WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

PUBLISHED MONTHLY
VOLUME XXIV, No. 4

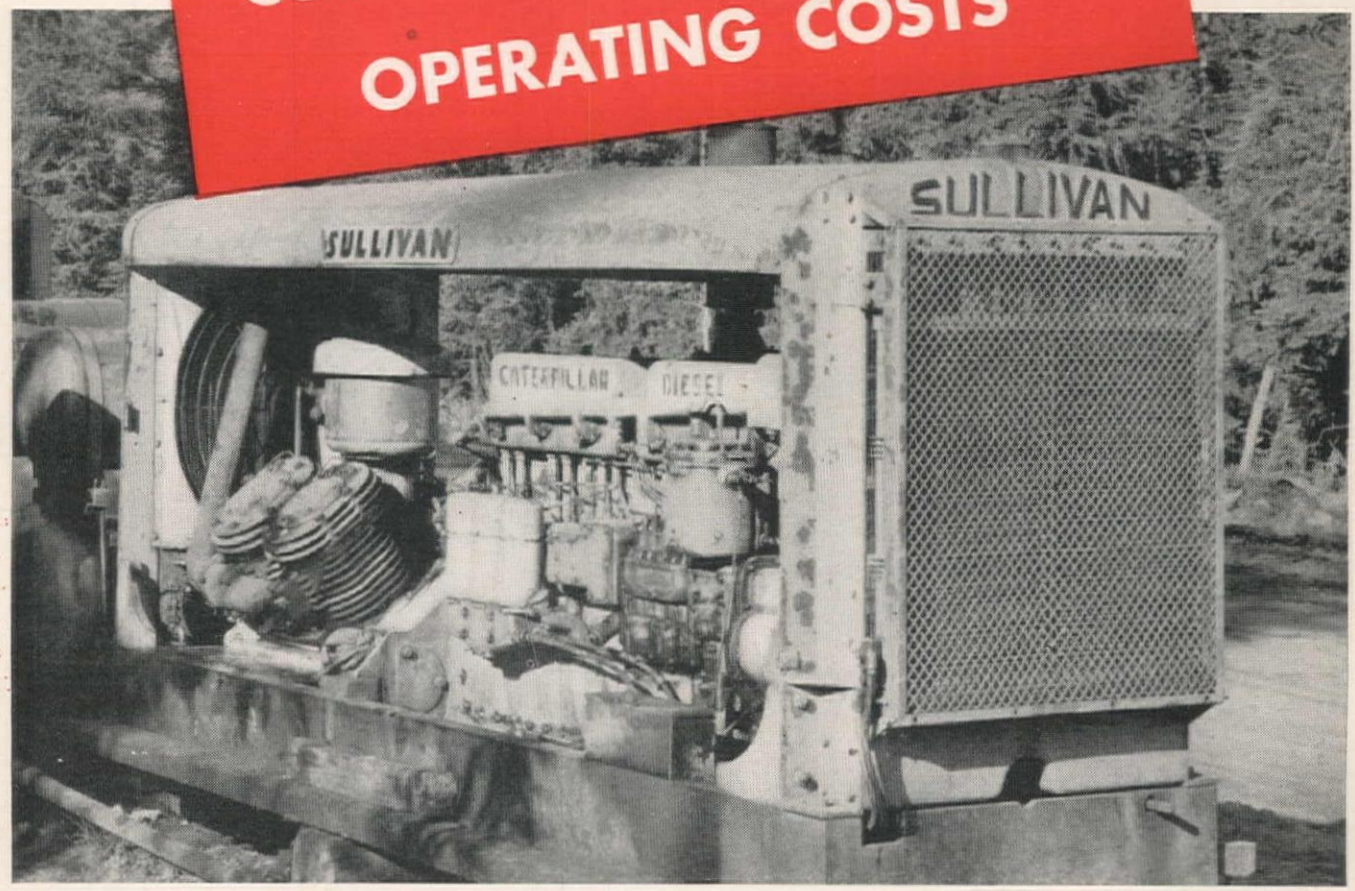
APRIL 15 • 1949

35 CENTS A COPY
$4.00 PER YEAR

A Manitowoc Speed Crane places heavy rip-rap along Southern California coast line. Here, contractor Clyde W. Wood was faced with the challenge of pushing the Pacific Ocean back 150 ft.

(Story, page 63)

CUT YOUR COMPRESSOR OPERATING COSTS



Use Texaco compressor oils and keep valves clean — pressure up

FOR compressors of every type and size, and for every operating condition, there is a Texaco oil that will keep valves clean, and assure full volume and pressure with minimum cost for upkeep.

For *normal* operating conditions, use *Texaco Cetus, Alcaid or Algol Oils*. They are highly refined, specially processed oils that won't form harmful carbon or gummy deposits. They assure clean valves, free rings, open ports and clean air lines — are used by operators the world over.

For compression of *wet* air, use *Texaco Regal Oils (R & O)*. These turbine-grade oils give full protection against wear and, in addition, guard against rust even during idle periods and in intermittent operation.

Protect your drills by using *Texaco Rock Drill Lubricants EP*.

Keep hydraulic systems free of sludge and rust by using *Texaco Regal Oils (R & O)*.

A Texaco Lubrication Engineer will gladly help you select the Texaco lubricants you need for best results. Call the nearest of the more than 2300 Texaco Wholesale Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

USE TEXACO'S SIMPLIFIED LUBRICATION PLAN. You can save time, cut costs and assure more efficient operation of all your heavy construction machinery by using the Texaco Simplified Lubrication Plan. It enables you to meet *all* your lubrication requirements more effectively — and more economically — with *less than a dozen* lubricants!

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

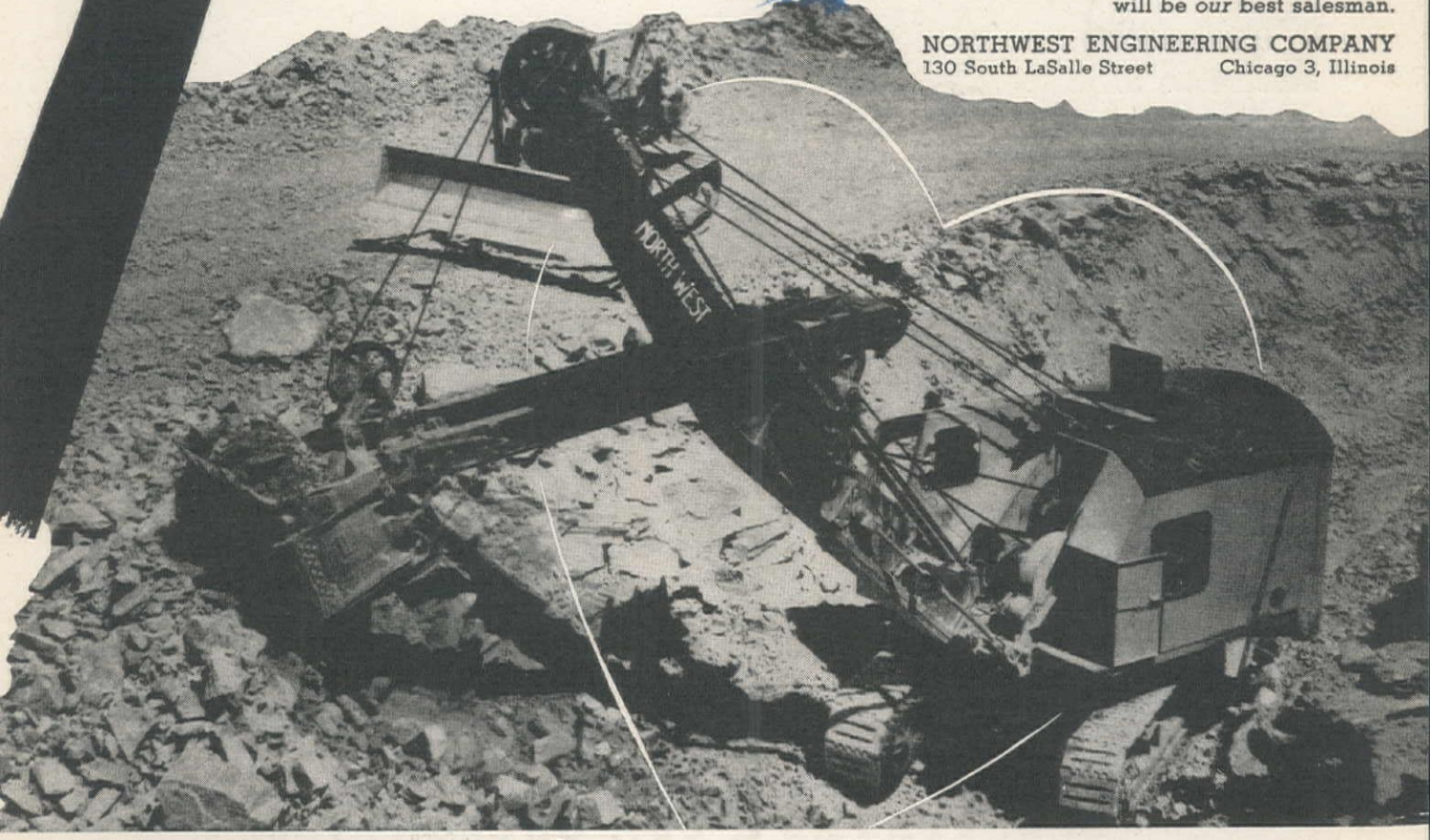
Tune in . . . TEXACO STAR THEATRE presents MILTON BERLE every Wednesday night. See newspaper for time and station.

YOUR 1ST NORTHWEST IS OUR BEST SALESMAN!

Watch a Northwest in the heart of a job like this! Note the smooth crowding action—the ease with which the dipper bites in—the freedom from stuttering. Note the smooth swing and the accurate control of the dipper when spotting. There is no time lost in jockeying for position—it's a full dipper; fast, clean swing and back again, hour after hour. The "Feather-Touch" Clutch Control assures ease of operation without complications and keeps output up. Simple design makes maintenance easy and keeps operating costs down.

It's a real Rock Shovel—built for the heart of the tough jobs. High output, low operating cost and Northwest features have made one out of every three Northwests a repeat order. They are the Money Makers for the *Key Spots* and you can't afford to have anything but the best in the *Key Spots*. Plan on a Northwest! Your first Northwest will be *our* best salesman.

NORTHWEST ENGINEERING COMPANY
130 South LaSalle Street Chicago 3, Illinois



eal NORTHWEST sales agents

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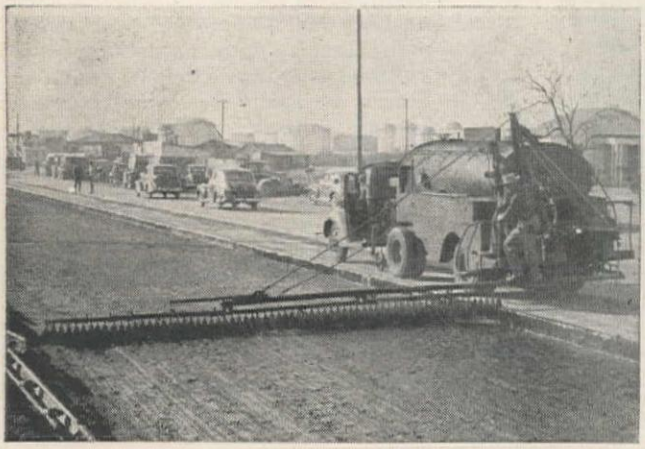
ETNYRE "BLACK-TOPPERS" MAKE "TOUGH JOBS" EASY

You can always rely on Etnyre "Black-Toppers" for economical operation, accurate distribution, dependable performance. But that's not all!

For special attachments and extra equipment can make Etnyres do the unusual too! Some of these "special" uses are shown below.



Customer-adjusted spray bar, 23 feet long, rigged for a special job where soft sand subgrade prevented driving distributor between forms.

"Black-Topper" being used for underseal work to lift pavement by pumping Bituminous Material into weakened base.

One-man controls, when desired, make it possible to operate Etnyre distributors from the cab, eliminating rear platform man, cutting labor costs.

Accurate . . . dependable . . . economical — that's what contractors, engineers and operators all over the world say about Etnyre "Black-Topper" distributors.

E. D. ETNYRE & CO., OREGON, ILL.

SEE YOUR ETNYRE DEALER

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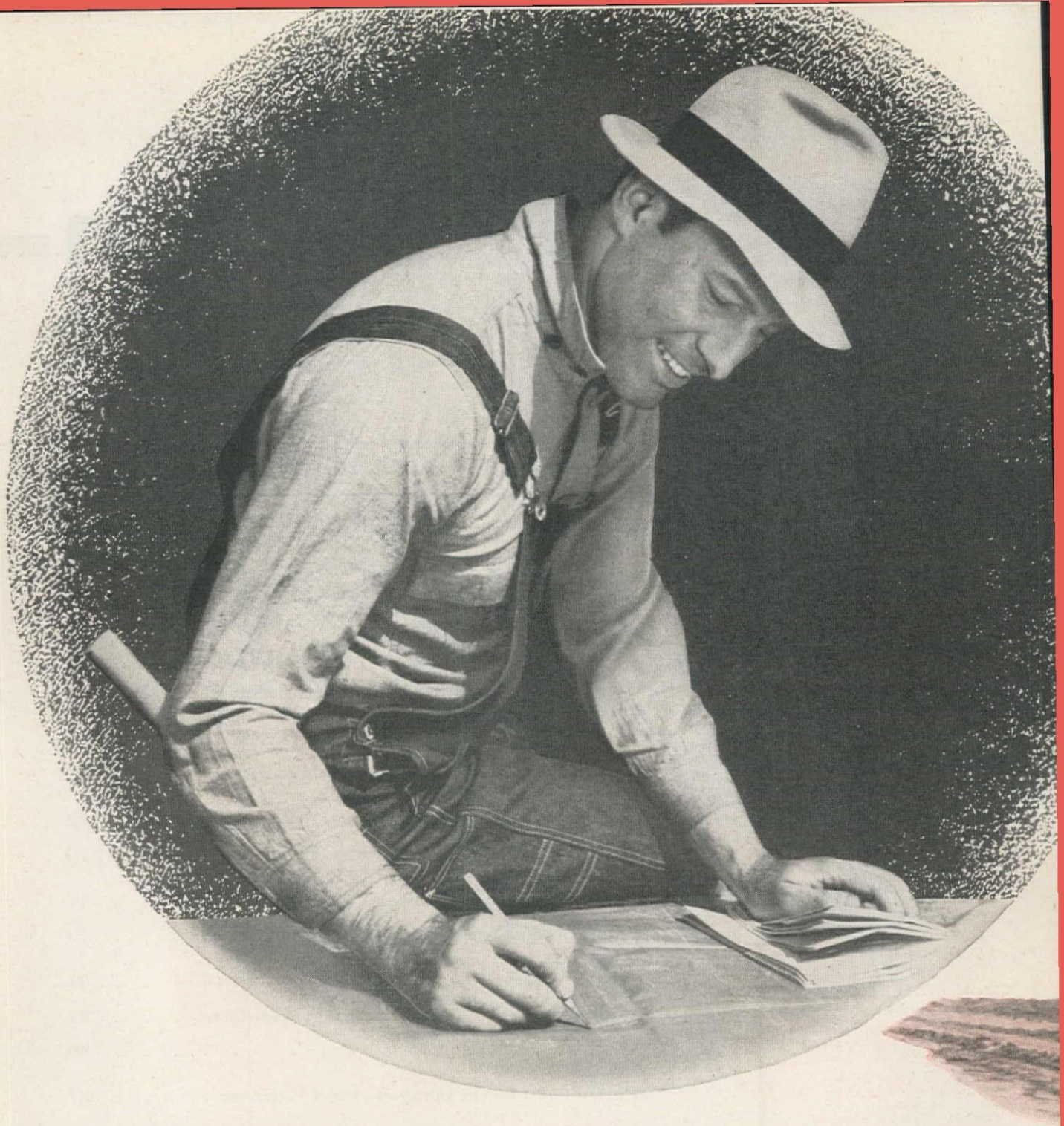
Covering Construction in the Western Half of the United States



NO MATTER *HOW* YOU FIGURE

YOUR BEST BUY IS . . .

CRAWLER TRACTORS
POWER UNITS
DIESEL ENGINES
WHEEL TRACTORS

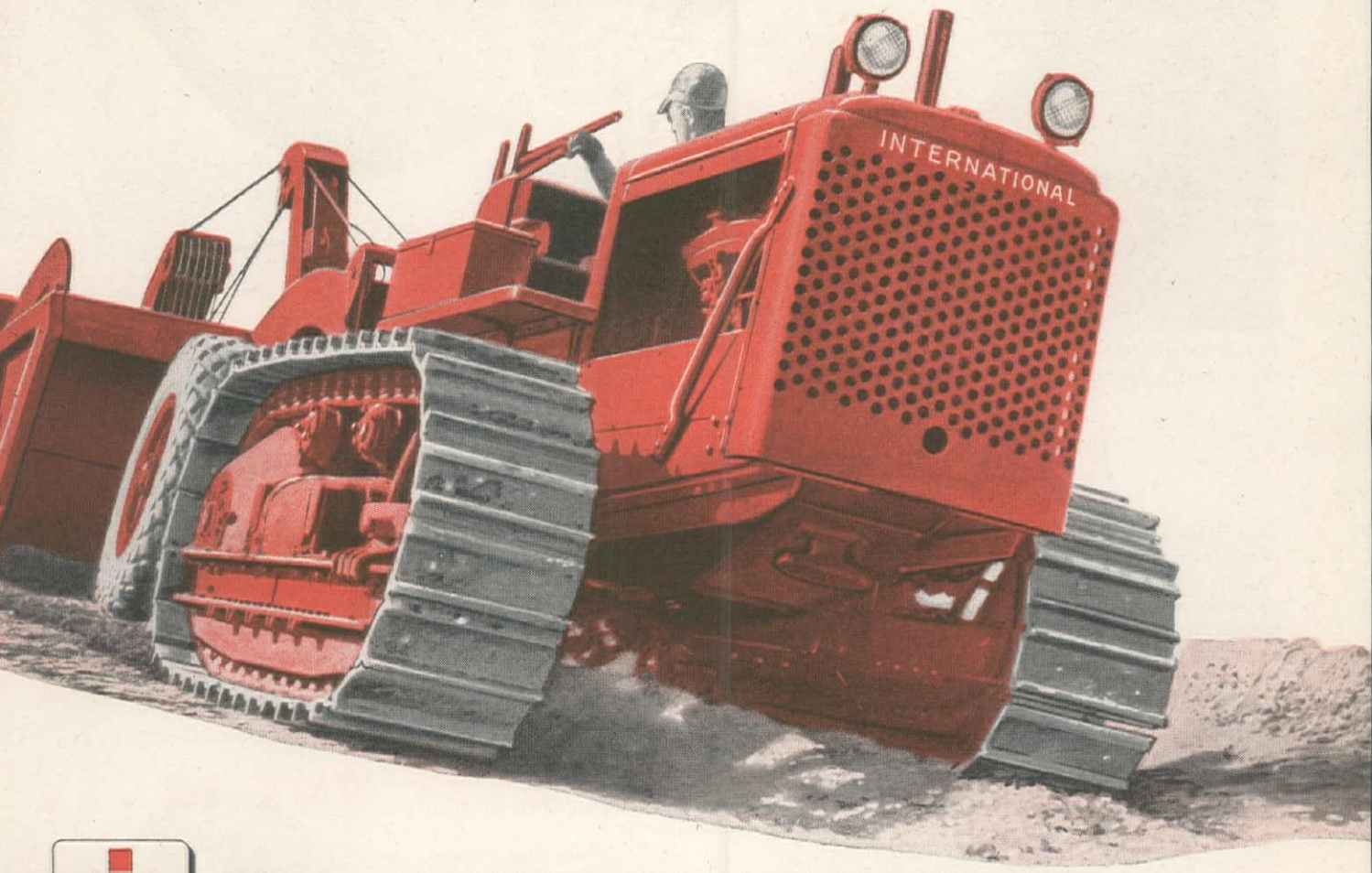
INTERNATIONAL

WHEN YOUR POWER IS INTERNATIONAL

Base your bidding on big pay yardage. Fit International Tractors and matched earthmoving equipment into your planning and reduce the downtime on your jobs. Rugged Internationals are built to carry on, hour after hour, day after day at minimum cost for fuel, lubricants and maintenance. And because they are backed up by a nation-wide, localized service organization, you have assurance of long-term satisfaction from Internationals.

Before you figure your bids, check your power and equipment needs with your International Industrial Power Distributor. He sells and services the full line of International tractors and International-powered earthmoving equipment. NO MATTER HOW YOU FIGURE — here is the power and equipment that will dig in and move profit-making yardages.

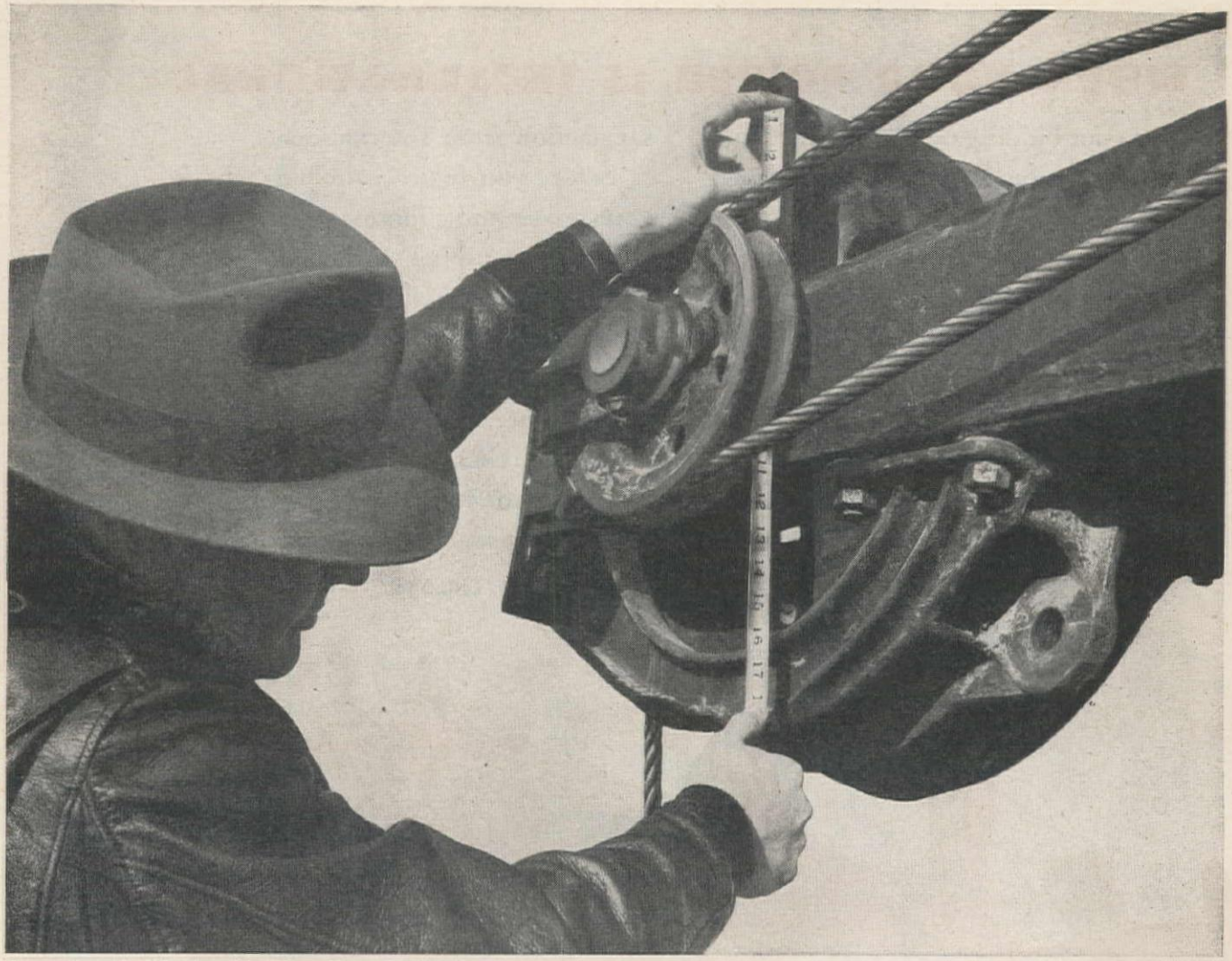
INTERNATIONAL HARVESTER COMPANY, Chicago



INTERNATIONAL HARVESTER

Hear James Melton and "Harvest of Stars" every Sunday, NBC. See your local newspaper for time and station.

Industrial Power



Long, tough life for this Tiger Brand Wire Rope is being assured by Columbia Steel's Field Specialist. He is measuring the sheave's diameter against the rope's size and construction—an extra safety check that means better wire rope service.

How to stop wire rope trouble—before it starts

This Tiger Brand Field Specialist—one of Columbia Steel Company's skilled technical men—will help you engineer your installation for maximum all-around performance. He'll check the sheave and drum diameters, recommending the exact specifications you need. He'll give your wire rope equipment a complete check-up so that all parts will work in harmony. For his job is to make American Tiger Brand work hard, resist bending fatigue and wear.

Controlling tough Tiger Brand Wire Rope from raw ore to the finished product is a big job. But we want to make sure that you get all the stamina that hard usage demands. That's why we've put the Tiger Brand Specialist at your service... without charge or obligation... to assist you in every possible way so that your wire rope will work hard, long and efficiently. Contact your Tiger Brand distributor or any Columbia Steel Company Office.

Columbia Steel Company

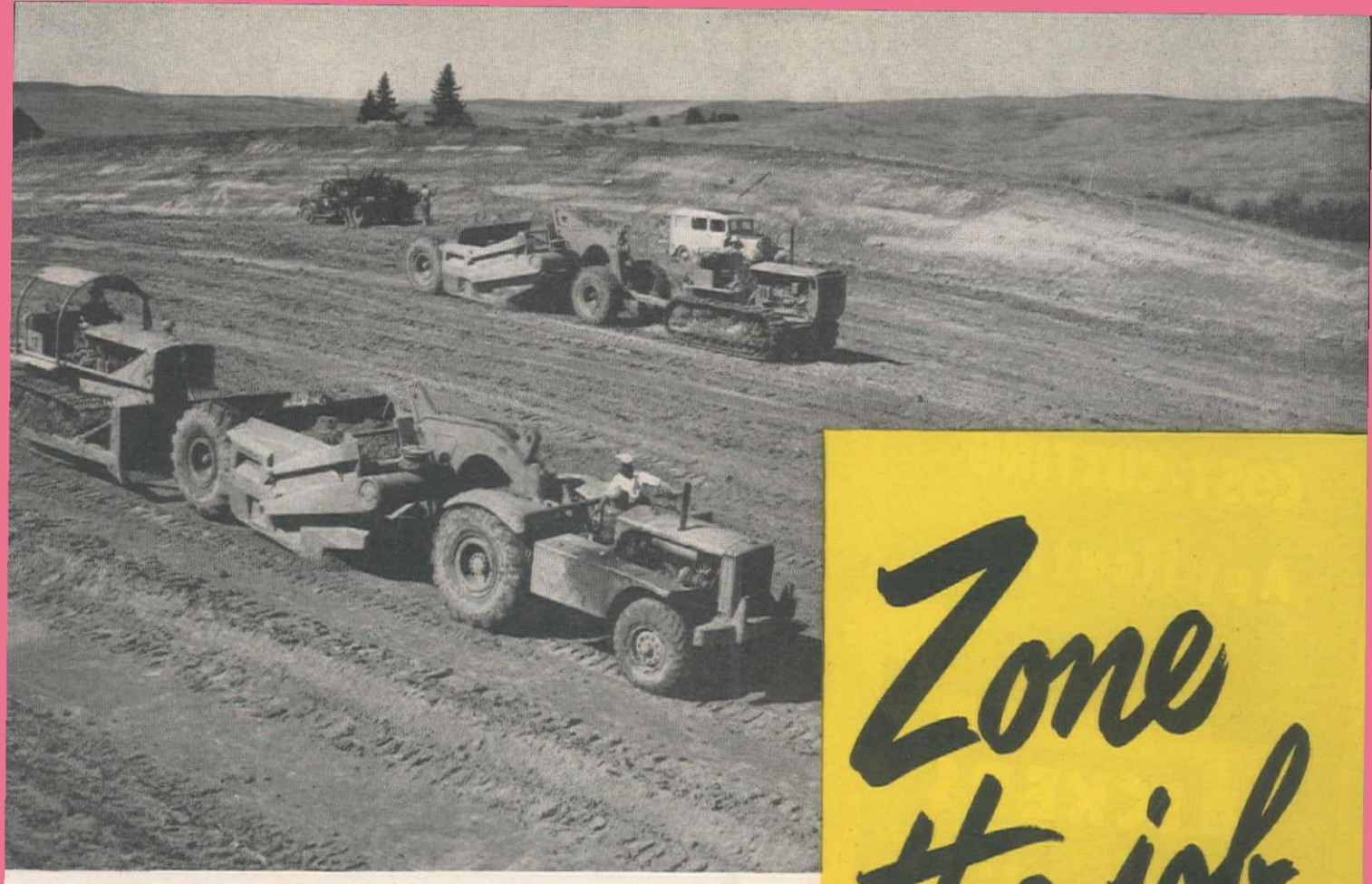
San Francisco · Los Angeles · Portland · Seattle · Salt Lake City

Tiger Brand Tip: Here are some recommended tread diameters for a few standard rope constructions:

Type of Wire Rope	*Drums and Sheaves*
6 x 19 Seale Patent	51 times rope diameter
6 x 19 Type N	39 times rope diameter
8 x 19 Seale Patent	39 times rope diameter
6 x 37 Type S	27 times rope diameter

USS **U·S·S TIGER BRAND Wire Rope**

UNITED STATES STEEL



Part of R. A. Heintz's "Caterpillar" Zoned Equipment fleet, building highway near Moscow, Idaho. In the background a D8 pulls a "Caterpillar" No. 80 Scraper on a medium-length haul. The scraper in the foreground is being push-loaded by a D8. In a moment the "Caterpillar" Diesel DW10 Tractor will roll off with it to a distant fill.

Zone the job ... and move more earth faster

"CATERPILLAR" Zoned Equipment is being used by more and more contractors to speed up jobs and increase profits.

R. A. Heintz, of Portland, Oregon, has been doing it for four years. His highway contract near Moscow, Idaho, is a good example of efficient job-zoning.

"Caterpillar" Diesel D8 Tractors, with No. 8S Bull-dozers, do the pioneering and push-loading; "Caterpillar" No. 80 Scrapers, drawn by D8 Tractors, handle the medium hauls; and fast "Caterpillar" DW10 Tractors, rolling on rubber tires, pull scrapers over the longer distances.

Besides the definite advantages of using the right tools for each zone, with every piece of equipment designed to do its particular job best, Heintz benefits in other ways:

1 All equipment is of one make, familiar to operators.

2 One manufacturer is responsible for the whole line-up.

3 All service and parts can be supplied by one well-equipped dealer. And wherever the job may be, there's a "Caterpillar" dealer near enough to take good care of service needs.

CATERPILLAR TRACTOR CO. • San Leandro, Calif.; Peoria, Ill.

R. A. HEINTZ *likes the "Caterpillar" Diesel* DW10 *for speed on long hauls. He bought his first* DW10s *in 1945 and has since added several new ones to his fleet. He says "They're plenty fast, with easy steering, and can be operated by any good truck driver. A* DW10 *is dependable, too. It operates when other equipment is down for repairs."*

CATERPILLAR
REG U S PAT OFF.
DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

FASTER LOADING

Another COST-CUTTING Application of VICKERS Hydraulics

ATHEY Model 3 FORCE-FEED LOADER
SELF-PROPELLED

One important reason why users of the Athey Force-Feed Loader report savings in time and money is because it is equipped with Vickers Hydraulic Controls. A Vickers Multiple-Unit Valve is used to raise and lower the moldboard, throat, feeder and conveyor. Hydraulic power is supplied by a Vickers Balanced Vane Type Pump driven from the engine crankshaft pulley.

The Vickers Sectional Type Multiple-Unit Valve, available in many combinations for operating single- or double-acting cylinders, provides convenient and selective control. Ask for Bulletin 40-13.

Vickers Balanced Vane Pumps are outstanding for their long life and efficient operation. Their exclusive hydraulic balance construction entirely eliminates pressure-induced bearing loads and resulting wear. Longer life and less hydraulic slip are insured at maximum operating pressures. Ask for Bulletins 36-12 and 49-52.

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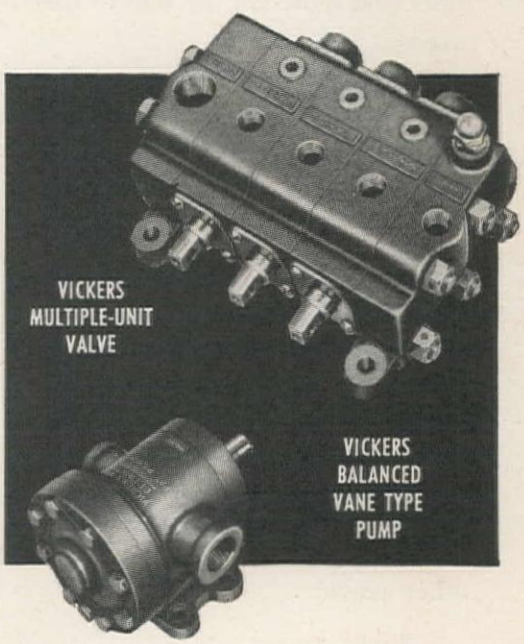

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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

SURE-GRIP—in grader and earth-mover sizes for maximum traction on drive wheels.

More grip for Graders

and Earth Movers, too!

JUST look at that o-p-e-n c-e-n-t-e-r self-cleaning tread and those massive lug bars and you'll see why Goodyear Sure-Grips deliver more traction than other off-the-road tires.

These husky job specialists are first choice with construction men. They give maximum grip, minimum slip—provide super pulling power—low-cost, long-life performance. Another reason why year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind.*

Earth Mover All-Weather for drawn vehicles and general traction

Hard Rock Lug for super-stamina in all rock work

We think you'll like "The Greatest Story Ever Told"—Every Sunday—ABC Network

Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company

GOODYEAR

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND

YOU CAN

FOR HOSPITALS...

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Flood Lighting

Freight Elevators

Motors and Control

Wiring Devices

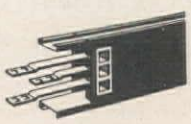
Passenger Elevators

POWER DISTRIBUTION EQUIPMENT

Panelboards

Power Centers

AB-I Breakers



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Load Centers

Meters and Instruments

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Forced Fans

Precipitron*

Unitaires

Fans

Stokers

*Reg. U.S. Trademark

BE SURE..IF IT'S Westinghouse

One reliable source for Everything Electrical . . . to distribute, control and utilize electric power

Badly needed expansion of both government and private hospitals is now bringing construction programs to an all-time peak.

For this type of construction, as well as all other commercial and industrial buildings, Westinghouse offers architects and contractors a unique advantage. *Everything electrical*—from distribution and control apparatus to highly specialized x-ray and lighting equipment—can be obtained through one reliable source.

By centralizing responsibility with Westinghouse for power distribution equipment, construction and building equipment, heating and ventilating equipment and lighting units, you gain important advantages:

1. SPECIALIZED ENGINEERING . . . to assist in selecting and applying equipment for maximum efficiency.

2. SIMPLIFIED ORDERING . . . by providing a focal point of contact for all buying and specification data.

3. SPEEDIER INSTALLATION . . . by centralizing responsibility for delivery and installation.

4. BETTER, MORE RELIABLE SERVICE . . . through the co-ordinated design and construction of Westinghouse equipment, plus broad experience in applying it for all types of buildings. Westinghouse also offers unmatched electrical maintenance service, through its nationwide chain of Renewal Parts Warehouses and Manufacturing and Repair Shops.

Call your nearest Westinghouse District Office or Distributor for full information on this co-ordinated service. When there's CONSTRUCTION AHEAD requiring electrical equipment of any kind . . . you can be *sure* if it's Westinghouse. J-94782

PRACTICAL, EASY-TO-USE BUYING INFORMATION

Architect's and Engineer's Data Book—B-2161-D

This 362-page book contains data on all Westinghouse products for the building industry. Its format is adapted to the needs of the architect and engineer. Ask your nearest Westinghouse office for a copy.

LAMPS AND LIGHTING EQUIPMENT


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WESTINGHOUSE

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PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Increase LIFT 50%
with KOEHRING Truck Cranes

ON scattered lifting jobs requiring frequent moves, you'll find it pays to use Koehring Truck Cranes. Check the extra load capacities . . . extra reach . . . and extra speed you get:

304 Safely lifts up to 40,000 lbs. . . . 8½-tons more than its crawler rating. Extra stability of truck crane mounting also increases the 304's boom reach from 70' to a maximum 110'.

205 Heavy-duty Koehring 205 Truck Crane, with its 20,000 lb. lift on rubber, also increases load capacity by about half. Maximum boom length is stepped up from 50' to 85'.

These mobile Truck Cranes roll along at traffic speeds of 30 to 35 m.p.h. . . get to job fast, start work sooner. No waiting for trailer, no planking. Hinged booms fold back for ample travel clearance . . . save more time every move.

Both the 304 and 205 are also available on rubber-tired cruiser mounting. As a cruiser crane the 304 lifts up to 40,000 lbs. . . . the 205 cruiser lifts 20,000 lbs. Other Koehring Crane sizes include 30½-ton 605, and big 50½-ton 1005.

Mobile, 20-ton 304 Truck Crane unloaded, carried and placed heavy prefabricated spans on this dock shed. Big, heavy-duty clutch, large brake surface, and reserve strength beyond rated lift capacities, assured accurate, safe control. Other Koehring *plus* features on 304 and 205 Truck Cranes include: spring-loaded boom-hoist brake, which holds load automatically . . . clutch throw-out boom limit stops . . . independent boom hoist . . . and optional power boom lowering device.

KOEHRING HEAVY DUTY

ASK YOUR KOEHRING DISTRIBUTOR ABOUT SAVINGS IN TIME AND MONEY ON YOUR WORK

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McKelvy Machinery Co., *Denver*
Moore Equipment Co., *Stockton*
Neil B. McGinnis Co., *Phoenix*
Pacific Hoist & Derrick Co., *Seattle*
The Harry Cornelius Co., *Albuquerque*
Western Machinery Co., *Spokane*

KOEHRING *HEAVY-DUTY* TRUCK CRANES

KWIK-MIX Plaster-Mortar MIXER

This 6-cu. ft. Plaster-Mortar Mixer requires so little attention, that mixing operation for a 3 or 4-man crew isn't a full-time assignment. Operator can handle the mixer and still spend most of his time plastering. On uninterrupted production, its fast, thorough mixing can keep a crew of 30 men working at top speed. Saw-tooth mixing blades knead the batch end to end, give top quality mix. Non-tilt, 7-second discharge, saves time . . . saves labor on every batch.

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Harron, Rickard & McCone Co. of So. Calif. ..... Los Angeles
Kimball Equipment Company ..... Salt Lake City
McKelvy Machinery Company ..... Denver
Moore Equipment Company ..... Stockton
Neil B. McGinnis Company ..... Phoenix
Pacific Hoist & Derrick Company ..... Seattle
The Harry Cornelius Company ..... Albuquerque
Western Machinery Company ..... Spokane

JOHNSON Lo-Bin TROLLEY BATCHER

Handy Lo-Bin Trolley Batcher is only 7½' high, holds 8 tons . . . is easily charged by front-end tractor loaders. Flared extension panels increase capacity to 30 tons . . . height to only 9½'. Efficiently serves 16-S, 11-S and 6-S mixers. 22 cu. ft. weigh hopper rolls on trolley . . . rides out beyond end of track . . . dumps directly into mixer skip. Lo-Bin is quickly dismantled, easily moved on dump truck. Let us show you what a Trolley Batcher can do on your jobs.

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Edward R. Bacon Company ..... San Francisco
Harron, Rickard & McCone Co. of So. Calif. ..... Los Angeles
McKelvy Machinery Company ..... Denver
Neil B. McGinnis Company ..... Phoenix
Pacific Hoist & Derrick Company ..... Seattle
The Harry Cornelius Company ..... Albuquerque
Western Machinery Company ..... Spokane
Western Machinery Company ..... Salt Lake City

PARSONS 18.5 m.p.h. TRENCHMOBILE

Here's the mobile, utility-size trencher you've been looking for to replace slow, expensive hand methods on small trenching jobs. This rubber-tired Model 80 Trenchmobile is ideal for widely-scattered assignments because it makes self-powered moves over city streets and highways at speeds up to 18.5 m.p.h. No waiting for trailer. Digs up to 13.22 ft. per min., 48" deep, 5 and 7½" wide . . . completes more jobs faster, and at lower costs for you.

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Harron, Rickard & McCone Co. of So. Calif. ..... Los Angeles
Kimball Equipment Company ..... Salt Lake City
McKelvy Machinery Company ..... Denver
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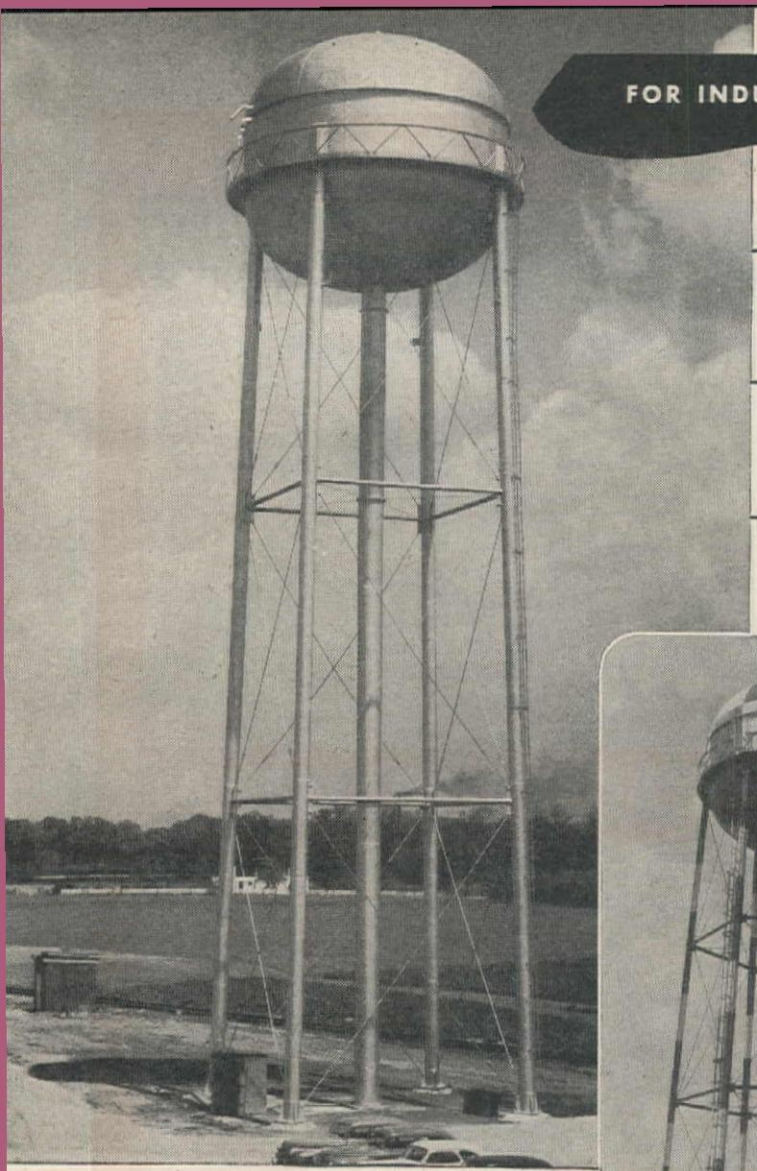

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Better WATER SERVICE...

Better FIRE PROTECTION...

Better LONG-TERM ECONOMY.

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PITTSBURGH •DES MOINES

Elevated Steel Tanks

Completely dependable water service for general plant use—including storage of cooled water and other process applications—combines with ever-present fire protection to create immediate value in your Pittsburgh-Des Moines Elevated Steel Tank. Year-after-year durability and low maintenance costs are P-DM values that steadily enhance your investment. *May we give you the details?*

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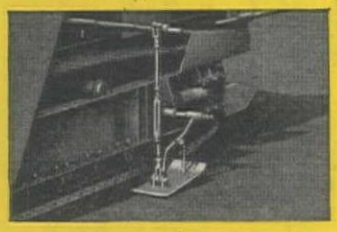
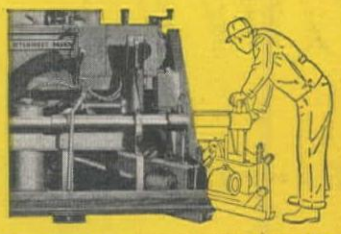
DES MOINES . . . 921 Tuttle Street
DALLAS . . 1225 Praetorian Building

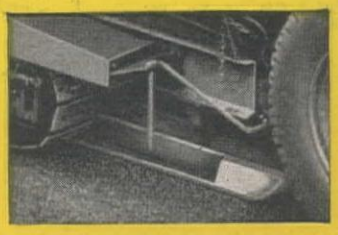
the Paver of the future - Jaeger's BP-5



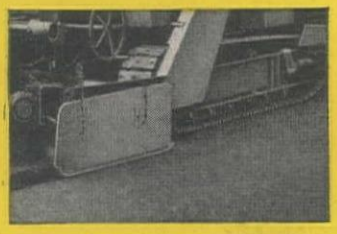
1. AUTOMATIC MATCHING of any adjacent course, curb, gutter or other grade line.



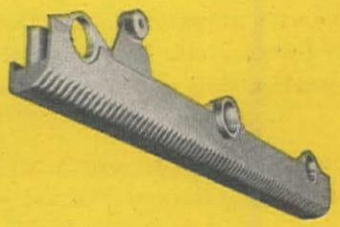
2. TWIRL A WHEEL TO CHANGE WIDTH: Lays any width 5'8" to 12'6", without adding parts.



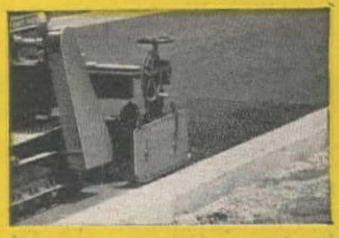
3. SMOOTHEST RIDING SURFACES: 12' longitudinal floating runners equalize screed level.



4. NO PREMATURE SEALING: Weight and traction are on the hard subgrade or completed course —never on the newly-laid surface.



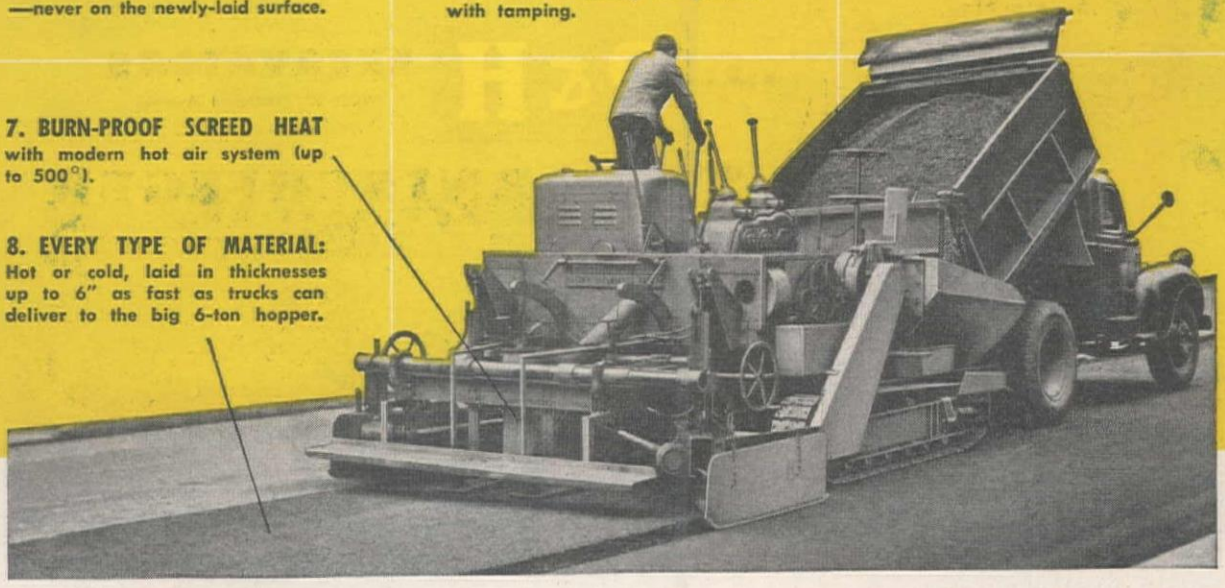
5. MORE UNIFORM MAT: Fast-oscillating, bevel-toothed screeds, tiltable as needed, work material to a uniform density not possible with tamping.



6. LAYS FLUSH TO CURBS and blends perfect-sealing joints between lanes.

7. BURN-PROOF SCREED HEAT with modern hot air system (up to 500°).

8. EVERY TYPE OF MATERIAL: Hot or cold, laid in thicknesses up to 6" as fast as trucks can deliver to the big 6-ton hopper.



To the basically correct principles of paver design long-proved in earlier model Jaeger pavers, the Model BP-5 adds many important improvements in automatic precision and adaptability to the varied materials and conditions encountered in road, street and airport work. For complete information, see your Jaeger distributor or send for Catalog BP-9, describing numerous advantages of interest to contractors and highway engineers. Early deliveries will be limited to orders already on hand.

Sold, Rented, Serviced by:

EDWARD R. BACON CO.	San Francisco 10, Calif.
SMITH BOOTH USHER CO.	Los Angeles 54, Calif.
WESTERN MACHINERY CO.	Salt Lake City 13, Utah and Denver 2, Colo.
A. H. COX & CO.	Seattle 4, Wash.
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CENTRAL MACHINERY CO.	Great Falls, Mont.
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IT'S **P&H** FOR ADDED VALUES!

WHERE "Swing Time" IS PAY-OFF TIME!

Yes, faster swing is the big pay-off when you operate a P&H Model 1055. Its *"Magnetorque" Electric Swing unit is 20% faster — delivers 5 cycles to 4 on other machines. It means more productivity — extra yardage that adds up fast.

It's smoother too — with velvety stops and starts that protect machinery against damaging wear. Simple, effortless control gives this big 3½ yard machine the easy operation that you normally associate with much smaller machines.

The best way to gain a comparison is to watch a P&H 1055 on the job. Drop us a line . . . ask for location of the one nearest you.

****THE P&H MAGNETORQUE** transmits power for swing electro-magnetically. It does away with all frictions on swing and propel — eliminates the usual time-outs for adjustments. The P&H Magnetorque lasts the life of the machine.*

P&H EXCAVATORS
4490 W. National Avenue
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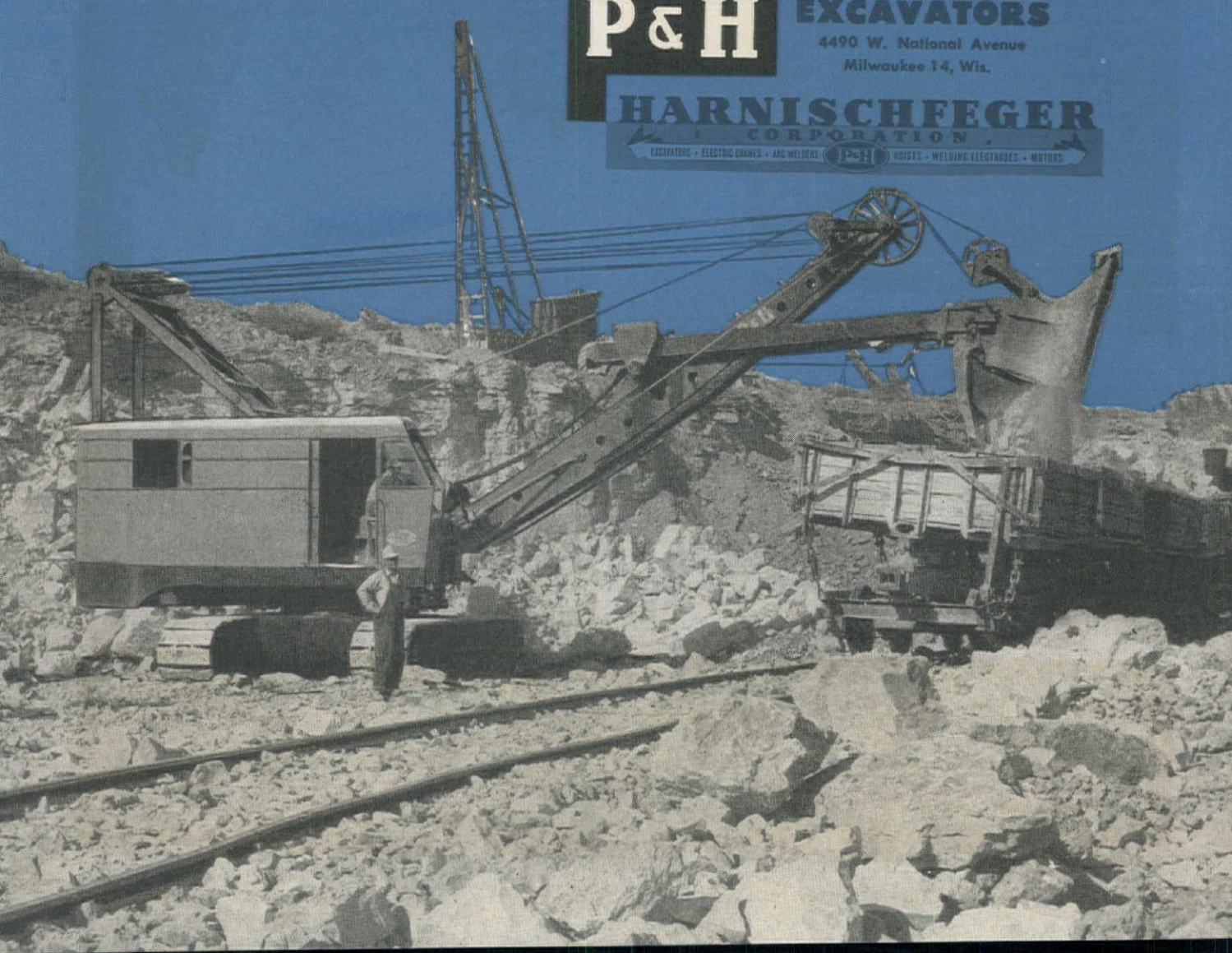
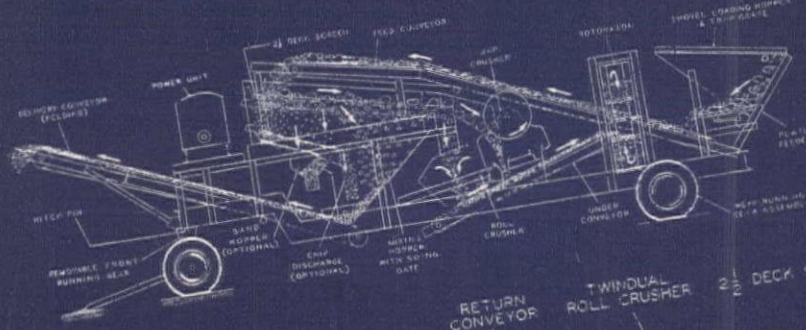
HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS



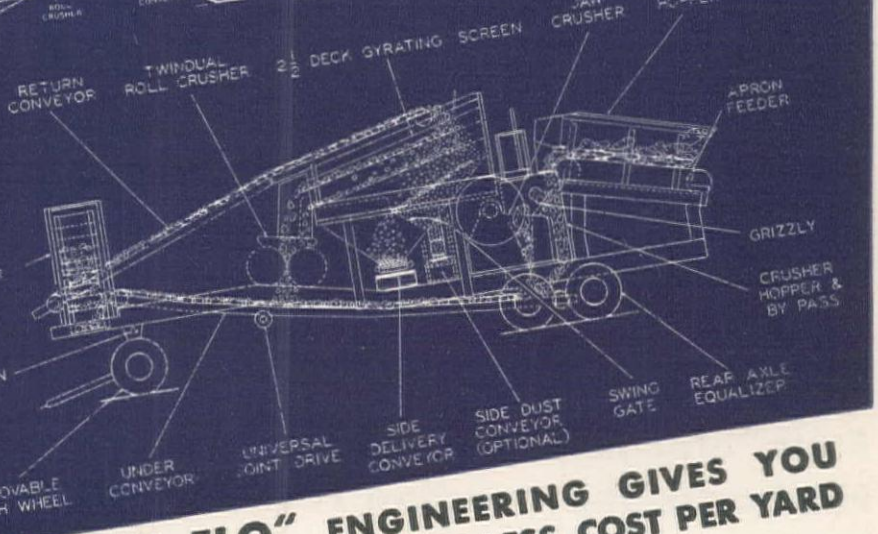
Check these UNIVERSAL DESIGN FEATURES that will give you more profits

The UNIVERSAL 880 GRAVELMASTER



Built in 4 sizes with capacities from 35 to 200 yards of 1" per hour depending on actual amount of crushing.

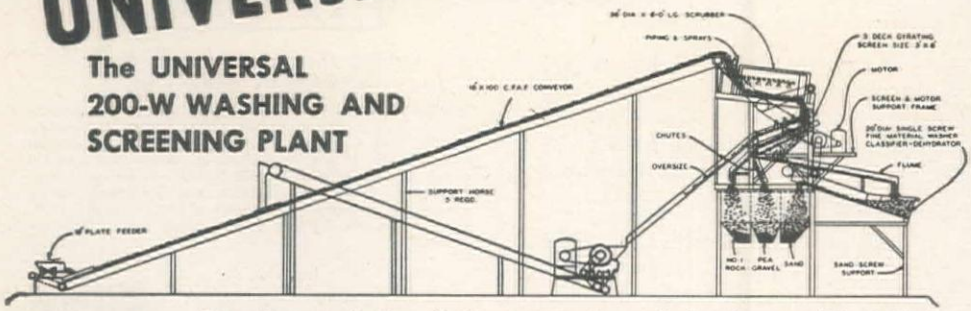
The UNIVERSAL 293-Q PACEMAKER



Three stages of reduction with two crushers give capacity to tackle largest jobs—portability to handle small jobs profitably. Two sizes, capacities to 125 cubic yards of 1" per hour.

UNIVERSAL "STREAM-FLO" ENGINEERING GIVES YOU MORE YARDS PER HOUR AT LESS COST PER YARD

The UNIVERSAL 200-W WASHING AND SCREENING PLANT



For volume production of clean aggregate, washed and screened to 3 sizes. Capacity: 100-135 tons per hour.

Depend upon UNIVERSAL for top economy and low cost production. All UNIVERSAL plants are "Stream-Flo" engineered to provide the perfect balance of high capacity units to assure a steady flow of properly graded material. No bottlenecks to cut into profits. Roller bearings throughout mean economical, smooth and quiet operation.

Yes, check and compare . . . and you'll see why UNIVERSAL sets the pace in engineering and field performance. Write for information.

The UNIVERSAL ENGINEERING CORPORATION

A division of PETTIBONE MULLIKEN CORPORATION • New York • Chicago

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Industrial Equipment Co. of S. Calif...Los Angeles 11, Calif.
Moore Equipment Co.....Stockton and Fresno, California
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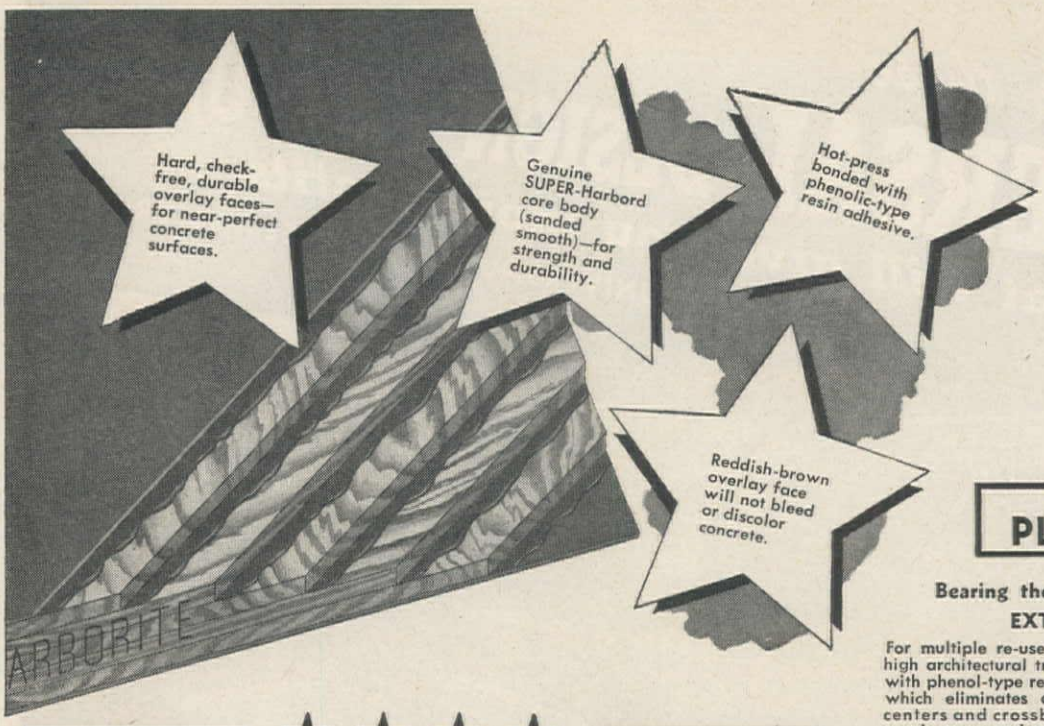
Nevada Equipment Service Inc.....Reno, Nevada
The Harry Cornelius Co.....Albuquerque, New Mexico
J. K. Wheeler Machinery Co.....Salt Lake City 1, Utah
J. D. Evans Equipment Co.....Rapid City, South Dakota



Harbor Presents... Star PerFORMers For Concrete Forms!

You'll find basic concrete form panel problems answered by Harbor Plywood's quartet of concrete form panels — each engineered to meet specific service requirements, and starred in order of performance, quality and price.

★★★ SUPER-Harbord **PLYCRETE**

Bearing the industry grade-mark:

EXT • DFPA • AA

For multiple re-use form work demanding relatively high architectural treatment, Harbor hot-press bonded with phenol-type resin adhesive. ALL veneer is jointed, which eliminates appreciable voids. All defects in centers and crossbands are repaired, eliminating weak areas and concealed voids. All panels are re-humidified after pressing, reducing tendency to warp. These exclusive Harbor extras mean longer service on your form work. Sanded smooth both sides. Factory edge-sealing and oiling optional.

★★ Harbord **PLYCRETE**

Bearing the industry grade-mark:

INTERIOR • AA • DFPA

Harbord PLYCRETE has the same AA (Sound) veneer faces as SUPER-Harbord Plycrete, but is bonded with 10-cycle moisture-resistant glues instead of the waterproof adhesives used in the Exterior-type panels. A superior form panel, sanded smooth on both faces. Will withstand many re-uses, but can not, of course, be expected to deliver the service established by Harborite or SUPER-Harbord Plycrete. Ideal for average jobs where limited re-use will write off the cost. Factory edge-sealing and oiling optional.

★ HARBOR **PLYFORM**

Bearing the industry grade-mark:

PLYFORM • DFPA • BB

The standard DFPA PlyForm panel, manufactured to Harbor Plywood Corporation's strict quality standards. Bonded with highly water-resistant 10-cycle glues (not waterproof), it will withstand a reasonable number of re-uses. Both faces are BB (solid) veneer, with surfaces free from open defects, but admitting neatly made plugs, tight splits, and slightly rough grain, sanded smooth. Factory edge-sealing and oiling optional.

HARBOR ★★★★ **Harborite**

Trade Mark Registered. Patents 2,150,697—2,150,698—2,150,841 and 2,343,740

The Superior Multiple Re-Use Concrete Form Panel

Four "Star Features" Make Harborite the Leading Form Panel!

Only Harbor's exclusive method of hot-press bonding of phenolic-type resin-impregnated overlays to a core of genuine SUPER-Harbord give you the four advantages you seek most in concrete form panels.

1 Hard, check-free overlay surfaces give you better concrete surfaces, free from blemishes, quickly and easily finished.

2 The quality of Harborite's overlay facing is without equal, because Harbor manufactures its own overlay . . . assuring you of tougher, abrasion-resistant panels for longer, more efficient use.

3 The "tooth" of the overlay surface is specially designed to hold oil, sealers or lacquers, and the overlay's absorptive liner effect helps reduce pit voids to a minimum.

4 Harborite will *not* bleed or discolor the concrete. Its distinctive reddish-brown color is permanent. No added finishing problems with Harborite!

Harborite sizes: Widths — 36″ up to 48″; Lengths — 96″ up to 144″; Thicknesses — ¼″ to 1-3/16″. Thickness tolerance — 1/64″. Edge-sealing and mill-oiling optional.

Specify "HARBORITE" . . . the concrete form panel for better concrete surfaces . . . for form panels that can be used again and again until literally worn away!

For information concerning Harborite and other Harbor Concrete Form Panels, Contact:

HARBOR PLYWOOD CORPORATION, Hoquiam, Washington

— or any of the following —

Like any other quality product, most satisfactory results are gained by using approved procedures. For full data on Harborite use, write requesting instructions.

California - Geo. E. Ream Co., 235 S. Alameda St., Los Angeles 12; Harbor Plywood Corporation (of California), 540 Tenth St., San Francisco 3 **Colorado** - Donald B. Richardson, 1650 Eleventh St., Denver 4 **District of Columbia** - Harbor Sales Co., Inc., 4th and Bryant Sts., N. E. Washington **Florida** - Harbor Plywood Corporation, 2355 Dennis St., Jacksonville 4; Harbor Plywood Corporation, Box 265, Buena Vista Sta. (3627 N. E. 1st Court), Miami 37; Harbor Plywood Corporation, P. O. Box 2168 (802 No. Rome Ave.), Tampa 1 **Georgia** - Harbor Plywood Corporation, 1161 Ridge Ave. S. W., Atlanta 3 **Illinois** - Harbor Plywood Corporation, 1444 W. Cermak Road, Chicago 8 **Indiana** - E. W. Camp Plywood Co., Inc., 1001 E. New York St., Indianapolis 7 **Kentucky** - E. W. Camp Plywood Co., Inc., 825 S. 9th St., Louisville 2 **Maryland** - The Harbor Sales Co., Inc., 1501 S. Warner St., Baltimore 30 **Massachusetts** - Kimball Lumber Co., 148 Waltham St., Watertown; Lawrence R. McCoy & Co., Inc., 332 Main St., Worcester 8 **Missouri** - H. H. Horton, Harbor Plywood Corporation, 1301 R. A. Long Bldg., Kansas City 6; Fry-Fulton Lumber Co., 148 Carroll St., St. Louis 4 **Nebraska** - W. R. Stelzer, 200 Foster-Barker Bldg., Omaha 2 **New Jersey** - J. R. Quigley Co., 811 Market St., Gloucester City **New York** - Plunkett-Webster Lumber Co., Inc., 815 East 136th St., New York 54; Plunkett-Webster Lumber Co., Inc., 271 North Ave., New Rochelle; Kimball Lumber Corporation, P. O. Box 625, Schenectady **Ohio** - E. W. Camp Plywood Co., Inc., Commerce at Plum St., Cincinnati 2 **Pennsylvania** - J. R. Quigley Co., Front and Railroad Sts., Cressona; J. R. Quigley Co., 1290 S. Cameron St., Harrisburg; J. R. Quigley Co., 309 Harrisburg Ave., Lancaster; J. R. Quigley Co., 1028 N. Delaware Ave., Philadelphia 25; G. A. Whitmeyer, Harbor Plywood Corporation, 1028 N. Delaware Ave., Philadelphia 25; Wholesale Distributing Co., 36th St. and A. V. R. R., Pittsburgh 1 **Washington** - Harbord Mercantile, Port Dock, P. O. Box 998, Aberdeen; Lundgren Dealers Supply, P. O. Box 1373 (440 E. 25th St.) Tacoma 1

"...why we are

Mrs. Mary Ritchie talks automotive equipment with R. B. MacQuarrie of General Petroleum.

While Salesman Jack Carey fuels a truck, Mr. and Mrs. Ritchie go over lube schedules with R. B. MacQuarrie.

Land leveling for farms, airports, and road grading contracts keep the Ritchie equipment busy.

An Enterprising Member

so thoroughly sold"

"In the two years we have been using G. P. Products, we have not lost a motor, a transmission or a final drive, which is really remarkable when you consider the type of business we are in. Furthermore, our overhaul periods have been extended economically far beyond our previous schedule. You can readily understand why we are so thoroughly sold on all G. P. Products."

Mary B. Ritchie

Mrs. Ritchie and her husband Mart are partners in a statewide land leveling and construction business, with headquarters in Fresno, California. Since returning from active war service in the construction field, Mrs. Ritchie has made engineering a family enterprise, with Mr. Ritchie joining her in the business and both of the Ritchie children being educated in that field.

All equipment of the Ritchie Land Leveling Company is fueled and lubricated with G. P. Products. The same savings in equipment time and maintenance expense now enjoyed by the Ritchies are available to contractors throughout the West. Just call your nearest General Petroleum branch or distributor.

GENERAL PETROLEUM CORPORATION

of the Progressive Petroleum Industry

Mobilgas
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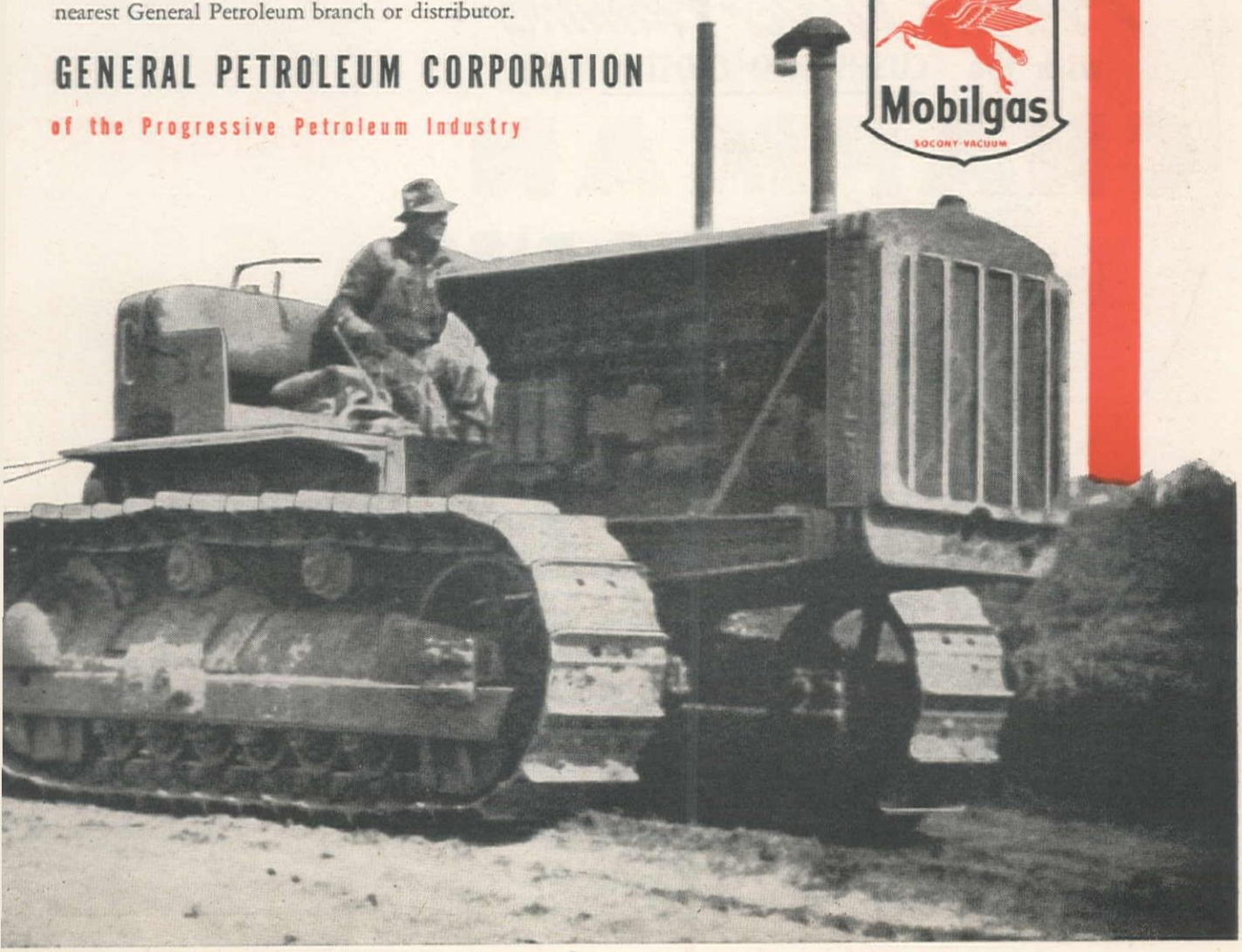
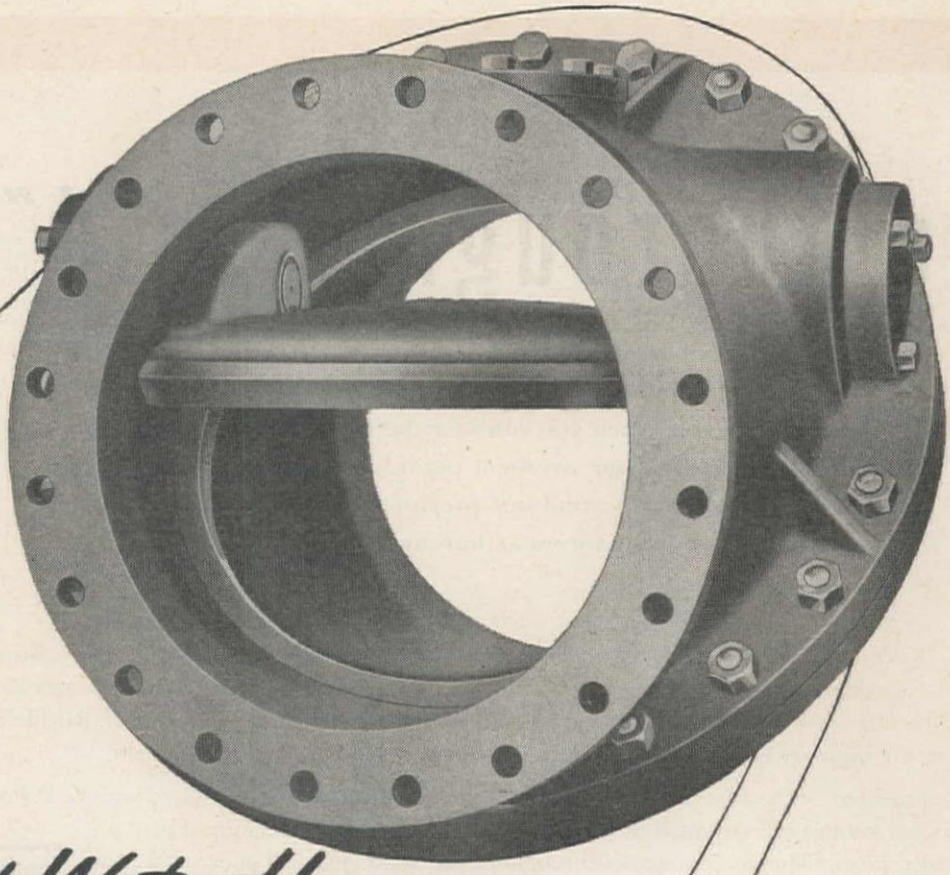




Prevent Water Hammer

with the "CUSHIONED CLOSING" of

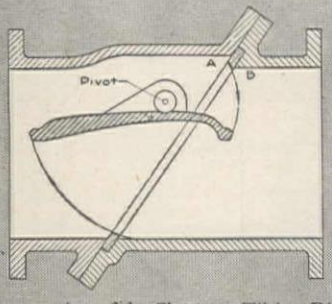
CHAPMAN

TILTING DISC CHECK VALVES

Chapman Tilting Disc Check Valves *work with . . . not against . . . the stream.* As a result, destructive pipe line stresses are practically eliminated. Head losses, as compared with conventional type check valves, are reduced 65% to 80%.

This balanced disc rides smoothly on the flow. It lifts away easily when opening . . . closes quickly and quietly. There is no rubbing on the seat . . . no slamming. Hinge pins, seats and bearings wear far longer.

These are facts. Write today for engineering data and reports of tests. Valves available in either iron or steel.



Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

The Chapman Valve Manufacturing Company
INDIAN ORCHARD, MASSACHUSETTS

"ROLLS WITH THE PUNCH"

of BUCYRUS ERIE Bullgraders-Bulldozers

The rolling action you see here is a result of two recognized features of Bucyrus-Erie Bullgraders and Bulldozers: (1) Perfect *balance* between B-E equipment and the tractor; (2) The scientifically curved B-E blade.

Whether you use cable or hydraulic control this is a one-two punch combination that really peels the dirt off in a smooth easy roll—gives you faster, cleaner earth-moving on the job. Watch a Bucyrus-Erie outfit on a hill or side slope and see how *balance* keeps it level — without nosing down. Watch it perform in sticky mud or loose sand.

Your International Industrial Tractor dealer can give you the full story on why more dirt "rolls with the punch" of a Bucyrus-Erie Bullgrader or Bulldozer.

BUCYRUS-ERIE CO., So. Milwaukee, Wis.

MORE REASONS WHY BUCYRUS-ERIE UNITS HIT HARD AND FAST

- Blade mounting allows free track oscillation without changing blade angle.
- Bullgrader blade angled or tilted in few minutes by one man.
- Box girder frame plus flame hardened weldments give great strength.
- Proper sheave alignment for long cable life.
- Operator has clear vision in sitting position.
- New power control winch means easier operation.
- World-wide service through International dealers.

127T48

See Your INTERNATIONAL Industrial Tractor Distributor

Cut costs with the rope that lasts longest

Contractors are saving with Preformed "Blue Center" Wire Rope

WHEN YOU ASK "HOW LONG," don't think merely of a rope's length; think of how long it will stay on the job! The rope that lasts longest, costs you the least . . . and that's why contractors are turning to Roebling Preformed "Blue Center" Steel Wire Rope. "Blue Center" Steel—made only by Roebling—gives wire rope *extra* ability to withstand strain, abrasion and shock loads.

PREFORMED SPEEDS OPERATIONS, TOO. Roebling Preformed saves handling and installation time because it is not inclined to set or kink. You can cut it without seizing, and there's less trouble in applying fittings. In operation, Preformed is largely free of vibration and whipping . . . gives top performance despite severe bending, small sheaves and reverse bends.

FREE ENGINEERING SERVICE. Have your Roebling Distributor help choose the *right* wire rope for genuine economy on your equipment. If you have any special problems in the selection, installation or maintenance of wire rope, your Distributor will promptly get the assistance of a Roebling Engineer. John A. Roebling's Sons Co. of Calif., 1740 17th St., San Francisco, Calif.

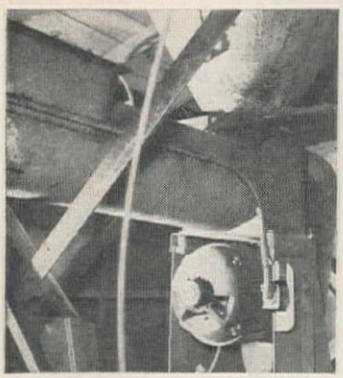
WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. ★ ***Boston***, 51 Sleeper St. ★ ***Chicago***, 5525 W. Roosevelt Rd. ★ ***Cleveland***, 701 St. Clair Ave., N. E. ★ ***Denver***, 1635 17th St. ★ ***Houston***, 6216 Navigation Blvd. ★ ***Los Angeles***, 216 S. Alameda St. ★ ***New York***, 19 Rector St. ★ ***Philadelphia***, 12 S. 12th St. ★ ***Pittsburgh***, 855 W. North Ave. ★ ***Portland, Ore.***, 1032 N. W. 14th Ave. ★ ***San Francisco***, 1740 17th St. ★ ***Seattle***, 900 First Ave.

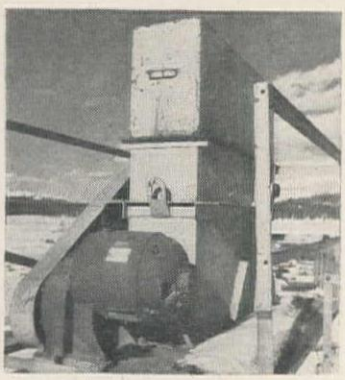
ROEBLING

☆ A CENTURY OF CONFIDENCE ☆

automatic batching ...Electrically



Cement from silo is fed to weigh batcher by worm screw, driven by G-E Tri-Clad motor.

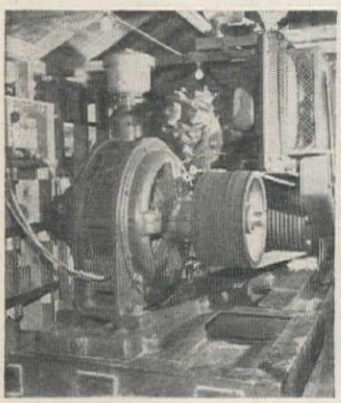


Cement elevator drive is powered by G-E Tri-Clad motor.

G-E Motors and Control Speed Concrete Placing at Granby

Granby pumping plant, operating heart of the Bureau of Reclamation's Colorado Big Thompson project, is now under construction at an accelerated pace. To help maintain this pace, Granby Constructors are utilizing electric drive wherever possible as on this Noble batch plant . . . relying on General Electric components almost entirely.

Construction equipment driven by G-E motors and control, supplied from G-E Power-distribution systems, will help you meet schedules . . . at a profit! Apparatus Dept., General Electric Co., Schenectady, N. Y.



G-E induction motor driving compressor which supplies air to batch plant and other equipment.

Bert Sandberg, Engineer for Granby Constructors, operates the G-E combination starter which controls the compressor motor.

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job at lower cost by complete electrification. Call, wire or write him now!

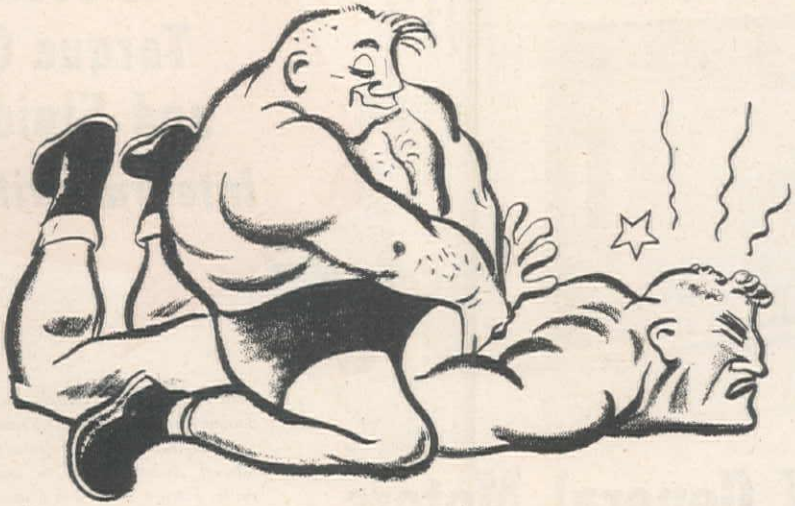
Electrified Construction
BETTER PRODUCT
LOWER COST

GENERAL ELECTRIC

664-1

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

Hold Down Cost!



In Spite of Rising Expenses

The **ROCKMASTER** Blasting System

Stabilizes Over-All Costs!

Sounds incredible in the face of rising costs of labor and blasting supplies. But it *is* true! Quarries, mines, stripping operations and construction projects hold down over-all costs with the ROCKMASTER Blasting System. Here's a case in point:

One company with the tough job of blasting hard limestone figures it saves $20,000 a year through the use of ROCKMASTER. They do less drilling, use less equipment, and have boosted their daily tonnage by five hundred tons. What's more, they have cut vibration and noise to a minimum—of prime importance to a quarry located within city limits!

When Atlas pioneered ROCKMASTER, it introduced a new concept of blasting. ROCKMASTER is a blasting *system* based on the right explosive and method of loading . . . the proper spacing of holes . . . the selection of the right milli-second delays—all based on the kind of rock being blasted.

Call in your Atlas representative. He'll be glad to show you how ROCKMASTER can help *you* hold down your blasting costs.

"ROCKMASTER"—Trade Mark
Manasite: Reg. U. S. Pat. Off.

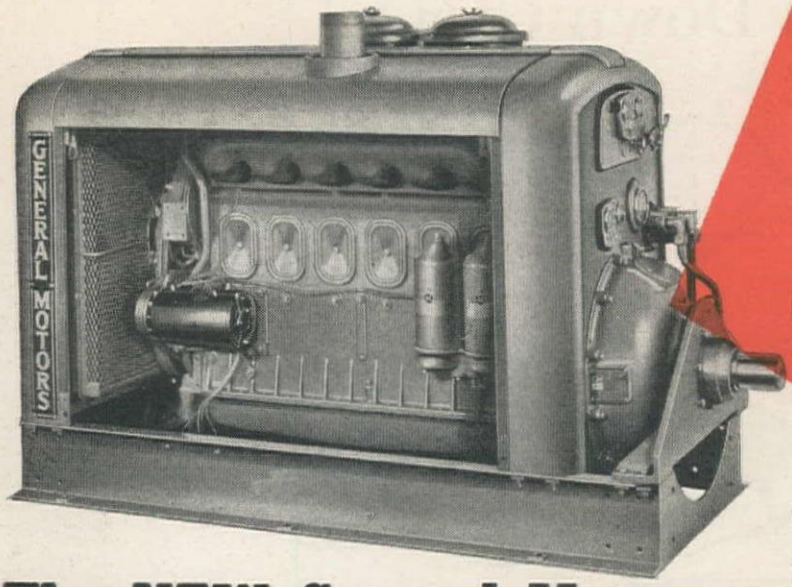
Offices in Principal Cities

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

SAN FRANCISCO 4, CAL. ATLAS POWDER COMPANY SEATTLE 1, WASH.

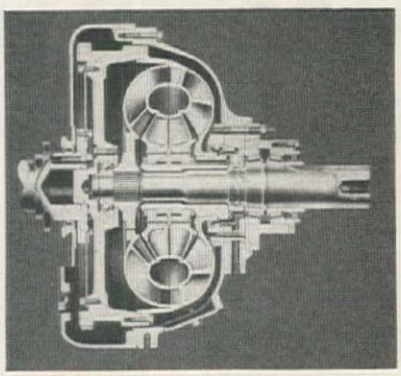


A Combination Torque Converter and Fluid Coupling *Integral with the Engine*

General Motors 71 Diesels equipped with the new GM Torque Converter take up no more space or weight than the same engines with conventional friction clutch and power take-off. Available in 3-, 4-, and 6-cylinder single engine units. Twin 4 and Twin 6 models having engine ratings from 75 to 300 H.P.

The NEW General Motors DIESEL ENGINE-TORQUE CONVERTER UNIT

HERE is a complete, integrated Diesel engine-torque converter unit that combines the inherent efficiency of the GM 2-cycle Diesel engine with the features and advantages of *both* torque converter and fluid coupling. It provides *torque multiplication up to 4 to 1* for starting variable heavy loads. It also provides *highly efficient transmission of power* during light load periods by *automatically shifting to fluid coupling* in the upper speed range.



In the new GM Torque Converter, oil does the work. Automatic transition from torque multiplication of 4:1 at stall to 1:1 in upper speed range.

A smooth, uninterrupted flow of power, delivered through a liquid, *prevents engine stalling* under any load and *protects both engine and driven machinery from sudden shocks.*

One Manufacturer—One Responsibility

Up to now most engines and hydraulic drives have been separate units. The result—compromise designs and divided responsibility. Now General Motors offers a new torque converter specifically designed and manufactured as an integral part of the General Motors Series 71 Diesel engine. It is a self-contained unit built by one manufacturer providing a long needed saving in space and weight as well as certain desirable operating characteristics not available before.

This new power unit will get the most work done in the least time because the engine operates in its most efficient speed range at all times—delivering maximum engine horsepower regardless of the speed of the load. *Maximum torque to start heavy loads PLUS maximum horsepower to keep the load moving.*

Everyone with a hard job to do in the oil fields, in construction, in mining or in logging should have all the facts about this compact, flexible GM Diesel Engine Torque Converter unit. *Write today for a complete description.*

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . Up to 200 H.P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS.. Up to 800 H.P.

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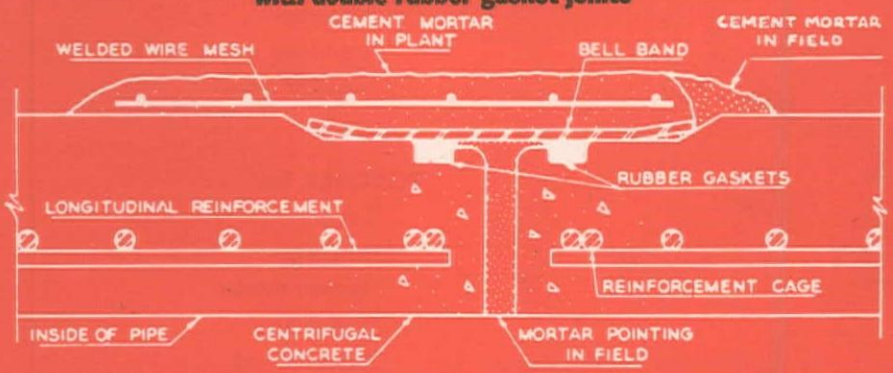
DON'T OVERLOOK SAVINGS in pipeline construction costs to reduce cost of delivered water

CENTRIFUGALLY SPUN REINFORCED CONCRETE PRESSURE PIPE
with double rubber gasket joints



for moderate operating heads ranging up to 150'

Installing rubber gasket in groove on spigot end of pipe.

These savings are important to everyone concerned with main water supply line design, construction and operation:

1. **To Design Engineers** who want a watertight closure simple in design, rugged in construction, flexible and positive in service. Straight steel joint sleeves permit some pulling of joints to allow for minor changes in alignment or grade, while angle sleeves may be used to provide for larger deflections. This unique joint is also adaptable for connecting to fabricated elbows, reducers and other fittings.

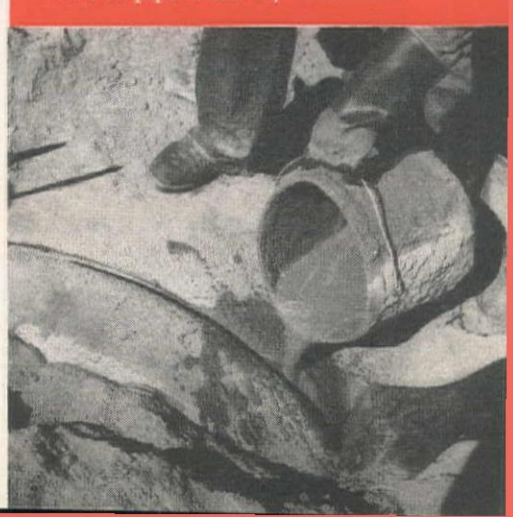
2. **To Contractors** who desire ease and speed of installation. Steel joint sleeve is fitted in the plant to one end of each section of pipe — in effect a bell and spigot rubber gasket joint. 12 ft. sections facilitate laying. There's no need to dig bell-holes, no circumferential welding, no laborious and costly caulking. Immediate back-filling is recommended — an important cost-saving factor in itself.

3. **To Owners, Water Users and Taxpayers** who desire maximum economies in cost of delivered water. Low first costs, plus the proven advantages of performance, sustained carrying capacity and freedom from maintenance expense assure substantial savings.

This type of centrifugally spun reinforced concrete pressure pipe is helping to make substantial savings in construction costs on Unit 5, Coachella Valley Distribution System, a U. S. Bureau of Reclamation project. Information and specifications regarding this class of pipe are available on request.

(Above) Joint sections ready to slip into place — as a cork fits in a bottle.

(Below) Pouring soupy mortar into outside annular space — tar paper confines mortar to joint area. Inside space is pointed by hand in pipe 24" and larger, or "buttered" and swabbed in pipe under 24" diameter.



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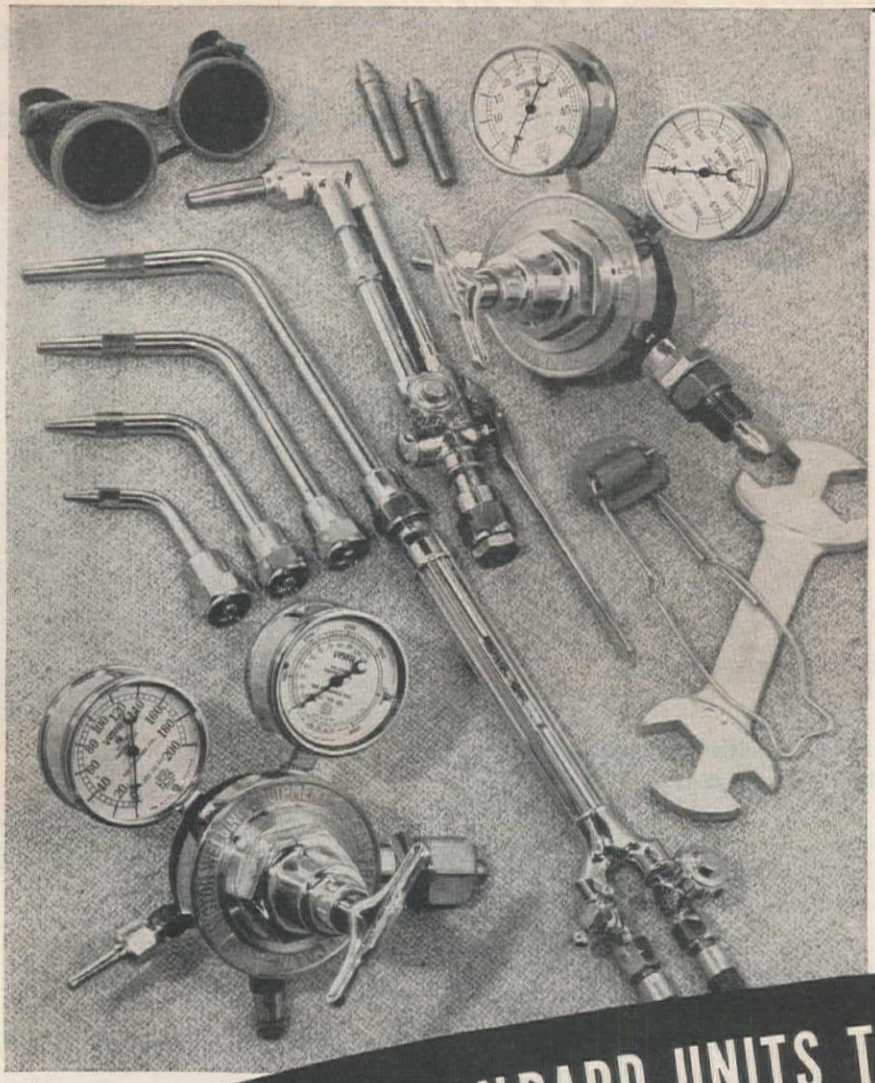

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Here are typical examples of the up-to-the-minute design, long-lasting construction and smooth, dependable performance now proving to contractors all over the world that there's more worth in a Blue Brute. Your nearby Worthington-Ransome Dealer has the complete line of Blue Brute Construction Equipment. Write for his name.

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Count on Blue Brute Portable Mixers for lower-cost concrete on every job. Quickly spotted and towed, and with such features as smooth, positive gear-and-pinion drive . . . high-carbon, Timken-equipped drum rollers . . . and Ransome's famous mixing action, they're sure bets for speedier, better mixing.

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H9-8

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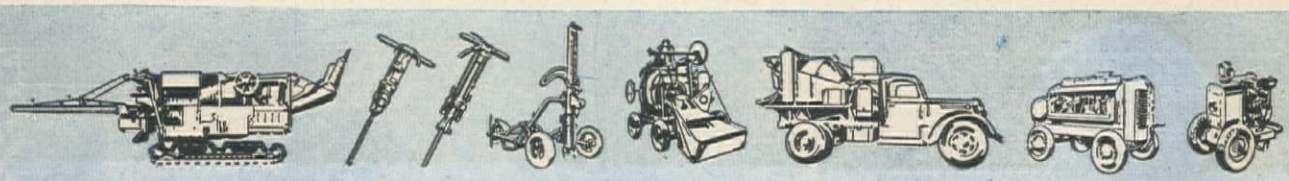
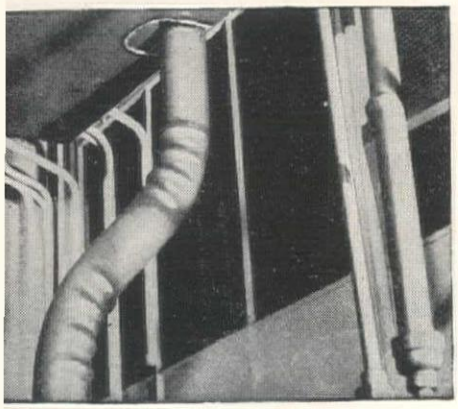
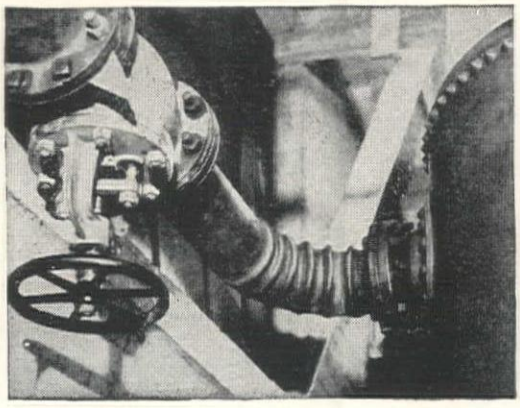


IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

"Tailor-Made" Bends

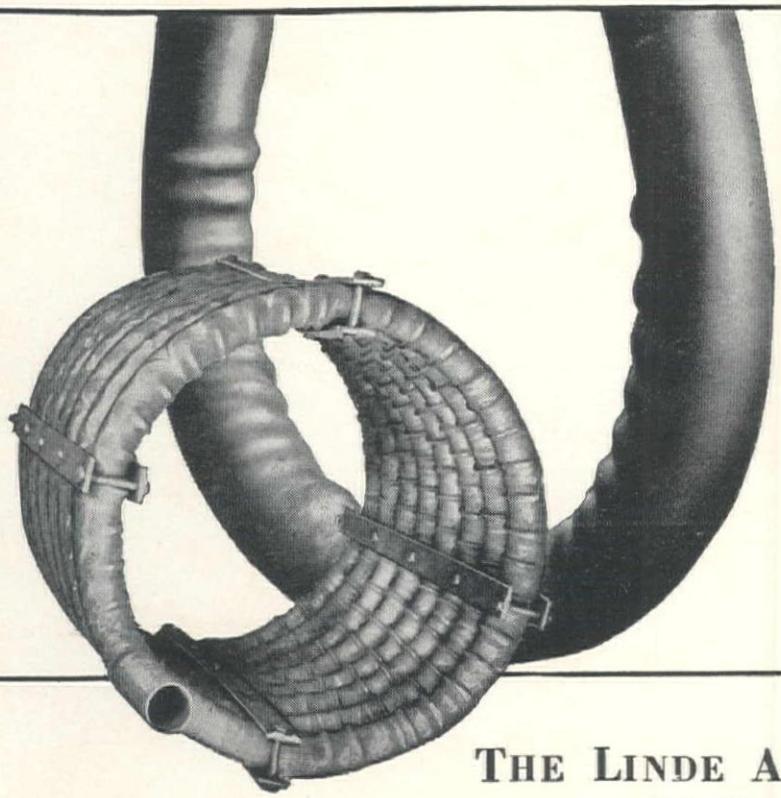


Where compound bends are required in a continuous section of pipe, wrinkle-bends offer an ideal solution. Wrinkle-bends are leakproof, as strong as the pipe itself, require no maintenance, and are easy to insulate.



This short-radius wrinkle-bend joins a compressed air line to a reservoir. Wrinkle-bends can be made in brass, copper, aluminum, and steel pipe from 2 inches to 26 inches in diameter.

Pipe bends can be made right on the spot with the aid of an oxy-acetylene welding or heating blowpipe, a simple bending rig, and a few common tools. Wrinkle-bending does not reduce the thickness of pipe walls.



This condenser coil made from 2-inch stainless steel pipe has 350 wrinkle-bends.

There are many LINDE methods for forming, cutting, joining, and treating metals. LINDE engineering service is always on call to help customers with production, construction, and maintenance jobs. Just call the nearest LINDE office.

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THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

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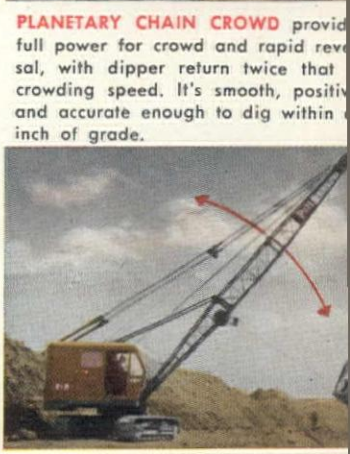
How P&H PLANETARIES Pep Up Production

This is the planetary transmission used so effectively on P & H Excavators. Through the use of this simple, proved principle, P & H provides operating characteristics which are unmatched for speed, smoothness and accuracy of control.

Where frequent reversals are required, such as for shovels or for the main drum in crane service, the planetary provides remarkable flexibility, yet delivers full power as positively as a gear.

P & H originated and patented the application of the planetary transmission on excavators and has always led in its development. Its various uses, explained here and on the following page, constitute another important P & H Added Value.

PLANETARY CHAIN CROWD provid full power for crowd and rapid reve sal, with dipper return twice that crowding speed. It's smooth, positiv and accurate enough to dig within inch of grade.



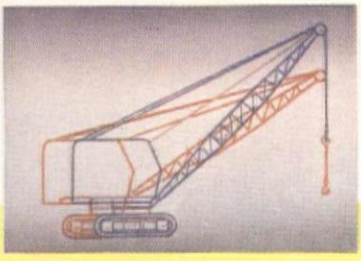
PLANETARY BOOM HOIST is independ ent—triple safe. Safety lowering again engine compression makes it impos ble for the boom to drop suddenly.

...and in crane service...

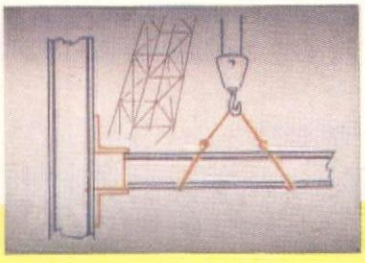
PLANETARY CONTROL

means safer, faster, more accurate load handling

Here's an operating feature you'll find on no other crane—planetary raising of both boom and load, together or independently. It is quick, easy and safe. And with load lowering against engine power, there's greater accuracy for "inching" heavy loads where utmost precision is required.



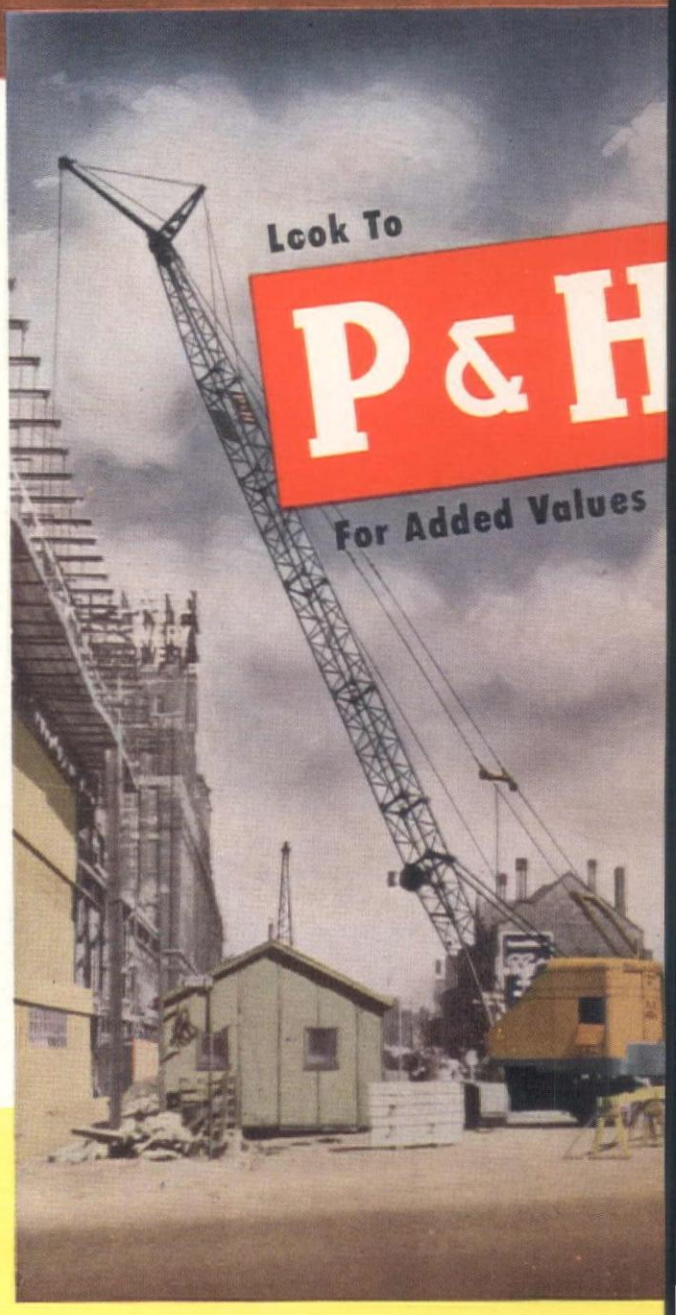
HERE'S A BIG ADVANTAGE in work such as steel erection. Operator can raise boom and load as machine moves forward, without forward motion of the boom point.



BOOM AND LOAD can be lowered smoothly, steadily, without jerking. This permits more precise handling of heavy members such as in fitting up structural steels.

COMPLETE SAFETY. Holding brakes are supplemented by ratchet mechanism which automatically prevents lowering boom faster than engine speed. Like coasting your car downhill in low gear.

EASY OPERATION is provided through simple, positive hydraulic control; more responsive. The operator reacts naturally with direct "feel" of the load at all times.



The P & H planetary transmission is the simplest, most compact mechanism for these Crane functions. There are no exposed gears, no stub shafts, no extra clutches.

P & H design and construction offer many other important added values to the excavator buyer. Ask your nearest P & H dealer about them or write us for complete information.

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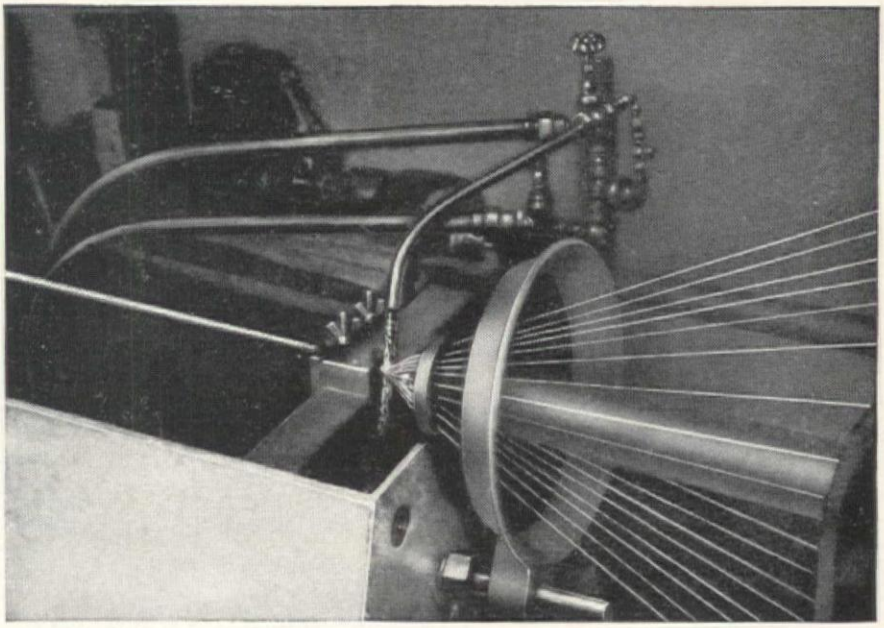

Hot Oil Treatment for Steel Muscles

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Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.

Field lubrication of wire rope does much to prevent friction and corrosion and should not be neglected. However, it is only a *surface* treatment. To provide proper *internal* lubrication, every strand of Wickwire Rope is actually formed in a stream of hot, quick-setting lubricant which packs the many spaces between the wires of the strand.

Fiber cores, too, are saturated with a compound that lubricates the strands after the rope has been put in service. This built-in protection is the result of years of study to develop a lubrication system that would afford protection against factors which bind ropes and result in loss of strength and rope life.

Thorough lubrication is only one step in the quality control of Wickwire Rope manufacture—but we at Wickwire believe that *every* step is important to assure finished rope that will provide the utmost in performance, safety and long life.

Wickwire Distributors and Rope Engineers are always ready to help solve your wire rope problems and supply the right rope for your needs. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

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AXLES

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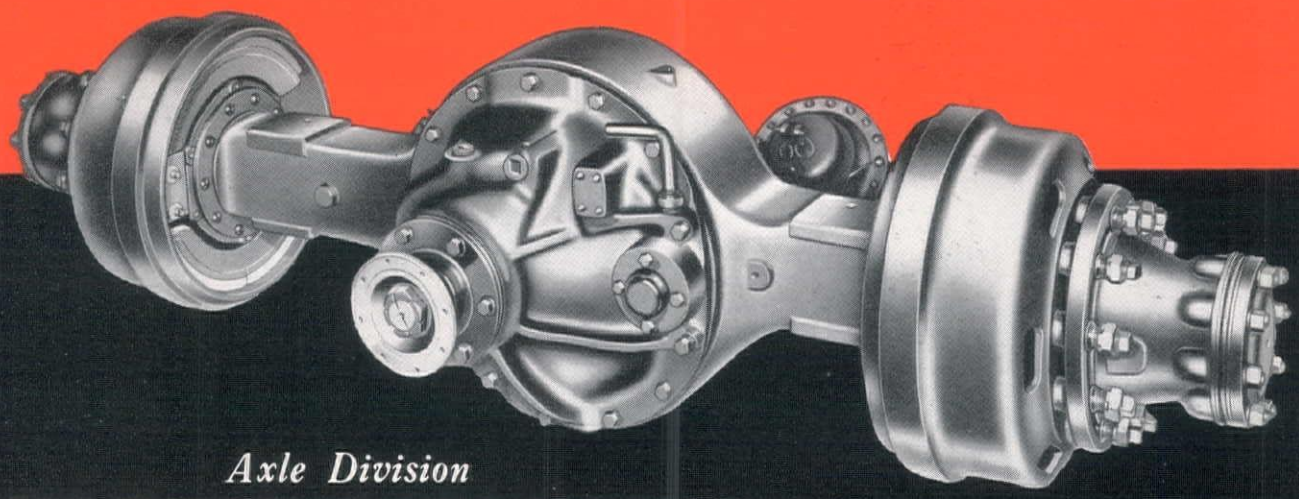
Pulling out under full load, making time on the hills, or high-balling on the straight-away—there is an operating speed range that's best for your engine—best for performance, for operating economy, and for engine life. Eaton 2-Speed Axles permit engines to run in this top-efficiency range under all conditions of road and load. This results in lower operating and maintenance costs, and longer life for the entire vehicle. Eaton 2-Speed Axles are available for most trucks of the 1½ ton class and larger. See your truck dealer for complete information.

More Than a Million Eaton 2-Speed Axles in Trucks Today



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Tandem axle trailers proved themselves during the war, when the Office of Defense Transportation asked all states to permit the use of Tandem trailers. When the war was over, reports showed that the tandems had inflicted no unusual wear on the highways. It was proved, in fact, that two properly spaced axles of a tandem tailer had carried heavier loads with less damage to roads than overloaded single axle trailers. Distribution of the load impact over greater road area is the obvious answer.

ONLY 2 MOVING PARTS

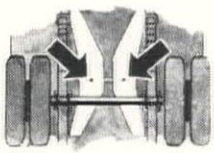
SIMPLICITY is the key to the TRAILMOBILE TANDEM design. There are no bell cranks, gears or bars—just two sturdy moving parts. With less parts there is also less wear. There is less time out for maintenance, and when an overhaul is necessary, less labor is required.

"TRAILMOBILE TANDEMS ARE BEST!"

TRAILMOBILE TANDEMS have two big steel rocker beams, delicately balanced to distribute every road shock into four springs instead of two. The simple, fool-proof construction stays in adjustment. There are only two moving parts, and these require no attention other than lubrication. They cannot work loose and drop the body onto the tires. The stress-free axles are held equidistant from each other by radius rods and automatically adjust their position over rough stretches. Rocker beams balance out spring action and eliminate chatter. TRAILMOBILE Tandems do not wallow—they are easy going into or coming out of turns. TRAILMOBILE Tandems hold the body as upright as a single axle trailer and body sway is eliminated. Those are just a few of the reasons why the TREND IS TOWARD TRAILMOBILE TANDEMS.

THE TRAILMOBILE COMPANY
BERKELEY, CALIFORNIA

LESS MAINTENANCE



Two rocker beams are the only moving parts. Their oversize bearings are constantly lubricated from oversize reservoirs. One Alemite fitting under each rocker arm is all the service necessary. There is no doubt about it—TRAILMOBILE Tandems are cheaper to own and maintain than any other tandem on the market today.

TRAILMOBILE

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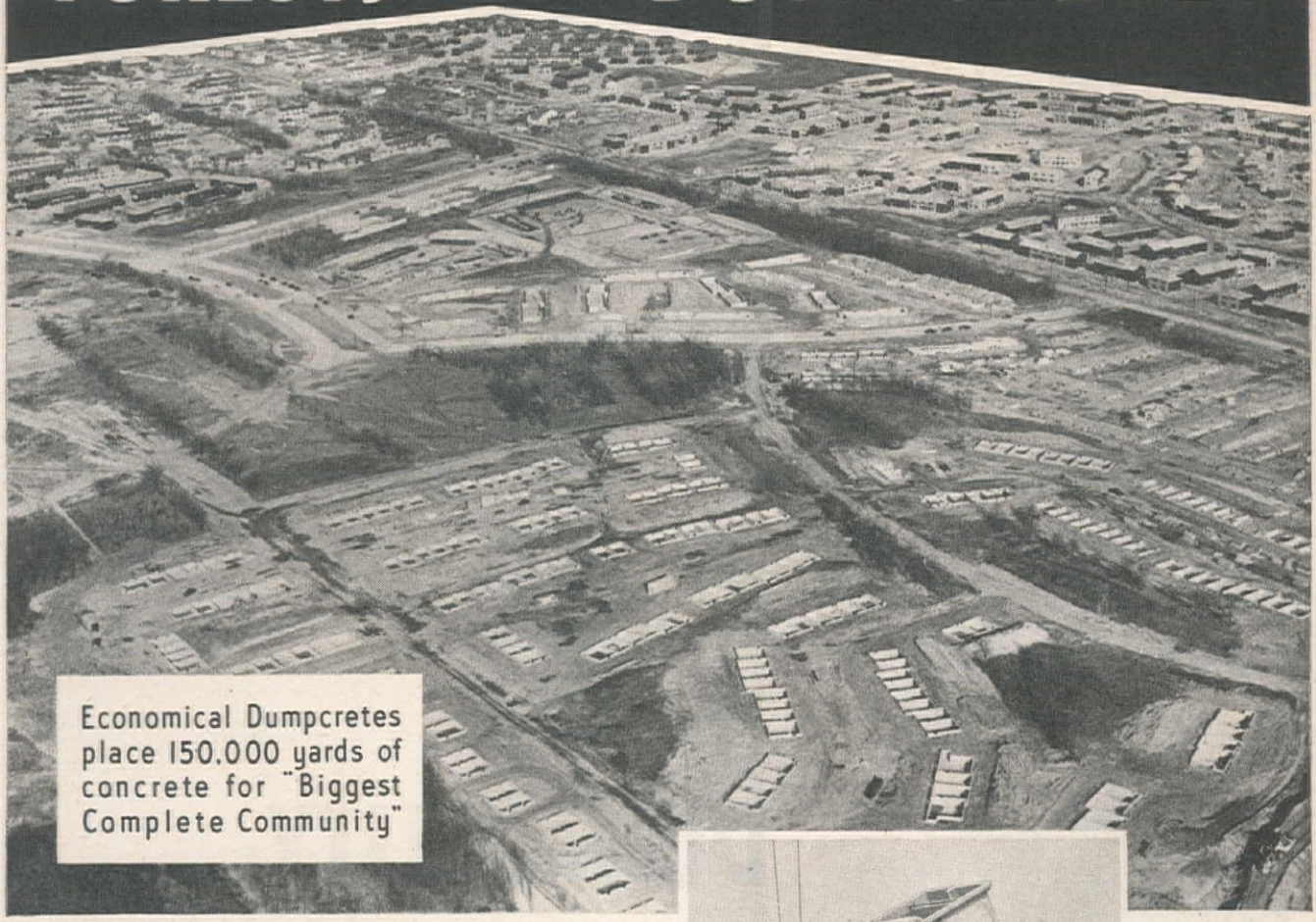
PARK FOREST *Picks* DUMPCRETES



Park Forest Homes (a city-to-be of 30,000 near Chicago) picked a reliable contractor to furnish its 150,000 yards of concrete. And Corbetta Construction Company picked a reliable concrete body—the Dumpcrete—to place it.

Corbetta's on-the-job mixing plant and seven Dumpcretes *average* 1750 yards per week!

Every yard of this air-entrained concrete meets rigid specifications. No extra air is whipped in by the non-agitating Dumpcretes on the way to the pour. Top-to-bottom, load-to-load uniformity is the rule.

THIS IS THE DUMPCRETE — the concrete body that placed 1½ million yards last year. The lower cost Dumpcrete is lightweight, watertight, with 13-foot chute, controlled higher discharge and lower center of gravity. Users report savings up to $1.00 a yard. Hauls sand, gravel and earth too.

High-discharge Dumpcrete pours directly into lay-down bucket.

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Why did Corbetta pick the Dumpcrete? . . . They wanted speed, low cost and a body that would do anything. The Dumpcretes load fast and dump fast. They haul hour after hour, day after day without downtime or expense. With their *extra high* discharge they place directly into buckets; or chute 13 ft. for foundations, footings, walks and streets.

You can have speed, economy and flexibility on your next job too . . . whether it's *big* or *small*. The low-cost Dumpcrete is the answer. Get proof . . . send for the facts today.

Send me booklet "Contractors Pour Faster, at Lower Cost."

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DIVISION, MAXON CONSTRUCTION CO., INC.

520 Talbott Bldg., Dayton 2, Ohio

LaPLANT-CHOATE MOTOR SCRAPERS

make earthmoving more profitable!

THESE are but a few of the outstanding profit-making advantages of the LPC Motor Scraper which let you carry 17½ heaped yards each trip, even in the heaviest materials. Higher speeds mean more trips per hour — per day — per year.

Bigger tires give you *surplus* traction and flotation in any type of material. And you get this better all-around performance with less wear and tear on the tires and with fewer tire replacements.

Add to these advantages the big new constant-mesh transmission — 12-cu. ft. piston type air compressor — 32 amp. generator — new and improved power control unit and controls. All these with the original high production features — double-acting hydraulic steering, four-wheel air brakes, curved offset cutting edge, low wide bowl, positive forced ejection, high apron lift, equal weight distribution, and many others — mean still lower costs per yard.

It will pay you to investigate all the money-making advantages of the Motor Scraper. See your nearest LPC Distributor now. Ask for a demonstration. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa — 1022 77th Ave., Oakland, California.

Compare...

	LPC Motor Scraper (225 H.P.)	Earthmover "A" (150 H.P.)	Earthmover "B" (200 H.P.)
H.P. per Struck Yard of Capacity	16.1	13.8	14.3
Price per H.P.	$124.00	$143.33	$135.00
Weight per H.P.	204 lbs.	194.6 lbs.	226 lbs.
Hauling Capacity in 3000 lb./yd. Without Tire Overload	13.4 yds.	10.9 yds.	8.44 yds.
Speed M.P.H.	19.3	17.3	16.8

INDUSTRIAL EQUIPMENT COMPANY OF SOUTHERN CALIFORNIA
4441 Santa Fe Avenue, Los Angeles 11, California

WESTERN CONSTRUCTION EQUIPMENT CO.
505 N. 24th Street, Billings, Montana
Stephens & Mount Avenue, Missoula, Montana

GENERAL EQUIPMENT COMPANY
1201 East 2nd Street, Reno Nevada

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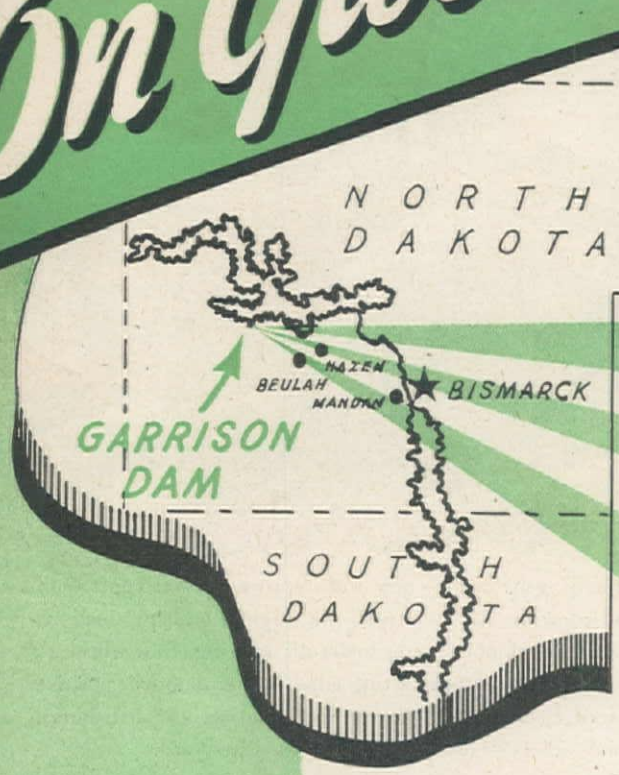
501 W. Seventh Street South, Salt Lake City, Utah

N. C. RIBBLE CO.
1304 N. Fourth Street, Albuquerque, New Mexico

ENGINEERING SALES SERVICE, INC.
410 Capitol Blvd., Boise, Idaho

LaPLANT-CHOATE

On Garrison Dam Lots



Contractors and engineers are using the most modern earth moving equipment—and lots of it—to build the world's greatest rolled earth fill dam on the Missouri River in North Dakota. Garrison Dam—scheduled for completion in 1953—will be 210 feet high and will have a crest length of 12,000 feet. A total of 75,000,000 cu. yds. of earth and rock fill will be required for the embankment.

Euclid equipment gets the call again at Garrison Dam! Sixty-six Bottom-Dump and 3 Rear-Dump Euclids, 5 Euclid Loaders and 3 water wagons will soon be on the job . . . hauling more and bigger loads at less cost . . . providing dependable, long-life service at low maintenance cost under a wide range of operating conditions.

A big, tough job—Garrison Dam! It's part of a tremendous project of the Corps of Engineers to eliminate destructive floods and harness rivers of the Missouri Basin for irrigation and hydro-electric power. A tough job, yes, but typical of hundreds of construction, mining, and industrial projects where "Eucs" have proved their ability to stay on the job, efficiently and dependably, day after day.

EUCLID
THE PIONEER

EUCLIDS

EUCLID all the way!

PETER KIEWIT SONS' CO. & MORRISON-KNUDSEN CO.
DEPEND ON EUCLIDS!

For their 20,000,000 yd. contract these contractors standardized on Euclid equipment because they know from experience that "Eucs" move more yards more profitably. For hauling the bulk of the earth and gravel, 66 Bottom-Dump Euclids of 25 cu. yd. capacity will be used. These units are powered by Butane engines of 300 h.p. and have a loaded top speed of 28 m.p.h. Drive and trailer tires are 27.00 x 33. Using the same model Euclid tractor as the Bottom-Dumps, 3 water wagons of 10,000 gallon capacity will be used on the fill and haul roads.

The big fleet of Bottom-Dumps will be kept busy by 5 Euclid Loaders working in the huge borrow pits. One of Euclid's more recent developments, the Loader has established many new production records on dozens of airport, dam, and highway jobs . . . the wide cutting blade and 54" belt really load dirt fast! Rear-Dump "Eucs" of 22-ton capacity will haul heavy excavation—these are powered by 300 h.p. engines and have a top speed of 27.7 m.p.h. with full payload. **Yes, it's Euclid all the way at Garrison!**

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

Move the Earth

After holing through, Supt. Sam Allen (right) on Brooklyn side greets Supt. Andy Amisano and General Supt. Harry Stripling (left) in Manhattan tunnel.

Holing-Through N.Y.'s Brooklyn-Battery Tunnel

Another Du Pont Dynamite Job

In driving the 9,117-foot, $80,000,000 vehicular tunnel beneath New York Harbor, construction engineers unhesitatingly approved selection of Du Pont Dynamites for all blasting operations. Another project of the Triborough Bridge & Tunnel Authority, New York, it is the second longest vehicular tunnel, in the world. It will consist of twin cast-iron tubes 31-feet in diameter, tile-lined, to provide four lanes that will readily handle an estimated total of 16,000,000 vehicles annually.

Photo above shows east tunnel from air shaft sunk in solid rock, 140-feet below surface at midway point. Sketch at right shows ventilating building designed by McKim, Mead & White, architects. It forms a man-made island in the bay.

Battery Tunnel contractors using Du Pont Dynamites included: Mason & Hanger Co., Inc.; and George H. Flinn Corporation.

Whenever you have a job of blasting . . . ask your Du Pont Explosives representative for complete information about Du Pont Dynamites and job-speeding blasting supplies to meet your specific requirements for an economical and efficient operation.

E. I. du Pont de Nemours & Co. (Inc.), Hoge Bldg., Seattle, Wash.—Midland Savings Bldg., Denver, Colo.—111 Sutter St., San Francisco, Calif.

DU PONT EXPLOSIVES

(ELECTRIC BLASTING CAPS "NITRAMON"† DYNAMITES BLASTING SUPPLIES AND ACCESSORIES)

†Reg. Trade-mark for nitrocarbonitrate blasting agent.

Contractors and Engineers Endorse These Tunnel-Driving Products

Whether the job is a great engineering project or a minor work of construction, Du Pont Explosives, blasting supplies and accessories are used with confidence by contractors and engineers everywhere.

DU PONT SPECIAL GELATIN

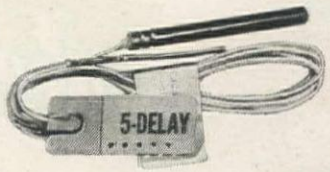
. . . used in driving the Brooklyn-Battery Tunnel has long been a favorite with blasters on all types of construction work. Plastic, cohesive, easy to handle, water-resistant.

DU PONT "GELEX"*

. . . economical, semi-gelatinous dynamite also used in the Tunnel is supplied with or without perforated cartridges. Plastic and highly water-resistant.

DU PONT "SERIES B" DELAY ELECTRIC BLASTING CAPS

. . . a recent addition to the extensive line of Du Pont Caps. Recommended for rotational shooting. The "Series B" is designed to eliminate risk of misfires due to arcing or "water hammer."



DU PONT ELECTRIC BLASTING CAPS . . . "MS" (millisecond) DELAY CAPS—

Galvanometers . . Rheostats
Blasting Machines . . . Tamping Plugs
Leading Wire . . . Connecting Wire

*TRADE MARK REG. U. S. PAT. OFF.

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DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

With hydraulically controlled loader in front, scarifier and scraper behind, this Model "VAI" Case tractor enables one man to do everything. He loosens, levels, spreads, digs, carries, lifts and loads earth—all with no need for other man or machine.

One man with Case "DI" tractor, shoveloader and dig-and-carry scraper (below) made 8-foot cut, finished 1000-yard job in 4 days. In larger picture, a Case "DI" equipped with hydraulic loader handles the backfill on a sewer job.

MAN SAVERS ... in Moving Dirt

● When you first put a Case Industrial tractor on an earth-moving job you'll notice how capable it is. You may think it uncanny that a tractor so compact can handle so much dirt. Then you get the idea that it's comfortable. Both tractor and operator seem to be "taking it easy."

As time goes on, you find that Case industrial tractors are economical, too. Their fuel economy continues consistently. More important in the long run, they are easy on upkeep. They take little of minor attention, go a long time before needing major overhaul. This same ENDURANCE means steady work on the job, makes the most of operating man-power.

Extra strength and stability built into Case Industrial tractors make them the ideal power plants for mounted equipment. The lugging ability of their heavy-duty engines makes hard pulls seem easier, saves gear shifting. Four basic sizes cover a weight range from 2500 to more than 10,000 pounds. J. I. Case Co., Racine, Wis.

See your Case Industrial Dealer

State Tractor & Equipment Co.....Phoenix, Arizona
Brown-Bevis Equipment Co.....Los Angeles, Calif.
Coast Equipment Co.....San Francisco, Calif.
Mitchell's .....Bakersfield, Calif.
Liberty Truck & Parts Co.....Denver, Colo.
Western Equipment Co.....Boise, Idaho, and Spokane, Wash.
Hilton's Inc.....Las Vegas, New Mexico
Nelson Equipment Co.....Portland, Ore. - Seattle, Wash.
Robison Machinery Co.....Salt Lake City, Utah
Wortham Machinery Co.
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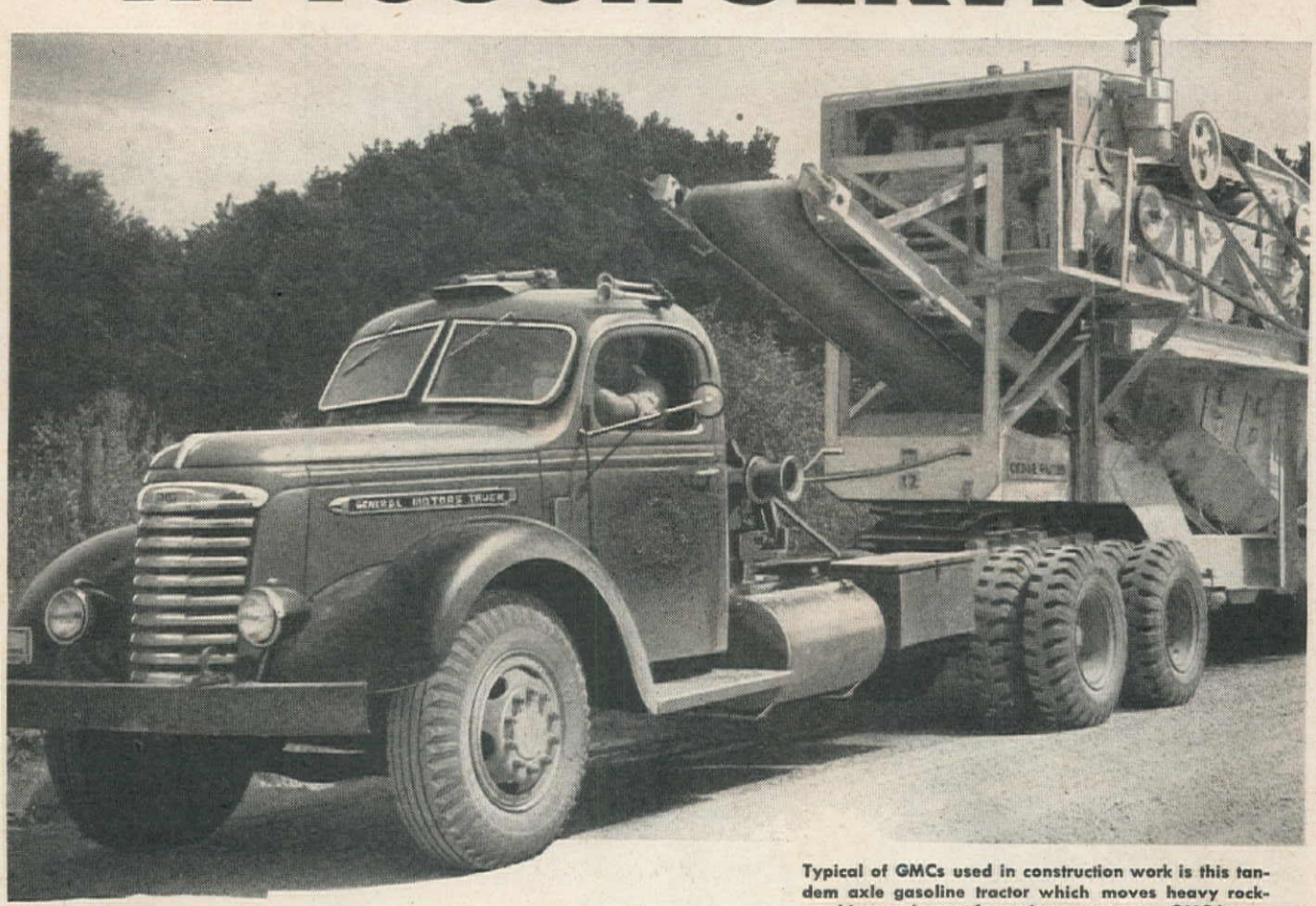
CASE

Built for Long Life
IN TOUGH SERVICE



Typical of GMCs used in construction work is this tandem axle gasoline tractor which moves heavy rock-crushing equipment for an Iowa contractor. GMC heavy duties are offered in gasoline models of four different engine sizes and Diesels of four- and six-cylinder design, in weight ratings from 19,000 to 90,000 pounds.

GMC heavy duty gasoline and Diesel trucks are preferred by operators who haul heavy loads in tough, rugged going. Why? Because GMC heavy duties have engines, axles, clutches, transmissions, springs, frames and brakes specifically designed to move big loads . . . and to move them more dependably, for more miles, at low per-mile cost.

GMC heavy duty trucks are the product of the world's largest exclusive producer of commercial vehicles. They are sold and serviced by a nation-wide organization of truck transport experts. If you're in need of new heavy hauling equipment, let your nearest GMC specialist aid you in selection of a GMC exactly suited to your job.

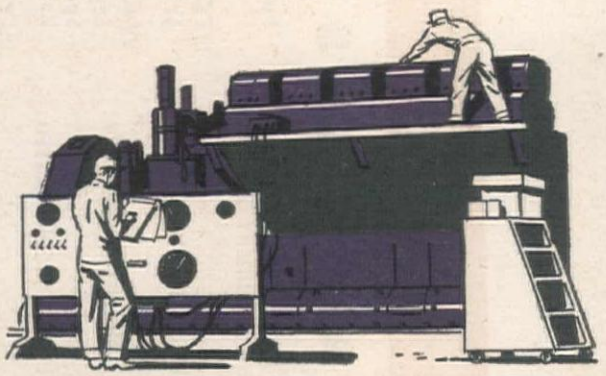
GMC TRUCKS
The Key to Greater Truck Value
GASOLINE · DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

The famous purple* OIL

T5X SUPERIOR LUBRICATION FOR ANY INTERNAL COMBUSTION ENGINE!

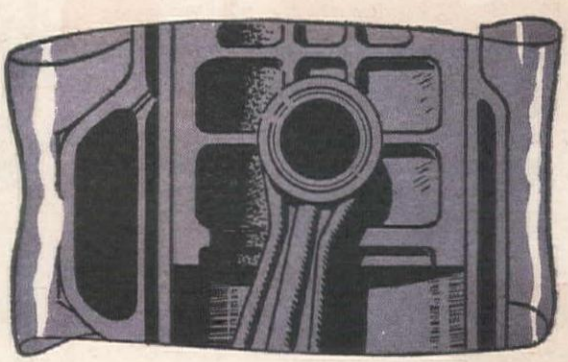
T5X gives greater protection to any type of internal combustion engine in any industrial operation. Here are the reasons why:



FIRST, T5X is a 100% pure, paraffin-base oil obtained from selected base stocks. It's a fully compounded, detergent-type oil that contains special rust and corrosion preventives.

SECOND, T5X contains an exclusive detergent compound that retards sludge formation to a remarkable degree. That means cleaner ring grooves, oil lines and pistons.

THIRD, T5X reduces wear to the minimum! A special inhibitor retards oxidation and gives high heat stability. A neutralizing agent combats acidity. Another ingredient suppresses foaming.



FOURTH, T5X forms an enduring oil film that gives maximum protection against scuffing and seizure. Rust and corrosion are held to a minimum by this tough film.

For full information on T5X phone your local Union Oil Representative or write Sales Dept., Union Oil Company, Los Angeles 14, Calif.

76 **UNION OIL COMPANY**
OF CALIFORNIA

*T5X gets its distinctive color from an exclusive ingredient that helps give the oil its remarkable stability.

It's NEW!

GALION No. 116 MOTOR GRADER

100 h.p.

for Extra Heavy-Duty Service

THE GALION IRON WORKS & MFG. CO

General and Export Offices Galion, Ohio, U. S. A.

Write for
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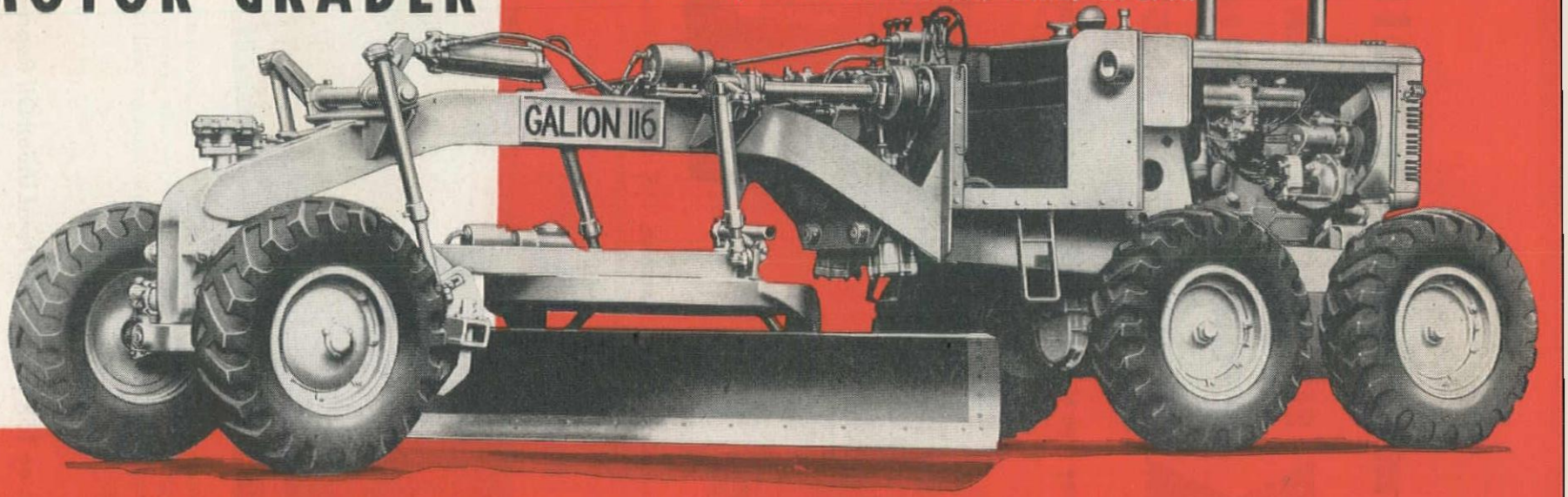

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WASHINGTON:
Seattle — PACIFIC HOIST & DERRICK CO.
Spokane — MODERN MACHINERY CO., INC.
Portland, Oregon — LOGGERS & CONTR. MACHY. CO.

WYOMING:
Rapid City, S. D. — J. D. EVANS EQUIPMENT CO.

PROFITS *are greater on* MECHANIZED PAVING JOBS!

Start your savings with

BLAW-KNOX
CLAMSHELL BUCKETS

HERE'S how to make more money on each paving job by using Blaw-Knox "assembly line" equipment . . . first, start increasing your savings with Blaw-Knox Clamshell Buckets . . . then continue to make more money by *saving* it through 100% mechanization of every operation. Use Blaw-Knox equipment right down the line, from rehandling material to finished pavement. Blaw-Knox supplies *everything you need* for high speed, low cost concrete and black top paving or concrete construction.

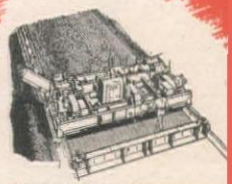
And remember, when your job starts with Clamshell Buckets, whether it is rehandling, trenching, dredging or hard digging, it will pay you to use the best bucket available . . . the one that brings you the greatest return on your crane investment. Be sure to select the *right* bucket for the job . . . check *crane capacity, clearances, type of material* to be handled or work to be done . . . then choose the *type, size* and *weight* of bucket that will pay off in maximum yardage, easier, faster work and reduced over-all maintenance costs.

Blaw-Knox can best give you the engineering service that makes correct bucket selection simple, and offers you the one-source—one-responsibility mechanized equipment that makes possible greater profit on every job. See your nearest Blaw-Knox distributor, or write direct for literature.

PORTABLE AGGREGATE BATCHING PLANTS

PORTABLE BULK CEMENT PLANTS

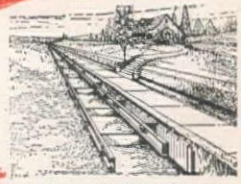
TRUCK MIXER LOADING PLANTS



PRECISION SUBGRADERS

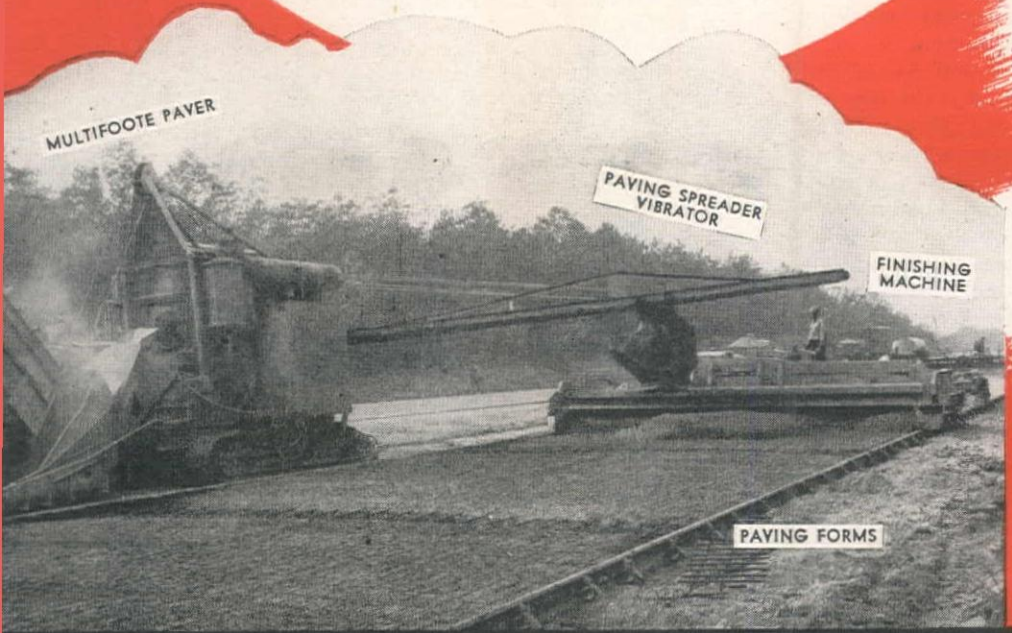
CONCRETE BUCKETS

ADNUN BLACK TOP PAVERS



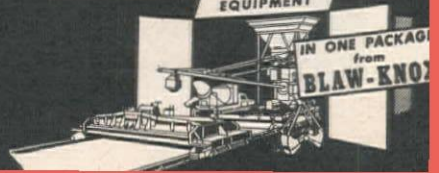
STEEL STREET FORMS

TRUCK MIXERS



BLAW-KNOX

FROM FORMS TO PAVER TO FINISHER... ALL YOUR PAVING EQUIPMENT



BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

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The Editor's Mail . . .

Hoover Dam Restored

Editor, Western Construction News

This is with regard to the lead article in your issue of February 15, 1949, ranking Ross Dam as the country's tallest concrete arch-type structure. This conclusion is reached after classifying Hoover, Shasta, and Grand Coulee Dams as gravity-type dams. It is quite possible that your classification is based solely on the shape of the cross-section of these three dams, which are roughly similar. However, shape of cross-section is but one of the main factors which enter into the structural behavior of a dam, and it is the way the dam acts that should determine its classification.

If we consider the manner in which the water load on a dam is carried to the foundation and abutments, we could show that one group of dams is considered to resist water load by gravity action alone, and we call these gravity dams. (Even in gravity dams, recent developments in analyses and model testing have shown that a portion of the water load may be carried by beam and twist action to the abutments, depending on the profile.) Grand Coulee Dam and Shasta Dam are gravity dams. The curvature of Shasta Dam is too flat to develop appreciable arch action, and hence the dam might be sub-classified as a curved-gravity dam.

With Hoover Dam, trial load analyses and model tests have shown that 68 per cent of the water load is carried by arch action, and only 32 per cent by gravity action. By way of comparison, trial load analyses of Ross Dam show that 70 per cent of the water load is carried by arch action and 30 per cent by gravity action. How, then, can you call Hoover Dam a gravity dam and Ross Dam an arch dam? If any distinction is made between the two dams, it should be to classify Ross as a thin-arch dam, and Hoover as an arch-gravity dam, making the distinction solely on the shape of the maximum cross-section.

There has been a popular misconception that Hoover Dam, with its massive cross-section, would stand by gravity alone. This is quite possibly true, if a dam of that height were lined up straight across a wide valley such as at Grand Coulee. However, Hoover Dam is arched in plan, and is set in a narrow canyon. It cannot act otherwise than as an arch dam, and any speculation about how it might act elsewhere is futile.

Ross Dam is an important structure in being the world's highest **thin-arch** dam, and this letter is not intended to detract in the least from its importance among the world's great dams. However, Hoover Dam has long been recognized as the world's greatest arch dam, and it should be restored to its rightful place.

JEROME M. RAPHAEL,
Civil Engineer, United States Bureau of Reclamation.

Denver, Colo.

Conserving Drops

Editor, Western Construction News

The article by Karl O. Kohler, Jr., in the February issue of *Western Construction News* on the prevention of waste in irrigation districts is of particular interest to the Salt River Valley Water Users' Association, as we are just starting an intensive program to reduce water losses and improve water delivery efficiency.

The information provided in Mr. Kohler's article will be useful to us in our personnel training program to increase the efficiency of water delivery to the farms in this valley. We wholeheartedly agree with the author that the time has come to take care of the water we have in order to keep the present land under cultivation supplied.

Here in Arizona we are planning on obtaining our share of water from the Southwest's last water hole, the Colorado River, but in the meantime we are directing every effort to conserve what we have and to distribute and use it in

Continued on page 54

Barber Greene

more capacity

more speed

more usefulness

THE 545A BUCKET LOADER

Every feature in the rugged Barber-Greene Model 545A Bucket Loader helps you to get more yards moved per hour, more jobs done per day.

For instance: there are primary and secondary transmissions . . . a separate crowding clutch . . . three forward speeds . . . a quick reverse. The 8-foot synchronized spiral feed keeps the hard-lipped buckets filled to capacity. Double-wheel drive through big, heavy-duty tires means positive traction and extra power. And you'll like the three-point chassis mounting . . . the light-handed steering.

Ask your B-G distributor for the whole story . . . you'll want to put a Model 545A on *your* payroll.

FAST ON THE ROAD, TOO

It's a great time-saver—fast on the road, fast on the job. Notice how the boom nestles horizontally for transport, and how it reduces overall height. Boom can be tilted onto saddle quickly and easily without using a wrench. Takes only a few minutes to get ready to move.

BARBER · GREENE COMPANY AURORA, ILLINOIS

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BROWN-BEVIS EQUIPMENT CO., Los Angeles 11, California; COLUMBIA EQUIPMENT CO., Spokane, Washington, Seattle, Washington, Boise, Idaho, Portland 14, Oregon; WILSON EQUIPMENT & SUPPLY CO., Cheyenne, Wyoming, Casper, Wyoming; CONTRACTORS EQUIPMENT & SUPPLY CO., Albuquerque, New Mexico; RAY CORSON MACHINERY CO., Denver 9, Colorado; JENISON MACHINERY CO., San Francisco 7, California; WESTERN CONSTRUCTION EQUIPMENT CO., Billings, Montana, Missoula, Montana; KIMBALL EQUIPMENT COMPANY, Salt Lake City 10, Utah; STATE TRACTOR & EQUIPMENT CO., Phoenix, Arizona.

a manner that will insure the application of every drop available for maximum usefulness.

We congratulate you on your selection of such excellent material for your fine magazine.

R. J. McMULLIN,
Manager of Irrigation,
Salt River Valley Water Users' Association.

Phoenix, Ariz.

Editor, Western Construction News

I have read with interest the article entitled "Need water? Start Saving Drops!" I believe that Mr. Kohler has treated this subject in a very fine manner and I have nothing but favorable comments to offer. I believe it would be well to have articles treating this subject from time to time, not only in construction magazines but also those magazines reaching the farmers or ranchers. It is a step in the right direction and should be kept up.

M. J. SHELTON
General Manager and Chief Engineer,
La Mesa, Lemon Grove and Spring Valley Irrigation District.

San Diego, Calif.

Airport Pavement Reinforcement—Is It Effective?

Editor, Western Construction News

The December, 1948, edition of *Western Construction News* contained an article on "Paving Material and Methods for Airport Runways" by A. E. Niederhoff, Civil Engineer, San Francisco.

In this article the author referred to recent "Concrete Airport Pavement Investigations and Loading Tests" conducted at Hamilton Field by the War Department, Corps of Engineers, U. S. Army, supervised by the Engineering Materials Laboratory, Department of Engineering, University of California. The article in general is a defense of the rigid concrete type of pavement and points to the efficiency and over-all economy to be obtained from this type of airport paving under varying conditions and considerations, both financial and physical.

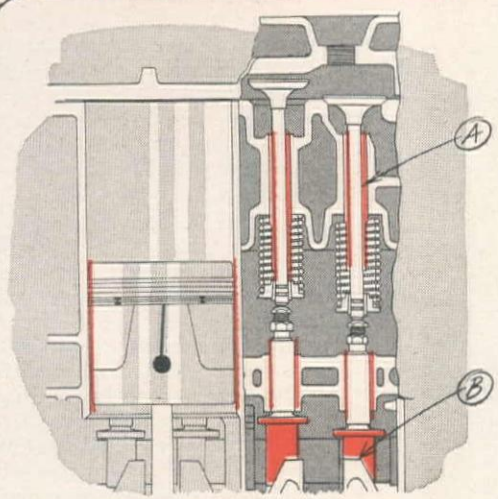
We concur in general with the findings and conclusions of the author that the best all purpose airport runway paving is the rigid concrete type under most conditions of loading and terrain. From the standpoint of engineering design, however, the author has taken the results of a physical investigation under very particular and highly specialized conditions and recommends that the results and findings can now be used as the engineering design criteria for airport paving under any and all conditions—climatic, ground or otherwise. He makes this significant statement:

"As a result of this unbiased investi-

Continued on page 56

STANDARD ENGINEER'S CASE FILE

Case HD118A—Cutting Engine Valve-assembly Wear



GASOLINE ENGINE VALVES AND CAM

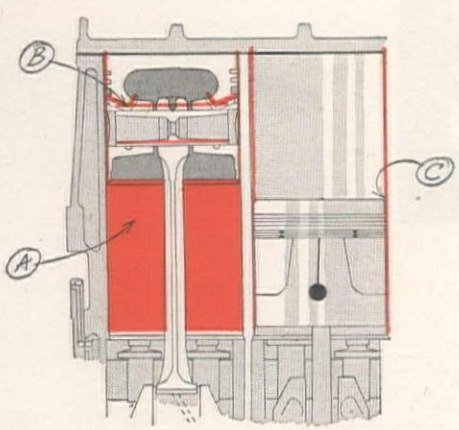
Heavy duty gasoline engines lubricated with RPM Heavy Duty Motor Oil and operated constantly under maximum loads required no valve service between regular overhaul periods. RPM Heavy Duty is also recommended for high-speed Diesel engines. Comes in five grades: SAE 10 to SAE 50.

A. Detergent in oil keeps engines clean -- prevents gumming on valve stems and wear-causing deposits.

B. Provides tough lubricating film -- will not rupture under high pressures and allow metal-to-metal contact ... stops extra wear on cams and other parts.

The base oil stocks of RPM Heavy Duty Motor Oil are specially selected for their ability to withstand the extreme operating conditions of hard service. Additives provide extra protection to engines. They help resist oxidation, sludging, corrosion, and prevent foaming of the oil in crankcases.

Case HD118B—Eliminating Engine Cylinder Scoring



GASOLINE ENGINE PISTONS AND CYLINDERS

RPM Heavy Duty Motor Oil provided adequate lubrication to prevent wear on cold pistons and cylinders in heavy duty gasoline engines from the instant the engines started to turn over.

A. A special compound in RPM Heavy Duty keeps film of oil on cylinder walls and other parts when the engine is idle -- lubricates until oil pump has time to function; keeps oil on parts when they are hot.

B. Cleansing agent keeps oil passages open and pistons and rings clean and working freely -- allows plenty of oil to flow to vital wear points and prevents gouging of cylinders.

C. Maintains oil-film seal on free-working rings -- reduces blowby and loss of power.

All varnish and lacquer removed from parts by RPM Heavy Duty Motor Oil, and other contaminants, remain dispersed in the oil and flow out with drainings.

Trademark Reg. U. S. Pat. Office

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush St., San Francisco 20, California.

HEAVY DUTY RPM MOTOR OIL

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

gineers, U. S. Army, and conducted by the Engineering Materials Laboratory, Department of Engineering, University of California, designers can now design concrete pavements for airports with full knowledge of their subsequent behavior."

In the Hamilton Field tests, the value of reinforcing steel in the slabs was reduced for various and obvious reasons which are fully described and explained in the analysis and comments accompanying the reports.

Mr. Niederhoff directs attention to this by quoting the report as follows:

"The significant findings of this full scale test showed that reinforcement was of little or no value."

Although not stated directly, the implication is that designers of rigid airport pavements may safely proceed on the theory that reinforcing steel is of no value for load carrying or crack control purposes and that best performance and economy may be obtained by using a thick non-reinforced slab.

We do not believe such a conclusion is warranted either by studies based upon the Hamilton Field Pavement Investigation or other comprehensive test data now available. In fact, most recent data support the opposite conclusion—that **reinforcement is both effective and economical when used in airfield pavements subjected to heavy load concentrations.** If conclusions are to be drawn concerning the effectiveness of reinforcing steel in air-base runway paving, they would more properly be confined to the data emanating from the Lockbourne Army Base Test Track near Columbus, Ohio, which has been designated by the U. S. Corps of Engineers "as their rigid pavement experimental laboratory."

The American Iron and Steel Institute has established a large committee on Reinforced Concrete Research. One of the objectives of this committee which has been functioning for a number of years is:

"To cooperate with other regularly constituted research organizations by supplementing work already done for the specific purpose of adding to the over-all technical data on any specific subject."

This committee, after discussing in detail the Hamilton Field Load Test Data with members of the staff of the Materials Laboratory, University of California, who conducted the tests for the San Francisco Office of the U. S. Engineers—stated:

"Our Committee's attention has been drawn to the fact that the construction at Hamilton Field should not be compared directly with that at Lockbourne test track since at the latter project the plain and reinforced pavement sections were laid over original sub-grade of various types, whereas, at Hamilton Field the new concrete sections were laid over 6-in. concrete pavement and over varying depths of granular material cushions."

Valid and comprehensive data are available not only on the Lockbourne

Continued on page 58

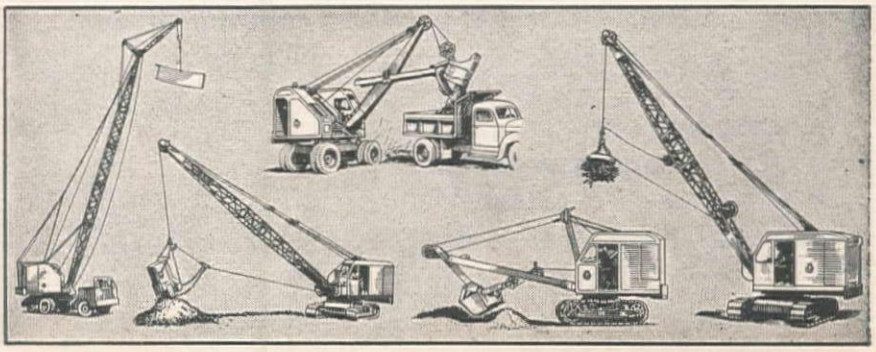
Pair of LINK-BELT SPEEDER Shovel-Cranes Speed Sewer Job

One LS-85 rigged as a back-hoe opens the 10 ft. trench, loading trucks with spoil. The other with hook block lowers the pipe, up to 90" in diameter, into the trench, and with clamshell, back fills. Team work of machines kept the street blocked only for short periods. Owner and operators all praise the fast powerful Link-Belt Speeders, and the helpful courteous service of Link-Belt Speeder distributors.

With crane-boom, the Link-Belt Speeder will handle numerous lifting, handling and erection jobs, or excavate with clamshell or dragline bucket. Quickly converted to shovel or trench hoe, it is ready for heavy digging of all kinds. The LS-85 has earned the nickname "Super ¾ yard" Shovel-Crane, by its extra strength, power and maneuverability.

In the Link-Belt Speeder line, there is a wheel-mounted, crawler-mounted or truck-type machine to suit every purpose, in capacities up to 3 yards, and convertible to all regular front end attachments. There is a Link-Belt Speeder distributor near you, with a stock of original Link-Belt Speeder parts and a crew of factory trained men. Call on him for information regarding this most complete line of Shovel-Cranes.

11,448



LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES

300,000-lb. experimental mat in Ohio but also the work at Westover Field, Chicopee, Mass.; Selfridge Field, Mt. Clemens, Mich., and other air bases in the United States **which without exception have shown the value of properly placed reinforcing steel in concrete airport pavement when subjected to the severe wheel concentration now imposed by modern air traffic.**

We believe that it is fair to request Mr. Niederhoff to clarify his position in regard to his statement that the Hamilton Field Tests are now the basis of general airport engineering design criteria. The inference that reinforcing steel is of very little value is entirely unsound and is not supported by experience and if accepted by those responsible for the design and construction of airports might impose a severe penalty on the steel industry which has done and is doing much to improve safety of air travel.

J. R. GUPTILL
Technical Sales Representative,
Columbia Steel Co.

San Francisco.

Editor, Western Construction News

The conditions of testing at Hamilton Field, i.e., an overlay test slab on an existing cracked pavement, were fully described in the subject article. The conclusion that reinforcement under the test conditions was of little or no value was contained in the report by the Department of Engineering, University of California, dated December, 1946.

The author did not intend to imply that steel reinforcement is never required for rigid concrete pavements, and this is brought out in the second sentence of the subject article, "As far as engineering is concerned, the crux of the matter is the bearing value of the sub-grade." The author will agree that Mr. Guptill is quite right if he would amend his statement to read, "reinforcement is both effective and economical when used in airfield pavements subject to heavy loading concentrations **and placed on a soft sub-grade."**

A. E. NIEDERHOFF
Civil Engineer
International Engineering Co., Inc.

San Francisco.

What Is Santa Fe Dam Worth?

Editor, Western Construction News

The article on page 96 of the February issue of WCN, "Army Engineers OKeh Santa Fe Dam" is very interesting, but wouldn't it be well to analyze the project either editorially or in a separate article and tell the readers just what we got for the money and what it is really worth?

47,200 ac. ft. of storage for $11,845,000 is a shade less than $251 per acre foot. Hoover Dam storage cost less than $2.00 per ac. ft., didn't it? There are no doubt many places where flood control dams could be built at a higher cost per ac. ft.,

Continued on page 108

"Stay out of here folks.... this hot stove will fry you!"

WHEN the first gas range, with its promise of a cool kitchen, was exhibited at the Philadelphia Centennial Exposition in 1876, little did its sponsor dream of a market of 21,000,000 homes. For that is the extraordinary number of residential customers now served by gas for cooking, refrigeration, or home heating.

Water supply and sanitation also made extraordinary progress in the half-century since 1899, the year our Company was established. Today, 12,000 water works furnish 85 million people with a dependable supply of safe, palatable water. Over 6,000 sewage treatment plants contribute to the health of the nation.

In these three progressive branches of public service—gas, water supply and sanitation—are customers who have been buying pipe from us for 50 years. They know that we, also, have made signal progress, from decade to decade, in developing and perfecting better methods for the production of better pipe.

To those responsible for the great progress in water supply, gas and sanitation service and their contribution to better health and living over the past fifty years, America pays tribute.

U.S. CAST IRON PIPE

1899-1949
U. S. Pipe & Foundry Co.
Makers for 50 years of cast iron pipe for water, gas and sewerage service.
General Offices: Burlington, N.J.

Seattle installs a one million gallon HORTON *Elevated Tank*

New radial-cone structure provides better water service in rapidly growing district

These two views show Seattle's 1,000,000-gal. Horton elevated tank which was recently installed in the water system to provide gravity water pressure for a rapidly growing section of the city. The 250,000-gal. capacity in an existing elevated tank (in the view at the left) had become inadequate to meet the growing water demand.

THE NEW elevated tank at Seattle is a 1,000,000-gal. Horton radial-cone bottom structure, 76 ft. to bottom, with a 25 ft. range in head. The radial-cone design provides a practical shape for large-capacity tanks with relatively low ranges-in-head, and makes it possible to eliminate the cost of pumping large amounts of water to unnecessary heights when the tank is filled.

Horton radial-cone bottom tanks are built in standard capacities from 500,000 to 2,500,000 gals. For tanks of 500,000 gals. or less, the Horton ellipsoidal bottom design is used. Ask our nearest office for full details on a tank of the size you need.

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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA. *In Canada* — HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

April 15, 1949 — Vol. 24, No. 4

The Parallel Bridge — ? —

WE HAVE JUST returned from a fine California regional meeting of the American Society of Civil Engineers in San Diego. It happened that simultaneously with the opening of the meeting, the California Toll Bridge Authority, speaking through Governor Warren and Public Works Director Charles Purcell, announced it had decided to proceed to build the parallel bridge across San Francisco Bay. This was no surprise to the readers or editors of *Western Construction News*, who had recognized months ago that the Authority never had any idea of building any other type or selecting any other location for the crossing.

The two *WCN* editors in attendance at San Diego naturally received a lot of good-natured joshing about the decision, which some people interpreted as the death knell of the Reber Plan, the Master Plan for San Francisco Bay which offers incomparably much more to the area than one limited bridge. Over and over again, we heard, "What are you going to say editorially about **that** announcement?"

Well, let's see what we could say: first, we could boastfully remark, "We told you so;" second, we could note that "There's many a slip 'twixt the cup and the lip," and that a lot of details like selling $155,000,000 of bonds, buying 200,000 tons of steel, securing right-of-way across Yerba Buena Island from a reluctant Navy, etc., are not automatically cleared up by the Authority's announcement; but third, we might say, "Let circumstances speak for themselves," referring to the fact that today, less than a week since the announcement, the State's Assembly has voted a bill (55-12) for an investigation of the whole Bay crossing problem, including the reasons why engineers were ordered **not** to consider the Reber Plan, the source of the pressure on Chambers of Commerce, which made those bodies in San Francisco, Alameda and San Mateo, in a matter of three days, completely reverse positions they had held for three years on the crossing, and the reason why no consideration has been given to the problem of bringing transcontinental railroads into San Francisco.

The investigation will probably have the effect of holding up the appropriation of almost a million dollars requested for bridge design. Other legislation introduced has been aimed at removal of Purcell from office, but so far as we know this is not likely to pass.

Come to think of it, you who asked us, that third answer, "Let the circumstances (since the announcement) speak for themselves" is all we'll have to say right now about the Authority's decision. The Assembly vote, indicating that the people of the State are **not back** of the Authority, seems adequate!

Engineers in the Labor Law

THE TRU-DEAL labor law, by which it is intended to repeal the Taft-Hartley Law, is in the Congressional mill. Labor Committees of both House and Senate have "reported it out" to the floor.

Without commenting on many of the provisions, we do take this means of calling the attention of our readers to the proposed elimination of the "professional employees" sections which were inserted in the T-H law after much work by the American Society of Civil Engineers and other engineering groups. These provided (1) an adequate definition of "professional employees," and (2) that they had the right to their own representation, rather than being lumped into bargaining agreements with non-professional laborers.

Every possible pressure, through letters, personal contact, or other means, should be exerted **immediately** on Congress to assure the insertion of these paragraphs in the new law.

Where are the Resources?

EVERYONE knows that the West is the fastest growing section of the country. At least part of the reason is found in this tabulation recently made for the 1949 convention of the American Institute of Mining & Metallurgical Engineers, at San Francisco.

Texas leads the nation in petroleum production, with **California** second and **Oklahoma** third.

Arizona leads in copper, with **Utah, Montana, New Mexico** and **Nevada** following in the order named.

Idaho produces almost 100 per cent of our domestic supply of antimony, and leads in the production of silver and zinc.

Washington leads in the production of aluminum, silica and crude magnesite.

Colorado is the principal producer of molybdenum and vanadium, with **Utah** second in each case.

Nevada is the leading source of tungsten.

Montana produces 90 per cent of our domestic supply of manganese, and is principal producer of vermiculite.

California leads in the production of gold and mercury.

Missouri is first in the production of lead, but **Idaho, Utah, Arizona** and **Colorado** follow in the order named.

New Mexico, California and **Utah** share our pitifully small resources of potash, ranking in the order named.

Although **Pennsylvania** leads in the production of Portland cement, **California** and **Texas** are second and third.

Alaska and **California** are our principal sources of platinum metals.

Texas, Louisiana, California and **Oklahoma** rank in that order in the production of natural gas.

Coal and iron are the only important minerals in which the Western Empire does not lead, and even in these, significant quantities are produced.

These Days —

IT WAS TO BE expected, of course, and it's here: A Democratic congressman has introduced a bill to once more change the name of that great dam on the Colorado River—this time he would return to the Ickes epithet, "Boulder." . . . As we write, Mike Straus and Richard Boke are **not** being returned to the Federal payroll, largely because of protests by California's courageous Senator, Sheridan Downey; they are of course raising a hullabaloo to the effect that he is attacking their loyalty, which he has not done. . . . The Hoover Commission is to be complimented on its forthright analyses of duplication in government operations, especially engineering and construction; its criticism of spiraling costs of reclamation projects as against original estimates, is a valuable contribution—we have no doubt it could be applied equally well, however, to other construction agencies; its suggestion of a single water resource agency leaves us a little cold, however, because of the willingness with which the Department of Interior accepts it — the Authority-minded Secretary, "Cap" Krug, must be confident that the new body will function under his direction. . . . Now that the details of the Atlantic Military Pact have been made public and it is obvious that the peaceful methods of the Marshall Plan have been eschewed, at least we ought to be able to stop sending the Marshall money to Europe. And the United Nations having been officially discarded by both the United States and Britain, we could cancel construction of the great monument to futility in New York.

The Power Grader that has Everything

Now there are 3

DIFFERENT IN SIZE
ALIKE IN PERFORMANCE

the New "88-H"

Bringing to the field of medium-sized graders the extra power and traction of all-wheel drive, and the unequaled maneuverability of all-wheel steer.

"99-H" 12 years a "champ"

The "old reliable." Leader of the motor grader parade since the original "99" of 1938. Unexcelled for heavy duty, all-around performance.

the New MASTER "99"

If your work requires the utmost in power, traction and speed, your nearby A-W distributor will probably call it the best buy of the three for you.

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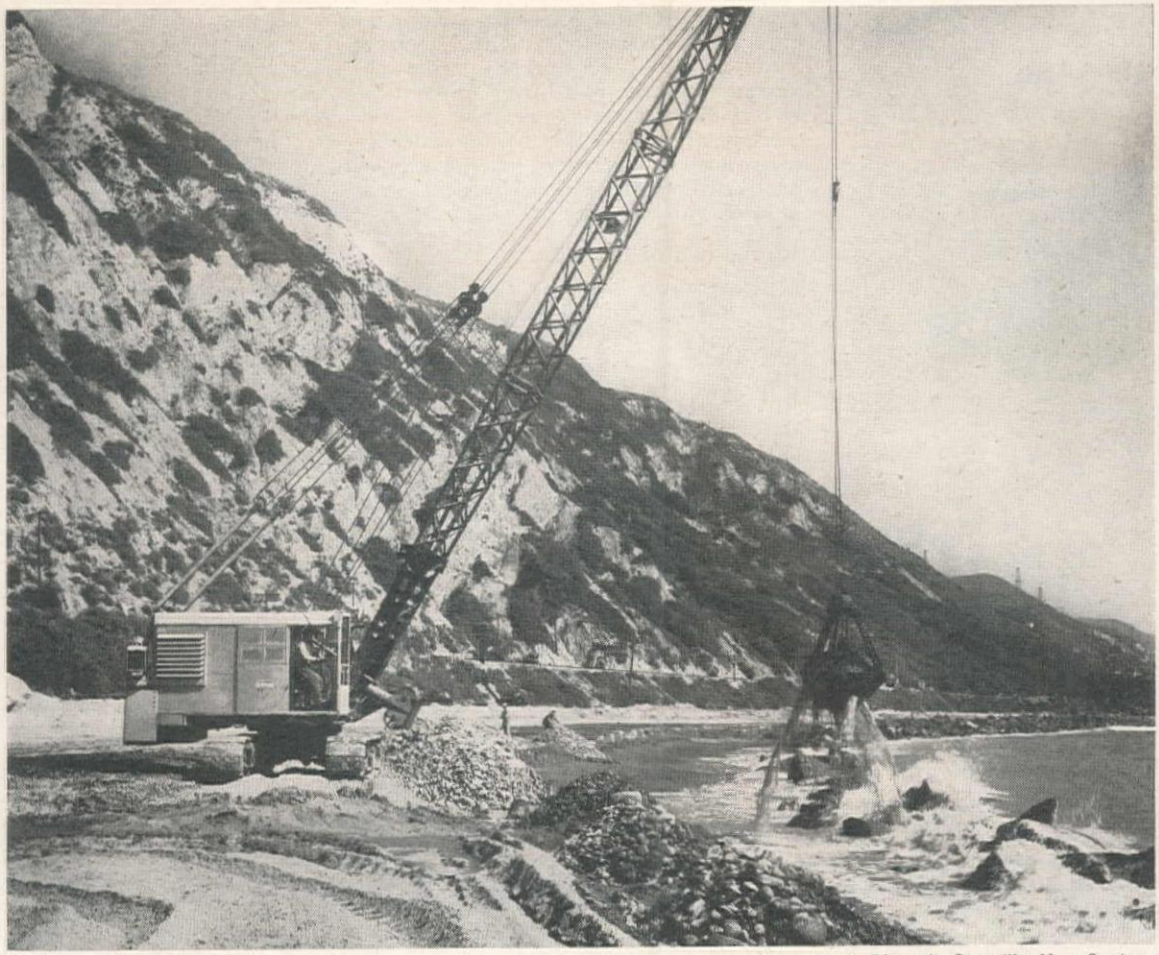


—*Photos by Caterpillar News Service.*

HANDLING 600 tons of rock per 8-hr. day, this Manitowoc Speed Crane places heavy rip-rap to protect the shoreline.

Ocean Pushed Back for—

Improvement of Coast Highway

Southern California highway, squeezed between railroad tracks and sea, improved by raising roadbed elevation and constructing new seawall of heavy rip-rap — Fill conveyed under railroad with no interruption of traffic

By KENNETH FAULK
and JACK TEETERS
Santa Paula, Calif.

TO PUSH the Pacific Ocean back 150 ft. was the challenge that faced Clyde W. Wood, Inc. of Los Angeles when awarded the contract by the California Division of Highways for improvement of U. S. Highway 101 ten miles west of Ventura.

The unusual topographic features of the location have often been responsible for traffic blocks due to flooding and silt deposition on the roadway through this section of the Coast Highway. The ocean beach for many miles along the highway between Ventura and Santa Barbara is dominated by abrupt 400-ft. cliffs of easily erodible sand. The Southern Pacific Railroad has graded a narrow bench near the foot of the cliffs for its Coast Line tracks, and the highway was squeezed onto a very narrow shelf between the tracks and the sea. In several places, continuing erosion by the surf made necessary the construction of concrete sea walls.

On this particular stretch of roadway, such a concrete wall had been constructed in 1926, but it was rapidly deteriorating, and in addition a serious drainage problem existed, caused by the low elevation of the road surface. Storm waters, heavily laden with sand from the cliffs, along with brush and other debris, would rush through the numerous culverts under the railroad, but would clog the corresponding openings under the highway because of their necessarily flat grades. The storm waters would then spread over the pavement and deposit their load of silt across the traveled way. In addition, the accumulated water tended to soften the railroad right-of-way and create a hazard for that service.

Accordingly, a contract in the amount of $960,595 was awarded to Clyde W. Wood on June 29 of last year, to widen the shelf upon which the highway is

FILL MATERIAL was excavated from the cliff-side and carried to . . .

located, and to raise the surface of the roadbed from 8 to 22 ft. above the original grade. The new highway section is 1.2 mi. in length and approximately 120 ft. in surface width. The old road was three lanes in width, while the new will carry four lanes and a dividing strip.

Under one, over the other

In pushing the ocean back to accommodate the new highway, a new seawall of heavy riprap was placed along the new shore line, and approximately 400,000 cu. yd. of sand from the adjacent cliffs was filled behind the barrier. Although the cliffs, with an unlimited quantity of highly suitable fill were only a few feet away from the site of placement, its conveyance across both railroad and highway in a manner which would not interfere with traffic on either system called for the maximum in ingenuity and mechanical assistance.

The movement of the earth was accomplished by erection of a two-step conveyor belt system which passed under the railroad through a concrete culvert, and passed over the highway with a minimum clearance of 14 ft. The belt under the tracks was 75 ft. long, and that over the highway 60 ft. long. The system was capable of delivering 600 cu. yd. of material per hour on the 4-ft. wide belt, but truck loading limitations at the discharge end generally prevented realization of the full capacity. The material was excavated by carrier scrapers from the cliff-side and bulldozed into a hopper which fed onto the belt. At the discharge end, the material was dumped onto a scalping screen which removed cobbles of 3-in. diameter and over, while suitable fill sand passed through to be distributed by Tournapulls.

The entire belt system was operated by one man using electric control buttons. Because fines in the material had a tendency to clog discharge hoppers, these were discarded and the Tournapulls were loaded directly from the screen, with the belt being stopped between each loading. Scalped cobbles were transported either to stockpiles for shore protection gravel or to a 20 x 36 Universal crusher for crushing into suitable size for the untreated rock base.

Riprap hauled 100 miles

The project involves the placement of 69,000 tons of riprap, ranging from 500 lb. to 12 tons each between elevation —10 and +20. This material was hauled from the Kaiser plant in Declezville, Riverside County, on railroad flat cars to Seacliff, where it was transferred by a Koehring crane to dump trucks and transported one mile to the project. The rocks were individually placed in the riprap by a long-boom Manitowoc crane.

Ten thousand tons of special heavy-base rock, ranging in size from 5 to 12 tons each, was placed from elev. —10 to elev. +3 along the entire length of the stretch. Thirty-six thousand tons of extra-heavy riprap, ranging from 3 to 5 tons each, was then placed on the rock base material to an elevation of +12.

Class heavy riprap came next, 13,000 tons in all, weighing 500 lb. to 3 tons each and was placed from elev. +12 to +20.

Crevices of varying sizes on the base foundation were then filled in by 8,000 tons of light riprap from 50 lb. to 5,000 lb.

The cobbles, scalped from the imported borrow, were placed in a 12-ft. wide strip between elevations 0 and +20 behind the riprap to keep the borrow from washing out through the heavier rocks.

Culvert boxes cantilevered

One of the most important operations on the whole project was the construction of 25 storm drain culverts through the new fill. They varied in size from 2 x 2-ft. box culverts to 10 x 16-ft. drains. Approximately 162,000 lb. of reinforcing steel and 1,000 cu. yd. of structural concrete were required. The seaward 20 ft. of each of the culverts was made extra heavy and tied back with reinforcing steel so that if by any remote possibility the riprap might be washed out during a storm, the drain will support itself by cantilever action, and continue to function properly.

The fill was placed first between the riprap seawall and the outward edge of the old pavement, and culverts were constructed through this portion while fill was being dumped. When the fill was brought to grade, traffic was diverted onto it, and filling over the old roadway was begun. The upper ends of the culverts were then poured. The short sections of channel between the railroad and highway culverts had been gunited to hold the water on a direct course.

In constructing the concrete culverts, the contractor made use of removable steel form panels of varying lengths and widths measured in 6-in. units. Wooden fillets are placed at the corners and by means of bolted interior corner connections the form panels can be collapsed inward after concrete is set. These particular panels were first used on construction of the Iron Mountain pumping plant of the Colorado River Aqueduct, and have been used innumerable times since.

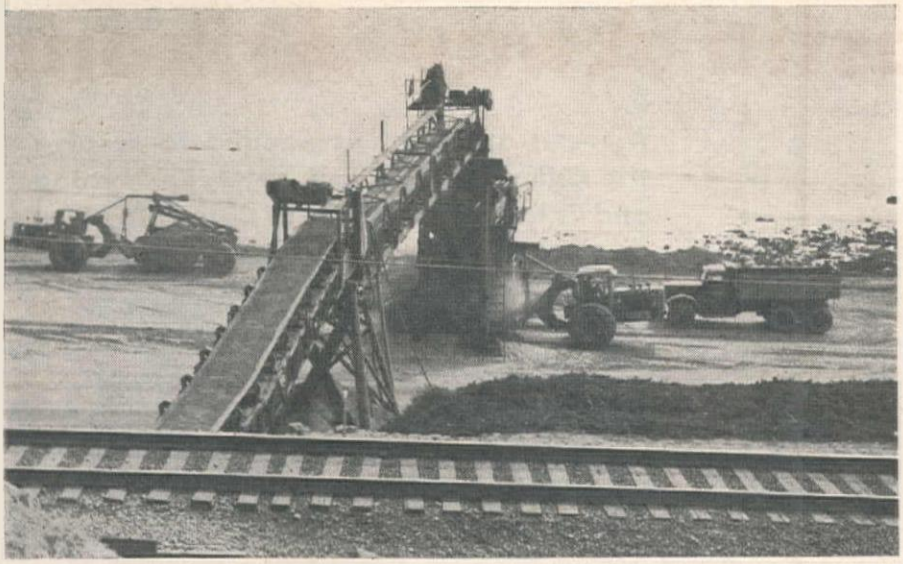
The transit-mixed structural concrete and gunite materials were supplied by the Saticoy Rock Co.

The fill is now completed and pouring will commence immediately. It is anticipated that the project will be completed by May 15. Pavement is to be a 3-in. plant-mix asphaltic surface on 8 in. of untreated rock base and 10 in. of imported sub-base. Asphaltic surface will be applied under a sub-contract by El Rio Rock Co. About 7,500 tons will be placed by Barber-Greene spreaders.

Organization of the job

Stanley Wood is project manager for the contractor, and A. W. Carr the resident engineer for the State Division of Highways. On Wood's staff are Wesley Myers, superintendent; Harold Mor-

. . . THE LOADING hopper of the under-the-railroad conveyor, from whence . . .



... DISCHARGE was through scalping screen where larger cobbles were removed.

row, dirt foreman; Robert Nutt, rock-placing foreman, and William Schirmeister, cement foreman.

Equipment used on the project included: 7 Caterpillar D8 tractors, 3 Caterpillar 80 carryalls, 2 LeTourneau RU carryalls, 6 Tournapulls, 2 double drum Southwest sheepsfoot tampers, 2 Caterpillar motor graders, one ½-cu. yd. Northwest shovel, one 2½-cu. yd. Manitowoc dragline, one 2½-cu. yd. Koehring dragline, two 3,000-gal. water trucks, six 8-cu. yd. dump trucks, two 16-cu. yd. dump trucks, one over-highway conveyor system, and one Universal crusher.

Studies Initiated for Development Of Oregon's Rogue River Basin Area

A PLAN for completing investigations leading to comprehensive development of the Rogue River Basin in Oregon has been announced by Regional Director R. J. Newell of the Bureau of Reclamation. The investigations are to be conducted by the Bureau of Reclamation, the National Park Service, and the Fish and Wildlife Service, in collaboration with local and state interests. The studies will seek to reconcile conflicting interests to the maximum extent consistent with a development of the Basin which is physically and economically sound.

The plan was presented simultaneously with the announcement of completion of two reports on the problem. The first is by Dr. Harlan H. Barrows of the University of Chicago, consultant for the Department of the Interior, on the public hearings held by the Bureau of Reclamation in Medford, Ore., June 8 and 9, 1948. The second report is by the Pacific Northwest Field Committee, composed of regional representatives of all agencies in the Department of the Interior.

Dr. Barrows' report concluded from an analysis of the testimony presented at the hearings that most local interests desire the Bureau's "Plan A," although it is vigorously opposed by recreational interests outside the Basin. This plan involves nine storage reservoirs. Seven would be on tributaries and two on the main stem of the Rogue River. The alternative "Plan B," Dr. Barrows noted, received very little support from any source. He recommended that "Plan B" be discarded and that "Plan A" be adopted, subject to final and suitable revisions.

The Field Committee report concludes that there is no fully satisfactory solution of the Rogue River problems without compromise or adjustment of conflicting views. The Rogue, taken as a whole, cannot be considered solely as a wilderness - recreational - sports fishing area, or solely as an economic area of conventional agricultural - industrial - community composition, the Committee states.

Specifically, the committee recommended:

1. Immediate initiation of studies by the National Park Service and by the Fish and Wildlife Service and the Oregon State Game Commission of recreational and wilderness values in certain parts of the Rogue River Basin and the extent to which these values will be affected by the developments proposed.

2. Immediate initiation by the Bureau of Reclamation of studies requisite to the modification of Plan A as proposed by Dr. Barrows, leading to an early report.

3. More comprehensive study of the basin and its various potential uses leading to earliest practicable formulation of a coordinated plan for development.

Regional Director Newell said that the Bureau of Reclamation will proceed immediately with the preparation of an interim Rogue River Basin report. This interim report will be based on the best overall plan of development with full consideration of alternatives. As a result of its earlier planning, the Bureau had proposed the irrigation of 73,000 ac. of new land, the provision of a supplemental water supply for 40,000 ac., and the installation of about 100,000 kw. of new hydroelectric power capacity. A substantial measure of flood control also would be provided in order to reduce the damage caused by repeated, destructive floods in the Rogue River Basin.

New Natural Gas Line From Texas to California

IN A MOVE to make available to consumer markets natural gas now being vented to the air in west Texas, the Federal Power Commission has authorized El Paso Natural Gas Co. and Pacific Gas and Electric Co. to construct new pipeline facilities for the transportation of 250,000,000 cu. ft. of gas per day for ultimate sale in central and northern California. The Commission's action was in line with the policy of the Texas Railroad Commission aimed at preventing the wastage of natural gas produced in conjunction with oil.

The new facilities of the two companies, to be built at an estimated combined cost of more than $100,000,000, will bring gas from the Permian Basin in New Mexico and Texas through the El Paso system to a connection with the P. G. & E. line on the Arizona-California border.

Under the authorization, El Paso will construct approximately 247 mi. of 30 and 26-in. line looping the company's present 26-in. line from the Permian Basin; about 95 mi. of 24-in. line in Texas to reach gas supplies; approximately 102 mi. of 26-in. and 17 mi. of 30-in. line extending from El Paso's Gila compressor station in central Arizona to the Colorado River, near Needles, Calif.; approximately 80,000 h.p. in compressor capacity; and additional field lines and equipment. Estimated cost of El Paso's portion of the project is $52,456,032.

P. G. & E. will build 506 mi. of 34-in. line extending from the California boundary to its terminal near Milpitas, Calif., 16,800 h.p. in compressor units, and additional lateral lines. The 34-in. line is the largest diameter ever authorized for any natural gas pipeline. P. G. & E. estimates cost of these facilities at about $55,519,000.

El Paso proposes to finance its construction through a $34,000,000 bond issue, a $9,000,000 bank loan, and the balance from internal sources. FPC's order, however, said the construction program does not necessitate El Paso's securing a bank loan at this time. P. G. & E. said its program will be financed along with other construction projects of the company from funds on hand, internal sources, proceeds from the sale of bonds and stock, and, if necessary, short-term bank loans.

The FPC order fixed July 1, 1952 as the deadline for completion of construction. Both companies have indicated that they will commence work on the projects immediately.

Water's Wastin' Away, Arizona

A fresh approach is needed to resolve the ridiculous deadlock between Arizona and California over use of Colorado River water—Here is a blueprint for action!

THE COLORADO River Compact was signed in 1922. Hoover Dam was commenced in 1931 and dedicated in 1936. Irrigation development in California's Imperial Valley, using Colorado River water, began in 1902. Roosevelt Dam on the Gila River in Arizona, first of the federal irrigation projects, was completed in 1911. Scores of such significant dates dealing with developments on the lower Colorado River and its tributaries could be mentioned, including the signing of the Mexican Water Treaty in 1944.

Every one of these dates should have denoted a milestone in the development of the agricultural and industrial destiny of a great area included in the states of Arizona, southern Nevada, and southern California, the natural beneficiaries of the lower Colorado River, and to whom, jointly, the Compact of 1922 forever assigned some 8,500,000 ac. ft. of water annually.

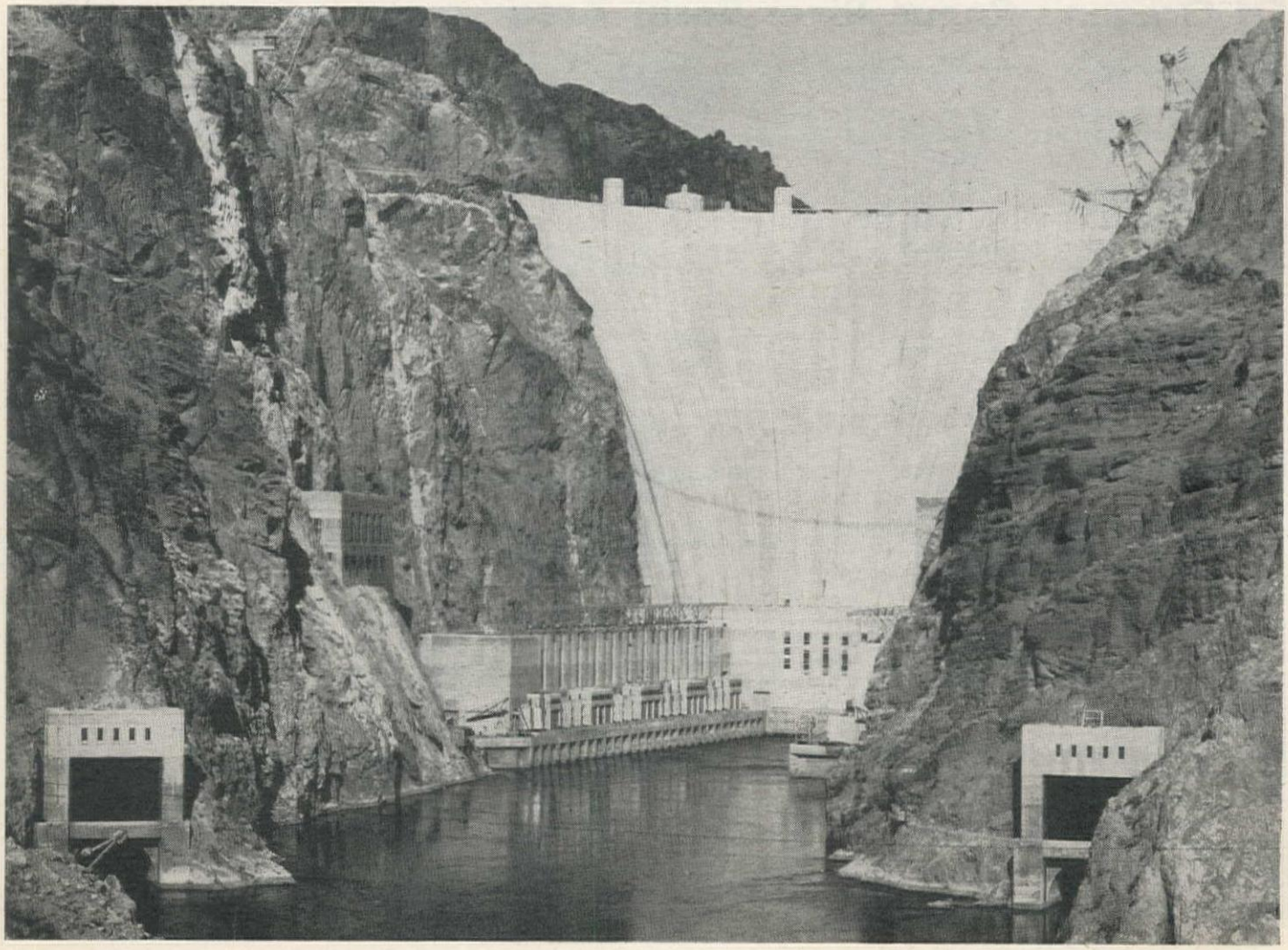
It would appear, and it was the intention of the framers of that Compact, that it shouldn't be too great a problem to appraise the needs of the several communities, agencies, and projects of the three states, and to assign to each a sufficient quantity of water to cover those needs, and if it was found that the quantity was insufficient to go around, then to weed out certain less feasible objectives, or to grant water proportionately to all.

Accordingly, the three states set up bargaining groups and they commenced meetings. It was inevitable, of course, that as soon as it was determined that the quantity was not completely adequate, conflicts and exaggerated claims would arise. Nevada's quota was agreed upon without too much argument, but to this day, 25 years later, Arizona and California have been unable, as might be hoped for in a civilized, rational age, to divide the remainder.

The city of Los Angeles and its neighbor communities feel that they are entitled to further supplies lest the future growth of their rapidly-expanding economy be stunted; water is desperately needed for the vast central Arizona acreage, and a project to cost three-quarters of a billion dollars is proposed, California claiming this expenditure cannot be justified; the states cannot agree by one million acre feet on the proportion of Gila River flow which should be charged against Arizona, nor who should absorb evaporation losses at and below Hoover Dam.

Delays have been costly

At least three costly losses have resulted from this lack of unity. First and foremost, undoubtedly, was the loss of 1,500,000 ac. ft. of water annually through the ratification of the Mexican



HOOVER DAM was put to work conserving precious Colorado River water in 1935, but the lower basin states are still at odds over use of this water.

ınd California!

Water Treaty. Being unable to present a united front in defense of their common property, unscrupulous do-gooders in Washington were allowed almost without hindrance to give away "in perpetuity" that much of their so desperately-needed water—a loss that must inevitably affect BOTH states adversely.

Secondly, development of important projects within their own states has been held up for many years. Understandably, the federal government has declined to finance the great projects which might be constructed since no assurance could be given of the amount of water that might be finally assigned. We think it could do nothing else.

Third, the overall effect of the constant combat, the ungentlemanly conduct — on both sides — the charges and counter-charges, the name-calling, the disharmony between neighbors, can be nothing but deleterious. Enmities have been created between individual men, between cities, and between states, that will take generations to compose. In this United States, threatened by an unfriendly world; in this Western Empire, constantly threatened by Eastern domination, such conditions are utterly inexcusable. Now, more than ever in history, harmony and unity are essential.

We take no sides

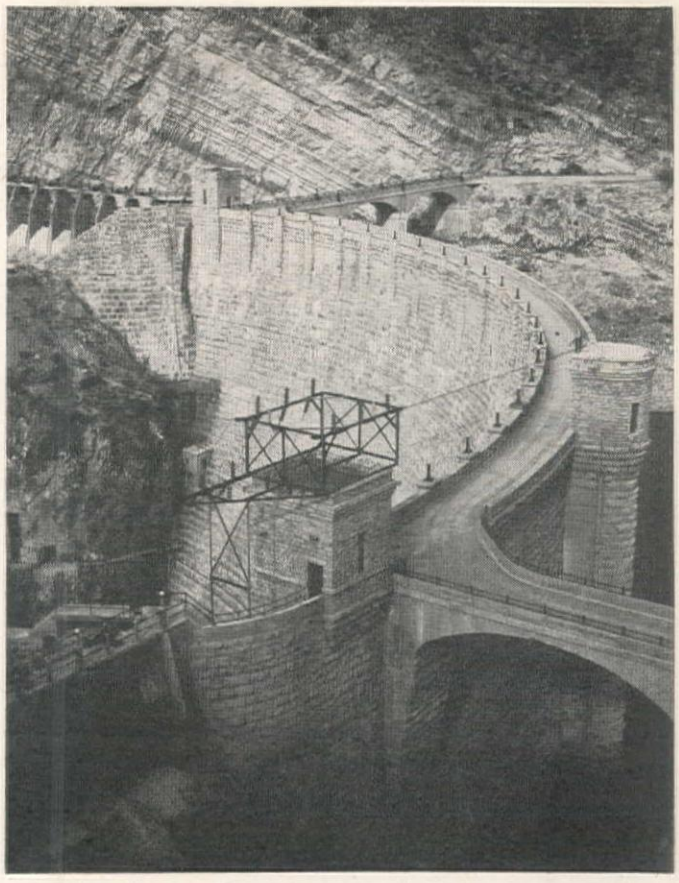
This editor has lived for a considerable period of years both in Arizona and in California, has many friends in each state, and has the deepest sympathy for each. He has striven to keep *Western Construction News* completely neutral in the controversy, speaking as it does for the engineering and construction industry in **all** the Western states, and its policy will continue on that basis. We have not, and will not, attempt to act as a judge on the issue of water division.

Our impatience has been steadily increasing, however, with those who have been handling the negotiations. Representatives of both states have assumed that no compromise is possible, and are pressing for outside assistance. California claims that only through a Supreme Court ruling can settlement be achieved, but experience indicates that this would require many, many additional years of delay, and might in the end produce an indefinite decree anyway. Arizona, fighting this proposal, asks fantastic liberalization of the Reclamation law, and hopes to win support from a power-happy Interior Department. Neither of these is a solution. They merely introduce further elements into the squabble and delay final accord, which in the end will have to be by agreement anyway.

We have reached the conclusion that the negotiators for the two states, many of whom we know personally and sincerely admire, have "lost sight of the forest because of the trees"; having fought for 25 years, they dare not lose face now by any concession, and so prolong the scrap indefinitely, using the same old cliches, the same old arguments. Despite the great respect that we have for most of them, we cannot help feeling that they have lost the will to settle the dispute, being dedicated now to its prolongation—not for hope of personal financial gain, but for pride's sake.

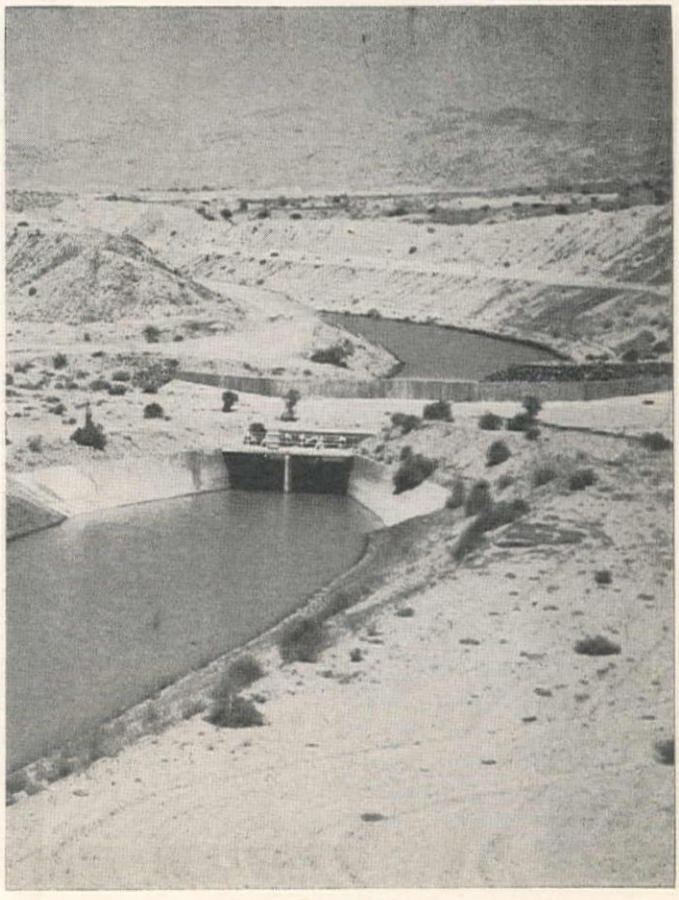
Let's start again from scratch

We propose, then, and seriously urge that the governors of the two states appoint committees of men with fresh approach, with a will to end this ridiculous deadlock and disharmony; that these men meet to "start from scratch"; and that they have "power to act" for their states in effecting a compromise compact, subject of course to ratification by the two legislatures. Other states, with long-standing controversies over water rights in other streams, have recently settled these matters by compact—there is no conceivable real reason why it cannot be done here.



ROOSEVELT DAM on Arizona's Gila River. After 38 years, disagreement over 1,000,000 ac. ft. continues.

ALL-AMERICAN CANAL, which serves Imperial Valley. Further development is stifled, pending agreement.



WCN Nominates These Competent Men for the Committees

REPRESENTING

CHAIRMAN | ARIZONA | CALIFORNIA

WALKER R. YOUNG

The recently-retired Chief Engineer of the Bureau of Reclamation, should be appointed as federal representative and ex-officio chairman of the combined committees.

☆

The men nominated here are all reliable and respected. They represent various walks of life, and their residence is divided between areas to be benefitted by water from the Colorado River and areas not in the direct zone of benefit. A few have been in the thick of the fight in the past, most have not. Their approach to the problem would be one of welcome freshness!

MUNICIPAL GOVERNMENT

RAY BUSEY
Mayor of Phoenix

FLETCHER BOWRON
Mayor of Los Angeles

PROFESSIONAL ENGINEERS

HAROLD W. YOST
Consulting Engineer, Phoenix

DONALD M. BAKER
Consulting Engineer, Los Angeles

G. M. BUTLER
Dean of Engineering, University of Arizona, Tucson

FRANK E. BONNER
Consulting Engineer, San Francisco

DARIO TRAVAINI
Superintendent of Sewage Disposal, City of Phoenix

PHILIP G. BRUTON
Brig.-Gen., U. S. Corps of Engineers, Ret., San Francisco

AMERICAN SOCIETY OF CIVIL ENGINEERS

JOHN A. BAUMGARTNER
President, Arizona Section, Tucson

DAVID LEE NARVER
President, Los Angeles Section

NEWSPAPERS

J. NEWELL JOHNSTON
Publisher, Douglas Dispatch

NEAL VAN SOOY
Editor and Publisher, Santa Paula Chronicle

CONTRACTORS

DEL E. WEBB
President, Del E. Webb Construction Co., Phoenix

JOHN MacLEOD
President, the Macco Corporation, Clearwater

WATER USERS

WAYNE AKIN
Manager, Western Farms Management Co., Phoenix

J. J. PRENDERGAST
President, Bear Valley Mutual Water Co., Redlands

WATER DISTRICTS

O. L. NORMAN
General Manager, Salt River Valley Water Users Association, Phoenix

M. J. DOWD
Consulting Engineer, Imperial Irrigation District, Imperial

We have devoted many hours of thought and conference to this matter, and present herewith our nominations for those committees. These men are competent, respected, reliable, and fair. They represent various walks of life, and in each case are divided as to residence between areas immediately to be benefitted by the water, and areas not in the direct zone of benefit. A few have been in the thick of the fight in the past, most have not.

From each state we have chosen: the Mayor of the principal city involved (Bowron of Los Angeles and Busey of Phoenix, but should either be changed through election before the committees are appointed, then his successor); three highly competent practicing engineers; the presidents of the Arizona and Los Angeles Sections of the American Society of Civil Engineers; a prominent contractor; a leading newspaper editor from without the area of direct benefit; a representative of water users; and an official of the leading water users' district.

As federal representative and ex-officio chairman of the combined committees, we most positively urge the appointment of Walker R. Young, recently retired as Chief Engineer of the Bureau of Reclamation.

Let's get on with the job!

We suggest urgency in the appointment of these committees, so that this troublesome problem can be expeditiously settled; that each man be paid a fair, but not exhorbitant, fee for his time, but that primarily each committee member regard his appointment as a civic and humanitarian obligation, rather than as a job; that the committee members, governors, legislators, and citizens of the two states undertake the assignment in a spirit of respect, fairness, honest appraisal, and a will to compromise for the best interests of everyone; that the "wild hare" schemes of the two states, Supreme Court intervention and Reclamation law liberalization, be discarded in the interest of neighborly settlement; and that a conscientious effort be made in each state to cultivate the feeling that our neighbors across the back fence (in this case the river) are not blackguards, but fellow-Americans with problems and rights, even as our own.

Equipment Stars in Utah Snow

All available equipment mobilized and worked on 24-hr. schedules to cope with Utah's worst winter on record—Packed and frozen drifts found harder on equipment than rocks and earth

By HAROLD R. HEATH, JR.
Salt Lake City, Utah

FACED with the worst winter on record, Utah highway officials, federal agencies, and contractors joined forces to utilize all available equipment in a successful battle to keep main highways and railroad lines open. Critical food shortages for livestock on winter ranges and at isolated ranches throughout the sparsely-settled western part of the state intensified the fight.

Costs of inconvenience and human suffering cannot be approximated, but snow removal costs of the Utah State Road Commission mounted to $1,400,000 compared to $210,000 for a normal winter. Permanent damage to roads and streets is still being ascertained, but several streets in Salt Lake City have been so badly ruined that they will have to be torn up and completely resurfaced.

Record winter sets the stage

Record snowfall in the months of November and December coupled with continued cold set the stage for the titanic struggle to follow in January and February. Weather Bureau records show that the 39.1 in. of snow that fell on Salt Lake City during the month of December were the greatest in the recorded history of the station. Total snowfall for the winter was 13 in. more than any previous year on March 1.

Gov. J. Bracken Lee issued a proclamation declaring a state of emergency on Jan. 22, but the fight with drifting snow and cold were already an old story to highway officials and workers for the Bureau of Land Management. Strong, gusty winds up to 60 m.p.h. in the first two weeks of February gave the snowfighters their severest test. Swirling clouds of light, dry, powdery snow quickly drifted into the hollows formed by plowed-out roads, erasing hours of patient labor under the most adverse circumstances. For several days highway travel in all directions from Salt Lake City was unpredictable.

Short on equipment, experience

Perhaps the greatest story to unfold from the efforts of men and machines to cope with the winter is that of the Bureau of Land Management. Faced with the problem of getting feed and water to livestock stranded on winter ranges and at isolated ranches, officials had no equipment of their own and little previous experience with problems of this nature to draw on. Earth-moving tractor-dozers and motor-graders owned by private contractors provided the bulk of equipment thrown into the fight.

J. Earl Palmer, range manager for the Bonneville district, comprising six counties in northern and western Utah, pays high praise to the contributions of the private contractors working in his area. Contractors left their jobs immediately when asked and gave 100 per cent cooperation throughout the fight. At the height of the storms, some 230 pieces of equipment, not inclusive of state and county, were under contract to the Bureau of Land Management in Utah and Colorado.

SNOW BANKS grew, but this state-owned bulldozer couldn't so it had to climb the solid-packed banks to get in its licks.

Conditions became severe early in January, and on Jan. 3 the first of over a thousand miles of secondary roads were taken under the care of the Bonneville district. As the storms continued, straight push-outs were impossible for even the heaviest dozers, and cross-cutting was necessitated as banks of snow 8 to 10 ft. high piled up on the sides of roads. Men and equipment worked on a 24-hr. schedule as new storms and winds closed the routes so painstakingly opened. From five up to two dozen push-outs were done on all of the roads during the two month campaign. In many places the existing roads became so packed with frozen and drifted snow that entirely new "roads" were cleared parallel to the regular ones.

Angle dozers star

The equipment used in the Bonneville district included tractors with angle dozer and straight dozer blades, motor graders, and a few trucks with snowplows contributed by contractors. The army commands at Wendover Air Base, Tooele Ordnance Depot, and Desert Chemical Warfare proving grounds threw all available equipment into the fight. Included in this equipment were two rotary snowplows.

Tractors with angle dozers proved to be the most valuable, and V-type dozers also did an excellent job when the back of the dozer was built high enough. Straight dozers were used to criss-cross the roads and to push snow back from the banks. As the snow accumulated the banks grew up to 10 ft. in height and extended from 30 to 40 ft. on each side of the roadway. In most places the fence lines, which were the only markings along these side roads, were completely covered and it was difficult to remain on the existing roadbed. One of the greatest hazards encountered in clearing the temporary roads cross-country were hidden washes and gullies into which the tractors slipped. Frequently another tractor had to be obtained to drag the stuck one out.

FROZEN CATTLE and frozen drifts made the going too rough for rotary snowplows in some sections, so tractor-dozers took over. This one is owned by contractor N. C. WOOD.

The going in general, was too rough for the rotary snowplows. Frozen cattle and other obstacles in the roads made their use on any but well established routes inadvisable. Motor graders were useful in clearing light snowfalls, but when the roads became drifted-in, they were not powerful enough to force the front wheels through the snow. In the early part of the stock feeding operations, convoys were organized, consisting of patrol graders clearing the way for trucks carrying feed and fuel for the tractors.

Morrison-Knudsen's mobile snow camps

Morrison-Knudsen Co. was one of the contractors supplying equipment and crews for the Bonneville district. They assumed responsibility for approximately 600 mi. of road in this one operation and maintained five heavy tractors and camps. E. L. Seifert was project superintendent for Morrison-Knudsen and was in charge of all of the operations in the territory they covered. The company had their own mechanics in the field and each tractor was accompanied by a pickup truck carrying fuel supplies and pulling a house-trailer. This system enabled crews to stay on the job for 15 days. Operators and equipment were subjected to the severest type of hardships. Meals were prepared enroute and in no way compared to the ordinary fare of an established construction camp. Canvas shelters were improvised over the tractor pits to attempt to protect the operators from the biting cold temperatures which averaged 20 to 30 deg. below zero and reached —50 deg. F.

Running up mileages of 3,000 mi. per month was a severe test on the Morrison-Knudsen equipment. The sandy and rocky country wore out blade bits in as little as three days when operators cleared snow away to the road surfaces. Low temperatures presented many lubrication problems and the constant use of equipment complicated maintenance schedules. Steering clutches on the tractors held up surprisingly well considering the nature of the work, according to Seifert. Some difficulty was encountered when snow and grit froze in the track mechanism and caused unusual wear an sprocket wheels and idlers. The tracks also showed considerable wear, but this was expected with the amount of use and mileage covered.

Road departments hard pressed

State, city, and county road departments were better equipped and more experienced in handling snow removal, but were hard pressed to cope with this winter. The storms were so intense and general that it was impossible to shift equipment to meet emergencies. Between 75 and 80 pieces of private contractors' equipment were utilized by the state road commission. If this equipment had not been available, an appeal to the army to bring in outside equipment would have been necessary. Local army installations in Utah and the National Guard made sizeable contributions of men and machines.

"I hope I never live to see another winter like this one," was the statement of Roy McLeese, chief engineer of the Utah State Road Commission. He estimated that at least 95 per cent of the workable tractors and graders in the state were in use during the fight to keep highways open.

The situation of state highways was one of keeping arterial routes open and of giving preference to livestock areas in work done on secondary roads. Snow traps were plowed at distances varying from 100 to 200 ft. from highways in an effort to stop drifting snow. In some cases, five and six of these snow traps or barriers failed to prevent drifting on the roads. U. S. Highway 6 near Delta, Utah, was completely filled between 8-ft. high banks in one hour by one of the February storms.

Snow tougher than rocks

The equipment under contract to the state ranged in size from Caterpillar D-2 up to D-8 tractors, and included International TD 24's and HD 19's in tractor-dozers. No special modifications were made in any equipment for use in the snow fight. George Catmull, who had two smooth-pad tractors used in the snow clearing work, cut holes in each pad where the sprocket wheel engages the track to prevent snow from packing between the track and the teeth on the sprocket. Some operators, he said, had tracks broken by the snow packing in this way.

Hugh B. Martin, a rancher from Calleo, Utah, used his International TD-14 tractor-dozer independently throughout the storms and characterized the work as being the hardest he had ever encountered. Pushing the packed and frozen drifts was much harder than working with rocks and earth. Martin wore his dozer blade beyond repair and had some clutch troubles. His self-cleaning track functioned well and he did not have any difficulty with snow and ice packing in between the track and the sprocket wheel. Like the work of many others, Martin's service was entirely voluntary and only after the storms had subsided and the situation stabilized did he come to the Bureau of Land Management offices in Salt Lake City and arrange for compensation.

Too much salt

A complete estimate of the damage done to Utah roads cannot possibly be made until late spring when the thaws and runoffs are over. Gradual daytime thaws and cold nights up to the middle of March have saved the roads from much of the breakup that it was feared would occur. A 35-m.p.h. speed limit and load limits were in effect on highways where critical conditions exist. Frequent light storms in November and December made highways very icy and slippery, and a normal year's supply of salt had been used on the roads by Christmas Day. Concrete scaling attributed to the salt is widespread and the salt and water solution has soaked into the sub-grades under paving giving the same effect as an alkali soil. Chief Engineer McLeese is of the opinion that this condition is responsible for much of the "heaving" of pavement sections. All road construction in Utah was halted about the first of January and work was resumed on three projects about March 1.

In Salt Lake City and Salt Lake County the normal snow clearing operations were carried out with municipally-owned equipment, but the heavy drifts necessitated some aid from private tractor owners. Snow removal costs in the city exceeded $100,000 while those of the county rose to $140,000. Commissioner Ray P. Greenwood, in charge of roads in Salt Lake County, was liberal in his praise of the job accomplished by the private contractors working under him.

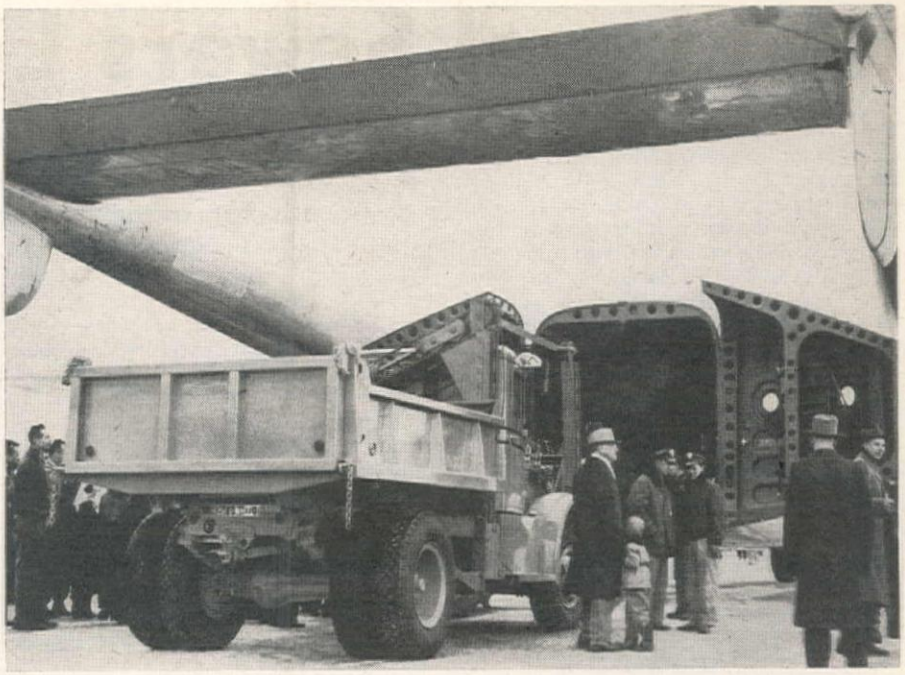
Neighbors hard hit too

Reports would indicate that while Utah was hard hit by the winter, the neighboring states of Wyoming and Colorado possibly suffered more at the hands of the weather. Transcontinental railway travel through Wyoming was impossible most of February. In Utah,

COLORADO was hard hit by the winter snows too. Below, a state-owned Adams Model B-70 Rotary widens a cut previously opened on a road in Weld County, Colo.

the Union Pacific Railroad was able, with the help of contractors and by the use of snow clearing equipment borrowed from other railroads, to keep its main line trackage open except for a few local tieups of short duration.

In summary, the accomplishments of the forces battling to keep the situation under control in Utah can be viewed with considerable pride. The prompt and willing cooperation of contractors and owners of equipment in seeing the task through to completion is certainly praiseworthy. The aftermath of the winter will undoubtedly result in a large highway repair and rebuilding campaign, most of which will be carried out by the same contractors who volunteered their equipment for Utah's "Operation Snowbound."



"FLYING BOXCAR" BRINGS EMERGENCY UNIT FOR INDIAN "OPERATION SNOWBOUND"

THE INDIANS at Fort Hall, Idaho, were marooned by blizzards, so the Bureau of Indian Affairs ordered emergency equipment flown to their rescue. Shown being loaded is an 8-ton truck equipped with a Heil 5-cu. yd. dump body, Heil hydraulic hoist and snowplow. This is believed to be the largest equipment flown into the West during the storm.

Automotive "New Looks" To Be Unveiled at Show

THE GREATEST Automotive Show of all time has been planned by the Automotive Council of Los Angeles. To be held at the Pan Pacific Auditorium on June 15-18, the exhibit is said to be the only show of its kind to be held in the United States this year.

Exhibitors will include all of the leading manufacturers of automobiles, trucks, truck-trailers and automotive equipment. It is said that a number of manufacturers are withholding new improvements for release at the national show. There will be no admission charge.

The National Show is sponsored by the Automotive Council of Los Angeles, a non-profit organization composed of fleet managers of private motor carriers and equipment manufacturers. The Automotive Council was founded in 1918 and has achieved national reputation as an organization promoting the free exchange of ideas which produce efficient motor transport methods.

This is the 12th Motor Truck, Trailer and Equipment Show sponsored by the Council. One of the features of the National Truck Show will be the California State Championship Finals of the Truck Roadeo. To be held on the closing day of the show, this event is expected to attract large numbers of the public interested in motor transport who will visit the exhibits at the same time.

General manager of the National show is C. T. Thomas, of General Petroleum Corp. Hal Chaile' of Fruehauf Trailer Co. is publicity manager, J. W. Sinclair of Union Oil is sales manager.

Bid Calls Soon for 1949 Phase of $75-Million Alaska Railroad Work

BIDS WILL be received soon on the Alaska Railroad's record 1949 building program—part of a three-year rehabilitation job which, through continued increasing costs and need for additional facilities, has jumped to $75,000,000.

The program, originally a five-year job estimated at about $35,000,000, moved first to about $50,000,000, and now will probably cost about $75,000,000 for the three year project.

About $40,000,000 has either already been appropriated or will be taken out of operating revenues. The $40,000,000 figure, plus $35,000,000 now being requested from Congress and which must pass through a series of Congressional mills before final approval, make the $75,000,000 total the railroad hopes will be enough to finish the program.

The rehabilitation job entails four chief projects: (1) a new right of way with properly ballasted track; (2) 115-lb. rail to replace worn 70-lb. steel; (3) a new working plant; and (4) a fleet of new rolling stock.

The work will include laying 101 mi. of rail from Caswell to Curry and from North Nenana to Noyes Slough bridge outside Fairbanks. This rail-relaying work is in addition to about 50 mi. to be laid by the William A. Smith Co. from last year's unfinished contract.

"Procurement of steel alone has taken special administrative action," the ARR's engineers pointed out. The job of obtaining priorities on material and rounding up construction equipment and work cars was undertaken by Col. J. P. Johnson, general manager. The rehabilitation program undoubtedly is Alaska's biggest civilian construction project.

Backbone of the line work is the so-called bank-widening which includes ballasting, replacing old ties, straightening curves, and filling sunken stretches.

The 1949 plan calls for work on 144 mi., divided into six sections, according to priority. The jobs will be awarded as money is available.

The six sections in the order of their priority are as follows: Colorado to Cantwell (26.1 mi.); Curry to Canyon (21.4 mi.); Chulitna to Colorado (21 mi.); Healy to Clear (35.3 mi.); Wasilla to Willow (27.4 mi.); and Potter to Anchorage (12.9 mi.).

These figures give an idea of how big a job the bank-widening is: 160,000 ties will be replaced; 1,750,000 cu. yd. of train-hauled embankment must be furnished; 210,000 cu. yd. of excavating done; over a mile of culvert pipe dug through the banks; 10,000 cu. yd. of solid rock must be blasted; and 10 mi. of line changes made. Sags, dipping as low as 13 ft., must be filled.

On tap also for bidding is the Turnagain Arm project which when completed will be the keystone for the Kenai Peninsula's highway system, connecting up with Anchorage and the rest of the Alaskan road network.

The job involves putting in a 12-mi. long bench for both the railroad and the highway to share from Indian to Potter. The Turnagain Arm project will involve moving 1,800,000 cu. yd. of solid rock; supplying 12 mi. of track and ballast; and building 12 mi. of highway.

The plan of operation briefly is this: The ARR right of way will occupy the sea side of the bench or the lower grade. When this right of way is ready, the railroad will shift over from its present location. The highway will then traverse the present path of the railroad. The ARR's move will eliminate a total of 1000 degrees of curve, Engineer Anton Anderson pointed out.

Sea Level Sewers Laid in Mud

Placing 16½ mi. of reinforced concrete conduit at sea level elevations in San Francisco Bay mud calls for aggressive constructioneering on $23,500,000 sewage disposal project

THE ATTITUDE of Elof Gustafson, superintendent for Stolte, Inc., San Leandro, Calif., is that no job is too tough if you go about it in an aggressive manner. It is this attitude that is making possible the execution of well-coordinated plans laid by the East Bay Municipal Utility District of Oakland, Calif., for their $23,500,000 sewage disposal project designed to serve the east bay cities of Albany, Berkeley, Emeryville, Alameda, and Oakland. "Tough" describes well the conditions found in laying several of the 16½ mi. of sewer conduit at sea level elevations in the same type San Francisco Bay mud that plagued the engineers on the Bay Bridge.

Yards of mud

Operating now on the bay tidal flats near the east approach to the Bay Bridge, Stolte, Inc., and United Concrete Pipe Co. of Baldwin Park, in a joint venture, are constructing Section 4 of the North Interceptor. This section is 8,850 ft. in length, composed of 7,800 ft. of reinforced concrete pipe varying in diameter from 66 in. to 84 in. and 996 ft. of tunnel. The tunneling is necessary to avoid disruption of traffic on the Ashby Ave. and Powell St. approaches to the Eastshore Highway, a feeder line to the Bay Bridge, and to keep clear the bridge tracks of the Key System Transit Lines Co. Work has been under way since January on this $1,435,160 contract. The tunnel outfall structure, now under construction, required a pit 32 ft. deep in pure mud. The heavily shored walls are of timber pile 6 by 12 in. These timber walls had not swayed even ⅛-in. from line in the first 10 days in position. A Lorain rubber-tired truck-crane with a ¾-yd. clamshell bucket was used successfully for excavating the pit.

Public notices smells

Public attention was directed toward the need for this gigantic project many years ago when the pollution of the Bay water created unpardonable smells at low tide. Studies began in 1937 when local city officials requested the utility district to handle design and construction of a project of sewage disposal. The tremendous growth of population and the industrial development of the region during the war further aggravated the odorous conditions in the shallow and polluted waters, hazardous to public health. A special district was formed at the November elections of 1944, and the sewage disposal problems restudied then and afterwards by the utility district's engineering staff. Consulting on the job, the Engineering Board of Review composed of Samuel A. Greeley, Chicago, N. T. Veatch of Kansas City, and Clyde C. Kennedy of San Francisco recommended the project on July 1, 1946. The bond issue of $23,500,000 was placed before the voters and passed by a 4½ to 1 majority at the general election in November, 1946.

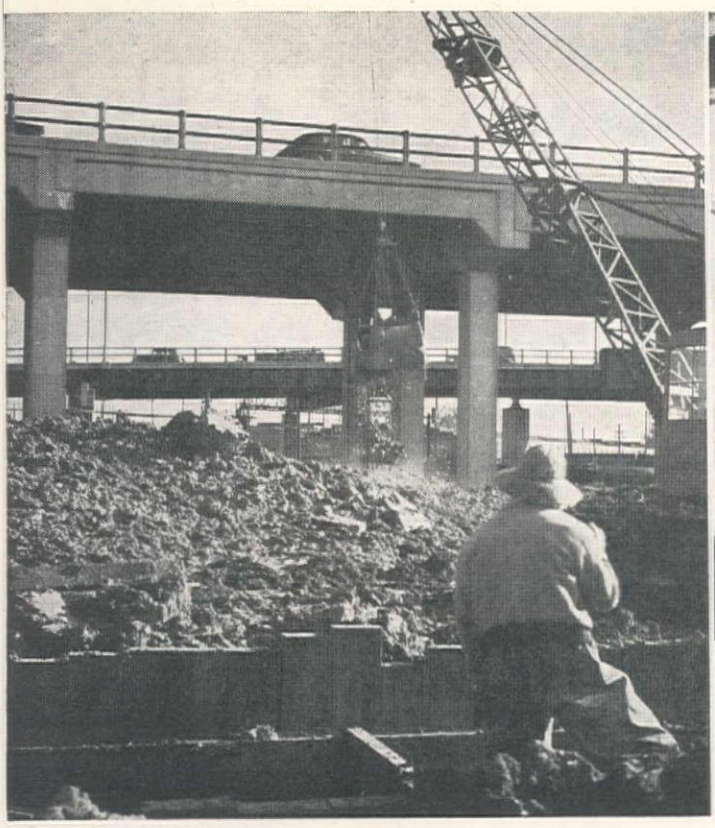
LOWERING 68-in. diameter pipe into trench for the North Interceptor. Cables in foreground were looped around planks for retrieving the wood before backfilling began.

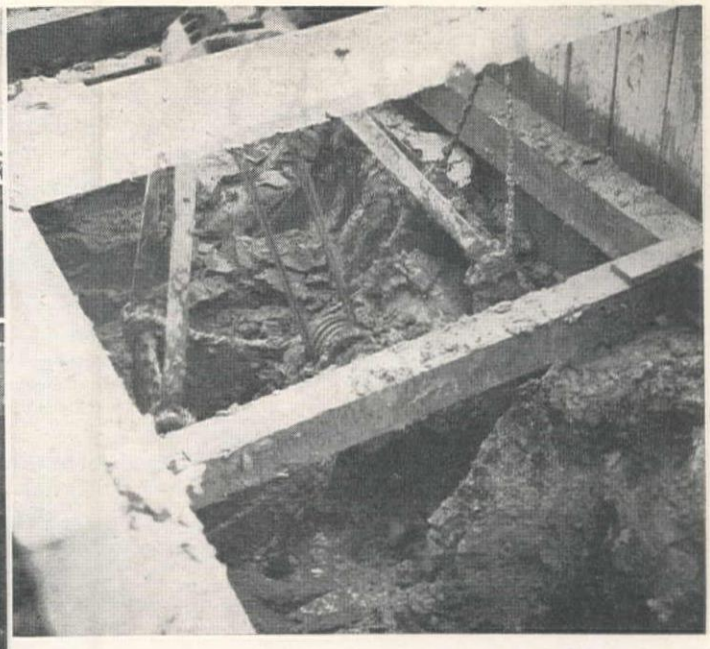
The cities involved agreed to separate storm waters from the sanitary sewage to reduce flow in the interceptors and treatment plant. The intercepting sewers, outfall sewers, and other structures not easily enlarged at a later date were designed to carry peak flows expected for the year 2000. Other facilities were designed for peak flows for 1970. Expected completion date of the entire project is Summer, 1951. Six months to one year is anticipated to oxidize the existing odoriferous sewage bedded on the tidal flats.

Key jobs

Essentially, the project consists of the north interceptor, south interceptor, submarine outfall sewer, treatment plant, and plant site. Both interceptors are complicated by critical minimum grades. On the north interceptor, 5½ mi. in length and paralleling Eastshore Highway, construction started in February, 1948. Reinforced concrete pipe used here varied from 24 to 96 in. in diameter. Contractor for section 2 is Elmer J. Freethy, El Cerrito (contract completed); on section 3, Healy-Tibbitts, San Francisco. Healy-Tibbitts trenched in all-clay soil containing a water-bearing layer of quicksand 12 in. thick, located about 6 to 7 ft. below the ground; however, no well points were used at this point of the work. Stolte, Inc., and United Concrete Pipe Corp. have the contract for section 4.

On the south interceptor, construction started April 24, 1948, on the 11 mi. of conduit paralleling that portion of the Eastshore Freeway also now under construction. The pipe varies from 12 to 108 in. in diameter. Contractors for section 3 are P. & J. Artukovich, Los Angeles (contract completed), and Mc-





PLENTY OF MUD of the same type that plagued constructors of San Francisco's Bay Bridge is making excavation for the South Interceptor a tough job. At left, with spotter in foreground, a Lorain Moto-Crane equipped with a ¾-cu. yd. clamshell bucket, drops another load of mud alongside the sewer trench. Trench walls of timber, driven vertically and heavily shored, allowed just enough room for the clamshell bucket, right.

Guire & Hester, Oakland. Both McGuire & Hester and Healy-Tibbitts did little digging with trenchers. Most of the earthwork was done with backhoes and clamshell buckets. For trench walls, Healy-Tibbitts drove 10-in. H-beam sections on 10-ft. centers, then laid 6 by 16-in. planks horizontally. The walls, supported by the beam flanges, required a minimum of shoring. Trench walls on other sections of the line consisted of 3 by 12-in. planks driven vertically and heavily shored.

The sands came

The recently completed 25-ac. treatment plant site was started July 1, 1948, and involved 311,600 cu. yd. of sand fill, 70,000 lin. ft. of vertical sand drains, and 8,300 lin. ft. of lateral drains. Vertical drains were placed in the usual manner by driving a plugged mandrel, 20 in. in diameter, with a pile driver to depths of 15 to 25 ft., filling the mandrel with coarse sand, and then withdrawing. Sand fill was shipped from Angel Island, where it was dredged from the Bay to the outer harbor near the plant site and placed in the fill hydraulically. Construction Aggregates Corp., San Francisco, held the contract for this work, and Ben C. Gerwick subcontracted the vertical sand drains.

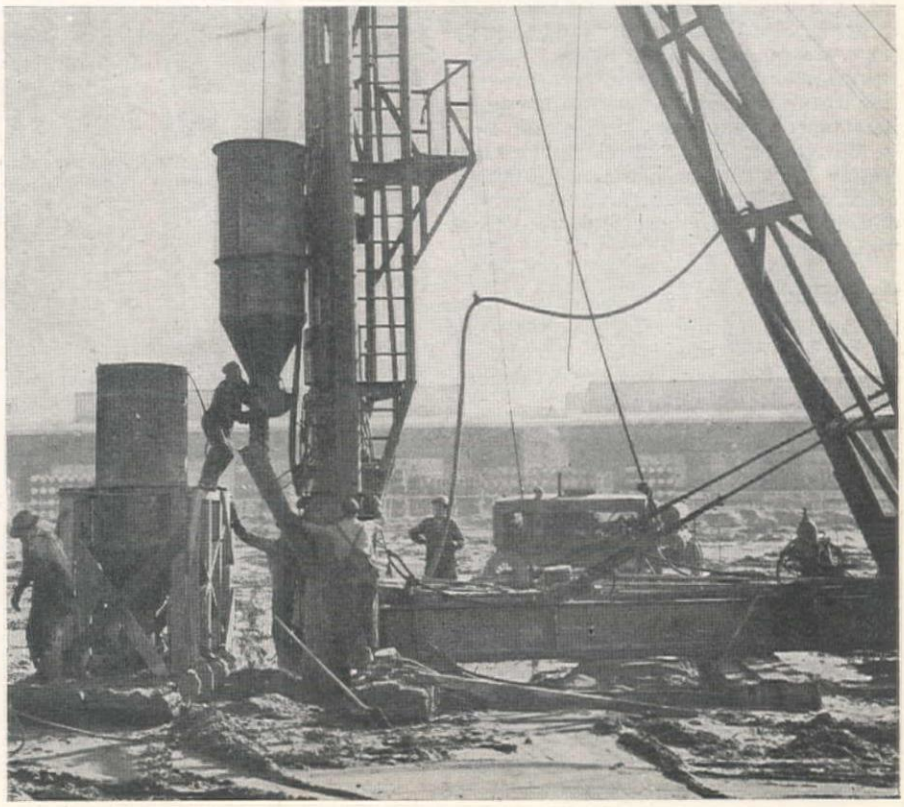
The sand fill, needed to bring the treatment plant site to the required grade and to form a suitable foundation for the plant structures, settled 1½ ft. the first 2 weeks after completion. The anticipated total settlement is 2 ft. Total yardage on the job, because of settlement and difference of densities of the same fill material between ship and plant site, exceeded the original estimate by almost 37,000 cu. yd. The original contract price, including the 3,750 vertical sand drains, was $508,700.

The outfall sewer will extend from the treatment plant to the deep waters of San Francisco Bay, and will be constructed of 96-in. diameter reinforced concrete pipe. It will lie 10,000 ft. on land and tidal flats, and 6,000 ft. under the waters of the Bay. The submarine portion will discharge effluent at a depth of 45 ft. below the water surface, where it will be dispersed by heavy tidal currents.

One plant for entire system

Raw sewage will be pumped from the interceptors to treatment plant intake by five 42,000-g.p.m. pumps, including one spare, operated by 500-h.p. motors. The raw sewage will be screened by mechanically-cleaned bar racks prior to pumping. Pumping will be to a common flume, where 4 grit chambers will settle out heavy residue. Sedimentation, the next

STABILIZATION of the 25-ac. hydraulic fill for the treatment plant site required 3,750 vertical sand drains. These were placed to 20-ft. depths, using a 20-in. diameter mandrel.



step in the treatment process after the grit chambers, will be accomplished in settling tanks 35 ft. wide, 180 ft. long, and 12 to 14 ft. deep, equipped with mechanical sludge collectors. The tanks will provide a detention period of about 1 hour. The settled sewage will then either flow by gravity or be pumped into San Francisco Bay through the outfall sewer, depending upon tidal conditions. An effluent pumping plant, to be located immediately to the west of the treatment plant, will operate at high tides to pump the treated flow from the plant to the Bay. Provision will be made for collection and use of the resulting gas products. Sludge will be treated after digestion in the heated tanks, and made available for sale as a fertilizer base.

Other contracts have been awarded for heavy equipment requiring considerable time to manufacture, including raw sewage pumps and effluent pumps, mechanical and electrical equipment. Award of a $25,500 contract was made to the Chapman Valve Manufacturing Co. for furnishing five 42-in. check valves for the raw sewage pumping plant.

W. R. McLEAN, left, is supervising civil engineer on the East Bay Municipal Utility District's entire sewage disposal project, and DAN PRODANOVICH is the assistant civil engineer.

The entire sewage disposal project is under the direction of John S. Longwell, chief engineer and general manager of East Bay Municipal Utility District, and W. R. McLean, supervising civil engineer. Dan Prodanovich is assistant civil engineer, and Elof Gustafson is supervisor for Stolte, Inc., on the north interceptor contract near the treatment plant, where tunneling operations are now in progress.

Western Bond Issues and R. E. A. Loans Forecast New Construction Activity

PROSPECTIVE construction totaling $25,805,000 is forecast through the loans approved by Rural Electrification Administration in recent weeks to local agencies throughout the West and by bond issues approved by voters in recent elections. These available funds include:

Arizona

An REA loan of $190,000 to Trico Electric Co-op., Tucson, to construct 52 mi. of distribution line and a 2-way radio system; $1,320,000 to Graham County Elec. Co-op., Pima, for 166 mi. of distribution line, 12 mi. of transmission line, four 1,000-kw. generating units, headquarters facilities, and a two-way radio system; and $320,000 to Duncan Valley Elec. Co-op., Duncan, for 35 mi. of transmission line and conversion of 46 mi. of single-phase line to three-phase.

California

Voters of Orange County have approved a bond issue of $8,308,000 to construct trunk lines, a sewage treatment plant and an ocean outfall.

Colorado

REA loans have been granted to San Luis Valley Rural Elec. Co-op., Monte Vista, in the amount of $235,000 for 63 mi. of distribution line, a radio system and other system improvements; and to White River Elec. Assn., Meeker, $158,000 for 16 mi. of line.

Idaho

REA has loaned $160,000 to Idaho County Light & Power Co-op. Assn., Grangeville, to construct 22 mi. of line and other system improvements.

Montana

Mid-Yellowstone Elec. Co-op., Hysham, was granted an REA loan of $175,000, for construction of 40 mi. of line and other improvements.

Nebraska

REA loans as follows: To K.B.R. Elec. Membership Corp., Ainsworth, $605,000 for 17.5 mi. of transmission line and 456.5 mi. of distribution line; to Southwest Elec. Membership Corp., Palisade, $480,000, for purchase and rehabilitation of a generating plant, locker plant, office building, ice plant and 3 mi. of distribution line in the town of Culbertson; to Wheat Belt Elec. Membership Assn., Sidney, $862,000 for acquisition and rehabilitation of a generating plant and 5 mi. of line serving Lodgepole, and for construction of 408.5 mi. of distribution line and 28 mi. of transmission line; and to Niobrara Valley Elec. Membership Corp., O'Neill, $157,000 for acquisition and rehabilitation of 2.5 mi. of line at Naper, acquisition and rehabilitation of a generating plant and 2 mi. of line at Verdel, and to construct 32.5 mi. of new line.

New Mexico

REA loans to Farmers Electric Co-op., Clovis, $250,000 for 115 mi. of line and a radio communication system; and Lea County Elec. Co-op., Lovington, $1,305,000 for 40 mi. of transmission line, and for acquisition of 120 mi. of distribution line from Inland Utilities.

North Dakota

An REA loan to Williams Elec. Co-op., Williston, $950,000 for 625 mi. of distribution line and other system improvements; and to Burke-Divide Elec. Co-op., Columbus, $1,640,000 for 1,100 mi. of distribution line and completion of previously approved construction.

Oklahoma

The following REA loans: To Red River Valley Rural Elec. Assn., Marietta, $110,000 for 22 mi. of distribution line; to Verdigris Valley Elec. Co-op., Collinsville, $700,000 for 164 mi. of distribution line and other system improvements; and to Caddo Elec. Co-op., Binger, $635,000 for 314 mi. of distribution line, 16 mi. of tie line, headquarters facilities and two-way radio system.

Oregon

Voters at Eugene have approved a $3,000,000 bond issue for improvement and expansion of the city water system; an REA loan was granted to Coos-Curry Elec. Co-op., Coquille, for $1,000,000 to construct 35 mi. of transmission line and 141 mi. of distribution line; and REA has also loaned Douglas Elec. Co-op., Roseburg, $100,000 for headquarters facilities.

Texas

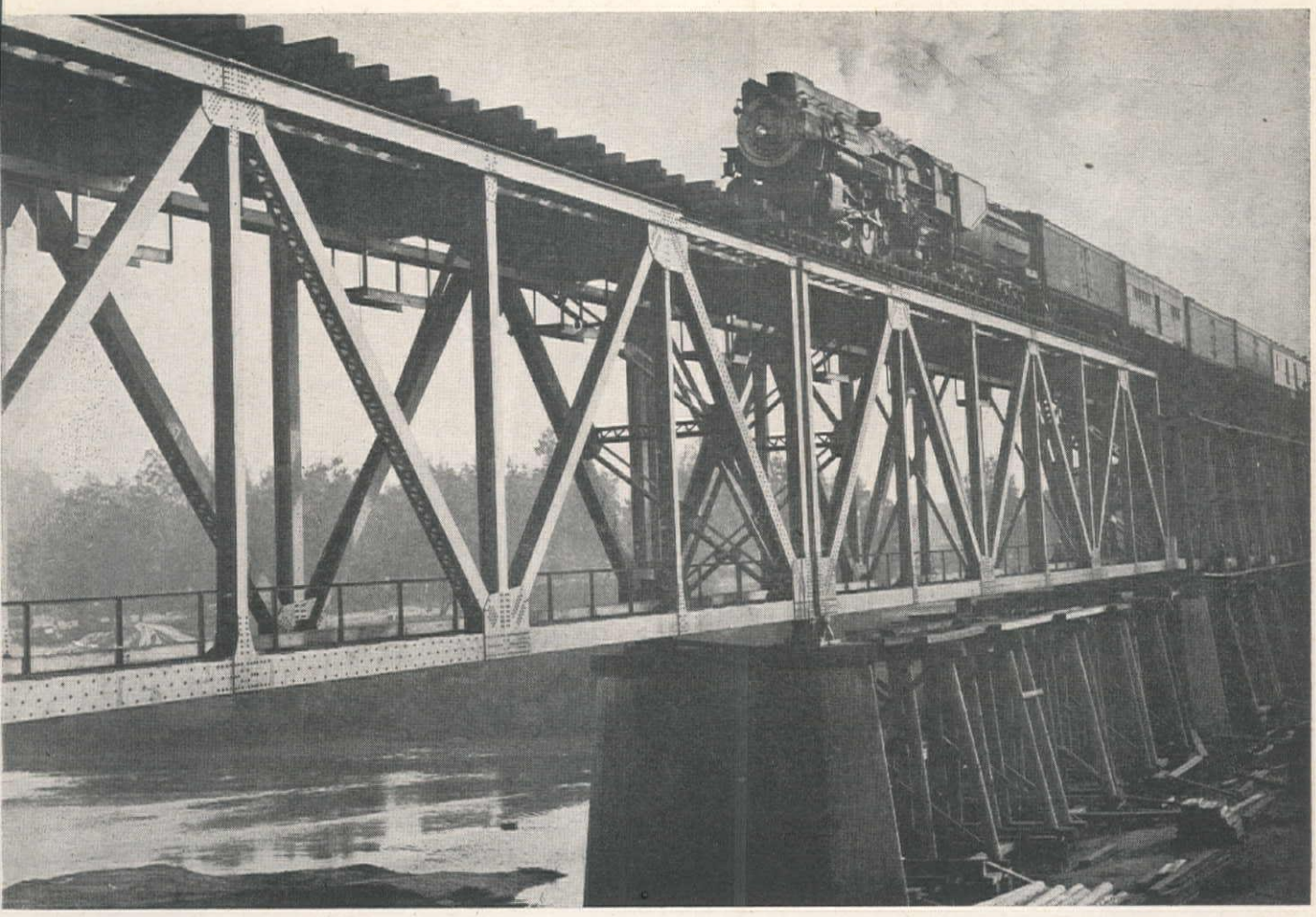
REA loans as follows: To Denton County Elec. Co-op., Denton, $200,000 for 50 mi. of distribution line and 58 mi. of tie line; to Stamford Elec. Co-op., Stamford, $315,000 for 167 mi. of distribution line and system improvements; to City of Bryan, $780,000 for 527 mi. of distribution line; to Rio Grande Elec. Co-op., Brackettville, $1,070,000 for 726 mi. of distribution line; to Midwest Elec. Co-op., Roby, $70,000 for 40 mi. of line; to Bartlett Elec. Co-op., Bartlett, $162,000 for 50 mi. of line, headquarters facilities and system improvements; to DeWitt County Elec. Co-op., Cuero, $113,000 for 50 mi. of distribution line; to Fort Belknap Elec. Co-op., Olney, $224,000 for 123 mi. of distribution line, warehouse facilities and system improvements; to Taylor Elec. Co-op., Merkel, $220,000 for 100 mi. of line and headquarters facilities; and to Hamilton County Elec. Co-op. Assn., Hamilton, $156,000 for 40 mi. of line, office facilities and system improvements.

Washington

REA has loaned Okanogan County Elec. Co-op., Winthrop, $55,000 for 7 mi. of line and system improvements including repairs to flood damage of last summer.

Wyoming

The following REA loans: To Lower Valley Power & Light, Freedom, $565,000 for a 1,000-kw. hydroelectric plant on Strawberry Creek near Freedom, 7 mi. of distribution line, and purchase of two temporary 100-kw. Diesel units; to Wheatland Rural Elec. Assn., Wheatland, $131,000 for purchase and rehabilitation of 2 mi. of line in Chugwater, construction of 24 mi. of line, and headquarters facilities; to Washakie Rural Elec. Co., Worland, $52,000 for 36 mi. of distribution line; and to Riverton Valley Elec. Assn., Riverton, $207,000 for 22 mi. of transmission line, 35 mi. of distribution line and 4 mi. of tie line.



HEAVY FREIGHT TRAFFIC and four passenger trains passed over the bridge daily during the reconstruction project.

Train Service Uninterrupted on—

Steel Truss Bridge Rebuilt in Place

Half of steel truss railroad bridge on Southern Pacific main line renewed in place while train traffic passed overhead

By J. P. DUNNAGAN
Engineer of Bridges, Southern Pacific Company
San Francisco, Calif.

RENEWAL of 530 ft. of Southern Pacific Company's single track steel bridge over the San Joaquin River at Herndon, 10 mi. north of Fresno, Calif., has been accomplished by bridge building crews of the railroad without interruption of train service. Work was in progress more than ten months. The structure has a total length of 950 ft. and carries a Southern Pacific main line 61 ft. above the river bed. Four passenger trains as well as a heavy volume of freight traffic pass over the bridge each day.

More than half of the bridge has been renewed, designed for a Coopers E-72 loading. This included three 160-ft. deck truss spans and a 50-ft. girder span, built in 1899 to Coopers E-46 loading. The remainder of the structure, a 396-ft. steel viaduct built in 1914 to Coopers E-55 loading, is more than adequate for the traffic load.

Original design too flexible

The deck truss spans were originally built to somewhat advanced prevailing standards in that a complete floor system of beams was provided resting on top of the trusses and riveted thereto with stringers framing into them. All trusses were pin connected, using eye-bars in all main tension members and rods in the bottom laterals.

With its trusses 14 ft. on centers and chords 26 ft., 8 in. on centers, this type of structure became obsolete with the passage of time because of wear in the pin holes and the general flexibility of the design. The increased weight and speed of locomotives also hastened the obsolescence. Observation showed that, in certain members, all the eye-bars in any one member were not taking an equal share of the load. Because of this condition, a speed restriction was placed on certain types of heavy locomotives passing over the bridge.

Cautious steps

First step in the renewal was to bulldoze a roadway across the river bed from the north end as far as the end of the second bridge span. It was necessary to leave an opening for the river water to pass through, so the roadway was omitted along the third span. The road was used by off-track equipment in the work of driving piles and erecting falsework.

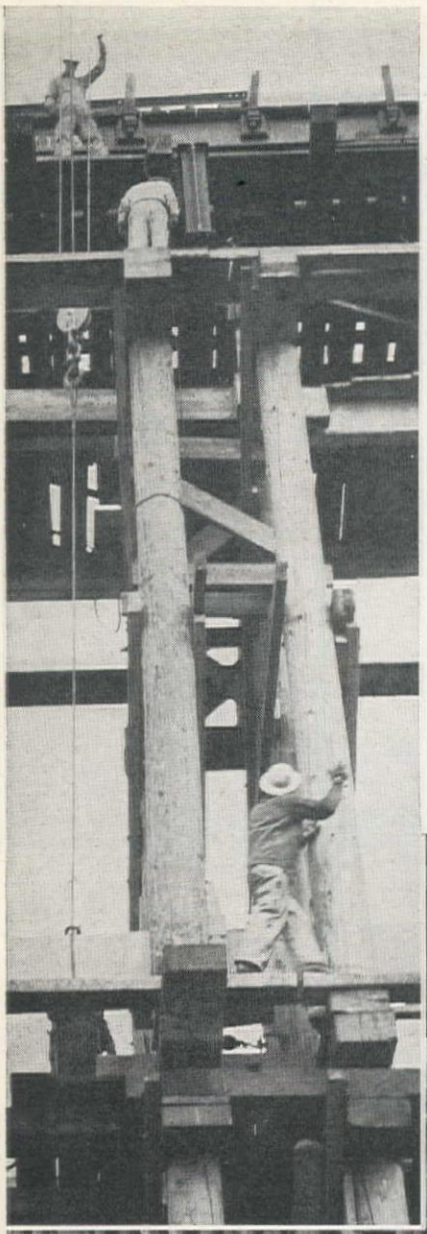
Second step called for the driving of all piles. This involved a total of 195 piles averaging a length of 15 ft. below cut-off.

Third step was the placing of first and second story falsework in the first span, and first story falsework in the second span. The posts were made from round piles. The 8 x 17-in. stringers used throughout the falsework were second-hand, removed from a trestle recently renewed.

Erection of the falsework on the first span was completed in approximately 7 weeks. The floor system was then wedged up and removal of the old steel span was started.

Torches create fire hazard

As the bridge was not to be saved for re-erection, only the stringers and top



chord members were kept intact for use in small bridge and culvert renewal. Torches were used in cutting the rest of the steel structure apart.

Because the torches created a fire hazard in the presence of the large amount of timber falsework, a fire pump was installed, together with hose, and a watchman was maintained on the site at night when the bridge gang was not working. While cutting was in progress, the timber was kept wet down.

The old floor system rested on the falsework and became part of it after the rest of the old steel structure was removed by use of a locomotive crane. A spur track was built at the south end to accommodate the crane and to serve the material yard.

The new steel was swung into place by use of a locomotive crane, beginning with the new floor system, and continuing with the main truss and vertical members.

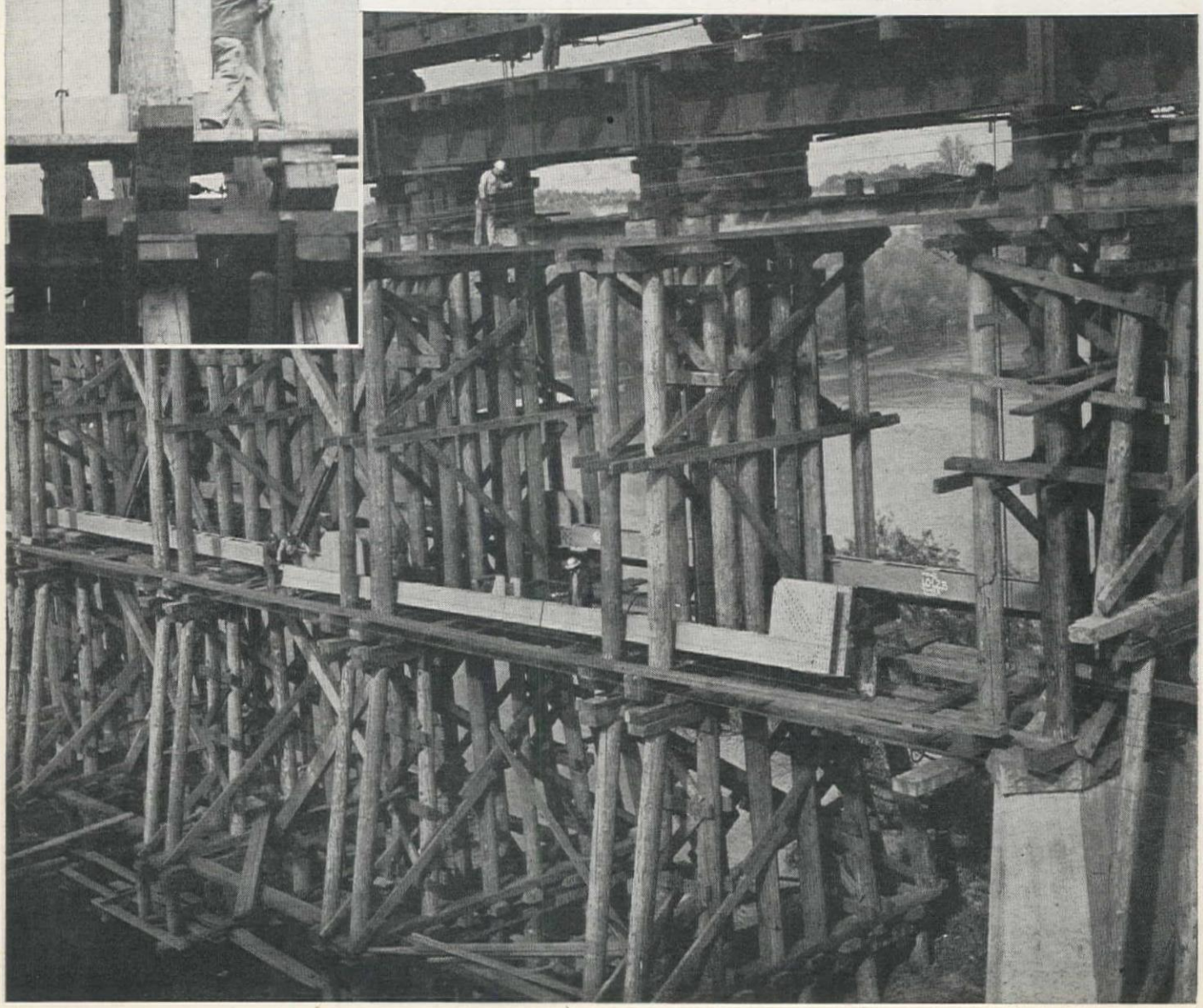
Falsework re-used

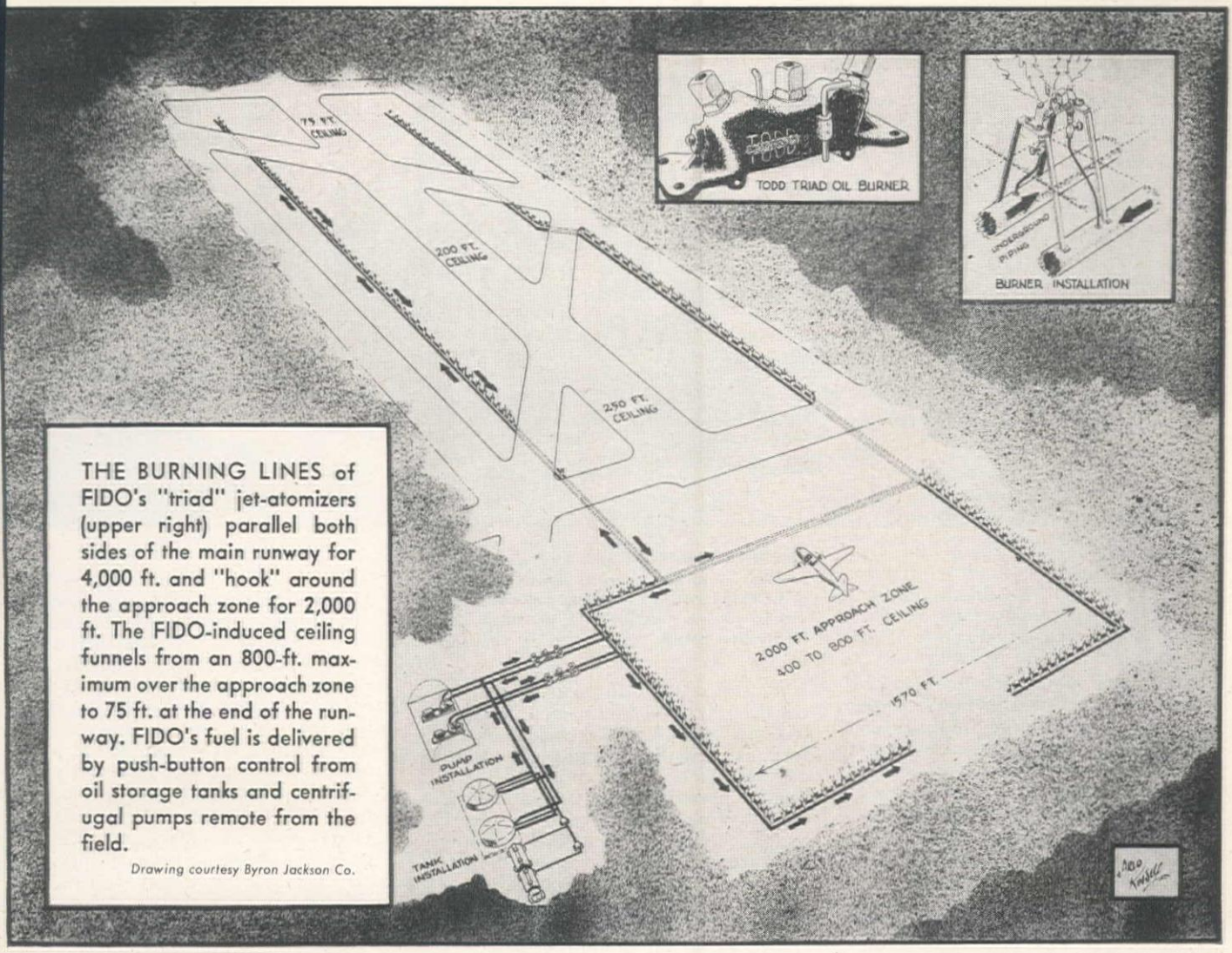
When the erection of the first span was completed and joints were bolted, this span was swung free from the falsework. While part of the crew was engaged in riveting the joints, another crew, by use of the locomotive crane, was engaged in shifting the falsework to the succeeding spans. This also permitted the completion of the lateral bracing of the first span. The procedure was repeated at each succeeding span.

As soon as each span was swung off the falsework the bridge and building gangs began placing of the deck. An open deck was decided on for economic reasons. If a ballast deck were used it would have been necessary to have built it for a distance of 933 ft.

Key personnel directing the unique bridge renewal job were: Earl E. Mayo, Chief Engineer of Southern Pacific Company; Roy W. Putnam, Engineer of Maintenance of Way and Structures; Jesse P. Dunnagan, Engineer of Bridges; Franz M. Misch, General Bridge and Building Supervisor; Oren M. Barlow, Western Division Engineer, and Ernest H. Haase, General Bridge and Building Superintendent. At the job site to direct the work was Fred Schobert, Supervisor of Steel Bridge Construction for the company.

NEW STEEL was placed by use of a locomotive crane while the old floor system rested on heavy timber falsework bents. Pictured is the erection of the lower chord of one of the truss spans. As each new span was erected, falsework was moved to the succeeding span.





THE BURNING LINES of FIDO's "triad" jet-atomizers (upper right) parallel both sides of the main runway for 4,000 ft. and "hook" around the approach zone for 2,000 ft. The FIDO-induced ceiling funnels from an 800-ft. maximum over the approach zone to 75 ft. at the end of the runway. FIDO's fuel is delivered by push-button control from oil storage tanks and centrifugal pumps remote from the field.

Drawing courtesy Byron Jackson Co.

First FIDO at Commercial Airport

Dense fog at Los Angeles Municipal Airport can now be dispersed in 1½ min. to provide round-the-clock safe landing conditions after installation of the country's first commercial FIDO

THE FIRST FIDO (Fog, intensive dispersal of) installation at a commercial airport was dedicated at Mines Field, the Los Angeles Municipal Airport, with appropriate ceremonies on March 29. It had been installed by Bechtel Corporation on an $842,000 contract, and is expected to provide round-the-clock, year-long safe landing conditions at the huge international airport.

The City of Los Angeles advanced $386,541 to apply on the construction cost, and the balance of $455,459 was supplied by the Federal government, through the Civil Aeronautics Administration federal-aid airport program. The City contribution will be repaid over a 5-year period by five major airlines (American, Pan-American, United, Trans World, and Western) and the lines will also assume operating costs.

The FIDO principle of dispersing heavy fog accumulations by intense heat was perfected at the Arcata, Calif., airport by Navy and CAA engineers during the war. An article on the experimental work at that field appeared in *Western Construction News* for May, 1946.

Burning lines guide "touchdown"

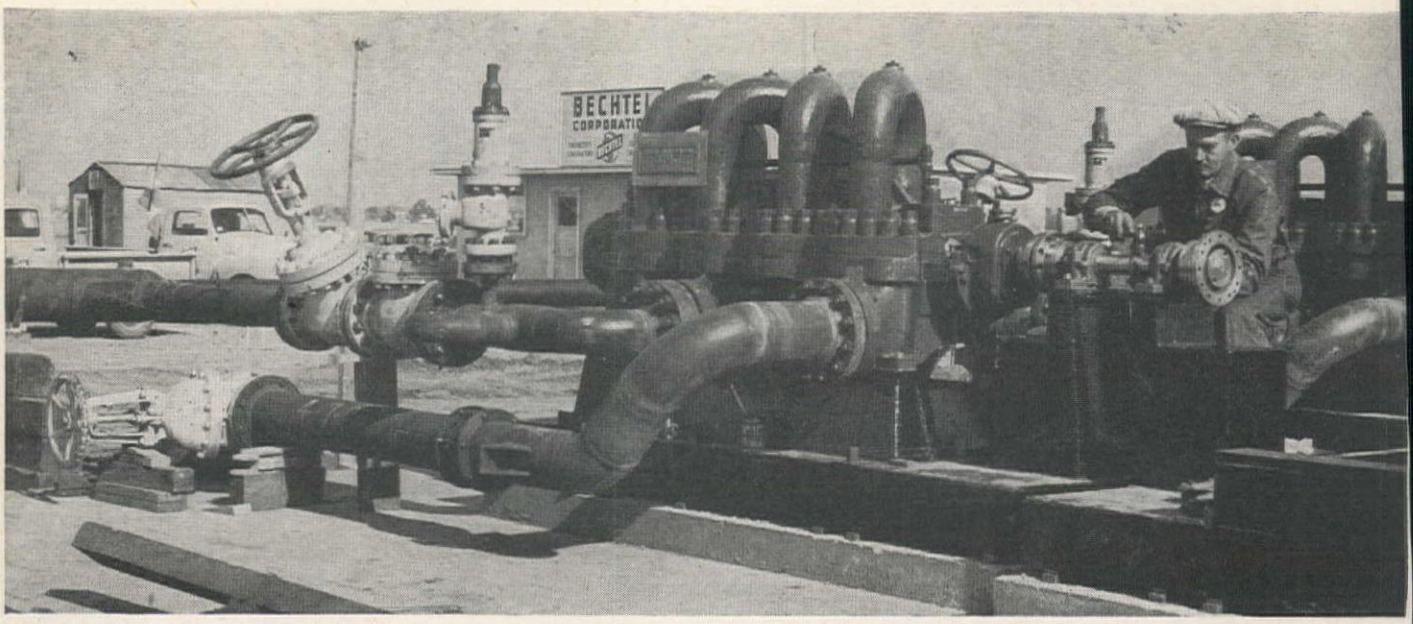
The intense controlled heat generated by the Todd jet-atomizer nozzles to be used at Mines Field raises the saturation point of the atmosphere to absorb water vapor over and in the immediate vicinity of the runway. The Los Angeles airport installation is designed to disperse the densest fog in 1½ min. to a minimum operable ceiling height, permitting final "touchdown" of an airplane by visual contact. The highest concentration of heat is in the approach zone where a ceiling of 400 ft. will be developed. The heat concentration is reduced along the runway so that a ceiling varying from 250 ft. in the touchdown zone to 75 ft. is produced at the west end of the runway.

Burning lines parallel both sides of the main runway for 4,000 ft. and then fan out into the approach zone for 2,000 ft. where they "hook" left and right to form burning patterns which take full advantage of wind drift normally associated with fog. Safety of airplane operations is assured by the wide separation of burning lines, ranging from 400 ft. to 870 ft. from the center of the runway.

A careful meteorological survey was made of Los Angeles Airport and vicinity by Aviation Facilities Associates. From this study the engineers of CAA, Los Angeles Department of Airports, Air Transport Association and Landing Aids Experimental Station determined the proper location and number of burners.

FIDO's fuel

Fuel for the fog dispersal system is delivered by two oil storage tanks remote from the field, each having a capacity of 129,276 gal., by two centrifugal pumps, each capable of delivering 1,100 gal. of oil per min. at a discharge pressure of 1,200 lb. per sq. in. This pressure will provide oil at the jet-atomizers at a pressure of not less than



CENTRIFUGAL PUMPS, manufactured by Byron Jackson Co. of Los Angeles, deliver FIDO's fuel at 1,100 gal. per min., creating a discharge pressure of not less than 1,000 lb. per sq. in. at the jet-atomizer nozzles.

1,000 lb. per sq. in. Each of the two pumps is fitted with an electric motor of 1,000 h.p., capable of varying discharge of oil from full capacity down to 35 gals. per min.

The pumps which develop this pressure are Byron Jackson double volute pumps. They discharge into a special manifold with valve arrangements which enable either unit to operate singly or the two can operate in parallel. The oil, which is cheapest grade Diesel fuel, will be delivered through two "out" lines and a reduced volume is drawn back to the storage tanks through two "return" lines.

Fuel atomized by push-button control

The burners are specially designed units manufactured by Todd Shipyards, Inc., known as "triads," since they have three burning orifices. Some 392 of these triad burners are used altogether. They consist of small steel castings from which individual connections extend vertically to three special orifice fittings, each of which contains ten small diameter holes drilled to precision tolerances. With the high pressures employed, as the oil flows through these very small diameter openings, thence to a whirling chamber and finally through an orifice, it is thoroughly atomized and a clear flame results—without smoke or other disadvantages regardless of atmospheric conditions.

The Todd jet-atomizers are ignited instantaneously by push-button control from a control booth through dual electrical igniters on the frame holding the triads. The design of the atomizing element is such that the rate of output in gallons of fuel can be varied by controlling the pressure in the return line without affecting the quality of atomization and without changing the oil supply pressure. The angle of flame in the Todd atomizer is practically constant over the entire range of fuel output. Burners can be shut off immediately to eliminate drip and to assure minimum required operation.

Visibility, 0 to ¾ mi. in 2 min.

Best estimates are that a 75-ft. ceiling can be burned into a 300-ft. ceiling, and visibility of ⅜ mi. can be burned to more than ¾ mi. in two minutes at a cost of $200. Experience at Arcata shows that for single aircraft with the wind unfavorable, cost is about $200 per landing; single aircraft with favoring wind, $150; several aircraft arriving at close intervals in favoring wind, per plane, $80. A 50-passenger transport can probably be "brought in" at Los Angeles for about $3 per passenger under average conditions with the thermal fog dispersal system. This compares with an average cost of $8 to $10 per passenger if a commercial plane is required to land at an alternate airport such as Palmdale.

Construction of the system was relatively simple. The main feed pipes are 10 in. in diameter at the start of the system, tapering to 3 in. on the branches, and return lines vary from 4 in. in diameter on the branches to 12 in. at the tanks. All pipe is somastic-coated, extra heavy weight, and welded at the joints. It was laid in trenches dug to a depth of 2 ft., and the burners extend 14 in. above the ground surface.

Glare walls of corrugated Transite boards have been built on all highways where necessary to avoid startling and blinding passing motorists. The entire system is fenced and service roads have been built to aid in maintenance.

Control of the entire system is fully automatic from a separate control booth built between the approach zone and runway midway of the main east-west runway. A feature of the control booth is large windows which give maximum visibility into the approach zone and down the runway. Control levers and buttons are within easy reach of the operator on a desk type panel. The panel will hold gauges to determine oil pressure in the burner supply manifolds, the burner return manifolds and at pump discharge. Fuel oil valves on the system generally are arranged for manual operation. However, in addition to manual operation for the two discharge shut-off valves and the two return flow control valves to the north and south manifolds, remote control using a hydraulic system is provided for operation from the control booth. By push-button control, the operator can regulate the position of the return flow valves, the opening or shutting of the oil supply valves to the burners and an emergency fuel shut-off.

KEY PERSONNEL for installation of the FIDO system were, left to right, WILLIAM N. BEADLE, Vice-President of Byron Jackson Co.; JACK CHAMBERLAIN, superintendent for Bechtel Corp., contractors for the installation work, and VERN OSTENDORF, supervising engineer for the City of Los Angeles.

Air traffic uninterrupted

The principal problem connected with the piping system was excavation of trenches across taxiways and Inglewood - Redondo Blvd., a very heavily traveled highway along the east side of the field. The trenches were opened

Continued on page 142

Putting Safety on the Payroll Pays

An efficient safety program on earth dam construction projects, where a wide variety of non-insurable accidents can occur, is a first essential to the competitive contractor

By L. M. McKAY
Safety Director, State Insurance Fund
State of Idaho

EARTH DAM construction projects differ substantially in type, size and in basic engineering design, but they all require the application of standard safety principles consistent with the size and nature of the operation. Basic economic and contract considerations require the utmost in conservation of human life and limb and the prevention of materials and equipment damage or loss. To accomplish these objectives, it is evident that a definite policy toward safety is a first essential to any competitive contractor.

Assuming success is dangerous

There are some contractors who have long ago established effective safety policies; but there are still too many who continue to assume that their operations will be sufficiently successful on the basis of insurance coverages alone. This assumption is false for the simple reason that there is not, and never has been, an insurance policy issued that will cover all of the losses the average contractor experiences as a result of accidents on the job. This is especially true on dam construction because of the wide variety of non-insurable losses that may occur.

A partial list of these non-insurable losses includes:

1. Delays and interruptions of normal work processes.
2. Loss of time of officials in investigating accidental losses.
3. Cost of replacing injured employees, including break-in and training time.
4. Increased costs of insurance.
5. Job slow-downs and loss of morale.

It is necessary that every contracting firm undertaking major dam construction establish a definite program designed to hold these losses to the lowest possible minimum.

However, in establishing the safety policy, the insurance factor should be evaluated carefully prior to the commencement of actual construction operations. Such coverages as Workmen's Compensation, Fire, Public Liability, Boiler & Machinery and Vehicle Insurance are usually necessary. Also, on projects employing a company doctor and medical staff, malpractice coverages are of benefit. Group health and accident policies are also of decided benefit.

Workmen's Compensation (or in some states, Employer's Liability Insurance) is by far the most important type of insurance coverage. Every contractor should arrange to receive the maximum expenditure possible under his Compensation Insurance plan in the interests of accident prevention.

It is also necessary that every contractor on a dam construction project demand and receive a complete safety service. In view of the fact that less than 2 per cent of the general contractors in this country employ a safety engineer in their basic organization and that less than 5 per cent have a company-directed safety program, it is apparent that the vast majority of contractors must go outside of their own organizations for assistance in this matter of accident prevention.

Put safety on the payroll

The formulation and application of a well-balanced safety program can be carried out in different ways, founded on the same general principles. It may be found desirable to have the Compensation Insurance Carrier provide a full time safety engineering service and also a medical service. However, due to the inescapable element of supervision, it is usually desirable to have the safety engineer and medical staff report directly to the project superintendent. In cases where these services are furnished by the insurance carrier, this procedure is not always possible. It is therefore evident that an effort should be made to place these employees on the contractor's direct payroll. In any event, the contractor and his employees deserve assurance that safety engineering and medical services will be neither substandard nor inadequate.

The Safety Program, to be applied efficiently, must begin with the incorporation of as much safety as possible in the original construction plan. It must proceed coincidentally with designs, specifications for materials and plans for operations. To accomplish this, the safety engineering force should be furnished with complete information as to projects and job sequence. Many accidental losses can be prevented in the planning room if this procedure is followed, and adequate planning is often the difference between red and black on the corporation ledger.

Best safety device—a safe workman

It has been well said that the best safety device is a safe workman. The problem is—how to obtain a safe workman. To this end, an effort should be made to set up, at the inception of the job, a medical screening method designed to secure within reasonable limits relatively safe employment for everyone who will be engaged in the inherently hazardous work of dam building. At present, the medical examination is a rather touchy subject with some labor unions, but there is a heartening increase of union interest in safety matters. Many unions are cooperating with, and even conducting, such programs in other industries, and there is no good reason why this work cannot be extended to the construction industry at large.

While special cases may require special study, it is felt that the primary medical considerations (Wassermann or Kahn test, vision tests, heart and lung tests, back and joint tests, literacy, equilibrium) are enough to give vast information about where a man can be put to work safely. A man should not be put on a scaffold where he could fall to his death due to an impaired sense of balance, joints that were no good for climbing or uncorrected impaired vision. What can be done, once medical facts are obtained, is to put every employee on a job where he can perform satisfactorily and safely.

There are probably very few contractors who cannot remember accidents which have occurred on previous jobs wherein a simple medical screening examination could have prevented a great human or material loss. Such things as a missed crane signal, an unread or misunderstood sign have cost many a life. Standard job placement programs should be utilized to the fullest degree on every dam construction program.

The second step in securing safe workmen is to provide for their continuous education in safety matters. This can be accomplished through the setting up of effective safety committees, by the use of adequate visual aids and publicity of safety news, and by conducting classes in safety education for supervisors. Also, a great deal of safety information can be passed along to foremen and workers through the medium of safety inspections and surveys in which these men are invited to assist the safety engineer or inspector.

Great advances have been made by

many general contractors through the adoption of a safety award program. Inasmuch as the largest percentage of compensable accidents occur in connection with the operation or repair of trucks and moving equipment, it is well to begin a safety award program among the operators of this equipment. Awards do not have to be elaborate. It is often amazing to observe the pride and satisfaction of a man who is carrying a safety award in his hip pocket when it is only a card showing so many shifts worked or so many miles operated without an accident, and signed by the president of the company. The Card and Ceremony system is enough to start with, but any contractor will find, that once the system begins to work efficiently, the value of the awards can be stepped up.

Safety—a full time job

A well rounded and effective schedule of safety inspection and safety engineering work must be instituted as part of the accident prevention program. While the basic safety engineering problems normally encountered in earth dam construction would fill a large book, the following outline might be followed to advantage.

1. Communications services between hospital and all major job sites require continuous attention.

2. A check list for daily safety inspections of excavation operations should include: Falling material hazards, slide or cave-in hazards, power shovel hazards both mechanical and electrical, personal protective equipment, scaling hazards, routing and scheduling of trucks, hand tool hazards, compressed air hazards and hoisting equipment hazards.

3. A check list for daily safety inspections of tunnel operations should include: Shoring and lagging, falling material, haulage problems including wire rope and attachments, fire and rescue, ventilation, storage and use of explosives, pre-employment chest X-ray, electrical hazards and machine and mine car hazards.

4. A check list for weekly safety inspections of shops, garages, mills, etc., should include: Machinery guards, ventilation, fire protection, sanitation, lighting and housekeeping.

5. A check list for daily safety inspections of wall construction operations should include: Scaffolds and ladders, crane operations, concrete pouring operations, form work, materials handling and clean-up work.

6. Core filling operations require attention to conveyor hazards, guarding of drives, catwalks, ladders, etc., falling material hazards, illumination, shovel operations, electric power cable hazards, overheating and movement hazards and truck and tractor hazards.

7. Outlet and spillway construction operations require daily safety inspections.

It is well to reflect that just as mechanical engineers know more about machines, electrical engineers know more about electricity and civil engineers know more about construction, safety engineers probably know more about accidents and how, when and why they occur in this business of earth dam construction. Put a safety engineer on your payroll and see if it doesn't pay dividends!

Work at Grand Coulee Dam Rushed to Meet Pacific Northwest Power Needs

AWARD OF CONTRACTS for the last three of 18 generating units, to make Grand Coulee Dam the greatest power producer in the world, has been announced by the Bureau of Reclamation. The installation of these and other generators already on order is being rushed to help alleviate the critical power shortage in the Pacific Northwest.

When the last of these generators goes on the line in 1952 the plant will have a rated capacity of 1,974,000 kw. With emergency operation in excess of rated capacity, the ultimate continuous production, when water is available, may approximate 2,200,000 kw. This would be enough power approximately to meet the combined needs of Philadelphia and Detroit. The cost of adding these three units, including necessary switchyard and power plant charges, will be approximately $16 million.

The first big generator with a nameplate capacity of 108,000 kw., will go into production in the right powerhouse this spring. Three more of the big generators will go into production in each of the next two succeeding fiscal years and the final two generators in fiscal year 1952. Irrigation pumping beginning in 1952 on the project will also make heavy demands on the plant. One more smaller station service unit will also be generating power in 1950.

The contracts were awarded by the Chief Engineer in Denver as follows:

Generators, $5,250,034, the Westinghouse Electric Co.

Turbines, $2,497,950, Newport News Shipbuilding and Drydock Co. of Newport News, Va.

Transformers, $1,072,011, the General Electric Co.

Governors, $129,475, the Woodward Governor Co. of Rockford, Ill.

The run of the river and storage in the lake backed up behind Grand Coulee Dam, would not alone justify installation of the last three generators because there would not be sufficient water available to keep them turning. However, Hungry Horse Dam, now under construction on a tributary of the Columbia River, the South Fork of the Flathead River in Montana, will impond an additional 3,500,000 ac. ft. of water. This water, in addition to generating power at Hungry Horse Dam, will be used to smooth out the flow of the river between high spring flood stage and low-water periods in the late fall and winter, thus permitting generation of considerable additional firm year-around power at down stream dams such as Grand Coulee.

A supplemental finding of feasibility report recently submitted to Congress estimated that with 15 units at Grand Coulee and without Hungry Horse storage, 1,043,000 average kilowatts of firm power could be produced at Grand Coulee. With 18 units at Grand Coulee and utilizing water stored at Hungry Horse, 1,203,000 average kilowatts of prime power would be available.

FPC Approval Asked for San Joaquin Power Dam

SOUTHERN California Edison Company has asked the Federal Power Commission to issue a license authorizing the construction of a hydroelectric project with an installed capacity of 115,000 h.p. on the San Joaquin River below Big Creek Power House No. 3 in central California. The project, which would make use of federal lands in the Sierra National Forest, would involve an estimated development cost of $19,406,500.

The company proposes to construct a 228-ft. arch-type concrete dam with a crest length of approximately 1,190 ft. The dam would create a reservoir having a gross capacity of about 35,000 ac. ft. Plans also call for construction of a powerhouse, designated as Big Creek Power House No. 4, containing two vertical 42,000-kva., 11.5 kilovolt, unity power factor generators. A proposed substation would house a three-phase 84,000-kva. transformer bank.

Southern California Edison said the energy generated at the project would be transmitted over a proposed 220,000-volt line to a connection with the company's existing interconnected primary transmission system. The power would be used for domestic, industrial, agricultural, manufacturing, railroad and other purposes in southern and central California.

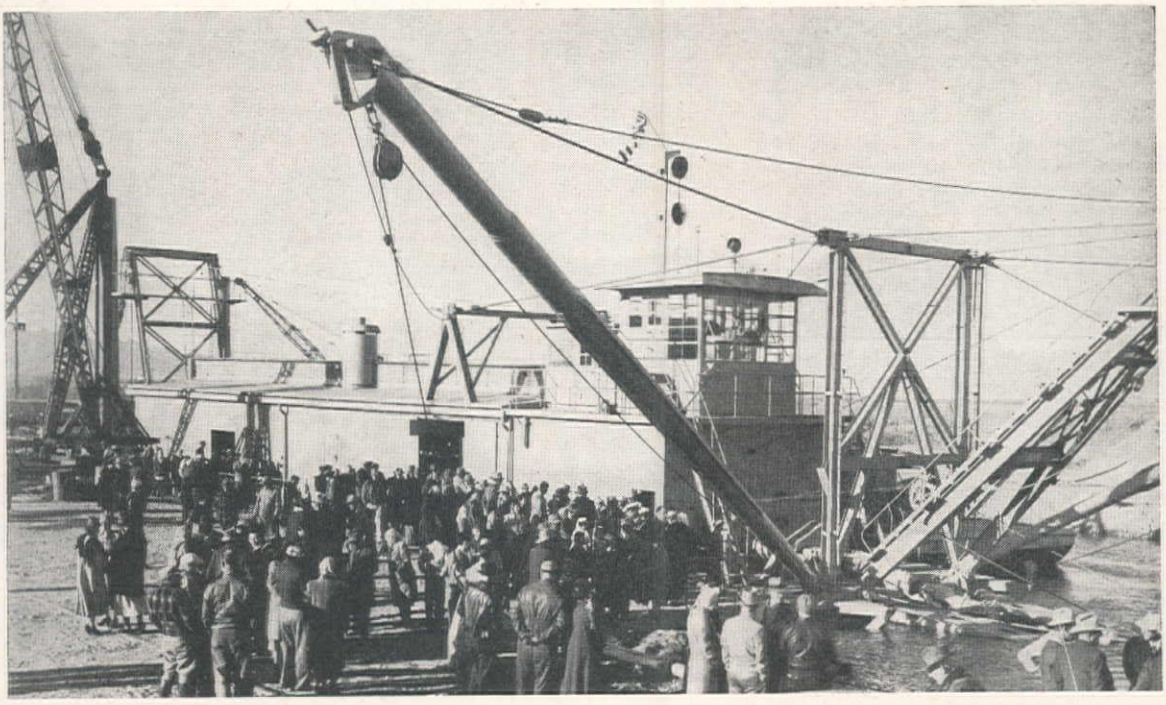
The company plans to finance construction of the project from available funds and from proceeds of bank loans or sale of additional securities.

FPC Authorizes Construction Of Gas Pipeline in Colorado

COLORADO-WYOMING Gas Co., of Denver, Colo., has received Federal Power Commission authorization to construct approximately 41 mi. of additional natural gas pipeline on its system and to install appurtenant meter stations and compressor units. The company also received FPC authorization to abandon approximately 17 mi. of line and two compressor stations.

Part of the pipeline facilities are to be used to deliver gas to Greely Gas Co. for resale in LaSalle, Ault and Eaton, and to Public Service Co. of Colorado for resale in Windsor. All four communities are in Colorado. Estimated cost of the facilities, including those which will increase capacity of the company's system to approximately 50,000,000 cu. ft. a day, is $690,100.

Colorado's Silt to Meet Its Master



THE NEWLY-CHRISTENED dredge submits to inspection by citizens of a town it will save from inundation.

Largest demountable dredge yet built has been christened and turned over to the Bureau of Reclamation for use in clearing badly silted portions of the Colorado River's channel

THE LARGEST demountable dredge ever built, constructed at a contract cost of $750,000 by the Pacific Coast Engineering Co. of Alameda, Calif., has been christened and turned over to the Bureau of Reclamation. The dredge will be used to cut a channel through the badly silted portion of the Colorado River between Hoover Dam and Parker Dam. The present river level there is so high as to seriously threaten inundation of the city of Needles, Calif., and the main line of the Santa Fe Railway. The entire problem and plans for construction of the dredge were reviewed by R. W. Davis, Bureau of Reclamation engineer in the Office of River Control, in the October, 1947, issue of *Western Construction News*. Although the dredge was designed specifically for this job, the Bureau plans to use the unit on many projects planned along the Colorado River in future years.

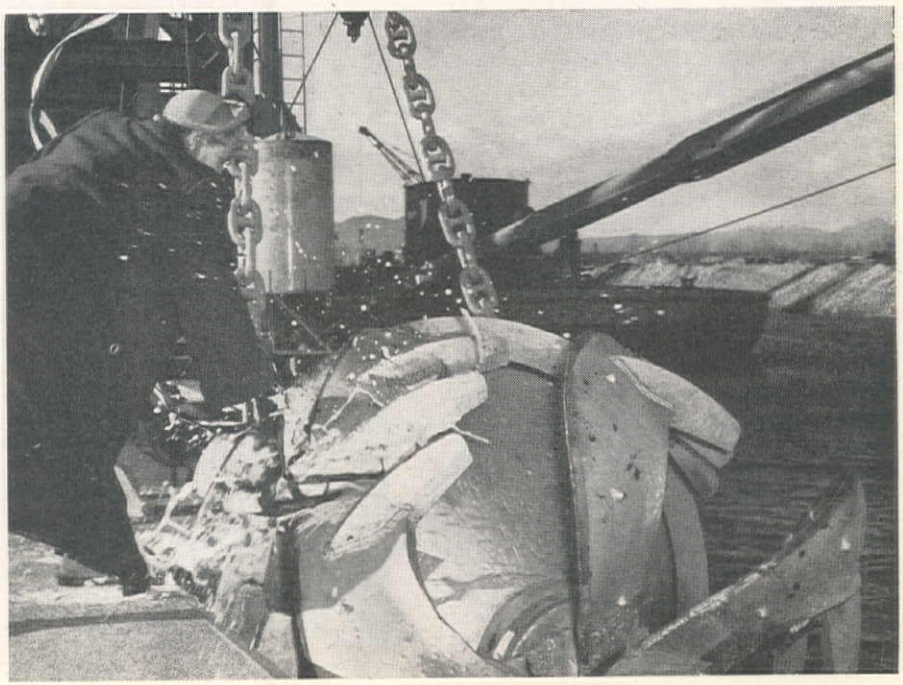
Suction 25 ft. under

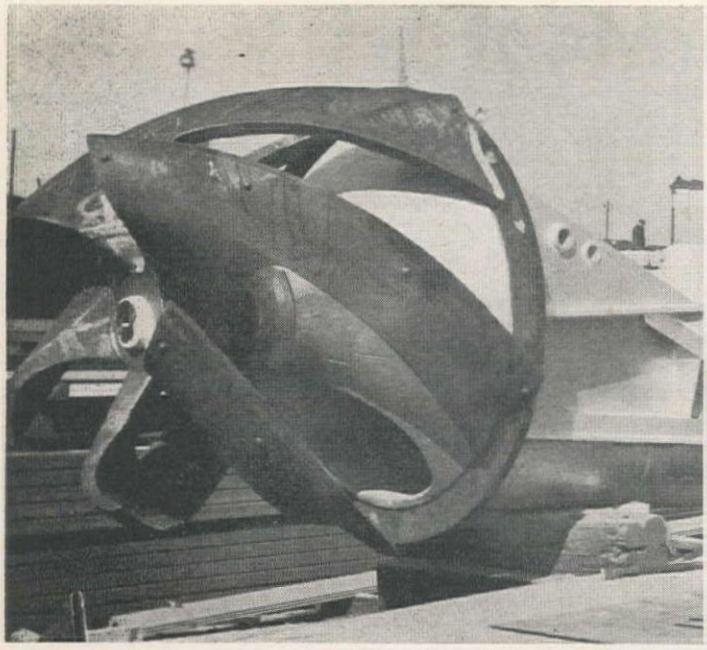
Appropriately called the *Colorado*, the dredge is a 130-ft. long suction-type unit equipped with a 20-in. hydraulic cutter. It is composed of nine hull pontoons with the over-all length of 130 ft., a width of 30 ft., a depth of 7 ft., 4 in., and an operating draft of 4 ft., 10 in. The sectional hull is designed in such a way that the pontoons overlap with 16 ft. between longitudinal joints.

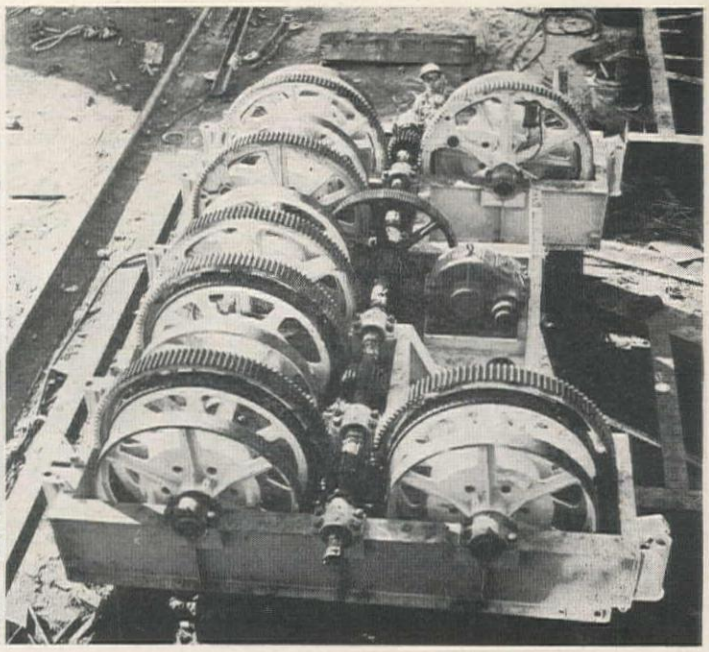
The pontoons are bolted together using 1¼-in. bolts and water tight grommets. Each hull section is designed as a water tight unit. The deck house is constructed with portable side panels and 10-ft. wide portable roof sections, which are complete shipping units. Cranes and hoists are provided over the pump in order to handle it from its seating in the hull overboard to the work barge. An overhead trolley runs the length of the house from the stern to the 7-drum hoist to service the main engine and auxiliary engines. A bridge-type crane is provided to service the 7-drum hoist and the cutter drive. The entire hull, deckhouse, and pilot house are of all-welded steel construction.

The superstructure frames are welded steel construction. The spud frame, the forward frame and the ladder frame are pin connected, and the center A-frame

THE 6-FT. CUTTER head, first part of the dredge that will actually engage the river silt, was singled out to receive the champagne bath as bestowed by MRS. C. P. VETTER.







THE CUTTER HEAD, left, has replaceable blades designed for cutting either tules or marsh grasses. The special gears for the cutter, right, as they were set up for testing in the yard of Pacific Coast Engineering Co.

over the pump well amidships is a fixed unit welded to the hull structure.

The dredge is designed for digging alluvial silt and fine sand and gravel from a depth of 25 ft. below water level and to discharge 500 cu. yd. of solid material per hour through a 2,000-ft. long pipe line at an elevation of 10 ft. above water level. The entire unit is so constructed that it may be readily dismantled for shipment by rail to another work site. No shipping unit will weigh over 40 tons.

One dredge, 15 manufacturers

The dredging pump is designed with a 24-in. suction, 20-in. discharge solid steel case direct connected to an Enterprise model DSQ316, 16 x 20-in., 6-cylinder, 1,350-h.p., supercharged Diesel engine operating at 360 r.p.m. The connection between the pump shaft and the engine is made with a Thomas Flexible Coupling and the dredge impeller shaft runs in a Kingsbury GF 21 thrust bearing and Kingsbury L19 self-aligning journal bearing.

Power for the cutter motor, hoist motor, service water pumps and other connected loads is provided by an Enterprise model DSX316, 10½ x 12-in., 6-cylinder, 525-h.p., supercharged Diesel engine direct connected to a General Electric 300-kw., 230-volt, D.C. 3-wire Generator. The two engines are equipped with Elliot Buchii exhaust gas turbo chargers. Jacket water cooling and lubricating oil cooling is by means of heat exchangers, using river water as the cooling agent.

The cutter drive is powered by a General Electric 250-h.p., 230-volt, stabilized shunt wound motor. Control for the cutter motor furnished by the General Electric Company provides constant horsepower between the basic full load speed and 150% of basic full load speed. A General Electric master switch is mounted in the pilot house. This motor is direct connected with a Waldron Flexible Coupling to a Pacific Western Special 9.145/1 herringbone gear reducer.

The output shaft of the Pacific Western Reducer is connected to a pinion and bull gear, the latter being directly mounted on the cutter shaft on the deck. The cutter shafting is carried forward through a universal type knuckle joint with a telescopic unit between the hull and the ladder. Thrust from the cutter is taken on a special plate type thrust bearing mounted on the ladder structure. The ladder is all-welded steel construction with the ladder head casting welded directly to the forward end of the ladder structure.

Two cutters are provided, one for the standard cutting service, the other specially designed for cutting tules and marsh grasses. The cutters are cast steel, designed so the cutting edges can be renewed.

Pilot house control

The seven-drum hoist is mounted on the deck aft of the cutter drive motor. The center drum is for the ladder hoist, the two adjacent drums are for the swing ropes and the two outside drums are for the spuds. Directly ahead of the spud drums are two drums for operating the swing anchors. The hoist is the outside band, friction type and has been designed and will be built by the Pacific Coast Engineering Company. The hoist is designed for air control from the pilot house by means of Westinghouse Air Brake control valves and cylinders. Spud ropes are carried aft under the deck.

The seven-drum hoist is powered by a 60-h.p., 230-volt, Westinghouse D.C. motor with a Westinghouse controller providing for a 40-ft. per min. rope speed at basic motor speed, a 90-ft. per min. rope speed by field weakening and a 15-ft. per min. speed by armature re-

C. P. VETTER, left, Chief of the U. S. B. R.'s Office of River Control, congratulates C. H. RAMSDEN, President of Pacific Coast Engineering Co., builders of the dredge.

sistance. The motor is connected to the main pinion shaft by means of a Pacific Western Gear Speed Reducer. Brakes and clutches are arranged to provide for clutch release and brake setting in case of an air failure. The dredge is being furnished with approximately 3,000 ft. of shore pipe and 1,000 ft. of pontoon floating line in 40-ft. lengths. Each length of pontoon pipe is being furnished with the Pacific Coast Engineering Company's patented "Paceco Flexible Pipe Joints." Hand winches for handling the floating line anchors have been designed and are being built by that company.

Small fleet to help

The company is furnishing, in addition to the dredge, a work barge with pile driver and A-frame, a pipe barge, a fuel barge for carrying Diesel oil from the shore base to the dredge and a 40-ft. twin screw tow boat.

Shop fabrication of the *Colorado* was completed in August of 1948, at which time the field erection was started in Needles. In addition to the dredge, the 40-ft. tow boat was designed by the company for shallow draft operation in the narrow channels of the Colorado River. The boat, a twin-screw, tunnel-stern ship, built in Alameda, was shipped complete on a flat car to Needles. It is powered by two Sterling MRAB6 90-h.p. Diesel engines, each swinging a 29 x 15-in. three-blade propeller. The hull is designed with a modified scow bow and is equipped with towing knees and A-frame. A 5-ton B. B. Bros. hand hoist is mounted on deck to handle small loads. The fuel barge, 42 x 24 x 5 ft. molded, has a capacity of 15,000 gal. of Diesel fuel with a 3½-ft. draft.

The pipe barge is a flush deck barge 36 x 22 x 4 ft. molded and the work barge is a duplicate, except that it is equipped with an A-frame and a double drum American Hoist and Derrick Company, Model 42G, gasoline hoist. The A-frame is furnished with a set of hanging pile driver leads and a pile hammer. The work barge, the pipe barge and the fuel barge are of sectional construction of the same general type as used in the dredge hull.

Directing design and construction of the units for Pacific Coast Engineering Co. were C. H. Ramsden, president of the company; Will C. Hall, vice-president; S. A. Mueller, secretary-treasurer, and C. D. Ramsden, chief engineer. Jean M. Allen of Los Angeles was consulting engineer for the Bureau of Reclamation dredge. C. P. Vetter is chief of the Bureau's Regional Office of River Control which is in immediate charge of the work at Needles and at other points on the lower Colorado River. Vetter's office is in Boulder City, Nev.

Oregon's City and County Engineers Hold First Annual Roads Conference

OF ALL THE ROAD and street conferences sponsored recently by Western universities and colleges, that held at Oregon State College in Corvallis, the first on this campus, was one of the most practical and commendable. Under the sponsorship of the Student Chapter of the American Society of Civil Engineers and the personal direction of Professor of Highways Bob Glenn, the 3-day meeting attracted many engineers from Washington, California and Oregon.

Designed primarily for city and county engineers, the First Annual Conference on Roads and Streets provided speakers who were loaded with experience and information helpful to the Oregon roadmen. The conference was particularly well timed in view of the devastating frosts and winter damage experienced in the Pacific Northwest, requiring that large percentages of local budgets be directed toward maintenance and repair of this damage.

Among the principal speakers at the city sessions were Harold Davis, City Engineer of Salem, and Victor Goodnight, City Engineer of Corvallis. The county sessions included papers by county engineers: C. P. Fauerso, Wasco county; S. B. Morgan, Union; Walter Larson, Linn; and Paul Northrup, Multnomah. At the general sessions, speakers discussed the current work and troubles of city, county, and state engineers in connection with Oregon's record 49.3 per cent increase in population since 1940. Principal speakers were James Convill, City Manager of Astoria; R. H. Baldock, Oregon State Highway Engineer; Rodney Ryker, District Engineer, Asphalt Institute; Donald West, Chelan county engineer, Wash.; Russell Smith of State Highway Engineer's office; William Bowes, Commissioner of Public Works, Portland; and Representative Ralph T. Moore.

The smoothness with which the conference was conducted gives evidence of the keen forethought given to it by the directors. The sessions were not extension courses in civil engineering—rather, they were informal groups of engineers exchanging questions and the latest solutions.

PROFESSOR BOB GLENN of Oregon State College, director of the conference, was the man most responsible for its success. Under his guidance, the latest solutions to many road construction problems were aired.

New Type Pipe Contract Cuts Installation Time

INAUGURATION of a new type of pipe construction contract which will materially reduce the time required to install water mains to serve new residential, commercial and industrial consumers was reported recently by J. S. Longwell, Chief Engineer and General Manager of the East Bay Municipal Utility District, Oakland, Calif., in announcing the opening and awarding of bids for the installation of over 61,000 ft. of new water mains in Alameda and Contra Costa Counties.

Under the new procedure, pipe contractors are invited to bid on the installation of a large number of water mains of various sizes and lengths needed throughout the District as replacements for existing mains which are worn out or inadequate. Bids are entered with the understanding, however, that water main extensions needed to serve new customers may be substituted at any time for equivalent amounts of replacement pipe at the same applicable construction prices.

According to Longwell, such a procedure will permit the District to promptly process requests for water main extensions, and issue the job to the pipe contractor for installation without the necessity of advertising for bids and awarding additional contracts for individual or groups of extensions. It is felt that this procedure will be of particular benefit to residential subdividers and home builders by greatly accelerating the speed with which water mains can be installed to serve such developments.

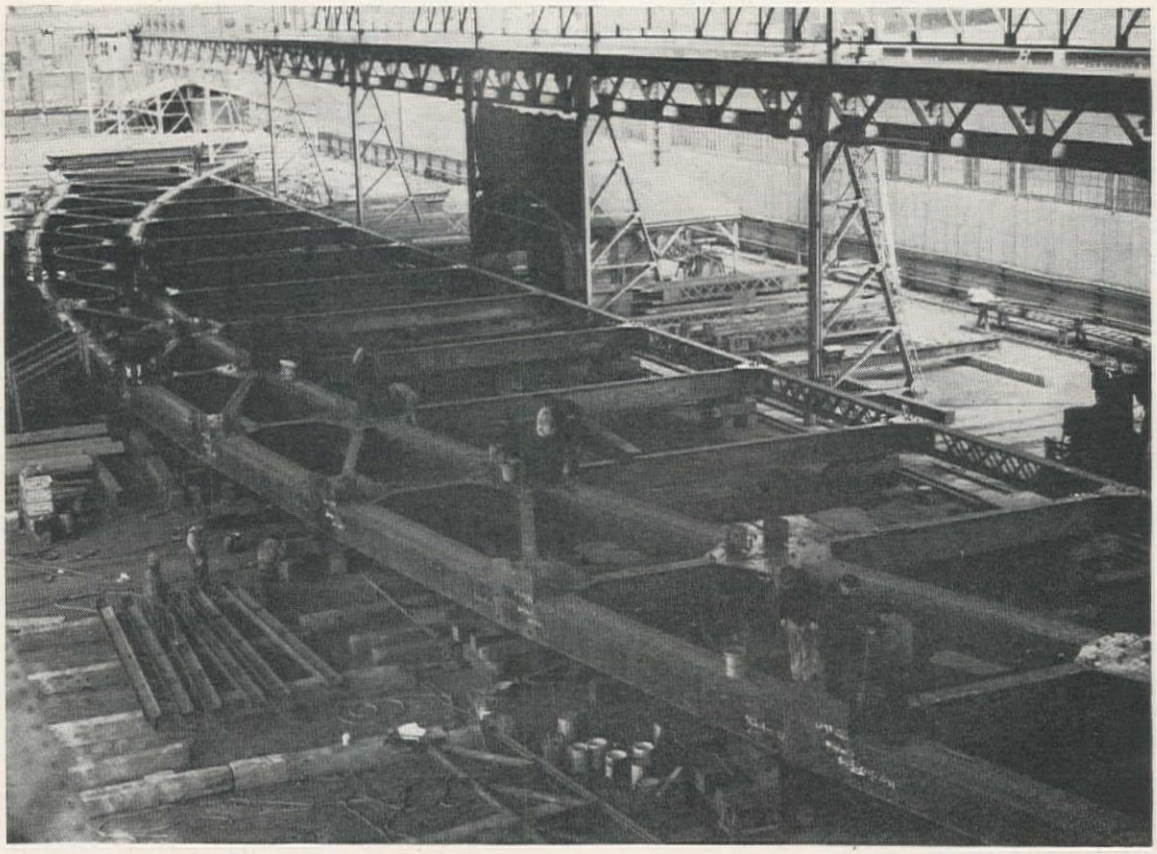
The first of this type of contract has been awarded to E. T. Haas Co. with a low bid of $145,082 for the installation of 40,700 ft. of water mains in Alameda County; and to the Associated Mechanical & Electrical Co., who submitted a low bid of $83,111 covering the installation of 20,700 ft. of pipe in Contra Costa County.

Need for Legislation Delays New Mexico's Road Projects

IT WILL BE impossible, according to New Mexico's State Highway Engineer, Burton Dwyre, to start the state's 1949 highway construction program until after July 1, because until March 10, when the Legislature finally approved an advance in the state gas tax from five to seven cents per gallon, there was no way of calculating the amount of money which would be available, and therefore what construction should be programmed. In addition, it was not possible to secure approval of federal-aid appropriations until state totals were ascertained.

The new law becomes effective 90 days after closing of the legislative session, which took place on March 12.

Manila Bridge Built on West Coast



ONE OF THE bridge's three trusses (width 58 ft., length 336 ft. between pin centers) in Moore Dry Dock's Oakland shop.

Steel bridge in the Philippines, knocked out during the war, prefabricated on the West Coast and shipped to Manila for erection

DURING the dark days of retreat and evacuation from the Philippines, early in the war in the Pacific, the United States armed forces blasted bridges and roads behind them to hinder the advancing Japanese. One of these bridges was located in the center of the city of Manila, across the Pasig River, and helped connect the East with the West between Calle Arroceros and Calle Echague. A thorough job with explosives knocked out the entire structure, leaving the end piers intact.

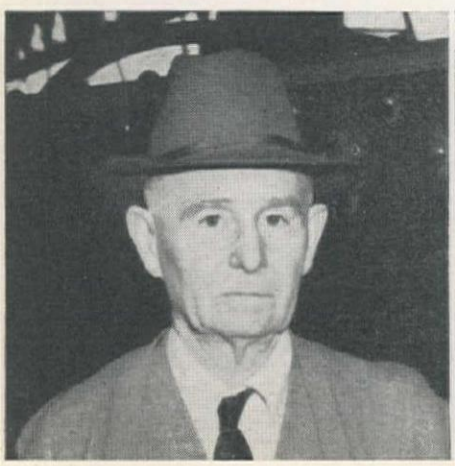
This bridge is now being replaced by the Bureau of Public Roads Administration under a contract let to Florencio Reyes Construction Co., Manila, early in 1948. A large and well-known company before the war, Florencio Reyes is doing the steel erecting and paving for the new structure, named after the Philippine hero, Manuel Quezon.

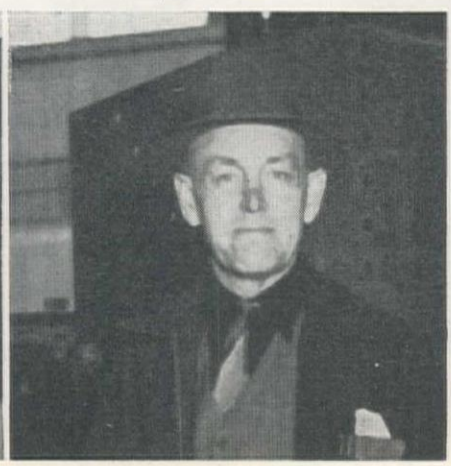
All American steel

All of the steel being used in the Quezon Bridge is being furnished and prefabricated by Moore Dry Dock Co., Oakland, Calif., under a $300,000 subcontract. Truss members, floor structure, and rivets, in the amount of 1200 tons, are supplied by Moore Dry Dock and shipped to Manila. Freight and insurance costs alone are $46,000 for the 8,000-mi. trip. The last of three shipments left early this month and contained the packaged steel for the last truss.

Plans and specifications were drawn up at the Washington, D. C., office of the P. R. A. and called for a 3-truss, 336-ft. 2-hinged arch bridge, providing two 25-ft. roadways on either side of the center truss, and 2 walkways cantilevered outboard from the outside trusses. The 1200-ton jigsaw puzzle being erected in Manila has 16 panels per truss and will provide H-20 loading according to 1944 AASHO design.

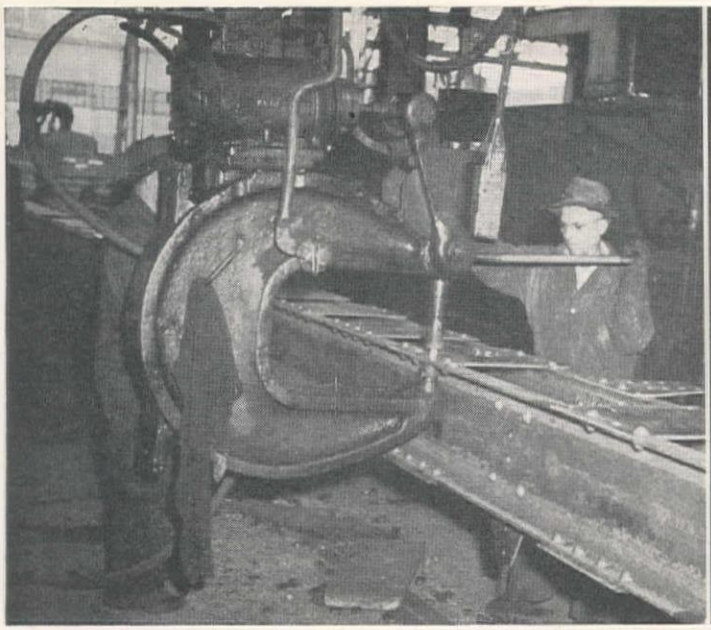
JOHN BROOKS, left, veteran of 48 years' experience in steel fabricating, is production manager for Moore Dry Dock Co. H. F. DETTMER is shop superintendent of prefabrication.

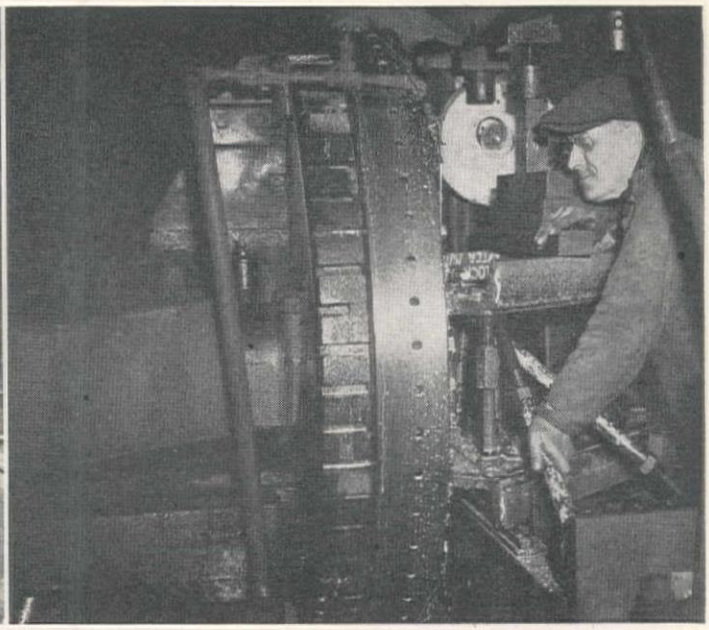




Earth tremors not wanted

Ground at the Moore Dry Dock prefabrication shop has become solidly compacted through the many years of steel work done there since the first world war, and the heavy trusses used on the Quezon Bridge—each one 336 ft. long, 58 ft. high and weighing 250 tons—are among the biggest single frames of steel to be spread out indoors anywhere. Shop work for each truss started at the top of the arch, between the two center





A RED-HOT rivet is punched into place for one of the upper chord members, left. Bearing areas of compression members were milled to close tolerances by F. W. TRAVERSE, right, on a Thomas spacer milling machine.

upper-chord members. Next, the entire upper chord was assembled, followed by the middle chord and web members between the two. The vertical hangers were then placed, and finally the entire lower chord secured. Elevation was checked constantly and occasionally the truss was raised in spots to correct for minor sags. The lower chord members arched in a camber of 8 in. for the entire length of the shop. In the field and under full dead loads the span will settle 2-13/16 in.

Acting for the P. R. A., the State of California had a shop inspector on the job checking the length of each truss as many as 3 times in a day. Average shop temperature was 65 deg. F., whereas average temperature in Manila may exceed 85 deg. F. at time of erecting. As a result, the length of the third and final truss hovered around 335.884 ft. at shop temperatures, as checked by a certified 500-ft. Lufkin standard chain using a 20-lb. pull and corrected for an error of 1/500 ft. per 100 ft. End hinge connections, in place at the site in Manila, are exactly 360 ft. apart, and will be fitted with end pins 4 ft. long and 13 or 15 in. in diameter, depending upon whether an inside or outside truss.

Cannot strike a match

Considerable machining was needed in the prefabrication of Quezon Bridge. Every compression member in the trusses was designed to use its full end bearing area, and therefore was mitered and milled to a tolerance of 15/1000 of an inch. Rivet holes were reamed in the member and gusset plate after the member was butted exactly in place at shop temperature. It is said, with excusable pride, by the prefabrication craftsmen that erectors of the bridge will not be able to strike a match on the butt ends of the chord members or in the rivet holes between gussets and flanges. Shop equipment includes a Thomas spacer milling machine for the mill-chords, using 54 cutters and 24 finishing tools.

Quezon Bridge prefabrication was under the direction of production manager John Brooks, Moore Dry Dock veteran with 48 years' experience in steel fabricating, and H. F. Dettmer, shop superintendent. George R. Jones was inspector for the State of California.

Many Apply for Missouri River Basin Power Output

INTENSE INTEREST in the electric power which will be generated at the Garrison and Fort Randall power plants is being displayed by people throughout the entire Missouri River Basin project area, Bureau of Reclamation officials have announced.

The interest is demonstrated by more than a hundred applications which have been received by the Bureau for the power which will be available. District offices at Bismarck, N. Dak., Huron, S. Dak., and Grand Island, Neb., all report having received applications from preferred customers such as rural electric cooperatives, public power districts and municipalities, as well as from privately-owned public utility companies. Analysis by states of the applications thus far received show that preference customers within feasible transmission distances from the Garrison and Fort Randall plants have applied for the following amounts of firm power:

	Kilowatts
North Dakota	42,000
South Dakota	52,000
Nebraska	60,000
Western Minnesota	49,000
Northwestern Iowa	53,000

The above applications already total 256,000 kw., or nearly all of the power that will be initially available from Garrison and Fort Randall, and additional applications are still being received.

The Garrison and Fort Randall Dams and related power plants are now under construction by the Corps of Engineers as part of the Missouri River Basin Project. They are multi-purpose developments designed to provide primarily for flood control, navigation, irrigation storage and power generation. Garrison Dam is located on the Missouri River approximately 80 mi. north of Bismarck, N. Dak., and Fort Randall Dam is in south central South Dakota.

The present program of the Corps of Engineers indicates that the first generating unit at Fort Randall will be completed in April, 1953, and that the initial generator at Garrison will be installed by April, 1954. Plans call for a total power installation of eight 40,000-kw. units at Randall and five 80,000-kw. units at Garrison.

Four Large Bridges Deemed Necessary at Vancouver, B. C.

CONSTRUCTION of four new bridges over False Creek in the center of Vancouver, B. C., is now considered to be necessary to meet the steadily increasing traffic demands of the city. Four engineers, C. A. Battershill, city engineer, Charles Brakenridge, former city engineer, Dean J. N. Finlayson, dean of engineering of the University of British Columbia, and Major J. R. Grant, have completed a survey and filed their recommendations on this project.

The recommendations call for a new bridge just west of the present Granville street bridge; erection of a four-lane low level bridge from Columbia and Keefer Sts. to Quebec St. at Third Ave.; replacement of the existing Connaught Bridge at Cambie with another structure immediately to the west; and the erection of a bridge from Richards and Drake Sts. to Oak St. and Broadway.

First on the list of recommendations is the new Granville St. bridge, estimated to cost $8,000,000.

The Columbia-Quebec structure, costing $1.2 million was regarded as second on the priority list. It would relieve congestion on Main St. The engineers believe steel from the old Granville bridge could be used for this span.

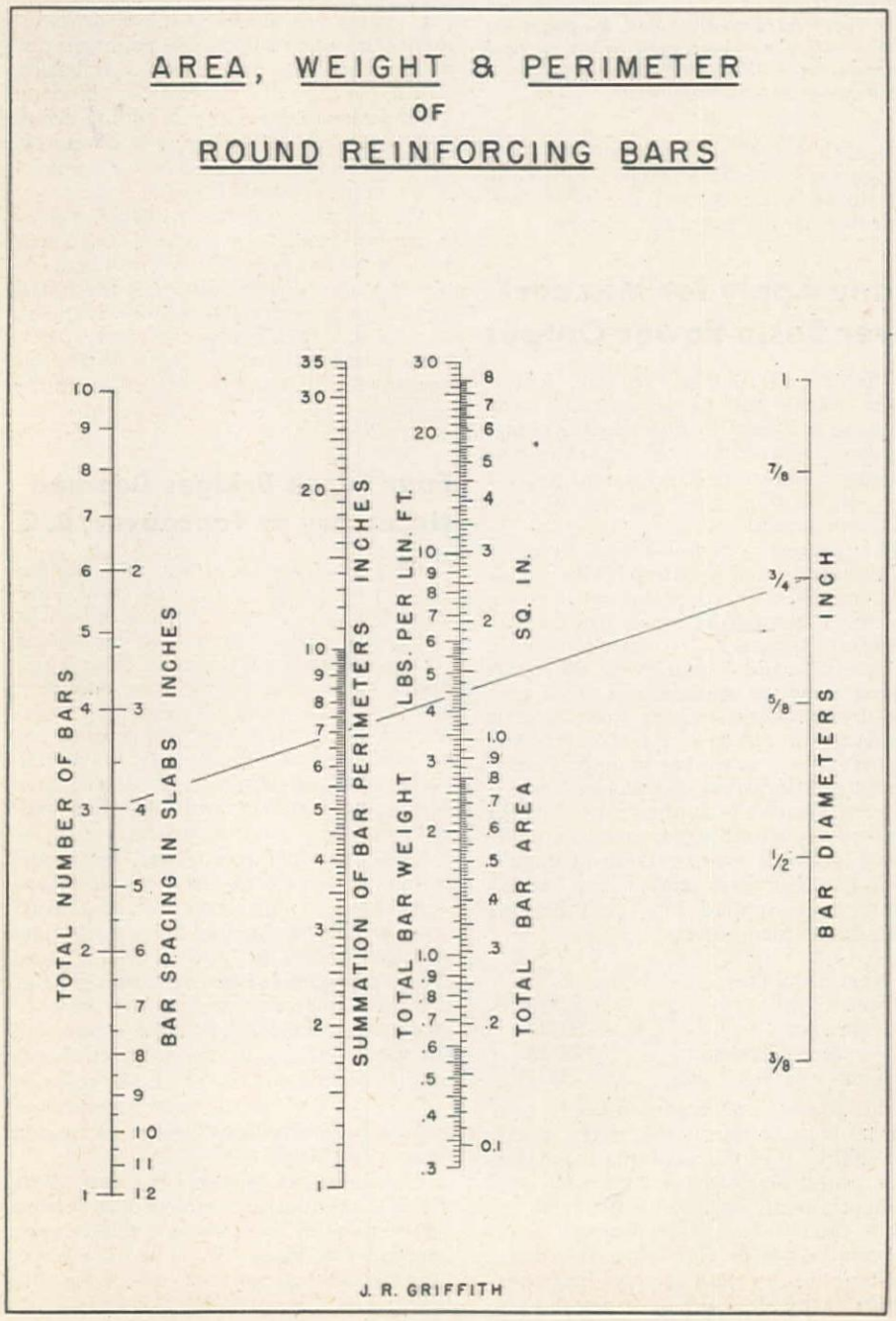
Construction Design Chart

CVI...Area, Weight and Perimeter Of Round Reinforcing Bars

By JAMES R. GRIFFITH
Dean of Engineering
University of Portland
Portland, Oregon

ONE OF my friends, while watching me prepare the accompanying chart, asked if this same information was not available in other references. It is true that most of the information presented in this series is available in other forms. The same may be said of the data in most technical books. The only originality claimed herein, is in the nomographic form of presentation. My long range objective has been to collect a series of charts for the solution of the routine problems of the construction engineer who cannot carry an extensive library to the jobsite. The fact that so many design offices are using these charts for checking and estimating, would indicate their value as a whole.

The designer, in making a choice of reinforcing steel, is interested in the sectional area and summation of perimeters in various combinations of bars. I have added a scale giving the total weights per linear foot, for the convenience of the estimator whose prime interest is in the tonnage required. It is the conventional practice in designing reinforced concrete slabs, to base the computations on a unit width of 12 in. Therefore, the results obtained from the chart for slab reinforcing, will be based on this same unit width, and for tonnage must be multiplied by the total width of slab as well as the length.



A single straight line intersecting all scales is necessary for a solution of the accompanying chart. The designer, in making a choice of reinforcing bars, will normally have a total sectional area to satisfy, which must be checked for bond and therefore will require the summation of bar perimeters. I have drawn a solution line on the chart for the following assumed conditions:

Number of bars = 3
Size of bars = ¾-in. round.

From the chart, the following information will be noted on the respective scales:

Total area = 1.31 sq. in.
Total weight = 4.5 lb. per ft.
Summation of perimeters = 7.1 in.

Since each ¾-in. round bar has the following characteristics:

Area = 0.4418 sq. in.
Weight = 1.502 lb. per ft.
Perimeter = 2.3562 in.,

we then have the following as a check on the results obtained from the chart:

Total area = 3 × 0.4418 = 1.3254 sq. in.
Total weight = 3 × 1.502 = 4.506 lb. per ft.
Summation of perimeters = 3 × 2.3562 = 7.0686 in.

It will be noted that these values agree reasonably close to those obtained from the chart.

The solution line drawn on the chart was for 3 bars. It will be noted that, for a unit width of slab, this number of bars is identical to a spacing of 4 in. between bars. In the determination of sectional area, weight, and summation of perimeters, the computation is always based on

$$\text{Number of bars} = \frac{12}{\text{bar spacing}}$$

In selecting a combination of reinforcing bars for a beam, the clearance between bars, and to the outside of the beam, must be considered. This information is given by a chart on page 50 of our reprint.[1] It would be technically possible to combine, on one chart, the information furnished on these two charts. By so doing, we would lose the simplicity which has always been foremost in mind in the preparation of this material.

[1] *Construction Design Charts*, 1947 edition. Western Construction News.

Tunnel Section for Portland Sewer to Be Contracted Soon

CONTRACTS will be let soon for construction of one of the most important units of Portland's interceptor sewer and sewage disposal project. This is the peninsula tunnel section extending from North Columbia Blvd. and Delaware Ave. to North Greeley Ave. near Interstate St.

The bore will be horseshoe shaped with an inside diameter of 8 ft. and will be concrete lined throughout. Concrete access shafts will be installed at regular intervals along its length. It is anticipated that over a year will be required to drive and line the tunnel.

Portrait of a Power Company Chief

Beginning as a day laborer, I. C. Steele has advanced to become Chief Engineer of a power company whose post-war construction program is topping $100,000,000 per year

I. C. STEELE

FROM DAY LABORER to Vice-President and Chief Engineer is, to date, a capsule description of the career of I. C. Steele, who, back in 1909, cast his fortunes with the Pacific Gas and Electric Company, one of the three largest private gas and electric utility companies in the United States. P. G. & E. operates a system extending into 46 California counties serving a population of approximately 4,950,000. Its 71 hydro-electric and steam-electric plants, 51,800 mi. of electric power lines and 11,100 mi. of gas pipe lines supply more power than is available to many entire countries. For the period between 1946 and 1951, the Company has scheduled as much new electric capacity as was completed throughout the previous 65 years of its history. In other words, Steele, as Vice-President and Chief Engineer, is holding down a full-time job.

Of a rare breed

I. Cleveland Steele—Cleve to his friends, since his first name is definitely off the record—was born in 1886 in Compton, Los Angeles County. Thus, he is one of that rare breed, a native of Southern California by birth rather than migration. His first impulse toward engineering came while watching construction of the Pacific Electric Track from Los Angeles to Long Beach. After attending public schools in Los Angeles County, he graduated from the University of California in the spring of 1909, with a B.S. degree in Civil Engineering. He made his Big "C" in baseball, and is proud of having played in a famous 17-inning game against Stanford.

Immediately following his graduation, he took a job as day laborer with P. G. & E., at the magnificent starting salary of 25 cents an hour. He was assigned to the Lake Arthur dam project, one of a crew that worked seven ten-hour days a week, with, according to him, a half hour off on Sundays so the men could wash their socks. He remembers this seven-day schedule with great clearness, since it caused the one break in a remarkable record. That November of 1909 is the only time he has missed a Big Game (Stanford vs. California) in the 44 years since 1904. Worse yet, the weather on that Big-Game weekend was so bad that all work was cancelled and he spent Saturday afternoon huddled in a damp tent with nothing to do except wonder what was happening at the stadium.

From laborer to Chief Engineer

Steele received four raises in his first five months with the Company, and by May of the following year had been made General Foreman on the job of raising a dam and building a tunnel outlet. After two years in the field, where he took part in the preliminary exploration for a diversion dam on Bear River as well as in the installation of various hydro-electric and irrigation structures, he was transferred to the head office to serve as a designer.

From 1911 to 1917, he worked under Harry C. Vensano, now Director of Public Works for the City and County of San Francisco. His duties included preparation of structural and hydraulic designs, as well as supervision of construction of civil engineering structures, such as substations, special transmission line structures, domestic water supply systems and steam plants. In 1917, Vensano left the Company and Steele was put in charge of the Civil Engineering Group.

By 1919, the rapid expansion of P. G. & E. operations made it advisable to create an independent engineering department, under the direction of the late Arthur H. Markwart. The Department was divided into several divisions and bureaus, and Steele now headed the Division of Civil Engineering, with greatly expanded duties.

The history of P. G. & E.'s ensuing years is one of great expansion. Steele participated in all phases of the development from field reconnaissance and exploration through the working out of studies to determine upon the most feasible and economic location and size of hydro and steam power projects, and finally to the preparation of construction plans.

One of the most interesting projects was on the Pit River, where a plan for a 60-mi. stretch of the river was developed.

AT GROUND-BREAKING ceremonies for P. G. & E.'s 405,000-h.p. steam power plant at Antioch, Calif., Steele (kneeling) helped to turn the first shovel of dirt, assisted by Wm. J. Buchanan, Contra Costa County Supervisors' Chairman (in cab) and J. Perry Yates, Vice-President of Bechtel Corp.

Steele also worked on the design of the Salt Springs Dam, the highest rock-fill dam in the world, towering to a record-making 328 ft., 53 ft. higher than the previous record. Steele is considered an authority on this type of structure, and wrote the section on rock-fill dams in the "Handbook of Applied Hydraulics" compiled by C. V. Davis. He has had a large part in the power development work on such California rivers as the Pit, the North Fork of the Feather, the Yuba, the Bear, the Mokelumne and the Stanislaus. He was also employed as a Consulting Engineer by the Los Angeles Flood Control District, for San Gabriel Dam No. 2.

To round out his experience, he has also participated in the unique sport of lassoing a bear. This occurred during the opening of Tiger Creek Flume in 1931. With a group of associates, Steele spied a very large, very wet brown bear being carried along by the swift-moving torrent of water. With considerable effort the animal was lassoed, a plank boardwalk was constructed to lure him ashore and, after he got on dry land and immediately climbed a tree, more time and efforts were consumed in removing the lasso. And then, the ungrateful Bruin promptly leaped back into the flume.

An executive, and "damn decent"

In 1944, Steele became Chief Engineer of the P. G. & E., and on July 1, 1947, was appointed to his present position of Vice-President and Chief Engineer, with executive charge over all work of the Engineering Department. The Department's duties include initiation of studies relating to the planning, development and programming of additions and changes to the Company's hydro and steam-electric plant properties; the designing or direction of designing of all physical facilities except those employed in the transportation and distribution of gas; prescribing standards and preparing specifications for materials, equipment and structures; inspection and testing of materials and equipment, and all problems associated with administering the Company's water rights.

Possibly Steele's outstanding characteristic is his ability to win the loyalty, respect and affection of the men who work with and under him. As one associate puts it, "He's so damn decent!" He is always ready to back up a subordinate and to shoulder the responsibility when something goes wrong, and equally ready to give credit for a good job to all who participated. He has the rare ability to bring a man along at his own pace, feeding him as much work as he can handle, without ever piling it on beyond his capacity. On the other hand, his pet dislike is a man who can't get results. It is often recalled that, upon his appointment as Chief Engineer, Steele personally sought out and shook hands with every member of his Department, at present numbering 325.

Steele is a good-looking man whose lean brown face is topped by a shock of graying hair. He has the easy friendliness of one who genuinely likes people, and shows a fondness for good tailors and for ties that are anything but conservative. Although he does not like public speaking, and makes no claim to excellence in that line, he undeniably dresses up any platform on which he appears.

In the midst of millions

At present, he is in the midst of P. G. & E.'s tremendous post-war construction program, the greatest being undertaken by any utility in the nation. Expenditures during the six-year period between 1946-51 will add up to more than $600,000,000! The immensity of this project can best be shown by comparison. The Hoover Dam and Power Plant, for example, when completed will have cost $160,000,000. The Central Valley Project, $440,000,000. The Grand Coulee Dam and Power Plant, $230,000,000, and the proposed new San Francisco Bay Bridge and approaches, $155,000,000.

P. G. & E.'s rates are among the lowest of any such private utility company in the country. This highly desirable result has been achieved in part by a full use of "mingled" power. In years when precipitation is normal, steam plants are used to comb off the peak loads and as reserve for outages, allowing the hydro plants to operate at high average loads. In dry years, the reverse is true, and then, it is hydro-power which operates on the peaks or is kept as a reserve. The program now in progress will involve the development of 300,000 kw. of new hydro power and 1,000,000 kw. of steam power. This calls for the building of 5 hydroelectric plants, 4 steam plants, plus substations, hundreds of miles of transmission lines and other structures.

Misses the outdoors

As Chief Engineer, Steele has a big job and he frankly loves it. He has never worked anywhere else and never wanted to. Like many engineers who attain executive positions, he misses the outdoor life that goes with being on a construction job, and in nostalgic moods, he will reminisce somewhat wistfully about his early days with the Company, when there were few roads and almost no accurate maps of the rivers, so that each field trip offered a wealth of exploratory adventure.

Steele has always been interested in outdoor activities, although he draws the line at gardening. He feels that he had enough of that during his early boyhood on the farm. But he plays a fair game of golf, and until recently, an even better game of tennis. In fact, he walked off with four cups during his years of tournament play in Alameda. He is also an admirably patient, if notoriously unsuccessful fisherman, and his enthusiasm for the sport is never dampened by the smallness of his catch.

Steele has three children, two sons and a daughter, and five grandchildren. His eldest son, Dwight, seems to have inherited his father's ability at getting along with men, for Dwight Steele is an expert on labor relations, and only recently was called in to assist management during the recent longshoremen's strike.

Conviviality

Like most men who enjoy life, I. C. Steele likes an occasional drink and a good party. He has just been elected President of the San Francisco Engineers Club, and is a former President of the San Francisco Section of the American Society of Civil Engineers.

He also belongs to a poker club, made up of seven men all close friends of long standing. During their games, the main interest of each is to outbluff the others. Like the rest, Steele puts across his fair share of bluffs, but he is never permitted to forget one notable lapse of memory. This occurred during a jack-pot. With consummate coolness he called — not raised, but called — the opener, with nothing in his hand but a pair of nines!

Hoover Commission Hits Pick-Sloan Missouri Basin Development Program

IN A REPORT by the Hoover Commission on government reorganization, the present Missouri Basin program was "not recommended" as a pattern for river development. It pointed out the continuing arguments between the Corps of Engineers and Bureau of Reclamation over construction of projects in the same river basins.

The report stated "After sharp clashes over plans for the development of the Missouri Basin, the Corps and the Bureau announced complete agreement on the Pick-Sloan plan.

"Analysis of that plan reveals the fact that it contains many projects which previously had been subjected to devastating criticism by one or the other agency. The 'compromise' consisted for the most part in a division of projects, each agency agreeing to forego the privilege of criticizing projects assigned by the agreement to the other.

"The result is in no sense an integrated development plan for the basin, and there is serious question in this case whether agreement between the two agencies is not more costly to the public than disagreement."

The "task force" on natural resources which studied the Missouri plan stated that it was still an unanswered question, whether sufficient dependable water is available for the purposes of irrigation, flood storage, water supply and power development. In vigorous language it stated that "it is nothing short of a calamity that there should be grave uncertainties on this score at this late date."

At the same time the task force recommended against extension of any system of Valley Authorities outside of the Tennessee Basin. Instead, the Commission has recommended that river and harbor development and flood control, now the responsibility of the Corps of Engineers, and irrigation and power development, now under the Bureau, be consolidated in one agency.

Rocky Plantation Cleared in Hawaii

Millions of tons of rocks being removed to clear sugar plantation site in Hawaiian Islands

By W. O. HARPER
Mechanical Superintendent, Pioneer Mill Co., Ltd.
Lahaina, Maui, T. H.

OF INTEREST to Western equipment dealers and construction firms is the use of equipment and work being done on a sugar plantation in the Hawaiian Islands. The Pioneer Mill Co., Ltd., Lahaina, Maui, is well along on a five-year program calling for the clearing and removal of rocks from 2,600 ac. of fallow land, which for years could only be prepared, planted, cultivated and harvested by hand labor. During 1948, a total of 651 ac. were cleared from fallow and planted again to cane, and the project has been accelerated this year in order to complete the operation by the end of 1950.

The purchase of additional equipment, such as cranes, trucks and tractors, which operate in two shifts, was necessary in order to speed up the program. This year's schedule calls for the removal of rock and preparation of land for planting of some 900 ac. In order to prepare this so that it might be ploughed, cultivated and harvested mechanically, it will be necessary to remove approximately 1,200,000 tons of rocks during 1949.

Rock dumps on rock dumps

The rocks are first bulldozed into long windrows by heavy tractors. The next operation is loading these rocks into dump trucks by cranes, using the Pioneer Mill rock grabs. The trucks haul the stones either to nearby gulches or designated end zones. These zones are located where direction of irrigation water flow changes and hence will cause least difficulty for standard practice of herringbone layout. Some dumps are placed inland where land was never suitable for growing cane. In some instances, in order to conserve area, rock dumps are built on top of rock dumps.

After the first clearing of the surface rock by the bulldozers, the land is ripped by heavy duty rippers pulled by Caterpillar tractors. This brings to the surface or loosens stone to the depth of approximately 36 in. These stones are then windrowed by rock dozers, or Fleco rakes (tine attachments used in place of the bulldozer blade) allowing the stones to be windrowed but leaving the dirt in place. These rocks, in turn, are then loaded and hauled to the dumps or gulches by the dump trucks.

"Big ones" blasted

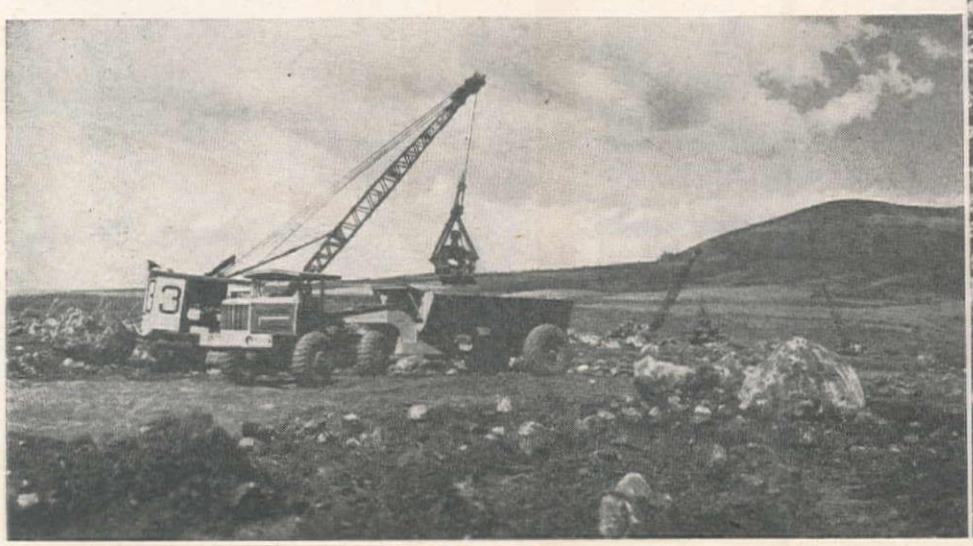
In many instances at this time there are stones too large to be uprooted by the rippers or too heavy to load in one piece after being rooted out. Truck-mounted portable air compressors circulate in the field and supply air for jackhammer drilling of these "big ones" preparatory to blasting. After the second clearing of rock, the land is ripped again with heavy rippers, but in the opposite direction.

When all stones are removed, the land is leveled with motor patrols and drag harrows. Following this, the Engineering Department sets out the grade check pins for the cane furrows and the land is moldboarded, prepared and planted. Maximum amount of rock tonnage removed per acre to date is 2200 tons. Average tonnage removed for 1948 was approximately 1000 tons per acre.

Equipment necessary for this program includes 5 Northwest cranes, 9 Caterpillar D8 tractors, 2 65-Caterpillar harrow tractors, 1 D7 Caterpillar bulldozer, 2 Oshkosh rock haulers, 4 Euclid 14-ton rear dump trucks, 10 International 6 x 6 rock trucks, 2 truck mounted air compressors, motor patrols, pull graders, moldboarding machines, portable light plants, service trucks, sprinkler trucks, as well as rippers, bulldozer blades and Fleco attachments.

This is but a part of the equipment necessary to operate a sugar plantation of this size. All plantation equipment is obtained through Island manufacturers' representatives if possible, otherwise through West Coast mainland dealers. Other operations, such as harvesting, ploughing, preparation of land for the growing of sugar cane, irrigation, cultivation, weed control, etc., make it necessary for the use of 175 automobiles, pickups and trucks, 13 Northwest cranes, 60 Caterpillar type tractors, motor graders, portable compressors, ploughs, rippers, bulldozers and a rock crusher.

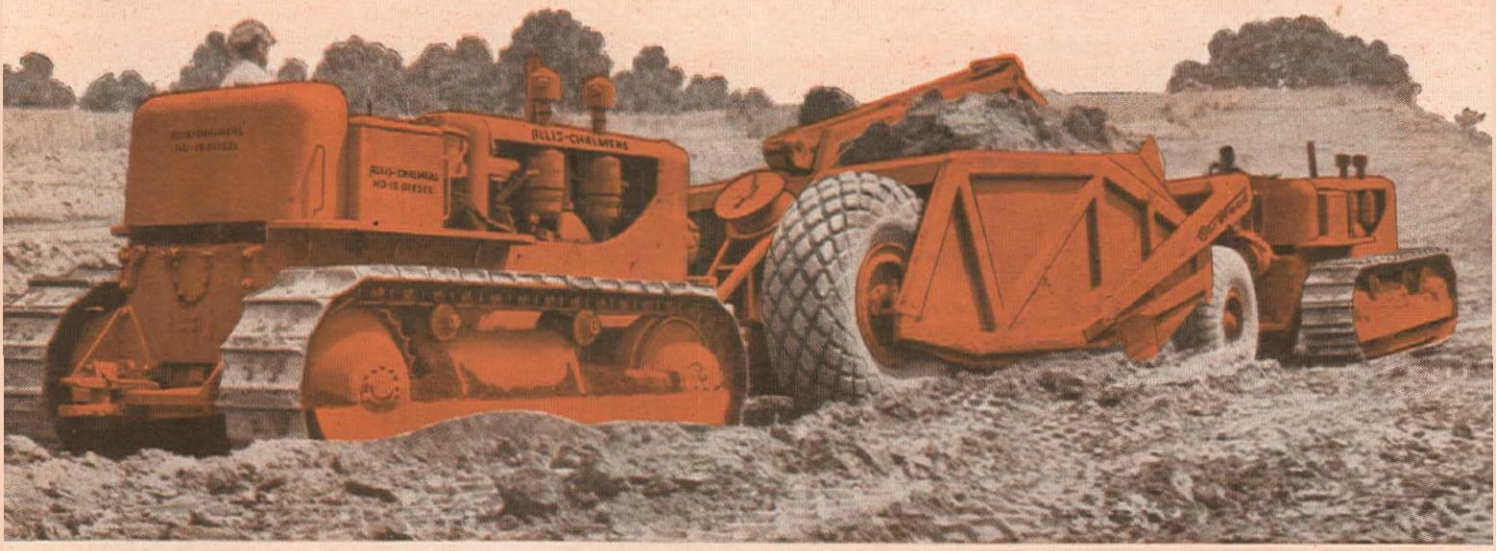
John T. Moir, Jr. is manager of Pioneer Mill Co., Ltd. Harry I. Seebart is assistant manager and E. Butler Smith is administrative assistant. S. G. Robertson is office manager and C. M. Bowen is civil engineer. W. O. Harper is agricultural mechanical superintendent, while A. S. Pombo is tractor department foreman; T. Miyashita, assistant tractor department foreman; Glen J. Adams, tractor shop foreman; L. J. Howard, garage foreman; Peter DeMello, transportation department foreman; J. Neddermeyer, assistant transportation department foreman; M. Ito, section gang foreman; Rodrigo Castaneda and Thomas Watanabe, clearing field bosses.



THE ROCKS, bulldozed into windrows, are loaded into dump trucks by cranes using special rock grabs, below. Many of the rock dumps are built on top of rock dumps, right.

HD-19 TORQUE

OUTPUSHES



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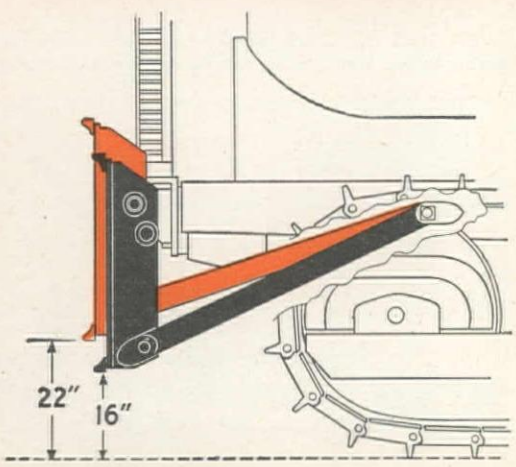

NEW HEAVY-DUTY, ADJUSTABLE PUSHER PLATE NOW AVAILABLE FOR HD-19. It's bigger, stronger, heavier — weighs 1,600 lbs. It's adjustable — operates at 16″ or 22″ above ground . . . pushes any make scraper or self-powered hauling unit.

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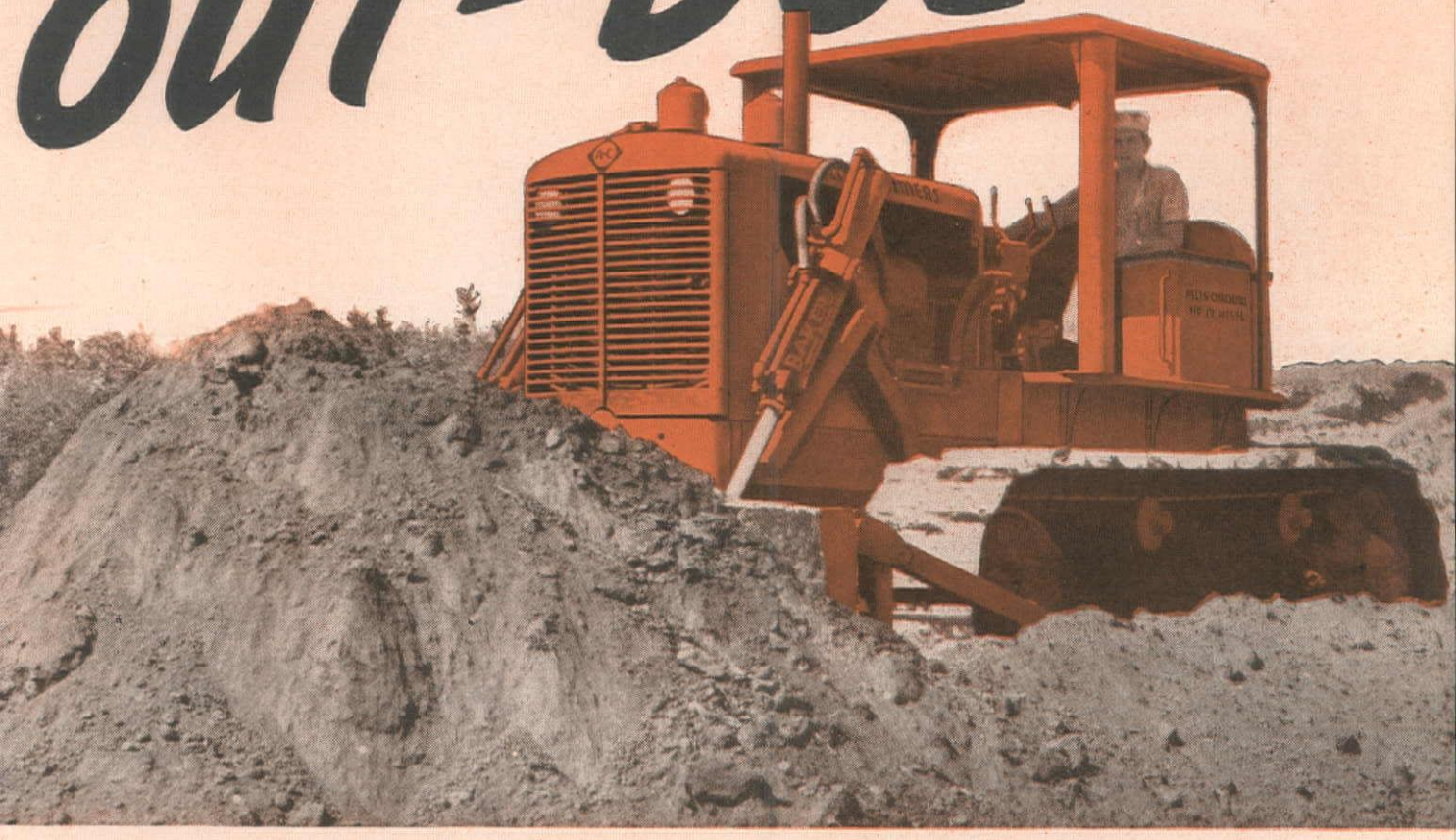
OUT-'DOZES



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Redmond—Tri-County Equip. Co., Inc.
Klamath Falls—West Hitchcock Corp.
Portland—Wood Tractor Co.

UTAH
Salt Lake City—Cate Equip. Co., Inc.

WASHINGTON
Seattle—A. H. Cox & Company
Walla Walla—Northern Harris
Spokane—Fred M. Viles and Company
Yakima—Wikstrom Motors, Inc.

WYOMING
Casper—Studer Tractor & Equip. Co.

A. G. C. Hits Taxes, Big Government

National convention of Associated General Contractors sizes up economic situation and sees big construction year ahead, with some ifs—

THE current economic situation especially as it affects the construction industry, provided the major theme of the 30th anniversary convention of the Associated General Contractors of America, Inc., at the Waldorf-Astoria Hotel in New York City, Feb. 28 through March 3. More than 1,200 contractors, representing over 5,000 of the nation's leading general construction firms, were in attendance. Nineteen principal speakers touched on almost every issue which could be of interest to contractors.

Managing Director Foreman provided the background for discussion of the economic situation at the convention's opening when he stated that, with the exception of more adequate materials and equipment, more skilled workmen and no major upsets in the national economy, there was every reason to believe that the construction industry could execute a larger volume of work more rapidly and more efficiently in 1949 than in any year since the end of the war. He cited a special A.G.C. survey, made of all the organization's Chapters and directors that showed costs stabilizing or tending to decline slightly.

Retiring President Winkleman, in his farewell address, made a plea for stability in national affairs to allow the construction industry to operate at a maximum of efficiency and effectiveness. He warned that the trend toward big government will continue, and greater control of much of our economic life will be exercised by the Federal government. He called for a corresponding increase in the size and strength of the A.G.C. and adequate representation in the nation's capitol to see that contractor's requirements are given "proper consideration by the government agencies planning new regulations." He declared that "One of the paradoxes of our times is that we (A.G.C.) now feel it necessary to defend more vigorously than ever before a way of life here which has made this a great nation and the envy of the world."

Contractors' profits too low?

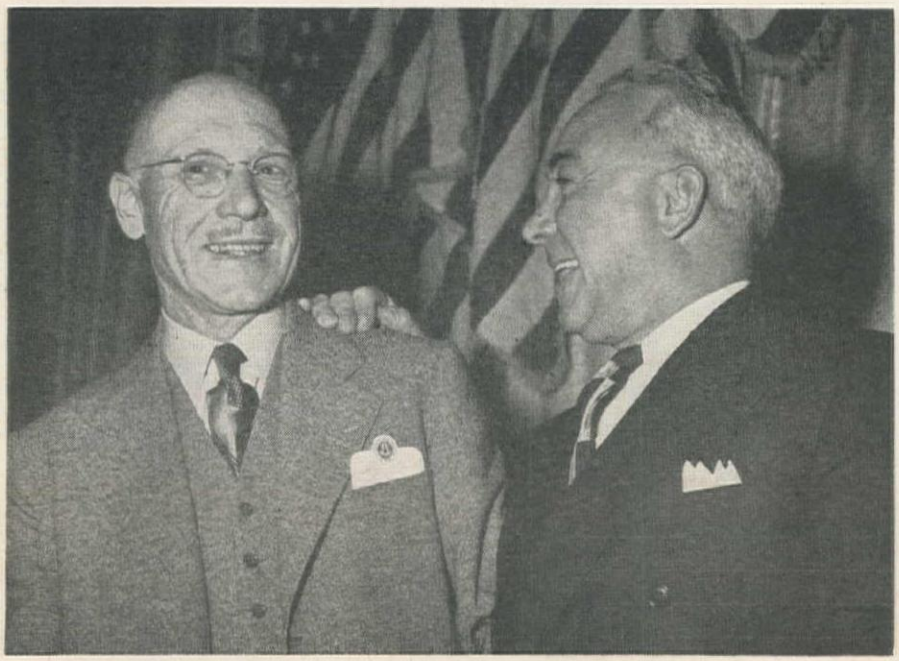
Probably the most down-to-earth talk on contractors' problems was that given by Guy C. Kiddoo, vice-president of the First National Bank of Chicago, which does a large volume of business with contractors. He pointed out that contractors' margins of profits after taxes are not too high, but were if anything, on the low side. Taking a representative sampling of figures from contractors' financial statements he showed the amount of work completed and the percentage of net profit realized on that work, both before and after taxes.

For the contractors engaged in building or general construction work, his figures showed an average profit for the contractors, before Federal taxes, of 3.36%; after taxes, this was reduced to 2.22%. For the group of representative road contractors, profit before taxes was 6.57%; after taxes, 3.99%. For the contractors in specialized fields (electrical, plumbing, etc.), the figures were 7.13% profit before taxes; 3.83% after taxes. A fourth classification including contractors engaged primarily in the heavy engineering field was shown to have made a profit of 9.6% before taxes, 6.77% after taxes. His interpretation of these profit margins was that the construction industry receives very moderate compensation for its work when the capital and experience required and the risks incident to the business are taken into account. Seeing a good volume of business ahead for the industry, Kiddoo observed that "the contracting business is largely depression proof."

Taxes draining initiative

A warning of "increased taxing away of business dollars that can and should go into plant and equipment" was made before the contractors by Carroll M. Shanks, president of the Prudential Insurance Co. The insurance executive said surveys showed that business was ready to invest huge sums in new equip-

ADOLPH TEICHERT, JR., left, 1949 President of National A.G.C., is congratulated by retiring President DWIGHT W. WINKLEMAN as the 30th anniversary convention concluded.



Adolph Teichert, Jr., President of A. Teichert & Son, Inc., contractors of Sacramento, Calif., was installed as president of the Associated General Contractors of America for 1949 as that organization completed its 30th annual convention at New York City March 3. His firm is one of the oldest construction companies in California and specializes in heavy construction. (A biographical portrait of Teichert appeared in *Western Construction News* for March, 1948.) The new A.G.C. vice-president is **Walter L. Couse** of Walter L. Couse & Co., Detroit, Mich. The Couse company is primarily active in the building construction field. The two men, and other A.G.C. national officials, were selected in a mail ballot prior to the opening of the convention.

Four Westerners are included among the eight newly-elected A.G.C. directors. These are **J. W. Brennan,** Brennan & Cahoon, Inc., Pocatello, Ida.; **J. G. Bartholomew,** J. G. Bartholomew Co., Dallas, Tex.; **Chester W. Cunningham,** Condon-Cunningham Co., Omaha, Neb., and **Cecil D. Bartholow,** W. E. Bartholow & Son Construction Co., Huron, S. D. Five Westerners are included among the ten re-elected directors. These are **Charles L. Harney,** Chas. L. Harney, Inc., San Francisco; **Edward O. Earl,** San Xavier Rock & Sand Co., Tucson, Ariz.; **Carl E. Nelson,** Carl E. Nelson Co., Logan, Utah; **W. D. Amis,** Amis Construction Co., Oklahoma City, and **Hal C. Dyer,** Dallas, Tex.

William Muirhead, President of Wm. Muirhead Construction Co., Durham, N. C., was re-appointed Secretary-Treasurer. **H. E. Foreman** is National Managing Director of A.G.C. at Washington, D. C.

Replacing ordinary elevating and conveying chain is a constant drain on profits . . . a constant source of production tie-ups and delays. Stop all these worries today by installing Amsco manganese steel chain in the really tough services. It often repays its own cost many times over by its tough resistance to breakage stresses and its outstanding wear resistance.

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CARL E. NELSON of Logan, Utah, 1949
Chairman of the Highway Division

A. S. HORNER of Denver, Colo., 1949
Chairman of the Railroad Division

JOHN MacLEOD of Clearwater, Calif.,
Vice-Chairman, Railroad Division

ment, if it could get the money. He told the convention: "Our job is to do everything possible to see that money needed to replace, renovate and modernize our national plant is not taxed away—for whatever reason."

Douglas W. Orr, president of the American Institute of Architects, and Richard E. Dougherty, past president of the American Society of Civil Engineers, both talked to the convention about the common interests of their professions with the contractors and of the need for collaboration between the professions and the industry.

Much of the constructive work of the convention was done in meetings of the association's three divisions—Building, Highway and Heavy Construction and Railroad Contractors' Divisions. Briefly, the accomplishments of these divisions were as follows:

BUILDING: A motion was passed recommending that favorable consideration be given to advocating to architects on private work that, where owners may not specifically object, jobs be constructed under one overall contract providing centralized control.

HIGHWAY: It was decided that all A.G.C. members get behind the bills now before several state legislatures to provide state funds to match federal funds available for state airport construction. A.G.C. members were urged to continue to strive for increased pay for state road employees. A lack of sufficient number of state highway engineers was cited as a factor holding back road construction. Methods were considered of obtaining prompter payment for highway contractors as their work was completed.

HEAVY-RAILROAD: This division requested the national staff to confer with the Department of the Army regarding the advisability of deleting the engineer's dollar value estimates from the bid coordination data. The division also recommended the establishment with the Bureau of Yards and Docks, Department of the Navy, of a joint committee to discuss contract terms and specifications provisions to the end that economies may be realized in construction costs for work carried out on that Bureau's projects.

These Resolutions Were Adopted by National A. G. C.

Commending the Corps of Engineers, the Bureau of Yards and Docks, the Bureau of Reclamation, the Federal Works Agency and its constituent agencies, the Veterans Administration and the Atomic Energy Commission, for establishing a system of coordinating bid opening dates.

Recommending the elimination of renegotiation clauses or requirements from all federal peacetime construction contracts.

Recommending the establishment of a committee composed of representatives of the A.G.C. and of the Building and Construction Trades Department, American Federation of Labor, for the purpose of preparing a definition of the amount and type of work which can be undertaken by any workman already on a project without prejudice to, or without waiving, any of the normal and recognized jurisdictional rights of other crafts.

Recommending the Congress continue current limitations on labor operations by the Bureau of Reclamation and, at an early date, write into the basic reclamation law the requirement that all construction should be by contract, except for management and operation, maintenance and repair, engineering and supervision, and routine minor construction work, or work in case of local emergencies.

Condemning proposals for the establishment of authorities patterned after the Tennessee Valley Authority and recommending that coordinated development of resources in river basins and elsewhere be carried out under existing agencies of the government.

Recommending immediate amendment or clarification of existing laws to allow sellers of construction materials to establish price systems which will permit them to be competitive in any areas in which they desire to do business.

Recommending to Congress that it once again appropriate funds for federal loans to state and local government agencies for defraying costs of preparing plans and specifications for future construction by contract of essential public works projects.

Recommending to Congress that, in consideration of legislation to replace the Taft-Hartley law, it do not infringe upon the rights of states to enact labor legislation, and that it clarify references to commerce so that the construction industry is not the victim of a conflict between federal and state labor laws.

Let Fruehauf Handle Your HEAVYWEIGHTS!

How are you going to get your big, heavy, cumbersome machinery to the job? Most likely, the authorities won't let you run it over the highways. The rails can't deliver it exactly where it must go. So, the thing to do is get yourself a Fruehauf Machinery Trailer. Then you're all set —and ready to go to work.

That's exactly what the Anderson Bridge Construction Co., Tacoma, did. In the heavy construction business for thirty years, this firm keeps abreast of the times by using up-to-date equipment. Now, when shovels, "cats," heavy timber and bridge steel have to be hauled, the job is assigned to their Fruehauf Machinery Trailer. All get to the spot quickly, safely and at less cost.

Take a look at the new Cora Bridge over the Cowlitz River, part of the new White Pass Highway. That's an Anderson Bridge Construction Co. span. Their Fruehauf Machinery Trailer hauled the equipment required for its erection.

But what about the Trailer itself? It's a model MT 55 for up to 25-ton loads. It has an unusually large, clear loading area. Ground clearance is exceptional. It has the famous LT type four-spring tandem Underconstruction for sure and safe going over rugged terrain, Fruehauf exclusive I-Beam Axles for greater strength and lighter weight. All in all, this is the Trailer for you. But should you need something to haul heavier loads, there's a 40-ton companion model with three axles.

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY

Western Manufacturing Plant, Los Angeles

SALES AND SERVICE — LOS ANGELES • SAN FRANCISCO • PORTLAND • SEATTLE • SAN DIEGO • FRESNO • SACRAMENTO
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PLAIN HORSE SENSE
YOU CAN PULL FAR MORE THAN YOU CAN CARRY!

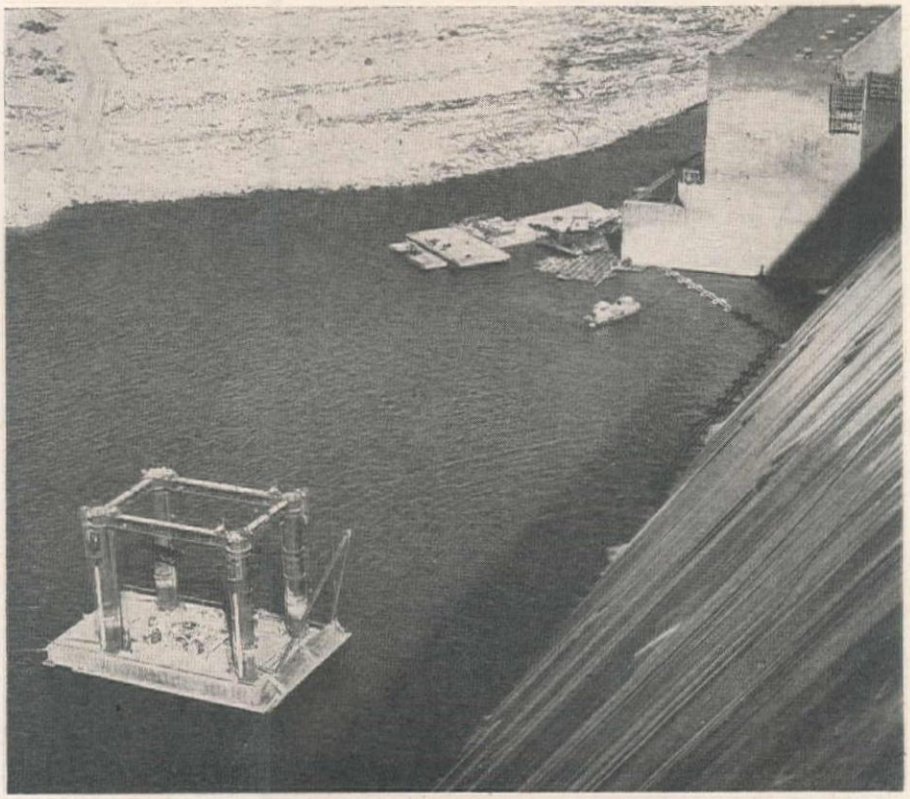
Fruehauf Trailers
"ENGINEERED TRANSPORTATION"

FIRST IN TRUCK-TRAILER TRANSPORT!

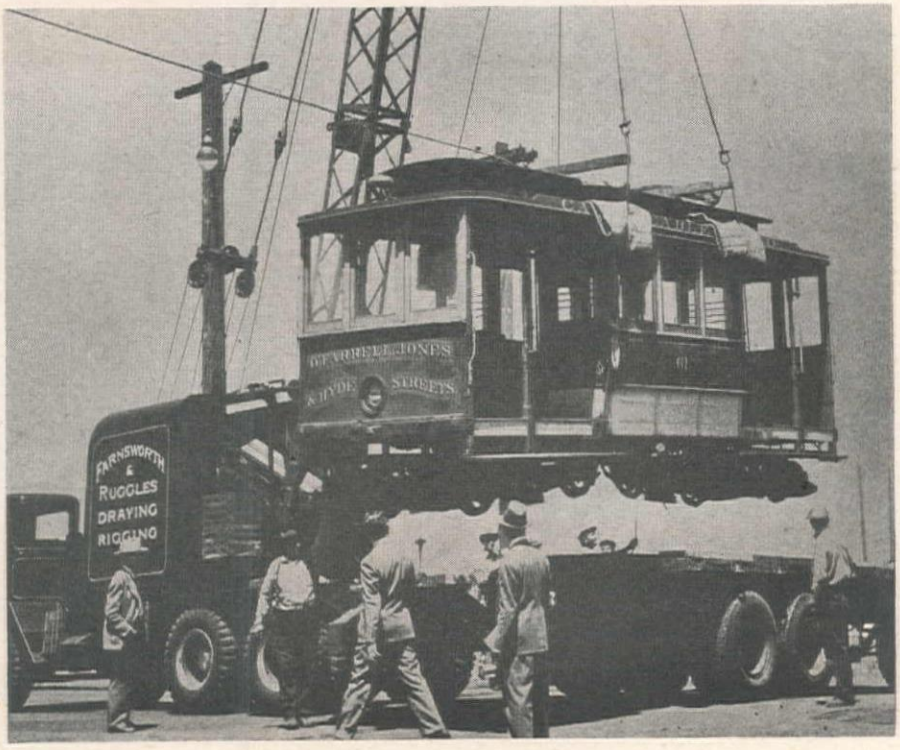
HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD

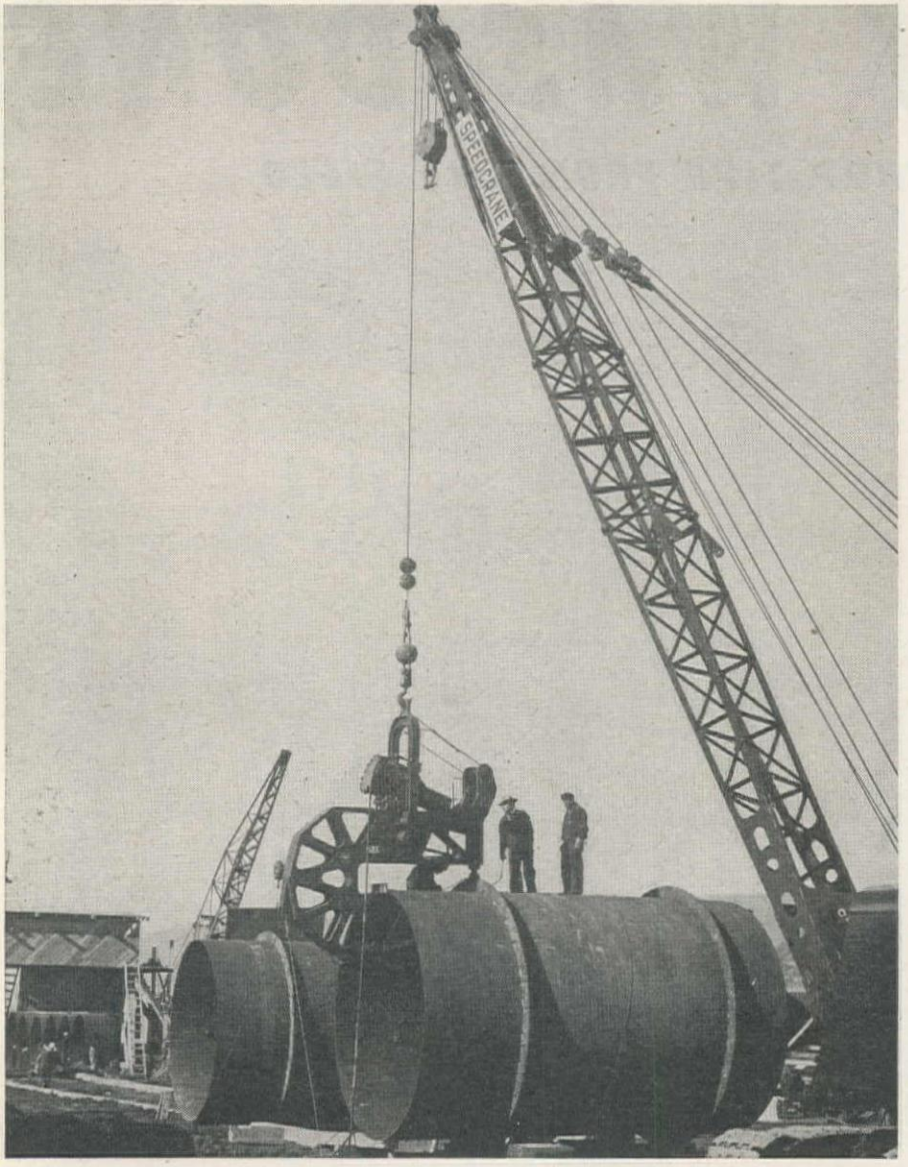
MASS MOVEMENT of the fill under the Southern Pacific lines near Sacramento, Calif., is being stopped by a system of 4-in. diameter bored and reamed horizontal drainage holes beneath the fill, completed with perforated linings. Doing the job is the Hydrauger, a product of Hydrauger Corp., San Francisco. It operates on compressed air and produces the bores up to 200 ft. in length. One man attaches the boring bar sections and runs the machine. The system is also being used for installing pipelines and drainage systems under many highways and streets in the West.



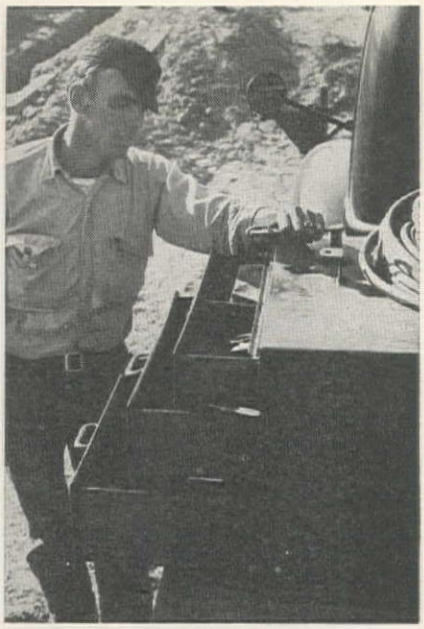
THE FLOATING CAISSON, to be used during the repair of eroded areas on the spillway bucket at Grand Coulee Dam in Washington, is shown making a trial run in front of the dam. The four tubes resembling smokestacks will carry men, materials and service lines to the working chamber below water. Weighing 1,500 tons, the caisson is 110 ft. long and has a beam of 57 ft. It is controlled by a system of cables extending to winches on the powerhouse (upper right) and on the riverbanks. Pacific Bridge Co. of San Francisco was awarded the $1,804,840 contract for the job of renovation.



AN ERSATZ San Francisco atmosphere was created recently in Los Angeles for the movie "I Remember Mama" as this cable car was carted off to the movie set. The machine doing the "Oscar" job of lifting the trolley is a Lorain Moto Crane MC414 owned by Farnsworth and Ruggles Draying Co. of San Francisco. The 50-yr. old trolley was moved intact.



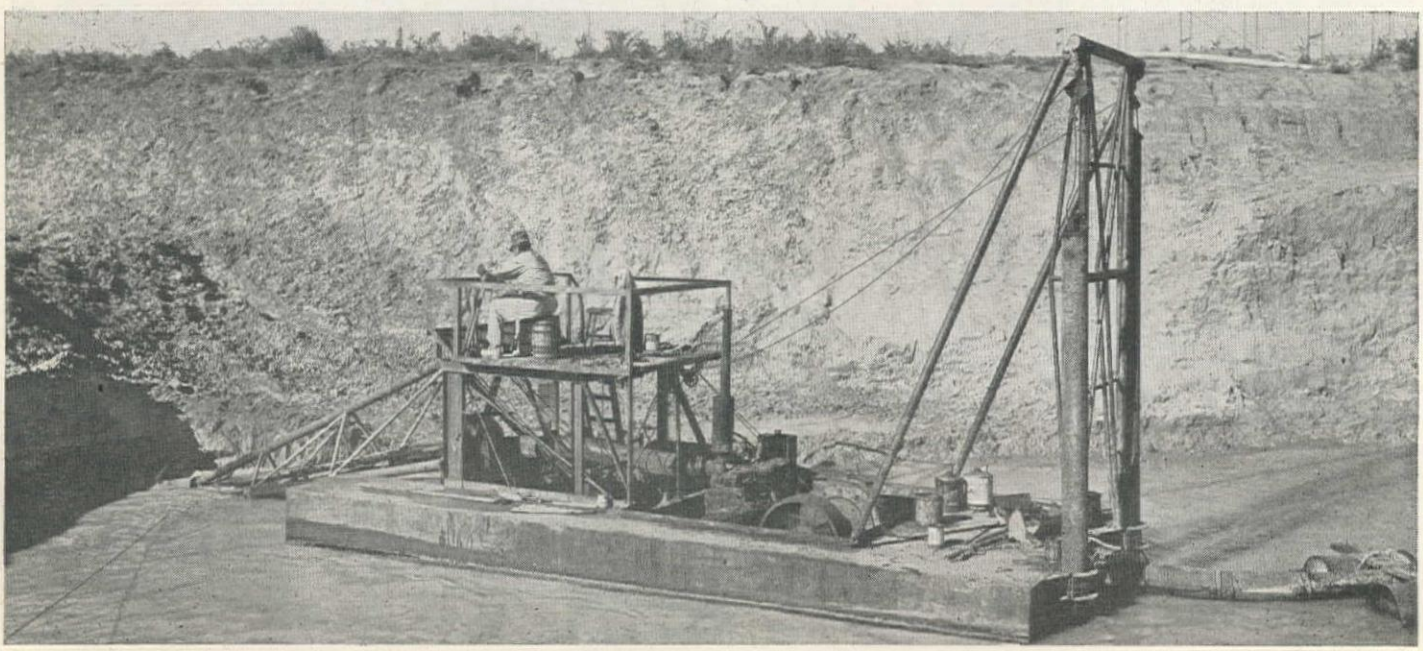
A STRICTLY home-made dredging rig of clever design is in use by contractors Affoiter and Garnett of Rio Hondo, Texas. It has a hull of welded steel plating, and all driving machinery is accommodated in a specially constructed hold department. A platform containing all engine and equipment controls is positioned well above the deck level, affording good visibility for the operator. Powered by a General Motors Series 71 Diesel Engine connected to an 8-in. centrifugal pump, the dredge banks 1,000 cu. yd. of material in a 10-hr. working day.



WILLIAM ANDERS, Shell Oil Co. employee, demonstrates the operation of his steel storage box mounted on the cab of his welding truck. The box has drawers on either side which hold all necessary tools and loose gear. The unit is made from sheet steel and all the drawers are locked by turning the handle as demonstrated by Anders in photo.

Lincoln Electric Photo.

NICKNAMED "The Bull" by construction workers because of its tremendous power, this giant sized hydraulic clamp is being used for work on the discharge pipe for Grand Coulee Dam pumping plant in Eastern Washington. In holding flanges while they are being welded to the discharge pipe, the clamp exerts only a fraction of its total available force of 250,000 psi. The scene shows some of the 12-ft. diameter pipe being readied for installation in the pumping plant works.



NEWS OF WESTERN CONSTRUCTION

APRIL 15, 1949

Huge Atomic Testing Station To Be Built in Idaho Desert

THE ATOMIC Energy Commission announced late in March that a 400,000-ac. site near Pocatello, Idaho, had been chosen as the location for a new national testing station for atomic reactors. A number of sites in various parts of the United States had been examined, but the decision was finally made to install the testing plant on the Snake River plains in an area which includes the now inactive Scoville Naval Ordnance Proving Ground, used during the war to test Naval guns which had been repaired at a gunnery relining plant in Pocatello.

The area of the Navy installation is 173,000 ac. and all of the balance of the land to be secured is Government owned, except for about 20,000 ac. upon which 75 to 100 people now reside. The topography is a waste land of sage brush and lava rock, virtually desert except during the rainy portion of the year. Annual rainfall totals only about 10 inches. It is expected that water supplies for the big plant will probably come from the Snake River near Blackfoot, or from the Big Loss River, which rises in the mountains north of Arco and finally disappears into the lava plain. Power probably will come from the generators of the Idaho Power Co. along the Snake River and from the latter company's tie-ins with other sources of power in the Northwest including Bonneville and Grand Coulee. In addition the Bureau of Reclamation has plans prepared for construction of Palisades Dam on the Snake River. Hungry Horse Dam now under construction in Montana is also a future source of power for the plant. A branch line of the Union Pacific Railroad runs into the plant area.

The new plant will compare in size with the plutonium production center at Hanford, Wash. At the peak of construction it is anticipated that about 6,000 workers will be required and regular employees of the plant when it is in full operation will number about 2,000 including scientists and technicians. The Commission is currently conducting investigations in all surrounding communities to determine the availability of housing, schools and other community facilities.

The term "nuclear reactors" refers to machines for converting atomic energy into useful power at a controlled rate. Studies are under way to make use of such power in propelling ships, aircraft and machinery, and to provide heat or electrical energy. The material from which such energy would be obtained is similar to that used in the atomic bombs. Experts insist that a reactor cannot explode and that the only type of accident which might happen at such a plant would be "in the nature of a major damage resulting from sabotage or the very remote possibility of simultaneous failure of the many safeguards and control mechanisms." No accident has occurred on any reactor thus far developed in any of the other atomic plants.

In addition to energy units, reactors will be developed to produce additional isotopes of the kinds which already are being used extensively in research and have been applied in medical therapy and industrial processes. Another phase of the program at Arco will be the training of engineers in the development and eventual use of these reactor machines.

The Commission announced that it expects to spend at least $500,000,000 in the program over the next five or six years. Construction contracts, however, will not be awarded until surveys of the site and land acquisition negotiations are completed. About $120,000,000 has been earmarked by the Government for construction of the actual reactors, most of which will be situated within the new plant area.

Westerners are particularly enthusiastic about the location of the new facilities in Idaho since this brings three of the four major atomic plants within the boundaries of the Western Empire (Hanford, Wash., and Los Alamos, N. M.).

SIDEWALK SUPERINTENDENTS GET A BREAK ON SAN FRANCISCO BUILDING

IN THE HEART of San Francisco's financial district, a 22-story annex is being erected to Standard Oil's office building. Sidewalk superintendents get a grandstand view of the job through shatter-proof glass windows built into the protective fence. A thermometer-type graph shows the work progress, and bulletin-board announcement tells what's happening. Swinerton & Walberg of San Francisco are contractors.

Bureau of Reclamation to Call for Bids Soon on Big Earthwork Jobs

THE OFFICE of the Chief Engineer of the Bureau of Reclamation in Denver has announced certain projects upon which bids are to be invited during the month of April and succeeding months, as follows:

On or about April 15, bids will be asked on construction of earthwork, concrete lining and structures for about 17 mi. of the Delta-Mendota canal near Los Banos, Calif., the design calling for 4,200 cu. ft. per sec. capacity; for a transmission line from Estes Park power plant to the Granby pumping plant near Granby, Colo. — alternate specifications are for 34 mi. of wood pile and 6.5 mi. of steel tower 115-kv. transmission line, or 6 mi. of pole line and 13 mi. of 69-kv. submarine cable through Adams Tunnel; and for erecting a 300,000-gal. steel water tank near Redding, Calif.

On April 28, invitations will be issued to bidders for construction of earthwork and structures on the 15-mi. Winchester wasteway of the Columbia Basin Project near Winchester, Wash., a canal of 4,200-cu. ft. per sec. capacity.

On April 29, bids will be advertised on 16 mi. of the Courtland canal near Superior, Neb., including earthwork and structures for the 750-cu. ft. per sec. canal; and for extension of water and sewer lines in Boulder City, Nev.

Bids anticipated during the following two months include canals 18 mi. long on the Wellton-Mohawk Project, 20 mi. east of Yuma, Ariz., and 6.5 mi. on the Cambridge Project, near Arapahoe, Neb.; 70 mi. of concrete pipe laterals on the Coachella Valley distribution system, near Thermal, Calif.; repairs to the 220-ft. high Tieton dam and spillway, 33 mi. west of Yakima, Wash.; channel improvements below Keechelus dam, 65 mi. northwest of Yakima; and 3 pumping plants on the Wellton-Mohawk canal.

Other forthcoming bids are for relocation of highways at two points in Idaho, 13.6 mi. of county road northwest of Cascade and 2 mi. of state highway at Palisades reservoir 56 mi. southeast of Idaho Falls; 4 transmission lines, 88 mi. between Sterling, Colo., and Ogallala, Neb., 68 mi. between Oak Creek and Green Mountain, Colo., 41 mi. between Bismarck and DeVaul, N. Dak., and 72 mi. between Oroville and Tracy, Calif.; substations at Williston, N. Dak., and Sidney, Neb.; steel structures in connection with substations at Tucson and Prescott, Ariz., and Pilot Knob, Calif.; clearing 69 ac. in the Platora reservoir site near Platora, Colo.; and erecting buildings of various types at Phoenix, Ariz., Platora, Colo., Tracy, Calif., and Boulder City, Nev.

$21-Million Medical Center Planned in San Francisco

THE UNIVERSITY of California has announced plans for a huge new medical center to be built at the site of the present center in San Francisco. A total of $21,080,000 has been set aside by the state over the past eight years to this account, and another million dollars has been pledged by the U. S. Public Health Service.

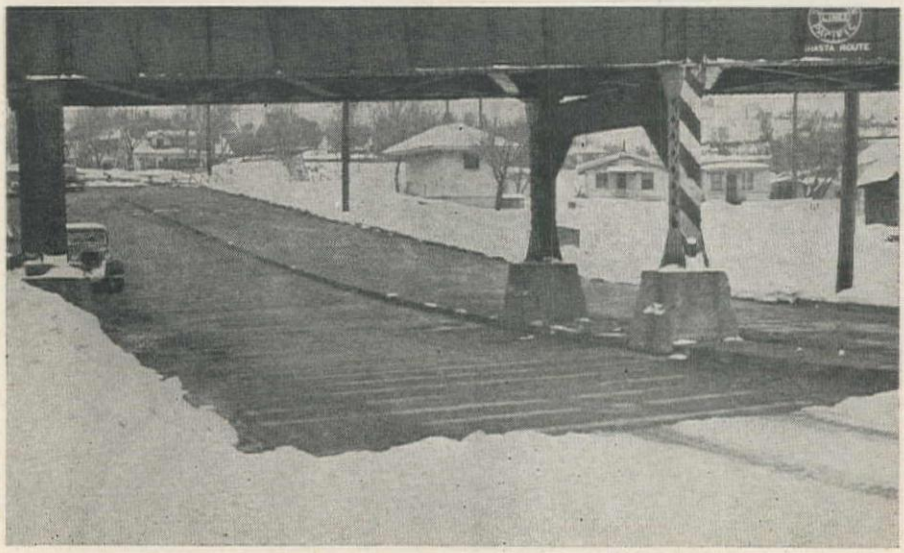
The money is divided into four main construction objectives. A teaching hospital is estimated will cost $9,500,000; a medical science building will cost $10,315,000; expansion of the present dental clinic will use $200,000; and a cancer research institute will make use of $1,000,000. It is anticipated that the two main structures, the teaching hospital and the medical science building will be completed by 1952.

The new hospital will be 12 stories high, with a floor area of 290,000 sq. ft., and will accommodate 400 beds. Later two more floors may be added, with accommodations for 100 more beds. The hospital will be cruciform in design, with service facilities located at the center.

The medical building will be L-shaped, and 14 stories in height, containing about 300,000 sq. ft. of floor space. Included in the facilities of this structure will be a medical library containing 100,000 volumes.

RADIANT HEATING SYSTEM CLEARS OREGON HIGHWAY OF SNOW

THE FIRST application of radiant heating principles to a public road has proved successful at Klamath Falls, Ore. In the pavement are embedded 15,000 ft. of ¾-in. wrought iron pipe through which hot water from a nearby main circulates. The entire layout of the system was described in the January *Western Construction News*.



Washington Power Firm Plans Big Construction

THE WASHINGTON Water Power Co. has set aside $4,200,000 for new construction during 1949, according to J. E. Royer, general manager. Important elements of the construction program include:

1. A 5-ft. steel and concrete addition to the height of Long Lake Dam, 35 mi. northwest of Spokane, Wash. This will raise the head at the generating plant to 176 ft. and add 3,000 kw. to the plant's capacity.

2. Construction of 250 mi. of new distribution lines throughout the company's system, and installation of 2,300 new transformer units.

3. Construction of a new substation at Grangeville, Idaho, which will reduce current from 60,000 volts to 13,000 volts. In addition substations at Chelan, Pullman, Colfax, Garfield, Clarkston and Medical Lake, Wash., and Moscow, Potlach, Craigmont, Kamiah, Coeur d'Alene and Post Falls, Idaho, will be modernized.

4. Completion of the $325,000 Metro substation in Spokane, now under construction. Also in Spokane, about 700 blocks of the city distribution system will be rebuilt to carry higher voltages. In addition the Moscow-Lewiston transmission line will be altered to carry 110,000 volts instead of its present 60,000-volt capacity.

F. P. C. Authorizes Power Dam In Northwestern Washington

THE FEDERAL Power Commission has authorized issuance of an 18-month preliminary permit to Snohomish County Public Utility District No. 1 for a proposed hydroelectric project on the Sultan River in northwestern Washington. A preliminary permit, issued solely to give the holder priority for license application during the period necessary to complete surveys, does not authorize any construction and gives no assurance that a license will be issued.

The Utility District's proposed project, designated Sultan Basin power project, would consist of a concrete dam with a maximum height of about 310 ft.,

HANDY HARD-FACING KINK

with a bargain of up to 5 times more life!

TO MINIMIZE GRADER BLADE WARPAGE during hard-facing, experienced welders bolt two blades together, exposing the leading face of each for applying TUBE BORIUM or BOROD.* Warpage of one is automatically compensated for by the other. Need for straightening is reduced and up to 5 times more service life can be expected than from unprotected blades.

HOW TO GAIN EXTRA GRADER BLADE LIFE

Apply parallel beads of $\frac{5}{16}$" 20-30 ELECTRIC TUBE BORIUM along bottom edge in a band 2" wide or less. Alternate the application of each bead between blades. Tube Borium assures a sharp cutting edge with maximum life under *severest abrasive conditions.*

This blade was protected with stringer beads of BOROD—a Stoody Alloy similar to Tube Borium but with much finer tungsten carbide particles. Excellent results are experienced where *both impact and abrasion are present.*

TUBE BORIUM and BOROD are two Stoody Alloys composed of Tungsten Carbide particles encased in mild steel tubes. They differ chiefly in size of particles, BOROD deposits being almost homogeneous in character. Both these alloys, as well as all other Stoody hard-metals, are available from your Stoody Dealer. Ask him for literature and recommendations on your wear problems.

STOODY COMPANY 1156 WEST SLAUSON AVENUE, WHITTIER, CALIFORNIA

creating a reservoir with usable storage capacity of approximately 234,300 ac. ft.; a 5.2-mi. tunnel; and a powerhouse with an installed capacity of about 60,000 kw. The project would affect lands of the United States within the Snoqualmie National Forest.

FPC said the Secretary of the Interior, Chief of Engineers, and the Secretary of Agriculture all have reported favorably on the application. On recommendation of the Secretaries of the Interior and Agriculture, however, the Commission included several conditions in its order relating to fish, wildlife, and forest conservation.

Idaho University in Big Building Program

BIDS WILL BE called for by the University of Idaho at Moscow, Ida., during the next six months on the largest building program of its sixty-year history, President J. E. Buchanan has announced. The 1949 program, calling for construction estimated to add up to about $2,500,000, was made possible by recent legislative appropriations and by proposed regent's bond issues.

"State funds for actual construction will not be available until May," said President Buchanan, "but we are expediting all preliminary work so that building can start at the earliest possible date."

Construction falling in the $400,000 to $1,000,000 class includes a Student Union building, Agriculture Science building, and Engineering buildings. Construction jobs costing less than $100,000 include rehabilitation of the Metallurgy building, building of shops, an electric substation, minor warehouse and shop structures, and a water system.

In addition to the above construction, unit one of a new Music hall and an addition to the Administration building are to be built at the university, probably in 1950.

First Water Spills Over Arizona's Horseshoe Dam

FOR THE FIRST TIME since Horseshoe Dam was completed in 1945 on the Verde River 60 mi. north of Phoenix, Ariz., (WCN, Sept., 1945) water passed over the spillway on March 15. The capacity of the reservoir is 67,000 ac. ft. The spillway discharge, about 4,300 cu. ft. per sec. at its peak, was captured in Bartlett Dam about 20 mi. down the river and conserved there for municipal and irrigation use during the summer.

During the high flow in the Verde River all irrigation water used in the central Arizona area is being withdrawn from Horseshoe and Bartlett Dams and storage is accumulated meanwhile behind the dams on the Salt River.

Contracts will be let soon for the installation of flood gates on the Horseshoe spillway. They will increase the storage capacity of the reservoir by about 75,000 ac. ft. and will cost about $800,000.

Plans Prepared for Access Highway And Bridges at Chief Joseph Dam

PRELIMINARY PLANS and specifications are being prepared for construction of an access highway and two highway bridges to Chief Joseph Dam site on the Columbia River, Colonel L. H. Hewitt, District Engineer, Seattle District, Corps of Engineers, has announced.

The access highway will be approximately 15 mi. long, connecting with U. S. Highway 97, via a new Okanogan River bridge, 3 mi. east of Brewster, Wash., and with State Highway 10, via a new Columbia River bridge, one mile east of Bridgeport, Wash. The road will be 24 ft. wide with 8-ft. shoulders and surfaced with hot mix asphaltic concrete.

The new Okanogan River bridge will be located immediately downstream from the existing county bridge. It is proposed to include six spans totaling 457 ft. in length and will be approximately 60 ft. above stream bed.

The proposed Columbia River bridge will have three main spans totaling 1,140 ft. in length and rising 125 ft. above stream bed. The two bridges will be of steel and concrete construction with 26-ft. roadways and 3-ft. sidewalks on either side.

The initial contract in this series was awarded to the Diamond Drilling Co., Spokane, for the necessary foundation exploration of the Okanogan River bridge site.

Construction material and supplies will be transported to Chief Joseph Dam via the access highway. The nearest point for railroad connections will be at Brewster. Materials and supplies shipped by rail will be transferred to trucks at this point.

Bids for construction of the Okanogan River bridge are planned to be opened in May. Bids for construction of the access highway are scheduled to be opened in August and the Columbia River bridge bids will be opened in November.

POLICE CALL FOR HELP

THE POLICE Department at Fresno, Calif., called for help to erect this 130-ft. flag pole and radio antenna. Pollard Bros., Fresno contractors, did the job with a Lorain Moto Crane equipped with an 80-ft. boom.

BAKER BULLDOZERS

FIRST CHOICE

BY A WIDE MARGIN

A Few Recent Purchasers of One or More Baker Dozers and A-C HD-19 Tractors

O'DELL-RINEY CONST. CO.
Contractor — Hannibal, Mo.

OOLITE ROCK CO.
Quarry — Miami, Fla.

S. A. HEALY CO.
Contractor — White Plains, N. Y.

CONSUMERS POWER CO.
Utility — Jackson, Mich.

MAUMEE COLLIERIES
Coal Mine — Terre Haute, Ind.

SUNLIGHT COAL CO.
Coal Mining — Boonville, Ind.

DAYTON POWER & LIGHT CO.
Utility — Dayton, Ohio

WYANDOTTE CHEMICALS CORP.
Quarry — Alpena, Mich.

LONE STAR CEMENT CO.
Cement — Bonner Springs, Kan.

CHILE EXPLORATION CO.
Mining — New York, N. Y.

SMITH CONTRACTING CORP.
Contractor — Ft. Worth, Texas

ROBINSON CLAY PROD. CO.
Quarry — Akron, Ohio

HYDRO-ELECTRIC POWER COM'N.
Utility — Toronto, Can.

CANADIAN INTERNATIONAL PAPER CO.
Logging — Montreal, Can.

OLIVER IRON MINING CO.
Mining — Duluth, Minn.

The Baker Bulldozer and HD-19 Allis-Chalmers tractor combination has really rocked the industry — amazed even the most experienced earth-movers with its power, traction and speed — with its ability to move more yardage than any unit in its class.

The Baker Hydraulic Bulldozer is perfectly matched in operating speed, balance and weight . . . important factors in getting the most out of the tractor. Its simplicity of design and operation mean faster bulldozing with less operator fatigue plus longer, trouble-free service.

Now, with buying again becoming selective, it is significant that from coast to coast — among contractors, quarries, mines, utilities and loggers — among experienced earth-movers who've tried them all, it's Baker Bulldozers by a wide margin. Before you buy any bulldozer, check with your Baker - Allis-Chalmers dealer.

BUY THE BEST . . . BUY BAKER

BAKER

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PERSONALLY SPEAKING

William E. Welsh of Boise, Idaho, recently-elected chairman of the Columbia River Resources Committee and field representative for the National Reclamation Association, will succeed **Don McBride** as Secretary-Manager of the Association at Washington, D. C., on May 1. Welsh has 30 years of background in the fields of irrigation and public relations work, and has been secretary-manager of the Idaho State Reclamation Association since 1937. He is now engaged in the organization of forces in the Pacific Northwest to combat Columbia Valley Authority legislation.

* * *

E. D. "Dusty" Rhoades, Bureau of Reclamation drilling superintendent on the Columbia Basin Project in eastern Washington, last month became the first U. S. B. R. employee in the United States to be named recipient of a $1,000 cash award by the Department of Interior under its program of rewarding Federal workers for developing money-saving equipment and methods. Rhoades perfected a "multiple packer" which has enabled a considerable reduction in the number of diamond drill holes necessary for obtaining vital information on ground-water levels of the Columbia Basin project. Before Rhoades' development, only two tables could be measured by a single hole. Thus, if six water flows were encountered, a total of at least three drill holes were required. By use of the "multiple packer," only a single drill hole is needed and the device permits determination of the ground-water levels at various points where the flow intersects the hole.

Rhoades is a ruggedly-built 6-ft. man who began his drilling career in the Alaska gold fields 33 years ago. He has spent the last 12 years supervising exploratory drilling in Washington for the Bureau, and has directed foundation drilling at Grand Coulee Dam and four earth-and-rock dams in the vast Columbia Basin Project, as well as for a number of canals and siphons. During his more than three decades in the drilling field, Rhoades estimates he has directed the completion of more than 500,000 ft. of drill holes.

"DUSTY" RHOADES, $1,000 awardee

* * *

Elmer J. Nieman, formerly engineer in charge of power plant construction at Grand Coulee Dam for the Bureau of Reclamation, has been named field engineer for the Hungry Horse Project in Montana. Bureau engineer **John Officer,** who has been acting field engineer on the project, will continue as assistant field engineer. **Clyde H. Spencer** is the Bureau's construction engineer at Hungry Horse, and **David Culver** is office engineer.

* * *

Carl B. Wirsching, City Manager of Long Beach, Calif., has submitted his resignation from that position effective June 30. Wirsching was formerly Commissioner of the Los Angeles Board of Public Works and general manager of that city's Harbor Department. He has been City Manager of Long Beach since late in 1946, and is the seventh person to hold that post in the last 20 years.

* * *

George L. Dealey, formerly vice-president of Herrick Iron Works, has been appointed by Barrett & Hilp, general contractors of San Francisco and Los Angeles, as vice-president and director of sales.

* * *

More than 6,000 builders attended the 7th annual convention of the National Association of Home Builders at Chicago, Ill. Among the twenty regional vice-presidents elected at the convention were 7 Westerners. These include: **Alex G. Adamson,** Salt Lake City, Utah; **T. A. Hutchinson,** Denver, Colo.; **Albert Balch,** Seattle, Wash.; **Cedric Roberts,** Los Angeles, Calif.; **Charles R. Malowney,** Tucson, Ariz., and **Carl Gellert,** San Francisco. **Alan E. Brockbank** of Salt Lake City continues as chairman of the organization's public relations committee.

* * *

Norman Murray, formerly in charge of operations and maintenance work for the Bureau of Reclamation at Chico, Calif., has been named Regional Water Rights Engineer for the Bureau at Sacramento, Calif.

* * *

Harrison Hawkins, asphalt engineer with the Wasatch Oil Co. of Spokane, Wash., has accepted the position as County Engineer of Clallam County, Wash. He was for 15 years employed by the Washington State Highway Department in various capacities, and has been

E. J. NIEMAN, to Hungry Horse

county road engineer for Adams County, Wash., and county engineer for Okanogan County, Wash. He will succeed **Theodore F. Rixon,** who was appointed temporary engineer when **Herman Ahlvers** resigned early this year to become City Engineer of Port Angeles, Wash.

* * *

Cecil D. Kinder, formerly County Engineer of Garfield County in Washington, has been appointed County Engineer of Benton County, Wash. He succeeds the late **Roy Nunn.**

* * *

Larry Milnes, who recently completed post graduate studies in civil engineering at the University of California, is now assistant engineer with the Fresno Irrigation District in California.

* * *

Carl E. Dahlquist, engineer with the Stearns-Rogers Manufacturing Co., is the elected 1949 president of the Colorado Society of Engineers, Denver. **George M. Hatfield** is vice-president and **C. M. Lightburn** is secretary-treasurer. The board of directors includes **Dana E. Kepner, Robert E. Livingston, Ralph P. Agnew, Leslie N. McClellan, Terry J. Owens, Paul K. Seyler, Irvin S. Rasmusson** and **L. M. Robertson.**

* * *

Ralph C. Pybus, Commonwealth Construction Co., Ltd., Vancouver, B. C., has been elected 1949 president of the Building and Construction Industries Exchange of British Columbia. Other officers and directors are **R. A. Hall** and **J. F. Sigurdson,** vice-presidents; **Fred W. Welsh,** past president, and **J. E. Amundson, M. L. Barr, C. C. Carter,**

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MIDDLEWEIGHT CHAMPION

of the rock drilling field

it's Ingersoll-Rand's
45-pound class
J-40 JACKHAMER

CARSET JACKBIT
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A. S. Gentles, Walter Leek, L. G. Murray, A. J. Armstrong, W. G. Jenner, W. F. Foster and **J. H. McRae,** directors.

* * *

Erdman J. Allen, director of the Seattle, Wash., City Water Department's sanitary engineering work, has been named acting assistant superintendent of the department, replacing the late **G. B. Schunke.**

* * *

Carroll H. Coberly is engineer for the new sanitation district at Wheat Ridge, Colo., western suburb of Denver.

* * *

William C. Bryant, formerly engineer for the Bureau of Reclamation at Banning, Calif., is now Field Representative for the Portland Cement Association, and is residing in Temple City, Calif.

* * *

Norman J. Goode, former district engineer in Saskatchewan, Canada, for the Public Health Engineering Division of the National Health and Welfare Division, has been appointed by the British Columbia Department of Public Health and Welfare as assistant public health engineer.

* * *

John H. Bjork, structural engineer with the Bureau of Reclamation, is now with the Davis Dam Design Unit at Phoenix, Ariz.

* * *

Bert Bowelle, member of the National Society of Engineers and of the American Waterworks Association and with more than 30 years' experience in civil, structural and municipal engineering, now heads a new firm in Kennewick, Wash., known as Engineering Consultants, Inc. Offices of the new firm are at 19 Front Ave., Kennewick.

* * *

Ralph T. Knutzen, formerly resident engineer for the Washington State Highway Department, has been named County Engineer of Whatcom County, Wash. He will take the place of **Carl McCoy** who has been acting county engineer since **T. P. Scholz** resigned early this year to become City Engineer of Bellingham, Wash.

* * *

The retirement of **Theodore P. Flynn,** engineer in charge of the equipment development laboratory for the U. S. Forestry Service in the Pacific Northwest, has been announced. Among numerous developments made under his direction are the logging drums on tractors, portable compressors, folding blades, gear-lift dozers, bank slopers, over-the-snow tractors and tractors of various types. He served with the Army Engineers during World War I.

* * *

Edwin L. Driggs, special planning engineer for the East Bay Municipal Utility District, Oakland, Calif., retired March 1 after 25 years of service. He joined the department in 1924 as designing engineer when plans were being formulated for the Mokelumne Aqueduct System. He was office engineer at Oakland for 17 years and was assigned as special planning engineer in 1946.

* * *

George Ballantyne, retired president of the Security Warehouse and Cold Storage Co. of San Jose, Calif., is the 1949 president of the Engineers Club of San Jose. **Lloyd Nelson** is vice-president; **J. Robert Roll** is secretary-treasurer, and **Ralph Smith, Norman English** and **Irving Ryder** are new directors.

* * *

Ashton H. Shields is the 1949 president of the Engineers Club of Fresno, Calif. **Jack B. McCardle** is vice-president and **Francis E. Riley** is secretary-treasurer.

* * *

John J. Hedderman, formerly area engineer for the Bureau of Reclamation at Durango, Colo., has taken over duties as assistant regional supervisor of operations and maintenance in the Bureau's Region Four, and has joined the Salt Lake City, Utah, regional staff. Hedderman has been in charge of 20 reclamation project investigations in Colorado and New Mexico during the last 11 years. His new duties will involve technical supervision of the use of irrigation and related works on operating projects.

* * *

Howard A. Stringle, Superintendent of Buildings and Grounds for the Spokane schools, is 1949 president of the Associated Engineers of Spokane, Wash. Vice-presidents include **Stephen H. Excell,** professional engineer; **Kenneth D. Storment,** architect; **Ivan A. Shirk,** mechanical engineer; **J. Byron Barber,** civil engineer, and **Howard P. Sherman,** mining engineer. **Frederic A. Long,** architect, is the secretary-manager.

* * *

A. G. Hanson has been named county engineer of Wahkiakum County in southwestern Washington.

* * *

Kenn F. Goodson, formerly superintendent for Swinerton & Walberg Co., San Francisco, is now Operations Officer with the United States Government, Alaska Road Commission, Juneau.

* * *

Harry D. Martin is the new county engineer of Garfield County in southeastern Washington. He had been assistant county engineer of Whitman County, Wash., for five years.

NEW BOOKS . . .

LIGHT GAGE STEEL DESIGN MANUAL—Published by the American Iron and Steel Institute, 350 Fifth Ave., New York 1, N. Y. 6 x 9, 70 pages, paper cover. Price $1.00.

This manual is for the use of architects, designers and structural engineers. It includes tables of structural properties and other design information for the following basic sections: Two channels with stiffened flanges, back-to-back; similar setup with unstiffened flanges; two equal leg unstiffened angles, back-to-back; single channels and zees with stiffened or unstiffened flanges, and equal leg unstiffened angles. Examples of practical design problems illustrate the use of the many tables and charts included in the book.

* * *

DESIGN OF STEEL BUILDINGS—by Harold D. Hauf and Henry A. Pfisterer. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 275 pages, 6 x 9. Price $5.00.

This is the third edition of a book that presents in detail the principles of structural design as applied to the more common types of buildings, such as apartment houses, offices and school and other institutional buildings. Subjects covered include reactions, shear and bending moments, the design of beams, riveted connections, plate girders, columns and struts, roof trusses, wind stresses in tall buildings, welded construction and resistance to earthquakes. The welding chapter, an entirely new section, treats in detail the application of welding to the design of plate girders and roof trusses.

* * *

ELEMENTARY STRUCTURAL PROBLEMS IN STEEL AND TIMBER—by C. R. Young and C. F. Morrison. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 330 pages, 6 x 9. Price $4.50.

There is very little theory in this book. It is written for the man who wants to test the knowledge of design theory he has already acquired. Problems involving the design of beams, girders, trusses and other timber and steel structures are presented and solved in detail, so that the reader can see exactly how such problems are handled in industry. Part II of the book gives an extensive coverage of modern timber engineering. Recent developments in ring-connected construction are covered in several chapters. One chapter is devoted to the design of a glued, laminated wood arch.

* * *

TENTATIVE STANDARD ON PIPE FRICTION — Compiled and published by the Hydraulic Institute, 90 West Street, New York 6, N. Y. Price $1.50.

Material presented in this book should be of interest to everyone concerned with flow of fluids in pipes. Friction loss

for water is shown in tabular form tables for pipe sizes from ⅛ to 84 in. for both wrought iron or steel and asphalt dipped cast iron pipe. In each table, the flow in gallons per minute and cubic feet per second is shown with the corresponding velocity, velocity head and friction loss per 100 ft. of pipe. The data are carried to three significant figures and are listed in small increments to avoid the necessity for interpolation. Tables are also given for computing the friction loss for liquids other than water.

* * *

DESIGN FOR WELDING—Compiled by the James F. Lincoln Arc Welding Foundation from entries in the 1948 Design-for-Progress Award Program. Edited by Robert S. Green, M.S.E., Chairman of the Department of Welding Engineering at Ohio State University. 1025 pages, 6 x 9. Price $2.00.

The 82 papers presented in this book were chosen as being the most representative and involving the least duplication from over eleven hundred entries submitted in the Foundation's Award Program. Each paper presented is considered a concise account of how a given organization has solved its own problem by the application of arc welding. Cost figures are liberally supplied by the authors, and many of the papers are directed at the reduction of costs. Generally, the objective of the book is to provide engineers with a variety of ideas which may be adaptable to their own products or structures. Papers are included on aircraft, automotive, railroad, watercraft, containers, furniture, structures (including bridges, wharves, buildings, etc.), machinery and welderies fields.

* * *

ENGINEERING LAMINATES — Edited by Albert G. H. Dietz with a contributing staff of 24 experts. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 800 pages, 6 x 9. Price $10.00.

This book completely explains the mechanics of laminate materials from basic properties, through physical and chemical properties, to industrial uses. Sandwich-type building and aircraft panels, laminated timber, plastics-based laminates, and plywood, along with the methods of molding these materials are included. Clad steel, hard surfacing, aluminum clad, glass-lined steel equipment and sprayed metals are among the metallic laminates discussed. Also discussed are corrosion, chemical resistance, properties and characteristics of laminating adhesives. Tables are interspersed throughout the book to expedite reference and calculation.

Safety glass is one of the materials treated in a chapter devoted to composite-glass structures. Thermostat metals which can be used to control, regulate, compensate and indicate temperature, are discussed. Rubber-based laminates and their engineering applications are included. Also emphasized are engineering properties, design, manufacture and use of laminated structural materials.

OBITUARIES . . .

THE LATE REGINALD THOMSON

Reginald H. Thomson, 92, probably the oldest engineer on the Pacific Coast in active practice of his profession, is dead. Since 1881, he had resided continuously in the Pacific Northwest with headquarters at Seattle, Wash. He twice served the City of Seattle as City Engineer, the first time for a continuous period of 19 years. To him more than any other individual, Seattle is indebted for its splendid physical development wrought from a most forbidding natural topography. He designed and built Seattle's Cedar River water system with a potential supply of 400 million gal. per day, and also built the city's first municipally-owned hydro-electric power plant. He pressed through the state legislature the law authorizing the establishment of the Port of Seattle and he resigned the office of City Engineer to become the Port's first chief engineer. He was active in the early railroad work in Washington, serving extensively as location engineer and as construction engineer. He served the Washington Toll Bridge Authority as one of its consultants on the Lake Washington Pontoon Bridge. He was a member of the American Society of Civil Engineers for 48 years, and was National Director from 1917 to 1919. He was past president of the Pacific Northwest Society of Engineers and a Life Member of the Canadian Institute of Engineers.

* * *

Raymond F. Goudey, 54, for many years sanitary engineer for the Los Angeles Bureau of Waterworks and Supply, died recently. Last year, he opened private offices for consulting work on water treatment and waste disposal. He was noted for his society activities, writings and inventions in his field.

* * *

George Savage Ashton, 78, pioneer contractor of Salt Lake City, Utah, died March 9 of causes incident to age. Ashton entered the contracting business in 1890 with his brother, forming the Ashton Bros. firm. The firm has constructed hundreds of buildings in Salt Lake City and vicinity. He was also secretary-treasurer of the Utah Granite Corp.

* * *

Benjamin R. Wood, 66, chief of the engineering division of the North Pacific Division of the Corps of Engineers at Portland, Ore., died March 13 on a train while enroute from Washington, D. C., to Portland. With the Corps of Engineers since 1908, he served during the World War I as a major, supervised construction of Pershing Stadium in Paris, and from 1929 to 1943 was a member of the Board of Engineers for Rivers and Harbors. He came to Portland in 1946 after two years as head of the civil works division in the office of the Chief of Engineers.

* * *

George A. Mashon, bridge superintendent for J. E. Haddock, Ltd., Pasadena, Calif., for the past 20 years, died recently. He had personally supervised the construction of 45 bridges in Southern California, 13 being on the Arroyo Seco Parkway. During World War II, he was project manager on construction of the Tonopah Air Base in Nevada and construction of the first concrete floating dry dock for the Navy. At the time of his death, he was supervising the construction of 6 bridges on the new Hollywood Freeway through Los Angeles.

* * *

John Sletten, 62, general contractor of Great Falls, Mont., died March 11 after several months of illness. He came to Great Falls as a carpenter in 1914, later became a superintendent of construction and subsequently a member of the firm of Kleppe & Sletten. The Sletten Construction Co., which he headed, was formed after Kleppe's retirement.

* * *

Robert Edward Marshall, 85, retired building contractor of Los Angeles, died March 1.

* * *

Sanford E. Thompson, 82, president of the Thompson and Liehtner Co., Inc., engineers in management, industrial research and construction, died Feb. 25 in Phoenix, Ariz. He was the author of three books and numerous articles on scientific management and construction. He was a member of the American Society of Civil Engineers, American Society of Testing Materials and an honorary member of the American Concrete Institute.

* * *

M. L. Haag, 50, contractor of Akron, Colo., was killed March 6 when his light plane crashed while landing at a farm near Akron. He was landing to pick up another passenger and the landing gear caught on a fence.

* * *

Henry H. Rooney, 94, retired contractor of Great Falls, Mont., died March 6.

* * *

J. P. Alvey, 65, consulting engineer for the Bonneville Power Administration, died March 2 at Boston, Mass. He was

one of the first employees of the late J. D. Ross when the latter became first administrator of the BPA. Since 1937, Alvey had been in charge of the BPA office in Washington, D. C.

* * *

Adolph G. Opegz, 74, building contractor of La Canada, Calif., died Feb. 23.

* * *

Glen H. Trout, 69, retired assistant chief engineer of the Union Pacific Railroad at Omaha, Neb., died recently. With UP since 1903, he held various engineering positions in Idaho, Oregon and Nebraska.

* * *

L. T. Wright, concrete inspector for the Bureau of Reclamation at Moses Lake, Wash., died recently.

* * *

B. J. Davenport, highway engineer with the California Division of Highways and a resident of Mountain View, Calif., died last month.

* * *

Floyd Spencer, civil engineer of Fresno, Calif., died March 22.

The Editor's Mail...

Continued from page 58

perhaps twice as much as this one, but what is the limit that we can afford?

What about this spillway discharge of 200,000 cu. ft. per sec. and why? If they had a flood of that size the reservoir if empty at the time, would fill up in less than 3 hours, wouldn't it? And how do you suppose that capacity was figured, 1200 ft. long by 5 ft. deep by 33.3 ft. per sec. velocity, or what?

I have read figures on how fast Lake Mead is filling up with silt; I wonder if anyone has estimated how long it would take for this little reservoir to fill up with debris if there was a flood big enough to fill it with water 8 times in 24 hours?

If they had 12 in. of rain in 12 hours, and half of it was "run-off" on the 231 sq. mi. area there would be close to a 75,000 cu. ft. per sec. discharge, wouldn't there? I may be wrong but it seems to me that the project is fine and dandy only if it doesn't rain too hard and too long in that vicinity, what do you honestly think about it?

S. D. CLINTON
Consulting Engineer

Pocatello, Idaho

Analytical reader Clinton should note this is a flood control dam designed for peak regulation, not storage. Cost is justified not by cost per acre foot, but by value of land protected downstream. Spillway capacity **does** seem large, particularly since channels downstream would not accommodate any such flow. Apparently it was designed to handle maximum recorded flow, without considering three other dams now constructed upstream.—Editors.

SUPERVISING THE JOBS

Several changes have been made in the supervisory personnel for Pacific Bridge Co., San Francisco, contractors for construction of the Digester Tanks for the huge Hyperion Sewage Disposal Project facilities at El Segundo, Calif. **Stanley Kimball** is the superintendent, and **Everett Pelkey** is his assistant. Job superintendents include **Presley Moore,** carpenter; **Bill Wellman,** labor; **Red Burke,** iron worker; **Marvin Miller,** master mechanic, and **Newell Jensen** carpenter fabrication. **Morris Bolzer** is the field engineer, **Jim Conwell** is office engineer, and **Frank Moore** is office manager. The job is nearing completion.

* * *

Charles Bisordi is the superintendent for Pacific Bridge Co., San Francisco, on their $1,804,840 contract for repair of the spillway face and bucket at Grand Coulee Dam. Bisordi was Pacific Bridge's superintendent on construction of the Hyperion Digestion Tanks at El Segundo, Calif.

* * *

R. B. Jewell is job manager for Silas Mason Co., Shreveport, La., on their $8,585,808 contract for tunnel work, Schedule B, for the Fort Randall Reservoir near Lake Andes, S. Dak. **George Lyle** is the job superintendent, and **J. C. Drummond** is the job engineer. **Harry Walsh** is office manager and **C. E. Harp** is personnel manager.

* * *

H. W. "Spike" Eliason is the general superintendent and **Charles Rowe** is job superintendent for H. Earl Parker Co.,

BILL McEARAY is superintendent on Piombo Construction Company's tough job of road relocation north of P. G. & E.'s Feather River Project in Butte and Plumas Counties, Calif.

Marysville, Calif., on the $3,336,510 contract for grading and appurtenant work for the westerly addition to the Los Angeles, Calif., Municipal Airport. **"Bob" Bendorf** is the office manager, **Carl Woods** is maintenance superintendent, and **L. W. Brown** is the superintendent of rubber-tired equipment.

* * *

O. A. White is project manager and **"Boots" Snider** is superintendent for White Bros. Co., Walla Walla, Wash., on the $264,000 railroad relocation at the McNary Dam Project near Plymouth, Wash. **Whitey Haver** is grade foreman on the job, **Lou York** is drilling foreman and **Ernie German** is finishing foreman. **Les Southerland** is master mechanic. **Patrick Tulley** is resident engineer for the Army Engineers.

* * *

Eddy Hauser is superintendent for R. J. Daum Construction Co., Inglewood, Calif., on their $750,000 contract for the construction of Unit A of the new engineering school at the University of California in Los Angeles. **Eddie Jockola** is carpenter foreman, **Charles Cammileri** is labor foreman, and **Al Simmons** is steel foreman. **William Penrose** is the job office manager. **Leonard "Blackie" Randel** is superintendent for sub-contractors Victory Engineering & Electric Corp.

* * *

Jack Arave is the superintendent for J. E. Haddock, Ltd., Pasadena, Calif., on the construction of two reinforced concrete grade separations (at Santa Monica Blvd. and Normandie Ave.) on the Hollywood Parkway in Los Angeles, Calif. **George Wiggers** is the assistant superintendent and **Neil Saul** is superintendent of dirt-moving operations. **Art Anderson** is carpenter foreman and **Dwight Matthius** is the job engineer. **B. T. Cook** is the job office manager. The $556,000 job is due for completion shortly before the end of this year.

* * *

G. N. Bauer is the superintendent for contractor C. L. Peck of Los Angeles, Calif., on the substructure for a five-story building in Beverly Hills, Calif. **D. Querner** is carpenter foreman, **Jack Hamilton** is general labor foreman and **Robert E. Sinclair** is the job office manager. Contract for the building's superstructure has not been awarded.

* * *

Alex Simpson is the general superintendent for L. E. Dixon Co. of San Gabriel, Calif., on construction of the Rock Creek Tunnel on Pacific Gas & Electric Company's Feather River Project north of Oroville, Calif. **Frank Moore** is the tunnel superintendent. **Bill**

Brute Strength *and a "Delicate Touch"*
An OLIVER "Cletrac" Plus Advantage

Oliver "Cletrac" Model FDE equipped with shear dozer and tree pusher mounted on Drott Trailbuilder clearing right-of-way.

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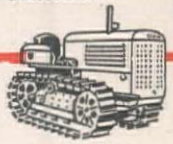

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State of Arizona: Guerin Implement Co., Phoenix., 1401 S. Central St. ***State of California:*** Gustafson Tractor Co., Eureka; Mechanical Farm Equipment Dist., Inc., San Jose; Ashton Implement Co., Salinas; Comber & Mindach, Modesto; Tractor Service Company, Inc., 820 Broadway, Chico; Tractor & Equipment Co., San Leandro; Flood Equipment Co., Sacramento; W. J. Yandle Co., Santa Rosa; Hamsher Tractor Co., Stockton; Branch Equipment Co., Ventura; Jim Ingle Co., Fresno and Tulare; Oliver Implement Co., Bakersfield; Turner & Chapin, Whittier; Farmers Tractor & Implement Supply Company, Colton. ***State of Washington:*** Inland Diesel & Machinery Company, Spokane; Pacific Hoist & Derrick Co., Seattle; Melcher-Ray Machinery Co., 202 East Alder Street, Walla Walla; Central Tractor and Equipment Co., Wenatchee. ***State of Oregon:*** Loggers & Contractors Machinery Co., Portland, Eugene & Klamath Falls. ***State of Idaho:*** Idaho Cletrac Sales Co., Lewiston; Engineering Sales Service, Inc., Boise. ***State of Montana:*** Western Construction Equipment Company, Billings and Missoula. ***State of Nevada:*** B & M Tractor & Equipment Corp., 1420 S. Virginia St., Reno. ***British Columbia:*** Pacific Tractor & Equipment, Ltd., 505 Railway Street, Vancouver.

Lyons is master mechanic and **Bert Gallagher** is his assistant. **"Red" Hicks** is mechanics foreman. **Ben Morris** is labor foreman. Walkers are **Ralph Christian, T. E. Moore** and **Don Hardin. "Big Earl" Carroll** is superintendent for the Dixon Company on the Jackass Adit of the tunnel. Walkers are **Johnnie Reed, Lew Crawford** and **"HayBag" Wallace.** Shifters are **Red Wilson, Jimmie Johnson** and **Chief Myers. Larry Bilteley** is Dixon's shop foreman and **Bill Hughes** is electrical superintendent. Some of the boys who are helping **Al Huntington,** Morrison-Knudsen Company's superintendent on Rock Creek Tunnel, to break all tunnel-driving records are **John Nixon, Edward McCroy, Donald Schall, Ed Dalton, "Whitey" Lee, Lex Berry** and **Jerry O'Neil.**

* * *

Neil E. Snyder is the superintendent for Campbell Construction Co., Sacramento, Calif., on construction of a warehouse and offices for the Zellerbach Paper Co. in Sacramento. **Tony Massi** is carpenter foreman, **George Poland** is concrete foreman. **Roy Huffman** is foreman for Moore Drydock Co. of Oakland, Calif., who are handling the structural iron work.

* * *

Adam C. Goetz is general superintendent of rock plant and hot plant operations for the Brighton Sand & Gravel Co. of Sacramento, Calif. **Simon Dingey** is superintendent of the firm's asphaltic plant and **Gene Dougherty** is superintendent of outside operations. **Ray Austin** and **Phil Whitver** are superintendents for the firm. **Dain J. Domich** is office manager, **Joe Coler** is shop foreman and **Jake Gross** is welder foreman.

* * *

Robert Fontana was superintendent for Johnson Western Co. and Tavares Construction Co. on the unique job of raising by 6 ft. the Badger Street Bridge on Ford Ave. at Terminal Island, Calif. **C. E. "Pop" Shields** was labor foreman on the job and **George Parkerson** was master mechanic.

* * *

Ben Dow is the superintendent for George Pollock Co., Sacramento, Calif., on road work and construction of an overhead crossing near White Rock, Calif. **W. H. Dippold** is the assistant superintendent, **Ted Cox** is the excavation superintendent and **H. Higday** is carpenter superintendent. **Terry Aldridge** is master mechanic, and **Hugo Johnston** is blasting superintendent. **H. Thomas** is office manager, **Harvey Towne** is the resident engineer for the California Division of Highways.

* * *

David Kaiser is general superintendent for Kaiser Contracting Co., Sacramento, Calif., now constructing 9 apartment houses in Sacramento. **Mike Schaitz, R. Stuckert, W. Freizloff** and **M. Nelson** are general foremen for the work.

* * *

Homer Bowder is the superintendent for Pozzo Construction Co., Ltd., Los Angeles, Calif., on construction of a $250,000 building in Beverly Hills. **Johnny Boyles** is carpenter foreman on the job and **Jim N. Wright** is job office manager.

* * *

C. W. Timmons is the job superintendent for Rushlight Automatic Sprinkler Co., Portland, Ore., on the $244,250 construction of a sewage treatment plant at Vancouver, Wash. **L. B. McKinney** is the general superintendent of construction for the firm.

* * *

Alvin G. Roenfeldt is the job superintendent for Mesa Constructors, Grand Junction, Colo., on the $1,587,871 construction of a reinforced concrete, brick and stone hospital in Grand Junction. **J. Clarence Ritchey** is the assistant superintendent and **Willard W. Brockway** is the job engineer.

* * *

A. G. "Art" Strange is superintendent for Allison Honer Co., Santa Ana, Calif., on construction of 2-story, reinforced concrete, $275,000 building for the new Reliance Title Co. in Santa Ana. **Verne Pember** is the carpenter foreman and **Herb Brickey** is labor foreman. Purchasing for the project is being handled at the firm's main offices in Santa Ana by **Allison Honer** and **Fred McCandless.**

* * *

R. C. Blasongame is now superintendent for Grafe-Callahan Construction Co., Los Angeles, Calif., on construction of a haulage tunnel for the Climax Molybdenum Co. at Climax, Colo.

* * *

C. W. "Wally" Wills is now general steel foreman for J. A. Terteling & Sons, Inc., of Boise, Ida., on the construction of 12 mi. of main canal for the Frenchman-Cambridge Unit, Bureau of Reclamation project near Holbrook, Neb.

* * *

O. D. Hofman is now office engineer for the Utah Construction Co. at Lark, Utah, where the company is driving a 4.1-mi. haulage tunnel for the Kennecott Copper Co.

* * *

W. H. Dippold is now superintendent for George Pollock Co., Inc., Sacramento, Calif., on the installation of 81 mi. of power line from El Centro to Coachella, Calif. The entire line passes through the desert so the job is being rushed to beat the heat, according to Dippold.

* * *

L. E. Ridnour, master mechanic with the Utah Construction Co., is now in that capacity for the company's job of building a copper refinery for the Kennecott Copper Co. at Garfield, Utah.

* * *

Torrance Sand & Gravel of Torrance, Calif., are currently constructing a $250,000 sand, gravel and transmix plant for the Torrance region. The new plant will be located in the hills adjacent to Sepulveda Blvd. at 25701 Crenshaw Blvd., Torrance. Directors of the work are the owners of the firm: **C. W. "Chuck" Shepard,** formerly of Shepard Bros., material and trucking firm at Lon Beach, Calif., and **H. Block,** plasterin contractor of Long Beach.

* * *

H. L. Morisette is the general superintendent for McGillivray Construction Co., Sacramento, Calif., on a $104,562 highway paving job for the California State Highway Department near Morgan Hill, Calif. **F. C. Crilly, W. O. Hogg** and **W. Greenleaf** are job superintendents. **George C. McFadden** is genera foreman and **S. C. Muir** is job foreman **Floyd Briggs** is the master mechanic **Henry Weston** is the job office manager

* * *

Rex Dunn is project manager for Bechtel Corp., San Francisco, on construction of a powerhouse for the Pacific Gas & Electric Co. at Dobbins, Calif. **S. W. Saul** is general superintendent, and he is assisted by **W. J. Gould, C. R. Culler, A. J. McCullough** and **Con Warnick.** General foremen are **H. M. Taylor** and **G. W. Van Horn,** and **A. W. Gardner** and **A. A. Thomas** are carpenter foremen. **N. G. Breisteg** is cement foreman, **V. Smith** is steel foreman and **Dewey Hagen** is plumbing superintendent. Engineers on the project are **S. Makeyson, T. C. Beard** and **Herb Kerby. W. H. Carlin** is the job office manager and **W. F. Freeman** is timekeeper and paymaster.

* * *

John Whalin is superintendent for Laurence Construction Co., Sacramento, Calif., on construction of a large school building in North Sacramento. **Charlie Dill** is the layout man and **H. C. Staley** is general foreman.

* * *

Correcting an error in the March "Supervising the Jobs," **Gerry Haskell** is the superintendent for B & R Construction Co. on construction of the Chico Training School and Boiler House at Chico, Calif. Haskell has spent 13 years in Panama and South America as a construction superintendent. **Cliff Kjer** is carpenter foreman on the Chico job, and **Angelo Manzo** is labor and concrete foreman.

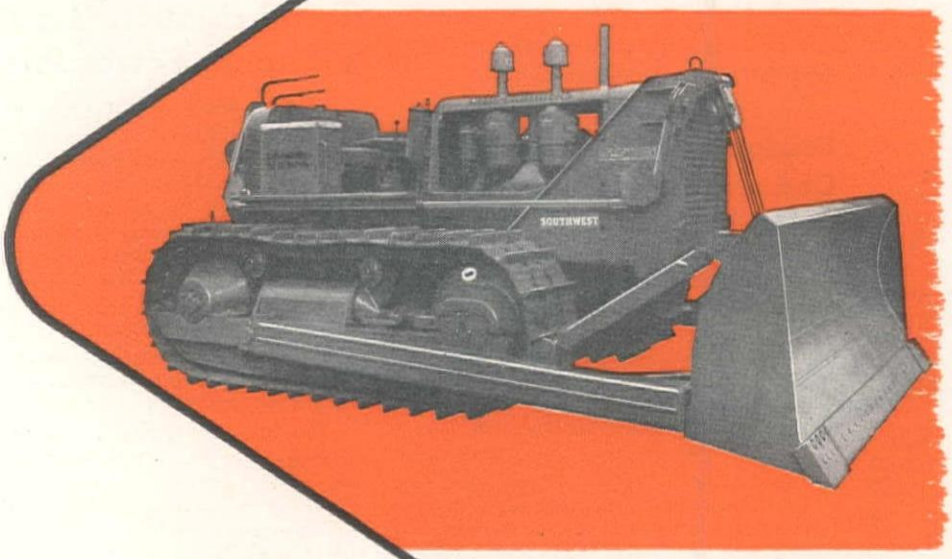
* * *

Harry Oliver is superintendent for McDonald, Young & Nelson, Inc., of San Francisco, who are building a $240,000 store for J. C. Penny Co. at El Centro, Calif. **Earl Brown** is carpenter foreman.

* * *

G. F. "Jerry" Ehret is the general superintendent for C. F. Braun & Co. of Alhambra, Calif., who are building a new refinery for the Standard Oil Co. at Bakersfield, Calif. **Ray D. Witten** is field superintendent for the contractor, and **C. M. "Brownie" Brown** is assistant superintendent. **J. M. "Jimmy" Powell** is superintendent of foundation work, **C. L. "Tex" Roland** is supervising electrical work, and **B. M. "Benny" Dake** is superintendent of piping installations. **John R. Conley** is the project engineer, and **Woodrow W. Wilson** is the job office manager. Carpenter foremen on the job are **Ralph Criswell, Pete Horton** and **Ray Copeland.**

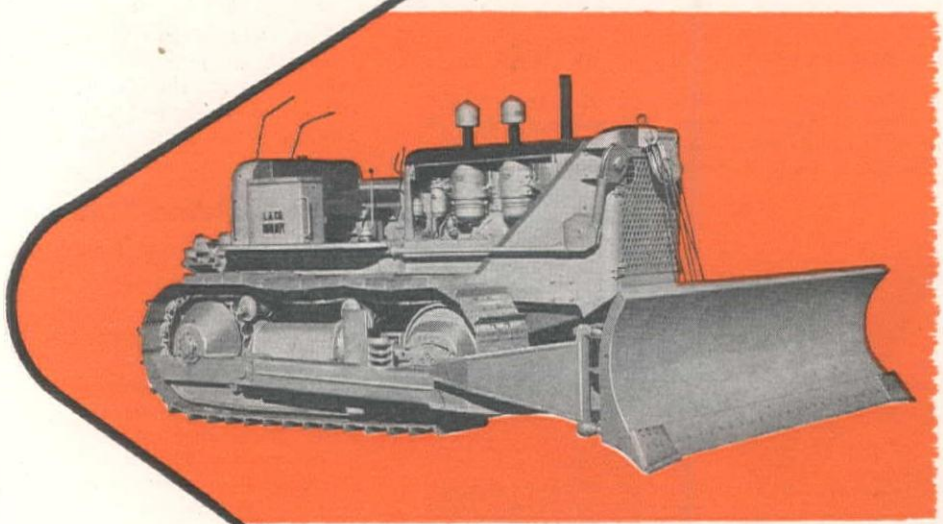
SOUTHWEST



The new bulldozer and trailbuilder equipment developed by SOUTHWEST for use with Allis-Chalmers HD-19 tractors have proved exceptionally efficient and reliable in all types of operations. These are rugged, dependable units that provide outstanding economy and long service life.

Type "AFB" Bulldozers and Type "AFT" Trailbuilders for use with Allis-Chalmers Tractors.

"QUARRY-TYPE"
BULLDOZERS AND TRAILBUILDERS NOW AVAILABLE FOR ALLIS-CHALMERS HD-19 TRACTORS



NOTE THESE FEATURES...

Overhead "A" frame structures entirely eliminated.

New, rugged radiator guard type mounting.

Furnished for either rear or front mounted control units.

Bulldozers can be furnished with either adjustable arms or with side arms welded to blade.

WRITE FOR BULLETIN CM23

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA

SCOOPS BULLDOZERS CRANES WINCHES DUMP WAGONS RIPPERS TAMPERS SCRAPERS

California Firm Starts Work Soon on $6,500,000 Canadian Gasoline Plant

CONSTRUCTION will be started this spring on the $6,500,000 gas-gathering and absorption system in the Leduc section of the Edmonton, Alberta, oil field. Imperial Oil Limited have placed contracts for the construction, which must be completed by mid-summer of 1950. Work will commence as soon as ground conditions permit.

Walker L. Taylor of Calgary, Imperial's western production chief, announced that the contract for construction of the gasoline absorption plant and the compressor station has been let to C. F. Braun Co. of Alhambra, Calif., specialists in this work.

The gas-gathering system of pipelines, linking all wells in the Leduc and Woodbend sectors to the central plant located near Devon, will be constructed by Imperial Oil itself, either directly or through contracts.

The system will have two main functions: recovering propane, butane and natural gasoline from the natural gas that is a byproduct of oil production from wells; returning dry, residual gas to the gas reservoir that pressurizes the oilfield a mile below ground. The latter is intended as a conservation measure to give maximum productive life to the field.

The first function will be carried out by the gasoline plant and the second by the compressor station. There will be two main banks of compressors, one for returning gas to the formation, and the other for sucking gas from the gathering system into the gasoline plant.

The system will have a capacity of 24,000,000 cubic feet daily. This is expected to be sufficient for requirements for some years to come. Liquid recovery from Leduc gas is expected to run about 1¼ gal. per 1,000 cu. ft. At present, the field is producing about 9,500,000 cu. ft. of gas per day. This would give a recovery of 11,875 gal. of natural gasoline, propane and butane per day.

Dredging of Scholfield River Channel Planned in Oregon

PORTLAND DISTRICT and North Pacific division offices of the Corps of Engineers have recommended improvement of the Scholfield river at Reedsport, Ore., by dredging a channel 12 ft. deep at mean low water, varying in width from 300 to 100 ft. over a two-mile distance and costing approximately $50,000, Colonel Theron D. Weaver, North Pacific division engineer has announced.

The engineers' report favors modification of the existing project for Umpqua harbor and river to improve barge navigation and facilitate lumber handling. The Scholfield river has its confluence with the Umpqua in the vicinity of Reedsport where two large sawmills are located.

Local interests would be required to pay $10,000 towards the cost of the project and furnish all necessary areas required for disposal of excavated materials.

Benefits anticipated from the project include the elimination of time lost by towboats, barges and log tows awaiting high tide. The 12-ft. depth recommended in the proposed improvement would permit lumber and log movement at all stages of the tide and would also accommodate deeper draft fishing vessels. The project would benefit the fishing industry by providing a harbor for laying up fishing boats to avoid marine growth and borers.

Two Irrigation Groups Planning Power Project

SOUTH SAN JOAQUIN Irrigation District and Oakdale Irrigation District have applied to the Federal Power Commission for a 12-month preliminary permit in order to secure and maintain priority of application for a license while obtaining necessary data to prepare the license application for a reservoir and power project on the Middle Fork of the Stanislaus River in central California. A preliminary permit does not authorize any construction and gives no assurance that a license will be issued.

The two irrigation districts propose to construct a 285-ft. rock-fill dam having a crest length of approximately 730 ft. and a side spillway about 200 ft. long or a concrete variable radius arch overpour dam. The structure, to be designated Donnells Dam, would create a reservoir with a surface area of 413 ac. and gross capacity of 64,500 ac. ft. at maximum storage level.

The application states that a 30,000-ft. tunnel would be constructed between the dam and powerhouse. Plans call for installation of vertical multi-nozzle impulse turbines directly connected to vertical 60-cycle 3-phase generators in the powerhouse. The maximum static head would be 1360 ft. The two districts estimate that the power plant will have a peak capacity of 48,240 h.p.

The electric energy generated by the Donnells project would be sold at the switchboard to the Pacific Gas and Electric Company which is the public utility serving this region of California.

UNITED STATES-MANUFACTURED EQUIPMENT BUILDING MEXICAN DAM

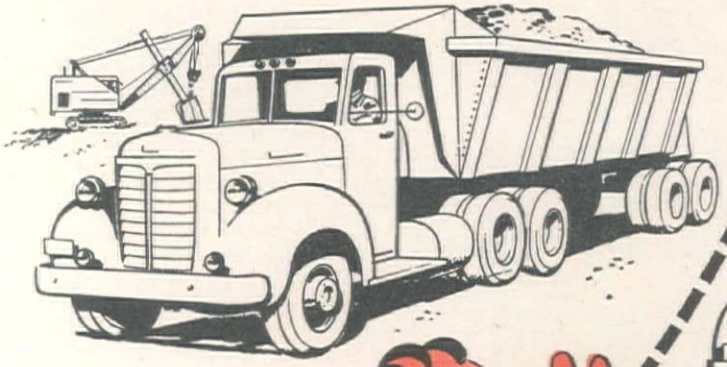
CONSTRUCCIONES Jorge Larrea, Mexican contracting firm, are using four Model 27FD Rear-Dump Euclids in construction of Excame Dam, 120 mi. northwest of Zacetecas in central Mexico. The dam will provide flood control and irrigation water from the Tlaltenango River, and will be 126 ft. high, 2,560 ft. long of earth-rock fill.

More Building Materials in 1948 Than Any Year to Date

MORE BUILDING materials were produced in 1948 than during any previous year on record, the Department of Commerce reports.

On the basis of preliminary totals for the year, the Department's 1948 Composite Index of Production for Selected Construction Materials shows an increase of some 5 per cent over 1947, the previous record year. The 1948 gains were shared by almost all of the Index's 20 component materials. Exceptions were: asphalt prepared roofing, range boilers, warm air furnaces, and structural tile.

For five of the materials included in the index—cement, soil pipe, softwood plywood, gypsum board, gypsum lath and asphalt siding and felts—1948 production was the highest ever recorded. Three others—hardwood flooring, wire nails and clay sewer pipe—reached their highest output levels since the 1920's.



a truck on the job is worth two in the shop

. . . or, to carry the old adage even further, a truck on the road is worth *a whole fleet* in the shop. Your rigs make money for you only when they operate with a minimum of maintenance and repair.

You'll get real transmission performance . . . thousands of miles of rugged road service without major repairs or parts replacement . . . by standardizing on Fuller Transmissions throughout your fleet.

Long wear-life and low maintenance are inbuilt characteristics of Fuller Transmissions . . . characteristics that give you extra miles and extra profits. Write for the catalog which describes each of Fuller's proved-in-the-field transmissions.

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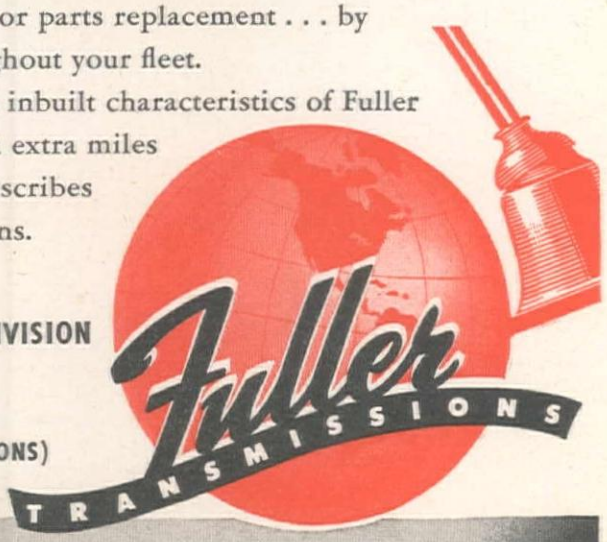


LeTOURNEAU UNIT TRAVELS TO MEXICO CITY UNDER ITS OWN POWER

ORDERED BY LeTourneau's Mexico distributor, Construccion y Maquinaria, S. A., this self-propelled rubber-tired earthmover weighing 20,700 lb. made the trip from Laredo, Texas, to Mexico City in 46 hours, averaging 16.6 m.p.h. for the 763-mi. journey. The road trip was made necessary because of railroad embargoes on shipment of such items. The machine is shown here by the Zocalo, or public square, in the Mexican capital.

Parallel Suspension Span Selected For San Francisco Bay Crossing

BY UNANIMOUS vote the California Toll Bridge Authority on March 23, went on record as favoring the immediate building of a second San Francisco Bay crossing paralleling the existing San Francisco-Oakland Bay Bridge, and the construction of a southern crossing as soon as its financing is possible.

Action was taken by the Authority after Governor Earl Warren, its chairman, cited seven reasons why he favors a parallel crossing and Director of Public Works C. H. Purcell strongly recommended a twin span. Both Governor Warren and Purcell emphasized that they believe both crossings are needed but expressed the opinion that a parallel bridge will best serve present urgent traffic needs and that a southern crossing cannot be financed at this time.

Governor Warren listed his reasons for deciding in favor of a parallel span as follows:

1. The parallel bridge will better serve 82% of the traffic that will use it. The southern crossing only 18%.
2. With conditions as they are today it will be possible to maintain a 25-cent toll on the existing bridge and a new parallel crossing. It would be necessary to increase the toll to 35 cents on the existing as well as the southern crossing.
3. The parallel bridge will relieve the congestion immediately upon its completion. The southern crossing will **not** relieve the congestion at any time.
4. The parallel bridge, including approaches, can be completed two and a half years sooner than a southern crossing.
5. The parallel crossing can be constructed more cheaply.
6. Safety to traffic will be greatly favored by a parallel bridge.
7. The cost of maintenance and operation of two parallel bridges will be cheaper by more than $400,000 per year than the cost of maintenance and operation of a combination of the present bridge and a southern crossing.

By its action, the Authority approved the report and recommendations of the Division of San Francisco Bay Toll Crossings, of which Ralph A. Tudor is Chief Engineer. This report was briefed in *Western Construction News*, Dec., 1948.

The Authority adopted two resolutions. One states that the Authority finds that public interest and necessity require the construction of the parallel bridge at the earliest possible moment and prior to the construction of a southern crossing, authorizes the Department of Public Works to proceed immediately with the necessary work and directs the Department to suspend work on a southern toll highway crossing until a possib method of financing such a crossing ca be recommended by the Department t the Authority.

The second resolution petitions Con gress to authorize the proper officers o the United States to convey to the Stat of California a perpetual easement fo an additional toll bridge over and acros Yerba Buena Island and over and acros such other federal lands in and about th Bay of San Francisco as may be require as a right of way for the bridge.

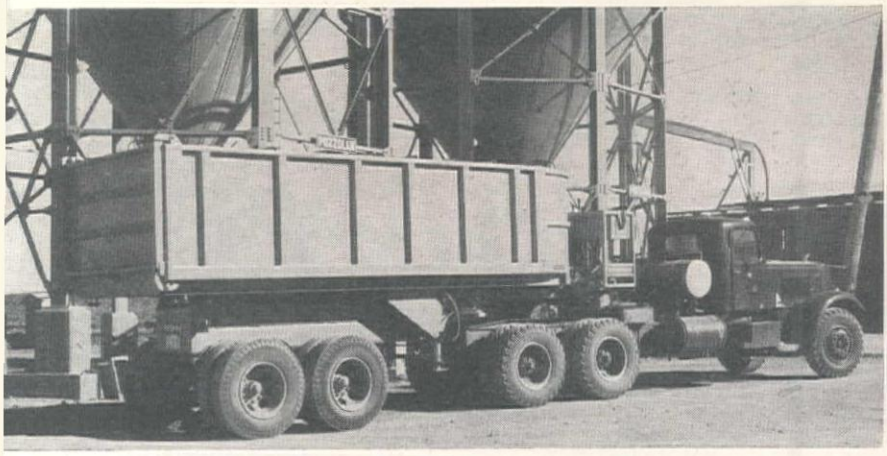
According to Governor Warren, "Thi area already has a population of tw million people. It has grown 39% sinc the 1940 census. Its possibilities fo growth are almost unlimited provided among other things, its traffic problem are solved. Like the New York City area its parts are separated by water, which must be crossed at various places i the traffic is to be facilitated.

"A start has been made with the San Francisco-Oakland and the Golden Gate Bridges, but as experience has already demonstrated, additional crossings will be needed in the comparatively near future, one of which should be constructed immediately to relieve present congestion. The Toll Bridge Authority through the State Department of Public Works has studied the problem for a period of three years in accordance with Legislative authorization. It has spent $657,000 in this work. It has employed the most eminent tube, bridge and traffic engineers in the country as consultants. It has cooperated with the Army-Navy Board which in the early stages of the matter made a study based upon then available data. It has given serious consideration to the findings of that board and this may be measured by the fact that approximately 64% of the state funds spent during the past year were on the Army-Navy Board proposed southern crossing.

"Because it is a matter of such importance, I have been particularly concerned with the effect of another crossing to national defense and the possibility of serious bomb damage. This has been discussed at length with military experts and I am convinced that in this instance the problems of national defense are by no means controlling—the Army-Navy Board did not find them so.

"I have also been concerned with the problem of street congestion at the bridgehead areas on both sides of the Bay. Our traffic studies and plans for ramps and freeway connections have explored this in great detail and I find it makes no difference where the crossing is located. The ramps will effectively distribute bridge traffic and even improve present conditions.

"The Army has issued a permit for the construction of either or both crossings. All that is needed from the Federal Government is to acquire the necessary rights of way across certain government owned land—in the case of the parallel bridge across Yerba Buena Island, and on both sides of the Bay—and to repeal the provision of the 1931 Federal Act that tolls on the San Francisco-Oakland Bay Bridge must be discontinued, or at least restricted, when that bridge has paid for itself."



SPECIAL TRAILER FOR CEMENT HAUL

TO HAUL cement to Davis Dam from the railroad at Kingman, Ariz., a distance of 35 mi., a special trailer was designed by Fruehauf Trailer Co. at its Phoenix plant. It will carry 25 cu. yd. (32 tons) over the desert road, which has grades up to 8 per cent, but is particularly different in that a Ford F-8 industrial engine is built into the trailer, so that it can raise the body into dumping position even entirely detached from the truck-tractor, thus releasing the hauling unit for other work while the cement is being unloaded. Utah Construction Co., contractors on the dam, sometimes need cement so seriously that three round trips per day, 210 mi., are made by the trailer-hauler.

,os Angeles Sued Over Use)f Sewers by Neighbor City

:ULVER CITY has filed suit against he City of Los Angeles, to compel the ıtter city to make its sewage transpor- ıtion and treatment facilities available o Culver City.

Complainant asserts that under an greement made in 1922 and on two later ccasions, it granted permission to Los ıngeles to construct a sewage treatment lant within its city limits and granted arious rights-of-way, with the under- tanding that all Culver City sewage ould be disposed of through Los An- eles facilities without cost. Now, ac- ording to the camplaint, Los Angeles is equesting Culver City to pay a propor- ional share of the cost of maintenance nd operation of the sewerage works. In ddition, the smaller city asserts, new runks are being built at a grade which ill make it necessary for Culver City o pump its sewage, and requests that he defendant be obliged to lower the rades to former gravity levels.

Wyoming Project Found Not Economically Sound

MMEDIATE CONSTRUCTION of he proposed Lyman reclamation proj- ct, which would provide supplemental vater for 40,600 ac. of land in Uinta County, Wyo., has been recommended or deferment by the Bureau of Recla- nation, primarily because of lack of re- ayment ability to carry the entire con- truction cost.

The repayment schedule is based upon he ability of the land to carry both peration and maintenance charges and epayment of interest-free Federal ap- propriations which would be advanced or construction.

However, according to the Bureau, here is some prospect for future de- velopment of the project through finan- cial assistance from multiple-purpose storage and power reservoirs on the main stream of the Colorado River and ts principal tributaries or when a fur- her economic need develops.

The Lyman project would not provide a full water supply to all lands, but it would materially reduce shortages which at present permit only low and insuf- ficient yields of forage and grain crops

that are needed to support the local livestock industry and which necessitate the importation of feed from other areas.

The plan called for construction of an earth-fill dam 185 ft. high to impound 43,000 ac. ft. of water at the Bridger site on Willow Creek, together with a distribution system. Estimated cost is $9,235,000 and operation and maintenance costs would be $29,300 annually, an increase of $24,400 over present operation costs. It is estimated that water users could repay about $69,000 annually toward construction costs.

Calcium Chloride Returns to Market After War Shortages

AFTER A SHORTAGE of five years, calcium chloride is once more in adequate supply, the Calcium Chloride Association, spokesman for the industry, announced recently.

This means that industries using substantial quantities — highway construction and maintenance, highway ice control, coal treating, concrete construction, air drying, and so forth — can for the first time in years plan long-range projects with a reasonable assurance that calcium chloride will be available when needed.

The catching up with demand in certain locations during the past few months has permitted many dealers and distributors to ship on short notice. Much of the present tonnage is being used for highway ice control. Calcium chloride is one of the most effective methods found to date for protecting stockpiles against freezing, and providing fast imbedment of abrasives applied to icy highways.

The dustlaying and air drying season will start in April, but no tightening of supply is anticipated.

Seattle Apartment Will Accommodate 370 Units

ONE OF THE LARGEST apartment structures in the country will be constructed immediately in Seattle at a cost of $3,500,000. Earl W. Morrison of that city was the architect on the structure, and construction will be done by Walter W. Harfst Co., Inc., and William L. and Harry Henson.

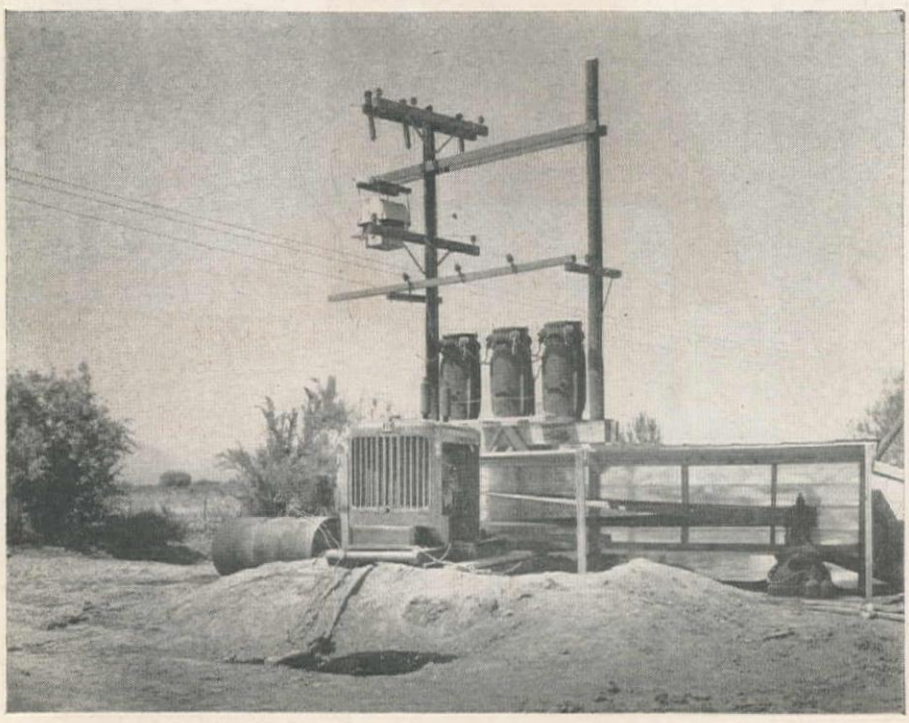
The building will be 18 stories high and contain 370 apartment units. Total ground area will be 55,000 sq. ft. In addition, a 2-story, 250-car garage will be built immediately adjoining. The building will be entirely of reinforced concrete, with an exterior finish in the same material. About 22,000 cu. yd. of concrete will be required.

On the ground floor, there will be a lobby, dining room, and accommodations for 15 stores. Laundry facilities and nursery rooms will be provided on the second floor. There will be four high-speed elevators. The roof of the two-story garage will be devoted to roof garden and play areas.

It is expected that construction will require from 12 to 14 months. When completed, the building will be known as Grosvenor House.

DIESEL POWER UNIT SPEEDS ARIZONA FARM PUMPING JOB

AN INTERNATIONAL UD-24 Diesel power unit was called into service at Casa Grande, Ariz., to pump irrigation water on the 960-ac. farm owned by Carl Lane. Rainfall is so short in Arizona that pumping is being increasingly called on to supply farmers. The Lane well is 600 ft. deep, and water is lifted 180 ft. by the 180-h.p. power unit connected by six V-belts to a turbine pump. The casing of the well is 20 in. in diameter, and the pump delivers water through an 18-in. outlet at a rate of 2,400 gpm.



REA Units Set Power Purchase Record in 1948

PURCHASES of wholesale electri power by REA-financed rural electri systems totaled 4,151,635,089 kwh. dur ing the last fiscal year, a third highe than they were the preceding year.

The over-all average price paid for th wholesale power purchases amounted t 8.9 mills per kwh. This was a slight in crease over the 1947 average of 8.7 mill paid for 3,082,267,051 kwh. The increase in wholesale rate schedules that many borrowers reported during the 1948 fiscal year were offset to a large degree in the national average by the improved position resulting from energy purchases in larger volume.

Privately-owned generation plants, principally power company plants, provided 62.4 per cent of the wholesale power purchased by the REA borrowers during the year. A total of $26,246,346, an average price of 10.1 mills, was paid for power to these suppliers.

Public power suppliers, including both federal and municipal plants, provided 37.6 per cent of the power purchased. They received $10,768,390 or an average of 6.9 mills per kwh.

Insofar as state averages are concerned, the lowest averages paid to public agencies were in Nevada, where the average rate was 3.1 mills per kilowatt hour, and in Oregon and Washington, 3.6 mills.

Expect Lake Mead to Almost Top Hoover Dam This Year

THE LEVEL of Lake Mead behind Hoover Dam is expected to rise approximately 48 ft. between now and the last of July as a result of a spring runoff calculated to be about 11,900,000 ac. ft., Reclamation Director E. A. Moritz has reported.

Latest forecast by the Bureau of Reclamation's Office of River Control indicates that melting snows in the Rockies will send the largest flow into the lake since 1941. The spring runoff for that year reached 12,038,000 ac. ft., or 138,000 ac. ft. more than is expected this year. This compares with a runoff of 9,491,000 ac. ft. for last year and a 36-year average of 9,600,000 ac. ft. If the runoff reaches the forecast of 11,900,000 ac. ft. anticipated, the lake will rise to within 7 ft. of the spillway crest at Hoover Dam.

"Power generation at the Hoover power plant has been stepped up during the past several months in order to lower the reservoir and make room for the above normal runoff and thus prevent wastage of water through non-power releases," Moritz explained.

$40-Million Cement Plant

CONSTRUCTION is beginning on a $40,000,000 Portland Cement plant near Lewiston in Idaho. The plant, financed by Eastern capital, will manufacture 3,000 bbl. of cement a day using resources of limestone, clay and iron ore found in the Lewiston area.

LICKING THE NORTHWEST'S TOUGHEST ROAD JOB

...with the World's Toughest Bucket

ESCO all-cast dipper bucket with box-type points and adapters working on North Santiam highway in Oregon. Contractor: Kuckenberg Construction Company, Portland, Oregon

In the Pacific Northwest, scene of the nation's most rugged road building jobs, the North Santiam highway is known as the toughest of them all. Roadway was carved out of the forest. Three million yards of muck and basalt rock had to be moved from 9.8 miles of road. Drilling and shooting averaged 60 cents a yard, and excavation sometimes ran as high as $2.50 a yard.

ESCO all-cast manganese dipper buckets are one of the tools that licked the job. For over a year four of these buckets stood up under this beating with only minor maintenance — and they are ready for still more tough going on the next job.

Contractors the world over specify *ESCO* all-cast dippers for their toughest jobs. Here is why —

Last Longer on the Job

Made of shock-resisting manganese steel that surface hardens and gets tougher with use.

Lighter Weight... Bigger Payloads

Hollow back beam reduces weight while actually increasing strength. Manganese steel eliminates necessity of casting wearing parts excessively heavy to allow for wear. Shovel power moves payload instead of dead weight.

Faster Digging

Clean cutting front with integrally cast tooth holders reduces digging resistance. Flaring position of teeth gives full bite. Tapered box prevents clogging, permits quick complete discharge.

Sizes from ⅜ to 6 yards... Ask for Detailed Data

Details of construction of *ESCO* manganese dipper buckets are contained in catalog number 114-C. Your nearest *ESCO* representative will gladly give you a copy; or fill in and mail the coupon. Electric Steel Foundry, 2163 N.W. 25th Avenue, Portland 10, Oregon; 722 Porter Street, Danville, Illinois. Offices in Eugene, Oregon; Chicago; Honolulu; Houston; Los Angeles; New York; San Francisco; Seattle and Spokane. In Canada, *ESCO* Limited, Vancouver, B.C.

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NEWS BRIEFS

CONTRACT LET BY COIN'S FLIP—J. F. Konen and F. H. Deatley, both contractors of Lewiston, Idaho, both bid exactly $31,620 for stockpiling crushed rock on a road job in Idaho, leaving the Idaho State Bureau of Highways in a quandary. The knotty problem of how to award the contract between the identical low bids was easily solved—by the flip of a coin. J. F. Konen was the winner. Representatives of the state contractor's licensing board condoned the method of decision and witnessed the procedure.

WAY CLEARED FOR DESCHUTES RIVER DAM—In a test of strength between Oregon power and fishery interests, power interests won handily when the Oregon legislature voted overwhelmingly to kill a bill which would have reserved waters of the Deschutes River for salmon fishing interests. Thus, the way was cleared for construction of a $12,000,000, 150-ft. high power dam on the river. The dam is being sponsored by the Portland General Electric Co., Pacific Power and Light Co., and Washington Water Power Co.

COMPREHENSIVE ALASKA SURVEY AUTHORIZED—A comprehensive survey of Alaska, designed to accomplish in the Territory what has been done by the Corps of Engineers in many major river basins throughout the United States, has been authorized by the Chief of Engineers. The survey will be carried out by the Alaska and Seattle Districts under supervision of the North Pacific Division, according to Col. Theron D. Weaver, Division Engineer. The survey will cover the entire Territory with respect to power, flood control, navigation and water uses, and will not duplicate work of the Bureau of Reclamation.

WASHINGTON UPS HIGHWAY EXPENDITURES—Washington will spend $107,466,633 on its highways during the next two years, 25 per cent more than it spent during the last similar period. This will include $69,516,633 for state roads, $28,650,000 for county roads and $9,300,000 for city streets. The increased expenditures are made possible by the additional 1½-cent-a-gallon state gasoline tax imposed by the present state legislature.

$1,600,000 PIPE LINE CONSTRUCTION BEGINS—Work has begun on the $1,600,000 feeder pipe line from the main aqueduct of the Metropolitan Water District of Southern California to seven communities, southwestern neighbors of Los Angeles. When the 45-in. reinforced concrete pipe line is completed late this year, Colorado River water will be available to the communities of Gardena, Hermosa Beach, Manhattan Beach, Lawndale, Lomita, Redondo Beach and Palos Verdes—all annexed within the Metropolitan organization last year.

PLASTIC CANAL LININGS PROPOSED—Ival Goslin, manager of the Aberdeen-Springfield Canal Co. of Blackfoot, Idaho, proposes plastic linings for irrigation canals, claiming it would save much of the water now lost through seepage.

UPPER COLORADO STATES MAY HAVE POWER POOL—R. J. Tipton, consulting engineer to the Colorado State Water Conservation Board, has told a United States House of Representatives subcommittee that a power pool may be created to help finance new projects throughout the Upper Colorado River Basin. He said it has been suggested that Congress might set up a "power account" into which revenues would be gathered from hydro-electric projects on the Colorado River. States affected would be Colorado, Wyoming, Utah, Arizona and New Mexico.

SIX-LANE TUNNEL PROPOSED AT LOS ANGELES—The California State Highway Commission has voted to ask the City of Los Angeles to construct a six-lane highway tunnel on Sepulveda Blvd. under the portion of the Los Angeles Municipal Airport now being extended over the thoroughfare. A four-lane tunnel was originally planned, but this is now considered inadequate to carry traffic to beach communities southwest of Los Angeles.

TECOLOTE TUNNEL BIDS OPENED—Wunderlich Construction Co., Omaha, Nebraska, were low bidders, at $5,482,865, for construction of the 6.4 mi. long Tecolote Tunnel and 1.7 mi. of access road on the Santa Barbara Project near Goleta, Calif. Second low was Peter Kiewit Sons' Co. at $5,947,776.

$15,217,975 BID FOR GARRISON DAM TUNNELS—S. A. Healy Co. of Chicago, Ill., was low before the Corps of Engineers, at $15,217,975, for construction of the main tunnel works at the huge Garrison Dam in North Dakota. Government estimate was $13,999,882, without profit. The job consists of eight tunnels about 1,200 ft. long each, and includes finishing structures at each end. The tunnels will vary in diameter from 28 to 35 ft. An article on construction of Garrison Dam appeared in the November issue of *Western Construction News*.

NEW MEXICO'S HIGHWAY LAB OPERATING AGAIN—The testing laboratories of the New Mexico State Highway Department at the University of New Mexico in Albuquerque, destroyed recently by a gas explosion, are in operation at temporary quarters in Albuquerque (208 South Yale St.) with remnants of equipment salvaged from the fire. Damage in the blast was estimated at $20,000.

BRITISH COLUMBIA BRIDGE PLANNED — Swan, Rhodes & Wooster, Vancouver, B. C., engineers, are engaged in field investigations in connection with the proposed $2,000,000 bridge between Agassiz and Rosedale, B. C. The survey is being carried out on instruction of the provincial government.

$3,245,275 BID FOR BREAKWATER WORK—Macco Corp., Los Angeles, and Morrison-Knudsen Co., Inc., Boise, Idaho, submitted the low joint bid of $3,245,275 for construction of a breakwater at Crescent City, Calif., for the Corps of Engineers. The breakwater will extend approx. 1,700 ft. and will consist mainly of rock rubble.

$5,644,874 LOW BID FOR SAN ANGELO DAM—Winston Bros. Co. of Azusa, Calif., along with Taylor-Wheless Co. of Minneapolis, at $5,644,874, were low bidders before the Corps of Engineers for construction of the spillway and service bridge and completion of the embankment of San Angelo Dam near Galveston, Texas.

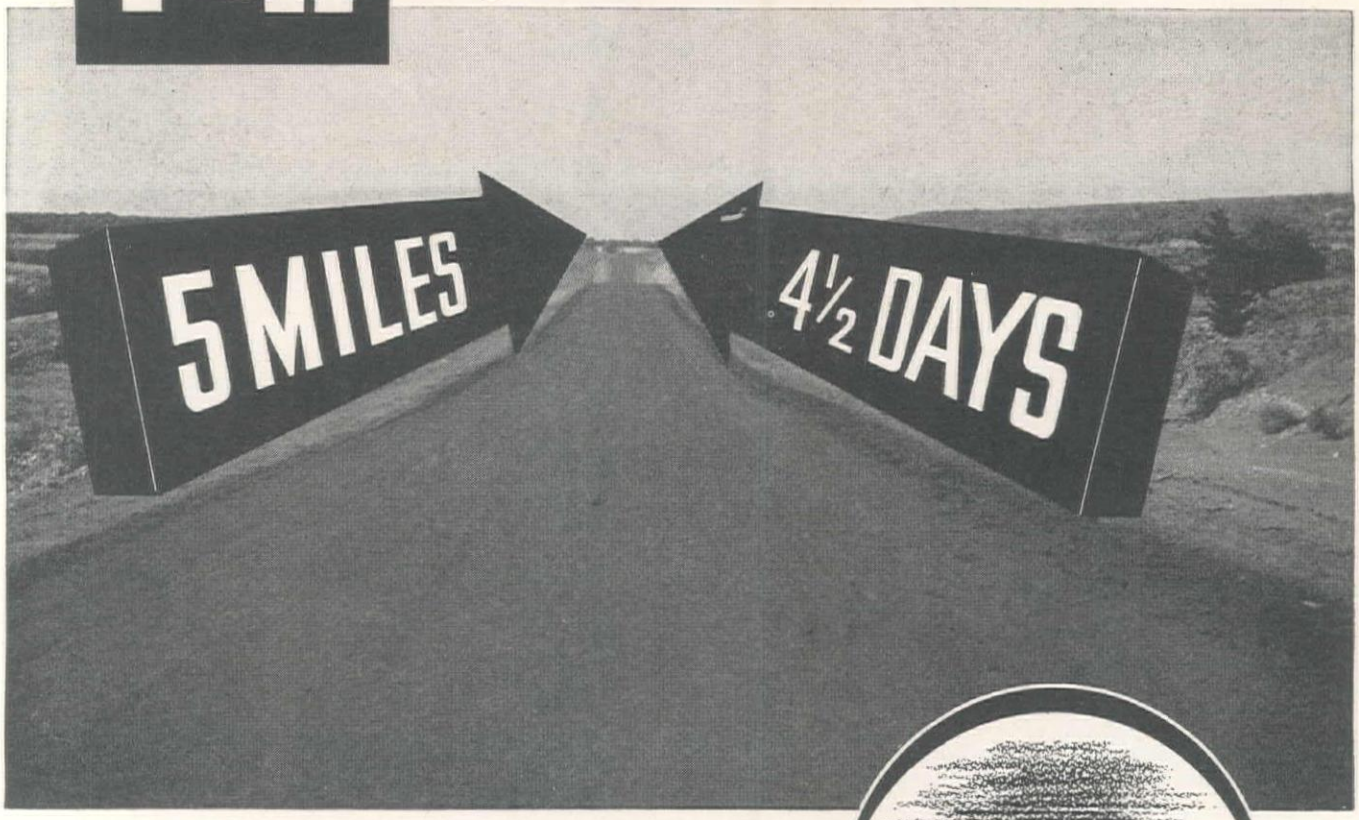
APPROVAL REQUIRED ON COLORADO HIGHWAY JOBS—Attorney General John Metzger has informed the Colorado State Highway Department and the Colorado State Highway Advisory Board that board authorization must be obtained specifically for each project calling for purchase of right-of-way. Previously, a blanket authorization had been considered sufficient authorization. Mark Watrous, Colorado Highway Engineer, claims the requirement will ruin the functions of his department, since it will require too much time.

STREET PAVING RECORD SET—Two crews of workmen, 30 in each unit, utilized 1,570 tons of asphaltic materials to pave an eight-block stretch of pavement in Los Angeles during a 10-hour period. This is believed to be a record for speed in paving operation. All traffic on this stretch, with the exception of passenger motor coaches, was diverted during the operation.

BOOKLET DESCRIBES ENGINEER ACTIVITY IN NORTHWEST—Initial development objectives of a 2½-billion dollar coordinated program of state and federal agencies in the Pacific Northwest are presented in a booklet prepared by the Columbia Basin Inter-Agency Committee. The booklet covers the first six years of the long-range objectives of the inter-agency group.

AGATE PASS BRIDGE BILL SIGNED—Gov. Langlie of Washington has signed a law providing for immediate construction of the $1,400,000 steel cantilever Agate Pass Bridge, to connect the north end of Bainbridge Island in Puget Sound with the Kitsap County mainland. Manson

P&H Single Pass Soil Stabilizers



Over a Mile of *Soil-Bituminous Road Per Day!*

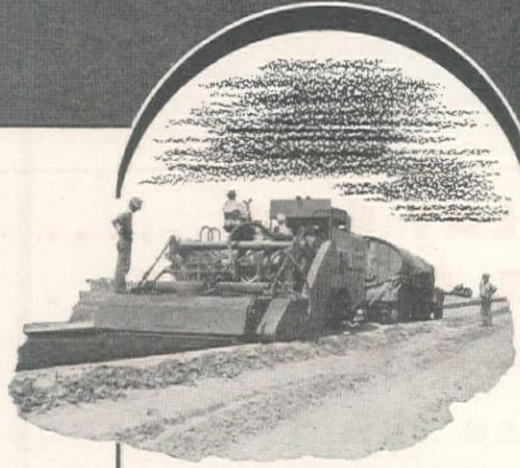
● A *new* speed has come to road building. This Oklahoma job — and others all over the country like it — shows how the P&H Single Pass Soil Stabilizer paves the way to faster, lower cost all-weather roads.

This 5-mile stretch of U. S. highway is 24 feet wide and was processed to a depth of 8 inches *in only 4-1/2 working days* by one P&H Stabilizer!

You can achieve performance like this on your own jobs with a P&H Stabilizer. For this one machine in one pass with one operator and with any type of admixture performs *all* stabilizing operations to meet specifications exactly for roads of pre-determined load carrying capacity.

Making maximum use of native materials, the P&H Stabilizer shaves and pulverizes, blends, maintains true subgrade, applies liquids, final mixes and spreads to a uniform depth — and does it rapidly.

If you build secondary highways, streets, base courses, airport runways, you should investigate the P&H Stabilizer. Ask for the facts.



OKLAHOMA JOB FACTS

LOCATION — U. S. Highway 281, Major County.

LENGTH OF PROJECT — 5 miles. Width of roadway — 24 feet. Depth of treatment — 8 inches, compacted.

TYPE OF SOIL — 85% sand, 9% silt, 6% clay.

STABILIZING AGENT — Asphalt, PI — 3% — 4% MC-3.

Sound Color Films showing P&H Stabilizer on soil-cement and soil-bituminous jobs are available. Write for information.

P&H SINGLE PASS STABILIZERS
4490 West National Avenue
Milwaukee 14, Wis.

HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

Construction and Engineering Co. of Seattle have already submitted the low bid for the bridge's construction.

B. C. POWER COMPANY IN $2,500,000 EXPANSION—An order has been placed by the B. C. Electric Co. for the third 47,000-h.p. generating unit to be installed at its Ruskin, B. C., power plant. Construction of the $2,500,000 unit will begin in April and the addition is scheduled to go into operation in October, 1950.

ROGUE RIVER DAM PLANNED—The Oregon State Senate has approved a permit that would allow the building of a dam on the Rogue River in southern Oregon at Lewis Creek. This is the key dam in a proposed $90,000,000 Bureau of Reclamation project for the Willamette River Basin.

COLORADO CITY WILL EXPAND WATER SYSTEM—Approval of a $250,000 improvement and expansion of the municipal water system of Canon City, Colo., has been reached by that city's Council. The program calls for a new pipe line, new sedimentation basin, new chemical treatment house and extension of the distribution system. The community obtains its water from the Arkansas River via a 7-mi. pipeline.

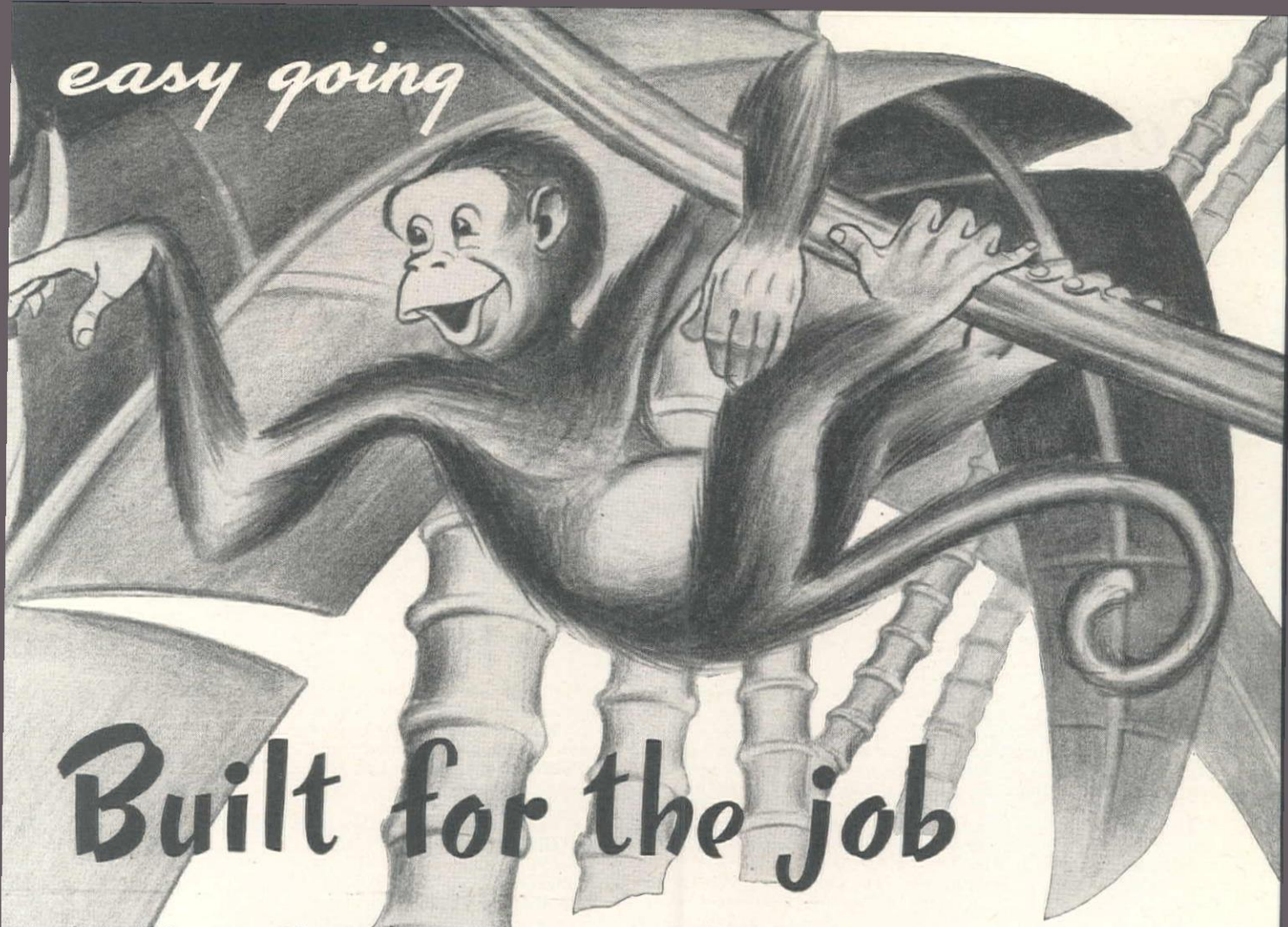
WAY CLEARED FOR PALISADES DAM ON SNAKE RIVER—A long-standing dispute over water rights along the Snake River in Idaho has removed the last barrier to the proposed construction of Palisades Dam on the Upper Snake River. The Bureau of Reclamation has agreed to sell 315,000 ac. ft. from the American Falls Reservoir to users along the Snake River, provide for a 47,000-ac. ft. storage reservoir in the American Falls Reservoir, and a 90,000-ac. ft. storage reservoir at Palisades when that project is completed.

APPROVAL OF COLORADO UPPER BASIN COMPACT NEAR—California's representatives among the experts representing California and Upper Colorado River Basin states agreed last month to abandon their demand that a Congressional resolution approving the Upper Basin Compact must carry a clause emphasizing that the compact in no way modify the over-all Colorado River Compact of 1922. After this hurdle was passed, there remained no other technical questions requiring resolution, and approval of the Upper Colorado River Basin Compact appeared a certainty, requiring only the time for the legislative mill to make the bill a law.

ATKINSON FIRM LOW BIDDER FOR GORGE POWERHOUSE—Low bidder for an addition to Seattle City Light's Gorge Powerhouse near Newhalem on the Skagit River northeast of Seattle, Wash., was Guy F. Atkinson Co. of San Francisco, at $3,188,268. The work includes enlarging of the present powerhouse to house a 92,500-hp. generator, grouting work in the power tunnel and installation of penstock liner. General-Shea-Morrison, builders of Seattle's Ross Dam, were the only other bidders, at $3,240,595.

MORRISON-KNUDSEN GETS RAILROAD RELOCATION JOB—Award of a $2,966,000 contract to Morrison-Knudsen Co., Inc., 610 Title Guarantee Bldg., Los Angeles, Calif., has been made by the Corps of Engineers for construction work involved in the relocation of the Oxford Branch of the C. B. & Q. Railroad in Franklin and Harlan Counties, Neb. The work includes construction of about 20 mi. of new track. Exactly one year is allowed for completion.

RENO SEWERAGE IMPROVEMENT DUE—Modernization of the municipal sewage disposal plant at Reno, Nevada, will go into its final phase next month. A total of $500,000 is available for completion of the City's $1,000,000 sewer improvement program. Plans and specifications for the disposal plant have been approved, call for bids will be made soon, and the bids will be opened May 9. Submission of alternate bids is planned, one set of plans calling for bids on the entire plant, and three others eliminating certain large pieces of equipment.



Built for the job

Monkeys shine at getting to the source of supply. Nature has engineered them for agility. Kenworth, too, has engineered for extra maneuverability and adaptability. Therefore, the shortest distance, economically, between any two points is by Kenworth. Balanced design fits each vehicle to its particular job. On the job performance is assured by the specialized consideration given engine horsepower and torque, steering characteristics, gear ratios, braking, and overall design. You name the job — Kenworth will build the trucks to do that job better, easier, more economically — to prove to you that . . . . *there's more* **WORTH** *in* **KENWORTH.**

The going gets rough on construction projects, but it smooths out when Kenworth trucks come on the job. This Kenworth Model 524, operated by Harry L. Young of Salt Lake City, and other Kenworth trucks engineered for the construction industry have the power, strength and maneuverability to handle big loads in tight spots.

KENWORTH

TRUCKS ★ BUSES

FACTORY AND HOME OFFICE: SEATTLE, U. S. A., DISTRIBUTORS IN THE UNITED STATES AND MOST FOREIGN COUNTRIES

Contracts . . .

Summary of Major Construction Contracts Awarded Last Month

Award of two contracts totaling $6,310,564 has been made for building canals and other structures in the Columbia Basin's irrigation system in Eastern Washington. **Morrison-Knudsen Co., Inc.,** Seattle, was awarded a $6,136,234 contract for building 17 mi. of the West Canal from the vicinity of Soap Lake southwesterly beyond Ephrata. **Mathews Brothers** of Idaho Falls, Idaho, was given a $174,330 job for constructing the lateral system to serve the 1,200-ac. Burbank Unit of the project in northwestern Walla Walla County. Award of these contracts brings to $16,621,234 the total of construction contracts in force on the project.

A $2,584,000 bid for construction of a new Federal Reserve bank building on Second Ave. in Seattle, Wash., made by the **Kuney Johnson Co.** of Seattle, has been accepted. The firm's original bid, lowest of eight, was $2,058,800, but alternate items approved by the board of governors brought the contract price to the award figure. Construction of the building will take 500 days.

Robert E. McKee, contractor of 4700 San Fernando Road, West, Los Angeles, Calif., has been awarded a $1,586,900 contract by the Officer in Charge of Construction, U. S. Naval Air Missile Test Center, Point Mugu, Calif., for construction of four 2-story barracks buildings, one airfield hangar containing 100,000 sq. ft., a central telephone exchange building, and two 8-family units for married officers at the Point Mugu Missile Test Center.

A $1,744,619 contract for relocation of the Shasta Dam Branch Line Railroad on the Central Valley Project in California has been awarded to **R. A. Heintz,** contractor of 8101 N.E. Union St., Portland, Ore. Including road relocation, the job extends from near the northwest boundary of Redding, Calif., to Coram, Calif., about 10 mi. northwest of Redding. The job includes construction of earthwork, structures, track and telephone line for the railroad relocation, and structures and surfacing for the road relocations. Time allowed for completion is 360 days.

An $11,350,735 contract for construction of Cedar Bluff Dam on the Missouri Basin Project in Kansas has been awarded to a combine consisting of **C. F. Lytle Co.,** Sioux City, Iowa; **Amis Construction Co.,** Oklahoma City, Okla., and **San Ore Construction Co.,** McPherson, Kansas. The work is situated on the Smoky Hill River about 18 mi. southeast of Elles in Trego County. The job includes some relocation of county roads.

The Bureau of Reclamation has awarded a $2,049,922 contract to **American Pipe & Construction Co.,** 4635 E. Firestone Blvd., South Gate, Calif., for construction of earthwork, pipeline and structures, laterals 119.64 to 123.4 and sublaterals, Unit 6, Coachella Valley Distribution System, on the Boulder Canyon Project in Arizona and California. The work will be in the vicinity of Thermal, Coachella and Indio in Riverside County, Calif. 450 days are allowed for completion.

Work on a housing project, estimated to cost $1,800,000, has been started near Whittier, Calif., by **William C. Warmington Construction Co.,** 8330 West Third St., Los Angeles. The construction will consist of 189 two- and three-bedroom frame and stucco dwellings.

Construction of a $700,000 reinforced concrete power plant for the Citizens Utilities Co. has begun at Nogales, Ariz. Contractor is **J. H. Welch & Sons,** 805 S. Central Ave., Phoenix. The work includes cooling towers, spur track and an oil storage tank.

Carrico & Gautier, 365 Ocean Ave., San Francisco, have been awarded a $566,087 contract by the National Advisory Committee for Aeronautics, Ames Aeronautical Laboratory, Moffett Field, for construction of a 2-story reinforced concrete laboratory building at Moffett Field in Santa Clara County, Calif.

The $1,239,409 contract for completion of Keswick Dam and Power Plant on the Central Valley Project near Redding, Calif., has been awarded to **C. M. Elliott** and **John C. Gist,** 1020 46th St., Sacramento, Calif. It is a Bureau of Reclamation project.

A $1,618,883 contract for construction of high school buildings for the Union High School District, Kern County, Calif., has been awarded to **Guy E. Hall,** 310 30th St., Bakersfield, Calif. The job includes construction of a bus garage, agricultural building, shop building, gymnasium and locker room building, cafeteria, domestic science building and various other facilities. Location of the construction is in Arvin, Calif.

An $866,263 contract has been awarded to **Knisely-Moore Co.** of Douglas, Wyo., for construction of the Superior-Courtland Diversion Dam (earthfill) and the Superior Canal on the Missouri Basin Project in Nebraska. The work includes construction of the dam and canal, station 1 plus 74 to station 10 plus 00, and is situated 2 mi. west of Guide Rock, Neb.

A $942,150 contract for construction of a two-story transit shed at Los Angeles Harbor has been awarded by the Harbor Commission to **Baruch Corp.,** 5655 Wilshire at Hauser, Los Angeles. The shed, to be used to handle general cargo, is part of a new passenger and freight terminal at Berths 153, 154 and 155. Contracts totaling $2,693,000 were previously awarded for the facilities.

Consolidated Builders, Inc., Portland, Ore., with a bid of $28,230,509, have been awarded the contract by the Corps of Engineers for construction of the main structure of Detroit Dam on the North Santiam River 13 mi. east of Mill City, Ore. Consolidated is a combine of General Construction Co., Seattle; J. F. Shea Co., Alhambra, Calif.; Kaiser Engineers, Inc., Oakland, Calif.; Walsh Construction Co., San Francisco, and Utah Construction Co., San Francisco. The contract calls for construction of the concrete gravity dam, complete with outlet gates and valves, penstocks, trashracks, stilling basin, control house and other appurtenant structures. Completion time is 1,550 days.

A $916,485 contract for construction of Section C of the Lake Merced Sewer for the City of San Francisco has been awarded to **M & K Corp.,** 405 Montgomery St., San Francisco; **Fredrickson & Watson Construction Co.,** 873 81st Ave., Oakland, and **Piombo Construction Co.,** 1571 Turk St., San Francisco, as joint venturers.

A contract valued at approximately $1,300,000 has been awarded to **Gilley Bros., Ltd.,** New Westminster, B. C., for building a 14,200-ft. extension to the south jetty of the Fraser River at Steveston, B. C. The jetty will be of rock construction, and will parallel the existing north jetty. Completion time will be two years.

Permanente Products Co. of Oakland, Calif., has been awarded a $1,460,855 contract by the Bonneville Power Administration for cable and accessories to be used in power line construction in Oregon and Washington during 1949.

A $1,151,672 contract for installation of a power and light distribution system at the Hyperion Sewage Treatment Plant at El Segundo, Calif., has been awarded to **Newbery Electric Corp.**

Awards of contracts totaling $8,949,470 have been made by the Bureau of Reclamation for generating equipment to be installed at Grand Coulee Dam in Washington. Contracts are as follows: Generators—$5,250,034, **Westinghouse Electric Co.**; Turbines—$2,497,950, **Newport News Shipbuilding & Drydock Co.**; and Transformers—$1,072,011, **General Electric Co.**

Northwestern Engineering Co., Rapid City, S. D., have been awarded a $448,748 contract by the North Dakota State Highway Department for construction of 19.9 mi. on State Highway 25 from Hannover to Stanton, N. D. The road will be of asphaltic concrete surfacing.

W. P. Roscoe Co. of Billings, Mont., has been awarded a $623,848 contract by the Montana State Highway Commission for construction of a 1,022-ft. steel and concrete bridge over Yellowstone River on the Billings-Pompey's Pillar road near Huntley, Yellowstone County.

Five permanent buildings will be constructed for the U. S. Atomic Energy Commission at Los Alamos, N. Mex., at a cost of $1,082,749. Contractors for the main portion of the work are **Robert E. McKee,** 60 Lincoln Ave., Santa Fe, N. Mex., and **Lowdermilk Brothers,** 140 S. Elati St., Denver, Colo. The job includes water, sewer and electric facilities, etc.

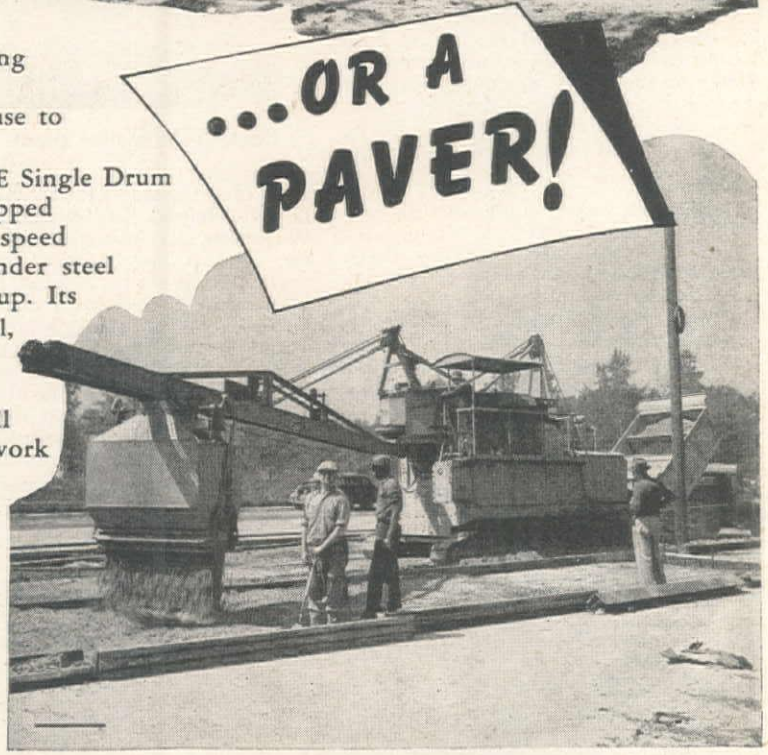
A $757,000 contract has been awarded to **Carl N. Swenson Co.,** 1095 Stockton Ave., San Jose, Calif., for construction of a 4-story steel frame and reinforced concrete court house and jail building at Ukiah, Calif.

Lembke Construction Co., Las Vegas, Nevada, have been awarded a $635,324 contract by the Bureau of Reclamation for construction of a Junior-Senior High School at Boulder City, Nevada.

TAKE this MultiFoote Paver with its Elevating Boom out of this picture and run over the methods and equipment you would have to use to accomplish the same thing.

Your MultiFoote, either the Singlemix 34-E Single Drum or the Duomix 34-E Double Drum Paver equipped with the MultiFoote Elevating Boom is a high-speed mobile construction tool. It will travel in under steel or false work. It will place concrete 23 feet up. Its MultiFeed Bucket will deliver either a shovelful, a wheelbarrowful or the whole load and is controlled from the operator's platform.

With the MultiFoote you are equally well equipped to bid on general contracts or road work profitably. Contractors will find that they can, in many cases, eliminate trucks, shooting towers, cranes and other expensive equipment and should give consideration to the MultiFoote and the Elevating Boom on their future jobs. We will be glad to give you details.



THE FOOTE COMPANY, INC.
Subsidiary of Blaw-Knox Co.
1940 State Street, Nunda, New York

MULTIFOOTE

Duomix 34-E Double Drum • Singlemix 34-E Single Drum

A BLAW-KNOX PRODUCT
FROM FORMS TO PAVER TO FINISHER - ALL YOUR PAVING EQUIPMENT
IN ONE PACKAGE from BLAW-KNOX

TRADE WINDS

News of Men Who Sell to the Construction West

Western Distribuor News Round-up

FOULGER EQUIPMENT CO., Salt Lake City, Utah, have been appointed exclusive distributor for the concrete machinery of Blaw-Knox Co. Wooldridge, Lima, Huber, Joy-Sullivan, Esco and Pacific Wire Rope are other nationally popular lines now being distributed by this progressive organization, in operation now for three years. **Bert L. Foulger** is president and manager of the firm, **O. M. Foulger** is treasurer and office manager, and **Jack T. Holland** is sales manager.

☆ ☆ ☆

Homer F. Knox, general manager and owner of WESTERN TRACTION CO., San Francisco, announces appointment of his firm as Northern California distributors for Wayne Motor Sweeper (Division of Brown-Bevis Co., Los Angeles), manufacturers of the Wayne Motor Pickup Street Sweeper. Western Traction Co. are already distributors for Unit Crane & Shovel Corp., Galion Iron Works and Marmon-Herrington Co.

☆ ☆ ☆

E. E. RICHTER & SON, Oakland, Calif., distributors for Wisconsin Motors and Lipe-Rollway clutches, have added **E. S. Jones** to their staff to cover Northern California calls. He was formerly with Willys Overland, Hudson Motor Corp., and Continental Motors Corp.

☆ ☆ ☆

Ten Western heavy equipment distributors took part in a 10,000-mi. "flying sales trip" that four sales executives from R. G. LeTOURNEAU, INC., heavy earthmoving equipment manufacturer, made between Feb. 28 and March 31. The group from LeTourneau headquarters at Peoria, Ill., were in Portland, Ore. on March 18; Oakland, Calif., on March 21; Salt Lake City, Utah, on March 23, and El Paso, Texas, on March 25. LeTourneau distributors attending the one-day streamlined conference in Portland were PACIFIC HOIST & DERRICK CO., Seattle; MONTANA POWDER & EQUIPMENT CO., Helena, Mont.; MODERN MACHINERY CO., Spokane; and LOGGERS & CONTRACTORS MACHINERY CO., Portland. THE CROOK CO., Los Angeles, and SIERRA MACHINERY CO., Reno, Nev., attended the Oakland meeting. The Salt Lake City conference was attended by IDAHO MACHINERY CO., Boise, and J. K. WHEELER MACHINERY CO., Salt Lake City. Attending the El Paso meeting were CONTRACTORS EQUIPMENT & SUPPLY CO., Albuquerque, N. M., and ARIZONA EQUIPMENT SALES, INC., Phoenix, Ariz. The four LeTourneau department heads—**R. P. Nichols,** sales; **D. K. Heiple,** field engineering; **E. E. Weyeneth,** advertising, and **H. R. McQuarrie,** product development—made the extensive air jaunt to 18 cities in the United States and Canada in a company-owned, 14-passenger Lockheed Lodestar. Purpose of the meetings was to bring to the distributors the latest information on high-speed, LeTourneau electric control construction tools. These include two new models of Tournapulls and newly-introduced models of Tournarockers and Tournahoppers.

☆ ☆ ☆

BROWN-BEVIS EQUIPMENT CO., Los Angeles, Calif., have been named distributors in Southern California for Marion Power Shovel Co., according to **William H. Schutte,** vice-president and sales manager for Brown-Bevis. At a recent meeting of the board of directors of Brown-Bevis Co., **Charles M. Weinberg** was elected chairman of the board and **John A. Beynon** was named president.

☆ ☆ ☆

PETERSON TRACTOR & EQUIPMENT CO., dealers for Caterpillar Tractor Co. and John Deere, formally opened their sizable new plant in San Leandro, Calif., Feb. 15 with an all-day open house. The new plant is built on a 20-acre tract and over 3 acres (132,000 sq. ft.) are under roof. The bulk of this area (80,000 sq. ft.) is devoted to parts-storage and service shops. The service shop (40,000 sq. ft.) is of steel construction and equipped with four 3-ton electric overhead cranes for handling subassemblies. The building consists of two bays, each 100 ft. clear span by 180 ft. in length. The parts building, (40,000 sq. ft.) also of steel construction, houses the parts-storage area, the parts office, display room, tool room, shop offices and the engineering department. The three other buildings are the main show room, general office building and a washing, painting and sandblasting building. Some important new features have been incorporated into the plant. One is the "To-your-truck" parts service. Parts ordered at the counter are placed directly on the truck of the person making the order at one of fourteen loading bays. Other features are: Under-roof parking for parts customers; depressed loading ramps to accommodate either high-bed or low-bed trucks or trailers, and a five-car railroad spur track with elevated loading platform. Heading the Peterson company are **Howard Peterson,** president; **R. A. "Buster" Peterson,** vice-president; **Clinton D. Price,** vice-president and secretary; **Frank Castellucci,** sales manager; **Crocker J. "Crock" Hunter,** general parts manager, and **Jack Salvador,** service manager.

PETERSON'S new plant at San Leandro features "To-your-truck" parts service.

Left to right, "Flying salesmen" NICHOLS, McQUARRIE, WEYENETH, HEIPLE.

☆ ☆ ☆

WECO EQUIPMENT CO., North Hollywood, Calif., have been appointed exclusive California distributors for the motor graders manufactured by American Road Equipment Co., Omaha, Neb.

☆ ☆ ☆

Edward Gordon has left McCulloch Motors of Los Angeles to take over active management of the McCULLOCH-SACRAMENTO CHAIN SAW SERVICE, exclusive dealer in McCulloch saws located at 2111 16th St., Sacramento, Calif.

☆ ☆ ☆

STANDARD MACHINERY CO., San Francisco, have been appointed Northern California distributors for Allied Steel Products, Inc., Cleveland, Ohio. Among

Allied products to be distributed are the new Bulldog Grip-Lugs, which are easily applied by welding to any shape or size grouser shoe. Three special sizes of the lugs provide a re-tread for any steel wheel, track-laying or crawler type of equipment.

☆ ☆ ☆

MOORE EQUIPMENT CO., of Stockton, Calif., have opened a new branch store at Fresno, Calif. It will be operated under the name of Moore Equipment Co., Fresno Branch. **T. E. Mackrell** of the company states that the branch will distribute the following lines: Koehring, Parsons, Kwik-Mix, Gorman-Rupp, Hendrix, Page, Johnson, Pacific Wire Rope, Scoop-Mobile, West Coast Machinery, Ingersoll-Rand, Universal Engineering, Wisconsin Motors and Wheeler Rollers. The branch will also specialize in the rental business. Tractors, graders, dozers, etc., will be available for rental.

☆ ☆ ☆

W. F. Carey, manager of the Oakland, Calif., branch of J. I. CASE CO., has announced the appointment of several new distributors in California for the firm's line of industrial tractors. Among the appointments are: GROWERS SUPPLY & EQUIPMENT CO., Fresno; GROWERS TRACTOR & IMPLEMENTS CO., Inc., Sacramento; HIWAY FARM EQUIPMENT CO., Modesto; MITCHELLS, Bakersfield, and ELECTRIC TOOL & SUPPLY CO., San Bernardino. These are combination dealers since they handle both the agricultural and industrial lines of the Case company.

☆ ☆ ☆

WESTERN MACHINERY CO. has been named Northern California distributors for the H & L Co., of Montebello, Calif., manufacturers of replaceable teeth for shovels, draglines, trenchers, etc. **G. G. Curto,** branch manager for Western, states that stock will be carried at the company's San Francisco and Sacramento branch plants.

☆ ☆ ☆

J. E. Huber, Western district manager for Austin-Western Co., Aurora, Ill., announces the appointment of W. R. SHRIVER MACHINERY CO., Phoenix, Ariz., as distributors for A-W equipment in the state of Arizona. A series of sales meetings were conducted recently in the West by **J. E. Fitzenz,** Aurora district manager for Austin-Western. Meetings were held in San Francisco, Los Angeles and Salt Lake City for all A-W distributors. The meetings were attended by both management and personnel.

☆ ☆ ☆

Ray S. Whitmore has joined the CAPITOL TRACTOR & EQUIPMENT CO., Allis-Chalmers dealers of Sacramento, Calif., as vice-president and general manager, according to **Carl E. Danielson,** president of the company. For the past 2½ years, Whitmore was with the Cornell Tractor Co. of Salinas, Calif., as general sales manager, and was for 17 years with Budd and Quinn, Caterpillar Tractor Co. dealers at Sacramento. **Charles W. Cox,** formerly with the Weaver Tractor Co., has joined Capitol as industrial field engineer. He will cover the construction trade in the fourteen California counties represented by Capitol.

☆ ☆ ☆

A. B. JUDD SUPPLY CO., of Houston, Texas, has been appointed distributor of Tube-Turn welding fittings and flanges, according to **John G. Seiler,** executive vice-president of Tube-Turns, Inc., Louisville, Kentucky. **A. B. Judd,** president of the recently-established supply company, was president of the Republic Supply Co. of Houston until he resigned in 1948 to set up his own organization.

☆ ☆ ☆

WESTERN MACHINERY CO., San Francisco, have been appointed Northern California distributors for Link-Belt Speeder Corp., according to **G. G. Curto,** branch manager.

☆ ☆ ☆

C. H. GRANT CO., San Francisco distributors of the portable crushing plants, crushers, screens, etc., manufactured by Diamond Iron Works, have appointed **A. F. "Bill" Dredge** as their representative in California's San Joaquin Valley area. Dredge will be available for consultation on rock plant equipment and all types of concrete and asphalt paving equipment. Diamond Iron Works has appointed **A. C. Quinn** as Western District Manager. Quinn has wide experience in crushing and screening problems.

☆ ☆ ☆

WESTERN CONSTRUCTION EQUIPMENT CO. has been named distributor for Parsons Trenchliners in the Montana and Northern Wyoming area, according to **H. J. Holdsworth,** general manager of the Parsons company. The company maintains offices in Billings and Missoula, Mont. The firm also handles Kwik-Mix and Koehring heavy-duty construction equipment. **Harold M. Doolen** is president and **Jack L. Patterson** is sales manager.

☆ ☆ ☆

E. A. Kirk, for many years in the construction equipment rental business in Los Angeles, Calif., has opened a new branch

at 2121 East Firestone in Los Angeles. Manager at the new location is **Dave E. Ryan,** formerly with the Los Angeles Tractor & Equipment Co.

☆ ☆ ☆

F. F. Schaffer, president of the GARDNER-DENVER CO., was a recent visitor at Los Angeles, Calif., where he attended dedication ceremonies for the new building to be occupied by REPUBLIC SUPPLY CO., distributors of Gardner-Denver products in the Southern California territory.

☆ ☆ ☆

L. B. Miller, secretary and sales manager of LEE & THATRO EQUIPMENT CO., Los Angeles, announces their appointment as Southern California distributors for Harnischfeger Corp. They will handle cranes and shovels of up to 2-cu. yd. capacity. They will also handle a complete line of parts and will service all equipment.

TRADE WINDS

Frederick Forbes was recently elected president of Lee & Thatro.

☆ ☆ ☆

SHAW SALES & SERVICE CO., Los Angeles, have been appointed Southern California distributors for Link-Belt Speeder Co. The Shaw company recently took over the distribution in Southern California of the Cedarapids equipment manufactured by Iowa Manufacturing Co.

☆ ☆ ☆

William S. Beal, formerly a paving contractor at Sanford, Maine, has been appointed sales engineer for the FORNACIARI CO. of Los Angeles, Calif. He is a graduate engineer of Williams College.

Manufacturer Activity in California

Another major step was taken recently in the Western expansion program of the WESTINGHOUSE ELECTRIC CORP. with the opening of the new Vernon Branch of the Westinghouse Electric Supply Co. at 4601 South Boyle St., Los Angeles. The new quarters comprise an area of 65,200 sq. ft., in which are located the electrical appliance, radio and television offices, complete sales, service and warehouse facilities. **L. G. Berger** is Southern California District Manager for the Supply Co., and **M. B. Sauer** is manager of the Vernon Branch.

☆ ☆ ☆

Two men have been assigned to sales positions in California for R. G. LeTOURNEAU, manufacturer of heavy construction equipment. **George Wacker,** District Sales Representative for LeTourneau since 1947, has been assigned to the Oakland,

WACKER

GOETTSCHE

Calif., office as assistant to the Western sales manager. In his new assignment, he is managing the firm's sales activities in Northern California until such time as distributor appointments are made. **George Goettsche** has been named sales representative for a new branch factory LeTourneau has established in Oakland to handle direct sales in the Northern California area. He joined LeTourneau in 1948.

☆ ☆ ☆

Walter C. Burns has been named San Francisco District Sales Manager for PIONEER RUBBER MILLS, according to **S. M. "Joe" Suhr,** Pioneer's vice-president in charge of sales. Experiences in the proper selection and use of mechanical rubber goods in industry were interchanged by Pioneer district sales managers in a sales and service conference held recently in San Francisco. Executives of Pioneer's San Francisco headquarters and Pittsburg, Calif., plant attending included: **H. R. Mansfield,** president; **W. S. Towne,** director; **R. F. Motle,** secretary-treasurer, and **F. W. Swain,** vice-president in charge of production.

☆ ☆ ☆

Bob Hughes of STANDARD MACHINERY CO., Northern California distributors for Jiffy Excavator Tool Co., of Los Angeles, Calif., reports that the EXCAVATOR POINT & MANUFACTURING CO. of Los Angeles have been appointed manufacturers for part of the Jiffy line, including adapters for shovel, dragline clamshell, trencher and scarifier equipment and also the Jiffy Quick-Change Self-Sharpening Reversible Points. Manufacturing of buckets and other parts will be continued by the Jiffy Excavator Tool Co.

☆ ☆ ☆

The sales office maintained by CHICAGO BRIDGE & IRON CO. at the William Fox Building in Los Angeles, Calif., has been moved to Suite 457-8 in the General Petroleum Building, 612 South Flower St., Los Angeles. **Dean E. Stephan** has been manager of the company's Los Angeles office since 1945. He is assisted by **Lucian J. Harris,** who was transferred from the firm's Chicago sales office. Harris has been with the organization since 1939.

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Nick W. Porozoff has been named Western representative for the News Service of CATERPILLAR TRACTOR CO., Peoria, Ill. He will be headquartered at the offices of the company at their San Leandro, Calif., plant.

☆ ☆ ☆

A new 75-ton electric furnace will be added to the steel-making facilities of BETHLEHEM PACIFIC COAST STEEL CORPORATION'S Los Angeles plant. Its purpose will be to provide more steel for increased rolling mill operations at the plant.

☆ ☆ ☆

Don E. Hoffman, Assistant Division Manager of J. D. ADAMS MANUFACTURING CO. at San Francisco, is back in California after spending most of his time since the beginning of this year in the snow belt. The unprecedented snows in Wyoming, Colorado, Montana and other Western states gave the Adams company an opportunity to introduce the Adams Rotary Snow Plow as used with the firm's Heavy Duty Motor Grader. Application of the plow-grader combination in Colorado was described on page 82 of the March 15 *Western Construction News.* **B. W. Brereton,** District Manager for Adams at Spokane, has also been busy demonstrating and otherwise introducing the Adams Rotary to officials in Washington, Idaho and Utah, working with the Adams distributors — Intermountain Equipment Co. and the Lang Co.

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John Gussin has been appointed assistant district manager of the San Francisco office of the MACK INTERNATIONAL TRUCK CO.

☆ ☆ ☆

Sales expansion throughout all major population centers in California was completed recently by STANDARD GYPSUM COMPANY OF CALIFORNIA when Sales Manager **G. F. Richards** announced the transfer of **Dick Crowle** to Sacramento and the appointment of **Jack Feeley** to cover San Francisco City and Peninsula sales.

☆ ☆ ☆

PEGRAM

McCULLOCH MOTORS CORP., Los Angeles manufacturer of power chain saws, has announced the appointment of **John B. Pegram** as assistant sales manager. Pegram comes from Cleveland, where he has been sales engineer for the Thompson Products Co. He is an engineering graduate of Columbia University.

☆ ☆ ☆

Organization of the RAPIDS-STANDARD CO., INC., OF CALIFORNIA is announced by **C. Plin Mears,** general manager. The new firm is located at 444 Brannan St., San Francisco. The complete line of Rapids-Standard "Rapistan" material flow equipment will be warehoused by the new organization.

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Newman L. Smith is the elected president of the AIRQUIPMENT CO. of Burbank, Calif., and of its wholly-owned subsidiary, AEROL CO., INC., manufacturers of the new Aerol-Seal watertight wheel.

☆ ☆ ☆

STRAUB MANUFACTURING CO., Oakland, Calif., have granted exclusive licenses to manufacture and distribute Kue-Ken Jaw and Gyratory crushers to Pennsylvania Crusher Co., Philadelphia, and Tutt Bryant, Ltd., Australia. To take care of increasing demands for Kue-Ken crushers from other territories, the company is also increasing its own manufacturing and distribution facilities.

☆ ☆ ☆

Edward S. Hudson is joining the E. F. HOUGHTON CO., tool and machinery dealers in San Francisco. He was formerly with Western Forge & Tool Co. of Oakland and Chief Metallurgist at the Alameda Naval Air Station.

☆ ☆ ☆

R. B. Putnam has been named to the newly-created position of general sales manager of AMERICAN LUMBER & TREATING CO., Chicago, Ill. From the

Announcing the NEW LIMA TYPE 1002

Convertible SHOVEL, CRANE and DRAGLINE

Features

- Precision Air Control
- Anti-Friction Bearings
- Independent Chain Crowd on Shovel Boom
- Truck base—one-piece double annealed steel casting
- Rotating base—one-piece reinforced annealed steel casting
- Dependable Diesel power unit
- Tubular Dipper Handle
- Extra long, wide crawlers
- Large diameter cable drums
- Extra large, point sheaves
- Modern full vision streamlined cab
- Independent Propel (Optional)

—and many others.

This new addition to the LIMA line now makes available a convertible unit with 2½-yard shovel and 61-ton* crane capacity. Like all LIMA machines, the 1002 is engineered and built for maximum output at low operating costs and with minimum maintenance. It is equally effective as a shovel, crane or dragline, and readily converted from one to the other. Tested "on-the-job" for many months under the most gruelling conditions, it has established new records for speed and stamina. We proudly present it as the outstanding machine in its field.

Other LIMA excavators include Shovels—¾ to 6 yards, Cranes 13 to 110 tons and Draglines variable. Write for descriptive bulletins.

*With 60-foot boom at 12 foot radius.

Our Seattle Office: 1932 First Avenue So., Seattle 4, Washington

LIMA EQUIPMENT SOLD AND SERVICED BY:

Our San Francisco Office: 1315 Howard Street, San Francisco 3, California

Feenaughty Machinery Co., 112 S. E. Belmont St., Portland 14, Ore.
Feenaughty Machinery Co., 600 Front St., Boise, Idaho
Smith Booth Usher Co., 2001 Santa Fe Ave., Los Angeles 54, Calif.
McCoy Co., 3201 Brighton Blvd., Denver 5, Colo.
Contractors' Equipment & Supply Co., Springer Bldg., Albuquerque, N. M.

Sales Agents:

Modern Machinery Co., Inc., 4412 Trent Ave., Spokane 2, Wash.
Fouiger Equipment Co., Inc., 1361 South Second Street West, Salt Lake City 8, Utah
Acme Iron Works, Culebra Ave. at Expressway, N.W., San Antonio, Texas
Thompson-Sage, Inc., 400 South Wilson Way, Stockton, Calif.
Jameson Engineering Sales, Fairbanks, Alaska

Lima Shovel and Crane Division

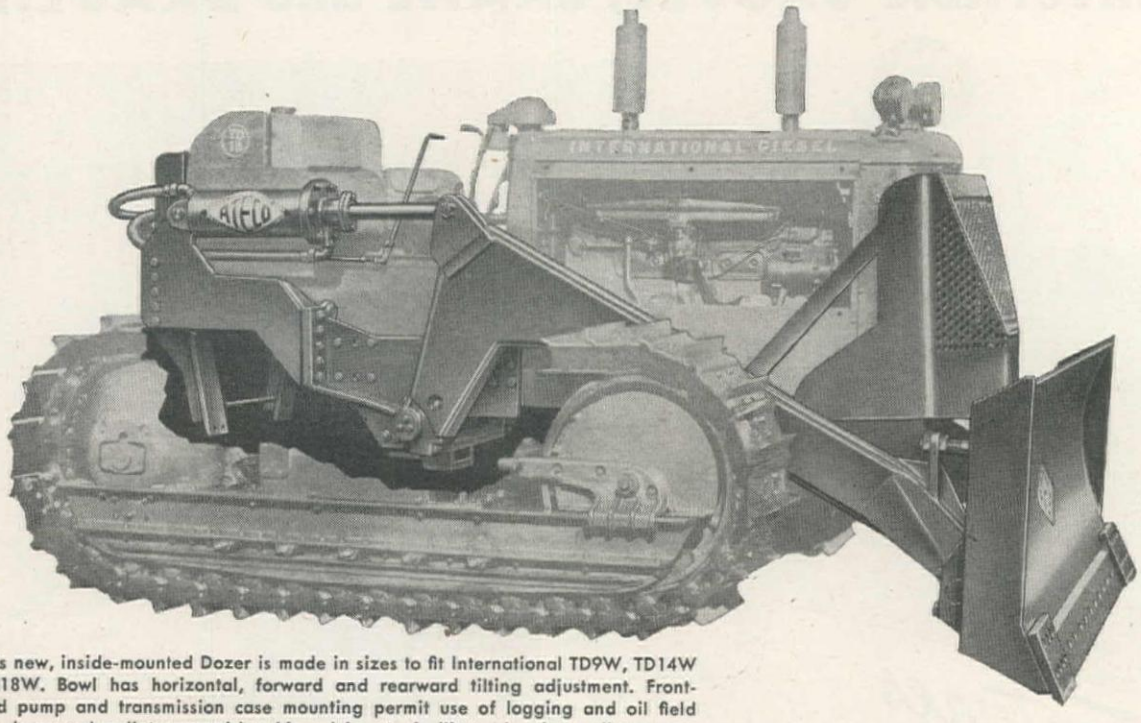
LIMA, OHIO

OTHER DIVISIONS: *Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.*

LIMA HAMILTON CORPORATION

We'll bet you a new hat...

ATECO's Inside-Mounted Dozer will outwork any Dozer you've seen



ATECO's new, inside-mounted Dozer is made in sizes to fit International TD9W, TD14W and TD18W. Bowl has horizontal, forward and rearward tilting adjustment. Front-mounted pump and transmission case mounting permit use of logging and oil field winches. Improved radiator guard has hinged face to facilitate cleaning radiator core.

Mounts free of tracks . . . extra fast bowl action . . . no permit required for highway transport . . . built to stay out of repair shops and lengthen tractor life.

Take a look at the compact, snug fit of this ATECO heavy-duty Dozer. It mounts rigidly to the transmission case on both sides, also at rear, and is tied together underneath the tractor. This unique inside mounting does away with belcranks and sloppy linkage; the hydraulic jacks act directly on the Dozer pusharms to give you a fast bowl raise of one foot per second. You get more H.P. at the bowl, too, because bowl is only 7′ 11 ¾″ long. This bowl speed and horsepower, plus a high lift of 48″ and low drop of 12″ (for TD9W and TD14W) to 18″ (for TD18W) makes the ATECO a performing fool on tough stumping, bank sloping, trench and slush pit building, hillside and close excavating jobs.

OPERATORS AND SERVICEMEN LIKE THESE FEATURES

Right distribution of weight eliminates nose diving, reduces wear on front idlers and lower track wheels.

Mounted on sprung part of tractor: shock loads, vibration practically eliminated, less operator fatigue.

7′ 11 ¾″ bowl eliminates side draft and fighting clutches.

Dozer does not interfere in any way with servicing of any part of tractor.

SEE FOR YOURSELF

Ask your International distributor to let you try this ATECO inside-mounted Dozer on your toughest Dozer job. If it doesn't outwork any Dozer you've got or seen, we'll buy you a new hat. Call your International distributor or phone us direct . . . NOW.

AMERICAN TRACTOR EQUIPMENT CORPORATION

9131 SAN LEANDRO BLVD.
OAKLAND 3, CALIFORNIA

Mack Wooldridge
PRESIDENT

DARREL WOOLDRIDGE
Vice President

CABLE ADDRESS: ATECO, OAKLAND
TELEPHONE SWeetwood 8-2466

BULLDOZERS • ROADBUILDERS • SCRAPERS
TAMPERS • RIPPERS • FARM IMPLEMENTS
FRONT LOADERS

SUBSOILERS • VALVES • HYDRAULIC MOTORS
CYLINDERS • OIL HOSE AND FITTINGS
TRACTOR CRANES • PUMPS

company's general offices in Chicago, he will manage sales activities through ten of the firm's regional offices, including those at Los Angeles, San Francisco and Portland.

☆ ☆ ☆

UNITED STATES PLYWOOD CORP., New York City, has opened a new warehouse at Glendale, Calif., to serve the Pasadena-Glendale-Burbank-San Fernando area. The warehouse will be managed by **Fred B. Smales** and will carry a complete line of Weldwood plywood and affiliated products.

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George O. Abell, district manager for the S. K. WELLMAN CO., with offices in Los Angeles, recently made a trip to Mexico City for the purpose of appointing new distributors for that territory.

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L. M. Guibara has been appointed district sales manager for the electrical wire and cable department of UNITED STATES RUBBER CO. in Los Angeles, San Francisco, Seattle and Salt Lake City.

☆ ☆ ☆

Manufacturer Activity in The Pacific Northwest

Alfred I. Stuart has been appointed head of the Methods Engineering Department of the HYSTER CO., manufacturers of industrial trucks and tractor equipment. He will be in full charge of methods engineering at Hyster's Portland, Ore., plant as well as the firm's two eastern plants.

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CONSOLIDATED WESTERN STEEL CORP., United States Steel subsidiary, has opened a sales office at Seattle, Wash. **Hanford Haynes,** active for many years in the field of steel fabrication, is in charge.

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G. L. Hansen has been named field representative for SKF INDUSTRIES, INC., ball and roller bearing firm, in the Pacific Northwest. His headquarters will be at Portland, Ore.

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James T. Gow, with an impressive record of achievement in metallography and metallurgical science and practice, has been named chief metallurgist for the ELECTRIC STEEL FOUNDRY CO., Portland, Ore., producers of steel castings and specialty equipment in stainless, manganese and high alloy analyses for heat, corrosion and abrasion applications.

TRADE WINDS

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Two men have been assigned to sales positions in the Pacific Northwest by R. G. LeTOURNEAU, INC., manufacturers of heavy construction equipment. **A. W. "Buzz" Travis** has been named district sales representative for Oregon, Washington, British Columbia, Canada and the

TRAVIS LeTOURNEAU

Territory of Alaska. He is giving sales assistance to LeTourneau distributors in those areas. His headquarters are in Portland. **L. D. "Louie" LeTourneau** (brother of R. G.) has been named logging specialist in the Northwest. He will introduce and promote the many varieties of logging tools which are being developed by the company.

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John A. Salzmann, formerly field engineer for Chicago Pneumatic Tool Co. in the Salt Lake City area, has been named to represent E. F. HOUGHTON & CO. of San Francisco in Portland, Ore. His headquarters will be at 203 S.W. Stark St. in that city. Offices of the Houghton company in Seattle have been moved to the White Henry Stuart Bldg. **D. W. Deniston** has been transferred from the Seattle office to divisional headquarters in San Francisco.

☆ ☆ ☆

E. A. May has been appointed assistant district manager of the Portland, Ore., office of the MACK INTERNATIONAL TRUCK CO.

Firms Expanding in the Intermountain Region

A new plant, producing Prest-O-Lite acetylene at Albuquerque, N. M., began operation recently, according to an announcement made by the LINDE AIR PRODUCTS CO., a unit of Union Carbide and Carbon Corp. The new plant will supplement the facilities of an oxygen filling station which, for about 7 yr., has provided industries in this area with a convenient source of Linde oxygen.

☆ ☆ ☆

William A. Schaub has been named manager of the Denver, Colo., district of the Industrial Products Sales department of the B. F. GOODRICH CO.

☆ ☆ ☆

C. A. Franklin, Jr., has been appointed district manager for the NEW YORK BELTING AND PACKING CO. in the Rocky Mountain area. He will have in his jurisdiction all of Montana, Nevada, eastern Idaho, Wyoming, Colorado, New Mexico and Arizona.

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District sales managers have been appointed by the electric wire and cable department of UNITED STATES RUBBER CO. to supervise sales in electrical wire and cable in major cities of the Intermountain Region. **A. B. Gangwer** will be the manager in Kansas City, Tulsa, Omaha and Denver, and **R. S. Keith** will be manager in Dallas and Houston, Tex.

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SLAYBAUGH - THOMPSON CO., Denver, Colo., has been appointed to represent General Switch Corp. of Brooklyn, N. Y. in Colorado, Utah and Wyoming, according to **Morton S. Muller,** president of General. Products handled will be enclosed safety switches, service entrance equipment, panelboards for light and power distribution and wireways and fittings for residential and industrial installation.

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J. R. Thompson, for the last two years manager of the Denver district of the Industrial Products Sales department of B. F. GOODRICH CO., has been named manager of flat belting, conveyor, elevator and transmission belting in the department. He will headquarter at the firm's main offices in Akron, Ohio. **Paul W. Van Orden,** with the company for 21 years in belting sales and engineering, has been named manager of "V"-belts and packing.

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Three new executive assignments in the sales staff of the Industrial Power Division of International Harvester Co., Chicago, Ill., have been announced by **Neal Higgins,** division manager of sales. **W. M. Holland,** assistant division sales manager and previously responsible for distributor accounts, has been placed in charge of engine sales. In his new capacity, he succeeds **W. M. Parrish,** who retired March 1. **I. P. Payne,** formerly manager of industrial power sales for the Southwest region, has been advanced to assistant division sales manager and assumes charge of distributor accounts. **H. R. Carlson,** who has been assistant manager in charge of industrial power sales for the Dallas general line and industrial district, is named to succeed Payne as Southwest region manager.

MORE TRADE WINDS, PAGE 130

TRADE MAGAZINE ADVERTISING, some appearing in *Western Construction News*, helped KENWORTH MOTOR TRUCK CORP. of Seattle win first place award in the Commercial Advertising Campaign classification of the annual Paul Bunyan Contest sponsored by the Seattle Chamber of Commerce. R. D. O'BRIEN, Kenworth's sales manager, and E. P. BEEZER, advertising manager, are shown with the Kenworth display presented at the award luncheon.

News of the Eastern Manufacturers

The KOEHRING COMPANY of Milwaukee, Wis., manufacturer of heavy-duty construction equipment, has announced major changes in its supervisory staff. President **G. E. Long** released the news of these promotions: **E. A. Brugger** was named vice-president in charge of production. He had been general manager of the Parsons Company, a Koehring subsidiary. **E. O. Martinson** has been transferred to Koehring from C. S. Johnson Co., another subsidiary. Martinson at one time spent several years on the Grand Coulee Dam project. He becomes chief engineer of Koehring. **E. W. Maas** was named vice-president and general manager of the Kwik-Mix Co., a subsidiary of the company located in Port Washington, Wis. **R. A. Beckwith,** who has been chief engineer since 1940 will now devote his full time to engineering development work at Koehring and its three subsidiaries. **F. H. Heine,** production manager since 1946, will serve as director of foreign operations and utility officer.

☆ ☆ ☆

William J. Crawford has been appointed manager of dealer sales for the GREAT LAKES CARBON CORP.'s building products division, it was announced by **T. C. Carter,** vice-president. This division of the company operates a Permalite manufacturing plant in Torrance, Calif., and operates rock wool plants in Ohio, Pennsylvania and Illinois. The company maintains general offices in New York, Chicago and Los Angeles.

☆ ☆ ☆

The appointment of **C. H. Bartlett** as manager of power transformer sales of the WESTINGHOUSE ELECTRIC CORP. transformer division at Sharon, Pa., has been announced. Bartlett was formerly in the Westinghouse transformer sales departments at both the Emeryville plant in California and at the Sharon works. In his new position he will supervise sales activities of power transformers 501 kva. and above, converter, rectifier, regulating and grounding transformers and current limiting reactors for the transformer division.

☆ ☆ ☆

Announcement of a sales personnel change and the opening of a new district office in the Peerless Pump Division, FOOD MACHINERY AND CHEMICAL CORP., is made by **F. E. Fairman,** Jr., FMC vice president and Peerless divisional manager. **J. W. L. Stone** has been appointed district manager of a newly formed Peerless sales district with headquarters in Omaha, Nebr. Stone was formerly a field engineer for the Peerless division in the Southwest district. As district manager, he will now supervise the sales of both the Peerless horizontal and vertical lines and other pumps of the company's manufacture.

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R. W. (Pat) Murphey has been designated advertising manager, TAYLOR FORGE & PIPE WORKS, whose general offices and main plant are located in Chicago. The company operates a western plant at Fontana, Calif., and also has another plant at Carnegie, Pa. Murphey has had extensive industrial advertising experience, and is well known in the Chicago area.

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Recent announcements of the CHAIN BELT COMPANY of Milwaukee are the opening of two new district sales offices, one at St. Louis, Mo., and the other at Jacksonville, Fla. The St. Louis office is under the direction of **Clarence R. Studer,** district sales engineer, and the Jacksonville office is under the direction of **David B. Hill.** Another announcement is the appointment of **Homer L. Knouse** as southern sales representative, with headquarters at Atlanta, Ga.

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SMYTHE

It was in 1939 that THE THEW SHOVEL CO., Lorain, Ohio, developed the Lorain Moto-Crane, and officials of the company recently gathered to witness the departure of the 4,000th Moto-Crane to be built in the last nine years. This 20-ton carrier was turned over to **M. B. Garber,** general sales manager, by **C. B. Smythe,** president. Also on hand for the memorable occasion besides Smythe and Garber were **E. W. Johnston,** general works manager, and **R. H. Zeilman,** chief engineer. Garber revealed that the Moto-Crane was being delivered to the Bethlehem Steel Corp.

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J. B. Templeton, president of TEMPLETON, KENLY & CO., Chicago, manufacturers of Simplex jacks, recently announced that **William E. Gahl** has been appointed chief engineer of the company. He succeeds **F. J. Jakoubek** who has resigned to enter the manufacturing business for himself. Gahl has been active in steel and heavy industry in various engineering capacities for the last eighteen years. He joined Templeton, Kenly & Co. in 1929.

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HILL

Edward B. Hill, formerly general sales manager, has been named vice-president in charge of sales for GAR WOOD INDUSTRIES, INC., Wayne, Mich., according to **Edward F. Fisher,** newly-elected president of the firm. Hill has been with the organization since 1926, and has wide experience in the selling of truck and tractor equipment. He was at one time salesman at the firm's Los Angeles branch and branch manager at Seattle, Wash.

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J. E. "Jim" Poole has been appointed general sales manager of the KEYSTONE ASPHALT PRODUCTS CO., a division of American-Marietta Co. In his new position, he will supervise both paving products and Kapco Board sales.

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Fred G. Gurley, president of the SANTA FE RAILWAY, was recently presented with the safety achievement award of the National Safety Council. The award, presented to Santa Fe because of its outstanding 25% reduction in casualty rate during 1947 as compared with 1946, is based on reports made to the Interstate Commerce Commission regularly by all of the railroads.

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Creation of a new vice presidency of ALLEGHENY LUDLUM STEEL CORP., Pittsburgh, Pa., and the appointment of **Robert M. Arnold,** a director, to the position was announced following a meeting of the board of directors. Arnold is also president of ARNOLD ENGINEERING CO., Chicago, a wholly owned subsidiary. He became secretary and chief engineer of Arnold Engineering Co. in 1935 and was named its president 6 years later. His company, producers of permanent magnets, was acquired by Allegheny Ludlum in January, 1946.

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According to a statement by **D. W. R. Morgan,** vice-president, WESTINGHOUSE ELECTRIC CORP., Philadelphia, Pa., the steam division of Westinghouse has set an all-time record in production of power-generating steam turbines by having shipped in 1948 more than 2,000 kilowatts of turbine capacity. This is two and one-half times the company's best prewar steam turbine production.

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BRODERICK & BASCOM ROPE CO., St. Louis, Mo., announces two changes in executive responsibility. **Fred Zimmerman,** vice-president, who has been in charge of sales, assumes the new title of Director of Sales. **J. J. Sieber** has been appointed Sales Manager.

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M. S. Downes has been appointed General Sales Manager of the Railway Division of TIMKEN ROLLER BEARING CO., Canton, Ohio. He succeeds the late **W. C. Sanders,** under whom he had been Assistant General Sales Manager for the past twenty years. At the same time, **J. E. McCort,** formerly District Manager of the Division at Cleveland, was made Assistant General Sales Manager. **Ralph G. Harmon,** formerly a sales engineer in the Chicago office of the company, has been named District Manager of the firm's Industrial and Steel and Tube Divisions in Birmingham, Alabama. He replaces **F. B. Carney,** who resigned to develop and manufacture agricultural equipment.

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TRACTOMOTIVE CORP., formerly of Findlay, Ohio, has moved to its new plant at Deerfield, Ill., according to **V. M. Dobeus,** president. Tractomotive manufactures front-end shovels and loaders for Allis-Chalmers crawler and wheel-type tractors in addition to other road building equipment. The new plant is located on 26 ac. of land 40 mi. north of Chicago.

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Net earnings of DRESSER INDUSTRIES, INC., Cleveland, Ohio, for the fiscal year ended Oct. 31, 1948, reached $8,038,422 on net sales of $108,636,897, **H. N. Mallon,** president, said in the company's annual report to shareholders. This compares with net earnings of $4,439,189 on net sales of $80,095,199 in the previous twelve months.

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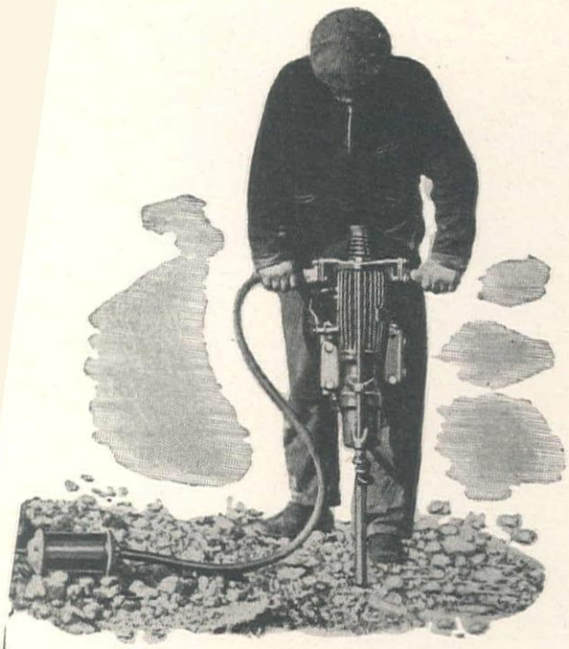
Completion of a 16 mm. sound and full color motion picture featuring the "Traveler," ½ and ⅝ cu. yd. rubber-tired excavator and crane, is announced by the Sales Division of THE BYERS MACHINE CO. of Ravenna, Ohio, manufacturer of power shovels and cranes. "There's a Dif-

No Job too Big or Small for BARCO



For heavy concrete breaking,
BARCO MODEL H-6B

FOR heavy concrete breaking and backfill tamping, the Barco Hammer (H-6B) is unbeatable. Its portability means easier handling, plus the ability to get jobs done in difficult or hard-to-reach spots. Barco is packed full of power, deals a smashing battering attack that never slackens no matter how tough the going. And as for profit, Barco's mechanized muscles do more work at lower cost. For lighter work, especially frost breaking, use Barco Hammer (J-2). Write Barco Manufacturing Company, 1819 Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.

For breaking medium and light concrete, and hard or frozen ground, BARCO MODEL J-2

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

BARCO PORTABLE HAMMERS • BREAKING • DRILLING DRIVING • TAMPING

ference" consists of 20 minutes of scenes showing the differences which are built into the machine, as well as various job applications for which the Byers Traveler is well known and equipped. Schools and organizations may request the use of the film by writing to the company.

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L. P. Oelschlager, formerly in charge of midwestern and southern sales of Barco Gasoline Hammers, has been appointed assistant sales manager, Gasoline Hammer Division, of BARCO MANUFACTURING CO., Chicago. The success of the new Barco Rammer for soil compaction is causing the company to expand their dealer operations.

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Vincent Vandervoort has been elected vice-president of MARLOW PUMPS, Ridgewood, N. J. A widely-known industrialist, he has been with Marlow since 1947.

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The appointment of **Andre S. Rubin, Jr.,** as sales manager has been announced by MARLOW PUMPS, Ridgewood, N. J. In his new capacity, Rubin will actively direct sales and sales promotion for the well-known line of construction pumps manufactured by this company. Rubin has been affiliated with Marlow Pumps since 1942.

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At the annual meeting of the CONTRACTORS' PUMP BUREAU, held in Chicago, **W. J. Fleming** of Holyoke, Mass., was elected to the post of chairman for 1949. He is associated with the WORTHINGTON PUMP AND MACHINERY CORP. The bureau is an affiliate of A.G.C. and its membership is drawn from manufacturers of contractors' drainage pumps.

TRADE WINDS

A. S. Marlow, Jr., of MARLOW PUMPS, Ridgewood, N. J., was elected vice-chairman. **B. F. Devine** of CHAIN BELT CO., Milwaukee, and **F. B. Hout** of BARNES MANUFACTURING CO., Mansfield, Ohio, were elected as members of the bureau's board of governors. **Kenneth H. Cadigan** of the GORMAN-RUPP CO., Mansfield, Ohio, has been named to direct the bureau's publicity and information program.

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W. H. Hammond of Detroit, Mich., has been elected vice-president in charge of sales for the MARION METAL PRODUCTS CO., Marion, Ohio. He is widely known in the automotive dump body and hydraulic hoist industry, having been in that field since 1922. In his new capacity, he will supervise all domestic and export sales activities of the company and will be assisted by **Harold H. Jacobs,** sales manager.

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THE LINCOLN ELECTRIC CO., Cleveland, Ohio, distributed $3,821,973 incentive payments to 1097 workers for the year 1948. These payments, as an average, double the income of every member in the organization, according to **J. F. Lincoln,** president of the Company. Lincoln states that the incentive program has increased wages and reduced the selling price of its motors, generators, welding electrodes and other products to less than half that of comparable products on the market. For the fiscal year 1948, the average product output per person on the payroll at Lincoln Electric was $29,748, compared with $6,895, the average output per person of three other large electrical manufacturers.

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Net sales of THE OLIVER CORP., Chicago, Ill., were $103,310,462 in the fiscal year ended Oct. 31, 1948, an increase of 40 per cent over the previous year. **Alva W. Phelps,** president of the company, in his annual report to the stockholders, said it is expected that the demand for farm equipment will continue to be high well into 1949 because of the large income of farmers during 1948, but that production in number of units during 1949 will probably not exceed that for 1948 because of anticipated difficulties in obtaining sheet steel and pig iron.

☆ ☆ ☆

I. N. Kimsey has been appointed field sales manager of the industrial products sales department of THE B. F. GOODRICH CO., Akron, Ohio, it has been announced by **Chester F. Conner,** department manager. Kimsey had been manager of the Akron district for industrial products sales for the last ten years. He joined the company as an industrial products salesman in 1922. Kimsey's former post has been taken by **John M. Cooney,** who had been manager of the Boston district for industrial product sales for the past two years.

☆ ☆ ☆

The 1948 annual report of the CATERPILLAR TRACTOR CO. indicates that profit last year was $13,772,581, or $7.32 per share of common stock outstanding. This was equivalent to an over-all average of 6.32 cents on each dollar of sales, which totaled $218,037,541. Comparable results for the previous year, 1947, were: profit $9,956,912, being $5.29 per share, or 5.26

:ents on each dollar of sales, which totaled $189,119,626. The improvement in operating results was due to a better relationship between sales prices and costs in the latter part of the year.

☆ ☆ ☆

Jack B. Bond has been appointed as District Manager of the Central Territory for the Crusher and Process Machinery Division of NORDBERG MANUFACTURING CO., Milwaukee, Wis. He joined Nordberg in 1944 as a sales engineer. He is the son of **J. S. Bond,** who was connected with the crushing, mining and cement machinery field for over 30 yr. with Power and Mining Machinery Co. and Allis-Chalmers Mfg. Co.

☆ ☆ ☆

Henry Giles, former road machinery sales representative at THE HEIL COMPANY's Hillside, N. J., plant, has been appointed sales manager of its road machinery division with headquarters at Milwaukee. He succeeds **Dan Pierce,** who has resigned to become sales manager for State Equipment Co., Heil road machinery distributor at Harrisburg, Pa.

☆ ☆ ☆

GOODMAN MANUFACTURING CO., Chicago, has announced the appointment of **Dale Hagenbook** as chief engineer. He joined Goodman in 1937 as assistant chief engineer to **W. W. Sloane.** Sloane is now serving as vice-president in charge of engineering.

☆ ☆ ☆

The board of directors has elected **Edward F. Fisher** as President of GAR WOOD INDUSTRIES, INC., Wayne, Mich. Fisher comes to the firm after 4 yr. of retirement following a highly successful career in the automotive industry (Fisher bodies). He will head the Gar Wood organization, made up of four divisions (located in Wayne; Findlay, Ohio; Minneapolis, Minn., and Richmond, Calif.). Products manufactured are hydraulic hoists, dump bodies, winches, cranes, truck tanks, ditchers, spreaders, power shovels, road patrols, etc.

☆ ☆ ☆

BUTLER BIN CO., Waukesha, Wis., in a letter to its distributors, announced the appointment of **M. R. Butler, Jr.,** as their general plant superintendent. "Bob" Butler was formerly a member of the company's engineering staff, and also served in the capacity of advertising manager, a position he still retains.

☆ ☆ ☆

Kempton Dunn was elected vice-president and **Cyrus E. Brush** was elected secretary of the AMERICAN BRAKE SHOE CO., New York City, at the recent meeting of the board of directors. Dunn has been with the company since 1932, and Brush since 1946.

☆ ☆ ☆

The resignation of **Melvin C. Harris** as vice-president in charge of production of ALLEGHANY LUDLUM STEEL CORP., Pittsburgh, Pa., has been announced. Pending the election of a successor, **C. B. Pollock,** production manager, will be in charge of manufacturing for the company. Pollock is a veteran of 33 years in the steel industry.

Organization of a finance company, to be known as the INTERNATIONAL HARVESTER CREDIT CORP., has been announced by the INTERNATIONAL HARVESTER CO., Chicago, Ill. It will be a wholly-owned subsidiary of the company and its purpose will be to finance domestic notes receivable of the company for which there is no source of financing available. Formation of the new company is the result of the recent growth of credit sales.

☆ ☆ ☆

Hugh W. Baird has been appointed vice-president of STANDARD PIPEPROTECTION, INC., St. Louis, Mo. Baird is widely known in the pipeline industry, having first-hand experience in the production, sales, protection and installation of pipe. The company was organized recently to coat and wrap pipe up to 12½-in. diameter, using new application techniques. Because its plant is located in St. Louis, pipe can be shipped to Western markets under minimum freight rates.

☆ ☆ ☆

Three appointments within the sales department of FULLER MANUFACTURING COMPANY's Transmission Division, Kalamazoo, Mich., have been announced by **W. E. Niness,** vice-president in charge of sales. The appointments include **J. A. Packard,** manager of original equipment sales; **L. C. Butler,** manager of service sales, and **B. S. Tooker,** service manager. Packard joined the company in 1942 as sales engineer; Butler has been in the company's service department since 1934, and Tooker has been associated with Fuller since 1942 and has wide experience in problems of field service.

UNIT BID SUMMARY

Irrigation . . .

California—Riverside County—Bur. of Recl.—Earthwork & Structs.

American Pipe and Construction Co., South Gate, Calif., with a bid of $2,049,922, was low before the Bureau of Reclamation at Coachella, Calif., for the construction of earthwork, pipelines and structures for Unit 6 of the Coachella Valley Distribution System of the All-American Canal System. The work extends from laterals 119.64 to 123.4, including sublaterals. The work is part of the Boulder Canyon Project, and is situated in the vicinity of Thermal, Coachella and Indio, Calif. 450 calendar days are allowed for completion. Unit bids were submitted by the following:

(A) American Pipe & Construction Co...$2,049,922
(B) Concrete Conduit Co. 2,105,023
(C) United Concrete Pipe Corp..... 2,147,735
(D) R. V. Lloyd & Co..... 2,195,540
(E) Haines & Haines $2,253,803
(F) Artukovich Bros. 2,258,283
(G) P & J Artukovich and Bebek & Brkich 2,725,149

(1) 364,000 cu. yd. excav. for pipe trenches
(2) 13,800 cu. yd. excav. for structs.
(3) 364,000 cu. yd. backfill in pipe trenches
(4) 13,800 cu. yd. backfill about structs.
(5) 4,800 cu. yd. excavating, loading, hauling and placing consolidation matl. from borrow areas
(6) 17,700 puddling backfill
(7) 17,700 cu. yd. consolidating backfill
(8) 880 cu. yd. reinf. concrete in structs.
(9) 280 cu. yd. plain concrete
(10) 1,750 bbl. furn. and handling cem. for conc. in structs. and in plain concrete
(11) 110 cu. yd. furn. and installing baffle plank in pipe stands
(12) 157 units, furn. and installing valve boxes and covers for 8-in. gate valves
(13) 161 units furn. and installing valve boxes and covers for 12-in. gate valves
(14) 107,000 lb. furn. and placing reinf. bars in structs.
(15) 148 units furn. matls. and const. pipe vents 10 ft. or less in height
(16) 21 units furn. and const. pipe vents betw. 10 and 15 ft. in height
(17) 1 unit furn. matls. and const. pipe vents more than 15 ft. in height
(18) 740 lin. ft. furn. and laying 10-in. diam. standard concrete irrigation pipe
(19) 36,000 lin. ft. ditto 12-in.
(20) 161,000 lin. ft. 14-in. ditto
(21) 30,500 lin. ft. 16-in. ditto
(22) 27,100 lin. ft. 18-in. ditto
(23) 37,400 lin. ft. 20-in. ditto
(24) 100 lin. ft. furn. and laying 12-in. diam. 25-ft. head reinf. conc. pipe
(25) 7,100 lin. ft. 21-in. ditto
(26) 39,700 lin. ft. 24-in. ditto
(27) 45,000 lin. ft. 27-in. ditto
(28) 19,700 lin. ft. 30-in. ditto
(29) 27,400 lin. ft. 33-in. ditto
(30) 2,700 lin. ft. 36-in. ditto
(31) 1,300 lin. ft. 39-in. ditto
(32) 3,900 lin. ft. 42-in. ditto
(33) 2,600 lin. ft. 45-in. ditto
(34) 3,300 lin. ft. 48-in. ditto
(35) 4,300 lin. ft. 54-in. ditto
(36) 2,000 lin. ft. 60-in. ditto
(37) 6,700 lin. ft. 66-in. ditto
(38) 2,900 lin. ft. 72-in. ditto
(39) 30 lin. ft. furn. and laying 12-in. diam. 50-ft. head reinf. conc. pipe
(40) 900 lin. ft. 66-in. ditto
(41) 770 lin. ft. furn. and installing 12-in. diam. conc. irrigation pipe vertically
(42) 200 lin. ft. furn. and installing 30-in. diam. 25-ft. head reinf. conc. pipe vertically
(43) 1,200 lin. ft. 36-in. ditto
(44) 280 lin. ft. 42-in. ditto
(45) 250 lin. ft. 48-in. ditto
(46) 220 lin. ft. 54-in. ditto
(47) 470 lin. ft. 60-in. ditto
(48) 340 lin. ft. 66-in. ditto
(49) 120 lin. ft. 72-in. ditto
(50) 30 lin. ft. 12-in. ditto
(51) 60 lin. ft. furn. and laying 12-in. diam. stand. strength conc. culvert pipe
(52) 650 lin. ft. 15-in. ditto
(53) 540 lin. ft. 18-in. ditto
(54) 1,340 lin. ft. 21-in. ditto
(55) 980 lin. ft. 24-in. ditto
(56) 1,160 lin. ft. 27-in. ditto
(57) 480 lin. ft. 30-in. ditto
(58) 600 lin. ft. 33-in. ditto
(59) 60 lin. ft. 36-in. ditto
(60) 120 lin. ft. 39-in. ditto
(61) 120 lin. ft. 42-in. ditto
(62) 80 lin. ft. 45-in. ditto
(63) 120 lin. ft. 48-in. ditto
(64) 120 lin. ft. 54-in. ditto
(65) 120 lin. ft. 66-in. ditto
(66) 170 lin. ft. 72-in. ditto
(67) 62 bends fabricating bends in 10-in. diam. irrigation pipe
(68) 2 bends 12-in. ditto
(69) 8 bends 14-in. ditto
(70) 1 bend 16-in. ditto
(71) 2 bends 18-in. ditto
(72) 2 bends 20-in. ditto
(73) 2 bends fabricating bends in 24-in. diam. 25-ft. head reinf. conc. pipe
(74) 1 bend 30-in. ditto
(75) 3 bends 36-in. ditto
(76) 1 bend 54-in. ditto
(77) 1 bend 54-in. ditto
(78) 3 bends 72-in. ditto
(79) 2 bends fabricating bends in 12-in. diam. 50-ft. head reinf. conc. pipe
(80) 136 tees fabricating 12x12x12-in. tees in irrigation pipe
(81) 2 tees 16x16x12-in. ditto
(82) 10 tees 18x18x12-in. ditto
(83) 4 tees 20x20x12-in. ditto
(84) 2 tees fabricating 12x12x12-in. tees in 25-ft. head reinf. conc. pipe
(85) 2 tees 24x24x12-in. ditto
(86) 3 tees 27x27x12-in. ditto
(87) 1 tee 30x30x12-in. ditto
(88) 4 tees 33x33x12-in. ditto
(89) 1 tee 42x42x12-in. ditto
(90) 1 tee 45x45x12-in. ditto
(91) 1 tee 48x48x12-in. ditto
(92) 2 tees 54x54x12-in. ditto
(93) 1 tee 60x60x12-in. ditto
(94) 2 tees 66x66x12-in. ditto
(95) 1 tee 54x54x18-in. ditto
(96) 2 tees fabricating 12x12x12-in. tees in 50-ft. head reinf. conc. pipe
(97) 1 tee 66x66x12-in. ditto
(98) 70 tapers furn. and laying 10x12-in. irrigation pipe tapers
(99) 218 tapers 12x14-in. ditto
(100) 26 tapers 12x16-in. ditto
(101) 23 tapers 12x18-in. ditto
(102) 4 tapers 14x16-in. ditto
(103) 2 tapers 14x18-in. ditto
(104) 8 tapers 16x18-in. ditto
(105) 16 tapers 16x20-in. ditto
(106) 4 tapers 18x20-in. ditto
(107) 2 tapers furn. and laying 18x21-in. 25-ft. head reinf. conc. pipe tapers
(108) 2 tapers 18x24-in. ditto
(109) 17 tapers 21x24-in. ditto
(110) 15 tapers 24x27-in. ditto
(111) 17 tapers 24x30-in. ditto
(112) 45 tapers 27x30-in. ditto
(113) 38 tapers 30x33-in. ditto
(114) 9 tapers 30x36-in. ditto
(115) 27 tapers 36x36-in. ditto
(116) 6 tapers 36x39-in. ditto
(117) 15 tapers 36x42-in. ditto
(118) 4 tapers 42x48-in. ditto
(119) 2 tapers 45x48-in. ditto
(120) 9 tapers 48x54-in. ditto
(121) 8 tapers 54x60-in. ditto
(122) 6 tapers 60x66-in. ditto
(123) 7 tapers 66x72-in. ditto
(124) 5 tapers 72x78-in. ditto
(125) 3 tapers 78x84-in. ditto
(126) 3 tapers 84x90-in. ditto
(127) 1 taper 90x96-in. ditto
(128) 5 units 12-in. dia. collared contraction jts.
(129) 2 units 16-in. ditto
(130) 1 unit 20-in. ditto
(131) 1 unit 21-in. ditto
(132) 4 units 24-in. ditto
(133) 1 unit 27-in. ditto
(134) 9 units 30-in. ditto
(135) 2 units 33-in. ditto
(136) 5 units 36-in. ditto
(137) 1 unit 39-in. ditto
(138) 1 unit 42-in. ditto
(139) 1 unit 45-in. ditto
(140) 1 unit 48-in. ditto
(141) 1 unit 54-in. ditto
(142) 2 units 60-in. ditto
(143) 1 unit 66-in. ditto
(144) 1 unit 72-in. ditto
(145) 2 units 78-in. ditto
(146) 2 units 90-in. ditto
(147) 1 unit 96-in. ditto
(148) 36 units installing 10-in. diam. line-meter tubes and heads
(149) 1 unit 12-in ditto

(Continued on next page)

"It stands up under terrific abuse"

The BELL Prime Mover*

. . . says Tom O'Rourke, Gen. Supt., Siegfried Construction Company

Hoist takes loaded Prime Mover to upper floor.

"On the new Veterans Hospital project in Buffalo, N. Y., a fleet of Prime Movers has seen extensive service under typical construction conditions: *mud, rough ground, heavy loads, long hours of steady use.*

"You should see the beating these machines take when it's muddy. Yesterday we were hauling bagged cement ...9 bags to a load. That's more than 3 times what a man can take in a wheelbarrow on dry ground. This was ankle-deep mud. Same thing with loads of mortar. We take big loads with no trouble at all.

"Another thing. When men are working with wheelbarrows, they get tired. Loads naturally get smaller and smaller. But, when they use our Prime Movers, they get a kick out of taking the *biggest* loads they can all day long.

"We also use Prime Movers for cleaning up rubbish. We figure it saves us about $25.00 a day. And this is one of those hidden expense items we never figure high enough.

"One more thing. There are plenty of times when we have to go through doorways when pouring floors. A concrete buggy won't go through a standard door. Our Prime Movers will... and with a capacity load.

"We've got a swell piece of equipment in the Prime Mover. It stands up under terrific abuse."

If you would like to see these machines in operation on one of your jobs, we'll arrange it through a member of our nationwide sales and service organization. For information, please fill in the coupon and mail it today.

Combining the features of a giant motorized wheelbarrow, half-ton platform truck, and light-duty grade-scraper, the Bell Prime Mover is tremendously useful in construction work. It will take abuse, too, as this testimonial will show you.

Completely gear-driven . . . with engine and clutch running in oil . . . with the entire engine fully enclosed against dirt and moisture, the Prime Mover requires minimum service. Its 3-hp. engine gives eight hours service on 3 gallons of gas.

Bucket holds 1000 pounds of wet or dry material

Mechanically dumped... operates by foot pedal

Climbs 20% grades fully loaded

SEND COUPON NOW

Bell Aircraft Corporation
P. O. Box WC4, Buffalo 5, N. Y.

Please send me facts on the Bell Prime Mover. Who is the nearest distributor?

Name.....

Address.....

Company.....

City, Zone & State.....

A PRODUCT OF **BELL** *Aircraft* CORPORATION

(150) 3 units installing 14-in. diam. line-meter tubes and heads
(151) 1 unit 16-in. ditto
(152) 4 units 24-in. ditto
(153) 5 units 30-in. ditto
(154) 2 units 36-in. ditto
(155) 1 unit 72-in. ditto
(156) 12,300 lb. installing metal slide gates and gate hoists
(157) 157 valves installing 8-in. diam. gate valves with bell-mouths
(158) 161 valves installing 12-in. diam. hub-end gate valves
(159) 900 lbs. furn. and installing miscl. metalwk.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
(1)	.33	.44	.50	.42	.60	.30	.75
(2)	1.06	1.25	2.00	.90	1.00	1.00	1.00
(3)	.31	.19	.30	.30	.30	.20	.30
(4)	1.02	.50	.60	.50	.75	.50	.60
(5)	1.42	2.20	3.00	1.43	1.50	1.50	2.00
(6)	1.02	.95	1.25	1.20	1.50	1.00	.50
(7)	1.88	1.55	2.00	1.80	1.50	2.00	1.50
(8)	70.00	87.50	90.00	70.00	80.00	60.00	60.00
(9)	30.00	37.50	40.00	35.00	40.00	40.00	25.00
(10)	4.10	6.00	6.00	5.00	5.00	4.00	4.50
(11)	150.00	87.50	110.00	95.00	90.00	100.00	100.00
(12)	12.00	11.25	6.00	5.00	6.00	10.00	12.00
(13)	14.00	12.50	6.00	6.00	6.00	12.00	15.00
(14)	.13	.15	.16	.15	.15	.15	.16
(15)	25.00	31.50	15.00	30.00	25.00	25.00	15.00
(16)	35.00	41.20	85.00	35.00	30.00	80.00	35.00
(17)	70.00	125.00	125.00	55.00	35.00	100.00	50.00
(18)	1.05	1.00	.90	.90	1.00	1.00	1.00
(19)	1.05	1.07	.96	1.00	1.05	1.20	1.25
(20)	1.20	1.30	1.12	1.25	1.30	1.30	1.50
(21)	1.50	1.58	1.33	1.50	1.48	1.50	1.70
(22)	1.70	1.80	1.53	1.80	1.75	1.75	1.90
(23)	2.10	2.20	1.70	2.15	2.10	2.40	2.20
(24)	2.00	2.10	4.00	2.50	2.40	2.50	4.00
(25)	3.55	3.65	4.60	4.18	4.00	5.00	5.00
(26)	4.45	4.20	5.00	4.78	4.50	5.95	6.00
(27)	5.10	4.85	5.45	5.46	5.50	6.00	7.00
(28)	5.75	5.55	6.00	6.57	6.50	6.50	7.50
(29)	6.45	6.35	6.60	7.25	7.25	6.50	8.50
(30)	7.20	7.00	7.20	8.00	8.25	8.50	9.50
(31)	7.90	7.95	7.70	8.92	9.00	9.50	11.00
(32)	8.65	8.90	8.40	9.79	10.00	10.50	12.00
(33)	9.40	9.65	9.00	10.45	10.50	11.50	13.00
(34)	10.30	10.50	9.80	11.38	11.50	12.50	14.00
(35)	11.85	12.30	11.50	12.93	12.50	14.00	16.50
(36)	14.00	14.90	13.20	15.15	15.00	17.00	19.50
(37)	15.95	17.60	15.20	17.43	18.00	20.00	22.50
(38)	18.25	20.50	16.60	19.74	20.00	24.00	25.50
(39)	2.50	2.50	4.20	3.00	2.75	3.00	6.50
(40)	19.90	23.40	17.20	22.50	24.00	25.00	41.00
(41)	2.50	1.70	1.30	1.50	1.50	2.50	2.50
(42)	7.15	9.10	7.20	9.00	9.32	7.50	10.00
(43)	8.90	10.20	8.20	10.50	11.00	9.00	12.00
(44)	10.50	11.80	10.20	11.50	12.48	12.00	15.00
(45)	12.30	14.00	12.20	13.60	13.60	14.00	17.00
(46)	14.30	15.45	14.20	15.60	15.17	17.00	19.00
(47)	16.50	18.20	16.20	18.00	16.82	20.00	23.00
(48)	18.75	20.80	18.20	21.00	18.82	23.00	29.00
(49)	21.50	26.50	22.20	25.50	22.00	26.00	35.00
(50)	3.00	3.50	4.20	3.00	3.90	4.50	6.00
(51)	2.65	2.60	5.60	3.00	3.05	3.50	5.00
(52)	3.30	3.25	6.00	3.50	3.55	4.50	5.50
(53)	4.00	4.05	6.20	4.00	4.10	5.50	6.50
(54)	4.70	11.00	6.50	9.30	6.00	6.50	7.40
(55)	5.50	7.75	7.00	7.00	7.25	8.00	8.50
(56)	6.30	8.15	7.50	8.00	8.05	9.00	9.20
(57)	7.10	6.80	8.00	7.12	7.00	10.00	10.50
(58)	7.95	12.85	8.50	11.50	8.50	11.00	11.50
(59)	8.80	8.40	8.80	9.60	9.00	13.00	12.80
(60)	9.70	9.55	9.50	10.25	11.00	15.00	14.00
(61)	10.65	10.50	10.00	11.50	11.50	17.00	16.00
(62)	11.45	11.35	11.00	12.30	12.00	18.00	18.00
(63)	12.50	12.35	12.30	13.00	12.50	19.00	20.00
(64)	14.40	14.20	16.00	14.50	13.50	20.00	21.00
(65)	18.60	20.00	20.00	18.60	18.00	24.00	25.00
(66)	21.75	24.10	24.00	22.30	21.50	28.00	33.00
(67)	4.50	8.10	8.00	5.00	6.00	7.50	12.00
(68)	6.00	8.75	8.00	5.00	6.00	8.50	14.00
(69)	7.70	9.05	10.00	5.00	6.00	10.00	16.00
(70)	8.65	9.35	10.00	5.00	6.00	11.00	19.00
(71)	10.00	10.00	10.00	5.00	6.00	13.00	21.00
(72)	13.00	10.60	12.00	5.00	6.00	15.00	23.00
(73)	28.00	31.50	21.00	20.00	15.00	25.00	33.00
(74)	40.00	37.50	22.00	30.00	20.00	29.00	37.00
(75)	50.00	43.75	32.00	36.00	25.00	35.00	40.00
(76)	60.00	46.80	37.00	40.00	30.00	39.00	49.00
(77)	80.00	62.50	65.00	60.00	40.00	65.00	75.00
(78)	95.00	100.00	90.00	100.00	60.00	73.00	100.00
(79)	16.00	25.00	10.00	15.00	10.00	10.00	20.00
(80)	8.25	9.70	8.00	6.00	5.00	9.00	12.00
(81)	10.50	10.30	9.00	6.00	5.00	10.00	15.00
(82)	11.50	11.25	10.00	6.00	5.00	12.00	17.00
(83)	15.00	12.50	11.00	6.00	5.00	15.00	22.00
(84)	28.00	16.85	9.00	10.00	6.00	12.00	12.00
(85)	28.00	18.75	15.00	10.00	6.00	24.00	28.00
(86)	28.00	31.50	17.00	15.00	6.00	28.00	30.00
(87)	28.00	37.50	18.00	20.00	6.00	30 00	32.00
(88)	28.00	40.60	19.00	20.00	6.00	32.00	35.00
(89)	28.00	43.70	20.00	20.00	6.00	33.00	45.00
(90)	28.00	46.80	22.00	20.00	6.00	35.00	50.00
(91)	28.00	50.00	25.00	20.00	6.00	36.00	55.00
(92)	28.00	50.00	30.00	25.00	6.00	38.00	65.00
(93)	28.00	56.00	35.00	30.00	6.00	39 00	100.00
(94)	28.00	63.00	38.00	30.00	6.00	41.00	130.00
(95)	35.00	50.00	40.00	35.00	10.00	40.00	65.00
(96)	28.00	17.00	10.00	20.00	20.00	13.00	15.00
(97)	28.00	63.00	55.00	35.00	20.00	43.00	150.00
(98)	7.50	6.50	7.00	5.00	5.00	7.50	8.00
(99)	9.00	6.40	7.00	6.00	5.50	9.00	9.00
(100)	10.50	9.70	16.00	8.00	6.00	10.50	11.00
(101)	11.50	11 30	16.00	9.00	7.00	12.00	13.00
(102)	10.50	9.30	17.00	8.00	7.00	11.00	15.00
(103)	12.00	13.00	17.00	9.00	8.00	12.00	17.00
(104)	12.50	9.75	18.00	9.00	9.00	12.50	18.00

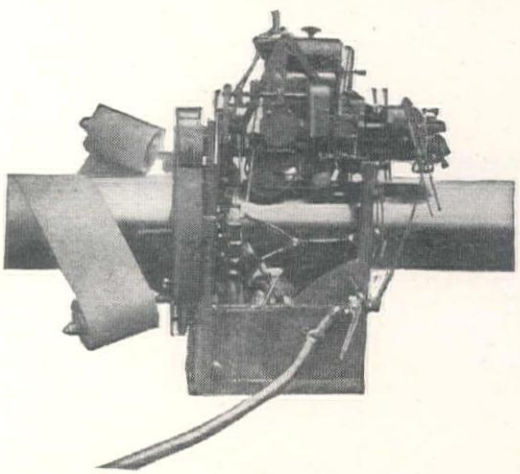
(Continued on next page)

Barrett* PROTECTION SERVICE
Covers Every Pipe-coating Need

Materials and Application Procedure for:

1. Water Industries
2. Natural Gas, Crude Oils and Products Transmission
3. Professional Application in Plants and Yards
4. Distribution Systems
5. Reconditioning Operations
6. Gathering Systems
7. Recycling Operations

Materials and Application Procedure for NATURAL GAS, CRUDE OILS AND PRODUCTS TRANSMISSION



Barrett-protected oil and gas pipe is wrapped in asbestos felt to provide a shield for the enamel coating.

Because of the variable weather conditions under which enamel is applied to pipe, it is necessary to have a *weatherized* primer.

Most primers are designed to dry under normal conditions (50% humidity at 70°F) during 9 months of the year, but Barrett also makes special primers for use in very cold and very hot application weather.

These primers form lasting bonds with all Barrett* Enamels. Thus the line engineer is offered a wide range of primer-enamel combinations to suit his particular construction conditions.

The application of hot enamel over the primer *re-softens* the primer, and causes it to fuse with both the metal and the enamel for a perfect bond.

The initial and sustained dielectric values of Barrett enamels remain unchanged under all normal line currents. Since these values do not break down under electric currents put on the pipe, the economy of cathodic protection is assured.

The Barrett organization will be glad to confer with you on any of your pipe coating problems.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

*Reg. U. S. Pat. Off.

Barrett*

CITY OF PORTLAND, OREGON

INTERCEPTING SEWER AND SEWAGE TREATMENT PROJECT PENINSULA TUNNEL UNIT

Notice to Contractors

Sealed proposals for furnishing all materials and constructing the Peninsula Tunnel Unit of the Intercepting Sewer and Sewage Treatment Project will be received at the office of the Purchasing Agent, Room 208, City Hall, Portland, Oregon, until 2 P. M. on April 26, 1949, and thereafter will be publicly opened and read.

This Contract Unit consists primarily of approximately 3 miles of 8-foot, horseshoe section, concrete-lined tunnel, with necessary shafts and appurtenant structures. Bids may be submitted on alternate types of timbering and supports. This is a unit price contract and quantities may be varied. The following amounts for certain major items which are common for all types of tunnel supports give a general idea of the character and size of the work:

Excavation for 8-ft. tunnel....16,410 lin. ft.
Concrete lining for 8-ft. tunnel....16,410 lin. ft.
Shafts....342 vert. ft.
Reinforcing Steel....500,000 pounds
Pipe Sewers and Drains....7,500 lin. ft.

Plans, Specifications and other documents required for bidding may be inspected at the Office of the Purchasing Agent and copies may be obtained by qualified prospective bidders upon a deposit of $25.00 which amount will be refunded in case a regular and bonafide bid is made and the documents returned, but otherwise will be retained.

Attention of bidders is directed to Section 98-103, Oregon Code, providing for pre-qualification.

All Proposals must be upon the regular blank forms furnished with the Specifications, and must be accompanied by a certified check for an amount equal to or exceeding five per cent (5%) of the total bid. A 100% corporate surety bond will be required to guarantee the faithful performance of the contract, together with insurance in such sum as may be necessary to protect the City against loss or damage by reason of injuries to person or property.

Bonds to finance this improvement have been sold, and monthly progress payments will be made.

The right is reserved by the City to reject any or all bids, or to accept the proposal which appears most advantageous.

By order of the City Council, March 23, 1949.

GENTRY W. YATES
Purchasing Agent

	(A)	(B)	(C)	(D)	(E)	(F)	(G
(105)	13.00	13.80	20.00	10.00	9.50	13.00	20.0
(106)	13.00	13.80	22.00	10.00	10.00	13.00	22.0
(107)	20.50	17.50	22.00	16.00	10.00	20.00	23.0
(108)	25.00	18.75	35.00	18.00	15.00	25.00	25.0
(109)	25.00	18.75	35.00	18.00	17.00	25.00	27.0
(110)	28.00	18.75	38.00	21.00	20.00	27.00	30.0
(111)	30.00	25.00	40.00	23.00	23.00	29.00	33.0
(112)	30.00	25.00	40.00	23.00	24.00	30.00	35.0
(113)	34.00	28.00	42.00	25.00	25.00	34.00	40.0
(114)	37.00	31.50	55.00	27.00	28.00	36.00	45.0
(115)	37.00	31.50	58.00	27.00	27.00	38.00	48.0
(116)	41.00	37.50	60.00	30.00	32.00	40.00	55.0
(117)	45.00	44.00	63.00	33.00	34.00	45.00	65.0
(118)	54.00	56.00	65.00	38.00	40.00	55.00	80.0
(119)	54.00	56.00	68.00	38.00	42.00	57.00	95.0
(120)	63.00	75.00	70.00	42.00	45.00	64.00	110.0
(121)	70.00	94.00	75.00	50.00	47.00	70.00	130.0
(122)	78.00	125.00	80.00	60.00	55.00	77.00	175.0
(123)	96.00	156.00	85.00	75.00	100.00	85.00	123.0
(124)	118.00	175.00	90.00	130.00	110.00	91.00	250.0
(125)	145.00	187.00	100.00	150.00	125.00	95.00	300.0
(126)	175.00	250.00	120.00	180.00	150.00	104.00	350.0
(127)	205.00	315.00	150.00	200.00	200.00	120.00	400.0
(128)	11.00	12.50	7.00	10.00	10.00	15.00	25.00
(129)	13.00	15.00	9.00	15.00	12.00	17.00	30.00
(130)	17.00	18.70	10.00	20.00	15.00	19.00	40.00
(131)	19.00	21.00	11.00	20.00	17.00	20.00	45.00
(132)	20.00	25.00	12.00	20.00	20.00	20.00	50.00
(133)	22.00	27.50	14.00	25.00	22.00	22.00	55.00
(134)	24.00	30.00	17.00	25.00	24.00	24.00	60.00
(135)	27.00	34.00	18.00	25.00	26.00	28.00	65.00
(136)	30.00	37.50	22.00	30.00	30.00	32.00	70.00
(137)	33.00	45.00	24.00	40.00	35.00	36.00	80.00
(138)	36.00	45.00	26.00	42.00	40.00	40.00	90.00
(139)	40.00	50.00	30.00	45.00	42.00	45.00	100.00
(140)	43.00	50.00	32.00	48.00	45.00	50.00	110.00
(141)	46.00	58.00	40.00	54.00	48.00	55.00	120.00
(142)	54.00	63.00	60.00	60.00	50.00	60.00	135.00
(143)	60.00	75.00	70.00	66.00	55.00	65.00	150.00
(144)	70.00	88.00	80.00	72.00	60.00	70.00	175.00
(145)	100.00	100.00	85.00	78.00	70.00	75.00	200.00
(146)	120.00	143.00	100.00	90.00	80.00	100.00	250.00
(147)	150.00	125.00	150.00	96.00	90.00	120.00	300.00
(148)	30.00	22.50	11.00	15.00	15.00	25.00	25.00
(149)	30.00	22.50	12.00	18.00	15.00	30.00	30.00
(150)	35.00	28.00	16.00	20.00	16.00	30.00	35.00
(151)	35.00	31.00	17.00	22.00	20.00	35.00	37.00
(152)	45.00	56.00	33.00	30.00	25.00	45.00	45.00
(153)	52.00	62.00	45.00	40.00	50.00	55.00	50.00
(154)	60.00	75.00	55.00	60.00	50.00	65.00	60.00
(155)	135.00	156.00	135.00	150.00	200.00	75.00	120.00
(156)	.25	.38	.30	.16	.20	.50	.25
(157)	18.55	23.00	11.00	8.00	5.00	25.00	18.00
(158)	25.00	31.00	12.00	10.00	10.00	30.00	20.00
(159)	.35	.44	.20	.40	.50	.50	.60

Bridge and Grade Separation . . .

Oregon—Multnomah County—State—Reinf. Conc.

Gilpin Construction Co., Portland, with a bid of $809,440 was low before the Oregon State Highway Commission for construction of the Sauvies Island Bridge over Willamette Slough on Gillihan Road. The 1,200-ft. span will be of reinforced concrete and steel. Three biggest items involved are the shoring and cribbing, 580,000 lb. of metal reinforcement, and more than 1,000,000 lb. of structural steel. Unit bids were submitted by the following:

(1) Gilpin Construction Co....$809,440
(2) C. J. Montag & Sons....913,000
(3) Guy F. Atkinson Co....$ 984,630
(4) Morrison-Knudsen Co., Inc....1,024,553

	(1)	(2)	(3)	(4)
Lump sum, shoring, cribbing, etc.	$147,000	$239,480	$237,000	$230,378
4,080 cu. yd. structural excavation	5.00	7.00	6.50	12.00
200 cu. yd. structural excav. below elevations shown	10.00	7.00	10.00	22.50
24,000 lin. ft. furnish untreated piling	.52	.55	.55	.60
466 only drive piles	43.00	50.00	45.00	53.50
1,250 cu. yd. seal concrete	30.00	35.00	35.00	39.00
3,510 cu. yd. Class "A" concrete	77.00	76.00	78.00	88.50
580,000 lb. metal reinforcing	.11	.12	.12	.14
1,035,000 lb. structural steel	.1975	.19	.25	.217
2,440 lin. ft. metal rail	11.00	10.00	14.00	12.60
3 M-FBM treated lumber	400.00	300.00	300.00	420.00
Lump sum, electrical work	$3,500	$5,000	$4,000	$4,200

Highway and Street . . .

Washington—Grant County—State—Grade and Drain

Strong & MacDonald, Inc., of Tacoma, Wash., were awarded the contract on a bid of $416,842 for grading and draining on 4.82 mi. of Secondary State Highway No. 2-F from Odair to Electric City, Section 4. The work involves about 460,000 cu. yd. of excavation, with more than half in solid rock. Unit bids were submitted by the following:

(1) Strong & MacDonald, Inc....$416,842
(2) C. E. Oneal....464,023
(3) Peter Kiewit Sons' Co....466,443
(4) Erickson Paving Co....520,086
(5) N. Fiorito Co....$540,698
(6) Morrison-Knudsen Co., Inc....549,929
(7) Roy L. Bair & Co....698,793

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Lump sum, clearing and grubbing	500.00	$3,000	$3,500	$2,000	$10,000	$2,000	$4,900
141,720 cu. yd. uncl. excav. incl. haul of 600 ft.	.50	.38	.37	.50	.65	1.75	1.00
43,040 cu. yd. com. excav. incl. haul of 600 ft.	.40	.38	1.20	.30	1.25	.32	.50
253,770 cu. yd. solid rock excav. incl. haul of 600 ft.	1.10	1.34	1.20	1.50	1.25	1.44	1.85
1,250 cu. yd. com. trench excav. incl. haul of 600 ft.	1.00	1.50	3.50	2.50	5.00	3.75	2.00

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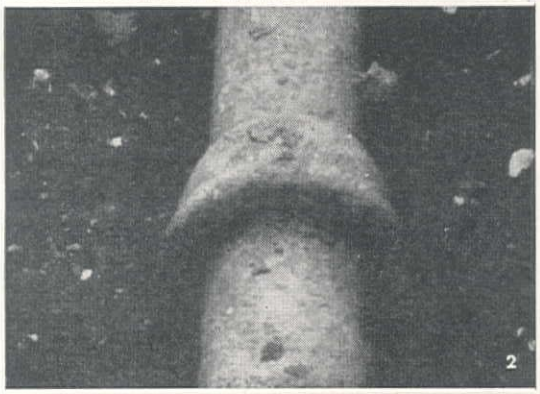

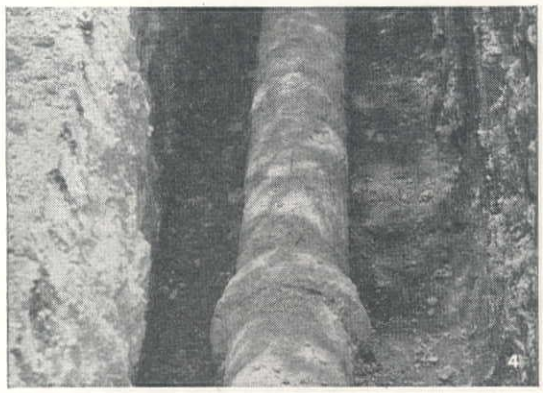

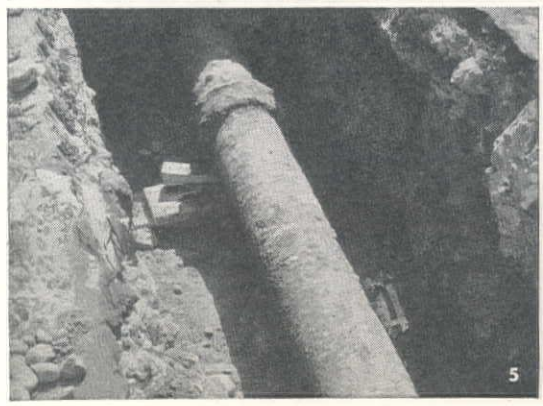

Going strong in their 2nd Century

About 30 of the older American cities have cast iron water or gas mains in service which were laid from 100 to 132 years ago. Most of these mains, on or after their 100th Anniversary, have been uncovered, inspected and photographed for the record. Five of them—all water mains, are shown in this advertisement.

While it is well known that cast iron water mains in England, France and Germany have service records that approach three centuries, we, who make cast iron pipe, nevertheless get a thrill out of looking down into the trench at an uncovered section of a main that has been in service for 100 years—and so, we are told, do water works and gas engineers.

When one considers the radical changes which have occurred in a century in vehicular traffic, and the vast development of underground construction for the many utility services, the fact that these mains are now in their second century of service is all the more remarkable.

(1) This 101-year-old cast iron water main is serving Frederick, Maryland.

(2) Still in use after 118 years of service in the water supply system of St. Louis, Mo.

(3) This water main, installed 117 years ago, is still serving Richmond, Va.

(4) Lancaster, Pa. laid this cast iron water main 105 years ago. It is still serving.

(5) One of several cast iron water mains that have been serving New York City for more than a century.

96% OF ALL 6-INCH AND LARGER CAST IRON WATER MAINS EVER LAID IN 25 REPRESENTATIVE CITIES ARE STILL IN SERVICE.

Based on the findings of a survey conducted by leading water works engineers.

Cast Iron Pipe Research Assn., T. F. Wolfe, Engr., Peoples Gas Bldg., Chicago 3.

CAST IRON PIPE

SERVES FOR CENTURIES

Third Group Asks Power Rights at Folsom Dam

TWO CALIFORNIA COUNTIES, El Dorado and Placer, have applied to the Federal Power Commission for an 18-month preliminary permit in order to secure and maintain priority of application for license while obtaining necessary data to prepare a license application for two hydroelectric generating plants in the Folsom Dam area on the American River in California.

The joint application proposes construction of one generating plant to utilize the water power of Folsom Dam and reservoir, a multiple-purpose project authorized for construction by the Government through the Army Corps of Engineers. The two counties also propose to operate a second power plant at the proposed After Bay Dam below the main Folsom Dam. Under the proposed plan, the counties would enter into an agreement with the Corps of Engineers for water storage and operation of the power plants.

The counties estimate that 160,000 kw. of power would be available 90 per cent of the time. Power developed would be distributed for municipal, domestic, irrigation and pumping use in the two counties, the application states.

The application is in conflict with two others previously filed with the Commission by Sacramento Municipal Utility District and Pacific Gas and Electric Company.

24,390 cu. yd. com. borrow incl. haul of 600 ft.	.40	.38	.30	.25	.40	.32	.40
368,585 cu. yd. stas. overhaul	.01	.02	.02	.02	.03	.025	.02
1,001.52 M. cu. yd. stas. overhaul	5.00	5.00	7.50	10.00	6.00	6.25	10.00
320 cu. yd. struct. excav.	2.00	4.00	3.70	3.00	4.00	6.25	3.00
23 days mechanical tamper	40.00	15.00	30.00	40.00	50.00	62.50	48.00
15,480 lin. ft. slope treatment, Class B	.15	.15	.20	.17	.20	.25	.15
254.3 stas. (100 ft.) finishing roadway	20.00	15.00	15.00	15.00	20.00	20.00	20.00
445 M. gals. water in place	2.50	3.00	2.40	3.00	4.00	3.15	1.50
55 cu. yd. concrete, Class A, in place	60.00	80.00	70.00	100.00	75.00	76.25	70.00
8,000 lb. steel reinf. bars in place	.15	.20	.13	.12	.15	.145	.15
8,000 lb. wire mesh in place	.15	.23	.16	.15	.15	.145	.25
1,400 sq. yd. mortar lining in place	4.50	3.00	3.00	3.00	5.00	4.75	5.00
321 lin. ft. std. reinf. conc. culv. pipe 18-in. diam. in place	3.50	3.00	3.80	3.00	4.75	4.15	4.00
153 lin. ft. std. reinf. conc. culv. pipe 24-in. diam. in place	6.00	4.25	5.70	4.30	6.50	5.50	6.00
90 lin. ft. std. reinf. conc. culv. pipe 36-in. diam. in place	12.00	8.50	10.50	8.00	10.50	9.85	10.00
441 lin. ft. extra str. reinf. conc. culv. pipe 24-in. diam. in place	7.00	5.50	6.75	4.50	7.50	6.60	6.00
260 lin. ft. plain corr. met. culv. pipe No. 16 gauge, 18-in. diam. in place	3.00	3.50	4.00	3.25	5.00	4.10	4.50
78 lin. ft. plain corr. met. culv. pipe No. 14 gauge, 24-in. diam. in place	4.50	5.00	6.20	4.60	6.50	6.10	5.50

Arizona—Gila County—Public Roads—Grade

Vinnell Co., Alhambra, Calif., presented the low bid of $245.169 before the Public Roads Administration at Phoenix, Ariz., for clearing, excavation, miscellaneous structures and provision of water plants along 9.4 mi. of the Verde Valley-Roosevelt Dam Highway in the Tonto National Forest. The roadbed will be 26 ft. wide, and the work includes 0.44 mi. of spur roads. Unit bids were submitted by the following:

(1) Vinnell Co.	$245,169	(5) Wyoming Construction Co.	274,986
(2) Larsen Contracting Co.	252,571	(6) Tanner Construction Co. and Heuser & Garnett	282,170
(3) Packard Contracting Co.	259,821	(7) Pioneer Contracting Co.	298,032
(4) Dale F. Payne	266,016		

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1,090 lin. ft. 24-in. C. G. S. M. culvert pipe	6.00	4.00	5.00	4.70	6.00	5.00	5.70
448 lin. ft. 30-in. C. G. S. M. culvert pipe	7.00	5.00	6.00	5.70	7.50	7.00	7.00
400 lin. ft. 36-in. C. G. S. M. culvert pipe	10.00	7.50	9.50	8.75	12.00	9.00	10.00
82 lin. ft. 48-in. C. G. S. M. culvert pipe	13.00	12.00	11.00	12.75	14.00	11.00	15.00
36 lin. ft. 21½-in. x 13½-in. C. G. S. M. pipe (arch type)	5.00	4.00	4.00	3.90	4.00	4.00	5.00
90 lin. ft. 30-in. x 17-in. C. G. S. M. pipe (arch type)	7.00	5.00	6.25	6.00	7.00	6.00	7.00
252 lin. ft. 90-in. field assem. metal culv. plate	55.00	55.00	52.00	55.00	50.00	65.00	45.00
358 lin. ft. removing, cleaning & stockpiling or relaying salv. culvert pipe	4.50	2.00	2.50	1.25	2.00	5.00	4.00
185 cu. yd. handlaid riprap for culvert inlet and outlet protection	24.00	6.00	30.00	15.00	10.00	12.00	20.00
Account force, furn. & applying grout to riprap	300.00	300.00	300.00	300.00	300.00	300.00	300.00
26 ea. right-of-way monuments, Type A	11.00	5.00	12.00	7.50	15.00	6.00	12.00
4 ea. concrete maintenance marker posts	11.00	15.00	25.00	12.50	2.00	15.00	20.00
70 ea. timber culvert markers	8.00	5.00	5.00	1.55	2.00	6.00	7.00

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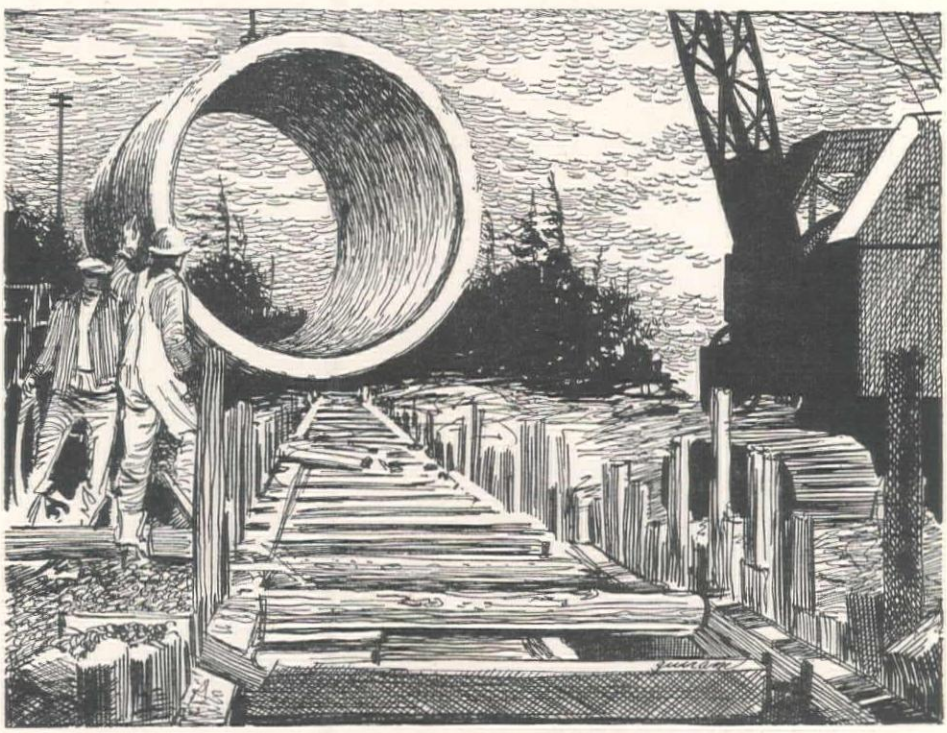
SPECIAL PURPOSE CEMENTS

Case No. 321

CONCRETE PIPE INSTALLATION



STANDARD PORTLAND

MODIFIED PORTLAND

HIGH EARLY

LOW HEAT

SULPHATE RESISTANT

PRONTO

PORTLAND POZZOLAN

BRICK MIX

PLASTIC CEMENT

OIL WELL CEMENT

Permanente PRONTO (Pipe) Cement

Permanente PRONTO Cement is specially prepared for use in the manufacture of concrete pipe.

It is a modifid high-early strength cement, ground finer than Standard Portland cement, to produce a plastic concrete which sets rapidly. When units leave the molding machine, they are rigid enough to be moved immediately to the curing area. The molding parts can be removed much earlier and returned to manufacturing operations. This permits units to stockpiled for permanent curing several days sooner.

Permanente PRONTO Cement sells for the same price as Standard Portland Cement in Northern California and Western Nevada.

PERMANENTE CEMENT COMPANY

On the job - On time

PERMANENTE CEMENT COMPANY

PERMANENTE, SANTA CLARA, DIAMOND, YOSEMITE AND KAISER BRANDS OF PORTLAND CEMENT AND PERMANENTE LIME PRODUCTS

OAKLAND • SEATTLE • HONOLULU

Los Angeles FIDO

. . . Continued from page 78

across the highway for half of its width at a time, so that traffic could be maintained. Openings across taxiways were made by special arrangements with the field operations officer, who permitted the particular strip to be out of service for a period of 24 hr. only, during which the trench had to be dug, pipe laid, backfill compacted, and asphaltic surfacing replaced. Pipe was jacked through a low railroad fill adjacent to the highway.

All operations had to be conducted, of course, with an eye to airplane operations, and a manual signal system was devised by contractors' men and the control tower. Walkie-talkie radio communication with the tower was not used, to avoid any possibility of interference with tower-to-plane messages. The entire project was installed without a single accident. Contractors' employees have commented on the splendid courtesy and cooperation of commercial pilots in directing wind and dust streams away from the workers. Numerous Army planes also use the field.

The project was constructed under the direction of Col. Clarence M. Young, General Manager of the Los Angeles Airport Department, Woody De Silva, Manager of Mines Field, M. Tommy Tucker, Chief Engineer of the department, and Vern Ostendorf, supervising engineer for the city. For the contractor, Bechtel Corp., John H. (Jack) Chamberlain was general superintendent, and Basil Licklider was office manager.

Sub-contractors included: Underground Construction Co., excavation; Fisher Paving Co., road work; Cyclone Fence Co.; Newbery Electric Co.; Steel Framing Corp., quonset-type pumphouse; Southwest Welding Co., fuel tanks; and Marine Engineers, Transite glare walls.

East Mesa Project, Says Krug, Is Not Feasible

THE IMPERIAL Irrigation District of El Centro, Calif., has been informed by Secretary of the Interior J. A. Krug that, in view of land classification and repayment feasibility reports, irrigation development of public lands on the East Mesa by either the Government or the District "would be inimical to the public interest." The East Mesa lies within the Imperial Irrigation District served by the All-American Canal in Southern California.

According to the Bureau of Reclamation Report, the lands were originally withdrawn from public entry in the hope that they could be successfully developed, but detailed investigations have since revealed them to be not practicable of irrigation and reclamation. The detailed land investigations were made by the Department of Agriculture, the University of California and the Bureau of Reclamation.

The East Mesa District had asked for a free hand in construction irrigation turnouts along the Coachella Canal.

1 ea. cattle guards (4-unit)	$1,600	$1,500	$1,200	$1,250	$2,500	$1,200	$2,000
26,300 ea. barbed wire fence	.18	.16	.17	.19	.20	.17	.22
12 ea. gates (Type 1)	45.00	50.00	75.00	75.00	35.00	75.00	85.00
Lump sum, extra and misc. force account work	800.00	800.00	800.00	800.00	80.00	800.00	800.00
67 ac. clearing and grubbing	400.00	225.00	203.25	100.00	300.00	200.00	300.00
208,000 cu. yd. unclassified excavation	.62	.77	.74	.84	.75	.83	.83
1,910 cu. yd. unclass. excav. for structs.	3.00	3.00	2.50	2.00	2.00	3.00	3.00
21,800 cu. yd. unclass. excav. for borrow, selected subgrade material	.40	.55	.60	.40	.75	.60	.60
840 cu. yd. unclass. excav. for borrow pit overburden stripping	.30	.30	.20	.20	.50	.20	.60
325,000 sta. yd. overhaul	.015	.015	.01	.015	.02	.02	.02
11,400 cu. yd. mi. special overhaul of borrow	.30	.25	.30	.25	.20	.30	.30
24,000 lin. ft. furrow ditches	.10	.10	.10	.30	.10	.10	.25
Force account, obliteration of old roadways	175.00	175.00	175.00	175.00	175.00	175.00	175.00
3,500 M. gal. watering of embank. Item 29	1.50	1.75	4.00	2.50	3.00	3.00	4.00
Lump sum, provid. & Maint. water plant or plants	$3,500	$1,000	$2,000	$1,000	$5,000	$2,000	$6,000
135 cu. yd. cement rubble masonry	40.00	25.00	30.00	38.00	75.00	40.00	25.00
1,072 lin. ft. 18-in. C. G. S. M. culvert pipe	5.00	3.50	3.20	3.10	4.00	4.00	3.60

Power . . .

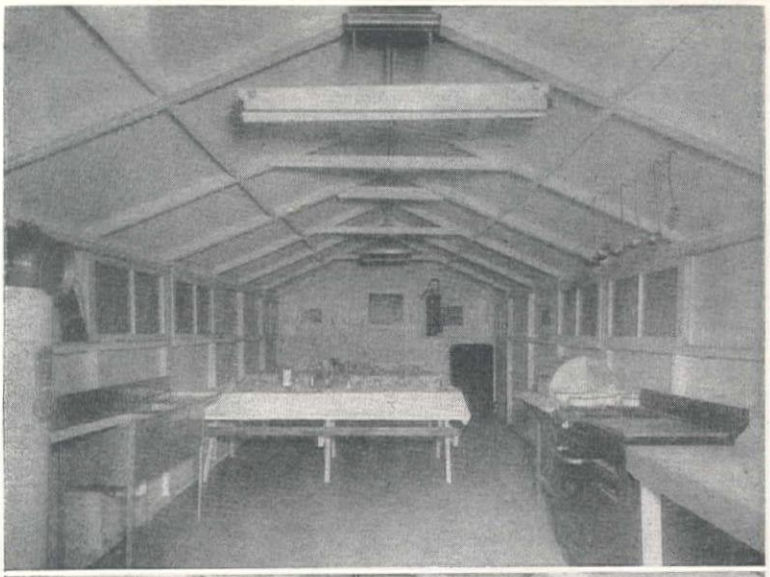
California—Imperial County—Imperial Irrig. Dist.—Transmission Line

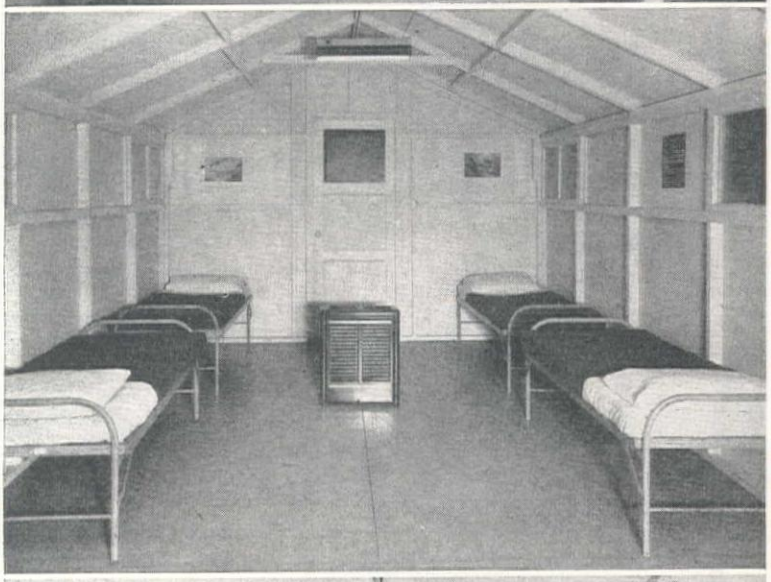
George Pollock and Co., Sacramento, Calif., submitted a low bid of $353,446 to the Imperial Irrigation District, El Centro, for the construction of a 92-161-kv. transmission line from El Centro to Coachella, Riverside County. Time allowed for completion of the project will be 180 calendar days. The following submitted unit bids:

(A) George Pollock and Company.....$353,446
(B) Petersen Electric Company..... 373,825
(C) Electrical Constructors 391,675
(D) Shurr and Finlay Chagnon Electric Company $568,553
(E) Associated Electrical and Mechanical Company 724,418

(1) lump sum, clearing right of way.
(2) 465 construct type HA structures with 65-ft. poles.
(3) 7 construct type HA-1 structures with 65-ft. poles.
(4) 3 construct type HA-2 structures with 65-ft. poles.
(5) 5 construct type HA-2 structures with 70-ft. poles.
(6) 16 construct type HB structures with 65-ft. poles.
(7) 2 construct type HB structures with 70-ft. poles.
(8) 1 construct type HB-1 structures with 65-ft. poles.
(9) 1 construct type HB-1 structures with 70-ft. poles.
(10) 7 construct type HB-2 structures with 65-ft. poles.
(11) 1 construct type HB-2 structures with 70-ft. poles.
(12) 2 construct type HB-3 structures with 65-ft. poles.
(13) 2 construct type HB-3 structures with 75-ft. poles.
(14) 1 construct type HB-4 structures with 70-ft. poles.
(15) 6 construct type HC structures with 65-ft. poles.
(16) 4 construct type HC-1 structures with 65-ft. poles.
(17) 1 construct type HD structures with 65-ft. poles.
(18) 1 construct type HD structures with 70-ft. poles.
(19) 18 construct type HT structures with 75-ft. poles.
(20) 5 construct type 3A structures with 70-ft. poles.
(21) 2 construct type 3A-1 structures with 70-ft. poles.
(22) 7 construct type 3B structures with 70-ft. maximum pole length.
(23) 2 construct type 3B-1 structures with 70-ft. maximum pole length.
(24) 3 construct type 3C structures with 70-ft. maximum pole length.
(25) 1 construct type 3D structures with 70-ft. maximum pole length.
(26) 2 construct type 3E structures with 70-ft. maximum pole length.
(27) 3 construct type 3F structures with 70-ft. maximum pole length.
(28) 2 construct type A galv. steel towers.
(29) 5 construct type B ditto.
(30) 4 construct type C ditto.
(31) 3 construct type D ditto.
(32) 2 construct type E ditto.
(33) 3 construct type G ditto.
(34) 1 construct type H ditto.
(35) 81.2 3-phase-circuit miles string 477.000 circular mill steel-reinf. aluminum conductor.
(36) 78.5 two-wire miles string ⅜-in. galv. steel, overhead static wires.
(37) 222 cu. yd. furnish and install concrete for galv. steel towers.
(38) 16,775 lb. furnish and install reinforcing steel.
(39) 550 cu. yd. excav. for concr. anchors for steel towers.
(40) 325 cu. yd. backfilling around conc. anchors for steel towers.

	(A)	(B)	(C)	(D)	(E)
(1)	$ 24,000.00	$ 33,000.00	$ 46,164.00	$ 8,460.00	$152,725.00
(2)	93,000.00	152,055.00	116,250.00	199,485.00	159,020.00
(3)	1,750.00	6,170.50	3,395.00	3,136.00	2,926.00
(4)	735.00	1,239.00	1,038.00	1,452.00	1,320.00
(5)	1,250.00	2,095.00	1,730.00	2,420.00	2,260.00
(6)	440.00	7,456.00	5,664.00	7,424.00	8,400.00
(7)	560.00	932.00	708.00	928.00	1,076.00
(8)	345.00	1,012.00	591.00	504.00	580.00
(9)	360.00	1,018.00	591.00	504.00	593.00
(10)	2,380.00	3,867.50	3,024.00	3,388.00	4,340.00
(11)	350.00	558.50	432.00	484.00	632.00
(12)	740.00	1,950.00	900.00	988.00	1,276.00
(13)	780.00	1,220.00	900.00	988.00	1,326.00
(14)	240.00	396.00	274.00	439.00	440.00
(15)	1,320.00	2,220.00	1,836.00	2,814.00	2,436.00
(16)	740.00	3,520.00	2,000.00	1,844.00	1,636.00
(17)	315.00	671.50	615.00	601.00	727.00
(18)	325.00	677.50	615.00	601.00	739.00
(19)	3,870.00	6,867.00	6,300.00	10,818.00	7,704.00
(20)	1,450.00	2,767.50	3,400.00	4,005.00	2,795.00
(21)	720.00	2,574.00	2,000.00	1,842.00	1,160.00
(22)	3,430.00	4,525.00	4,620.00	5,607.00	4,984.00
(23)	1,170.00	1,469.00	1,550.00	1,682.00	1,594.00
(24)	1,770.00	3,495.00	3,540.00	3,290.00	4,929.00
(25)	550.00	1,023.00	1,050.00	1,050.00	1,472.00
(26)	1,040.00	2,372.00	2,490.00	2,240.00	3,354.00
(27)	1,980.00	4,620.00	6,210.00	3,930.00	5,607.00
(28)	2,160.00	1,056.00	1,800.00	2,950.00	5,956.00
(29)	6,200.00	2,652.50	4,950.00	7,875.00	15,655.00
(30)	5,800.00	2,154.00	4,960.00	7,500.00	15,112.00
(31)	4,560.00	1,612.50	3,840.00	6,225.00	11,793.00
(32)	6,760.00	2,050.00	5,400.00	4,150.00	15,400.00
(33)	10,740.00	3,022.50	8,520.00	7,125.00	28,479.00
(34)	4,230.00	1,183.50	3,340.00	2,480.00	11,583.00
(35)	101,700.00	50,246.48	84,042.00	168,740.36	111,893.60
(36)	37,680.00	21,312.75	29,045.00	73,790.00	48,448.60
(37)	13,320.00	14,652.00	15,540.00	12,210.00	67,821.00
(38)	4,026.00	2,348.05	4,026.00	2,516.25	6,856.00
(39)	4,620.00	12,375.00	6,050.00	1,925.00	8,387.50
(40)	2,080.00	3,250.00	2,275.00	162.50	1,987.75





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Oregon—Marion County—Corps of Engineers—Concrete Gravity

Consolidated Builders, Inc., Swan Island, Ore., consisting of General Construction Co., Seattle, Wash.; J. F. Shea Co., Alhambra, Calif.; Kaiser Engineers, Inc., Oakland, Calif.; and Walsh Construction Co. of San Francisco were awarded the contract by the Portland District, Corps of Engineers, for construction of the main structure of Detroit Dam on the North Santiam River 13 mi. east of Mill City, Ore. Consolidated's low bid of $28,230,509 was more than $3,000,000 below the engineers' estimate. The contract calls for construction of the concrete gravity dam, complete with outlet gates and valves, penstocks, trashracks, stilling basin, control house and other appurtenant structures. Completion time is 1,550 days. Unit bids were submitted as follows:

(A)	Consolidated Builders, Inc.	$28,230,509
(B)	Guy F. Atkinson Co., J. A. Jones Construction Co., Bressi & Bevanda Constructors, Inc., Charles L. Harney, Inc., Ostrander Construction Co. and A. Teichert & Sons, Inc.	32,272,282
(C)	Morrison-Knudsen Co., Inc., Winston Bros. and Peter Kiewit Sons' Co.	32,889,995
(D)	Santiam Constructors, composed of J. C. Maguire, D. W. Thurston, Wunderlich Contracting Co., Brown & Root, Inc., Griffith Co., Grafe-Callahan Construction Co. and Gunter & Shirley	34,794,775
(E)	Government estimate	31,541,856

Clearing

(1) lump sum clearing

Excavation, Embankment and Revetment Work

(2) lump sum diversion and care of water
(2a) 150,000 cu. yd. stripping quarry, etc.
(3) 400,000 cu. yd. excav., common
(3a) 105,000 cu. yd. excav., common, in excess of 400,000 cu. yd.
(4) 300,000 cu. yd. excav., solid rock
(4a1) 105,000 cu. yd. excav., solid rock in excess of 300,000 cu. yd.
(4a) 200 cu. yd. struct. excav., common
(4b) 200 cu. yd. struct. excav., solid rock
(4c) 2,000 cu. yd. excav. for access road, common
(4d) 7,500 cu. yd. excav. for access road, solid rk.
(4e) 500 lin. ft. 18-in. diam. corru. metal culv. pipe, 16 gauge, in place
(4f) 200 lin. ft. 30-in. diam. corru. metal culv. pipe, 14 gauge, in place
(4g) 60 lin. ft. 36-in. diam. corru. metal culv. pipe, 12 gauge, in place
(4h) 100 lin. ft. 72-in. diam. corru. metal culv. pipe, 8 gauge, in place
(4i) 23,000 sq. ft. line drilling
(5) 7,000 cu. yd. embankment, compacted
(5a) 126,000 cu. yd. backfill, uncompacted
(6) 1,000 cu. yd. gravel foundation for revetment
(7) 5,200 cu. yd. stone revetment, dumped and rearranged
(8) 28,000 cu. yd. stone revetment, concreted

Concrete Work

(9) 400,000 bbl. Portland cement, Type IV or IVa
(9a) 800,000 bbl. Portland cement, Type II, IIa, III or IIIa
(10) 9,000 cu. yd. conc. gravity stilling basin wall
(11) 1,450,000 cu. yd. concr., mass
(12) 14,000 cu. yd. concr., stilling basin slab
(13) 21,700 cu. yd. concr., structural
(14) 3,000 cu. yd. concr. for concreted revetment
(14a) 10,000 sq. yd. vacuum treatment of unformer concr. surfaces
(14b) 15,000 sq. yd. vacuum treatment of formed concr. surfaces
(14c) 25,000 sq. yd. absorptive form lining for concr. surfaces
(15) 16,500 lin. ft. drilling for and grouting anchor bars
(16) 770 lin. ft. 6-in. diam. porous concr. drain tile, in place
(17) 3,900 lin. ft. 8-in. diam. open joint drain tile, in place
(18) 66,000 lb. embedded pipe cooling system, location "A"
(19) 300,000 lb. embedded pipe cooling system, location "B"
(20) deleted
(21) deleted

Foundation Exploration

(22) 4,000 lin. ft. drilling NX exploratory holes, depths 0 feet to 100 feet
(23) 100 lin. ft. drilling through overburden
(24) 1,000 lin. ft. drilling 6-in. diam. holes, depth 0 feet to 50 feet
(25) deleted
(26) 17,500 lb. miscellaneous pipe and fittings for grouting and drainage, in place
(27) 35,000 lb. copper water and grout stops in place

Structural Steel, Miscellaneous Metal Work and Installation of Government Furnished Equipment

(28) 63,000 lb. parapet handrailing, in place
(29) 13,000 lb. tainter gate seal plates, corrosion resisting steel, in place
(30) 310,000 lb. structural carbon steel in place
(31) 3,620,000 lb. steel reinf. in place
(32) 498,000 lb. struct. steel, fixed and embedded
(33) 90,000 lb. misc. metal, in place
(34) lump sum, installation of rectangular slide gates
(35) deleted
(36) 45,000 lb. large valves, in place
(37) 83,000 lb. miscel. pipe, valves and fittings, in place
(38) deleted
(38a) lump sum, install. of air compressor, compl.
(38b) lump sum, install. of engine generator set, compl.
(39) lump sum, install hydraulic control systems
(39a) lump sum, install. of two 14-ft. butterfly valves

Mechanical

(40) 2,760,000 lb. fabricated steel penstocks, conduit lining and vents, in place
(41) deleted
(42) 13,000 lb. welded steel tanks, in place
(43) lump sum sump pump, complete, in place
(44) deleted

Water and Sewer Systems

(45) lump sum domestic water and sewer systems, complete

Control House

(46) lump sum control house, complete
(47) deleted
(48) deleted

Electrical Work

(49) lump sum, main power distribution switchbd.
(50) 1 panelboard, lighting, 12 D.P. circuits
(51) 1 panelboard, convertible, heating
(52) 1 panelboard, lighting 4 S.P. circuits
(53) 300 lin. ft. conduit, rigid steel, embedded, ½-inch
(54) 4,500 lin. ft. conduit, rigid steel, embedded, ¾-in.
(55) 6,700 lin. ft. conduit, rigid steel, embedded, 1-inch
(56) 2,500 lin. ft. conduit, rigid steel, embedded, 1¼-inch
(57) 5,100 lin. ft. conduit, rigid steel, embedded, 1½-inch
(58) 9,600 lin. ft. conduit, rigid steel, surface, ½-inch
(59) 6,900 lin. ft. conduit, rigid steel, surface, ¾-inch
(60) 1,100 lin. ft. conduit, rigid steel, surface, 1-inch
(61) 2,000 lin. ft. conduit, rigid steel, surface, 1¼-inch
(62) 150 lin. ft. conduit, rigid steel, surface, 1½-inch
(63) 20 lin. ft. conduit, rigid steel, surface, 2½-in.
(64) 520 lin. ft., conduit, transite, embedded, 3-in.
(65) 440 lin. ft. conduit, transite, embedded, 4-in.
(66) 8,470 lb. wire, copper, insulated
(67) 2,840 lb. wire, copper, bare, and bar copper, bare
(68) 364 lb. boxes, sheet metal, galvanized
(69) 365 lb. boxes, cast iron, galvanized
(70) 7 each magnetic contactors, latch-in type
(71) deleted
(72) 43 each fixtures, lighting, glas-steel diffusers, 300 W.
(73) 29 each fixtures, lighting, glas-steel diffusers, 200 W.
(74) 21 each fixtures, lighting, RLM dome
(75) 33 each fixtures, lighting vaportight
(76) 7 each fixtures, lighting vapor-tight with reflector
(77) 54 each fixtures, lighting, GS533-B for stairs
(78) 2 each fixtures, lighting, control house, entrance
(79) 2 each fixtures, lighting, Graybar cat. No. 1230

(Continued on next page)

Construction of Platoro Dam Starts This Summer

ACTING SECRETARY of the Interior Oscar L. Chapman has approved a repayment contract which is expected to permit construction work to start this summer on the San Luis Valley project in southern Colorado.

The contract has been approved by the water users of the Conejos Water Conservancy District by a vote of 9,964 to 34. It has also been approved by appropriate Colorado State Court action.

The Bureau of Reclamation opened bids for construction of Platoro Dam at the project office, Monte Vista, Colo., on Apr. 12. The 135-ft., earth-fill dam across the Conejos River, will create a reservoir of 60,000-ac. ft. capacity, the highest level of which will stand at 10,042 ft. above sea level.

The dam, estimated to cost $4,200,000, will regulate and impound water from the annual snowfall of the Rocky Mountains in southern Colorado. The stored water will supply supplemental water to 91,000 ac. of fertile pasture and farm lands. Farm lands in the valley stand at approximately 8,000 ft. above sea level.

Of the cost of $4,200,000, a total of 40 per cent, or $1,680,000, has been allocated to flood control which is nonreimbursable. The conservancy district has contracted to repay irrigation's 60 per cent of the cost, or approximately $2,520,000. The revenue will come from the water users and from the general property tax base of the area benefitted.

Construction Closes Roadway Across Grand Coulee Dam

CLOSING of the roadway atop the Grand Coulee Dam to general travel by the public for an indefinite period has been announced by the Bureau of Reclamation. Bureau spokesmen reported that use of the roadway by heavy construction vehicles and other equipment makes its use by the traveling public hazardous.

The roadway spanning the 4,173-ft. dam was opened to the public for the first time last year. Beginning last fall, private contractors building the pumping plant, the East Control Bay Building, and East Switchyard have used the top of the dam to transport materials. In recent weeks, the Pacific Bridge Co. has been operating cranes and hoists from the roadway to facilitate spillway repair work.

Men employed at the dam by the Bureau and the various contractors will be permitted to cross the dam in a west-east direction during a short period in the morning in going to work. The dam will be open to them again for a brief period each evening for east-west travel only when they return from their jobs. Even this travel may be halted if it interferes with construction activities.

It is probable the top-of-the-dam roadway will remain closed to the public throughout the summer months and reopened when construction work permits.

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You are—you, the customer. You're the one who brought about the formation of the Truck Mixer Manufacturers Bureau.

You didn't like the multiplicity of sizes and capacities of truck mixers. You didn't like the constant changes in capacity that meant that your machines became obsolete in a hurry. You didn't like not being able to bid accurately and figure your truck mixer costs accurately. Your collective, justified complaint demanded that something be done.

And it was. We organized the Truck Mixer Manufacturers Bureau to set up standards that guaranteed size and capacity. We put a rating plate on the side of each truck mixer so that you could see how large it was, buy on mechanical merit, and figure your operating costs easily.

So look for that rating plate. It's your guarantee of size and accuracy . . . your guarantee that you're in charge here.

Truck Mixer Manufacturers Bureau

Affiliated with The National Ready Mixed Concrete Association

BLAW-KNOX DIVISION
Pittsburgh, Pa.

CHAIN BELT COMPANY
Milwaukee, Wis.

CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.

THE JAEGER MACHINE COMPANY
Columbus, Ohio

WORTHINGTON PUMP AND MACHINERY CORPORATION
RANSOME DIVISION
Dunellen, N. J.

THE T. L. SMITH COMPANY
Milwaukee, Wis.

(80) 151 each fixtures, lighting, for galleries
(81) 56 each fixtures, lighting, roadway, C-H, VCD-6
(82) 1 fixture, lighting, C-H, W380, Vapor-tight
(83) deleted
(84) 3 transformers, 25 KVA. 460-115/230 volts, 1-phase, 60 cycles, dry type
(85) 12 receptacles, plug, 480 volt, 3-phase, 4-pole, with threaded cap housing
(86) 61 receptacles, plug, 120 volt, 1-phase, 3-pole, with threaded cap housing
(87) 82 outlets, 120 volt, switch or convenience
(88) 16 outlets, 480 volt, Hubbellock, 4-wire, complete with receptacle, plate and plug
(89) 12 switch covers, vapor-tight, C-H DS type
(90) deleted
(91) 260 lin. ft. conduit, rigid steel, surface, 2-in.
(92) 100 lin. ft. conduit, rigid steel, embedded, 2-inch

	(A)	(B)	(C)	(D)	(E)
(1)	$70,000	$185,000	$440,000	$400,000	$103,993
(2)	$1,200,000	$1,965,500	$1,368,400	$1,000,000	$1,354,402
(2a)	1.60	1.70	2.40	2.50	4.34
(3)	3.00	3.50	2.00	7.50	1.44
(3a)	1.50	1.75	1.50	1.00	1.02
(4)	4.50	6.40	6.00	7.50	5.18
(4a1)	2.75	3.00	3.00	5.60	4.36
(4a)	3.00	6.00	5.90	10.00	4.92
(4b)	5.50	10.00	11.80	20.00	8.79
(4c)	1.40	1.00	1.80	1.50	.97
(4d)	2.60	2.25	3.50	5.00	2.94
(4e)	4.15	4.00	5.60	6.00	4.38
(4f)	8.50	8.00	10.00	12.00	7.34
(4g)	12.50	12.00	14.00	20.00	11.00
(4h)	48.00	45.00	47.00	50.00	34.52
(4i)	1.45	1.00	2.40	4.00	1.09
(5)	2.30	3.00	3.00	1.00	1.49
(5a)	1.95	1.50	.90	1.00	1.24
(6)	2.00	4.00	5.80	5.00	4.00
(7)	2.90	4.00	3.50	5.00	3.44
(8)	3.30	2.50	3.85	5.00	3.56
(9)	5.50	4.30	6.00	5.00	5.38
(9a)	5.15	4.00	5.30	4.70	4.90
(10)	16.00	25.00	18.90	15.00	15.98
(11)	8.80	11.64	11.20	11.00	11.18
(12)	13.00	27.00	15.90	15.00	14.16
(13)	54.00	55.00	51.50	64.00	43.20
(14)	12.00	20.00	25.00	15.00	15.97
(14a)	2.60	2.00	4.40	6.00	4.69
(14b)	5.25	5.00	6.20	8.00	5.91
(14c)	2.50	2.00	3.50	3.00	2.38
(15)	2.30	1.75	2.40	2.00	2.73
(16)	3.40	2.50	2.10	8.00	2.80
(17)	1.75	3.50	3.35	8.00	2.67
(18)	.66	.50	.70	1.20	.65
(19)	.73	.35	.60	1.20	.51
(22)	11.80	9.00	11.80	9.00	15.00
(23)	11.80	11.00	11.80	9.00	13.90
(24)	19.70	18.50	23.60	20.00	19.52
(26)	.65	.60	.90	.80	.52
(27)	2.00	1.40	1.55	1.80	1.50
(28)	.40	.60	.60	.50	.38
(29)	1.25	.85	1.40	1.50	1.86
(30)	.45	.38	.55	.80	.27

(Continued on next page)

Underground Water Flow Stopped by New Method

A NEW METHOD of controlling subsurface seepage, a major cause of loss or pollution of water, has been announced by the Shell Oil Co. The method of control is by a permanent underground dam constructed by means of an asphalt emulsion. The subterranean barrier is built without excavating, by injecting an asphalt emulsion into the earth through a pipe. The new method is marketed under the trade name of Shellperm.

The underground barrier created by the Shellperm process may prevent serious leakage of water through banks or reservoirs, check contamination caused by infiltration and prevent sea water from seeping into fresh-water wells. Aside from its role in water conservation, Shellperm can also be used to check seepage around tunnels, road beds or other subsurface structures without the use of such techniques as sheet piling.

The process employs an emulsion of asphalt in water which is pumped under low pressure through a metal pipe driven into the ground. Emerging from the pipe, the emulsion spreads out roughly in the form of a ball. Chemicals mixed with the emulsion then cause the asphalt to coalesce, producing a mass impermeable to water. Following the first injection, the pipe is raised and additional emulsion is pumped down to form a second impermeable mass. After repeated injections have produced a vertical asphalt column, the pipe is moved and additional injections are made to create another column. The process is repeated until abutting or overlapping columns form an underground dam. The process is now in use to check serious loss of irrigation water through an earth dam on the Santa Ana River in California.

$1,220,000 Contract Awarded For Los Angeles River Work

A CONTRACT for improvement of the Los Angeles River Channel between Tujunga Wash and Whitsett Avenue, river mile 37.71 to mile 38.61, has been awarded to Matich Bros. and E. L. Yeager, contractors of Riverside, Calif., on their low bid of $1,220,693.70. Government estimate on the job was $1,396,830.60. There were 11 bidders.

Terms of the contract state that contractors shall complete the entire work ready for use not later than 300 calendar days after date of notice to proceed.

Idaho Plans Construction

NEW CONSTRUCTION totaling $3,489,554 has been approved at three Idaho state institutions. The institutions are the state hospital at Blackfoot, the state hospital north of Orofino and the state school and colony at Nampa.

Funds for the construction have been approved by the state's legislature.

CRUSHER QUIZ

Check Your Present Crushing Results Against Kue-Ken Performance*

Q. Can fast-wearing jaw plates and frequent costly replacements be avoided?

A. **Yes. "Crushing without rubbing" is the solution. Use Kue-Ken Crushers for 5 to 10 times longer jaw plate life.**

Q. How can we get more production with less power?

A. **The Kue-Ken design permits a 30-40% saving in crusher weight, 50% to 60% higher crushing speed. Kue-Ken Crushers have greater capacity, turn out bigger volume and more uniform product with less power.**

Q. How can we eliminate overheating and fast-wearing bearings, which cause frequent shut-downs and reduce production?

A. **Use Kue-Ken Crushers. Shafts are larger, heavier, stronger, with greater bearing surface. This reduces bearing pressure per sq. inch. Bearings are sealed in filtered oil and pump-lubricated. Result: Bearings fully protected from dirt and abrasive, a crusher with long life at full-speed production.**

Q. Can a crusher be automatically protected against overload and lubrication failure?

A. **Yes. Kue-Ken Crushers are equipped with a built-in automatic release, insurance against costly shut-downs due to tramp iron or overloading. Kue-Ken also provides an automatic cut-off which stops crusher instantly in case of lubrication failure.**

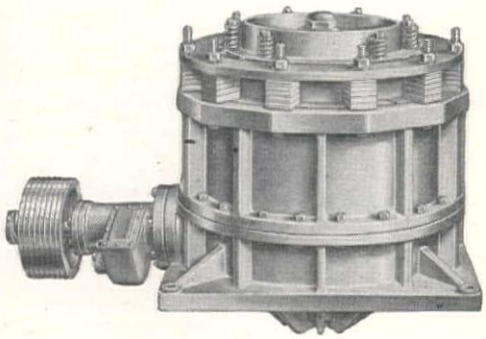
Q. Can crusher output be increased and crushing costs reduced at the same time?

A. **Yes. Kue-Ken Crushers, using the exclusive Kue-Ken principle of "crushing without rubbing," give 2 to 3 times greater capacity than old-style crushers, with less horsepower, reducing operating cost.**

Q. How can we get the facts about higher crushing production volume at lower cost?

A. **Send today for your copy of Jaw Crusher Bulletin 605 or Gyratory Bulletin 604.**

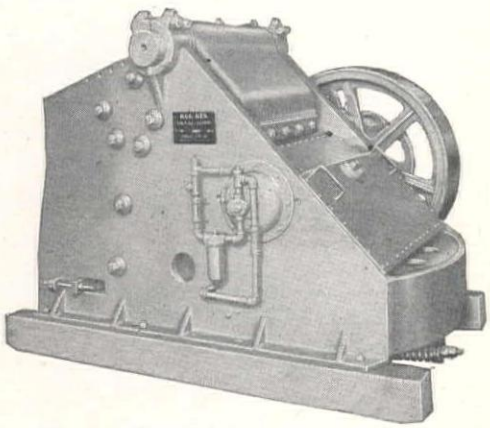
*Pronounced Q-Ken. U. S. & foreign patents pending.



KUE-KEN GYRATORY

Operates on the long-proved Kue-Ken principle of "crushing without rubbing." Powerful, compact, yet with larger, stronger shafts—7" diam. in 18-inch crusher, 12" diam. in 3-ft. model—provides greater bearing area for cool running, longer life.

LOW HEADROOM — 18-inch crusher only 30¼" high, 3-ft. crusher 45" high. **TAKES CHOKE FEED** of hardest rock—no feeders required. Note exclusive Kue-Ken features at left. Sizes 18" and 3 ft.



KUE-KEN JAW CRUSHER

Pictured is No. 80 36" x 10" Simplex, showing oil pump and filter side. Perfect lubrication of all mechanism in oil-tight housing stops wear, requires attention only twice a year. Automatic features described at left give complete protection against lubrication failure and overloading. This model crushes 50 to 60 tons per hour with 1" setting, uses exclusive Kue-Ken principle of "crushing without rubbing." A miser for power, a giant for production. All-steel frame is three times stronger than cast iron, weighs only half as much. Can be choke-fed—flood it with rocks and keep it full. Other models from 12" x 7" to 42" x 25".

DEALERS
Some Territory is still open.

OREGON-WASHINGTON DISTRIBUTORS
P. L. CROOKS & COMPANY, INC.
2145 N. W. PETTYGROVE ST. PORTLAND, OREGON
529 CHESTNUT STREET OAKLAND 7, CALIFORNIA

STRAUB MFG. CO.

Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
Kue-Ken Simplex Crushers	Concentrating Tables	Feeders
Kue-Ken Gyratory Crushers	Overhead Eccentric Crushers	Screenwheel Classifiers

(31)	.115	.125	.12	.13	.13
(32)	.35	.25	.35	.50	.23
(33)	.55	.60	.70	.80	.40
(34)	$42,000	$40,000	$61,360	$37,500	$51,786
(36)	.85	1.35	1.10	.90	.89
(37)	.45	.45	.60	.60	.39
(38a)	$1,500	$1,000	885.00	$1,500	$1,989
(38b)	$1,500	$1,000	$2,000	$1,500	$1,858
(39)	$20,000	$15,000	$14,160	$18,000	$9,821
(39a)	$46,000	$40,000	$34,400	$20,000	$56,770
(40)	.305	.31	.32	.30	.38
(42)	.32	.25	.50	.35	.20
(43)	$8,250	$9,000	$8,260	$9,000	$6,951
(45)	$28,500	$32,500	$23,600	$12,000	$18,968
(46)	$55,000	$62,000	$47,000	$30,000	$61,904
(49)	$9,700	$12,500	$8,915	$10,000	$6,358
(50)	370.00	500.00	354.00	500.00	392.00
(51)	500.00	600.00	450.00	500.00	426.00
(52)	140.00	200.00	120.00	100.00	179.00
(53)	.90	.70	.80	1.00	1.13
(54)	1.00	.75	.90	1.00	1.09
(55)	1.10	1.00	1.00	1.00	1.24
(56)	1.40	1.10	1.30	1.50	1.35
(57)	1.50	1.50	1.40	1.60	1.50
(58)	1.00	.70	.90	1.00	.85
(59)	1.20	.90	1.05	1.00	.94
(60)	1.80	1.10	1.95	1.50	1.03
(61)	1.90	1.50	1.70	1.60	1.13
(62)	2.20	2.00	2.00	2.00	1.34
(63)	4.00	3.00	3.60	3.00	3.85
(64)	2.60	1.50	2.70	3.00	2.60
(65)	6.00	3.00	5.45	5.00	3.65
(66)	2.20	1.50	2.00	2.00	2.70
(67)	1.50	1.25	1.35	1.50	1.20
(68)	2.75	2.50	2.50	2.50	2.50
(69)	3.00	3.00	2.80	2.60	3.00
(70)	80.00	90.00	71.00	85.00	148.00
(72)	24.00	30.00	22.00	20.00	33.00
(73)	20.00	20.00	18.00	20.00	29.00
(74)	10.00	12.00	8.00	10.00	24.00
(75)	10.00	15.00	9.00	10.00	31.00
(76)	22.00	22.00	20.00	25.00	35.00
(77)	7.00	9.00	6.50	7.00	16.50
(78)	36.00	30.00	33.00	30.00	65.50
(79)	12.00	15.00	11.00	12.00	17.50
(80)	5.00	5.00	5.00	6.00	17.00
(81)	90.00	90.00	82.50	80.00	89.00
(82)	50.00	50.00	42.00	50.00	55.00
(84)	530.00	600.00	492.00	600.00	526.00
(85)	22.00	40.00	20.00	25.00	46.00
(86)	17.00	20.00	15.00	20.00	39.00
(87)	3.00	7.00	3.00	3.00	7.50
(88)	9.00	12.00	8.25	10.00	20.50
(89)	6.00	7.00	5.00	6.00	7.00
(91)	2.60	2.00	2.40	3.00	1.80
(92)	2.20	1.50	2.40	2.00	2.16

Contractors Warned to Check License Validity

THE CALIFORNIA State Division of Highways has strongly suggested that contractors check the validity of their license and all joint venture licenses which they may hold with the California Registrar of Contractors. During recent weeks, the state department has lost money because low bidders on three highway and bridge projects were ruled by the Registrar of Contractors to be improperly licensed. All three low bidders were holders of B-1 licenses, entitling them to contract for general building and not authorizing them to undertake highway or bridge construction.

So that prospective bidders would be fully aware of the classification regulations, the Division of Highways has sent out several circulars, stating:

"Amendments to the Contractors License Law provide for the classification of licenses limiting the sphere of a contractor's activity to the particular type of work covered by his license. Recent rulings by the Registrar of Contractors under these license classification regulations have deprived three low bidders of the award of highway contracts on the grounds that their general building licenses (B-1) did not authorize them to undertake highway or bridge construction.

"Most highway work and all bridge construction requires a general engineering license (A). Construction of buildings and similar structures requires a general building license (B-1). Certain specialty licenses also are issued. Are you properly licensed for the class of work on which you propose to bid? It is our understanding that no additional fees are charged for supplemental licenses.

"In order to avoid losing the award of a contract because of the lack of proper license, it is suggested that you check the validity of your license and all joint venture licenses which you may hold with the Registrar of Contractors before submitting further bids. No bid will be considered unless the bidder is properly licensed at the time of bid opening."

Repair to Oregon Highways To Exhaust Available Funds

DAMAGE to major Oregon highways from the severe winter weather will total more than $1,000,000, according to estimates made by state engineers. This total does not include damage to city and county road systems. In the area around Pendleton in northeastern Oregon, damage to state roads was estimated at $35,000. Minimum repairs to state roads in Union and Wallowa counties will cost about $50,000. Highways are continuing to break up as the spring thaws begin, so current estimates of damage are conservative. Repairs will take all available funds from the state's road maintenance budget.

CONTRACTORS:
Lower Delivery Costs Mean Lower Overhead

You'll agree that a good way to *make* money . . . is to *save* money.

One good place to watch costs is in your delivery operation. For the *right* truck can lower delivery costs plenty! Dodge *"Job-Rated"* trucks are built to do just *that*. They're built to *fit* your hauling needs . . . save you money . . . and to last longer.

For example, every Dodge truck has one of seven *"Job-Rated"* truck engines. It is a high-compression engine of advance design . . . which insures maximum efficiency, with "top" economy.

Each has exactly the right clutch, transmission, rear axle, and every other unit . . . *"Job-Rated"* for maximum dependability, and long life.

Let your Dodge dealer tell you the whole *"Job-Rated"* story. You'll quickly realize his story makes sense! And remember . . . *only* Dodge builds *"Job-Rated"* trucks.

For the good of your business—

Switch to DODGE "Job-Rated" TRUCKS

NEW EQUIPMENT

MORE COMPLETE INFORMATION on any of the new products or equipment briefly described on the following pages may be had by sending your request to Equipment Service, Western Construction News, 503 Market Street, San Francisco 5, Calif. For quicker service, please designate the item by number.

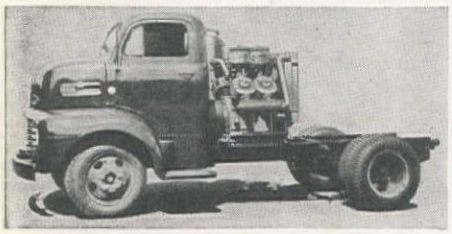
401

Truck-Mounted Compressor

Manufacturer: Davey Compressor Co., Kent, Ohio.

Equipment: Improved 160-c.f.m. "Auto-Air" Compressor, driven direct from the truck engine.

Features claimed: The compressor is of the V-type with three low pressure cylinders and one high pressure cylinder. It is 46 in. long and occupies about one-third of the truck body space, leaving the remainder open for the transportation of men, tools and materials. Width is 67 in. and height, 50 in. It is adaptable to any type of truck body and is driven direct from the truck engine through a Davey P-85 Heavy Duty Power Take-off, thus eliminating need for a separate driving engine. Including the take-off, the unit weighs 1600 lb. It is suitable for mounting directly on the truck chassis or on a platform base.



402

Mechanical Dowel Installer

Manufacturer: Flex-Plane Co., Warren, Ohio.

Equipment: Machine that mechanically installs dowels and tie bars in concrete pavements.

Features claimed: The installer, available for rental or sale, vibrates bars through the finished surface to their exact position and alignment within the slab. The machine is usually placed on the forms behind the finishing machine. A gas electric unit, with hydraulic lift controls, the machine more than keeps up with the fastest paver operation. Studies have revealed that the machine installs dowels and tie bars in 30 seconds. Manufactured in two standard widths—adjustable 20 to 25 ft. for full width paving, and 10 to 15 ft. for half width paving.

403

Truck-Mounted Crane

Manufacturer: Wayne Crane Division of American Steel Dredge Co., Inc., Fort Wayne, Ind.

Equipment: New ½-cu. yd., 10-ton truck mounted crane and excavator.

Features claimed: Known as the model 44 Corsair, the machine travels at truck speeds, swings at 5½ r.p.m., and is convertible to all crane and shovel attachments. The 6-wheel, tandem-type carrier, built especially for crane mounting, is of 16-in., 45-lb. steel I-beam construction. Outrigger tubes are integral with the frame with one pair ahead of the front wheels and one pair

When You Need Concrete Mixers Contact Any of These Smith WESTERN DISTRIBUTORS

BEEBY MACHINERY CO.
Sacramento, Calif.

CLYDE EQUIPMENT CO.
Portland, Ore.

CLYDE EQUIPMENT CO.
Seattle, Wash.

GARFIELD & CO.
San Francisco, Calif.

THE McCOY MACHINERY CO.
Denver, Colo.

THE McCOY MACHINERY CO.
Sterling, Colo.

LANG COMPANY
Salt Lake City, Utah

MODERN MACHINERY CO., INC.
Spokane, Wash.

NORTHLAND MACHINERY CO.
Sidney, Mont.

PIONEER MACHINERY CO.
Idaho Falls, Idaho

SAWTOOTH COMPANY
Boise, Idaho

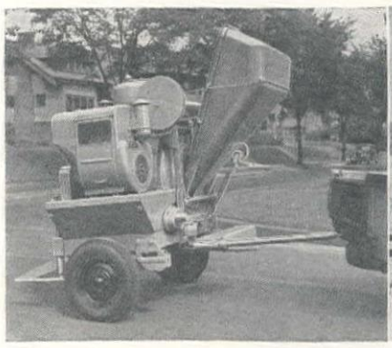
SHAW SALES & SERVICE CO.
Los Angeles, Calif.

STEFFECK EQUIPMENT CO.
Helena, Mont.

STUDER TRACTOR & EQUIPMENT CO.
Casper, Wyo.

WESTMONT TRACTOR & EQUIPMENT CO.
Missoula, Mont.

NATIONAL MACHINERY CO., LTD.
Vancouver, B. C.

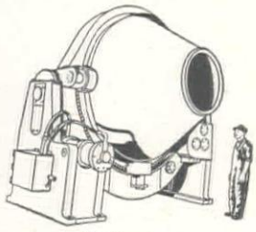


6-S Trail-Smith . . . a handy, 2-wheel trailer type mixer . . . faster . . . lightweight . . . well-balanced . . . easy to tow . . . easy to spot. All levers grouped for quick, easy operation. Ideal for the small jobs. Ask for Bulletin No. 235.

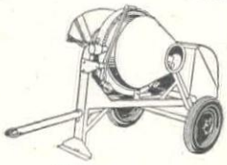
Smith-Mobile continues to lead the parade. Improved performance goes along with new beauty. Mixer engine, transmission, water pump, valve system and all moving parts completely enclosed in streamlined housing. 4 sizes.

49 Years of Mixer Building Experience

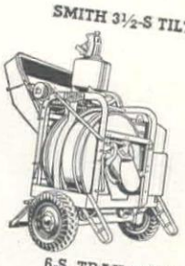
SMITH-MOBILE TRUCK MIXER



SMITH 112-S TILTER

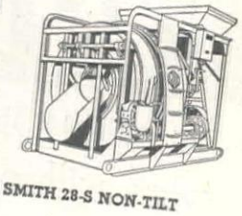


SMITH 3½-S TILTER



6-S TRAIL-SMITH

SMITH 11-S NON-TILT



SMITH 28-S NON-TILT

Smith continues to be the *first choice* of experienced contractors and engineers. When faced with the problem of producing mass concrete on scheduled time, they generally specify Smith Mixers or Smith-Mobile Truck Mixers. These dependable machines are being built today better than ever, for big yardage and long life.

SMITH
THE T. L. SMITH CO. MILWAUKEE, U.S.A.

CONCRETE MIXERS

Famous for Performance on the World's Greatest Projects

A 4878-1PR-6

behind the rear wheels. Improved boom clearance and visibility are achieved by an offset, one-man cab and tapered frame ends. An auxiliary transmission provides ten speeds forward and two reverse. Power is supplied by a 6-cylinder gasoline engine which develops 105 h.p. at 3200 r.p.m. The crane is powered by an 8-cylinder gasoline engine, developing 62 h.p. at 1800 r.p.m.

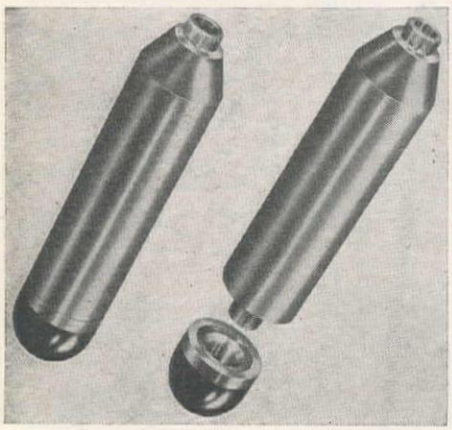
404

Rubber-Tipped Concrete Vibrator

Manufacturer: Viber Co., Burbank, Calif.

Equipment: Rubber-tipped vibrators to remove annoyance and expense for the contractor.

Features claimed: Damage to expensive forms has long been a constant annoyance



to the contractor. Realizing the possible savings in form placement cost, Viber Co. has developed the idea of using rubber-tipped vibrators as a practical method for reducing these costs. Plaster of Paris inserts for architectural concrete, plywood or any of the popular moisture-absorbent form lining materials such as Celotex can now be vibrated with a minimum amount of damage.

405

Rotary Concrete Drill Bit

Manufacturer: Rotary Concrete Drill Co., Pasadena, Calif.

Equipment: Drill bits that make hundreds of holes without dulling.

Features claimed: The unique blunt end design of the RCD drilling bits enables them to drill right through gravel or rounded rocks in concrete rather than being deflected around them. The bits are made from high grade steel with heat treated special carbide cutter set in and brazed to the blunt end of the shaft. The bits range in sizes from ¼ to 2 in., the smaller sizes sometimes being put out on free trial as demonstrators.

406

Bottom Dump Wagon

Manufacturer: The Heil Co., Milwaukee, Wis.

Equipment: Wagon with power-operated, clam-shell doors.

Features claimed: The wagon, with its Diesel power plant stepped up from 150 to 200 h.p., handles 28-ton loads with ease. The clam-shell doors are pulled wide open in two seconds and are automatically scraped clean. In the open position, the high ground clearance (38 in.) eliminates the drag and bogging down on the fill so common to the conventional wagons with drop-down doors.

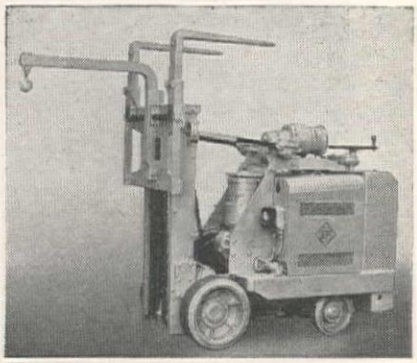
407

Load-Handling Attachment

Manufacturer: Elwell-Parker Electric Co,. Cleveland, Ohio.

Equipment: Truck attachment for load handling that can be converted from fork to boom type in a few minutes without using special tools.

Features claimed: The device has three main parts: A base member which is at-



tached to the truck's lifting mechanism and which rides in the upright tilting columns; the fork tines suspended from a bar supported on the base, and the boom. The latter is a solid, alloy-steel bar bent at right angles near the middle of its length. That part which engages the base is machined for a sliding fit into brackets where it is held vertically and firmly in place. When forks are to be used alone, the boom

is detached by slipping it out of its holder. When boom is required by itself, the fork tines are swung upward and backward and held in this reversed position by means of pins in the brackets at the top of the backbase. Truck's rated capacity is 4,000 lb.

408

Gravity Water Filter

Manufacturer: Sparkler Manufacturing Co., Mundelein, Ill.

Equipment: Filter to remove all sediment, off-color chlorine taste and other undesirable tastes from water.

Features claimed: The filter is completely portable and operates without water pressure or any other mechanical device. Filtration is accomplished through two stainless steel screens and a carbon pad. The pad contains an element that eliminates the accumulation of bacteria in the pad itself. As soon as the water to be filtered is poured into the upper container, the filter is in operation. The filter will provide pure drinking water to construction workers, road gangs, etc., on any location away from a certified source of water.

409

Screening and Loading Plant

Manufacturer: Universal Engineering Corp., Cedar Rapids, Iowa.

Equipment: New secondary crushing, screening and loading plant.

Features claimed: Feature of this plant, exclusively Universal, is the 30-in. Twin-Dual Roll Crusher. This is a two-stage reduction machine consisting of two double roll crushers mounted on a single set of shafts and bearings. One set of rolls receives the coarse material coming from the top deck of the screen and acts as roughing crusher. Approx. 40-50% of the material that goes through this crusher will be crushed to finish size. The second set of rolls of larger diameter than the first acts as a finishing machine set to reduce the crushed material to specification size. The TwinDual rolls relieve the jaw crusher of much of the crushing that otherwise would be required of the primary breaker. It is therefore possible to set the discharge opening of the primary crusher at a point where its capacity is almost double that of the primary used with the conventional type rolls. Other equipment includes a 4-ft. x 12-ft., 2½-deck vibrating screen, three 30-in. conveyors, a 25-in. plate feeder, a revolving elevator and a heavy-duty rubber tired chassis. All principal drives are through V-belts. The power unit is set at one side of the plant. Crushing capacity is 60 to 100 cu. yd. of minus one-inch material per hour.

410

Protective Paint

Manufacturer: Poly-Cycle Products Co., Cleveland, Ohio.

Equipment: Corrosion resistant plastic coatings.

Features claimed: The coatings were developed especially for the construction industry for the protection of industrial

equipment against attack from fumes, weather, spillage or chemicals and for general maintenance of structural work. The coating, termed Cyclon, is an easily-applied, high-solids synthetic paint. It air dries quickly by solvent evaporation to an

UNITED STATES RUBBER COMPANY

SERVING THROUGH SCIENCE

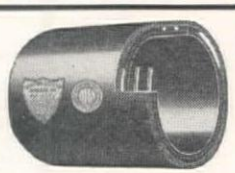
When You Need Suction Hose

You Really Need It!

Because suction hose is not used constantly on most construction jobs, many people figure that the cheapest kind of suction hose is good enough.

But we don't figure that way. We know that suction hose not only must take on-the-job punishment, but also the heavy abuse entailed in moving it from one job to another.

That's why you can be sure of "U. S." hose —from the large, heavy sand suction and discharge hose used in dredging operations right down to the everyday lightweight suction hose. Available at your equipment distributor or the nearest branch of United States Rubber Company.

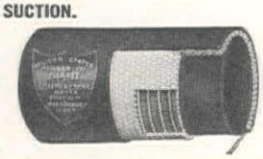


U. S. GIANT SAND SUCTION HOSE.
Toughest abrasion-resistant tube. Powerful fabric and wire reinforcement. Sun and wear resistant cover. Smooth bore. Sizes 4" I. D. and up.

U. S. PEERLESS SUCTION HOSE.
For building construction and trench work. Maximum flexibility without danger of collapse. Smooth bore. 2" to 12" I. D.

U. S. RAINBOW SUCTION HOSE.
Lightweight hose for diaphragm pumps used in sewer and foundation operations. Rough bore. 1½" to 6" I. D. inclusive.

U. S. GIANT CONTRACTORS WATER SUCTION.
Smooth bore, wire-woven carcass abrasive resistant cover. Unusually lightweight. Easily reshaped if crushed or flattened. 1½" to 4" I. D.: Can be used for suction or high pressure discharge service.



U. S. ENGINEERED RUBBER PRODUCTS FOR THE CONTRACTOR

Air, Water, Steam, Suction Hose · Belts · Packings · Tape

adhesive, hard wearing, flexible glossy coating without the necessity of priming the surface being coated.

411

Portable Safety Transformer

Manufacturer: Etraco Manufacturing Co., Inc., Flemington, N. J.

Equipment: Transformer for use in connection with trouble lamps.

Features claimed: The portable safety unit weighs only 4½ lb. and reduces a 110-

volt circuit to only 6 volts, a voltage which is harmless. The transformer is protected by a strong and water-proof bakelite casing tested to withstand extreme physical and chemical abuse. When connected to an outlet, the unit can be left on floor or table or it can be hung from any wall fixture by a convenient hook which protrudes from the top of the transformer. The unit comes complete with a 25-ft. length of insulated extension cord.

412

Rubber Control Joint Strip

Manufacturer: Williams Form Engineering Corp., Grand Rapids, Mich.

Equipment: Rubber strips to leave narrow vertical grooves in concrete building walls as control joints.

Features claimed: Control of the location of cracks in concrete walls can be accomplished without adversely affecting appearance of the building, and resulting in relief of stress in the wall. The rubber strip is left in place, thereby sealing the joint, obviating the need for calking.

413

Welding Cylinder Trucks

Manufacturer: Adams Manufacturing & Supply Co., Los Angeles, Calif.

Equipment: Trucks to carry any size welding cylinders in tandem or side by side.

Features claimed: The trucks are available with Adams close-fitting welded side-spoke steel wheels or with ball-bearing, rubber-tired industrial wheels. Improvement of the line of trucks includes a change in design to provide better balancing.

414

Draftsman's Chair

Manufacturer: Cramer Posture Chair Co., Inc., Kansas City, Mo.

Equipment: Comfortable drafting chair, completely adjustable without tools.

Features claimed: "Engineered" comfort is claimed for the new chair. The height of the seat may be adjusted with virtually no effort from 23½ in. to 32½ in. The depth of the seat may be adjusted through the use of a simple handwheel to accommodate individuals of any proportions. A circular steel footrest is independently adjustable in height. The seat is provided with a forward-tilting mechanism which may be adjusted for the degree of tilt and for the weight of the user. As the draftsman leans forward to work on the upper part of his drawing board, this unique device permits the seat and back to follow his motions. Another important feature is the casters. Because of the span of the chair legs, it is possible to use casters without danger of overturning the chair, with the result that a draftsman is able to roll the chair freely, without effort, from one end of a drawing board to the other.

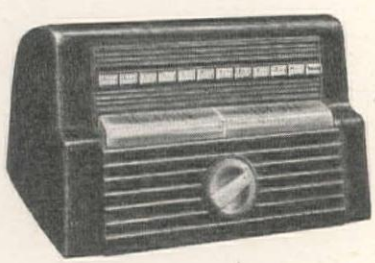
415

Inter-Communication System

Manufacturer: Talk-A-Phone Co., Chicago, Ill.

Equipment: System providing 12, 20 and 30-station capacity with only 12 push buttons.

Features claimed: The "Chief Forty-Niner" system can be expanded or rear-



ranged without discarding original installation. Up to thirty Master Stations can be used in the same system, and these can be mixed with Staff Stations. Feature of the system is the "Dynasonic Selector" which furnishes optional performance for each unit. The user merely selects, upon instal-

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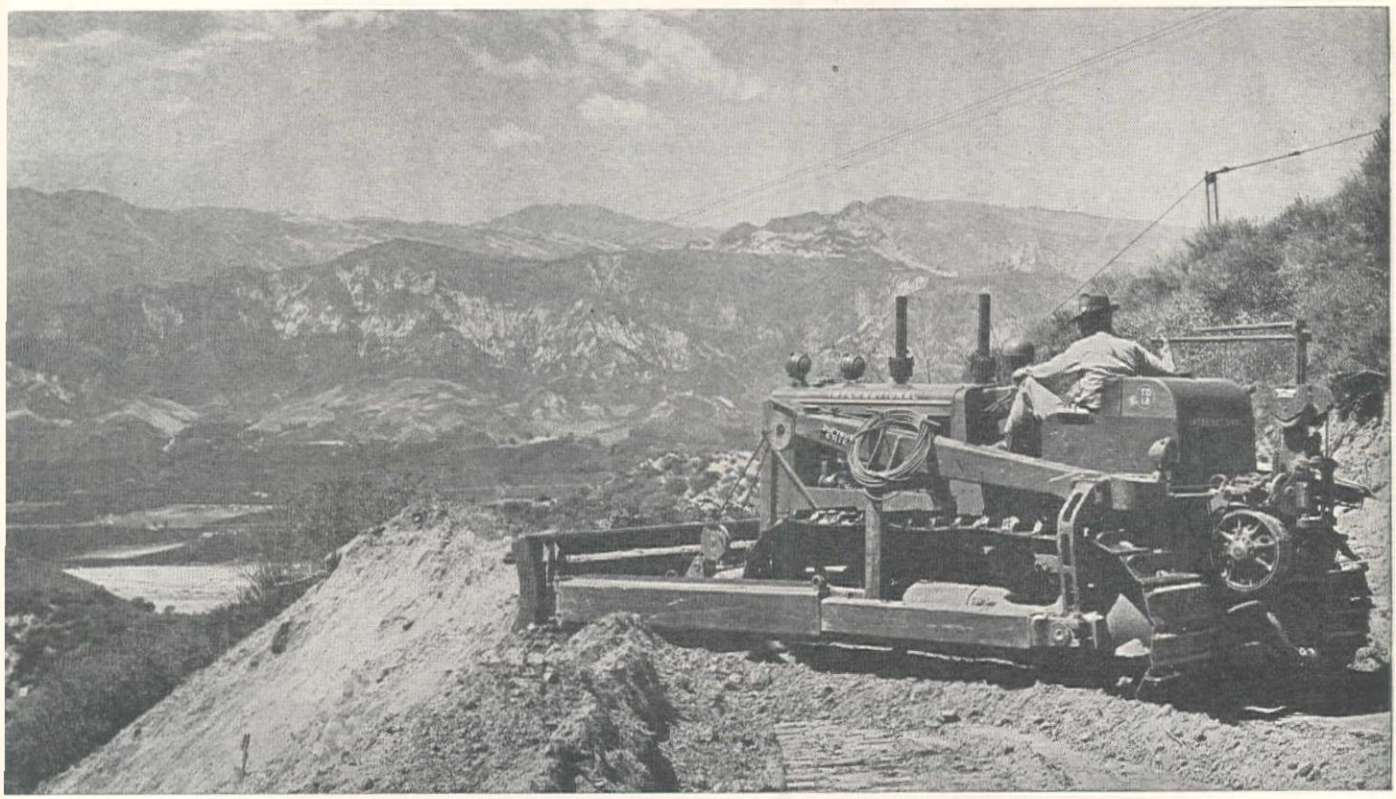

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- A review of progress on U. S. highway networks in the West
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lation, the type of performance he desires of each unit, and he may change his selection at any time, in any way. This system is Underwriters Laboratory Approved.

416

Tower Loader Attachment

Manufacturer: Kwik-Mix Co., Port Washington, Wis.

Equipment: Attachment for discharging concrete batches to forms above ground level or into trucks.

Features claimed: The tower device can be fitted into either the Model 11-S or 16-S mixers. Maximum discharge height is 9 ft., 6 in. The bucket handles a full batch directly from the discharge chute of the portable concrete mixer. Discharge at top of tower is completely automatic. Bucket travel and discharge is completed during the time the following batch is being mixed in the mixer drum. Operated by a special hoist, the loader is fully controlled by a single lever located on the operator's platform. The hoist is mounted within the mixer frame and is powered by the mixer motor.

417

Hand Truck

Manufacturer: Associated Services, Carlinville, Ill.

Equipment: Truck designed for the handling of crates and other heavy equipment.

Features claimed: The Stevens Escort Truck has a caterpillar tread which literally "crawls" up a stairway. The tread rolls easily over steel bearings set in an aluminum frame. The load is distributed evenly from step to step and allows for ease in handling, up or down, without the danger of chipped or marred stairways. The retractible swivel wheel on this model sup ports the entire load when rolling on a leve floor. The steel model of this type has capacity of 1500 lb. Information abou many other models of Escort trucks i available on request.

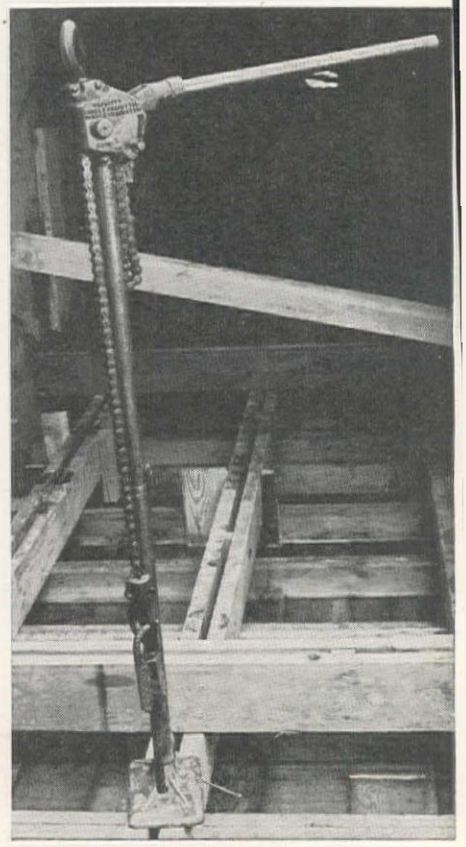
418

Hoist-Jack

Manufacturer: The Coffing Hoist Co. Danville, Ill.

Equipment: Jack for removing tie rods from forms in building construction.

Features claimed: With the use of this tool against the form, and the hook affixed



to the tie rod, the rod is simply "jacked" out of the concrete and form. This saves the rods themselves for re-use, saves time over other methods of salvaging tie rods, and eliminates the expense of tubes. The Hoist-Jack weighs but 23 lb., and is easily handled by one man, yet it has the strength and pulling power to easily overcome the adhesion of concrete to the rod. The tool can be used as a jack or, without the stand, as a hoist or puller.

419

Lo-Slump Concrete Bucket

Manufacturer: C. S. Johnson Co., Champaign, Ill.

Equipment: Bucket to discharge mass concrete with cement content as low as 2 bags per cubic yard and slumps down to ½ in. using 6-in. aggregate.

Features claimed: The new bucket combines the advantages of an extra large discharge opening with a fully controlled double clam discharge gate that can be operated manually or by compressed air. Completely automatic when operated by air, bucket gates close instantly when supply hose valve is released or when hose nozzle is pulled away from bucket air socket. To prevent segregation when handling mass concrete, a hinged bail was introduced. The bail link stands vertically

ıd is slotted to give it considerable verti-
ıl hooking range. On discharge, a 42-in.
ameter center opening prevents arching
the concrete. Segregation is prevented
y folding action of the concrete flow from
ıe center of the bucket. The 6-ft. diameter,
·cu. yd. size weighs 4,000 lb.

420

astening Tool

Manufacturer: Stemco Corp., Cleveland
, Ohio.

Equipment: Powder actuated tool for
riving steel studs and pins.

Features claimed: The tool is actuated by
powdered charge of several different
rengths, which upon being exploded with-
ı the tool force the steel studs or pins into
eel, concrete, masonry and other hard
ıaterials, replacing the conventional drill-
ıg or plugging method. The tool operates
ıstantly, with only 30 sec. being required
› prepare the tool and set the fastener into
lace. It is available in two sizes, 5 and 10
›., to suit different types of work.

421

Excavator and Handling Machine

Manufacturer: The Osgood Co., Marion,
)hio.

Equipment: Newly designed Type 72,
vailable in three models.

Features claimed: The three models are:
The Model 720, a shovel, dragline, clam-
hell, crane or hoe, with all front end at-
achments interchangeable; the Model 725
Mobilcrane, and the Model 727 dragline,
lamshell or crane. Redesigning of several
eatures of the Type 71, predecessor, in-
lude a new type crawler unit with each
read belt independently controlled, and the
addition of the new Osgood-type hook
rollers. Heavy brackets supporting the
rollers are mounted at each corner of the
deck. Further stabilization of the super-
structure of the crawlers is through a
gudgeon which is part of the crawler base
casting.

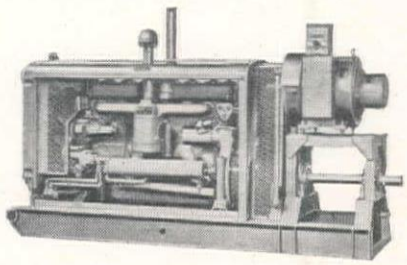
422

"Packaged" Diesel Power Unit

Manufacturer: Murphy Diesel Co., Mil-
waukee, Wis.

Equipment: Unit capable of providing
both electricity and mechanical driving
power simultaneously.

Features claimed: Mech-Elec units are
particularly suited for applications where



the advantages of mechanical drive are de-
sirable for the major load but where the
flexibility of electric drive is also desirable
for secondary loads. Any fixed or variable
proportions of mechanical or electrical
loads can be handled providing the com-
bined total does not exceed the rated
capacity of the engine and that the elec-
trical load does not exceed 50 kw. Two
models are currently available, the Model
ME-6, rated at 135 h.p. continuous, and the
Model ME-66, rated at 150 h.p. continuous.

423

Weedicide Sprayer

Manufacturer: Fabricated Metals, Oak-
land, Calif.

Equipment: Sprayer designed specifically
for the rapid, uniform application of con-
centrated weedicides.

Features claimed: Principle performance
features of the new equipment are true
one-man operation, positive dripless shut-
off, automatic nozzle cleaning, interchange-
able booms and centralized control giving
the tractor or truck driver "finger tip" con-
trol over spraying operations at all times.
SprayRite units are designed for quick
"one-piece" installation on all popular
makes of wheel tractors, and are also avail-
able in skid-mounted models for use on
flat-bed or pick-up trucks. Sturdy booms
are hinged to swing up and back to clear
abutments, line posts or guard rails. Booms
return automatically to spraying position
after clearing obstacles. Boom height is
quickly adjustable. Master control unit
permits operator to spray from either or
both booms.

424

Diesel Fuel Additive

Manufacturer: Pennsylvania Refining
Co., Cleveland, Ohio.

Equipment: Additive to dissolve gum
and sludge and keep fuel lines and injection
system clean.

Features claimed: One pint of "Diesel"
Gumout added to the tank for each 50 to
100 gal. of fuel per month assures clean,
economical burning of the fuel with the
high solvent power of the Gumout dissolv-
ing gum deposits and preventing sludge
formation. The additive maintains a con-

tinuous, free flow of fuel to the engine so that more power and economy are realized as well as higher combustion efficiency.

425

Impact Stone Crusher

Manufacturer: New Holland Machine Co., New Holland, Pa.

Equipment: Largest crusher ever made to crush stone by impact in suspension.

Features claimed: Built around the same principles as the company's Model 3030, the 5050 can take stone up to 50 in. and reduce it to aggregate in one operation. Aggregate can be produced in two sizes, minus 8 in. and minus 1½ in. Mounted on 18-in. I-beam skids, the breaker is 14 ft. long and 9 ft., 6 in. wide. Twin cast impellers, each weighing 13,400 lb., catch stone in mid-air as it enters the breaking chamber and send it flying against breaker bars set around the chamber.

426

Centrifugal Pumps

Manufacturer: Rice Pump & Machine Co., Milwaukee, Wis.

Equipment: Self-priming pumps with capacities of 7,000 and 10,000 gals. per hour.

Features claimed: The 7M and 10M Models of the pumps feature a self-lubricated shaft seal, which is entirely enclosed in a welded, pressed steel cartridge. This entire unit may be quickly and easily replaced in a matter of minutes. Other features include: Fully automatic priming after the pump is once put in service; direct line flow of water or other liquid through suction opening to impeller; built-in suction check valve, which holds liquid in the pump for repriming and eliminates the need for a foot valve in the hose; and non-clogging impeller and wear plate, both easily replaceable if wear occurs.

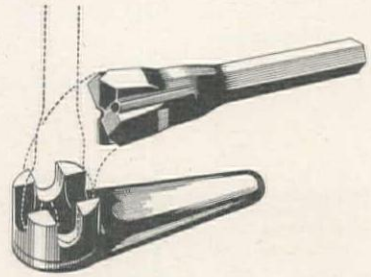
427

Drill Bit Wrench

Manufacturer: Thy's Manufacturing Co., Sacramento, Calif.

Equipment: Wrench for all jackhammer and wagon-drill bits.

Features claimed: The wrench will remove the bit in a few seconds no matter



how tight it is stuck since it shocks on all four corners at the same time. A few clips with the hammer and the bit is off. It will guarantee the user that no more bits will be broken and no more workers will be injured by pieces of flying bits.

428

Supercharged Diesel Engine

Manufacturer: Cummins Engine Co., Inc., Columbus, Ind.

Equipment: Model HRBIS-600, developing 225 h.p. at 1800 r.p.m.

Features claimed: The new model has a horsepower rating never previously offered to owners of Cummins Diesels. It has 5⅛-in. bore and 6-in. stroke, with pisto displacement of 743 cu. in., and like a Cummins Diesels, employs the 4-strok cycle principle of operation. Other mechan ical features include standard two-valv heads, continuous groove main bearings, in creased flow lubricating system, buttress type oil pan and flywheel housing, a newly designed lubricating oil cooler and a Roots type blower. The current line of Cummin basic industrial models now includes nin types ranging from 100 to 275 h.p. rating.

429

Flame-resisting Oil Tank

Manufacturer: B. F. Goodrich Co., Akron, Ohio.

Equipment: Oil tank capable of withstanding fire and temperatures of 2,000 deg. F.

Features claimed: The tank was especially developed for the U. S. Navy and is also bullet-sealing for naval aviation uses. An outer coating, in which American-made rubber is combined with other materials, gives unusual resistance to heat and direct exposure of flames, greatly increasing the factor of safety of oil cells.

430

Stud Welding Equipment

Manufacturer: Nelson Stud Welding Division, Morton Gregory Corp., Lorain, Ohio.

Equipment: Light-weight stud welding gun, automatic control unit and necessary welding cables, available on a rental basis.

Features claimed: Simple loading fixtures and templates used in the production of anchor plates on which female studs are

id-welded with the lightweight Nelson itomatic stud welding gun have enabled erators on one job to average 30 units er hour. The anchor plate was secured to ie wall studs with U-bolts in the usual shion, after which the wall was entirely nished, since the studs extended through ie lath and plaster. On another job in akland, Calif., the Nelson stud welding un was used to install 23,000 ½-in. female ireaded studs (tapped ⅜-in.) to struc- iral members for erection of outside wall orms on a 15-story telephone building. Holes were drilled in the forms whenever upport was necessary, and studs were then elded in place with the aid of a long fiber ibe attachment on the gun. Rods threaded ⅜ in. were then screwed in place to old the forms. The Nelson equipment can ow be obtained in principal cities through elson field engineers, for a fixed monthly ental of $45.

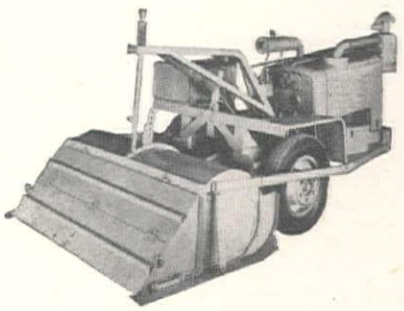
431

elective Speed Transmission

Manufacturer: Seaman Motors, Inc., filwaukee, Wis.

Equipment: Transmission now standard quipment on the Seaman Pulvi-Mixers.

Features claimed: The Seaman Pulvi- ixers are now being equipped with the



elective speed transmission which pro- ides a variation in rotor speeds best dapted to the job requirements. Variable otor speeds increase the efficiency of the ulvi-Mixer by permitting pulverization to much greater depth, the mixing of aggre- ate of much larger diameter, and better ulverization of stiffer clays and more horough blending of stonier soils.

432

Concrete Drill Bit

Manufacturer: Concrete Termite Drill o., Pasadena, Calif.

Equipment: Extra length rotary concrete rill bits.

Features claimed: The extra length of he new bits makes them invaluable for rilling holes for conduit, pipe, wire, etc., hrough deep walls, ceilings or floors. The its can be used with any electric drill and lepend on a rotary grinding action rather han a sharp cutting edge. This means a onger life for the bit, eliminates the need or resharpening, and enables more holes o be drilled with each bit. The bits are vailable in stock lengths of 12, 18, 24 and 36 in.

433

Automatic Fire Extinguisher

Manufacturer: Stop-Fire, Inc., Brooklyn, N. Y.

Equipment: Extinguisher actuated by eat waves.

Features claimed: When fire occurs, heat waves cause the sprinkler head to discharge nder pressure a wide, fast-moving spray of combined carbon dioxide and atomized Chlorobromomethane. This quickly blank- ets and snuffs out the fire, with absolutely no residue, stain or damage. The unit, constructed of heavy brass, silver welded, needs no piping or other expensive installation. Simply hang it up and it is ready to operate.

434

Transmission Oil Filter

Manufacturer: Transmission Division of Fuller Manufacturing Co., Kalamazoo, Mich.

Equipment: Filter that continuously cleans gear oil of grit, grime and abrasives.

Features claimed: Consisting of a stamped housing with a replaceable filter element, the new filter can be attached to all transmissions equipped with standard SAE six-bolt short length power take-off openings. Transmission oil is forced into the filter housing and through the filter under pressure developed by the rotation of the transmission gears and shafts. As the oil is forced through the filter, foreign matter suspended in and circulating with the oil is deposited on the replaceable filter element and in the sump at the bottom of the housing. The cleaned oil is then channeled back into the transmission case. Primary function of the unit, Fuller engineers point out, is to insure clean oil between change periods, and correspondingly, less wear of bearings, bushings and other

highly finished parts machined to close tolerances.

435

Portable Utility Lamp

Manufacturer: Pompton Manufacturing Co., Pompton Plains, N. J.

Equipment: Lamp with rubber insulated grips that can be clamped on any projection.

Features claimed: The "Pompton Clamp-Lite" provides a high degree of illumination at the point of work and the clamp is strong enough to hold the light in any position desired. The lamp socket is held in a double-ball joint adjustable to any angle. The 9-in. spun aluminum reflector is highly polished to provide the greatest amount of light possible from the bulb used. Weight of the unit is 3½ lb., complete. The unit is furnished with 20 ft. of two-conductor cord approved by Underwriters Laboratories for general use.

436

Silver Alloy

Manufacturer: Eutectic Welding Alloys Corp., New York City.

Equipment: New high silver alloy and a handy pocket container for shop and home use.

Features claimed: The new Eutec-Silver-Weld Pocket Economizer is now available for the low heat joining of all metals, except aluminum. The Economizer contains a coil of the new high silver alloy which feeds through a small hole in the top of the unit. A separate compartment in the bottom contains a jar of Eutector Flux that is scientifically developed for use with this alloy to insure the low heat of application. This alloy is specially recommended for steel, copper, brass, bronze and stainless steel and malleable iron. It applies readily with all torches.

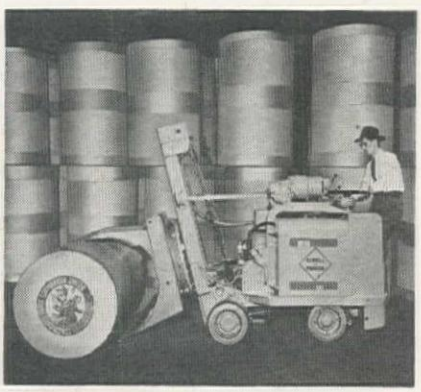
437

Roll-Handling Device for Power Trucks

Manufacturer: Elwell-Parker Electric Co., Cleveland, Ohio.

Equipment: New power truck attachment for holding securely materials in roll form.

Features claimed: The unit features two steel arms of semi-circular contour that



close on a heavy roll of paper, casks, drums, etc., while they are being picked up, transported, stacked or changed from vertical to horizontal position. The new unit is bolted to the rotary mechanism in place of a cradle. Hydraulic clamping action of the two arms, controlled by the truck operator, is sufficiently firm so that a 2,00 lb. load can be picked up or put dow clasped by as little as 6 in. of the roll upper end. In picking up a roll, from hor zontal position, the truck's head frame wit extra tilting angle is rocked far forwar and the arms engage the roll directly with out need of a forward thrust from the truc As much as 20% storage space has bee reported saved by one user in avoiding th use of pallets.

438

Hard Rock Rib Truck Tires

Manufacturer: Goodyear Tire & Rubbe Co., Akron, Ohio.

Equipment: Tire designed especially fo front wheel service in heavy constructio and excavation.

Features claimed: Tread design of th new tire consists of three heavy circum ferential ribs, with the shoulder patter resembling that of the company's standar Hard Rock Lug tire, long a favorite wit truck operators for heavy-rough duty. Th tire is expected to eliminate hard steerin and vibration encountered in heavy con struction and excavation. It is currentl being manufactured in three sizes: 12.00-24 13.00-24 and 14.00-24.

439

Explosion-Proof Electric Heater

Manufacturer: Electromode Corp., Rochester, N. Y.

Equipment: Heater specially designe for use in atmospheres containing explosiv products.

Features claimed: The Electromode Ex plosion-Proof Heater incorporates a pat

ted cast aluminum connection Safety-rid. The heating element consists of a ckel chromium resistor wire, insulated id sheathed in a seamless metal tubing, hich is embedded in a one-piece finned uminum casting. This completely seals e element, eliminating fire, shock and irn hazards. The aluminum grid remains a low operating temperature, but has a gh thermal conductivity. There are no oublesome liquids to freeze up or run dry. vailable in three models, with ratings of)00, 4000 and 6000 watts.

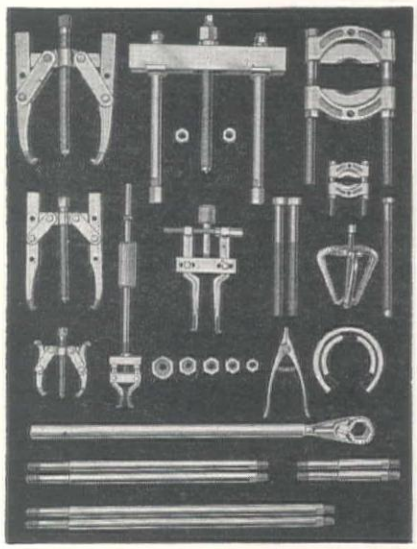
440

ruck Service Tool Set

Manufacturer: Owatonna Tool Co.,)watonna, Minn.

Equipment: Specialized service tool set eveloped particularly for Autocar Trucks.

Features claimed: The set includes tools)r removing and installing tight-fitting



)arts such as bearings, outer bearing races,)ushings, gears, shafts, etc. The basic pull-ng tools are adjustable to cover a wide ange of sizes, eliminating the need for a arge number of special tools. The set can lso be used on other makes of trucks.

441

Lightweight Gasoline Engine

Manufacturer: Lauson Co., New Hol-stein, Wis.

Equipment: Internal combustion engine weighing only 23 lb.

Features claimed: This new ¾-h.p. motor is the lightest and most compact 4-cycle engine manufactured by the Lau-son company for the commercial field. Important features include ball bearings on the crank-shaft, float feed, automotive-type carburetor, fly ball governor and high ten-sion magnet. The new engine has a bore of 1⅝ in. and a stroke of 1½ in., with a piston displacement of 3.11 cu. in. It should be ideal for powering portable pieces of equipment, and is also readily adaptable for use on pumps, compressors, sprayers, small generators and similar applications.

442

English-Made Moble Cranes

Manufacturer: Coles Cranes, Inc., Chi-cago, Ill.

Equipment: Self-propelled mobile cranes, with capacities from 3 to 15 tons.

Features claimed: Coles Cranes, an Eng-lish product, are now available in the United States. Illustrated is the Model 8502, a 7½-ton model powered by a Ford V-8, 47-h.p. engine. It has a turning cycle of 40 ft. and will travel 2 m.p.h. loaded and 4 m.p.h. unloaded. The crane has four motions: Hoisting, swinging, derricking and traveling, each operated by a separate single motor. All can be operated simultaneously. The crane travels on four pneumatic-tired wheels, steering being controlled from the driver's seat of the revolving superstructure. Brakes are electro-magnetic, automatically applied in hoist, boom hoist and swing. Ample stability is provided through the full 360-deg. swing of superstructure, and a minimum load can be lifted at any point of swing. Boom standard lengths are 12 and 17 ft. Special lengths up to 70 ft. are obtainable. Dealers all over the United States will be stocked with spare parts for immediate de-mand in case of breakdowns. Appointed as distributors in the West are Frank E. Witte Co. of San Francisco and Los Angeles, and

Air Mack Equipment Co. in Seattle and Portland.

LITERATURE FROM MANUFACTURERS...

Copies of the bulletins and catalogs described in this column may be had by addressing a request to the Western Construction News, 503 Market Street, San Francisco 5, California.

443

TRACTOR SHOVELS—An attractive new catalog has been prepared by the **Frank G. Hough Co.**, Libertyville, Ill., covering the new 4-wheel drive Model HM Payloader. The literature contains complete specifications on the big 1½-cu. yd. tractor shovel and numerous action views from a variety of jobs. Many outstanding features are illustrated — hydraulic bucket control, several speeds in either direction, fast forward-reverse control, power boosted steering, controlled dumping, operator visibility, ground-gripping traction provided by large earth mover tires and four-wheel drive.

444

CARBURETOR-TYPE ENGINES — **International Harvester Co.**, Chicago, Ill., in a new 12-page catalog, describe their industrial engines and equipment for operation on gasoline, distillate or natural gas a wide variety of applications. Models their four carburetor-type engines pr sented are available as stripped engines with job-determined equipment combin tions up to the complete power unit. T "inside story" of International exclusi design features is told through section views. Charts reveal horsepower, torqu and fuel consumption at various engi speeds for each model. Specifications an dimensions are given for each of the fo engines described in booklet A-164-MM.

445

PRINCIPAL ACCO PRODUCTS – **American Chain & Cable Co., Inc.**, Bridgeport, Conn., has released a new bookle DH-509, listing the principal product manufactured by the company's thirtee divisions and seven associate companies. short introduction to the 20-page, 3-colo booklet explains what their famous ACC Giant trade mark symbolizes. Each headin has an illustration of a principal produc Products include: Chain, wire rope, con trols and brakes, machinery, hoists an cables, wire rope, gages, springs, bolts an nuts, valves and fittings, steel casting hardness testers, hoist, trolleys and crane A list of sales offices is included.

446

ELECTRIC HOISTS—A 6-page folde describing the Wright Speedway Electri Hoists has been released by the **Wrigh Hoist Division** of the **American Chain & Cable Co., Inc.**, Bridgeport, Conn. Eigh basic types of mounting for the hoists ar illustrated and described, and 21 points o superiority for the hoists are listed. Th hoists feature an advanced design in stee construction and gear train using pre formed cable and swaged-on cable fittings

447

DRAGLINE—A new 16-page bulletin covering the P&H Model 455-A 1-cu. yd dragline, is now available from the **Harnischfeger Corp., Excavator Division,** Milwaukee, Wis. With striking on-the-jo pictures, the booklet describes and illustrates all the added value features of the machine. The model is especially designed for crane, clamshell and dragline service.

448

TECHNICAL DATA ON PLYWOOD—A looseleaf technical manual or plywood, its properties and uses was prepared in 1948 by the **Douglas Fir Plywood Association,** Tacoma, Wash. The compila-

ion presents, in convenient form, engineering information about the panel material and its performance in varying use categories. Extensive revisions have been made now in several sections of the handbook for architects and engineers, known as "Technical Data on Douglas Fir Plywood." Revised chapters are on: Commercial Standard CS45-48 for Douglas Fir Plywood, Designing with Plywood, Deflection Charts, the Design of Flat Panels with Stressed Covers, and the Design of Built-Up Beams with Plywood Webs. Holders of the handbook should obtain these revisions.

449

WIRE ROPE SLINGS—**A. Leschen & Sons Rope Co.**, St. Louis, Mo., have published a 12-page booklet describing their "Hercules" Flat-Laced Wire Rope Slings, claimed as a new 6-part, flat, belt-like sling that provides greater flexibility, more resistance to kinking, easier handling and larger and smoother supporting area. The bulletin contains illustrations of many actual installations in a wide field of operation and of loads in various sizes.

450

INSULATED PIPING DISTRIBUTION SYSTEMS—Two new booklets published by **The Ric-wiL Co.**, Cleveland, Ohio, are of particular interest to engineers, architects and contractors who deal with problems involved in insulated piping distribution systems. "Engineering Data for Underground Steam Distribution, Section 480-2" deals with such subjects as the layout of the route, methods of estimating steam loads, steam flow charts and tables, properties of steel pipe, properties of saturated steam and related topics. "Typical Engineering Drawings, Section 480-3" reproduces actual drawings used in a wide variety of insulated piping installations. These include industrial, educational, housing, hospital, public utilities, railroad and governmental projects. Both booklets are in 8½ x 11-in. format for easy handling and are printed in black and white.

451

PREFABRICATED HOMES—A 16-page illustrated booklet, entitled "Better Homes by Better Methods" has been published by **Prefabricated Home Manufacturers' Institute**, Washington, D. C., to describe the homes being produced by the country's leading housing manufacturers. The booklet explains the construction, erection, financing and distribution of prefabricated homes. Photographs of typical houses manufactured by 34 different companies are shown.

452

LUBRICATION DEVICES AND SEALS—A handy reference and buying guide published by **Gits Bros. Mfg. Co.**, Chicago, Ill., describes Gits products and engineering within the reach of engineers, purchasing directors and other operating executives who need to know about lubrication devices and seals. New directory features have been arranged in the "Price Guide Catalog" for buying convenience—complete price information, table of advantageous discounts, and precise specifications of body materials, thread sizes, capacities, dimensions, etc.

453

METAL ENGINEERING DATA—A new 8-page bulletin published by **Joseph T. Ryerson & Co., Inc.**, Emeryville and Los Angeles, Calif., gives engineering data including load deflection, air flow comparison and free openings of both standard and flattened mesh types of expanded steel. Also included is a list of sizes with dimensions and weights, illustrations of mesh and typical applications, and data on Expanded Metal Grating.

454

ELECTRIC-CONTROLLED EARTHMOVER — Information on the new electric-controlled C Tournapull is given in a new broadside, TP-167, published by **R. G. LeTourneau, Inc.**, Peoria, Ill. In addition to presenting specifications on this 150-h.p., 16-ton rig, the broadside features action pictures showing this Tournapull working in mud, in tough sand, on steep grades and making job-to-job moves over the highway. Also described are the main design features of this rig.

455

PUBLIC RELATIONS—**Lyon Metal Products, Inc.**, Aurora, Ill., recently conducted a public relations campaign in the local newspapers of the two Lyon manufacturing communities. A series of ¾-page messages appeared in local newspapers to give people of the communities a broader understanding of the company's over-all operations. The campaign was so successful that the company is planning to repeat the procedure, and has published a booklet incorporating the advertisements as they appeared and explaining the campaign.

456

APRON-TYPE AND RECIPROCATING TYPE FEEDERS—An 8-page booklet giving detailed descriptions and specifi-

cations on the complete line of Cedarapids feeders, graphically showing their operation and use in typical installation photos and diagrams, has been published by **Iowa Manufacturing Co.**, Cedar Rapids, Iowa. Feeders for use with all types of material handling and bituminous mixing plants are included. Also described in detail are: A ground level heavy-duty apron-type feeder for use where raw material is handled by truck, dumptor or scraper; traps designed to handle direct dumping from trucks, scrapers, bulldozers, shovels or draglines and which protect the feeder as it feeds the material onto a conveyor belt, and reciprocating-type feeders in a wide selection of sizes.

457

PORTABLE SCREENING PLANT—A bulletin announcing a new portable screening plant for gravel or coal has been issued by **Iowa Manufacturing Co.**, Cedar Rapids, Iowa. This plant consists of a special horizontal vibrating screen, three folding type channel frame conveyors and a Diesel power unit, all mounted on a pneumatic-tired steel truck. The plants are recommended for use where additional screening is necessary to meet rigid specifications. A photograph of the plant and its specifications are presented in the bulletin.

458

AGGREGATE WASHING PLANT—An 8-page folder, profusely illustrated, with a full two-page cutaway drawing in two colors, describes the completely redesigned 305-W Washing Plant for sand, gravel and crushed aggregates manufactured by **Pioneer Engineering Works**, Minneapolis, Minn. The plant scrubs, cleans and washes 50 to 75 cu. yd. of aggregate per hour. It has a revolving scrubber drum and revolving screen capable of separating three sizes of stone and sand and depositing them in bins under the plant for truck loading. The one-man operation and low initial cost of the plant are described in the bulletin.

459

SPECIAL ROOF FOR TANKS—**Chicago Bridge & Iron Co.**, Chicago, Ill., has published a 4-page booklet describing the Vapordome Roof, which is installed on flat-bottom oil storage tanks to prevent evaporation losses caused by daily breathing. A flexible membrane in the dome at the center of the roof moves up and down as vapor on the tank expands and contracts due to temperature changes. This prevents daily loss of vapor through the vents. A table of the standard Vapordome Roof sizes is included in the leaflet.

460

STRADDLE TRUCK—A 16-page catalog released by the **Hyster Co.**, Portland, Ore., describes the revised Model "M" straddle truck with its numerous improvements in engineering and design. The greater capacity of 18,000 lb. and greater visibility for the operator are two of the important features described. Model views and operational photographs showing the truck carrying a variety of materials such as lumber, machinery, angle iron, rough castings and other unit packages provide a graphic idea of the design and capabilities of the machine.

461

VIBRATING SCREEN — **Lippmann Engineering Works**, Milwaukee, Wis., has published a 16-page, 2-color book giving specifications and dimensions for 69 sizes of their single, double and triple-deck units of the Screen-All positive eccentric vibrating screens. Chief features of the new design described are the hub-mounted bearings which are located outside the screen body, straight shaft design with eccentricity achieved by means of patented hubs and three-point suspension or support. Included are methods of determining screen area required, recommended throw and operating speeds, wire cloth sizes and weights.

462

BITUMINOUS PAVER—The Jaeger Bituminous Paver, Model No. BP-5, is illustrated and described in an 8-page folder published by the **Jaeger Machine Co.**, Columbus, Ohio. Job application photographs point up features of the paver—adjustability while in motion to any width from 9 to 12½ ft., ability to lay any material to exact thickness and uniform desired density, and ability to pave flush to adjacent course, curb or gutter. Complete specifications are included.

463

LOCOMOTIVE CRANE — **American Hoist & Derrick Co.**, St. Paul, Minn., has published a 20-page booklet describing the American Locomotive Diesel Cranes. The booklet describes how the cranes are cutting maintenance costs by the use of tough alloy steel shaftings, and describes such features as ball and roller bearings throughout, splined shafts, enclosed travel gears, readily accessible parts and simple servicing features. Job application photographs and specifications are included.

464

PUBLIC RELATIONS — **Timken Roller Bearing Co.**, Canton, Ohio, has published a 240-page volume containing 52 talks made over radio stations in Canto during 1948. Each talk covers some phas of the company's operation or a statemer of company policy. The book is availabl to anybody seeking information about th Timken enterprise.

465

WELDING STAINLESS STEEL — **The Lincoln Electric Co.**, Cleveland, Ohio has published another in their series o Weldirectories, this one dealing with th choice and application of electrodes fo welding stainless steel. Application, properties of deposited metal, and welding procedures for five electrodes are presented. The leaflet is intended for inclusion in a notebook.

466

PUBLIC CONSTRUCTION — The Construction Industry Information Committee of the **Producers' Council, Inc.**, Washington, D. C., has published an 8-page discussion of public construction since the war. The booklet describes how the pent-up demands for nearly all types of construction arising from the suppression of activity during the war have resulted in peacetime expenditures exceeding those of any peacetime period. An analysis of all the phases of governmental construction is presented.

467

HOSE COUPLINGS AND CLAMPS —**Hose Accessories Co.**, Philadelphia, Pa., describes the complete line of Le-Hi hose couplings, hose clamps, air valves and manifolds in a new, illustrated condensed catalog just published. Le-Hi's safety-locking universal coupling, with exclusive self-locking springs, is a featured item in the section dealing with Le-Hi universal type quick detachable air hose couplings. Also illustrated and described are Le-Hi throttle valves for compressed air service, air hammer hose couplings, special high pressure couplings, long shank couplings for low pressure steam and spray hose and the complete line of Le-Hi hose clamps.

468

STEEL CASEMENT FOLDER—**Soulé Steel Co.** of South San Francisco has issued a new enlarged folder covering many new types and sizes of its Steeline Residence Casements. The folder includes a page of full size bar sections, several installation instruction views, hardware details, glass sizes and many other items of useful information.

469

MOBILE CRANES — A 4-color brochure describing the Coles Cranes, English-made mobile cranes, has been released by **Coles Cranes, Inc.**, Chicago, Ill. The folder contains photographs and complete specifications about the different models, and describes how the cranes are particularly suitable for railroad application, inasmuch as the boom is mounted on a centrally situated frame so that in the horizontal position with the crane close to the gondola car, the machine is capable of operating very successfully. Distributors are now being appointed all over the United States for the cranes.

OPPORTUNITY SECTION

For Sale—Link-Belt Dragline
Model K 48 — Serial No. 1760. D-1300 Diesel Caterpillar Motor. 1½ yard capacity. New Esco 2 yard bucket. Oilamatic controls. $20.000.00.
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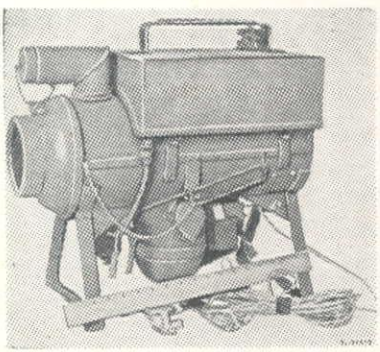
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1—Bucyrus-Erie, Model 29T, crawler mounted, gasoline driven, used, with 9" and some 6" new accessories.
1—Bucyrus-Erie, Model 27T, crawler mounted, used with some 6" accessories, gasoline driven.
2—Star Drilling Machine Co., Model 71A, skid mounted, gasoline driven, used, with some 6" accessories.
For further information and bid forms write
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315 O.P.O. BUILDING, KNOXVILLE, TENNESSEE
For inspection see E. C. McCLENAGAN AT WATAUGA DAM,
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Besser Junior Tamper. Now Manufacturing 2200, 8x8x16 blocks per day. Will also manufacture 4", 8", 6", 10" and 12" blocks.....$5,000.00
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NOTICE OF SALE OF FLUME
Sealed bids will be received at the office of CORDUA IRRIGATION DISTRICT, MEMORIAL BUILDING, Marysville, California, and opened at 10:00 A.M. on the 3rd day of May 1949 for the sale of 3000 feet of Lennon Type Flume No. 120, 76.4 inches diameter—20 gauge together with approximately 200 bents, heights 13 at 4 ft.; 27 at 5 ft. to 12 ft.; 160 at 12 ft. to 15 ft. Posts 8" x 8" cross braces and ties 4" x 4", 3" x 6" and 2" x 6". Hardware consists of Bolts 800—½" x 8", 2600—½" x 10"; 1700—½" x 12"; 400 ½" x 13". Lag screws 400—½" x 4½"; 2000—½" x 8". Cast Washers 10,000—½ inch. Iron plates 450—¼" x 8" x 21½".
Flume may be viewed at its location approximately 8 miles Northeast of Marysville, Yuba County, California. Each bid must be accompanied by a certified check in a sum not less than 15 per cent of the amount of the bid. The District reserves the right to reject any and all bids.
Signed—C. E. KIBBE, Chairman of the Board

For Sale—Federal Truck Tractor
With 30 ton Trailmobile, Trailor low-bed type. Powered by H. B. Cummins Motor, 150 H.P. $9,000.00.
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