. Foundation piers were “belled out” at the bottom, and designed for a maximum allowable bearing of 25 tons to the square foot.

Busiest corner in downtown Pittsburgh was this Sidewalk Superintendents’ Gallery, future site of Alcoa’s big tower.

The load on a typical exterior column pier of the building was 2,200,000 pounds. If the building had been constructed with standard masonry walls, in contrast, this load would have been increased to 3,037,000 pounds.

From this maze of lumber and concrete, an ultra-modern, aluminum-sheathed skyscraper will grow. Foundations and framing of the building were shallower, lighter, because of its thin curtain wall.
Structural Frame

There can be little doubt that Alcoa's new office building—for all of its 30 stories and its ample factors of safety—is the lightest for its size ever built. Its relatively thin curtain wall permitted—in the very beginning—a sizable weight saving in its structural steel frame. Only 6,500 tons of steel were used—a 30 per cent to 50 per cent saving over the heavier structural framework required for a traditional masonry building.

Beams and columns were strongly wind-braced, since the main tower is tall and relatively narrow. Structural members were materially lighter than those used in traditional buildings (a radical and economical departure from most office buildings whose walls measure from 18 to 40 inches in thickness). For example, the nearby Gulf Building, only seven stories higher than the Alcoa Building, with an equivalent rentable area above the first floor, employs almost twice as much structural steel in its frame.

Begun in February, 1951, the Alcoa Building's aluminum painted steel frame was "topped off" in late August of that year. The main tower is 64 feet wide and rises, without setbacks, to a height of 410 feet above the sidewalk level on Sixth Avenue.

Lightweight foamed concrete was used to fireproof the building's columns and spandrel beams, as well as floor slabs in the core or service areas of the structure. The fireproofing process closely followed the riveting of the building's frame. Light gauge cellular steel flooring in the office areas was installed almost as soon as steelwork for each floor was completed. And the concrete floor fill over subflooring, used for office areas outside the building core, was poured soon after the structural frame was erected.

Thirty-one stories of framing now completed, the building's spandrel beams are ready to receive lightweight aluminum panels.
Aluminum Dress for a Skyscraper

WHAT SETS THE ALCOA BUILDING farthest apart from its contemporaries...what makes the towering, 30-story structure truly an aluminum skyscraper...is its distinctive "curtain" or exterior wall. Certainly it is the building's most striking feature and one that bids fair to establish a trend in metal facing for office buildings of the future.

The building is sheathed in a continuous run of aluminum panels, 3/8-inch in thickness, which were mechanically stamped in a huge hydraulic press. Individual panels measure roughly 6' x 12', the top half containing a 4'2" x 4'7" cut-out for the insertion of a reversible, aluminum-framed window. The bottom of each panel is depressed into an architecturally pleasing, inverted-pyramid pattern about seven inches deep. While providing some rigidity to the aluminum skin, the pyramid design was mainly specified for aesthetic reasons, since the panel, if desired, could have been fabricated in almost flat form to save six or more inches of wall thickness.

No one had ever attempted the stamping of aluminum panels of this great size. After Alcoa designers talked with production men at Pullman Standard Car Manufacturing Company in Hammond, Indiana, Pullman experimented with modified equipment, and preliminary production runs were made. Alcoa's distinctive lightweight curtain wall was the result.

From Hammond, the panels were shipped to the Stolle Corporation at Sidney, Ohio. Here they were given an electrochemical finish, to build up aluminum's natural oxide coating. A silicon-bearing alloy liner in the sheet itself, combined with this anodizing process, gave them a permanently iridescent gray color.

From Sidney, they were shipped to a Pittsburgh warehouse where window frames were installed,

A special electrochemical bath builds up aluminum's tough oxide coating, gives panels iridescent gray color, greater resistance to atmospheric corrosion.
thence to the building site, where they were stored on each floor until ready for installation.

Before attaching the panels to the building frame, metal clip angles were first bolted to the spandrel beams. Then, the one-story-high panels being lowered into place from the floor above, they were quickly bolted to the angles. Once this procedure had been worked out on a few floors, installation went ahead rapidly. Panels were shimmed into final position by screw jacks. Holes had been drilled in the flanged sides of the panels, enabling workmen to bring panels into proper elevation with a minimum of delay.

Once the aluminum “skin” had been properly anchored to the spandrel beams on each floor, erection crews moved upward. Panels were engineered so that no taping or calking of joints was required—a costly maintenance factor in masonry buildings. Flanges of panels were designed so that a four-way labyrinth excluded all rain penetration. Structural steel columns were covered with smaller, 27-inch-wide panels extending from floor level to floor level at 20 foot intervals around the perimeter of the building. Separated from its back-up wall, the thin exterior wall design permits circulating air to help carry off water vapor that may penetrate from the interior of the building.

No expensive scaffolding was required to install the Alcoa Building panels; all installation was effected from within the building. Floors were quickly and completely enclosed without delays occasioned by bad weather. Thanks to their relatively large size and few joints, panels were installed in a fraction of the time required for “wet” or masonry construction that must be built up laboriously piece by piece. And calking of joints was eliminated once and for all by the joint design. The inner “back-up” wall of the building (except for window openings) extends in an uninterrupted plane from column to column, beam to beam.
Reversible Windows

Safe, easy cleaning

Cleaning poses no problem with this double-glazed, reversible window. It's done safely, rapidly, from within the building.

Ever watch a human fly hang from a high perch and wash a skyscraper's windows from the outside?

Maintenance men in the modern Alcoa Building will never have that hazardous experience. At the very outset of design work on the structure, one rigid specification was established: windows would be designed to pivot so that they could be washed from within the building. Collaborating with its architects and window fabricators, Alcoa engineers came up with a window innovation that has already proved its practicality on other new buildings under construction at this writing. It's so simple, so foolproof, that people rightly wonder why someone didn't think of it a long time ago.

Windows of the Alcoa Building are set directly into the curtain wall panels, measure 4'2" wide by 4'7" high. Frames were fabricated from aluminum extrusions, anodized in a natural color finish which provides a pleasing contrast to the medium-

Aluminum-framed windows were glazed after wall panels had been installed. Blue-green outer pane restricts harsh sun rays.
This full color drawing shows working elements of reversible aluminum window. Rubber gasket is recessed in center of aluminum frame. When inflated by special pump to 30 pounds air pressure, it provides complete, weathertight seal.
Windows were laboratory-tested to withstand driving rain, winds of gale force. All of them pivot for cleaning on vertical axis.

Y-shaped tool deflates rubber gasket in window core so that it can be reversed. After cleaning, tube is inflated to 30 pounds pressure. Key at right locks window.

Natural rubber tube inflates like bicycle tire to provide weather-tight protection. Tubes can be replaced without removing window.

gray patina of the curtain wall. Sash is double-glazed, a job that was done after each panel was permanently bolted in place.

Pivoting on a vertical axis a full 360 degrees, the window is designed to be washed from within the building without recourse to outside hooks, safety belts or precarious perches. Window corners are rounded to simplify the cleaning task. The exterior pane is heat-absorbing, glare-reducing plate glass, measuring ¾-inch thick. Then comes a ½-inch sealed air space and finally a pane of clear, ¼-inch thick plate glass.

Ingeniously recessed in the frame’s outer edge is a long-lived but replaceable natural rubber gasket which is inflated to a pressure of about 30 pounds, much like a bicycle tire. Window cleaners’ carts are equipped with a “Y”-shaped tool connected by rubber hose to a portable compressor which deflates and inflates window gaskets before and after the cleaning operation.

A special key unlocks the window, locks it again after cleaning. And, since the building is completely air-conditioned, windows need be opened only for cleaning. Designed to withstand all the weather extremes of a northern winter, the reversible windows have already undergone accelerated tests against driving rain and winds of hurricane force. No leakage, structural damage, or moisture penetration has resulted.
Outer wall is shown shimmed to proper elevation. Air space between inner, outer wall will carry off any moisture which might form between the two.

Wall Behind the Wall

As novel and as practical as the Alcoa Building’s aluminum sheathing is the structure’s fire-rated back-up wall. Not a conventional inner wall in any sense of the word, it is a thin, self-supporting, lightweight barrier to fire, sound and heat loss. Made of perlite, a special lightweight concrete, it was built up in a series of four one-inch layers, or passes, by a plastering machine. Erected from within the building after the facing panels of aluminum were installed, the back-up wall was literally “sprayed” into place.

First, slotted aluminum lath was set up as a form to receive the lightweight concrete inner wall. Metal reinforcing bars were simultaneously put in place. Next, a four-man crew sprayed perlite concrete from a pneumatic nozzle onto the aluminum lath, after having first masked out window areas. Four separate, one-inch-thick passes were made on the walls, the perlite hardening after each application before the next layer was applied. Experience soon showed that three of these four-man crews were able to complete back-up walls of the building at the rate of about four floors a week.

Slotted aluminum lath (left) is installed as form for 4-inch perlite concrete inner wall. Metal reinforcing rods provide rigidity for back-up wall.
Experimentation with numerous "back-up" materials revealed perlite to be the most satisfactory for the job. It was light in weight, gave excellent thermal insulation, was highly resistant to fire and sound transmission, and possessed surprisingly good strength for its weight. Tests showed the perlite concrete back-up to have an average strength of about 2,000 pounds per square inch. Finally, it was designed to withstand a four-hour fire test, more than twice the requirements of Pittsburgh's notably stringent building code.

Total weight of the Alcoa Building's installed back-up wall is only 66 pounds to the cubic foot, less than half the weight of traditional building construction. The mix called for one cubic foot of cement, 3½ cubic feet of perlite, 8½ gallons of water and an agent to reduce viscosity. After being mixed in a rotating drum, it was sprayed under pressure onto the slotted aluminum lath by a special machine.

It is significant that the total weight of Alcoa's complete wall—3½-inch aluminum sheet exterior panel, an air space, aluminum lath, a 4-inch thick slab of perlite back-up material, furring and plaster—was only 35 pounds to the square foot. Compare this with numerous studies of standard wall construction weighing up to 150 pounds to the square foot or more and you can readily understand the building's claim as the lightest for its size ever built.

If the Alcoa Building had used conventional masonry construction, it would have weighed in at an additional 10,340 tons!

Plastered, painted wall gives clean appearance, unbroken by columns, radiators, or other appurtenances. It measures slightly more than a foot thick from aluminum skin to painted interior.
Cross section of Alcoa Building's lightweight curtain wall is reproduced here in full color. Note separating air space between aluminum panel and perlite back-up wall. Stamped aluminum panels are attached to metal brackets shown in center of picture.
Basis for heating and half the cooling of building are these 1/2-inch aluminum ceiling grids through which hot or cold water is circulated. They're suspended from turnbuckles in plaster ceiling.

**Twelve Months of May**

Perforated aluminum pan (above) measures one by two feet, clips to aluminum pipe.

This 625 ton capacity compressor in basement (left) pumps water to Alcoa Building's rooftop cooling tower.
ONE OF THE BIGGEST INNOVATIONS in the Alcoa Building, and the first major demonstration of its kind in this country, is the unique overhead radiant heating and cooling system in the ceilings of the structure.

Save for machine rooms and odd spaces, the building is heated and partly cooled by a network of aluminum piping which heats or cools thousands of ceiling "pans." This ingenious system provides all of the heat needed in winter, and at least half of the cooling required in the hottest summer months.

Suspended to proper elevation from the main ceiling on each floor is a series of 6' x 12' grids of aluminum pipe into which hot or cold water is circulated, depending on the season. These grids, comprised of 3/8-inch aluminum pipe welded to headers on 1-foot centers, are supported by a turnbuckle-leveling system which holds them precisely above ceiling level. All connections are fitted with flared-type joints.

Attached to the ceiling grids are a series of aluminum radiant panels, measuring 1' x 2' and .040-inch in thickness. An integral part of the
How an office is heated and cooled from the ceiling is graphically shown in this cutaway drawing. Water is circulated through aluminum piping grid and heat (or cool air) transmitted to perforated aluminum pan, thence to room.

ceiling, they're clipped to the \(\frac{1}{2}\)-inch aluminum pipe by a simple, continuous-type grid. Purely for acoustical reasons, 90% of the area of each aluminum panel is perforated and a \(\frac{3}{4}\)-inch semirigid blanket of glass fiber insulation placed atop the ceiling grid. Almost three-fourths of the ceiling area of the entire building is taken up by these radiant-heating-type aluminum grids; the remainder of the ceiling area contains flush-type fluorescent lighting fixtures, air diffusers, return air grilles and access panels.

Recessed lighting units form a part of the ceiling's radiant surface and are in direct contact with the grid pipes.

Since no radiators, pipes, cabinets, heaters or other types of along-the-wall air-conditioning units are used, approximately 15,000 square feet—the equivalent of one-and-a-half entire floors of space—were gained in usable floor area by employing this radiant ceiling system.

In summer, the Alcoa Building's main source of cooling and dehumidification are two motor-driven refrigerating machines located in the basement. This equipment operates with condensing water chilled in a huge aluminum cooling tower atop the building. A sort of central "refrigerator," the tower chills water pumped to air-conditioning units on each floor.
True Ventilation

Closely tied to the radiant heating system in the new building is its air-conditioning system which requires only about one-half the output of conventional ventilating systems. Designed to take care of all dehumidification in summer, it also handles all required humidification in winter. Since it works hand in hand with the radiant ceiling, it performs what engineers refer to as "true ventilation" with only about half the facilities needed in most large building systems.

Basic source of cooling and dehumidification in the building are two electric, refrigerating machines, operating with condensing water chilled in a huge aluminum cooling tower on the roof.

Radiant heating and cooling systems on each floor are subdivided into four "zones," each separately controlled. Three of these zones handle exposed surfaces of the building. The fourth handles all interior spaces. Fresh or "primary" air is supplied to each floor from one of three fan rooms,

Sun's heat bounces off aluminum cooling tower, largest of its type ever constructed.
Cooling water is circulated from tower to electric refrigerating machines in basement.
Through this aluminum air diffuser, cool, dehumidified air is fed to individual offices. Circulated air, drawn off through aluminum grill in background, is regenerated, used again.

Exclusively aluminum, the Alcoa Building's air distribution system (effectively combined with panel heating and cooling from the ceiling) does a more efficient job in less space. Located in the basement, on the 14th floor, and in the utility penthouse. Half of this primary air is drawn from outside the building through both electrostatic and mechanical filters which remove pollen and dust particles. Half of the remainder consists of "reconditioned" air withdrawn from occupied areas by return-air fans, deodorized by activated-carbon absorbing equipment and filtered to render it suitable for re-use. The remaining 25 per cent is recirculated room air. All air in the air-conditioning system is, of course, automatically cooled and dehumidified in summer or warmed and humidified in winter.

Potential savings showed up in the use of both the radiant cooling and air-conditioning system in the building. Size and cost of local supply ducts, local return ducts, fans, filters and coils were reduced in the combined system. Floor areas required for local fan rooms and ceiling spaces required for trunk ducts could be and were substantially cropped. And, by using local fan and local return air systems, air "delivered" to the various floors from the primary fan rooms has been reduced about 40 per cent of what it would
be if all of the air were handled from central fan rooms.

Zoning of panel heating and cooling systems by floors and the horizontal distribution of water on each floor, precluded the installation of piping and ventilating trunks around the outside walls of the building. Together with the elimination of all heating and air-conditioning equipment under window areas, the building benefits through an additional gain of "usable" floor area.

Lobby stores, elevator machine rooms, basements and other areas in the building are equipped with conventional air-conditioning systems suited to their own layout. The 4½-story main entrance is heated, for example, by a radiant floor plus warm air "piped in" near glass surfaces. Black and white striped concrete sidewalks surrounding the building on three sides are provided with embedded snow-melting coils, use hot water containing a hydro-carbon antifreeze to keep these broad walkways clean and dry during rainy or snowy weather.
Aluminum Carriers for Kilowatts

PROBABLY NO BUILDING in the world has used aluminum so effectively and so economically in its electrical systems as the Alcoa Building. Five features in the electrical design are brand new and unique to skyscraper construction. They include: (1) exclusive use of aluminum conductor; (2) exclusive use of rigid aluminum conduit; (3) dual low-reactance riser buses; (4) use of all-aluminum lighting fixtures, designed as an integral part of the ceiling panel heating and cooling system; and (5) a lighting system so designed that it can readily be modified to meet changing office arrangements and provide a high lighting level of 35 to 50 foot candles intensity.
The Alcoa Building is the first major structure to make exclusive use of aluminum wiring and a newly designed aluminum bus (or electrical distribution) circuit which replaces traditional copper bus. Made of extruded aluminum, the aluminum bus feeders (there are two) rise vertically through the building core like taut lifelines. These arteries are tapped for electrical power at each floor. Main feeder buses are triangular in shape, made up of three separate sectors. Electrical designers claim that higher voltage efficiency is possible this way than with the traditional flat-type buses. In total, the twin 400-foot high risers have scarcely half the weight of comparable copper buses. Installation was quicker since aluminum buses are considerably lighter and easier to manage.

Chief among the advantages of the aluminum buses, in addition to their economical design features, is that either riser can be switched off and isolated from the other by placing an extra-heavy rubber curtain between the two. This makes it possible for electricians to service either bus without shutting down vital electrical power in the building.

Artist's drawing shows end view of extruded aluminum sector bus. Two of these low reactance buses (completely separated electrically) serve building.

Looking down on main switchboard, photo shows extensive use of aluminum busbars and connections.

This vertical run of aluminum sector bus in building shows tap connection to light and power panels.
Four aluminum terminals of 4,000 ampere circuit-breaker are shown ready to receive six aluminum cables each from main power transformer.

Insulated aluminum cables and terminals in top of picture are shown supplying power to 650-horsepower refrigeration compressor, located in building's sub-basement.

Aluminum cable is shown connected to common ring bus. Connections are made through T-connectors and limiters.

Aluminum compression terminals were installed on insulated aluminum cable by hand-operated compression tool in bottom foreground.
A study in aluminum is this intricate network of large-diameter aluminum pipe.

Aluminum Plumbing, Too

Admittedly an innovation, the aluminum piping in Alcoa’s new building incorporates some established doctrine along with many new and a few hitherto untried applications in the plumbing field. About 60 per cent of all piping in the 30-story structure is aluminum. It is used, for example, for all domestic water supply piping, risers to toilet rooms, and for many of the valves and fittings in the gigantic network of plumbing installations throughout the building.

Anticipating the day when aluminum piping will become useful in all phases of plumbing, Alcoa engineers specified aluminum pipe wherever prac-

Dramatic photograph shows workman welding two sections of aluminum pipe by the heliarc method.
Aluminum pipe connections in the plumbing system are either welded or have flanged connections. They’re joined by heliarc welding. Piping work in the building was accomplished without undue difficulty, in spite of the fact that Alcoa’s building is the first to utilize aluminum piping on such a large scale.

Designers of the Alcoa Building found aluminum piping materially less expensive than copper. Once data is accumulated on the performance of aluminum piping in the Alcoa Building over the next several years, it will serve as a valuable guide for proposed commercial installations in all parts of the world. As with many pioneer applications of aluminum in the building trades, plumbing will not win widespread acceptance until valves, fittings and vital plumbing accessories are themselves available in aluminum. The day this happens, it would appear, is not far off.

Hundreds of valves and other plumbing hardware in the Alcoa Building’s system have been fabricated from aluminum.

tical and economical. A “sacrificial” aluminum pipe fitting is used throughout the building where aluminum and copper pipe are used in combination. For example, aluminum pipe ends just before flanged water valves on many fittings. At such junctions, a special gasket is placed between flanges and around bolts, and this gasket acts as a barrier to electrolytic corrosion at the joint. In such connections, further, a 13-inch long, thick-walled section of almost pure aluminum pipe is inserted between the valve and dissimilar metal pipe. Aptly named a sacrificial joint, it acts as a magnet to attract electrolytic current away from the aluminum and dissimilar metal pipe and thus limits possible corrosion to itself. There are more than 650 of these protector pipe inserts in the building, all accessible for easy replacement when necessary.
Take A Tour With Us!

SHEathed in its gleaming aluminum facing, the Alcoa Building’s 4½-story main entrance stands in striking contrast to the entries of most modern office buildings. Constructed from the top down, its weight is supported by two huge cantilever beams which jut out from the main tower at the fifth floor level. Six hundred twenty-four large sections of double-glazed plate glass, treated to subdue harsh sun rays, are held in place by aluminum...
covered mullions anchored at the lobby floor line to prevent horizontal movement.

The modern main entrance was intentionally separated from the building so that the clean, unbroken lines of the 410-foot-high aluminum tower could be preserved.

A tunnel to the underground parking garage in Mellon Park across the street will ultimately connect the building with the garage and sublevel entries to other buildings surrounding the park area.

An aluminum roof, aluminum swinging and revolving doors, sills, thresholds, ornamental trim and coping are generously used in the main entrance. Aluminum terrazzo stripping and Alcoa’s distinctive shield-shaped insignia are inlaid in its striped black and white marble floor. Granite planting boxes, fountains and trim accentuate this eye-catching demonstration of ultra modern decor which combines aluminum with tinted glass and rose-colored marble.
An arched, aluminum-sheathed passageway leads from the main entrance to the lobby proper. Again, continuous aluminum panels, extruded in eight-inch wide sections, are installed on wall areas along the corridors to preserve the light, modern effect evident throughout the entire building. Entrances to lobby stores and display windows are tastefully fabricated from aluminum extrusions, as are ornamental trim, moldings, baseboards and store hardware.

Ceiling of the main lobby is another decor highlight. It consists of relatively thin, natural-finish aluminum extrusions which support a woven mesh of aluminum bars with translucent plastic panels and cold cathode lights above. The extrusions contain supply and return grilles for the lobby air conditioning. Lobby columns and walls are faced with pink-gray Norwegian Rose marble in a dull-honed finish. Blue Belge marble, one of the hardest varieties in existence, is combined with white Vermont marble for all lobby flooring.

Two elevator banks serve the building. One, with six cars, handles traffic from the lobby to the fifteenth floor. The other, with eight cars, operates from the sixteenth to thirtieth floors. All elevators are richly styled with aluminum doors, cab interiors, controls, hardware, and trim. They’re lighted with fluorescent aluminum fixtures, installed above an aluminum egg-crate style ceiling. Automatically controlled, the two elevator banks are designed to handle more than fourteen hundred Alcoa employees and building tenants without congestion during peak traffic periods.

Illuminated elevator signs, name plates, building directory, telephone booths, doors, thresholds, sills, and other lobby accessories are also attractively styled in aluminum.

In a structure as completely modern as the Alcoa Building, traditional office furnishings have given way to strikingly attractive modern decor. Business floors are covered with sage green and textured green wall-to-wall carpeting. Even the corridors have been carpeted to enhance beauty, deaden noise and handsomely set off the extruded

Marble floors, columns blend richly with aluminum extrusions in low rise elevator lobby which serves first through fifteenth floors.
Far walls of reception foyers on each floor are faced with Travertine marble. Opposite walls are faced with a variety of woods. Sage green carpeting, modern furnishings make Aleoa Building a “home away from home.”

This is what a visitor sees when he alights from elevator.

As with these mail chutes, aluminum is used wherever practical and economical throughout the building.

Functional Comfort

aluminum baseboards and ceiling moldings. Plastered walls are painted in light pastels of soft green, gray, brown, or blue complemented by dark, rich shades of gray, brown, green, or blue. A washable plastic wall covering on a cloth base is laminated to plaster walls of corridors and many office areas. Used in light, dark and marbled hues, it requires only mild soap and water for cleaning.

Flush-type, soundproofed doors in the building, including the thresholds which surround them, are aluminum too. Textured aluminum sheet in a pebble-grain pattern is used for door panels and a subdued aluminum finish has been employed for thresholds. Anodized aluminum door hardware, base plates and trim accentuate the clean, modern effect. Window sills in all offices are aluminum, as are venetian blinds, switch plates, moldings, glass partition framing and most of the functionally modern business furnishings.
Elevator lobbies on every floor are faced with attractively fluted aluminum, in a soft, lustrous finish. Reception foyers are furnished in the latest contemporary style by America’s leading modern designers. Imperial Roman Travertine marble, quarried from the Tiber River, is employed on the far wall of each foyer. Opposite walls are covered with walnut, oak, mahogany, teak, or rosewood. Some of these wood-faced areas are ornamented at intervals with one-inch-wide aluminum extrusions. Even the mail chutes, dumb waiters, drinking fountains, utility locker doors, and trim are fabricated from bright, anodized aluminum, requiring a minimum of maintenance.

Handsomely designed executive offices in the building are located on the 29th and 30th floors. All are richly wood-paneled and demonstrate the latest techniques of modern design. Chenille car-

Corner, administrative offices reflect clean, modern efficiency of entire building.

Executive Environment

Executive offices are beautifully, yet simply designed. This twenty-ninth floor office is comfortable, functional, in perfect taste.
Doors, hardware and thresholds throughout building are aluminum for beauty, ease of maintenance. Large drafting area (right) has excellent natural illumination.

peting in several medium and dark shades predominates. Lobbies, foyers and corridors of executive floors are carpeted with a distinctive charcoal gray chenille. Wall surfaces of reception areas are covered with polished travertine marble contrasting with opposite walls of fluted gold-colored aluminum extrusions. A five-foot-wide, semicircular aluminum staircase connects the executive floors augmenting regular elevator service and a small private elevator.

Walls of executive offices and their adjoining secretarial areas are beautifully finished in laminated woods of walnut, birch, straight-grained oak, mahogany, teak, or rosewood, according to the individual tastes of the occupants. Modern furnishings and floor-length draw draperies carry out the contemporary theme.

Penthouse floor of the building—the 31st—houses much of the service and utility equipment for upper areas. This includes elevator equipment for the high-rise elevator bank, water-cooling tower, house tanks, heating and cooling system and other service facilities.

But the penthouse is most noteworthy because of its management conference room and lounge—largest of several in the building—with its adjoining flower garden and rooftop patio.

A spectacular example of functionally modern

Some offices are provided with glass partitioning. This small conference room, one of many in the building, is paneled with light woods.
design, the conference room's entire east wall and a major part of its south wall are composed of ceiling-height clear plate glass set in thin aluminum frames. South and north walls of the 25' x 36' room are paneled in rosewood, while a large fireplace occupies the northwest exposure. The hearth and most of the north wall facing consist of polished Italian Cremo marble, beautifully highlighted with aluminum ornamental trim.

Floor of the ultramodern room is of gray St. Michael marble, quarried in the Pyrenees, on which an 18' x 28' rectangular Ecuadorian rug—similar to the one in the United Nations Building—has been laid. A large, oval conference table of polished teak, surrounded by eight modern upholstered armchairs, is located in the center of the big room. Extra-long couches, ultra-modern leather lounging chairs, end tables and lamps of contemporary design complete the management conference room furnishings.

Rooftop lounge is also equipped with a large fireplace, and contains doors leading to two separate terraces. The entire area is surrounded with small trees and plantings.

Located on the fifteenth floor—midway point for the two elevator banks, and thus the most accessible floor of the building—is the medical department. Almost a hospital in itself, its elaborate layout includes a reception room, treatment dispensary, rest room with two beds, doctor's office, two examining rooms, a laboratory, an X-ray unit and darkroom.

Fundamentally, the department is divided into two parts: the first providing the finest emergency medical care for occupants of the building; the second performing preplacement and periodic medical examinations for employees.

Employee comfort gets special attention in Alcoa skyscraper. Women's lounges on every floor contain upholstered modern furnishings, full length mirrors.

Finest medical facilities are available to Alcoa employees, building tenants. A well-staffed medical department is located on building's fifteenth floor.

Up-to-date medical laboratory is only one of several rooms devoted to preplacement and periodic physical examinations for Alcoa employees.
Modern, 71-seat theater is in constant demand for meetings, commercial motion picture showings.

For Attentive Audiences

The Alcoa Building's custom-designed, 71-seat theater is located on the building's seventh floor. Walls are covered with thin battens of selected white birch on a red birch background. Seats are upholstered with foam rubber and covered with a neutral gray mohair. Storage cabinets with concealed hinges line the east wall of the room. A soundproofed projection room from which lights and stage curtains are operated is located in the rear. The theater's semicircular, elevated stage measures 20 feet wide by 9 feet deep. Carpeted floor has a gentle slope for proper viewing comfort. Building and furnishing materials have been wisely selected to provide optimum acoustics. Adjoining the theater is a film distribution room and a rewind and film storage area.

Television outlets are located on the theater's stage, most of the building's several conference rooms and in executive offices.
Penthouse floor houses 18' by 36' management conference room, tour highlight of America's most distinguished skyscraper. Walls are faced with Italian Cremo marble, polished rosewood and floor-to-ceiling plate glass set in aluminum extrusions. Rooftop lounge and patio provide dramatic view of Pittsburgh's Golden Triangle, upriver industrial activity.
Mail distribution in the 30-story building is controlled from a centrally located mail room on the fifteenth floor. From this station, incoming mail is distributed to every Alcoa business floor by two electrically controlled dumb-waiters, set directly behind the reception desk on each floor. In one of the most efficient mail-handling systems to be found in any office building, push-button carriers can distribute mail to the top fifteen floors of the building in ten minutes, thus eliminating traffic congestion on floors and elevators. Incoming and outgoing mail sacks arrive and depart from a freight elevator which opens directly into the mail room.

Nerve center of the Alcoa Building's communications network is the company's eight position dial switchboard with its 53 central office trunks. Its facilities make direct dialing possible among an eventual 2,000 phones—700 in the Pittsburgh headquarters, and more than 1000 at the company's New Kensington, Pennsylvania Works about 20 miles away. Aside from local and inter-office calls, a monthly average of 3,000 long-distance calls are made over this board, not including calls on seven private network lines to company works locations averaging over 1,800 monthly. Local incoming calls are serviced on 22 trunk lines in sequence, and on 31 outgoing trunk lines.

Telegraph and teletype facilities are also located on the fifteenth floor of the building. The company has installed a functional manual tape relay system—first of its type in Pittsburgh—with direct
Before You Leave Us

In these pages you have followed the planning and creation of an office building that is new, startling, and remarkably rich in promise for the future. The structure introduces concepts of design, engineering, and erection that may well change the architectural face of America in the next half-century.

Let us re-examine them briefly:
Abundant supporting strength from far less massive foundations.
A lighter and consequently less expensive structural frame.
Reversible windows cleaned safely from within.
Lower labor costs, thanks to simplified installation of sectional aluminum curtain wall panels.
A continued freshness of appearance.
Greater usable floor area within, as a result of thin, weathertight aluminum panels.
Finally, sharply reduced maintenance costs, to gladden the heart of any tightly budgeted building owner or operator.

Throughout all of its thirty gleaming stories, the Alcoa Building is probably the most functional office building in the world today. We leave it to you whether it is not also one of the most beautiful. Besides demonstrating the basic soundness of aluminum as an architectural material, Alcoa’s skyscraper points up the economy of the light metal, both in initial material costs and ensuing low maintenance costs of its aluminum sheathing over the years ahead.

Magazine reprints and photographs covering practically all the building elements discussed in these pages are available by writing on your letterhead to:
Architectural Division
Aluminum Company of America
806 Alcoa Building
Pittsburgh 19, Pennsylvania
SUPPLIERS AND SUBCONTRACTORS - The Alcoa Building

ALLOYS MANUFACTURING Co.,

Pittsburgh, Pennsylvania

BAR-RAY PRODUCTS Co.,

Pittsburgh, Pennsylvania

BARKETT MACHINE CO.,

Pittsburgh, Pennsylvania

BARLOW HARDWARE CO.,

Pittsburgh, Pennsylvania

BARTLETT ENGINEERS, Inc.,

Shenandoah, Pennsylvania

BARTLETT HARDWARE & TOOL CO.,

Pittsburgh, Pennsylvania

BELL & GOSBET COMPANY,

Morton Grove, Illinois

BELL & GOSBET COMPANY,

Morton Grove, Illinois

BELL TELEPHONE COMPANY,

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BIMBA MANUFACTURING COMPANY,

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BLACK & DECKER MANUFACTURING CO.,

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BROWN & GREEN SUPPLY COMPANY,

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BUDDY ENGINEERING COMPANY,

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BUCHER ELECTRIC COMPANY,

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COLUMBIA ELECTRIC & MFG. CO.,

Cranston, Rhode Island

COMMERCIAL RADIO & SOUND CORP.,

New York, New York

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CRANE COMPANY,

Pittsburgh, Pennsylvania

CRANE COMPANY,

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CULIGAN SOFT WATER SERVICE OF PITTSBURGH, INC.

Cranston, Rhode Island

CUTLER MAUI CHUTE COMPANY,

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CUTLER MANUFACTURING COMPANY,

Worcester, Massachusetts

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Worcester, Massachusetts

DELMAR METALLIC DOOR COMPANY,

Jamestown, New York

DELMAR METALLIC DOOR COMPANY,

Jamestown, New York

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<td>Williamsport, Pennsylvania</td>
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<td>Dayton Sure Grip &amp; Shore Company</td>
<td>Pittsburgh, Pennsylvania</td>
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McCrady-Rodgers Company
Pittsburgh, Pennsylvania
Building Suppliers

W. T. McCulloch Electric Company
Pittsburgh, Pennsylvania

ELECTRICAL SUPPLIES

McDonnell & Miller
Pittsburgh, Pennsylvania
Boiler Water Feeders

McKinney Manufacturing Company
Pittsburgh, Pennsylvania

McNulty Brothers Company
Pittsburgh, Pennsylvania

Machinery Sales Company, Inc.
Pittsburgh, Pennsylvania
Moisture Regulators

Manchester Steel Company
Pittsburgh, Pennsylvania
Pipe

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Pittsburgh, Pennsylvania
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Mansfield Brass & Aluminum Corp.
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The Mercoac Corporation
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The Muller Safe Company
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Caster's Office Equipment

Murfrey Machine & Tool Company
Louisville, Kentucky
Valves

Nash Engineering Company
Pittsburgh, Pennsylvania

Vacuum Pumps

National Alkali Corporation
Chicago, Illinois

Water Treatment

National Fireproofing Corporation
Pittsburgh, Pennsylvania

Masonry

National Supply Company
Pittsburgh, Pennsylvania

Pipe

Nelson Electric Mfg. Company
Tulsa, Oklahoma

Tin Plate

The Nick-O-Lock Company
Indianapolis, Indiana

Utility Stakes

Norton Door-Closer Company
Berrien Springs, Michigan

Door Closers

Ottol-Pavaroni, Inc.
New York, New York

Concrete Fireproofing & Floors

O. T. M. Supply Company
Houston, Texas

yaw Plane

The Oregon Company
Passaic, New Jersey

Cable & Wire

Oliver Iron & Steel Corporation
Pittsburgh, Pennsylvania

Mathematical Geologic Tools

Oliver Manufacturing Company
Greenburg, Pennsylvania

Structural Metal Work

Owen-Illinois Glass Company
Toledo, Ohio

Roof Tile

The Parker Appliance Company
Cleveland, Ohio

Mechanical Engineering

Parker & Parker Company
Pittsburgh, Pennsylvania

Toilet Accessories

Parr Electric Company, Inc.
Newark, New Jersey

Electrical Supplies

Parr Paint & Color Company
Cleveland, Ohio

Aluminum Tape

Patent Scaffolding Company
Pittsburgh, Pennsylvania

Scaffolding

Patterson-Kelly Company
East Stroudsburg, Pennsylvania

Hot Water Heaters

Pawling Rubber Corporation
Pawling, New York

Nylon

Pelle Company
Brooklyn, New York

Dumbwaiter Doors

Peebles Pump Division
Food Machinery & Chemical Corp.
Pittsburgh, Pennsylvania

Fire Pump

Penn Electric Manufacturing Co.
Erie, Pennsylvania

Switchboard

Penn Electric Company
Pittsburgh, Pennsylvania

Steam Heaters

Penn General Supply Company
Pittsburgh, Pennsylvania

Heats

Penn Manufacturing Company
Washington, Pennsylvania

Heats

Penn Metal Company
Parkersburg, West Virginia

Aluminum Corner Bead

Penn Pipe Hanger Company
Philadelphia, Pennsylvania

Saddles & Rolls

Penn Southern Construction Co.
Pittsburgh, Pennsylvania

Setting Reinforcing Steel

Penna, Allison Machinery Company
Pittsburgh, Pennsylvania

Flanges

Perry Drilling Company
Pittsburgh, Pennsylvania

Core Test Boring, Concrete Drills

The Penna Industrial Suppliers Co.
Pittsburgh, Pennsylvania

Fittings

Peterson Company
Rockville, Maryland

Corporation

Philadelphia Rust-Proof Company
Philadelphia, Pennsylvania

Aluminum Finishing

James R. Pecaik and
Thomas F. Pecaik

Philadelphia, Pennsylvania

Structural Aluminum Fabricating, Inc.

Pittsburgh Des Moines Company
Pittsburgh, Pennsylvania

House Tanks

Pittsburgh Electric Supply Co.
Pittsburgh, Pennsylvania

Electrical Supplies

Pittsburgh Gage & Supply Co.
Pittsburgh, Pennsylvania

Fittings

Pittsburgh Outdoor Advertising Co.
Pittsburgh, Pennsylvania

Cold Cathode Lighting

Pittsburgh Paint & Glass Company
Pittsburgh, Pennsylvania

Glass & Glazing, Paint

Pittsburgh Plated Products Co.
Pittsburgh, Pennsylvania

Lighting Fixtures

Pittsburgh Screw & Bolt Corp.
Pittsburgh, Pennsylvania

Steel Studs

Pittsburgh Texting Laboratories
Pittsburgh, Pennsylvania

Printing

Pittsburgh Thermoline Company
Pittsburgh, Pennsylvania

Welding Rods

William Powell Company
Cincinnati, Ohio

Gauges

Price Brothers Inc.
Chicago, Illinois

Lighting Fixtures

Pringle Electric Mfg. Company
Pittsburgh, Pennsylvania

Pressure Switches

Chicago, Illinois

Fabrication of Aluminum Panels

R. C. A. Service Company, Inc.
Pittsburgh, Pennsylvania

Tubular System

Ravertor Manhattan, Inc.
New York, New York

Rubber Strip

Reining Manufacturing Company
Pittsburgh, Pennsylvania

Saw

Research Products Corporation
Pittsburgh, Pennsylvania

Air Filters

Robertshaw-Fulton Controls Co.
Pittsburgh, Pennsylvania

Expansion Joints

H. H. Robertson Company
Pittsburgh, Pennsylvania

"C" Floater

Rockester Products Corp.
Pittsburgh, Pennsylvania

Insulated Aluminum Cable

F. W. Rockstrom & Company
Pittsburgh, Pennsylvania

Water Heaters & Tanks

Rockwell Manufacturing Co.
Pittsburgh, Pennsylvania

Gate Valves

Robert W. Ryerson & Sons, Inc.
Pittsburgh, Pennsylvania

Miscellaneous Steel

S. & S. Hinge & Metal Products Co.
Chicago, Illinois

Interchanges

Safety Guard & Manufacturing Company
Pittsburgh, Pennsylvania

Safety Devices

Safety Steel Scaffolds Co.
Pittsburgh, Pennsylvania

Scaffolding

Sasco Company
Pittsburgh, Pennsylvania

Steam Traps

Sargent & Company
New Haven, Connecticut

Hardware

Sauer, Inc.
Pittsburgh, Pennsylvania

Plumbing

Schlage Lock Company
San Francisco, California

Locks

E. H. Sheldon Equipment Company
Pittsburgh, Pennsylvania

Laboratory Equipment

Shields Rubber Company
Pittsburgh, Pennsylvania

Rubber, Gaskets

A. & B. Smith Company
Pittsburgh, Pennsylvania

Instrumentation

Edward C. Skene
Pittsburgh, Pennsylvania

Temperature Control

Somers, Fitler & Todd Company
Pittsburgh, Pennsylvania

Miscellaneous Supplies

L. Sonnenberg
Irwin, Pennsylvania

Curbing Compound

Sorel Electric Company
Milwaukee, Wisconsin

Transformers

Spence Engineering Co., Inc.
Pittsburgh, Pennsylvania

Fire Fighting

Standard Day Wall Products Co.
Pittsburgh, Pennsylvania

Water Flask

Standard Floor Company
Pittsburgh, Pennsylvania

Damp proofing

The Stanley Works
New Britain, Connecticut

Hinges

The Stoll Corporation
Sidney, Ohio

Aluminum Foil

Super Bronze & Iron Company
Brooklyn, New York

Aluminum Fabrication

The John Swenon Granite Company
Concord, New Hampshire

Granite

Synco Machinery Company
Perth Amboy, New Jersey

Damp proofing

The Talbot & Ticket Company
New York, New York

Directory Board

Taylor Forge & Pipe Works
Chicago, Illinois

Flanges

Charles J. Thomas
Pittsburgh, Pennsylvania

Flanges

Thompson & Company
Oakmont, Pennsylvania

Paint

Thor Pneumatic & Electric Tool Co.
Pittsburgh, Pennsylvania

Drills

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Alcoa Sales Offices

Aberdeen, S. D. • 304 Western Union Building
Akron, Ohio • 506 Akron Savings & Loan Building
Albany, N. Y. • 90 State Street
Allentown, Pa. • 1132 Hamilton Street
Atlanta 3, Ga. • 1800 Rhodes-Haverty Building
Baltimore 1, Md. • 400 Baltimore Life Building
Birmingham 3, Ala. • 505 First National Building
Boston 16, Mass. • 20 Providence Street, Park Square
Bridgeport 4, Conn. • Atlantic Street
Buffalo 7, N. Y. • 1880 Elmwood Avenue
Charlotte 2, N. C. • 616 Johnston Building
Chattanooga 1, Tenn. • 1205 Volunteer Building
Chicago 11, Ill. • 520 North Michigan Avenue
Cincinnati 2, Ohio • 801 Enquirer Building
Cleveland 13, Ohio • 1450 Terminal Tower
Columbus 15, Ohio • 40 S. Third St. Building
Dallas 2, Texas • 301 Thomas Building
Davenport, Iowa • 503 Kahl Building
Dayton 5, Ohio • 207 Northtown Arcade
Denver 2, Colo. • 524 U. S. National Bank Building
Detroit 2, Mich. • 610 New Center Building
Evansville 10, Ind. • 320 Northwest 7th Street
Fort Wayne, Ind. • 930 Lincoln Bank Tower
Hartford 3, Conn. • Capitol Building, 410 Asylum Street
Houston 2, Texas • 1804 Commerce Building
Indianapolis 4, Ind. • 303 Guaranty Building
Jackson, Mich. • 1405 National Bank Building
Kansas City 5, Mo. • 2300 Power & Light Building
Los Angeles 14, Calif. • 108 West Sixth Street
Louisville 2, Ky. • 1152 Starks Building
Memphis 3, Tenn. • 2802 Sterick Building
Miami 32, Fla. • 1605 Alfred I. du Pont Building
Milwaukee 2, Wis. • 735 North Water Street
Minneapolis 2, Minn. • 1060 Northwestern Bank Building
Newark 2, N. J. • 744 Broad Street
New Orleans 12, La. • 627 Whitney Bank Building
New York 17, N. Y. • 230 Park Avenue
Oklahoma City 2, Okla. • 1606 Liberty Bank Building
Omaha, Nebr. • 708 Omaha National Bank Building
Peoria 1, Ill. • 725 Commercial National Bank Building
Philadelphia 9, Pa. • 123 S. Broad Street
Pittsburgh 19, Pa. • 1501 Alcoa Building
Pontiac 15, Mich. • 301 Pontiac State Bank Building
Portland 4, Ore. • 1115 U. S. National Bank Building
Providence 3, R. I. • 815 Industrial Trust Building
Richmond 19, Va. • 712 Southern States Building
Rochester 4, N. Y. • 1331 Lincoln Alliance Bank Building
St. Louis 8, Mo. • 10th Floor, Continental Building
San Francisco 4, Calif. • 615 Russ Building
Seattle 1, Wash. • 1411 Fourth Avenue Building
South Bend 1, Ind. • 805 J.M.S. Building
Springfield 3, Mass. • 232 Tarbell-Watters Building
Syracuse 2, N. Y. • 408 State Tower Building
Tampa 2, Fla. • 227 First National Building
Toledo 4, Ohio • 1801 Ohio Building
Washington 6, D. C. • 1200 Ring Building
Wichita 2, Kan. • 1011 Central Building
Wilmington 28, Del. • 301 Delaware Trust Building
Worcester 8, Mass. • 22 Pleasant Street
York, Pa. • 25 N. Duke Street

ALUMINUM COMPANY OF AMERICA

General Offices—Alcoa Building, Pittsburgh 19, Pa.