WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

PUBLISHED MONTHLY
VOLUME XXI, No. 1

JANUARY • 1946

35 CENTS A COPY
$3.00 PER YEAR

IN THIS ISSUE

THE RIDGE ROUTE, which since realignment a few years ago, should more properly be called The Valley Route, across the Tehachapi Mountains, between Los Angeles and San Francisco, Calif., as it passes through Piru Creek canyon. Photo by California Division of Highways.

GET MORE POWER FROM YOUR ENGINES

U. S. Army Air Forces Photo

Use this . . . DETERGENT DISPERSIVE . . . Oil

FOR efficient performance under all conditions, from tropic heat to arctic cold, heavy-duty gasoline and Diesel engines need an oil that keeps engine parts clean, rings free, assures better compression, better combustion. *Texaco Ursa Oil X*** fills the bill precisely. It's both detergent and dispersive. It assures full power output, with greater fuel economy.

The properties of detergency and dispersion in *Ursa X*** play a major part in producing these benefits. Detergency keeps your engine clean. Dispersion holds deposit-forming materials in suspension until drained. In addition, *Texaco Ursa Oil X*** has properties that protect bearings against corrosion, prevent scuffing of rings, pistons and cylinders.

For effective lubrication of air compressors, use *Texaco Alcaid, Algol or Ursa Oil.* You'll assure wide-opening, tight-shutting valves, eliminate ring-sticking, reduce repair and replacement bills—get better performance at lower cost.

Put your lubricating problems up to Texaco Lubrication Engineering Service. Call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON SUNDAY NIGHTS ★ METROPOLITAN OPERA BROADCASTS SATURDAY AFTERNOONS

Are you getting these advantages in the

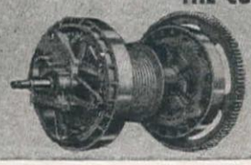
NEW SHOVELS CRANES and DRAGLINES

you are ordering?

THE "FEATHER-TOUCH" CLUTCH CONTROL—

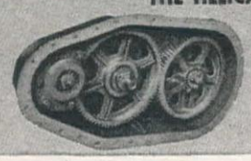
for easy operation that keeps the high output curve up all day long.

THE CUSHION CLUTCH—



assures longer cable life and reduces strains on all parts under power when overloads come on.

THE HELICAL GEAR DRIVE—



smooth, quiet, nothing to stretch—the highest possible type of speed reducer.

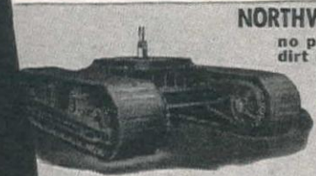
THE UNIFORM PRESSURE SWING CLUTCH—

takes the jerks and grabs out of swinging—means longer life—fewer adjustments—no inside or outside band clutch can be a uniform pressure clutch.

THE NORTHWEST DUAL INDEPENDENT CROWD—

an Independent Crowd plus an additional force for crowding that other shovels waste—handles harder digging and more yards per hour.

NORTHWEST CRAWLER—



no pockets to pack dirt in under rollers, gears fully enclosed. Differential steering on all machines 1 yd. capacity and larger.

BALL OR ROLLER BEARINGS—

on all high speed shafts—maximum transmission of engine power to all operations.

AND MANY OTHER NORTHWEST FEATURES

IF you are buying a Northwest, of course, you are—these advantages and many more. If you are planning on the purchase of a shovel, crane, dragline or pull-shovel, go into it deeply. You'll want these features and the many other features that Northwest can bring you.

Check the companies that now own Northwests. Note how many of the nation's leading contractors practically standardize on Northwest. Note that every third Northwest sold is a repeat order—the best possible testimonial to service.

Northwests are money makers, with a long record for high output and low maintenance. Northwests bring you the kind of service you are looking for.

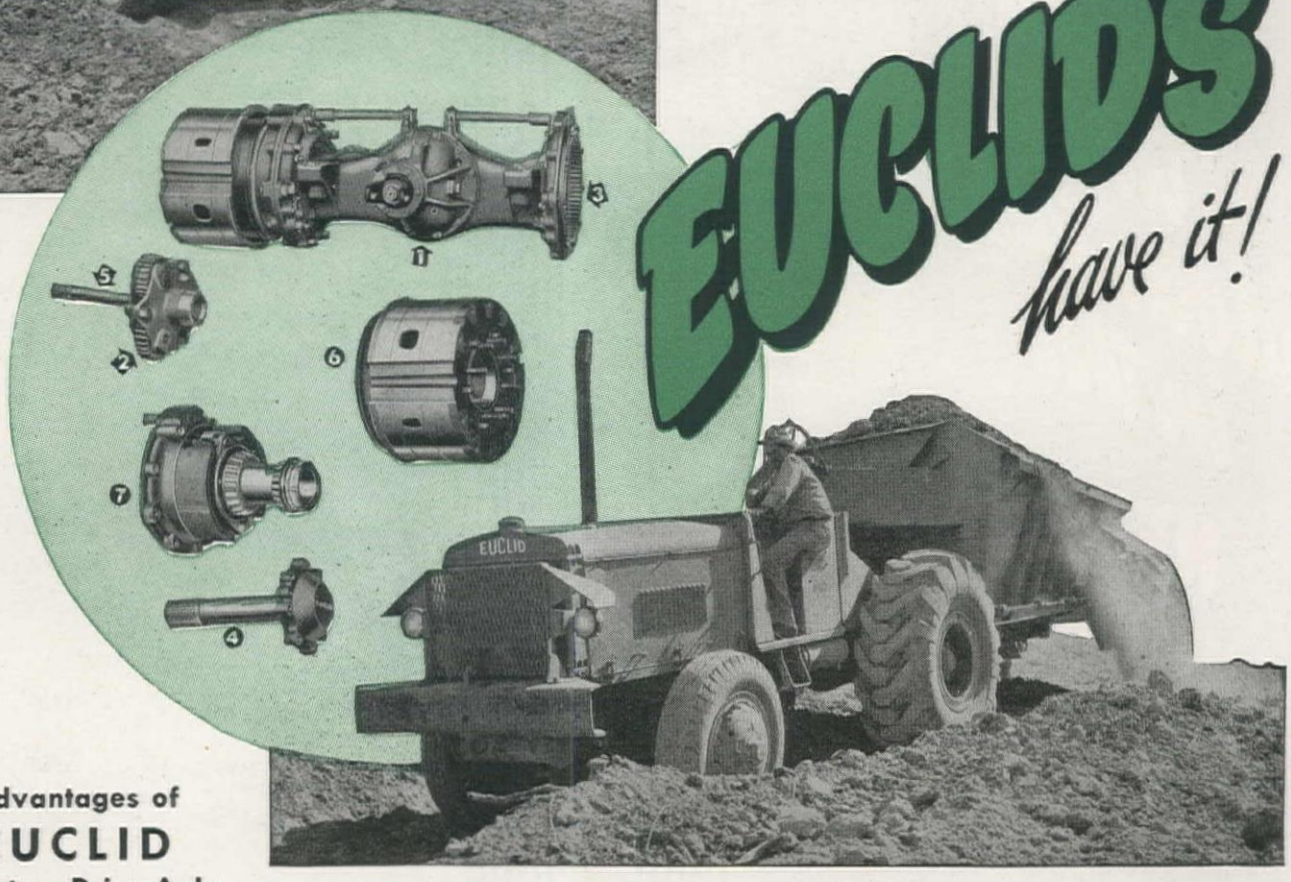
NORTHWEST ENGINEERING CO.
1736 Steger Bldg. · 28 E. Jackson Blvd.
Chicago 4, Illinois

EVERY THIRD NORTHWEST SOLD IS A REPEAT ORDER

NORTHWEST

Northwest Sales Agents: ARNOLD MACHY. CO., INC., 149 W. 2nd South St., Salt Lake City, Utah; BALZER MACHY. CO., 2136 S.E. Eighth Ave., Portland, Oregon; WILSON EQUIPMENT SUPPLY CO., 902 West 22nd St., Cheyenne, Wyoming; Branch Offices: 255 Tenth St., San Francisco, Calif.; 1234 Sixth Ave., South, Seattle, Wash.; 3707 Santa Fe Ave., Los Angeles, Calif.; 3015 Claremont, Denver, Colo.

When you need PULL EUCLIDS have it!



Advantages of EUCLID Planetary Drive Axle

The driving parts of the Euclid axle are: (a) — a primary reduction consisting of conventional spiral bevel ring gear, pinion and differential (1); (b) — secondary reduction of two floating planetary gear sets (2) each made up of a sun gear, three planetary gears and internal ring gear (3). The only parts carrying the full driving load are the outer drive axles and hub caps (4). The inner axles (5) carry less than 1/5 of the load delivered to the driving wheels (6). The use of the planetary reductions makes possible minimum gear reductions in the transmission and differential and results in much lighter loads being imposed on all parts between the planetary gears and engine.

Full-floating drive axle has exceptional strength

One reason for the wide use of Euclids on tough, off-the-highway hauls is the double reduction planetary drive axle used in both Rear-Dump and Bottom-Dump Euclids.

By this system of gear reduction, tremendous pulling power is attained with comparatively little burden on the intermediate driving parts. This results in greatly prolonged life of axle driving parts.

The Euclid drive axle is full-floating — all of the rear axle load being carried on heavy-duty tapered roller bearings mounted on hollow spindles which keep axle shafts and gears entirely free from vehicle and payload weight. The entire drive axle assembly is precision built and all working parts are completely enclosed in an oil bath.

The dependable performance of the Euclid axle — its strength and capacity — is unequaled by any other axle in heavy duty hauling equipment. It is an important factor in the long life and efficiency of Euclids.

The EUCLID ROAD MACHINERY Co. · · · CLEVELAND 17, OHIO

EUCLIDS *Move the Earth*

Brown, Fraser & Co., Ltd., Vancouver; Columbia Equipment Co., Portland; A. N. Cox & Co., Seattle; Hall-Perry Machinery Co., Butte; Intermountain Equipment Co., Boise & Spokane; The Lang Co., Salt Lake City; Lively Equipment Co., Albuquerque; Constructors Equipment Co., Denver. Factory Branch: 3710 San Pablo Avenue, Emeryville, California.

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

Covering the Western Half of the National Construction Field

Contents for January, 1946

J. M. SERVER, JR.
Editor

SUBSCRIPTION RATES

The annual subscription rate is $3 in the United States and foreign countries where extra postage is not required. To Canada and to foreign countries where extra postage is necessary the annual rate is $4. Single copies, 35 cents.

Published Monthly by King Publications

OFFICE OF PUBLICATION
503 Market St., San Francisco 5, Calif. . . . . Telephone YUkon 1537

SOUTHWEST OFFICE
9327½ W. Olympic Blvd., Beverly Hills, Calif. . . . . Telephone CRestview 1-7771
J. E. BADGLEY, District Manager

MIDWEST OFFICE
5833 So. Spaulding Ave., Chicago 29, Ill. . . . . Telephone PRospect 1685
A. C. PETERSEN, District Manager

EASTERN OFFICE
115 Central Park West, New York, N. Y. . . . . Telephone ENdicott 2-1665
R E. DORLAND, District Manager

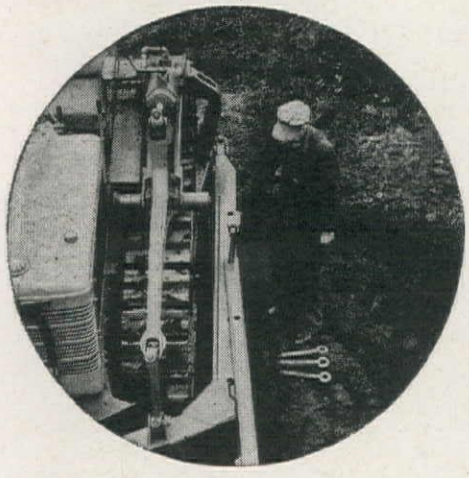
WASHINGTON OFFICE
1120 Vermont Ave., NW., Washington 5, D. C. . . . . Telephone District 8822
ARNOLD KRUCKMAN, Associate Editor

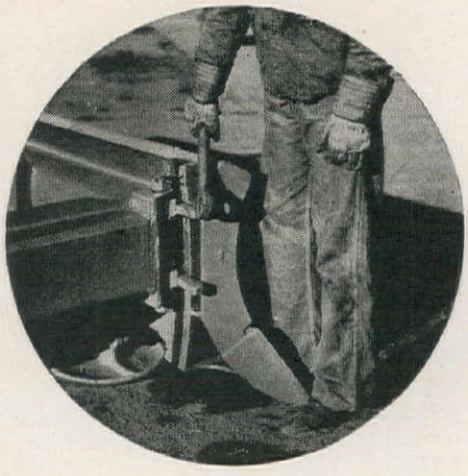
Please address correspondence to the executive offices, 503 Market St., San Francisco 5, California

Entered as Second Class Matter at the Post Office at San Francisco, California, under the Act of March 3, 1879.

ANGLING ••AND•• TILTING

that the OPERATOR Will Use!





"Sure . . . a blade angling and tilting feature can be a big help on plenty of jobs . . . but I'll be darned if I'll bother to angle or tilt if it takes a half hour to do it! I want to move dirt!" The Speaker? Almost any blade equipment operator. It's no problem to get your operators to use the effective angling and tilting features of Bucyrus-Erie Bullgraders, because they're both so easy to do — fast. Without tools, the operator angles the blade by pulling the landside pins, adjusting the blade to the correct angle, and replacing the pins. To tilt, he uses a landside pin to hammer out the wedges that hold the blade in position, shifts the blade to the tilt he wants, hammers the wedges back in place. Neither angling nor tilting takes more than a couple of minutes!

Both you and your operators will like the many other features of the Bucyrus-Erie Bullgrader, too: its easy handling through smooth hydraulic control and balanced-to-the-tractor design, its powerful digging down pressure, its complete visibility, its ability to handle so many jobs efficiently. Ask your International TracTracTor Distributor for complete details.

26T45

See Your INTERNATIONAL TracTracTor Distributor

ARIZONA: O. S. Stapley Co., Phoenix. CALIFORNIA: J. G. Bastian, Redding; Braman-Dickerson Co., Riverside; Brown Tractor Co., Fresno, Madera and Reedley; Exeter Mercantile Co., Visalia and Exeter; Farmers Exchange, Alturas; Farmers Mercantile Co., Salinas, Hollister, King City and Watsonville; Gallagher Tractor & Impl. Co., Merced; Smith Booth Usher Co., Los Angeles; Stanislaus Impl. & Hdwe. Co., Modesto; Stevenson Farm Equip. Co., Santa Rosa; Sutton-Morf Tractor Co., Sacramento; Thompson-Sage, Inc., Stockton, Lodi and Tracy; Valley Equipment Co., San Francisco and San Jose. IDAHO: Intermountain Equipment Co., Boise and Pocatello. NEVADA: Brown Motors, Reno; Clark County Wholesale Mercantile Co., Inc., Las Vegas. NEW MEXICO: Hardin & Coggins, Albuquerque. OREGON: Howard-Cooper Corp., Portland and Eugene. UTAH: The Lang Co., Salt Lake City. WASHINGTON: Howard-Cooper Corp., Seattle; Intermountain Equipment Co., Spokane and Walla Walla. WYOMING: Wilson Equipment & Supply Co., Cheyenne and Casper.

TRACTOR BUCYRUS ERIE EQUIPMENT TE-2

MOVE MORE YARDS faster-at lower cost!

YARDAGES moved by power units at 3 miles an hour was *once* considered fast, low-cost hauling.

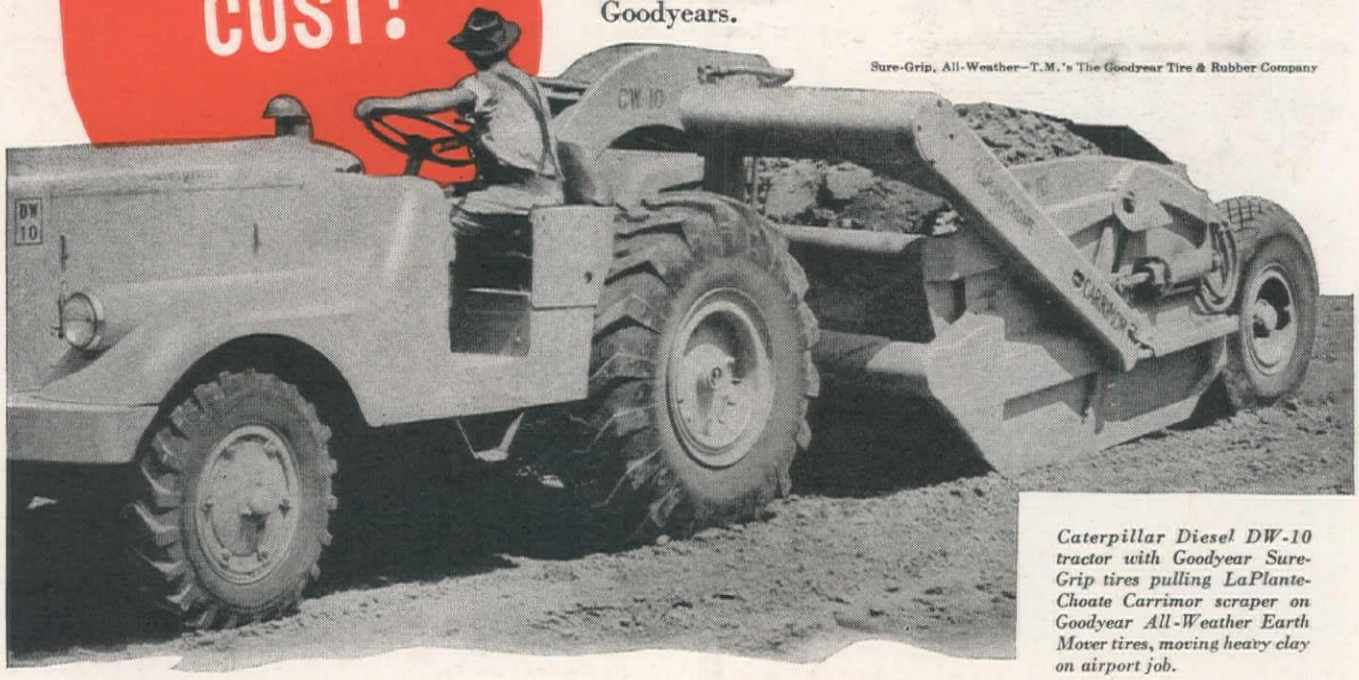
But today that speed is *high*-cost operation. Today those slow-moving units are obsolete—made so by modern equipment that rolls on rubber—on BIG pneumatic tires. For *BIG* tires roll easily over job-site bumps, make faster-hauling power units possible.

That's why earth-moving speeds are many times faster today. That's why today's rubber-tired equipment enables one man to fast-haul up to 15 tons and more at over 10 miles an hour, *and do so at lower costs-per-ton-mile than dirt was ever moved before!*

With gigantic postwar jobs planned the country over, earth-moving schedules will call for bigger and bigger yardages to be moved faster and faster. Your costs—and your contracts—will be determined by the speed with which you haul.

So plan now to get and hold your share of big jobs by putting your equipment on big tires. And when you're ready, choose with care—choose Goodyears. Job-proved tops in performance, Goodyear off-the-road tires come in 3 tread designs to meet all operational needs, deliver lower costs-per-ton-mile, are *first choice* with cost-wise contractors everywhere. It pays to buy—and specify—Goodyears.

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



Caterpillar Diesel DW-10 tractor with Goodyear Sure-Grip tires pulling LaPlante-Choate Carrimor scraper on Goodyear All-Weather Earth Mover tires, moving heavy clay on airport job.

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Would you consider the testimony of 195 water works superintendents *important?* They report that the maintenance cost of cast iron distribution mains is far below that of other pipe materials. Would you value the experience of water supply systems in 200 of our largest cities? They report that some or all of their original cast iron mains are still functioning, after generations of service. There can be no doubt that the long life and well-nigh trouble-free service of cast iron pipe mean economy —*substantial* economy—in water works operation. Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, Peoples Gas Building, Chicago 3, Illinois.

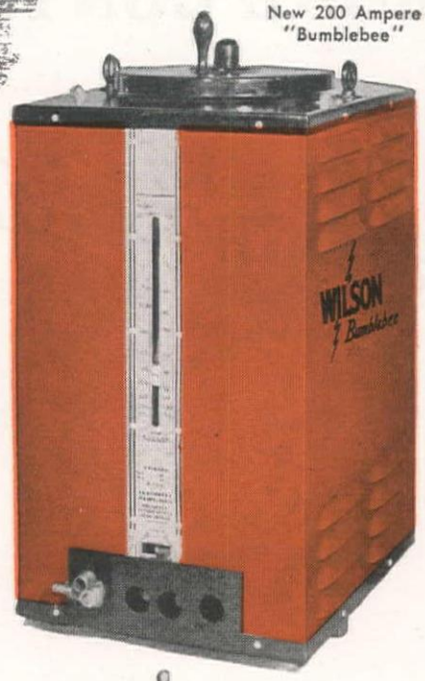
CAST IRON

CAST IRON PIPE

SERVES FOR CENTURIES

NOW YOU CAN HAVE "Bumblebee" performance for every welding job

New 200 Ampere "Bumblebee"

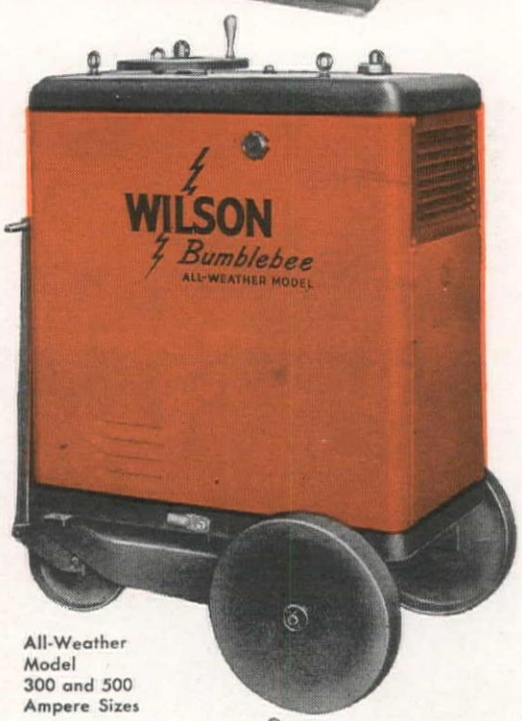


WHATEVER your welding problem — on production lines, or special jobs — there's a Wilson "Bumblebee" A.C. Arc Welder that's just suited to your needs . . . designed to do the work faster, better, with lower power consumption.

"Bumblebees" are now made in five sizes, all embodying characteristic "Bumblebee" efficiency, economy and dependability: (1) The *new* 200 ampere "Bumblebee" for light, odd-job or production welding; (2) the 300 ampere, and (3) the 500 ampere "Bumblebee" for heavy all-purpose assignments; and (4 and 5) the 750 and 1000 ampere sizes available on special order. The 300 and 500 ampere sizes are available in "All-Weather" models for welding under conditions where excessive moisture is encountered.

Throughout industry the many important features of the "Bumblebee" have made them a widespread choice among owners and operators. With their deep penetrating arc and excellent arc characteristics, they permit more welding production per work day — of better quality, with considerably lower power costs.

Light, well balanced, rugged, they provide continuous, step-less current control, from maximum to minimum — simply by turning a crank on top. All "live" parts are completely shielded and protected.



All-Weather Model
300 and 500 Ampere Sizes

● See your local Airco office for full information or write for catalog AOW-53A.

AIR REDUCTION

Offices in all Principal Cities

AIRCO

Western Offices: San Francisco, Calif.; Emeryville, Calif.; Portland, Ore.; Los Angeles, Calif.; and Seattle, Wash.

WILSON

"Bumblebee"

A.C. ARC WELDERS

with the penetrating, stinging arc

A COMPLETE LINE OF A.C., D.C. AND GAS-ENGINE DRIVEN UNITS

MORE CONTRACTORS

are switching to Job-Rated trucks

IT WAS no "wartime secret" that owners of Dodge *Job-Rated* trucks experienced consistent "on-the-job" operation. Because their trucks *fit the job*, they performed more efficiently, operated more economically, lasted longer.

That's why today so many more contractors are planning to standardize on precision-built Dodge *Job-Rated* trucks.

They're buying trucks with engines rated for their loads. They're getting trucks with a transmission and clutch, with axles, springs and every other unit *Job-Rated* to handle the job . . . to do a better job, longer, and at low cost!

DODGE DIVISION OF CHRYSLER CORPORATION

LISTEN TO THE MUSIC OF ANDRE KOSTELANETZ, WITH FAMOUS GUEST STARS
THURSDAYS, C. B. S., 9 P. M., E. T.

4

WARTIME YEARS PROVED PLENTY

Two "eye-opening" facts that will long be remembered by men to whom trucks were a "bread and butter" proposition during wartime, are these:

1 There's no substitute for years of truck-building experience, or for precise workmanship and quality . . . major reasons for the economy, dependability and long life of Dodge Job-Rated trucks.

2 Dodge Job-Rated trucks stayed on the job because of the ready availability of Dodge TRUCK PARTS and because of the prompt, efficient truck service of Dodge dealers.

See your Dodge dealer Now! Let him help you choose the right Dodge Job-Rated truck for all your hauling needs!

DODGE *Job-Rated* TRUCKS

FIT THE JOB ... LAST LONGER

COMING

● HANDLES BIGGER WINDROWS — MORE CLEARANCE ADDS EXTRA EARTH-MOVING CAPACITY.

SOME STANDBY FEATURES OF THE A-D

MORE POWER — 75 Diesel brake h.p. . . . more than any other motor grader.

MORE TRACTION — 21,500 lbs. weight . . . higher percentage of weight on tandem wheels than any other motor grader.

MORE CLEARANCE — Extra clearance under front axle and circle.

FULL RANGE OF BLADE POSITIONS — Easier, more accurately handles straight grading, high bank cuts, hard ditch cuts, heavy oil mixing.

*SOME OF THE NEW BONUS FEATURES

NEW-TYPE CLUTCH — larger capacity, longer life, easier to operate.

NEW GEAR SHIFT MECHANISM — easier operation, better service.

ELECTRIC BRAKES — first time on road graders. No adjustment, no high pressure tubing, no vapor-locks — far easier to operate.

IMPROVED TRANSMISSION — gears automatically locked in place — no jumping out of mesh.

EASIER CONTROL — leverage redesigned in control box to give approximately 30 per cent easier operation.

ELECTRIC INSTRUMENTS—eliminate all tubing on machine except fuel lines.

IMPROVED STEERING — leaning front wheels easier to operate.

IN ALL — SOME *35 IMPROVEMENTS* HAVE BEEN MADE!

YOUR WAY. . . .

MODEL A-D MOTOR GRADER

NOW BACK IN PRODUCTION . . .
A BETTER MACHINE THAN EVER!

Soon the Model A-D Motor Grader, with its many distinct advantages, can be *yours!*

Again in production after making way for the manufacture of war goods . . . the A-D brings you all its former outstanding features, plus some 35 improvements.* Operation is further simplified, made easier . . . there is extra overall strength . . . life of clutches, brakes, and other parts is lengthened.

Look for this better-than-ever motor grader — it's coming your way! The demand is big . . . there are many orders to fill . . . so get your name on your Allis-Chalmers dealer's list . . . NOW!

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

YOU GET ALL THREE WITH THE MODEL A-D . . .

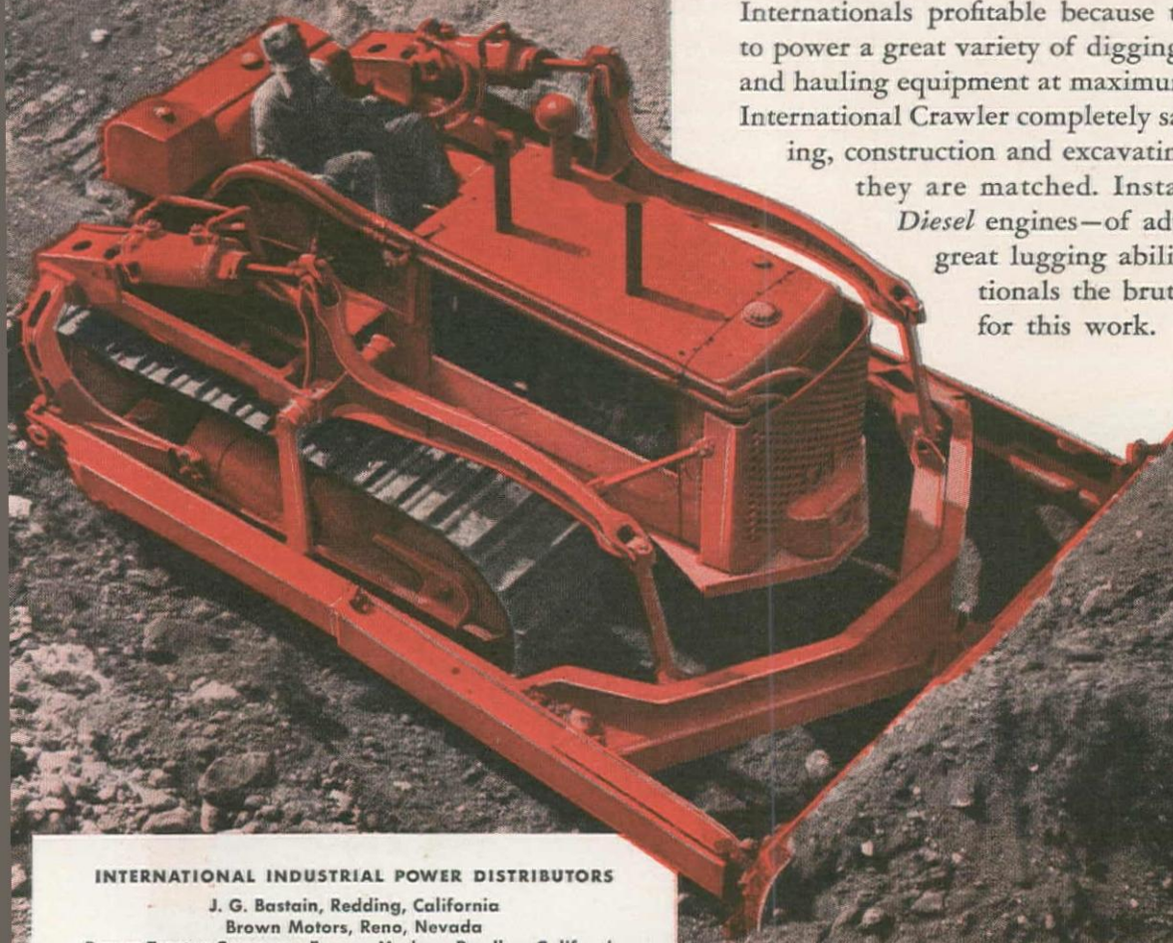
★**POWER** ★**TRACTION** ★**CLEARANCE**

A 90° BANK-CUTTING ANGLE MAKES STEEPEST BANKS EASY TO SLOPE.

LEANING FRONT WHEELS MAKE HEAVY DITCH CUTS EASIER TO HANDLE.

INTERNATIONAL POWER Makes the Tough Jobs Pay...

● Let International TracTracTors tackle your tough earth-moving jobs. They offer you matchless performance, with unbeatable operating economy and minimum maintenance. Owners everywhere find Internationals profitable because they are designed to power a great variety of digging, lifting, carrying and hauling equipment at maximum capacities. Each International Crawler completely satisfies earth-moving, construction and excavating needs to which they are matched. Instant starting, *full Diesel* engines—of advanced design for great lugging ability—give Internationals the brute power required for this work.



INTERNATIONAL INDUSTRIAL POWER DISTRIBUTORS

J. G. Bastain, Redding, California
Brown Motors, Reno, Nevada
Brown Tractor Company, Fresno, Madera, Reedley, California
Stanley J. Commerford, Eureka, California
Farmers Mercantile Company, Salinas, California
Sutton Tractor & Equipment Co., Sacramento, California
Thompson-Saga, Inc., Stockton, California
Valley Equipment Co., San Jose and San Francisco, California

See your International Industrial Power Distributor for TracTracTors, Wheel Tractors, Engines and allied equipment.

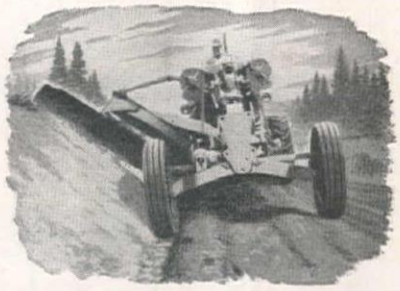
Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

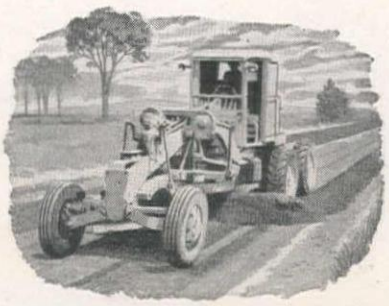
180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL INTERNATIONAL HARVESTER **Industrial Power**

DITCHING



BANK CUTTING

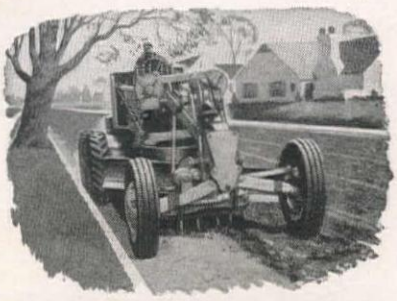


SURFACE MIXING

ADAMS

The All-Around Grader for Year-Around Service

ROAD and STREET MAINTENANCE



SCARIFYING

SNOW REMOVAL

WHEN YOU BUY an Adams Motor Grader, you buy a real *all-purpose, all-year* machine—a machine designed and built to deliver fast, efficient, economical service . . . *in all seasons* and *all weather.*

Big and husky, Adams Motor Graders have the power, traction and flotation to tackle any job within the range of a motor grader—plus the advantage of fast, power-operated cab controls that accurately position the blade for all types of surface, ditch and bank work—quickly, easily.

But this only begins to tell the story of Adams exceptional versatility. Eight overlapping forward speeds enable operators to obtain and maintain fastest practical working speeds on every type of operation. In addition to the road operations pictured here, Adams Motor Graders are adapted to a wide variety of work on—streets and alleys—airports—irrigation ditches—dam construction—and other grading projects.

Investigate the many all-around, year-around superiorities of Adams Motor Graders. See your local Adams dealer.

J. D. ADAMS MANUFACTURING COMPANY • INDIANAPOLIS, INDIANA

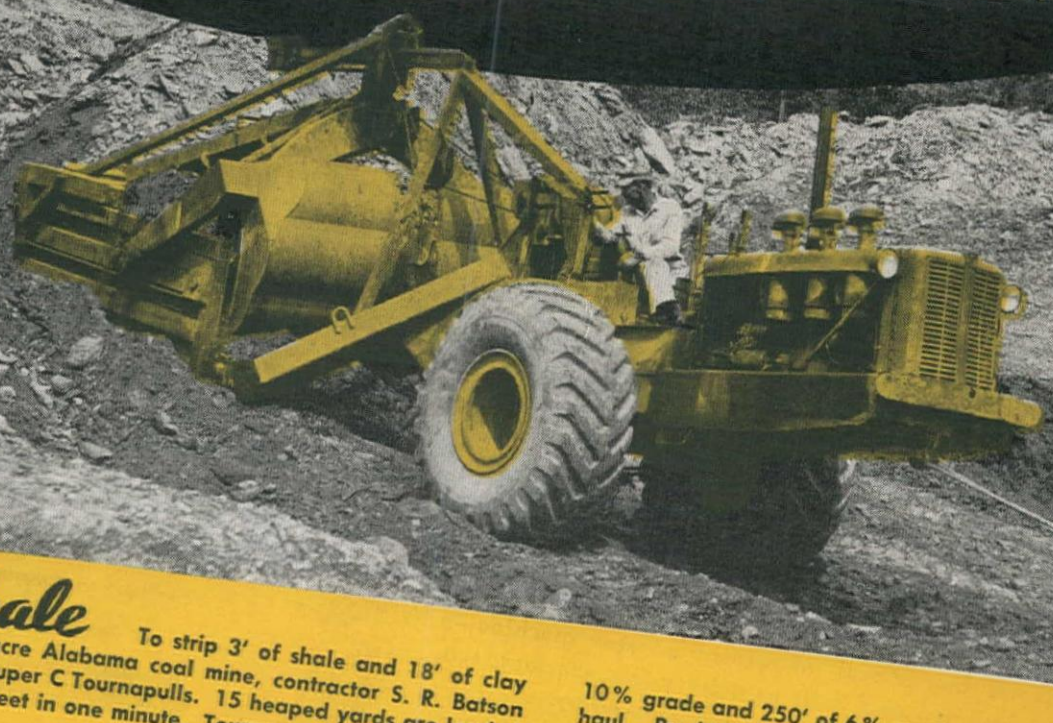
LOCAL *Adams* DEALERS

ALASKA—Glenn Carrington & Co., Fairbanks
ARIZONA—O. S. Stapley Company, Phoenix
CALIFORNIA—Lee & Thatro Equip. Co., Los Angeles
Sutton-Morf Tractor Co., Sacramento
J. G. Bastain, Redding
Valley Equip. Co., San Jose, San Francisco
Brown Tractor Co., Fresno
Thompson-Sage, Inc., Stockton
CALIFORNIA (Cont.)—Farmers Mercantile Co., Salinas
Stevenson Farm Equip. Co., Santa Rosa
Stanislaus Impl. & Hdwe. Co., Modesto
Exeter Mercantile Co., Visalia
Gallagher Tractor & Impl. Co., Merced
COLORADO—McKelvy Machinery Co., Denver
IDAHO—Intermountain Equipment Co., Boise, Pocatello
MONTANA—Industrial Equip. Co., Billings, Missoula
NEVADA—Brown Motors, Reno
NEW MEXICO—Hardin & Coggins, Albuquerque
OREGON—Howard-Cooper Corp., Portland, Eugene
UTAH—The Lang Company, Salt Lake City
WASHINGTON—Howard-Cooper Corp., Seattle
Intermountain Equipment Co., Spokane
WYOMING—Industrial Equip. Co., Billings, Mont.
The Lang Company, Salt Lake City, Utah

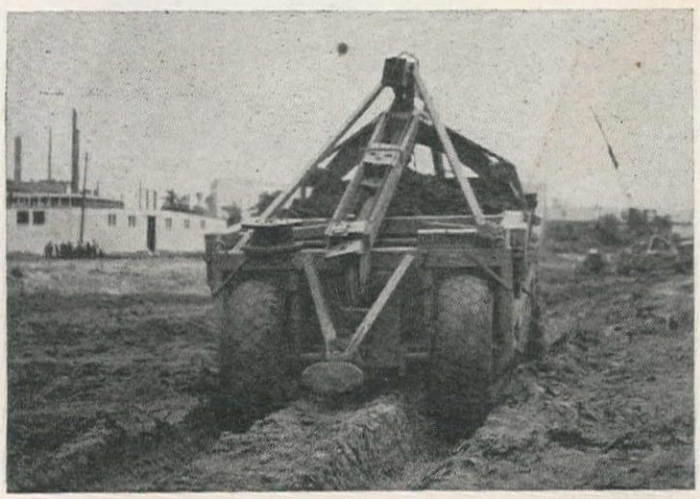
YOU CAN PROFITABLY HANDLE

All these materials

WITH **TOURNAPULLS**

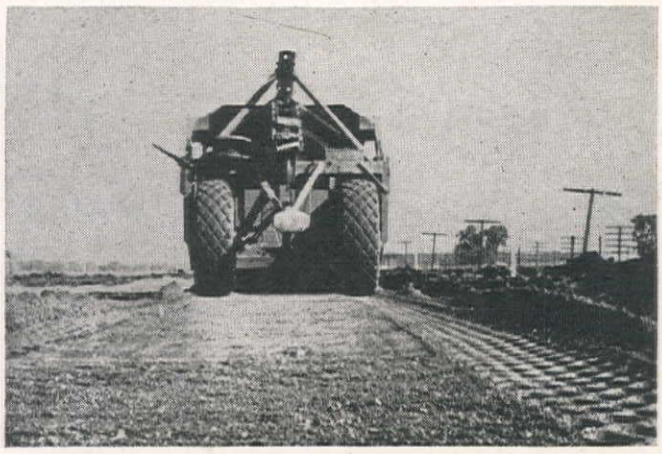


Shale To strip 3′ of shale and 18′ of clay from a 54-acre Alabama coal mine, contractor S. R. Batson Co. used 2 Super C Tournapulls. 15 heaped yards are loaded in 75 to 85 feet in one minute. Tournapulls travel up 150′ of 10% grade and 250′ of 6% grade on average 800′ one-way haul. Production is 3,000-yards-and-over every 10 hours according to Mr. Batson, who states that, in two months of operation, they have had only two hours down time.



Mud 3 Tournapulls moved mud during "shut-down" conditions for Grantwood Const. Co. on 110,000-cu. yd. land leveling job near St. Louis, Mo. Springs seeping out of hillside kept water standing in the cut. Fill was placed in a swamp. Tournapulls kept working because their big 21.00 x 24 tires gave ample flotation to stay on top of soft ground; correct ratio of weight to h.p., plus 2-wheel prime mover design, gave plenty of traction and power.

Rooted Rock 5 Tournapulls loaded tight, rocky hardpan for Leonard & Slate on 2½-mile, 636,000-yard section of U.S. 99 north of Woodland, Wash. Each rig averaged 55 pay yards per hour on a 4600′ round trip haul over 18 to 20% return grades, plus delays entering heavy traffic stream for haul on main highway. Tournapulls handle broken shale, decomposed granite, crushed stone, hardpan . or any material a Rooter can break loose.



Gravel Raemisch-Madden Co. used part of their fleet of 11 Tournapulls to load, haul and spread 47,000 cu. yds. of sub-base on U.S. 66, near Chenoa, Ill. Loading wet, pit-run gravel, hauling over pavement, spreading 4 to 6" lifts under rigid state engineer inspection, each rig delivered 25 pay yards per hour on 6-mile round trip. This method eliminated conventional shovel loading, truck hauling and spreader boxes.

Clay Working in typical Iowa gumbo, Peter Kiewit Sons Co. used 6 Tournapulls on their 2,300,000-yd. Rock Island rail relocation job, near Eldon, Iowa. Loading soft, sticky clay out of a 22' cut, material was spread on an 18' fill at bottom of a steep, slick grade. High apron lift, plus positive ejection tailgate cleared each load from the Carryall bowl; big-tired, 2-wheel traction gave plenty of pull through the soft fill and up slippery grade.

C36XX

Sand "Nothing like Tournapulls to move this sand," says J. M. Jones, Sup't. of Claussen-Dunn Const. Co. on their 300,000-yd., 3-mile Georgia highway job. Material is loose, dead sand. Two Tournapulls pumped capacity loads up to the spring pipe in 2½ minutes; each rig averaged a 9000' round trip every 10 minutes, with travel through 7,800' of traffic on black-top. Rain kept other haul units out of pit for two days, didn't stop Tournapulls.

Investigate Tournapull profit possibilities on YOUR dirt-moving. Get cost and production estimates from your LeTourneau Distributor!

LETOURNEAU
PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

JOB-PROVED
Over 4000 Built and Shipped

TOURNAPULLS*

*Trade Mark Reg. U. S. Pat. Off.

FOR LOWEST NET COST PER YARD

SPEED TO SPARE!

ON LONG & SHORTER HAULS

One of a fleet of TERRA-COBRAS operating on a Trans-Pacific air base on the West Coast

Wooldridge Terra-Cobra self-propelled earthmovers consistently maintain speed up to 21 m.p.h. fully loaded. Positive two-wheel steering control eliminates the necessity of slowing down for rough travel, sharp turns, passing on narrow strips, or spreading on soft fills. Faster round trips from cut to the fill result in greater total yardages at a higher profit and lower yardage cost. *Investigate fully, today.* Write for complete Bulletin TA-425.

WOOLDRIDGE
EARTHMOVING EQUIPMENT
Includes

SCRAPERS
Tractor-drawn for handling heaping yardages from 6 to 28 cu. yards.

★ **POWER CONTROL UNITS**
Single and multiple drum with universal or roller fairleads.

★ **BULLDOZERS**
Tough and rugged design for standard makes of tractors.

★ **TRAILBUILDERS**
Adjustable angle-blades for standard tractor mounting.

★ **RIPPERS**
Available in light, medium and heavy duty models with two sizes to each model.

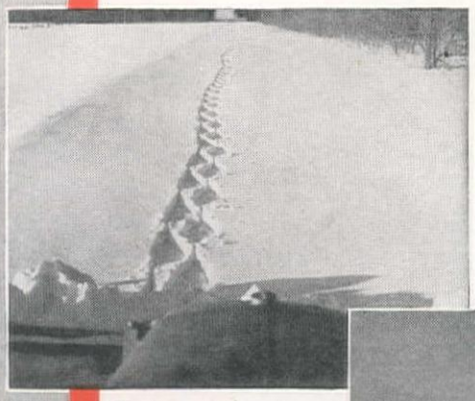
DISTRIBUTOR SALES & SERVICE FACILITIES IN ALL PRINCIPAL AREAS & FOREIGN TERRITORIES

WOOLDRIDGE
MANUFACTURING COMPANY
SUNNYVALE · CALIFORNIA · U. S. A.

TERRA COBRA
Hi-Speed Self-Propelled EARTHMOVERS

ACTION REPORT

from the Snow-fighting Front!



Wind, sweeping across highway, packed snow five feet deep so hard men walking on it, sank less than a foot.

FWD plowed steadily forward . . . snow came out of cut in 3-foot square blocks, piled 10 feet high, later "winged" far out of way at high speed.

"The Setting": In the heart of the snow-belt on U. S. Highway 28, along the shores of Lake Superior, blocked by 3½ to 8-ft. grainy, crystallized "sugar snow" that "couldn't be plowed" (said some old-timers). **The Snow-Plow Truck:** An M-10 FWD. **The Action:** The FWD plunged in with its terrific snow-bank-busting power, cleared the final 14 toughest miles of snowbound highway in 6½ hours . . . opening a great section of forest land to vital lumbering operations! "Best equipment available for the job", concluded Highway Engineer Sharpensteen, directing the job.

Snow-fighting at high speed is just one of many highway jobs FWD trucks take in stride. During seasons other than winter, these trucks, with power and traction on all four wheels, are tops for road grading, heavy hauling, and scores of other heavy-duty road building and maintenance jobs. ONE truck for ALL jobs, ALL seasons . . . that's the FWD!

THE FOUR WHEEL DRIVE AUTO COMPANY
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ontario

FWD TRUCKS
THE ORIGINAL EXCLUSIVE BUILDERS OF FOUR-WHEEL-DRIVE TRUCKS

FWD Distributors: ARIZONA—Arizona-Cedar Rapids Co., 401 N. First St., Phoenix; CALIFORNIA—The Four Wheel Drive Auto Co., 1339 Santa Fe Ave., Los Angeles 21, and FWD Pacific Co., 469 Bryant St., San Francisco 7; COLORADO—Liberty Trucks & Parts Co., P. O. Box 1889, Denver 1; IDAHO—Intermountain Equipment Company, Broadway at Myrtle St., Boise; MONTANA—Steffeck Equipment Co., 11 E. Cutler St., Helena; NEVADA—Allied Equipment Co., Reno; NEW MEXICO—The Myers Company, Las Cruces; OKLAHOMA—Halliburton Oil Well Cementing Co., P. O. Drawer 471, Duncan; OREGON—Feenaughty Machinery Co., 112 S. E. Belmont St., Portland 14; UTAH—Cate Equipment Co., 49 E. 9th So., Salt Lake City; WASHINGTON—Feenaughty Machinery Co., 1028 6th Ave., So., Seattle 2, Glenn Carrington & Co., 91 Columbia St., Seattle, and Feenaughty Machinery Co., 715 N. Division St., Spokane; WYOMING—Wortham Machinery Co., 517 W. 17th St., Cheyenne; ALASKA—Glenn Carrington & Co., Nome, Fairbanks, Anchorage.

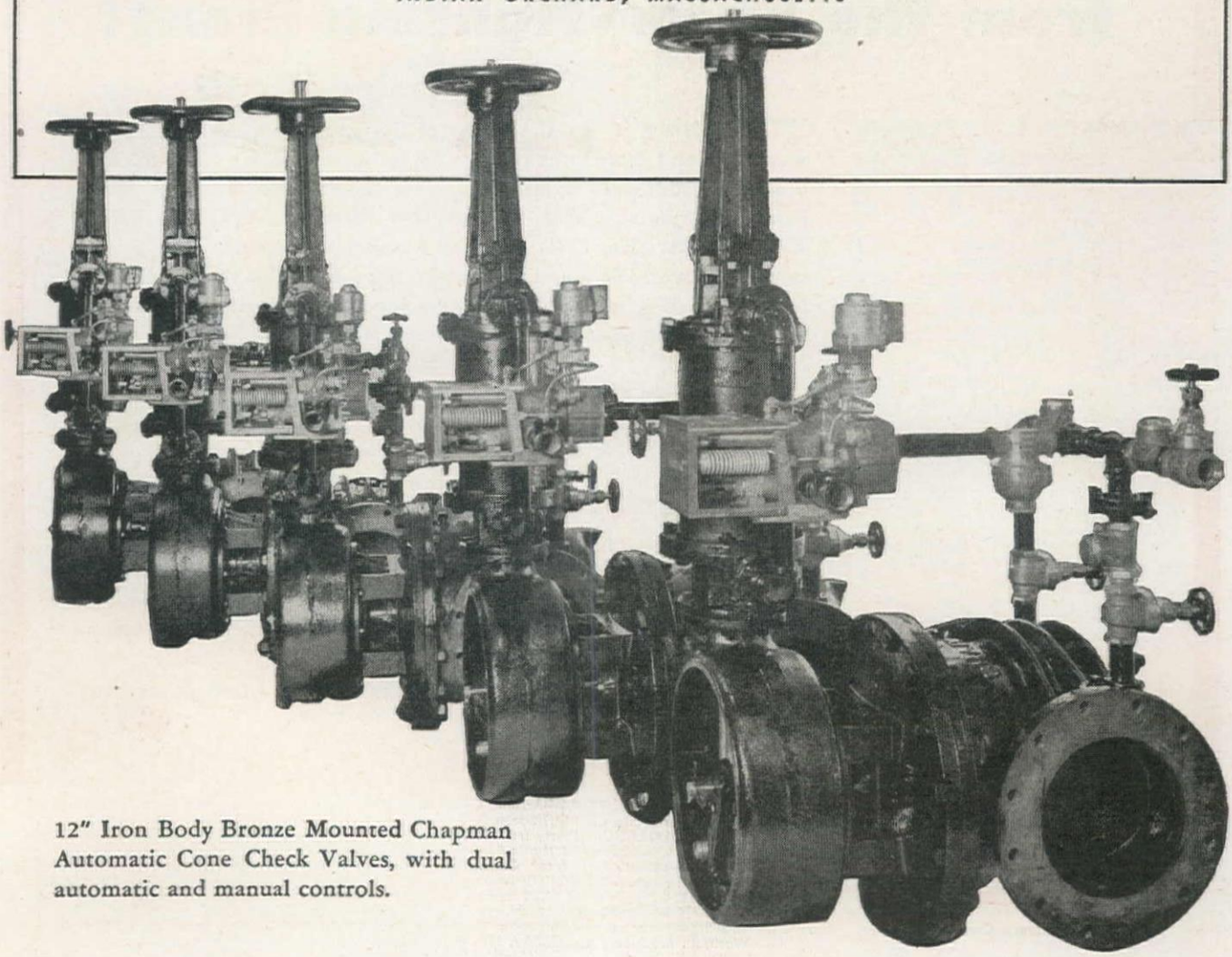
Triple Control

for these Chapman Automatic Cone Check Valves

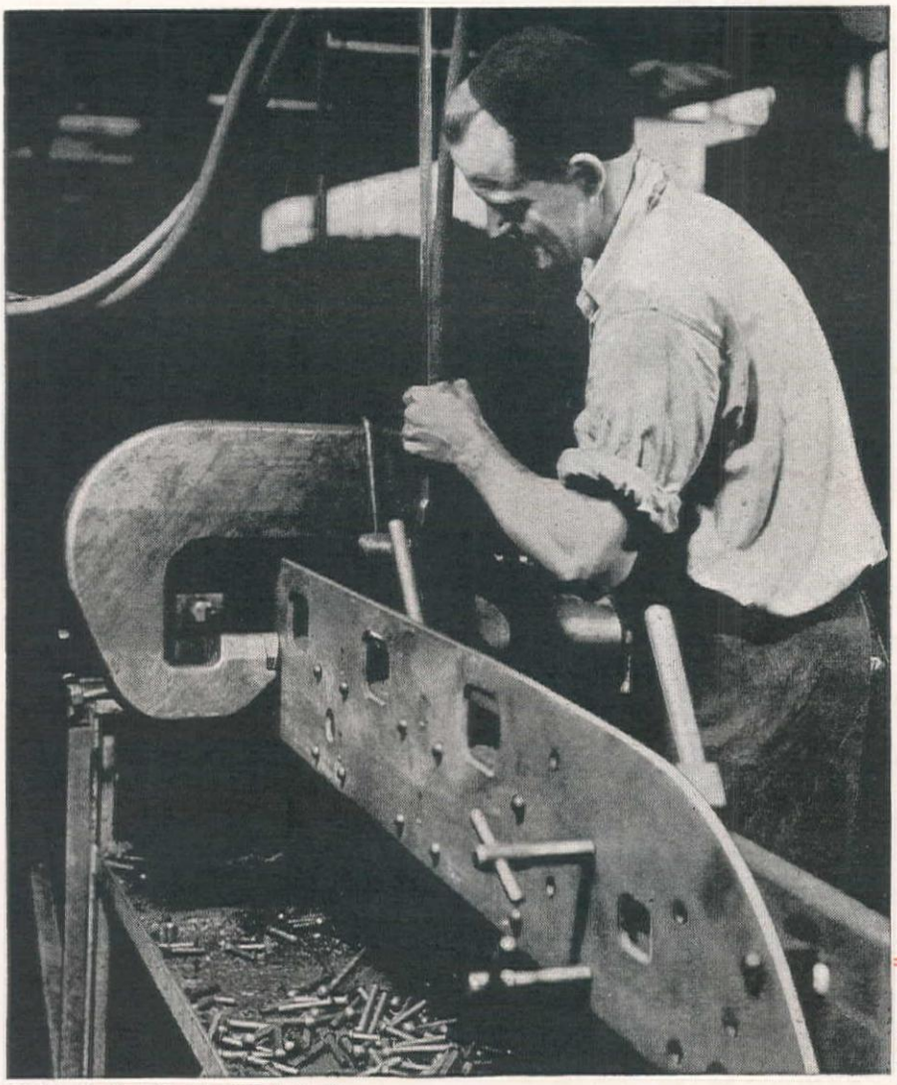
Automatically opens and closes the valve slowly with the pump running. Automatically closes the valve rapidly to prevent pump reversal in case of power failure. Provides manual closure by hand wheel, independent of automatic mechanism. Chapman Cone Valves can be adapted to the most severe service by the use of special controls.

The CHAPMAN VALVE Mfg. Co.

INDIAN ORCHARD, MASSACHUSETTS



12" Iron Body Bronze Mounted Chapman Automatic Cone Check Valves, with dual automatic and manual controls.



Cold riveting track frames with a Hydraulic Yoke Riveter in the Oliver "Cletrac" plant.

Added attraction!

To provide greater resistance to shocks, strains and twists of crawler tractor operation, the track frames of Oliver "Cletrac" tractors are reinforced with sections of heavy plate steel . . . an "added attraction" that adds years of dependable service.

Strategically located to provide greatest strength, these steel sections are securely riveted in place by modern hydraulic riveters. This *extra* protection is typical of the many added features that are standard on Oliver "Cletrac" tractors. Through the use of the most modern equipment and production methods, quality is built in . . . high cost is engineered out.

Maintenance of this standard enables your Oliver "Cletrac" dealer to offer you the finest in crawler tractors . . . for your every need.

CLETRAC

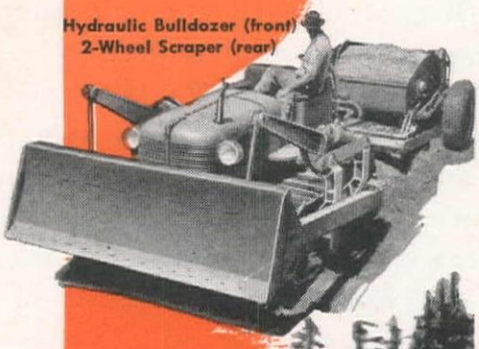
THE OLIVER CORPORATION Cletrac

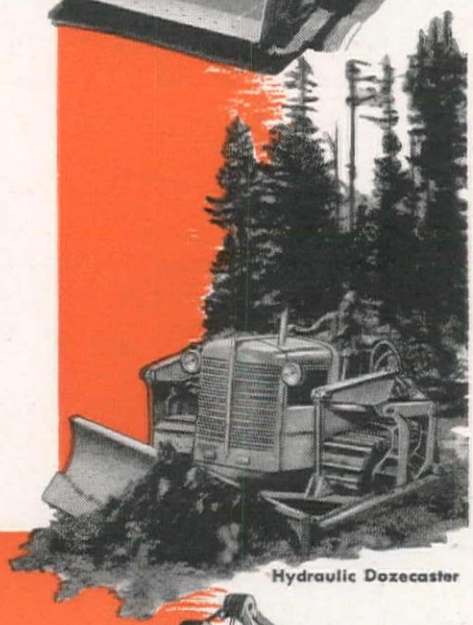
a product of **The OLIVER Corporation**

State of Arizona: Choguill Tractor Co., Phoenix. ***State of California:*** Gustafson Tractor Co., Eureka; Mechanical Farm Equipment Dist., Inc., San Jose; Comber & Mindach, Modesto; Nelson Equipment Co., Los Angeles; Tractor & Equipment Co., San Leandro; Flood Equipment Co., Sacramento; W. J. Yandle, Santa Rosa; Hamsher Tractor Co., Stockton. ***State of Washington:*** Burrows Motor Company, Yakima; Inland Truck & Diesel Company, Spokane; Pacific Hoist & Derrick Co., Seattle; Melcher-Ray Machinery Co., 202 East Alder Street, Walla Walla; Coleman-Jones Equipment Co., Chehalis. ***State of Oregon:*** Loggers & Contractors Machinery Co., Portland and Eugene. ***State of Idaho:*** Idaho Cletrac Sales Co., Lewiston; The Sawtooth Company, Boise. ***Western Montana:*** Western Construction Equipment Company, Billings and Missoula. ***British Columbia:*** The A. R. Williams Machinery Company of Vancouver, Limited, Vancouver.

Here's teamwork FOR YOUR earth moving jobs

GAR WOOD ROAD MACHINERY
WITH ALLIS-CHALMERS DIESEL POWER


Hydraulic Bulldozer (front)
2-Wheel Scraper (rear)

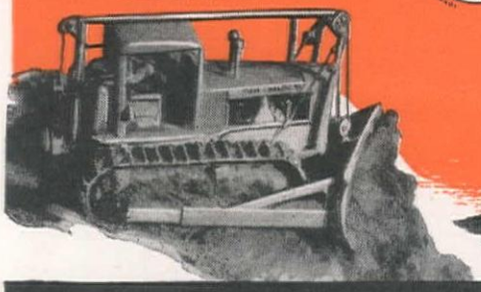

Hydraulic Dozecaster

The experience of successful contractors and public construction officials has shown that it takes teamwork to get earth moving jobs done on time and at lowest cost. When your operators and equipment work together with you as a team, you have a really unbeatable combination.

In organizing such a team, a logical place to start is with your equipment. Gar Wood Road Machinery and Allis-Chalmers Diesel Tractors are already "teamed up" for high efficiency operation because they are engineered and built to work as a team. And this dependable, proved equipment wins the enthusiastic cooperation of operators because it gets jobs done with the least effort and the utmost convenience and speed.

You benefit too by the nation-wide service of the strong Allis-Chalmers and Gar Wood factory organizations through your local dealer—always helpful service that keeps your equipment going. Get this teamwork on your jobs. Order Gar Wood Road Machinery now from your Allis-Chalmers dealer.

Cable Dozecaster



4-Wheel Cable Scraper

GW ROAD MACHINERY
is Sold Through
ALLIS-CHALMERS
Dealers Everywhere

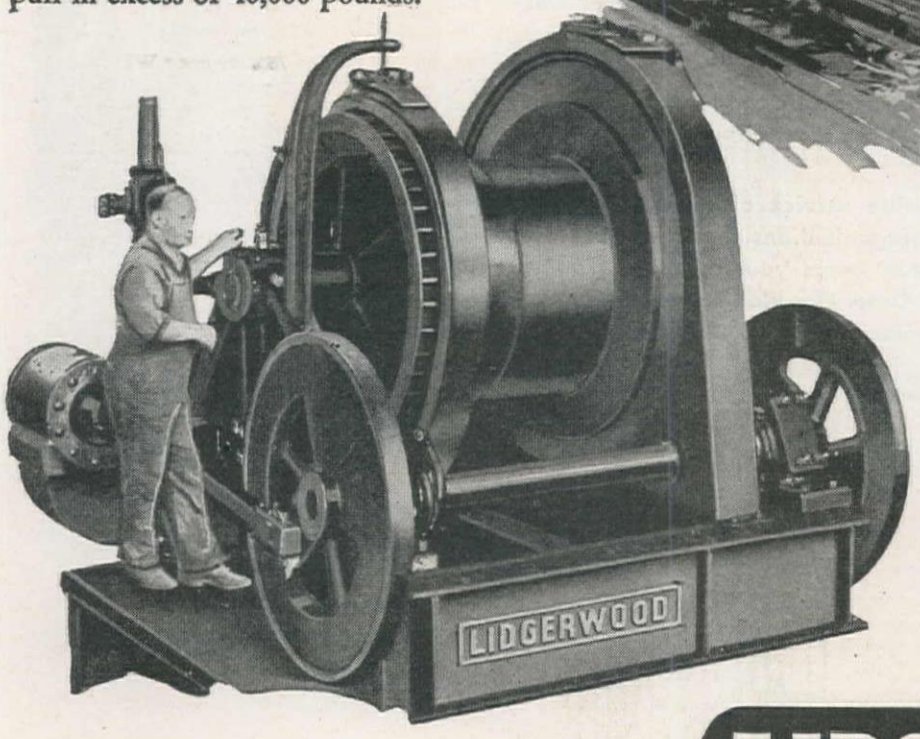
ROAD MACHINERY DIVISION
GAR WOOD INDUSTRIES, Inc.
DETROIT 11, MICHIGAN

OTHER PRODUCTS OF GAR WOOD INDUSTRIES INCLUDE HOISTS AND BODIES • WINCHES AND CRANES • TANKS • HEATING EQUIPMENT • MOTOR BOATS

LIDGERWOOD builds the BIG ones too...

These giant floating derricks—considered the largest in use today—are equipped with dependable LIDGERWOOD heavy-duty steam operated MAIN LINE, AUXILIARY and LUFFING hoist engines.

Rugged LIDGERWOOD construction shows clearly in the illustration (below) of the double cylinder, 16" x 18" reverse link motion MAIN LINE steam hoist. This hoist provides power to spare for the operation of the huge 150 ton capacity floating derricks—affording a reserve that has permitted handling loads in excess of 250 tons. The engine is geared for a single line pull in excess of 40,000 pounds.



LIDGERWOOD Steam, Electric, Diesel, Gasoline and Belt operated hoists are *built to fit the job.* While they are currently being furnished exclusively to the Government and war-related industries, our available facilities are at your disposal, to study your needs and make recommendations on your present *and* post-war requirements.

Send for *the new LIDGERWOOD Combination and Illustrated Hoist Bulletins. They will be sent promptly at your request on your business stationery.*

LIDGERWOOD
ESTABLISHED 1873
Manufacturing Company
MAIN OFFICE AND WORKS • ELIZABETH 8, NEW JERSEY

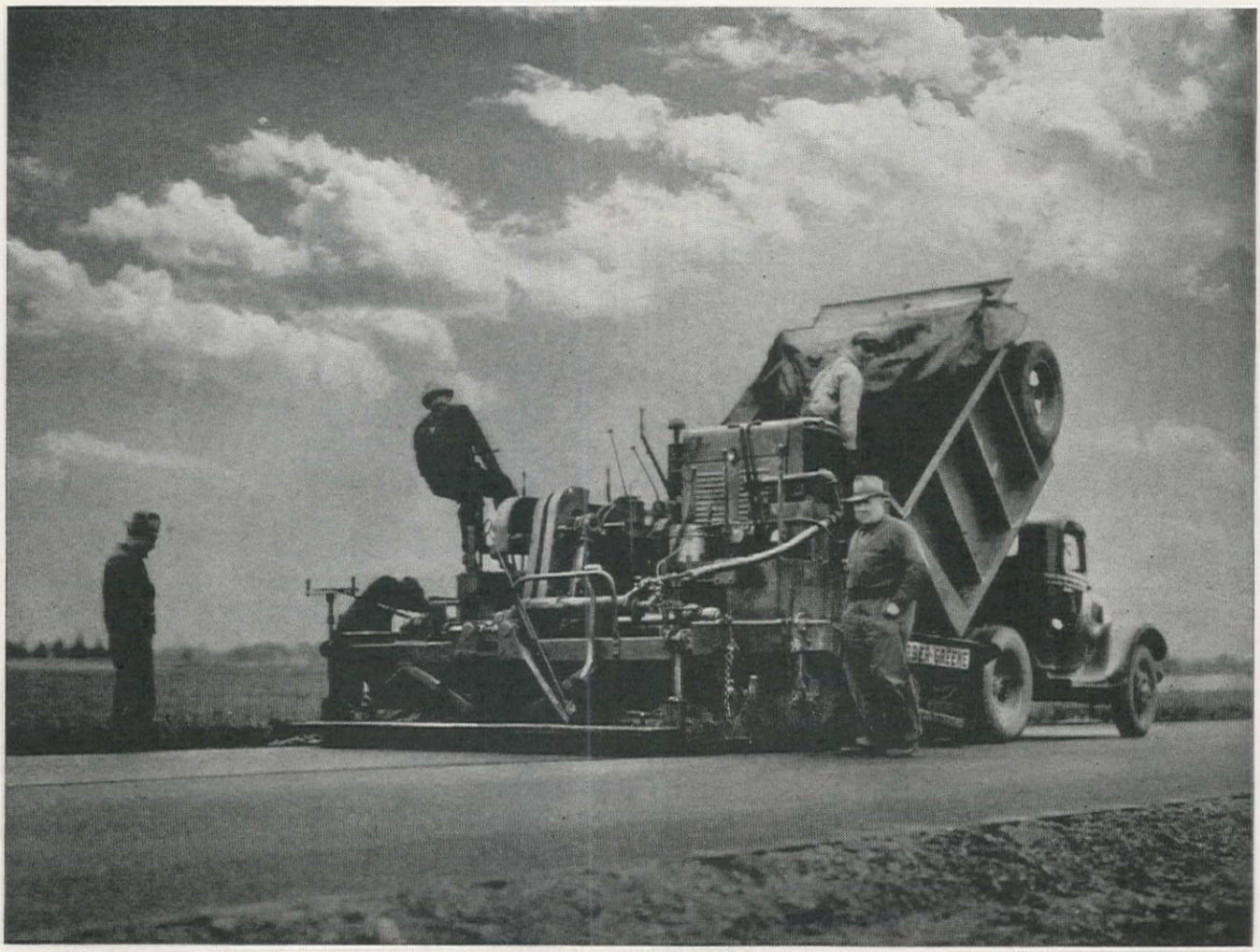
Represented in California by Industrial Equipment Co., Emeryville, California

New Ford Pickup Truck • Today's Ford Pickups are better trucks for *your* business. They're better trucks for *any* business. Exclusive Ford features and advancements make them roadworthy—streetworthy—farmworthy. Look below. You'll find advantages only Ford can offer—reasons why, year after year, registrations show "More Ford Trucks on the Road!"

MORE ECONOMICAL, MORE RELIABLE, MORE ENDURING THAN EVER!

TWO great engines—the rugged 100 H.P. V-8 with a score of important engineering advancements, or the 90 H.P. Six, for jobs that call for economical stop-and-go driving. Truck-type frame. Side-mounted springs. Three-quarter-floating rear axle with straddle-mounted pinion and 4-pinion differential. Four double-action shock absorbers. Note the generous dimensions of the heavy-gage steel Ford Pickup body, shown above—45 cubic feet of load space—wide enough for easy flat-loading of such 4-foot units as plywood or plasterboard (no wheel housings). Floor is heavy-gage steel-surfaced, with formed skid-strips and hardwood under-flooring. Tailgate, strong and rattle-free, swings full-down for loading.

Priorities No Longer Needed. Ford **See Your Ford Dealer!** **FORD TRUCKS**



HOW A B G FINISHER MAKES SMOOTHER ROADS

Here's a way to get a well packed surface without springy spots. An asphalt mat laid down with a Barber-Greene Tamping-Leveling Finisher is smooth, *firm*.

In many cases, a 5-ton roller adds only about an eighth of an inch compaction to the material *tamped* by a Barber-Greene. What's more, depressions in the base are not reflected in the finished surface. *The mat is equally packed over every variation in the subgrade.*

Hammering the hot mix 1200 times a minute, the bevelled face of the tamping bar actually compacts the material while striking it off. And to produce a mat of uniform density, the compacted mix is pushed forward and downward simultaneously.

In addition, the creeping travel of the tamper imparts a rolling movement to the loose mix in the spreading chamber. This prevents segregation of the material. And the weight of the follow-up screed — level with the stroking depth of the tamping bar — completes compaction . . . leaves a smooth, table-top surface.

A Barber-Greene *Tamping-Leveling* Finisher will help you build better, smoother, lower-cost roads. Write for B-G Finisher Catalog. Barber-Greene Company, Aurora, Illinois.

The tamping bar on a Barber-Greene Finisher compacts the hot mix while striking it off. Material is pushed forward and downward at the same time to fill all the voids in an uneven subgrade. A mat of equal density throughout is produced.

45-4

Barber-Greene B G *Constant Flow Equipment*

Brown-Bevis Equipment Co., Los Angeles 11, Calif.; Brown-Bevis Equipment Co., Phoenix, Ariz.; Columbia Equipment Co., Spokane, Wash.; Columbia Equipment Co., Seattle, Wash.; Columbia Equipment Co., Boise, Idaho; Contractors Equip. & Supply Co., Albuquerque, New Mexico; Ray Corson Machinery Co., Denver 2, Colo.; Jenison Machinery Co. San Francisco 7, Calif.; Lund Machinery Co., Salt Lake City, Utah; Western Construction Equipment Co., Billings, Mont.; Western Construction Equipment Co., Missoula, Mont.

with **CARCO** *Hot Dip Galvanizing*

The moisture and salt air common to the Pacific Northwest present a serious problem of rust and corrosion, which industry is eliminating by means of CARCO hot dip galvanizing.

Humidity, salt air, salt water, chemical actions and other corrosive conditions are successfully combated by this zinc armored protection. With CARCO hot dip galvanizing the molten zinc actually fuses with the iron or steel, penetrating into the pores of the metal and forming a zinc alloy. CARCO hot dip galvanizing standards exceed those of the NELA.

CARCO'S large, modern galvanizing division is prepared to handle any type of galvanizing job, large or small, from individual items to quantity production. Years of experience in quality hot dip galvanizing, backed by the close supervision of highly trained metalurgists, insure the best in this type of corrosion protection. May we quote on your requirements?

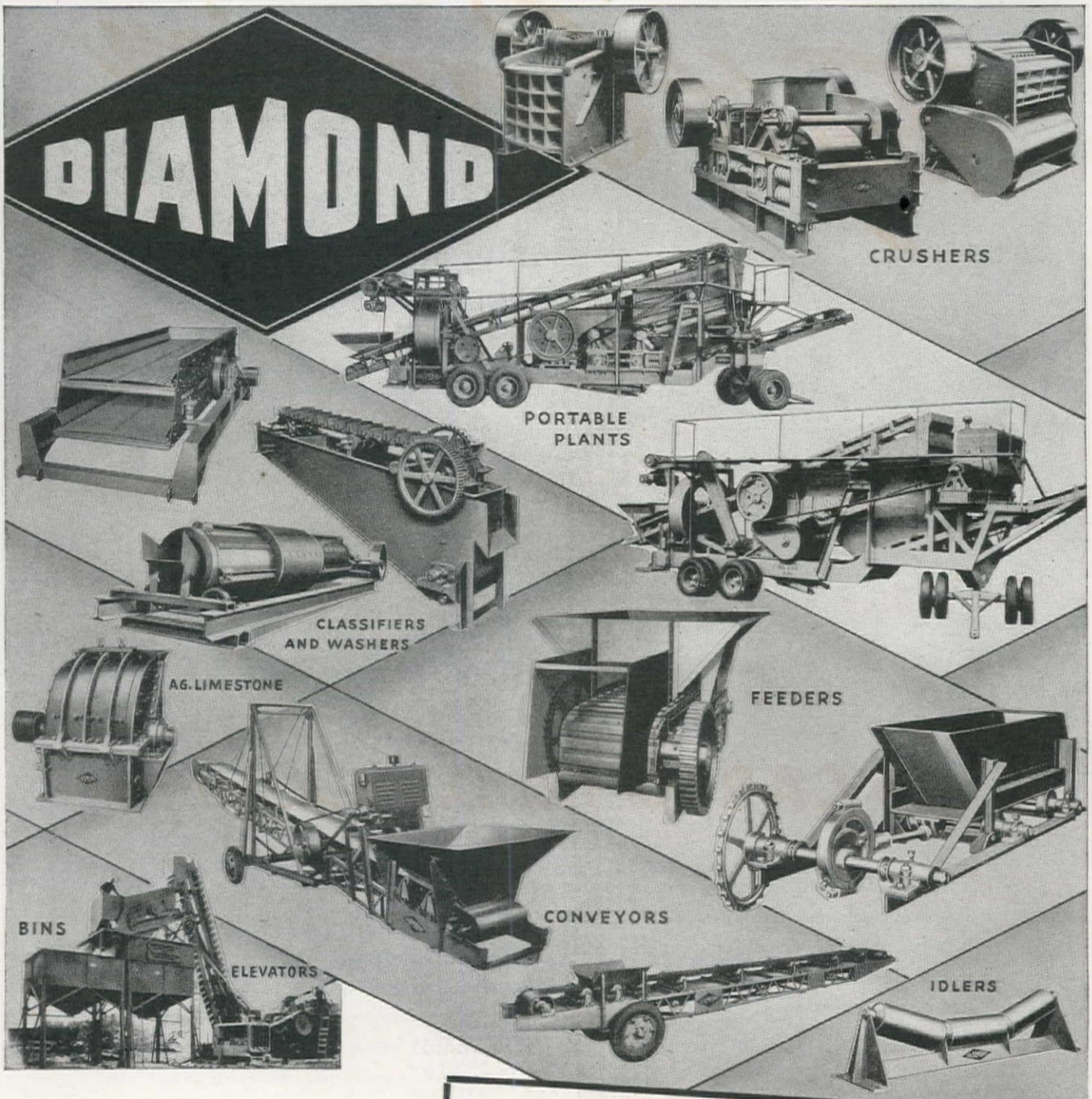
Structural Steel *Steel Forgings* *High Grade Alloy Steel Castings*
Precision Machine Work

PACIFIC CAR AND FOUNDRY COMPANY

CARCO

SEATTLE AND RENTON, WASHINGTON, U. S. A.

THERE'S NOTHING TOUGHER THAN A "DIAMOND"



The proven ruggedness of DIAMOND equipment is your key to profits on the job. The slogan at the top of this ad—"There's nothing tougher than a DIAMOND"—was suggested to us—and that's exactly the way hundreds of DIAMOND users feel. For a banner year in 1946—see your DIAMOND dealer or write us.

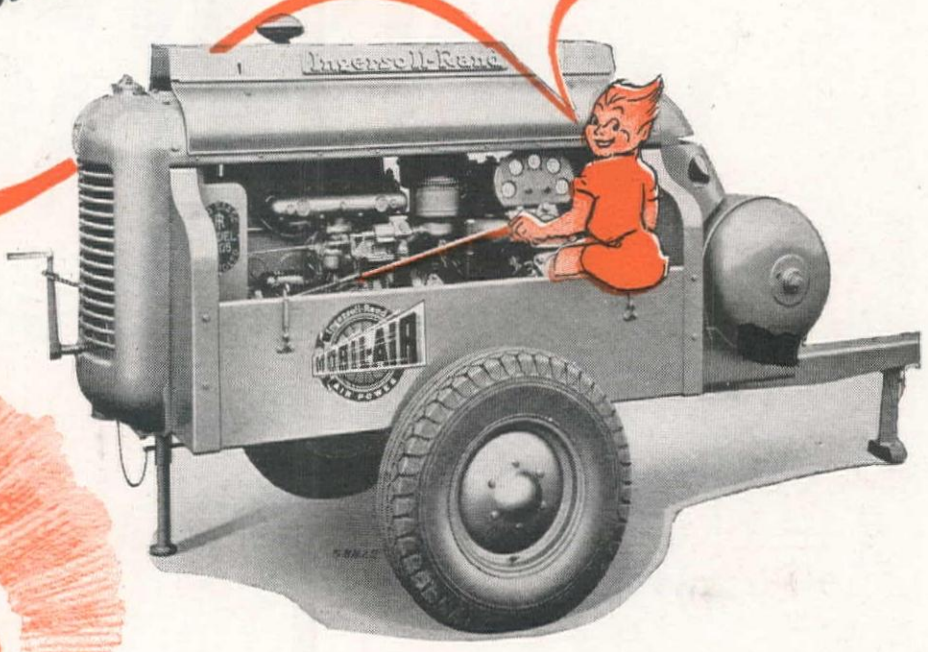
DIAMOND DEALERS

Oakland	SOULÉ EQUIP. CO.
Los Angeles	GARLINGHOUSE BROS.
Seattle	A. H. COX & CO.
Portland	LOGGERS & CONTRACT'S MACH. CO.
Boise	WESTERN EQUIP. CO.
Salt Lake City	C. H. JONES EQUIP. CO.
Phoenix	O. S. STAPLEY CO.
Albuquerque	CONTRACTORS' EQUIP. & SUP. CO.
Missoula	MOUNTAIN TRACTOR CO.

DIAMOND IRON WORKS, INC. and the **MAHR MANUFACTURING CO. DIVISION**
1818 SECOND STREET NORTH **MINNEAPOLIS 11, MINN.**

WHO...ME?

I'M THE DRILL-MORE REGULATOR ...the automatic pilot that saves fuel



Actually, the Drill-More Regulator looks like this. It has been standard on all K-Series Mobil-Air Compressors (105 to 500 cfm) since Ingersoll-Rand developed multi-speed regulation for portables.

"You'll find me in every K-Series MOBIL-AIR Compressor. I keep an eye on the air-pressure gauge, hold onto the engine-governor spring, and regulate the compressor speed according to the demand for air. When one of the air tools shuts off, the pressure goes up. If it reaches a given pressure, I ease up on the spring, and the compressor slows down a little but continues to compress air.

"I *unload* the compressor cylinders *only* when less than half capacity is used. When reloading, I hold *half* speed as long as the pressure stays up. That's how I eliminate wasteful idling.

"On many jobs, I can save up to 30% in fuel... by myself. I maintain a higher average and more uniform air pressure, too, so that air tools do as much as 15% more work.

"I'd like to help *you* save *fuel, time,* and *money.* When you need a portable compressor, remember me... *Drill-More Multi-Speed Regulator.*"

COMPRESSORS
CENTRIFUGAL PUMPS
OIL & GAS ENGINES
TURBO BLOWERS
CONDENSERS
AIR TOOLS
ROCK DRILLS

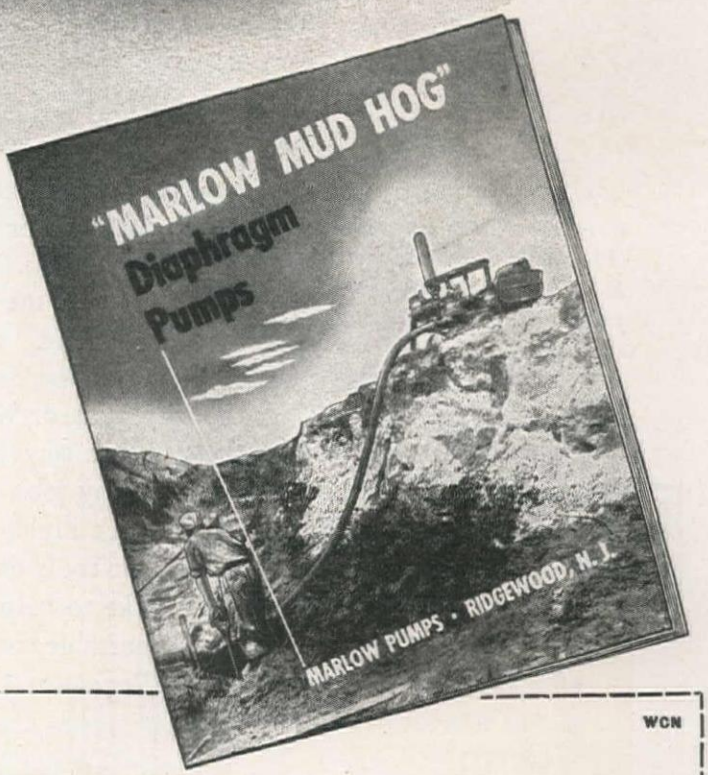
Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 2-785

Here's the book of

HEAVYWEIGHT CHAMPIONS

DISTRIBUTORS—Glenn Carrington Co., Seattle, Wash. (For Interior Alaska); Alaska-Pacific Supply Co., Seattle, Wash. (For Alaska Coastal Regions); General Machinery Co., Spokane, Wash.; Clyde Equipment Co., Portland, Ore., and Seattle, Wash.; Montana Powder and Equipment Co., Helena, Mont.; Nickerson Machinery Co., Salt Lake City, Utah; Le Roi-Rix Machinery Co., Los Angeles, Calif.; George M. Philpott Co., San Francisco, Calif.; Burdick & Burdick, El Paso, Texas.



For heavy pumping, nothing else equals "Marlow Mud Hogs." These mighty diaphragm pumps demonstrate constantly that they are the all-time champions for dirty, grueling pumping . . . for handling mud, sand, grit, gumbo, sludge, ooze and liquid filled with debris.

These powerful pumps are now in full production to help you cut costs and protect your profits on the big jobs ahead.

Every engineer and contractor should have the new "Marlow Mud Hog" catalog in his files. Send for your copy NOW!

WCN

MARLOW PUMPS, RIDGEWOOD, N. J.—Please put a free copy of the "Marlow Mud Hog" catalog in the mail for me today.

Name..... *Address*..... *State*.....

MARLOW PUMPS · RIDGEWOOD · NEW JERSEY

"Buy AUTOCARS...Today"

Available now to everyone: 20 different Autocar models—gasoline or Diesel. All heavy-duty trucks, famous for low-cost-per-mile performance. Demand still exceeds supply, but deliveries are improving.

Tons of drugs . . . *many* tons of *many* things. That's the job that Autocars are superbly engineered and precision-built *by Autocar* to do. How profitably and economically they do it is proved by the cost records of truck buyers from coast to coast. How dependably and speedily they do it is known by every truck driver who has felt the pull and power of these great trucks that command the load. . . . Heavy-duty Autocar Trucks cost more *because they're worth more.* Follow the leaders, for they know the way.

AUTOCAR TRUCKS

Famous for Heavy-Duty Hauling

Manufactured in Ardmore, Pa. • Serviced by Factory Branches and Distributors from Coast to Coast

YOUR DOLLARS BUY MORE WHEN YOU BUY P&H

P&H's ADDED VALUES

MEAN ADDED EARNING POWER!

• Wherever profits in the open pit depend upon steady production, P&H advantages show up. For P&H builds to quality standards far beyond those of the industry. P&H's added values make your investment a better investment for years to come.

Hydraulic Control — Smoother, faster, easier operation — less strain on machine and operator.

Planetary Transmission — Faster, more accurate crowd controls — far lower maintenance costs.

True Rolling Qualities — Easier to maneuver — less time out — less upkeep.

All Welded Construction — Rolled alloy steels provide greater strength, greater rigidity — longer life throughout.

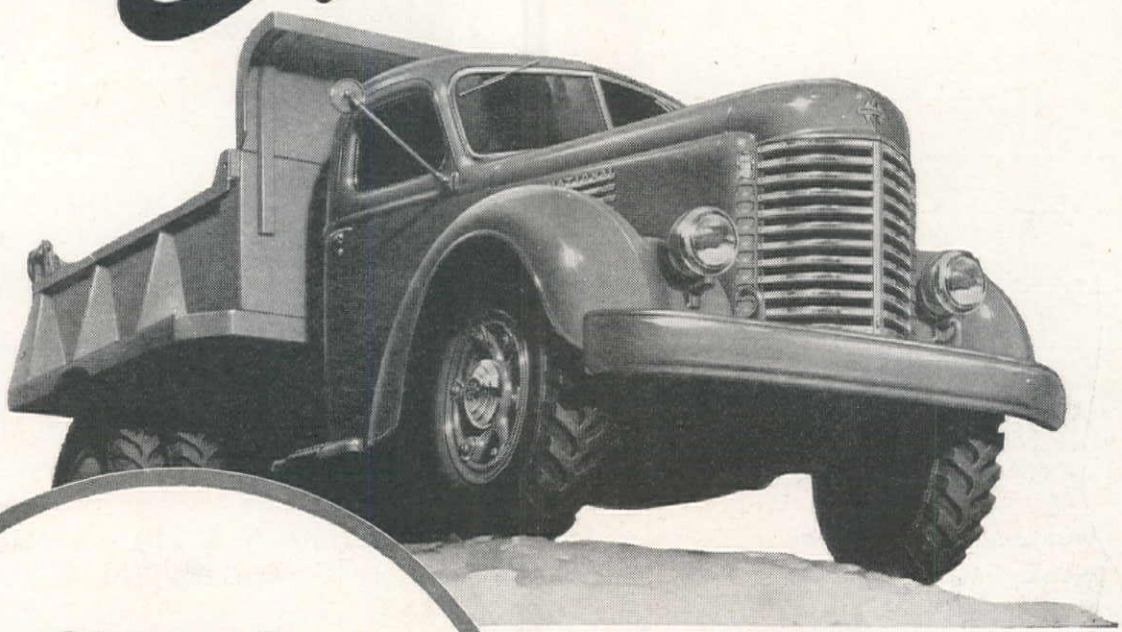
These are but a few of P&H's added values that mean lower tonnage costs in all kinds of mining and open pit operations.

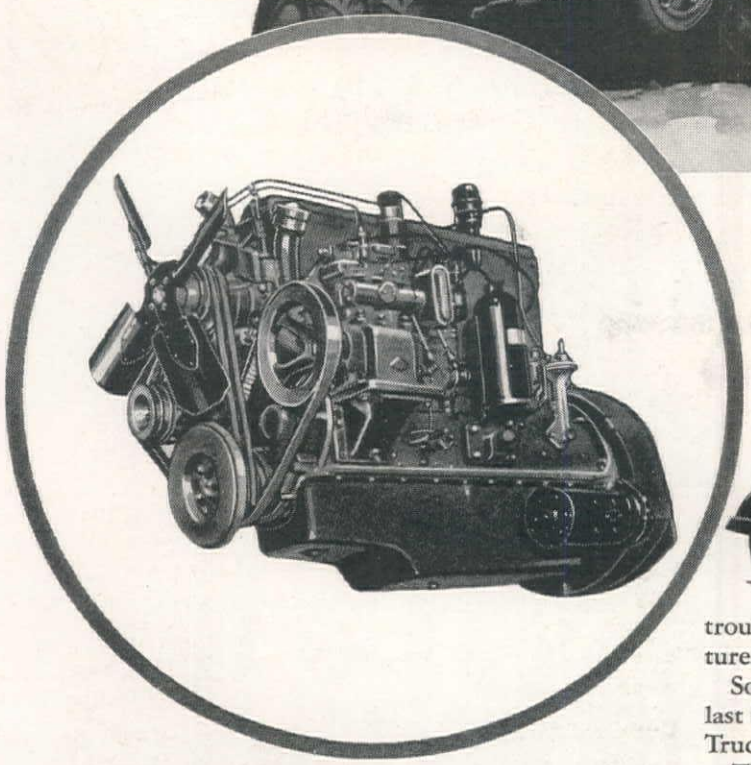
P&H EXCAVATORS
4490 W. National Avenue,
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

HARNISCHFEGER CORPORATION: SAN FRANCISCO, Calif., 82 Beale Street
Warehouses Service Stations: Seattle, Los Angeles, San Francisco
PORTLAND, Oregon: Loggers & Contractors Machinery Co., 240 S.E. Clay St.; WILLOWS, California: Willows Motor Sales Co.; NAPA, California: Berglund Tractor & Equipment Co., 1224 Third Street; SALT LAKE CITY, Utah: National Equipment Co., 101 West Second Street, So.; BOISE, Idaho: Olson Manufacturing Company, 2223 Fairview Avenue; EL CENTRO, California: Faure Tractor & Equipment Company, 1414 Main Street; SPOKANE, Washington: F. M. Viles & Co., 1007 Second Avenue, West; SACRAMENTO, California: Capital Tractor & Equipment Co., 235 W. 16th Street; RENO, Nevada: Dennison Tractor & Supply Company, 559 East Fourth Street.

TRUCK *Stamina*





FOR TOUGH TRANSPORT

• More stamina and power. That's what today's International Trucks deliver.

Note the International Red Diamond Engine in the picture. This famous engine powers the bigger Internationals. Now has longer life, because of greater strength, as well as added power.

Improvements have been made in International Truck Chassis, too—improvements to step up even further the economy, ease of operation and long, trouble-free service that are the outstanding features of International Truck performance.

So outstanding is this performance that in the last fourteen years more heavy-duty International Trucks have been sold than any other make.

The International Truck Line is a complete line, with a truck of the right size and carrying capacity for every job. And back of every truck are these top service facilities—a network of International Truck Dealers and a system of International Truck Branches that form the nation's largest company-owned truck service organization.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

LISTEN TO "HARVEST OF STARS" EVERY SUNDAY! NBC NETWORK

INTERNATIONAL

INTERNATIONAL Trucks

the Job— Laying 103,500 cu. yd. of concrete in a hurry

the Equipment — Three Multi Foote 34 E Pavers

BUILDING one of the longest and best constructed airport runways in the country, 8500 feet long, 200 feet wide, and 12 inches thick, and laying other necessary surfacing for handling 175,000-lb. wheel loads for a total of 103,500 cu. yd. of concrete is one of the more recent jobs finished in record time by three Multi Foote 34 E Pavers. The average concrete production was 1560 cu. yd. for a ten hour shift, with a high day of 2258 cu. yd.

Records like this for paving airports and roads are everyday production for Multi Foote Pavers because every feature is built for better mixing and faster charging and discharging. Double cone drum with its end-to-end scouring action insures a complete and thorough mix of every batch. Rotary discharge takes only a quarter turn to pour concrete into the big bucket ready to speed out the long boom to be discharged. One of the most important features of every Multi Foote is the high operating platform which provides greater visiblity for faster, more accurate work.

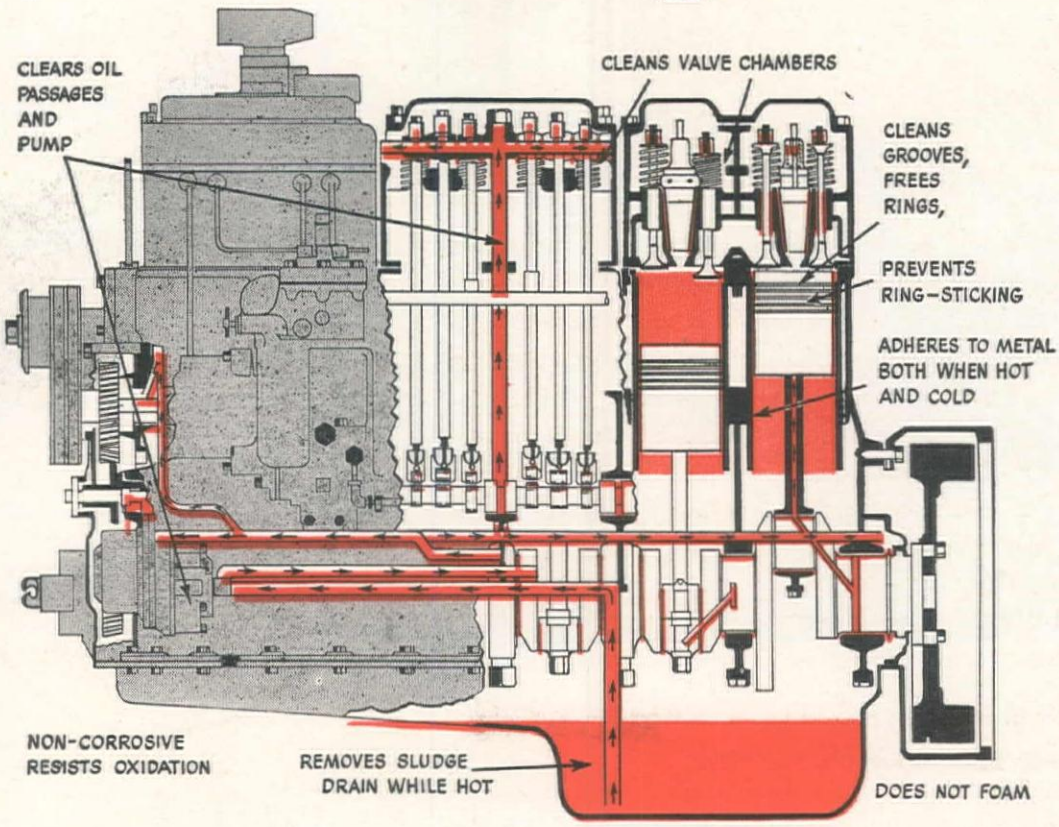
Write direct or ask your Foote dealer for details.

THE FOOTE CO., INC.
1940 State Street, Nunda, N. Y.

ARMY E NAVY

MULTIFOOTE
CONCRETE PAVERS

STANDARD ENGINEERS NOTEBOOK



Heavy duty oil cleans engines while they're running

Clean carbon, sludge, gum and other harmful matter from heavy truck engines without tearing them down by purging with RPM Heavy Duty Motor Oil.

It will even loosen stuck rings if they are not cemented in too tightly with accumulations of sticky, burned-on gum.

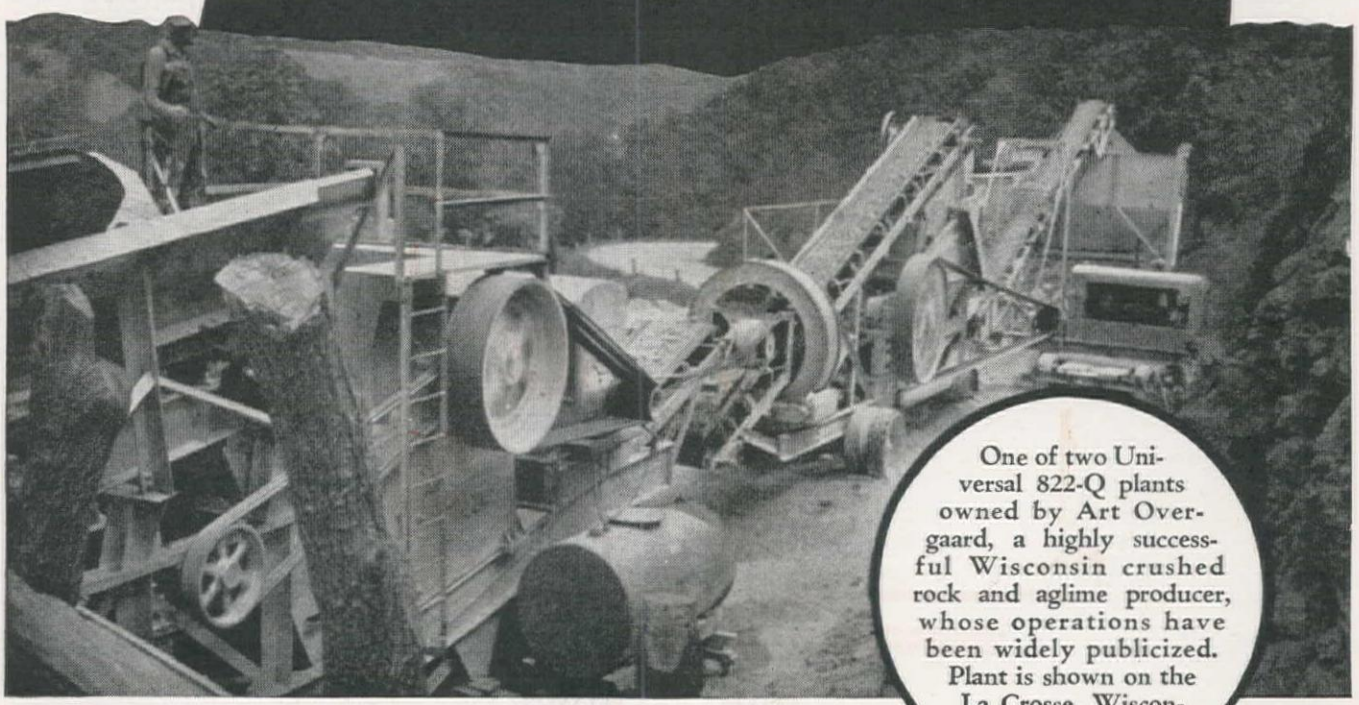
Selected base oils plus patented compounds give RPM Heavy Duty Motor Oil the ability to act on and remove carbonaceous deposits and keep them dispersed in the oil so they can be drained from the engine. The recommended purging procedure follows:

1. Drain present oil from crankcase while hot. 2. Renew filter element to trap abrasive particles that may be carried into circulation during purging. 3. Fill crankcase with RPM Heavy Duty Motor Oil. 4. Run engine at a fast idle for two hours, maintaining water jacket temperature of approximately 200° minimum. 5. Drain again while hot and refill with RPM Heavy Duty Motor Oil. 6. Place engine in regular service and drain at one-half normal drain period or 750 miles, whichever comes first, for two or three drains. Check oil frequently as removal of deposits may temporarily increase oil consumption. 7. Drain while hot. Check oil filter and replace when necessary. 8. Refill with RPM Heavy Duty Motor Oil, returning to regular oil drain and filter change period, and continue to use RPM Heavy Duty Motor Oil.

Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert help — make your maintenance job easier. Call your local Standard Representative or write Standard of California, 225 Bush St., San Francisco 20, California.

FOR EVERY JOB A STANDARD OF CALIFORNIA TEST-PROVED PRODUCT

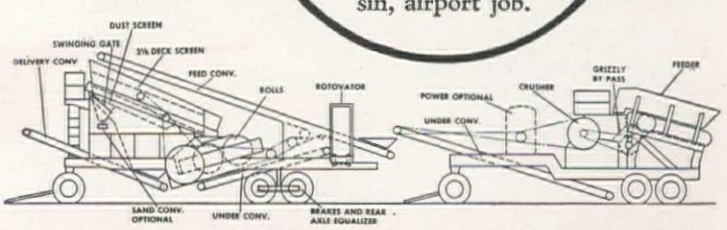
822-Q = { PORTABILITY + HIGH PRODUCTION



One of two Universal 822-Q plants owned by Art Overgaard, a highly successful Wisconsin crushed rock and aglime producer, whose operations have been widely publicized. Plant is shown on the La Crosse, Wisconsin, airport job.

Typical of the many profit-proved Universal portable crushing plants, is the 822-Q crushing, screening and loading plant. Primary reduction is by a Universal 546-P Unit which consists of rugged, steel plate hopper with built-in apron feeder, bar grizzly and by-pass, jaw crusher and underconveyor. Maximum capacity and minimum jaw wear is assured, as material not requiring crushing is short circuited.

Screening and secondary reduction is by the Universal 800 Secondary Unit. Material is fed to the 2½ deck gyrating screen, where larger oversize is scalped direct to rolls from top deck, protecting lower decks from excessive wear and assuring maximum screening efficiency. Material retained on lower deck also goes to rolls—throughs, to mixing hopper and delivery conveyor—dust is rejected by ½ deck. Material from roll crusher is returned to screen via Rotovator, closing circuit. A double deck auxiliary gyrating screen may be set in oversize Rotovator for production of 100% chips for seal coating, if desired.



PRIMARY UNIT SECONDARY UNIT

The Universal 822-Q Crushing and Screening Plant combines the high production of dual crusher units with extreme flexibility, in a compact, easy-to-move plant. Either unit can be used independently. The 800 Secondary Unit is adapted to use as a gravel plant.

This is part of the story—read the rest in Bulletin 30.

UNIVERSAL ENGINEERING CORP.
323 8th St. W. Cedar Rapids, Iowa

UNIVERSAL

ROCK AND GRAVEL CRUSHERS, CRUSHING ROLLS, HAMMER MILLS, COMPLETE CRUSHING AND SCREENING PLANTS, WASHING PLANTS, ASPHALT PLANTS, SPREADEROLLERS.

HENDRIX

Lightweight DRAGLINE BUCKETS

TYPES

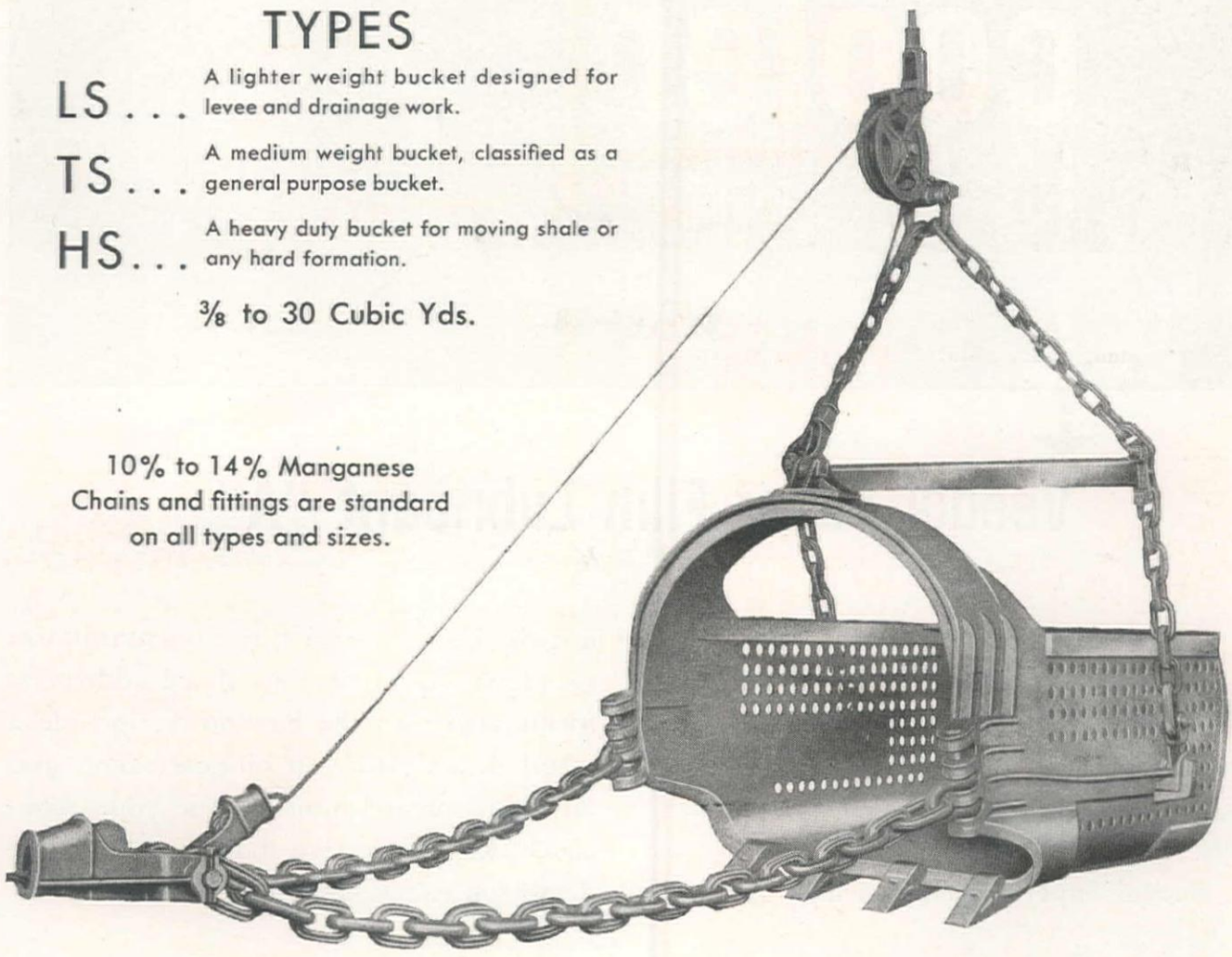
LS . . . A lighter weight bucket designed for levee and drainage work.

TS . . . A medium weight bucket, classified as a general purpose bucket.

HS . . . A heavy duty bucket for moving shale or any hard formation.

⅜ to 30 Cubic Yds.

10% to 14% Manganese
Chains and fittings are standard
on all types and sizes.

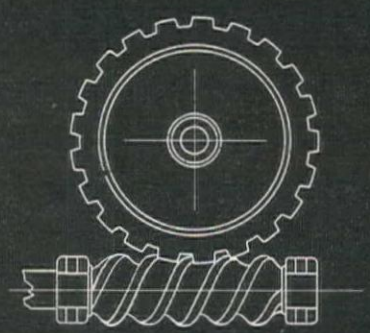


WRITE FOR DESCRIPTIVE LITERATURE—
OR ASK YOUR DEALER

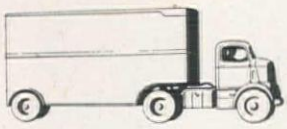
Also available without perforations.

DESOTO FOUNDRY, INC. ★ MANSFIELD, LOUISIANA

keeps worm gears cooler



Veedol Super Film Lubricant "A"



• *Reduces worm gear operating temperature, provides greater oiliness, inhibits oxidation. Made especially for use in heavy duty final drive worm gears and transmissions.*

Veedol Super Film Lubricant "A" does not thicken in service, retains maximum protective qualities. Its three additives, formulated into the base stock, include a metal de-activator, an oiliness agent, and an oxidation inhibitor. Phone your Associated Representative today for complete details on usage, quantities, and cost.

Listen to Associated Basketball Sportcasts

Correct Lubrication is Machinery's Most Vital Need

TIDE WATER ASSOCIATED OIL COMPANY

For more working horsepower

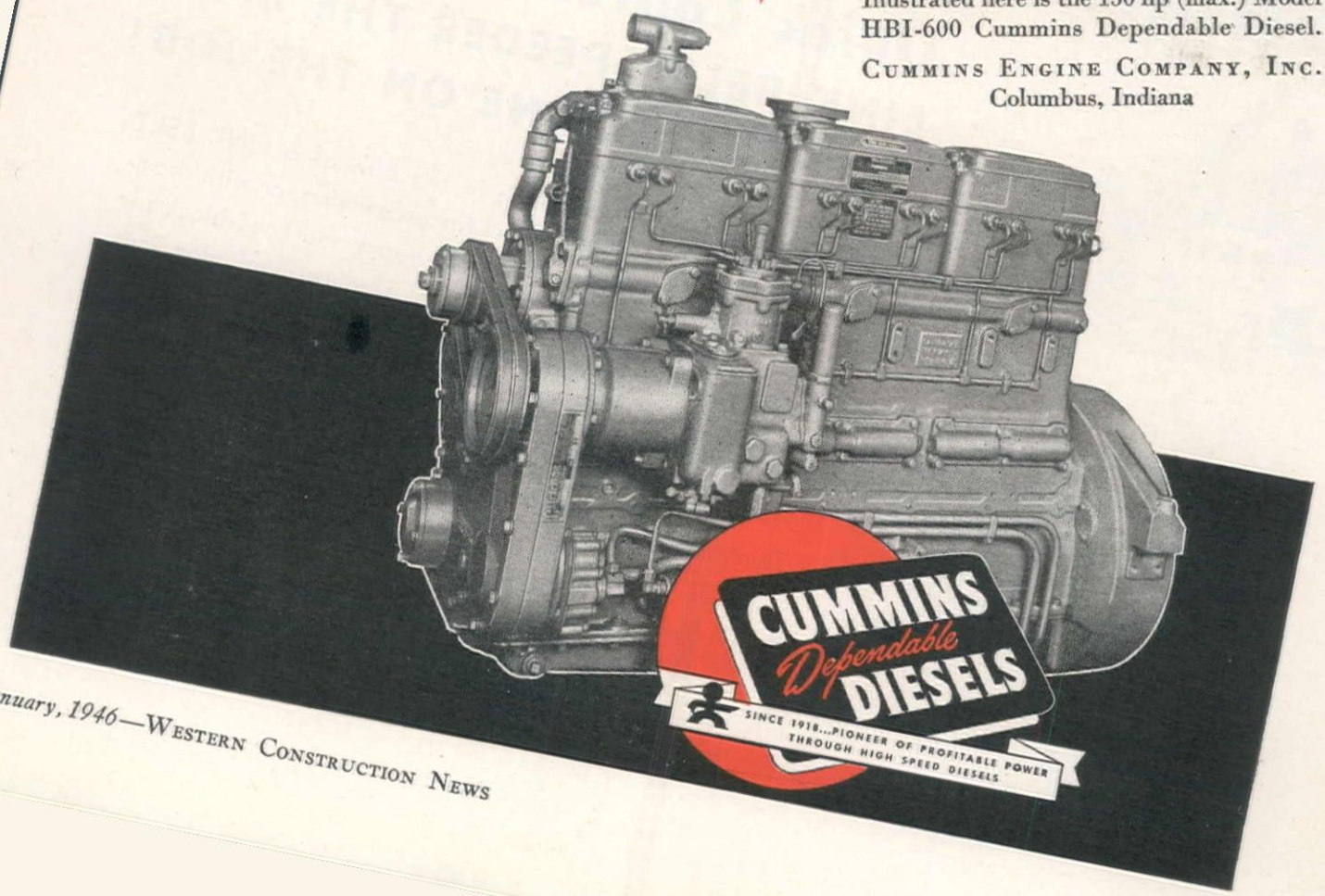
. . . and less engine weight . . .

your best investment in power is

a Cummins Dependable Diesel!

Within almost the same weights and mounting dimensions, your choice of 150-200-275 hp . . . weights as low as 10½ lbs. per horsepower . . . for all types of heavy-duty earth moving and material handling equipment. Illustrated here is the 150 hp (max.) Model HBI-600 Cummins Dependable Diesel.

CUMMINS ENGINE COMPANY, INC.
Columbus, Indiana



One Link-Belt Speeder DOES MANY DIFFERENT JOBS!

Owners of Link-Belt Speeder machines enjoy year-round utility on many types of jobs, from the same rugged, powerful, easy-to-operate unit.

Quick Convertibility MAKES LINK-BELT SPEEDER THE MOST USEFUL MACHINE ON THE JOB!

Many a job begins and ends in the cab of a LINK-BELT SPEEDER, first fitted with shovel for excavating, or with dragline for clearing the site, then with boom and hook-block for placing concrete and erecting steel. Underground pipe lines are laid with the aid of the trench-hoe, and finally the grading and clean-up work finished off with the dragline again!

For Prompt, Efficient, Convenient Sales and Service:
There is a Link-Belt Speeder Distributor Located Near You

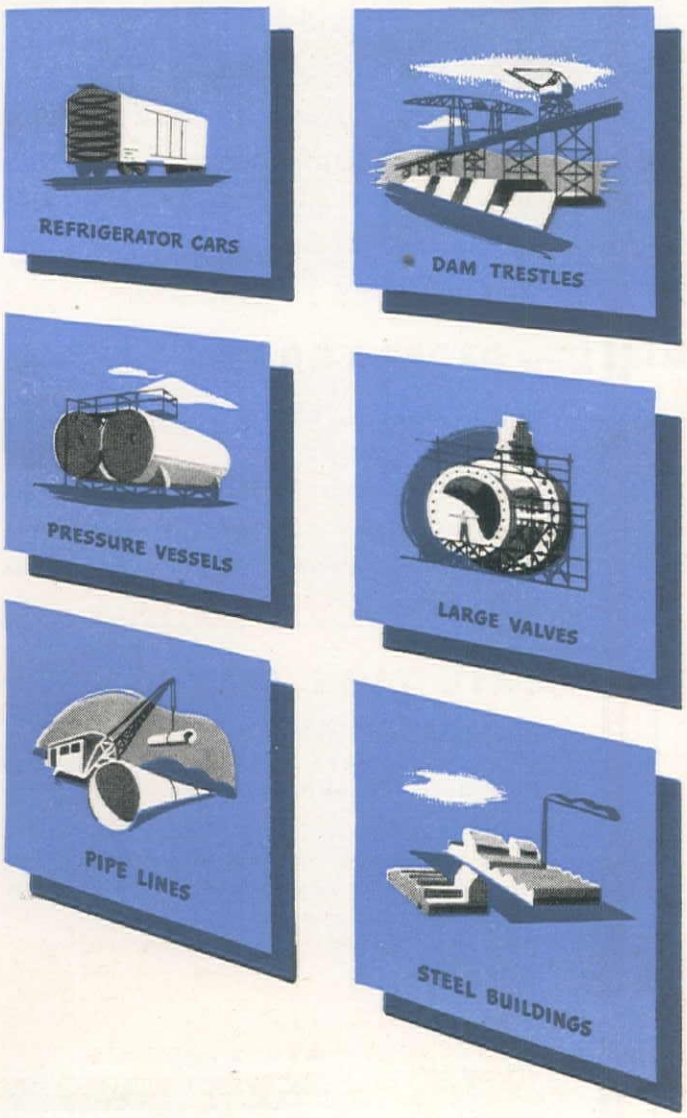
10,170

LINK-BELT SPEEDER

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

LINK-BELT SPEEDER CORPORATION, 301 W. PERSHING ROAD, CHICAGO 9, ILL.
(A DIVISION OF LINK-BELT COMPANY)

FOR AN INDUSTRIAL WEST



An expanding western industry has many uses for steel. Six are presented here to show the diversity of Consolidated Steel's precision fabrication.

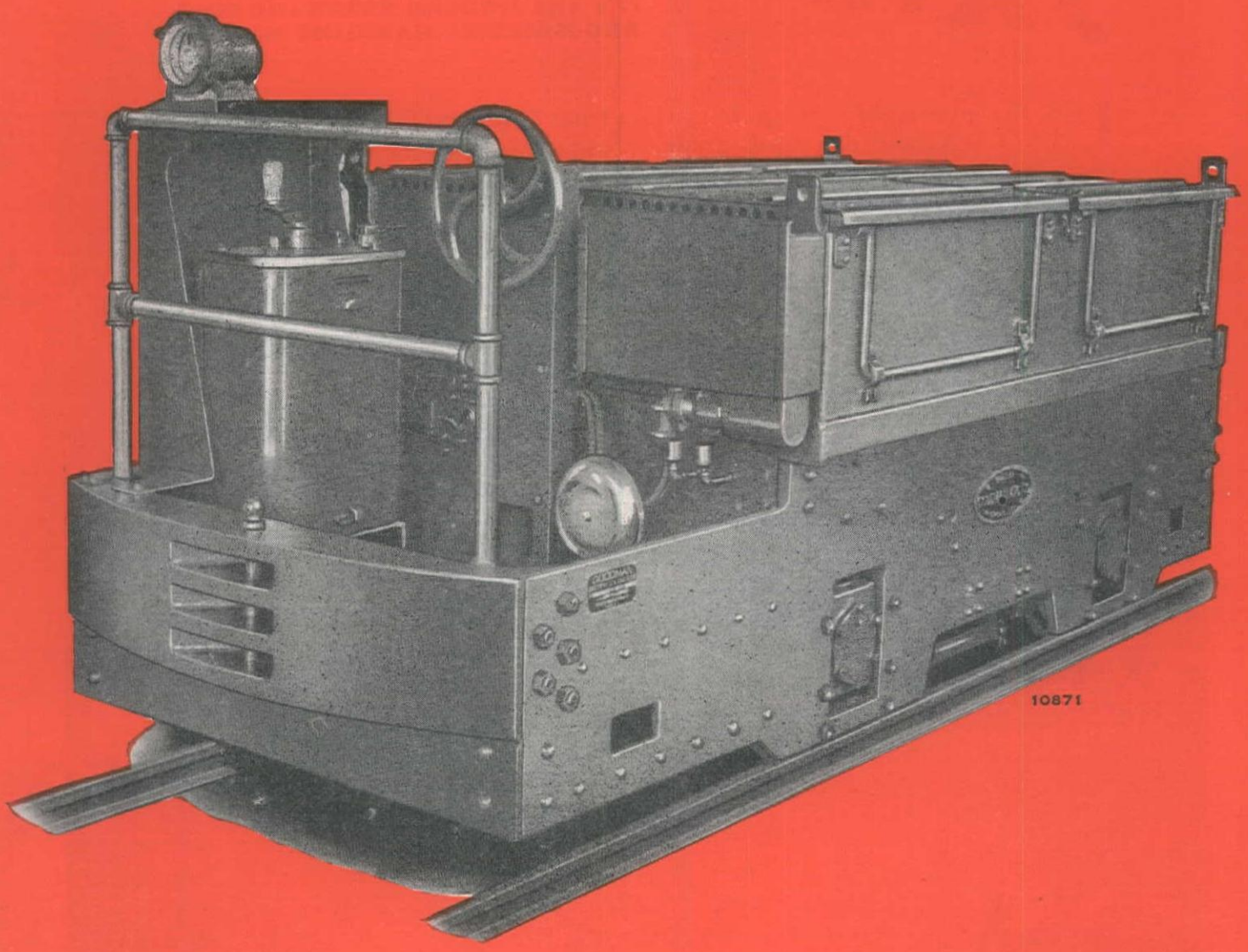
If your construction plans call for the use of steel—Consolidated Steel is ready to offer you capable, immediate service. Address Consolidated Steel, Los Angeles 22, California; or Orange, Texas.

Consolidated Steel

FABRICATORS
ENGINEERS
CRAFTSMEN

LEADERS IN THE WEST AND SOUTH

Keep that Tonnage Rolling with GOODMAN LOCOMOTIVES



A two motor, 4-ton (chassis wt.) storage battery locomotive. All electrical and working units are well protected from water, muck or dust.

. . . tough, durable, electric "work-horses" that keep tonnages rolling smoothly and efficiently at scores of underground operations. They are available in a wide range of sizes and types that assures a locomotive to suit requirements.

GOODMAN MANUFACTURING COMPANY

HALSTED STREET AT 48TH • CHICAGO 9, ILLINOIS

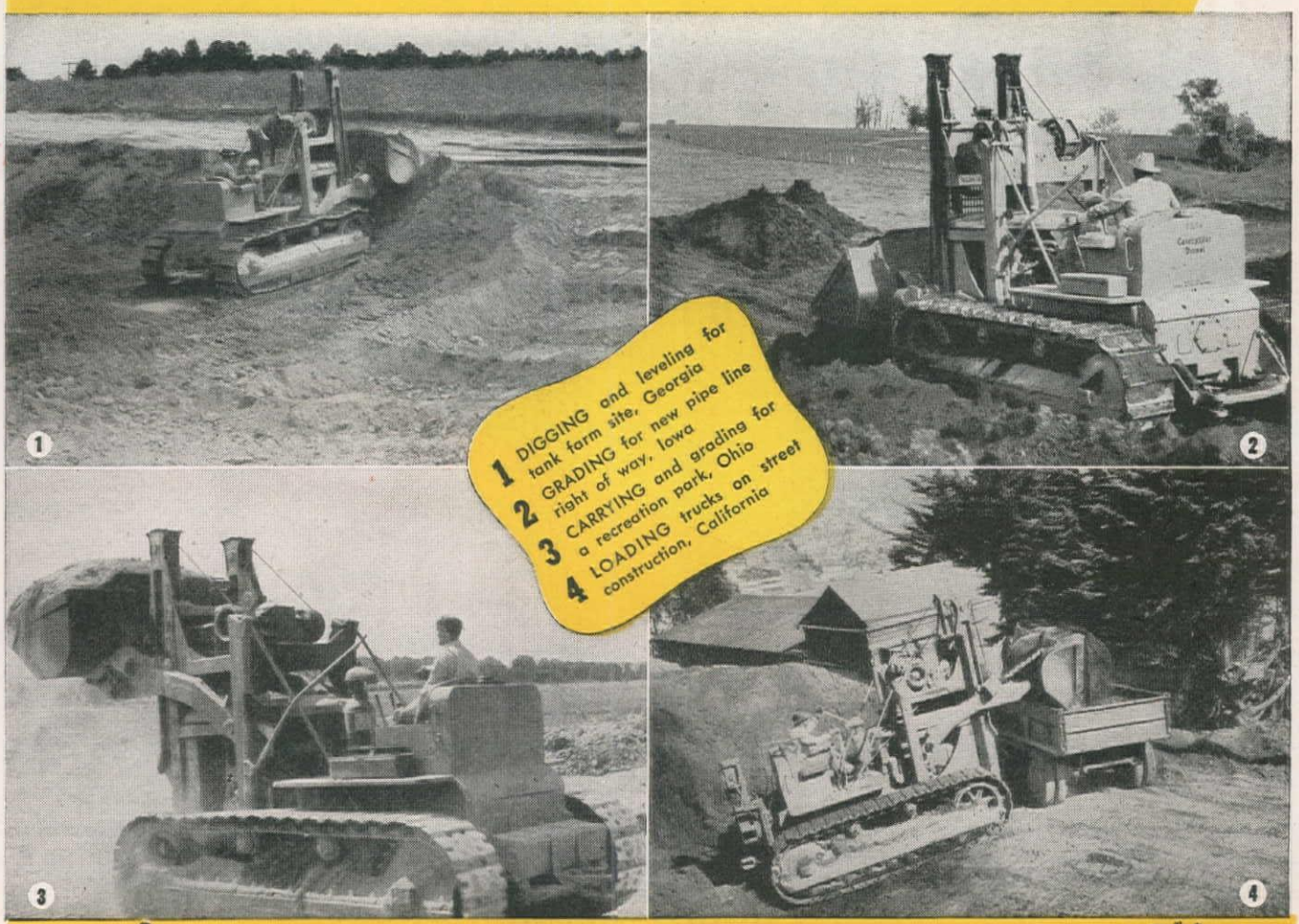
Locomotives • Loaders • Cutting Machines • Conveyors

Good Operators TRAXCAVATE!

IT'S THE MODERN EARTH-MOVING AND MATERIAL-HANDLING METHOD

IT'S the profitable thing to do! TRAXCAVATORS dig, load, grade, carry and do so many other important tasks efficiently that their dependable all-around utility seems limitless. TRAXCAVATORS do more work on more jobs . . . are virtually one-machine gangs at most every earth-moving and material-handling task . . . can keep profitably busy all year 'round.

Your TRACKSON-"Caterpillar" dealer will show you how these versatile machines can simplify your equipment needs. There's a size for every job and purpose, with bucket capacities from ½ to 2½ yards. See him today, or write for informative literature to TRACKSON COMPANY, Dept. WC-16, Milwaukee 1, Wisconsin.



Zoned Equipment

ZONE 1
"Caterpillar" Diesel track-type Tractors equipped with bull-dozers.

ZONE 2
"Caterpillar" Diesel track-type Tractors for loading and pulling scrapers.

ZONE 3
"Caterpillar" Diesel wheel-type Tractors for high-speed hauls.

DOES THE JOB *better, quicker, cheaper*

"Use the right tool for the job" is an old rule—and a sound one—that is followed in every successful factory, shop or craftsmen's trade. It is just as applicable in the great industry of earthmoving. Contractor, customer and community alike benefit when it is put into practice.

Here, for instance, on the Canton-Akron airport project, three contracting concerns got together in setting the job up *right*—with ZONED EQUIPMENT to fit the varying hauls.★ And that's the one "best" way to get top results on *any* large earthmoving operation.

The "Caterpillar" line has been steadily broadened to enable the contractor to "zone" his jobs with equipment obtained completely from *one source*—under the quality-and-performance responsibility of *one manufacturer*—and serviced through *one dealer organization* that is thoroughly equipped, experienced and always within easy reach.

What do *you* need to zone your next jobs for better, quicker, more profitable results? Talk it over with your "Caterpillar" dealer. And also keep in mind that "Caterpillar" *job-engineering* help is available if you want it.

★Illustrations show some of the *zoned equipment* used on this project. It includes 8 "Caterpillar" track-type Tractors operating carry-scrapers on heavy hauls of 1000 feet and under; 3 operating 'dozers on the "push" distances; and 8 "Caterpillar" Diesel wheel-type Tractors operating scrapers on the "speed" hauls of 2000 feet and over.

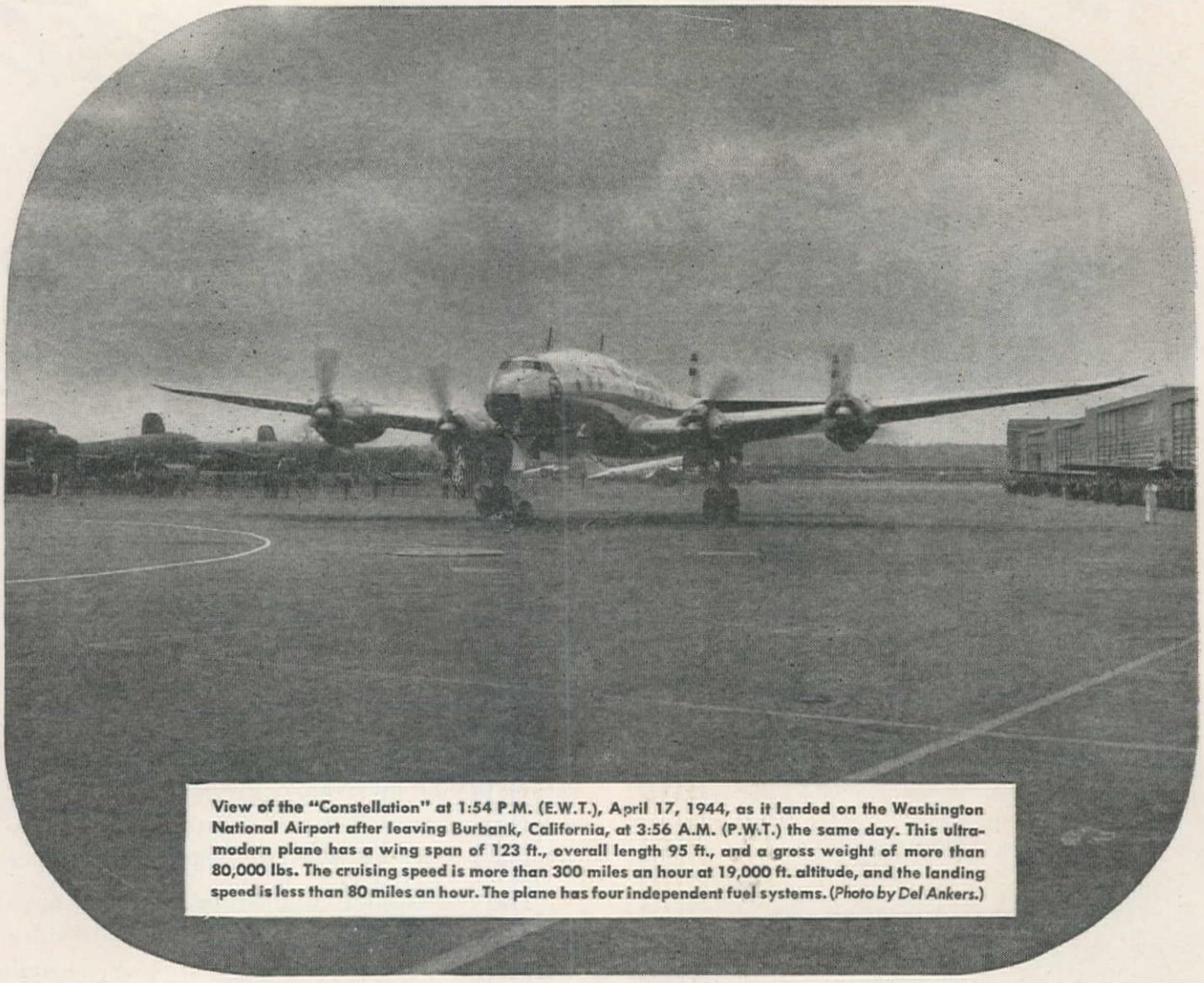
CATERPILLAR TRACTOR CO. • San Leandro, Calif.; Peoria, Ill.

CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

THE DISCHARGED VETERAN WEARS THIS EMBLEM. REMEMBER HIS SERVICE AND HONOR HIM.



View of the "Constellation" at 1:54 P.M. (E.W.T.), April 17, 1944, as it landed on the Washington National Airport after leaving Burbank, California, at 3:56 A.M. (P.W.T.) the same day. This ultra-modern plane has a wing span of 123 ft., overall length 95 ft., and a gross weight of more than 80,000 lbs. The cruising speed is more than 300 miles an hour at 19,000 ft. altitude, and the landing speed is less than 80 miles an hour. The plane has four independent fuel systems. (*Photo by Del Ankers.*)

CONCRETE PIPE LINES DRAIN THE NATION'S MAJOR AIRPORTS

When the TWA's 57-passenger Lockheed "Constellation" arrived at the Washington National Airport, Washington, D. C., April 17, 1944, after a record flight of 2,400 miles from Burbank, California, in 6 hours 57 minutes, it landed on runways safely designed and drained with concrete pipe. More than 64,000 ft. of concrete sewer pipe and reinforced concrete sewer and culvert pipe was required to build drains parallel to and under runways of the Washington National Airport.

Concrete pipe and reinforced concrete pipe ranging in diameter from 6 to 108 in. has been required to build drains, culverts, and sewers for most major airports of this country because of these advantages:

1. Maximum strength when properly bedded and back-filled;

2. Maximum hydraulic capacity;

3. Long life expectancy;

4. Furnished locally at reasonable cost by our members. List mailed on request.

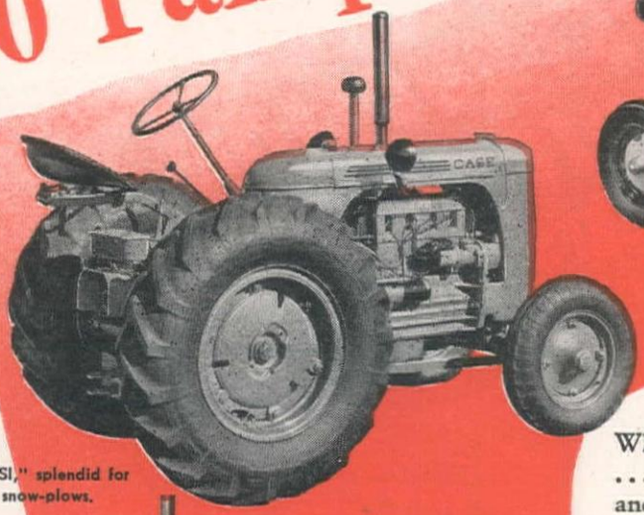
When you design drainage systems for airports now and in the postwar period, specify concrete pipe complying with the tests and other provisions of the Standard Specifications of the American Society for Testing Materials and the American Association of State Highway Officials.

CALIFORNIA ASSOCIATED CONCRETE PIPE MANUFACTURERS

P. O. BOX 152 — FRESNO 7, CALIF.

Power That Needs No Pampering

Model "VAI," favorite for highway mowing.



Model "SI," splendid for sidewalk snow-plows.

Model "DI," ideal for mounted loaders.

Model "LAI," suited to heavy cranes, scrapers.

When you want a tractor that thrives on hard work . . . that picks up its load eagerly . . . pulls as much and as steadily at half-speed as wide open . . . that takes but little routine care and goes extra months before major maintenance . . . then you have a place for a Case Industrial Tractor. More than seventy years of building robust outdoor power are back of the extra strength and extra ENDURANCE for which Case tractors are known.

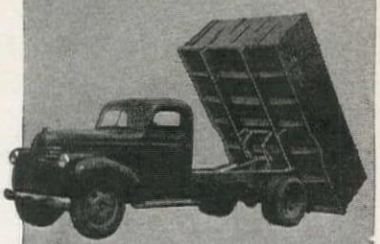
These same virtues, plus staunch stability, make Case Industrial Tractors ideal power-plants for all manner of mounted equipment—cranes and loaders, scrapers and bull-dozers, highway and sidewalk snowplows, rotary brushes, winches, highway and airport mowers. Case Industrial Tractors are built in four basic sizes, as shown, with varying wheel and tire equipment to cover an unbroken weight range from 2500 to more than 10,000 pounds. For complete information call your Case distributor.

CASE

In Business to Serve You. Your Case industrial distributor is located and equipped to supply complete service not only on Case tractors and engine units, but on related equipment. His lines are selected and his personnel is trained with your local conditions and requirements in mind. Take advantage of his varied experience in power and equipment applications. J. I. Case Co., Oakland.

Anthony HAS IT...

CONSTRUCTION EQUIPMENT THAT KEEPS TRUCKS ON THE MOVE



- **Anthony "Super" Hydraulic Hoists and Bodies,** up to 30 ton capacity—with "power speed lift" and "rubber restraining blocks," two of many features that explain the evident preference for Anthony equipment on the job.
- **Anthony Hydraulic Lift Gate . . .** one of the remarkable new war-developed pieces of equipment for loading and unloading. Raises and lowers loads from ground to truck level.
- **Anthony Material Spreader,** rugged, all steel; for road building, maintenance and ice control.
- **Anthony Hydraulic Platform "Booster" Hoists,** especially designed to make dump bodies out of flat-bed trucks.

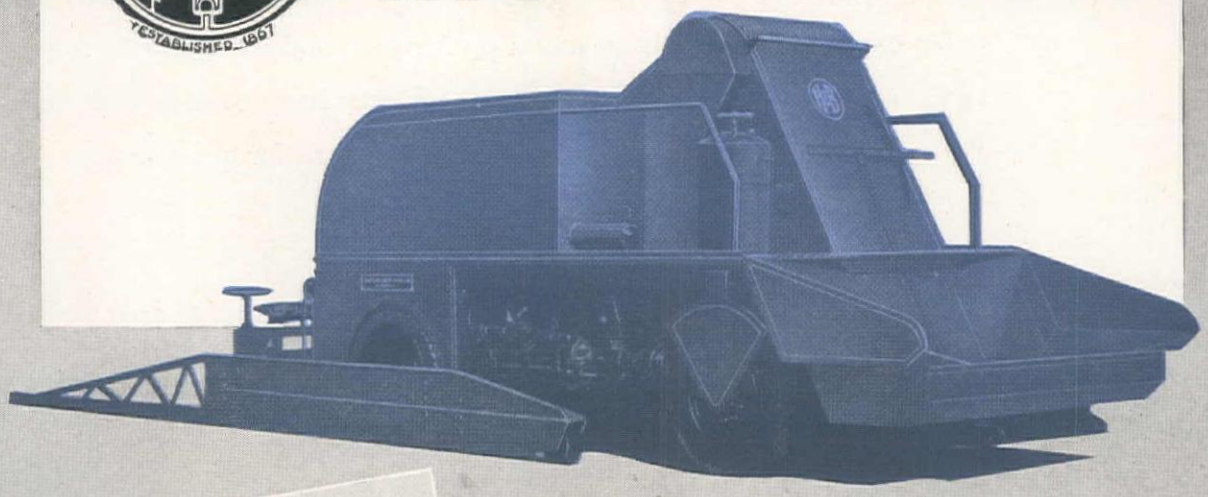
Write for complete details on any Anthony product. Available through all truck dealers and Anthony distributors.

ANTHONY HYDRAULIC

Manufactured by **ANTHONY CO.** Streator, Illinois

Here it is . . . The New . . .

MOTO-PAVER



Resurfacing a Michigan Road with the Moto-paver

An Entirely Self Contained, Self Propelled Asphalt Mixing and Laying Machine

Mixes, Spreads and Lays Any Type of Mixed-in-place Bituminous Material to Any Road Width, Thickness and Crown Condition.

Hetherington & Berner Inc., America's first builders of asphalt mixing machinery, proudly present the Moto-paver—the last word in asphalt mixing and laying equipment. This highly flexible and mobile machine is a complete traveling asphalt mixer and paver, requiring no separate loader, spreader or other paving equipment, and no trailer to haul it from one job to another. The Moto-paver is mounted on pneumatic tires, and powered by two gasoline engines, one driving the mixer and related units, the other driving the machine along the road. Paving speed is from 4 to 50 feet per minute, road speed 15 to 18 miles per hour. Mixing capacity is 100 to 120 tons per hour.

The Moto-paver mixes and lays all but the highest types of bituminous concrete. It is especially suitable for resurfacing trunk roads and streets of smaller municipalities, but it is also an efficient unit for new construction work on roads, streets, airports, parking lots, driveways, etc.

Write for bulletin MP-46, which gives complete information and specifications.

HETHERINGTON & BERNER INC. • 707 KENTUCKY AVE. • INDIANAPOLIS 7, IND.

Hetherington & Berner

America's First Builders of Asphalt Mixing Machinery

A COMPANY IS KNOWN BY *the Distributors It Keeps . . .*

Here at Novo, we are mighty proud of our distributors; and for a number of very good reasons. One reason, of course, is their standing in their communities. They are progressive . . wide-awake . . respected and trusted in their counsel on customer problems.

But we're equally proud that their success reflects so truly the quality of Novo equipment. That they—and their customers in turn—are enthusiastic about the trouble-free performance of Novo products is proved by their length of association with Novo—eleven have been with us from 20 to 27 years; fifteen from 10 to 20 years; and nineteen from 5 to 10 years.

Yes, a company is known by the distributors it KEEPS; and just as surely, distributors are known by the company they represent, for the integrity of the product they sell enhances their success. We are justly proud of our mutual efforts.

W. H. ANDERSON COMPANY, INC.
Detroit, Michigan

CLYDE W. BECKNER, INC.
Charleston, West Virginia

FRED BERRYHILL EQUIPMENT CO.
Lubbock, Texas

BLAKE EQUIPMENT COMPANY
Columbus, Ohio

BLUEFIELD SUPPLY COMPANY
Bluefield, West Virginia

THE BOARDMAN COMPANY
Oklahoma City, Oklahoma

BOCK EQUIPMENT COMPANY
Indianapolis, Indiana

BORCHERT-INGERSOLL, INC.
St. Paul—Duluth, Minnesota

BRINKER SUPPLY COMPANY
Pittsburgh, Pennsylvania

BURAN EQUIPMENT COMPANY
Oakland—Eureka, California

DON A. CARPENTER & COMPANY
El Paso, Texas

COLUMBIA EQUIPMENT COMPANY
Portland, Oregon
Seattle—Spokane, Washington

CONTRACTORS SERVICE, INC.
Charlotte, N. C.

CREDLE EQUIPMENT COMPANY
Utica, New York

DEMPSTER BROTHERS
Knoxville—Nashville, Tennessee

MATT A. DOETSCH MACHINERY CO.
Washington, D.C.

EASTERN EQUIPMENT, LTD.
Fredericton, New Brunswick, Can.

EASTERN TRACTOR AND EQUIPMENT COMPANY
Portland, Maine

EDMUND SUPPLY COMPANY
Toledo, Ohio

E. K. S. EQUIPMENT COMPANY
Grand Rapids, Michigan

EPPERSON & COMPANY
Tampa, Florida

EQUITABLE EQUIPMENT COMPANY
New Orleans, Louisiana

B. C. EQUIPMENT COMPANY, LTD.
Vancouver, B.C.

FARQUHAR MACHINERY COMPANY
Jacksonville, Florida

FEHRS TRACTOR & EQUIPMENT CO.
Omaha, Nebraska

FERGUSON SUPPLY COMPANY, LTD.
Calgary, Alberta, Canada

THE FINN EQUIPMENT COMPANY
Cincinnati, Ohio

JOHN B. FOLEY, JR.
Syracuse, New York

FROST MACHINERY COMPANY, LTD.
Winnipeg, Manitoba, Canada

FUNKHOUSER MACHINERY CO.
Kansas City 8, Missouri

GARLINGHOUSE BROTHERS
Los Angeles, California

GENERAL EQUIPMENT & SUPPLY CO.
Miami, Florida

GILL EQUIPMENT COMPANY
Atlanta, Georgia

GLOBE MACHINERY & SUPPLY CO.
De Moines, Iowa

HAVERSTICK & COMPANY, INC.
Rochester, New York

HENDRIE & BOLTHOFF
Denver, Colorado

INDUSTRIAL MACHINERY CO., INC.
Halifax, Nova Scotia

INDUSTRIAL SUPPLY COMPANY
Richmond, Virginia

THE LANG COMPANY
Salt Lake City, Utah

LITTLE ROCKROAD MACHINERY CO.
Little Rock, Arkansas

MARYLAND SUPPLY & EQUIPMENT COMPANY
Baltimore, Maryland

METALWELD, INC.
Philadelphia, Pennsylvania

MINE & SMELTER EQUIPMENT CO.
Phoenix, Arizona

MISSOURI-ILLINOIS TRACTOR & EQUIPMENT COMPANY
St. Louis, Missouri

MONTANA HARDWARE COMPANY
Butte—Great Falls, Montana

MUSSENS CANADA LIMITED
Montreal, Quebec
Toronto, Ontario

MYHRA EQUIPMENT COMPANY
Fargo, North Dakota

NATIONAL EQUIPMENT COMPANY
510-512 South Clay Street
Louisville, Kentucky

NEVADA TRUCK SALES
Reno, Nevada

NORTHWEST SUPPLY & EQUIPMENT COMPANY
Marietta, Ohio

H. O. PENN MACHINERY COMPANY
New York City—Poughkeepsie, N.Y.
Mineola, L.I.

PERRIN, SEAMANS & CO., INC.
Boston, Massachusetts

HENRY A. PETTER SUPPLY CO.
Paducah, Kentucky

SAN ANTONIO MACHINE & SUPPLY CO.
San Antonio—Waco—
Corpus Christi—Harlingen, Texas

SERVIS EQUIPMENT COMPANY
Dallas, Texas

SMITH TRACTOR & EQUIPMENT CO.
Irvington, New Jersey

SOUTH TEXAS EQUIPMENT CO.
Houston 1, Texas

STONE MANUFACTURING COMPANY
Milwaukee, Wisconsin

STRAITS ENGINEERING COMPANY
Sault Ste. Marie, Michigan

Service and Supply Division
LAKE SHORE ENGINEERING COMPANY
Iron Mountain, Michigan

M. F. TAYLOR COMPANY
Stamford, Connecticut

ROY C. THOMPSON COMPANY
Presque Isle, Maine

TIDEWATER SUPPLY COMPANY, INC.
Columbia, South Carolina
Norfolk, Virginia
Roanoke, Virginia

VAN NOUHUYS PUMP & SUPPLY CO
Albany, New York

WATKINS-ALDRIDGE EQUIPMENT COMPANY, LTD.
Jackson, Mississippi

WESTERN EQUIPMENT & SUPPLY CO.
Rock Island, Illinois

WHEELER EQUIPMENT COMPANY
Buffalo, New York

YOUNG AND VANN SUPPLY CO.
Birmingham, Alabama

. . . and DISTRIBUTORS ARE KNOWN BY *the Company They Keep*

Allied Member of A.E.D.

NOVO
ENGINE COMPANY
LANSING 5, MICH. U.S.A.
CONTRACTOR'S EQUIPMENT
· GRAY IRON CASTINGS ·
ENGINES

LOCK JOINT CONCRETE CYLINDER PIPE FOR MAIN WATER SUPPLY LINES

A connection on the Thorn Street Pipe Line, City of San Diego; 12,000 feet 36" Lock Joint Concrete Cylinder Pipe here connects into 30" cast iron pipe line. Reducer appears in foreground.

Pipe manufactured and installed by

AMERICAN PIPE AND CONSTRUCTION CO.

P. O. BOX 3428 TERMINAL ANNEX LOS ANGELES 54

PLANTS AT PORTLAND • OAKLAND • LOS ANGELES • SAN DIEGO

PETERBILTS BRING OUT THE REDWOOD!

In the redwood timberlands of Mendocino County, California, there seem to be just two directions—straight up and straight down. Added to the tendency to the perpendicular, loggers must contend with fifty inches of rainfall per year, which makes many a logging operation a summer show running from May to November.

The Sage Land & Lumber Co. of Willits have such an operation on Two Rock Creek. It's strictly a cat to truck side job. The haul from landing to the mill is 14 miles, 8 of which is adverse grade coming out of the canyon. Using three Diesel powered PETERBILT TRUCKS, they are hauling out 70M' per day minimum.

When you are confronted with a short season and adverse grades, that's when you want PETERBILT LOGGING TRUCKS to bring out the most footage in the shortest possible time.

Peterbilt Motors Company

107th AVENUE AND MacARTHUR BOULEVARD · OAKLAND · CALIFORNIA

GOVERNMENT SURPLUS STEEL

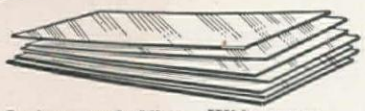
AVAILABLE NOW THROUGH RFC

Liberal Price Reductions

This is an unusual opportunity for many manufacturers to get ahead in their reconversion program. While some of the sizes, shapes and alloys of the RFC stock of surplus steel may differ from the specifications of normal industry requirements, it has the advantage of being quickly available.

Attractive allowances have been made in our pricing program to move this steel into the hands of private industry.

HOT ROLLED PLATES

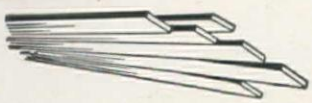


Carbon and Alloy. Wide range of sizes from ¼" to 6" thick, up to 96" wide.

TOOL STEEL

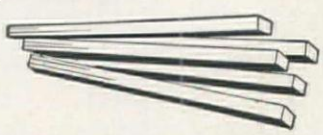
7,000 tons. In Water-hardening, Oil-hardening and High Speed grades. Large range of bar sizes.

STRIP STEEL



Available in Hot Rolled and Cold Rolled, Carbon and Alloy. Large quantity of High Carbon Cold Rolled Strip—to be sold at low Carbon prices—or lower. Large range of sizes.

BAR STEEL



Hot Rolled and Cold Finished in both Carbon and Alloy. Rounds, squares, flats and hexagons in various specifications. Many items in large quantities.

Write, wire or phone your requests to the nearest RFC agency listed below for more detailed information. If you desire, credit terms can be arranged. If your local office does not have all the materials you need, it will endeavor to locate them from other offices throughout the country.

CHECK THIS LIST

Miscellaneous STEEL PRODUCTS

1. Carbon and Alloy Billets, Blooms, Slabs, Skelp, Rods, etc. . . . ☐
2. Reinforcing Bars . . . . . ☐
3. Structural Steel Shapes . . . ☐
4. H. R. & C. R. Sheets, Strip Steel, Carbon and Alloy . . . . . ☐
5. Plates—Tin Plate, Terne Plate, Black Plate . . . . . ☐
6. Wire and Wire Products, Carbon and Alloy, Wire Rope, Reinforcing Wire Mesh . . . . . ☐
7. Stainless Steel Sheets, Strips, Standard Types . . . . . ☐
8. Iron and Steel Pipe, and Tubing—Valves and Fittings . . . . ☐
9. Mechanical Tubing, Carbon and Alloy . . . . . ☐

Name.....

Firm.....

Address.....

RECONSTRUCTION FINANCE CORPORATION

A Disposal Agency Designated by the Surplus Property Administration

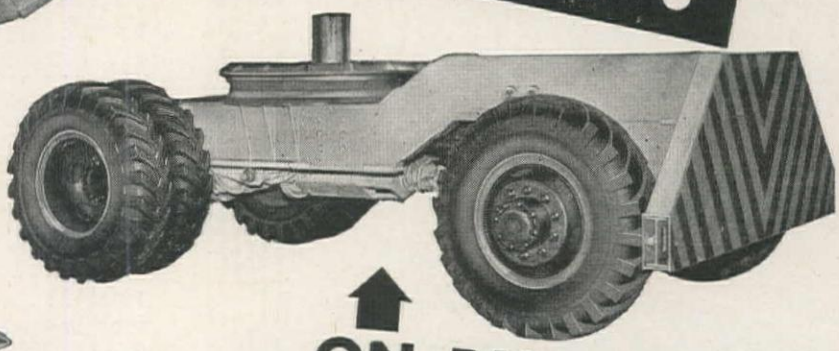
Agencies located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane

157-1

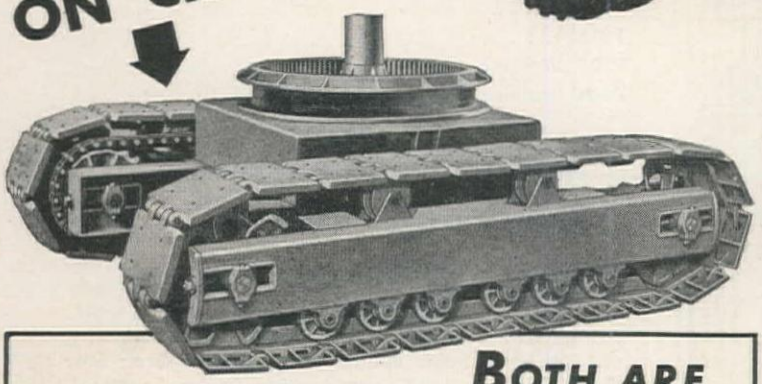
YOUR NEW HALF-YARD SHOVEL . . .

HOW DO YOU WANT IT?

ON CRAWLERS



ON RUBBER



BOTH ARE "TESTED • PROVED • APPROVED"

HERE'S an excavator that is offered two ways . . . on sturdy self-cleaning crawlers, or on a specially engineered, short coupled rubber tired chassis that makes the excavator highly mobile and self propelled.

EITHER WAY IT IS A ONE MAN OPERATED MACHINE

With either type of lower base, the revolving deck and all attachments are alike, embodying the same basic design and economy features . . . the same rugged revolving frame, enclosed gears, cool air clutches, air brakes, finger tip controls, safety boom hoist, wide tandem drums, fast line speeds and ample power.

For rubber tired mounting, a steering wheel is located in the cab at the operator's position, a gear shift and selective transmission for high speed road travel are added, together with foot accelerator and travel brake pedals.

You can order your new Byers excavator either way you want it, depending on your own operating conditions . . . Byers Traveler, on rubber, or Byers Model 61, on crawlers.

For full information and complete illustrated catalogs, see your nearest Byers equipment distributor.

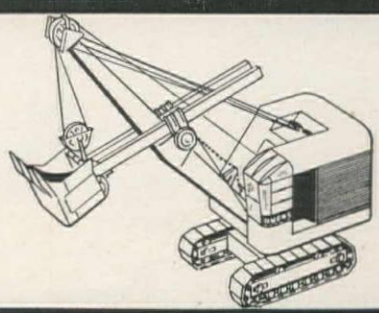
THE BYERS MACHINE CO.

Distributors throughout the world • RAVENNA, OHIO

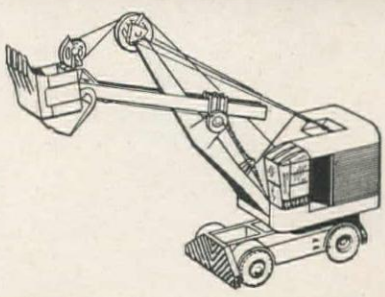
BYERS and BYERS

MODEL 61 TRAVELER

BYERS MODEL 61



BYERS TRAVELER



Your Local Byers Distributor Is:

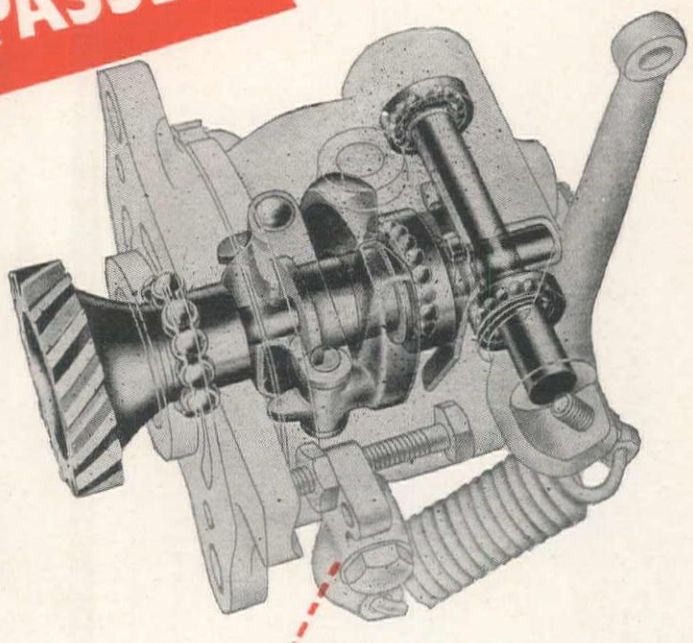
EDWARD R. BACON CO., San Francisco

NELSON EQUIPMENT CO., Portland and Seattle

RAY CORSON . . . . . Denver

WILLARD EQUIPMENT CO. . Vancouver

UNSURPASSED!

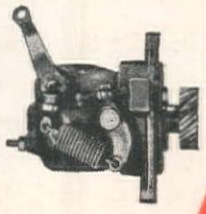


FOR ACCURATE REGULATION FOR UNFAILING PROTECTION

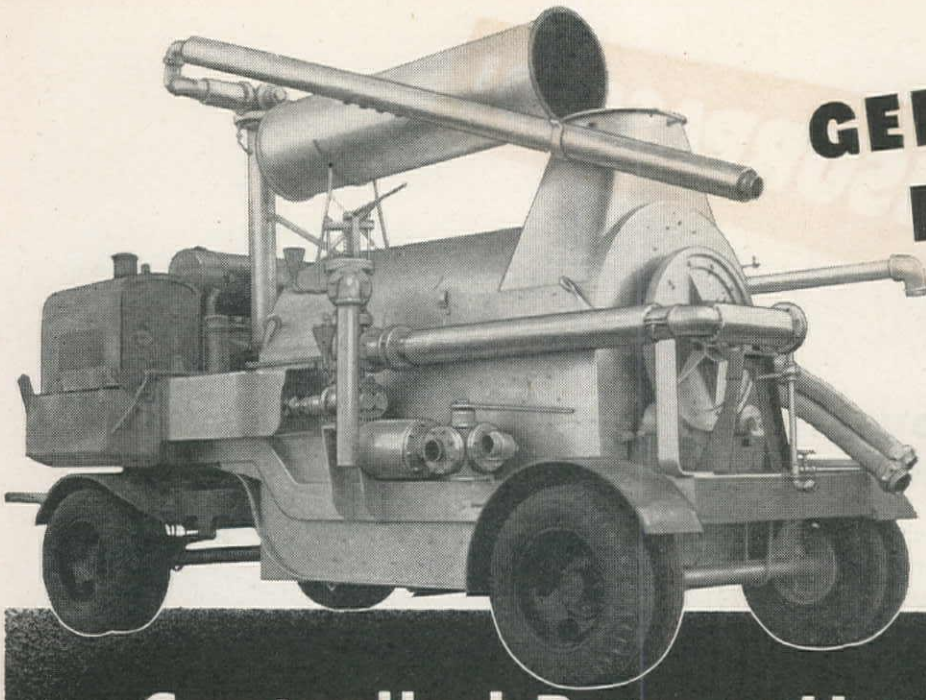
Wherever good governing is desirable, or necessary, for efficient handling of operations requiring internal combustion engines for power, Pierce Flyball Governors are setting the pace—for quick response, accuracy, dependability and unfailing protection. Pierce Governors now serve many of the world's finest engines, gasoline and diesel, as standard equipment. Specify them for the new engines you buy.

Thousands of engine users are installing Pierce Governors, both belt and gear driven, on their present engines. If your engines are not Pierce-governed, write for full information and the Pierce catalog. Depend on Pierce for long life—often for longer than the engine itself—and for positive regulation without gumming or sticking or frequent need for readjustment or service.

THE PIERCE GOVERNOR COMPANY, INC.
1645 OHIO AVENUE, ANDERSON, INDIANA
Manufacturers of Pierce Precision Governors and Sisson Automatic Chokes



PIERCE GOVERNORS

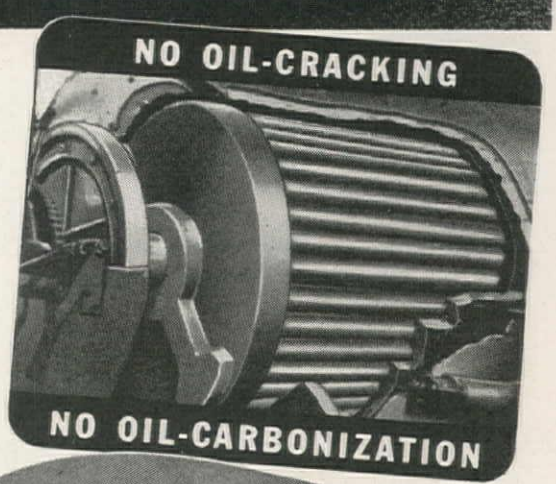


GERLINGER PORTABLE Rotary Oil RETORT

Controlled Rotary Heat Process *an All Exclusive Feature* insures

1000 GALLONS OF ROAD OIL OR ASPHALT LOADED OUT IN 4 MINUTES

In a single hour the temperature of 10,000 gallons of road oil or asphalt can be raised 60 degrees by the Gerlinger Rotary Oil Retort through an exclusive Gerlinger feature—the rotary coil! This complete, safe and highly time-saving feat is possible because the Gerlinger Rotary Coil contains 550 square feet of rapid and controlled heating surface. It is also insured against formation of carbon or oil cracking. Oil or asphalt heated by this exclusive Gerlinger process is now ready to be loaded out at the unbelievable rate of 1,000 gallons every four minutes. Each unit of this unique retort has been carefully, painstakingly engineered and deserves the praise given it by highway builders all over the country



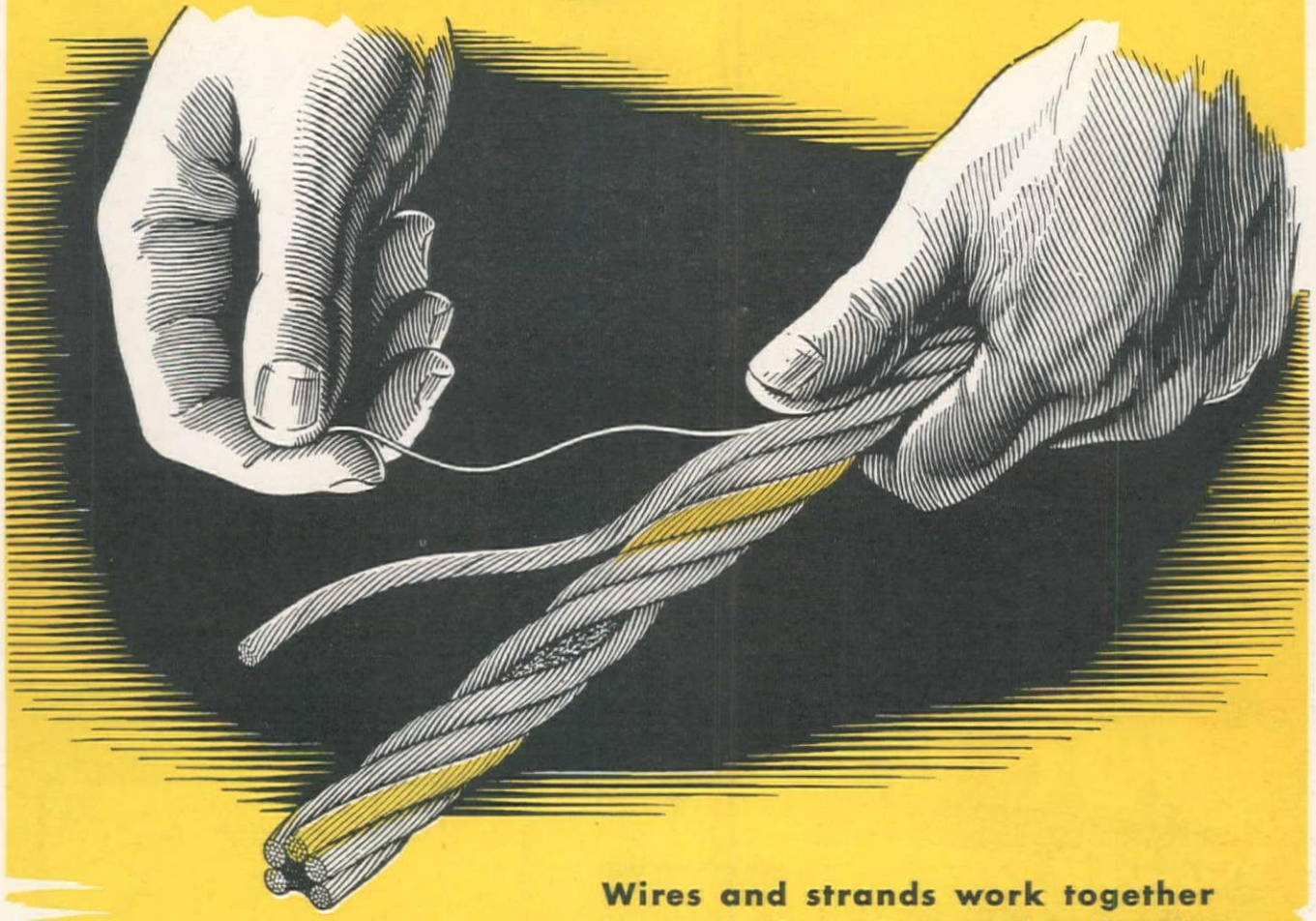
For detailed information and specifications please phone or write Department 7, Salem Iron Works, Salem, Oregon

GERLINGER PRODUCTS

S-2

A PRODUCT OF SALEM IRON WORKS SALEM OREGON

This fight is over



Wires and strands work together instead of against each other in *PREFORMED* YELLOW STRAND . . .

Don't get us wrong. The fight you *want* in *Preformed* Yellow Strand is there. It fights wear . . . delay . . . excessive wire rope costs.

But no one wants fight *inside* a rope—the wasteful stresses that result when springy wires and strands are twisted into place and kept there by force. Such straining parts are bound to lower the efficiency of an unpreformed rope.

This condition is corrected in the making of *Preformed* Yellow Strand. A patented process *preforms* each strand . . . sets both the strand and its wires to the curvature needed in the finished rope. The parts don't fight . . . they *fit,* as the illustration shows.

With internal conflict under control, a rope has little reason to stiffen, kink or squirm. So *Preformed* Yellow Strand is flexible and easy to manage. It is better prepared to withstand bending fatigue. It spools evenly . . . requires less breaking-in . . . increases safety . . . lasts longer.

Specify *Preformed* Yellow Strand by name. Get all you should in wire rope performance and economy. Broderick & Bascom Rope Co., St. Louis 15, Mo. *Branches:* SEATTLE, Portland, New York, Chicago, Houston. *Factories:* SEATTLE, St. Louis, Peoria.

HAND BOOK FREE: "Industrial Wire Ropes" contains useful facts, tables, pictures. Write for your copy.

ARMY E NAVY

BRODERICK & BASCOM

Yellow Strand

***PREFORMED* WIRE ROPE**

Guide to

larger capacity...
lowest operating costs with

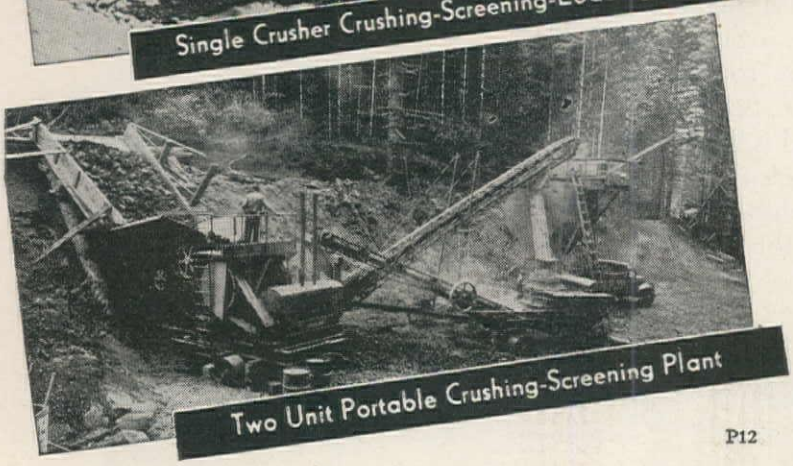
TELSMITH

PORTABLE CRUSHING PLANTS

GET NEW PORTABLE CRUSHING CATALOG P-30

Dual Portable Crushing-Screening-Loading Plant

Single Crusher Crushing-Screening-Loading Plant



Two Unit Portable Crushing-Screening Plant

P12

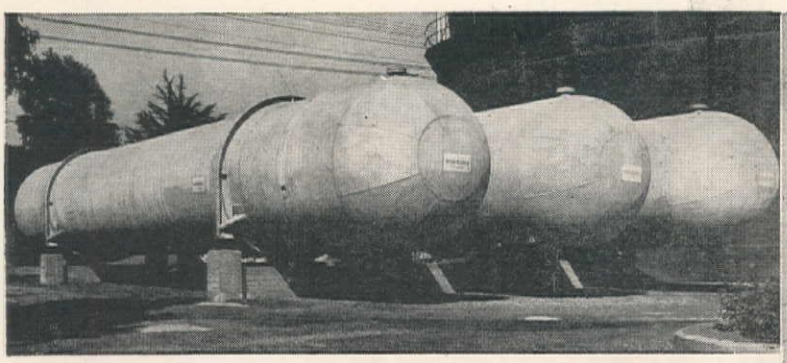
"Junior" Portable Crushing-Screening Plant makes 2 or 3 different sizes of product.

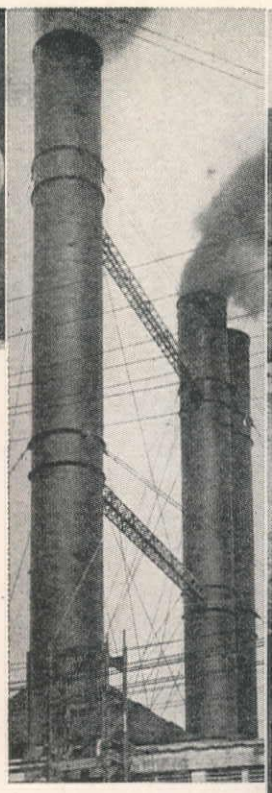
General Utility Portable Outfit with Jaw or Gyratory Crusher, and folding elevator.

SMITH ENGINEERING WORKS, 4010 N. HOLTON STREET, MILWAUKEE 12, WISCONSIN

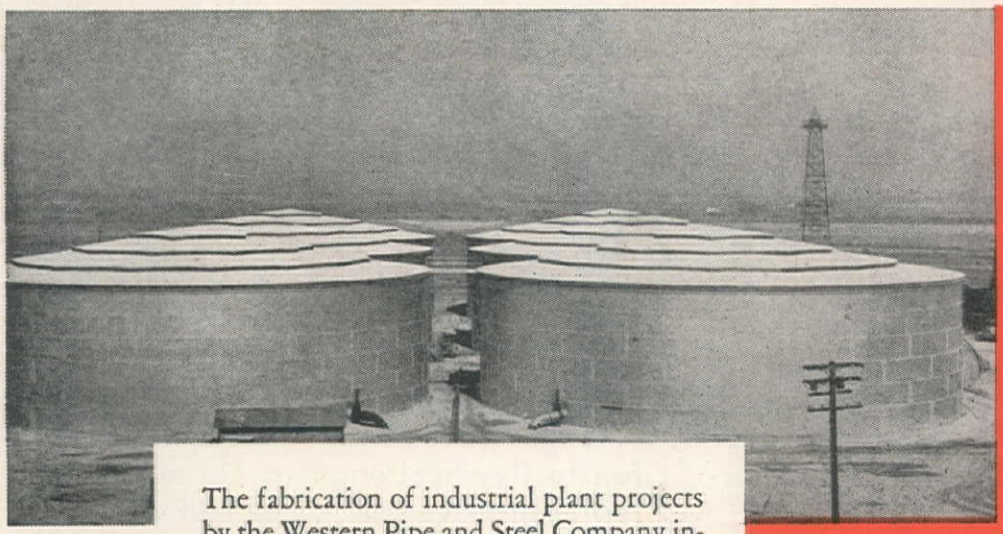
Mines Engineering & Equipment Company, 369 Pine St., San Francisco 4—811 W. 7th St., Los Angeles 14

Clyde Equipment Co. Portland 9, Ore. | Clyde Equipment Co. Seattle 4, Wash. | General Machinery Co. Spokane 1, Wash. | Gordon Russell, Ltd. Vancouver, B.C. | Contractors' Eqpt. & Supply Co. Albuquerque, N.M. — El Paso, Tex.





FROM SMOKESTACKS AND BOILERS TO COMPLETE PLANTS



The fabrication of industrial plant projects by the Western Pipe and Steel Company includes the manufacture of a wide variety of products. For example, you will find steel pipe and tanks, hoppers, steel forms, together with pressure vessels...for mills and essential ferrous and non-ferrous industries.

Highly specialized steel products are fabricated for railroads, public utilities, and general industries. For the chemical and oil industry, Western Pipe and Steel Company produces all types of steel equipment, even to complete plant units.

Whatever your plans, Western Pipe and Steel Company's forty years of "know how" service can be useful to you. We will be glad to discuss it at your convenience.

WESTERN BUILT PRODUCTS INCLUDE:

- Absorbers
- Accumulators
- Agitators
- Boilers
- Buildings, Sectional Steel
- Casings, Oil and Water
- Condensers
- Coolers
- Culverts
- Gas Cleaners
- Gas Holders
- Gas Separators
- Heat Exchangers
- Joints, Expansion
- Linings, Corrosion Resisting
- Penstocks, Steel
- Refinery Equipment
- Stainless Steel
- Tunnel Linings
- Tanks, Bolted, Galvanized, Riveted, Welded
- Towers, Bubble, Evaporator, Fractionating
- Vessels, Pressure
- Walkways, Structural

WESTERN

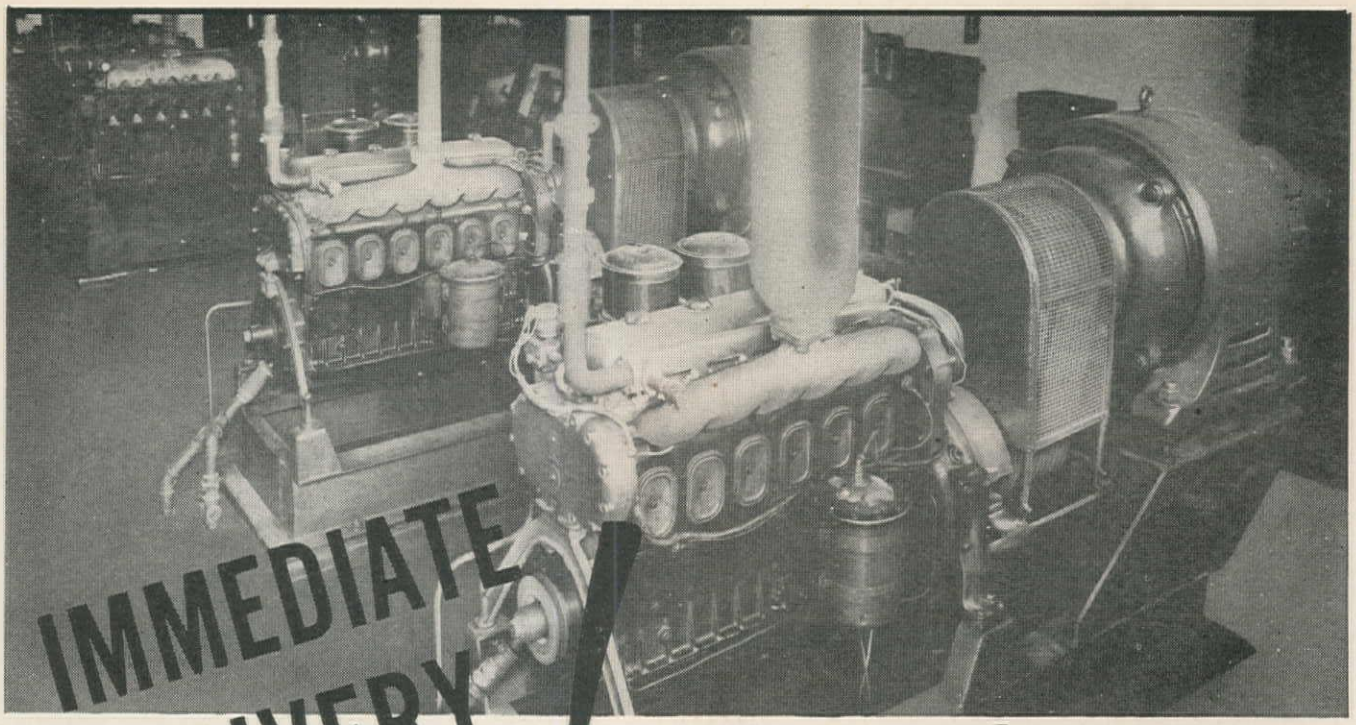
PIPE AND STEEL COMPANY OF CALIFORNIA

Fabricators and Erectors

5717 Santa Fe Avenue
Box 2015, Terminal Annex
Los Angeles 54, California

200 Bush Street
San Francisco 6
California

PLANTS AND OFFICES: FRESNO, BAKERSFIELD, TAFT, CALIFORNIA AND PHOENIX, ARIZONA



IMMEDIATE DELIVERY!

on G. M. DIESEL MOTORS

GM GENERAL MOTORS DIESEL POWER

Moore Equipment Company's "Combination of Services" is now full speed ahead . . . with complete engineering facilities and that "know how" . . . resulting in quick and practical solution to your power problems in relation to your particular needs.

We now have a complete stock of General Motors Series 71 two-cycle Diesel Engines . . . "Singles" – "Twins" – "Quads" – 34 H.P. to 592 H.P. – 2 cylinder to 6 cylinder units. Enclosed or open – longer short base models. Also basic fan to flywheel engines. Let our trained representative call . . . he will work with you from the selection of an engine until it is in actual efficient operation.

MOORE EQUIPMENT COMPANY

Combination of Services

- GORMAN-RUPP Pumps
- PARSONS Trench Excavators
- GRICO — Two Axle Drive
- C. S. JOHNSON Clam Shell Buckets
- KWIK-MIX Cement Mixers
- GENERAL MOTORS Diesel Engines
- INGERSOLL-RAND Equipment
- KOEHRING Shovels and Cranes
- MOORE Road Machinery

★ SAN FRANCISCO – 55 NEW MONTGOMERY STREET – PHONE SUtter 0929

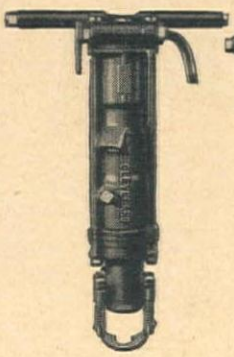
★ STOCKTON – 1250 SOUTH WILSON WAY – PHONE 8-8634

Cleveland Sinkers

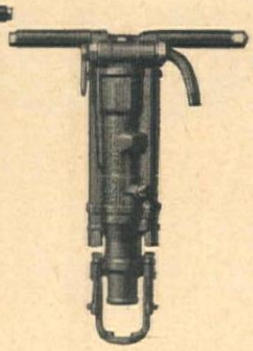
PACK A MIGHTY WALLOP!

In addition to their remarkable power, Cleveland Sinkers are easily-held and very economical in air consumption. Many sizes, in wet or dry construction, for fast drilling in every type of rock. Available with chucks for collared drill steel, and plain or lugged shanks. Drop forged construction insures super strength. End-seating valve (used on most models) improves with use, prevents greater air consumption as drill grows older. • Mountings available for Models H111 and H10 for conversion to drifter type drills, used on column arm or tripod. • Be sure to use these sinkers with the Cleveland Accessories shown here. *Remember, the most efficient rock drill delivers even better performance when equipped with the proper, high-quality accessories.*

Write for Bulletin 122 on Sinkers—Bulletin AC-11 on Accessories

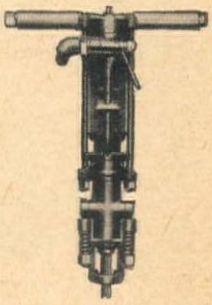


Model H23, 83 lbs.
For extra tough drilling.



Model H111, 55 lbs.
An all around favorite.

Model H10.
Leader in the 45 lb. class.

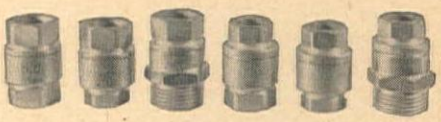


Model H66, 32 lbs.
Light but powerful.

FOR BEST RESULTS USE

CLEVELAND ACCESSORIES

"Veribest" Air Hose is extra tough, withstands rough treatment.



Cleveland Air Filters prevent line trash from entering your drill.

Cleveland Line Oiler keeps drills amply lubricated and working at top speed.

Hose Clamp Tool is handy and efficient for securing wire clamps to hose and fittings.

Type "A" Couplings are made of a tough, rust-proof, bronze alloy. Quick-acting.

LEADERS IN DRILLING EQUIPMENT

CLEVELAND
ROCK DRILL DIVISION
THE CLEVELAND PNEUMATIC TOOL CO.
CABLE ADDRESS: "ROCKDRILL"
CLEVELAND 5, OHIO

WESTERN DISTRIBUTORS

A. H. Cox & Co., Inc.
Seattle, Washington

Connelly Machinery Co.
Billings, Montana

General Machinery Co.
Spokane, Washington

Le Roi-Rix Machinery Co.
Los Angeles 11, California

Nelson Equipment Co.
Portland, Oregon

Purves E. Ritchie & Son, Ltd.
Vancouver, B. C., Canada

The Rix Co., Inc.
San Francisco 3, California

Sanford Tractor & Equipment Co.
Reno, Nevada

GOVERNMENT OWNED SURPLUS

CONSTRUCTION MATERIALS and EQUIPMENT

FOR SALE by RFC

for immediate delivery at substantial savings!

CONTRACTORS BUILDERS MINE OPERATORS

In addition to the classes of materials listed below, RFC has or will have a wider choice of surplus items from which you can make selections to meet your needs . . . If you are not already on RFC mailing lists . . . describe your needs in a letter addressed to the Surplus Property Division of your nearest agency. Future offering lists will then be mailed direct to you.

Check Your Needs

☐ **STEEL LANDING MATS**
Suitable for flat reinforcing . . . Metals Unit.

☐ **SPAR VARNISHES**
Clear in 1 and 5 gallon cans . . . Chemical Unit.

☐ **WELDING MACHINES**
300 and 400 amp. electric driven . . . Tool Unit.

☐ **STANDARD WIRE ROPE**
Varying lengths and sizes available, ⅜" to 2" . . . Metals Unit.

☐ **ELECTRIC GENERATOR UNITS**
Small and large for floodlighting, etc . . . Electrical Unit.

☐ **ROPE**
Variety of sizes, fibers, from ¼" to 3⅜" diameter . . . Miscellaneous Unit.

☐ **LUMBER**
Used—Reclaimed—Unused . . . Miscellaneous Unit.

☐ **PILING**
Treated and untreated . . . Miscellaneous Unit.

☐ **COPPER WIRE**
Single, double strand suitable for rural use . . . Electrical Unit.

☐ **PIPE, FITTINGS AND VALVES**
Various sizes, types and quality . . . Metals Unit.

☐ **MACHINE TOOLS**
Light and heavy duty and precision machine tools . . . Tool Unit.

☐ **EXTERIOR PAINT**
Lead base white . . . Chemical Unit.

☐ **WOOD PRESERVATIVE**
For open tank treatment . . . Chemical Unit.

☐ **LAMINATED PHENOLIC SHEETS**
Suitable for electric control panels . . . Chemical Unit.

☐ **STEEL**
Structurals, sheets, plates, bars . . . Metals Unit.

☐ **BUILDING PAPER**
Wire reinforced . . . Miscellaneous Unit.

☐ **LACQUER DOPES**
In a variety of colors . . . Chemical Unit.

Surplus property offerings are subject to prior sale. All sales are subject to tax regulations.

WRITE, WIRE OR TELEPHONE

RECONSTRUCTION FINANCE CORPORATION

A Disposal Agency Designated By The Surplus Property Administration

200 Bush Street • San Francisco 4 • California

***SURPLUS PROPERTY DIVISION:* 256 Montgomery Street, Telephone EXbrook 6206**

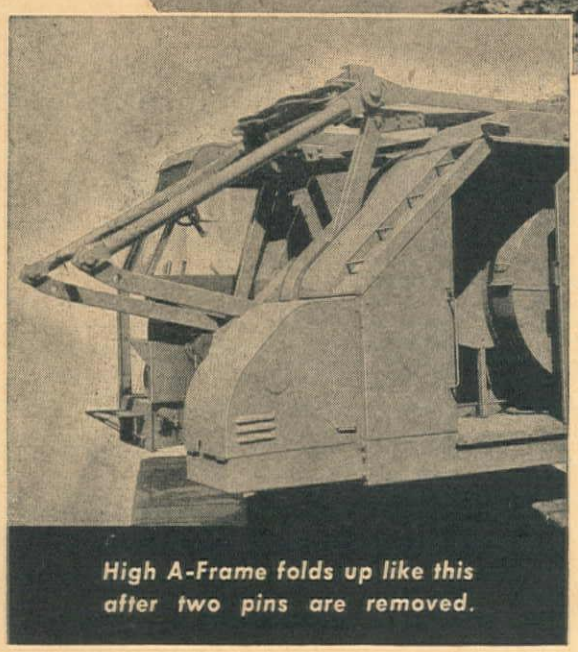
or the Nearest RFC Office

WESTERN OFFICES: Boston Bldg., DENVER, Alpine 0415 • Power Block, HELENA, Phone 481 • Pacific Mutual Bldg., LOS ANGELES, Michigan 6321 • Pittock Block, PORTLAND, Atwater 6401 • Dooly Bldg., SALT LAKE CITY, 5-7503 Dexter Horton Bldg., SEATTLE, Main 1080 • Columbia Bldg., SPOKANE, Main 5111

KOEHRING

605

POWER RAISES, LOWERS HIGH A-FRAME FAST...



High A-Frame folds up like this after two pins are removed.

Because **power raises and lowers the High A-Frame fast, you cut moving expenses every time you ship the new Koehring 30-ton crane by rail, every time you truck it through a highway underpass, every time you move it under overhead obstructions on the job. In just a few minutes you reduce overhead clearance from 18'-8" to 12'-9".**

REMOVE 2 PINS, THAT'S ALL

Raising or lowering the 605 High A-Frame is simple, safe. Remove 2 pins and the High A-Frame is ready for lowering by power. A cable attached to the hoist-drum controls lowering speed. The same cable raises the 605 High A-Frame back into position. No danger of over-pulling because the High A-Frame comes to a definite stop when fully raised.

SUSPENSION CABLES STAY ON

Boom suspension cables stay in place on short moves. Because the frame is strong, the Koehring 605 crane may be operated with the High A-Frame in any lowered position.

ASK FOR YOUR 605 CATALOG TODAY!

PACIFIC HOIST & DERRICK CO. . . . Seattle, Washington
WESTERN MACHINERY CO. . . . . Spokane, Washington
COLUMBIA EQUIPMENT CO. . . . . Portland, Oregon
MOORE EQUIPMENT CO. . . . . Stockton, California
HARRON, RICKARD & McCONE CO., San Francisco-Los Angeles
McKELVY MACHINERY CO. . . . . Denver, Colorado
HARRY CORNELIUS CO. . . . . Albuquerque, New Mexico
NEIL B. McGINNIS CO. . . . . Phoenix, Arizona
LUND MACHINERY CO. . . . . Salt Lake City, Utah
WESTERN CONSTRUCTION EQUIPMENT CO. . Billings, Mont.

KOEHRING COMPANY WEST COAST PARTS WAREHOUSE . Sacramento, California

MIX and SPREAD SOIL CEMENT IN *One* OPERATION?

Sure! WITH A WOOD ROADMIXER

★ **HERE ARE THE *Facts!***

The Wood Roadmixer is the pioneer and leading travel plant method of rapid, low cost, high quality pavement construction. It is pulled and powered by a standard crawler tractor. Supply truck is towed behind or parallels the mixer. The Wood Roadmixer is made in two sizes, handling up to 8 cu. ft. windrows.

Grade the surface to be paved and windrow materials to be mixed into equalized windrows. Proportion cement on windrows ahead of mixer either by bulk distribution or by sack. Make *ONE* pass with a Wood Roadmixer, adding correct amount of water, then spread—all in one operation.

That's a typical soil cement operation with a Wood Roadmixer—and it's a typical operation on road mix surfacing, mix-in-place asphalt base, flexible base or any type of stabilized base, using emulsions, road oils, tars, etc.

Sounds simple, doesn't it? And it is, because the Wood Roadmixer is a complete traveling mixing plant. It uses local or native materials, requires only two men on a normal job, ties up a minimum of equipment and produces from 250 to 350 tons per hour of ready-to-spread mix. The result is less cost per square yard or per ton—*as much as two-thirds less!*

That's why you should know *all* about the Wood Roadmixer. See your nearest dealer or write direct for literature and prices.

ROADBUILDING EQUIPMENT

WOOD MANUFACTURING CO.

BOX 32, 6900 TUJUNGA AVE. NORTH HOLLYWOOD, CALIF.

bigger output

WITH OVERSIZE ESCO DRAGLINE BUCKET

POUND FOR POUND, Esco manganese steel dragline buckets carry greater payloads than other makes. This is the result of their manganese steel construction which makes Esco buckets both lighter and stronger. Power is used for moving payload instead of bucket dead weight.

Typical of the greater output of these Esco buckets are results obtained by the Mauger Construction Company of Zanesville, Ohio. Here the 15-yard bucket shown above was used to strip overburden from coal deposits. The overburden on this operation is from 40 to 80 feet deep, consisting mostly of sand rock, which is shot by both horizontal and vertical drilling.

The bucket, operated on a 9W Monighan with 160 foot boom, is oversize for this equipment, but is entirely practical, due to its light weight. Large pieces are handled effectively by the extra wide mouth. Better digging is achieved by the exclusive Esco tooth and front design.

We'd like to give you full information about these lighter, stronger Esco dragline buckets. Write or wire us today.

ELECTRIC STEEL FOUNDRY

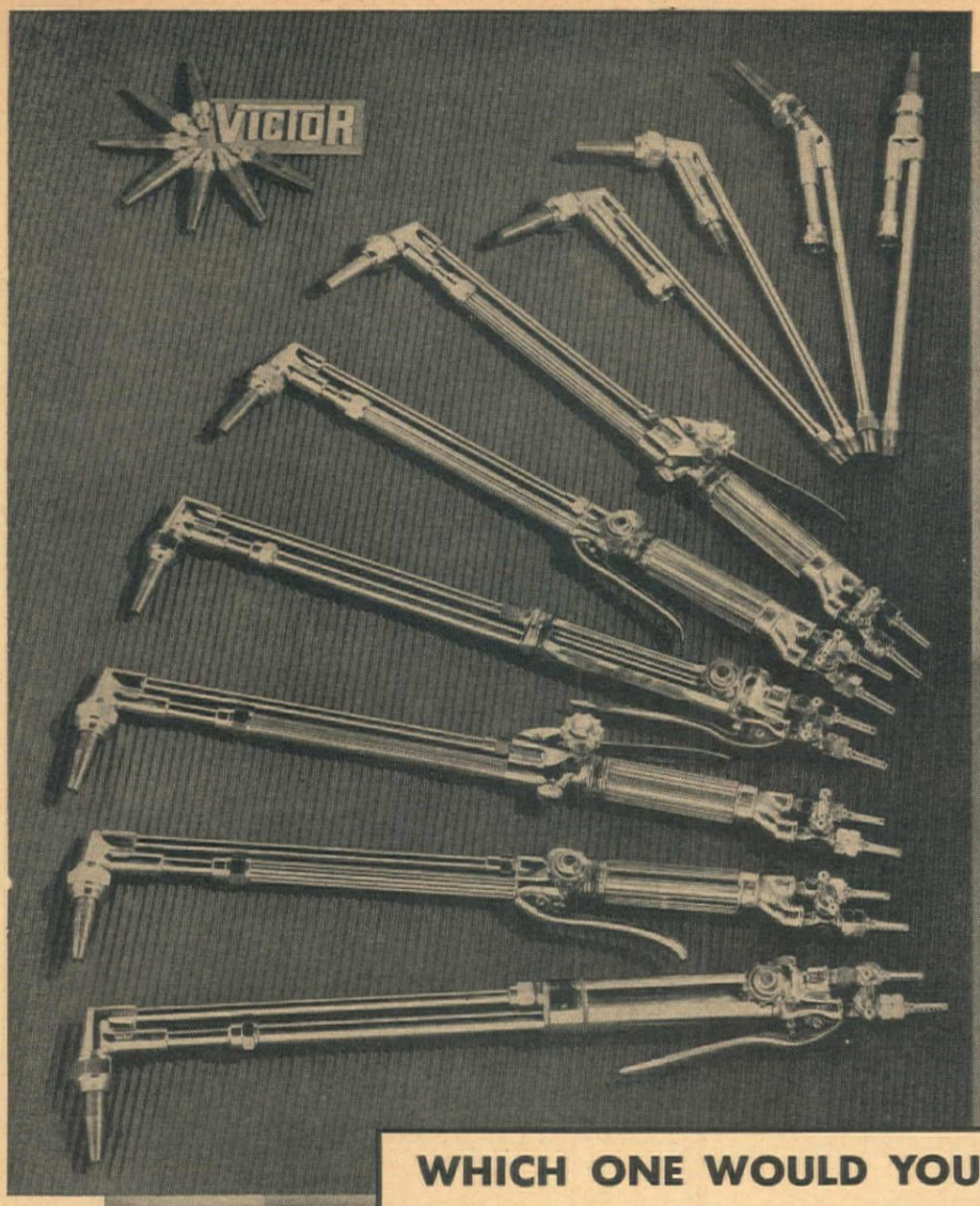
2141 N. W. 25th AVENUE • PORTLAND 10, OREGON

OFFICES AND WAREHOUSES

SEATTLE, 4	HONOLULU, 5	NEW YORK, 17	SAN FRANCISCO, 7	SPOKANE, 8	LOS ANGELES, 11	CHICAGO, 1
2724 First Ave. S.	814 Kapiolani Blvd.	Graybar Building	699 Second Street	121 S. Monroe St.	2700 Santa Fe Ave.	221 N. La Salle St.
Eliott 4161	Phone 6486	Lexington 28958	Douglas 8346	Main 5530	Lucas 7251	Dearborn 2284

EUGENE, ORE.
1991 Sixth Ave., W. • Phone 5012

IN CANADA—ESCO LIMITED, 1084 Homer St., Vancouver, B.C. Telephone Marine 2343



WHICH ONE WOULD YOU CHOOSE?

COMFORT TOO SAVES MONEY

Give your burner a cutting torch with the maximum comfort value. Some prefer the high pressure valve lever on top, some on the bottom, some in front and some in the rear of the torch. Which of these VICTOR hand cutting torches do you like the best? Of one thing you can be sure—no matter what the choice, VICTOR cutting torches are designed for maximum operating speed and minimum ownership cost.

VICTOR

VICTOR EQUIPMENT COMPANY

844 FOLSOM ST. • SAN FRANCISCO 7, CALIFORNIA

Ad 134

Construction Equipment

Available For Immediate Delivery
F.O.B. Sacramento, Calif.

OUR No.

EARTH MOVERS

210 to 215 — 6—Sterling Earth Movers. Model HCS297, 3 axle, 10 wheel, four wheel drive with 12 cu. yd. steel dump body with Heil Model OT 73-94 or Wood Model T440 hydraulic hoist. Powered by Cummins Engine Model H.D. w/15" single plate, WC Lipe Clutch. First sold new December 1941 to February 1942.

TRUCK CRANE

701 — Byers Crane—Model 83 w/Kohler Light Plant Model A25—800 watt, Gallineau refiner #125—16"—American S S Hook Block & Fire Extinguisher mounted on 1942 GMC Truck, Model AYX801—120" wheelbase, 5 speed main transmission, 1000 x 22 tires front and rear, ignition and carburetor safety device, frame stress absorber, 300 watt generator, notebook holder, Left and Right rear vision mirror, front wheel brake limiting air valve, gear shift device, Westinghouse separate air valve, low air pressure buzzer, air reservoir, brake flap adjusters, Budd wheels, responsive globe valve in fuel tank, auto winter radiator shield, drive shaft guard, pre-loaded brake valve, brake shield, rubber seat cushion, safety wiring, brake pressure gauge, Brown Lip auxiliary transmission, Maxi 6 wheel attachment w/chains and Model 600 Winslow filter. First sold—1943.

PAVERS

2319 — Multifoote Paver w/open-end loading skip 118" width and skip guards—2 speed reversible multifoote traction—60 gallon auxiliary tank, automatic Batcher operation—35 ft. inclined boom attachment w/controllable bucket and Hercules Power Unit Model RXLD. First sold—September 1944.

2343 — Ransome Paver Model 34E—Full length tractor with power loader, 32' 6" spreading reach and 60 gallon water storage tank. Has 6 cylinder Buda gas engine Model GF638. First sold—September 1941.

OUR No.

ROAD ROLLER & ROAD BROOM

2515—Buffalo-Springfield 10-12 ton Roller—3 wheel Hand Steering. First sold—June 1931.

2611 — Hough Road Broom w/6' 6" broom and Le Roi Engine—Type M3.

CARRYALLS

1011 — 4—Model TCR—18 yd. Wooldridge Scrapers. First sold—August 1944.

COMPRESSORS

1204 — Quincy #330 Compressor, cap. 30 cu. ft. w/Westinghouse 220/440—3 phase 5 H.P. motor. First sold—October 1944.

LIGHTING PLANTS

1310 — Oman Portable Lighting, Model W3—S50—3 kw.—110 volt. First sold—August 1944.

1311 to 1320 to 1324 — 6—Fairbanks-Morse Portable Lighting Plants. Model W3—S50—3 kw.—AC. First sold—October 1944.

1333 to 1335 — 2—Fairbanks-Morse Portable Lighting Plants. Model W3—S50—110 volt AC. First sold—August 1944.

1339 — Kohler Portable Lighting Plant, Model L, 2 kw.—DC—115 volt. First sold—August 1944.

1340 — Kohler Portable Light Plant, Model 1M21-O, 1½ kw.—DC—115 volt. First sold—August 1944.

POWER CONTROL UNIT

2646—3—LeTourneau Model R8 Double Drum Power Control Units all w/double-deck sheave assemblies. First sold—October 1944.

Also—GASOLINE AND ELECTRIC PUMPS • CHAIN HOISTS • GASOLINE SAW RIGS • RODDING AND FINISHING MACHINES • TAMPERS • PAVING BREAKERS • JACK HAMMERS • CLAY SPADES • CHIPPING GUNS • SKILL-SAW • ELECTRIC AND GASOLINE VIBRATORS • ELECTRIC DRILLS • CONCRETE BUCKETS • VISES • BATTERY CHARGERS • VALVE GRINDERS • DRILL PRESS

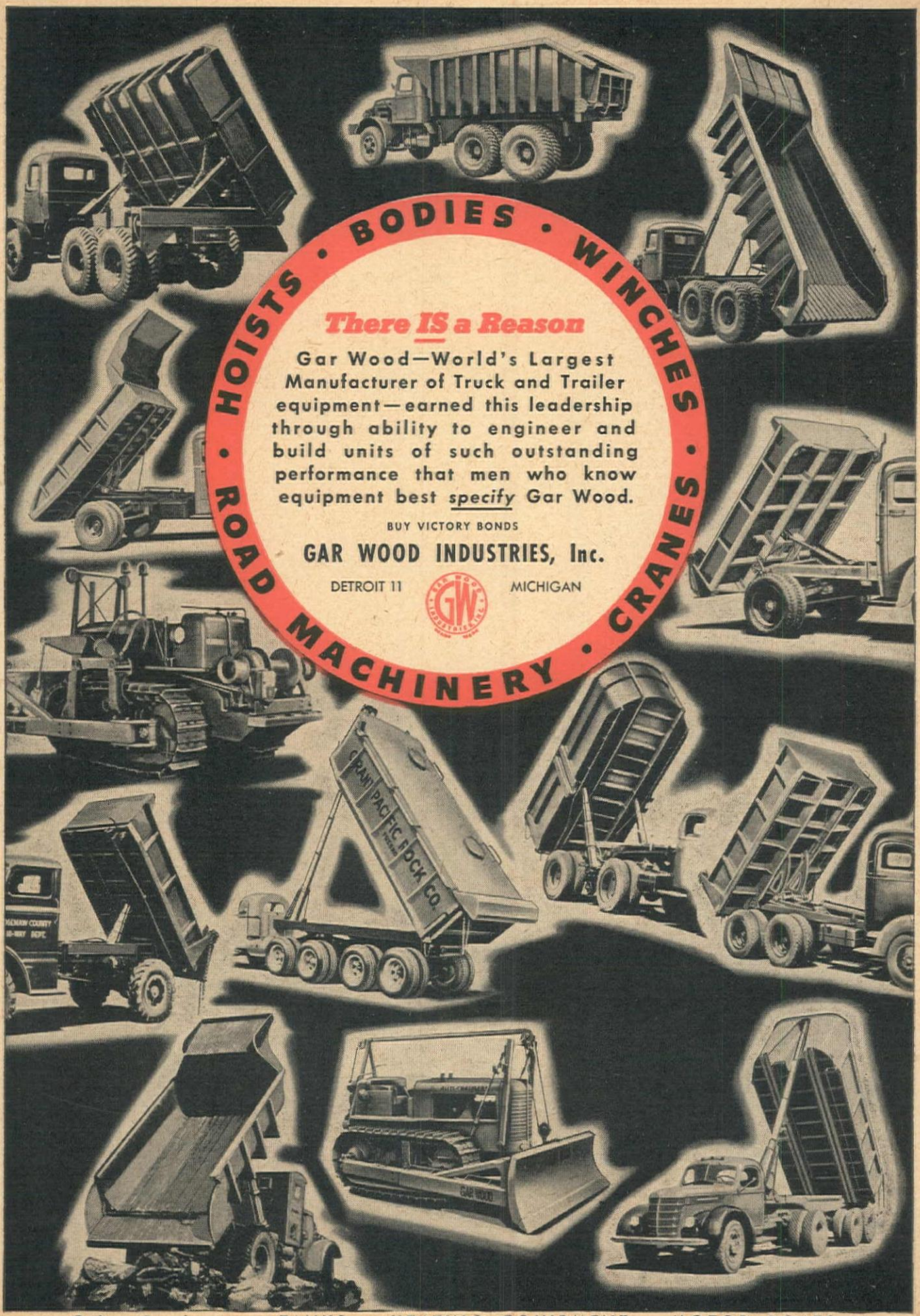
H. O. RUTHERFORD

212-13th Street, SACRAMENTO, CALIF. Phone Sacramento 2-1015

or Call

BARRETT & HILP

918 Harrison St., San Francisco, Calif. Phone DOuglas 0700



Other Products: • TANKS • HEATING EQUIPMENT • MOTOR BOATS

THE *Facts* you need- on BETTER WATER SERVICE

Write-

FOR YOUR COPY OF THIS NEW 28-PAGE BOOK—JUST OFF THE PRESS . . . . . COMPREHENSIVE, DETAILED, KEYED TO YOUR REQUIREMENTS!

PITTSBURGH • DES MOINES STEEL CO.

PITTSBURGH, PA., 3422 NEVILLE ISLAND—DES MOINES, IOWA, 923 TUTTLE STREET

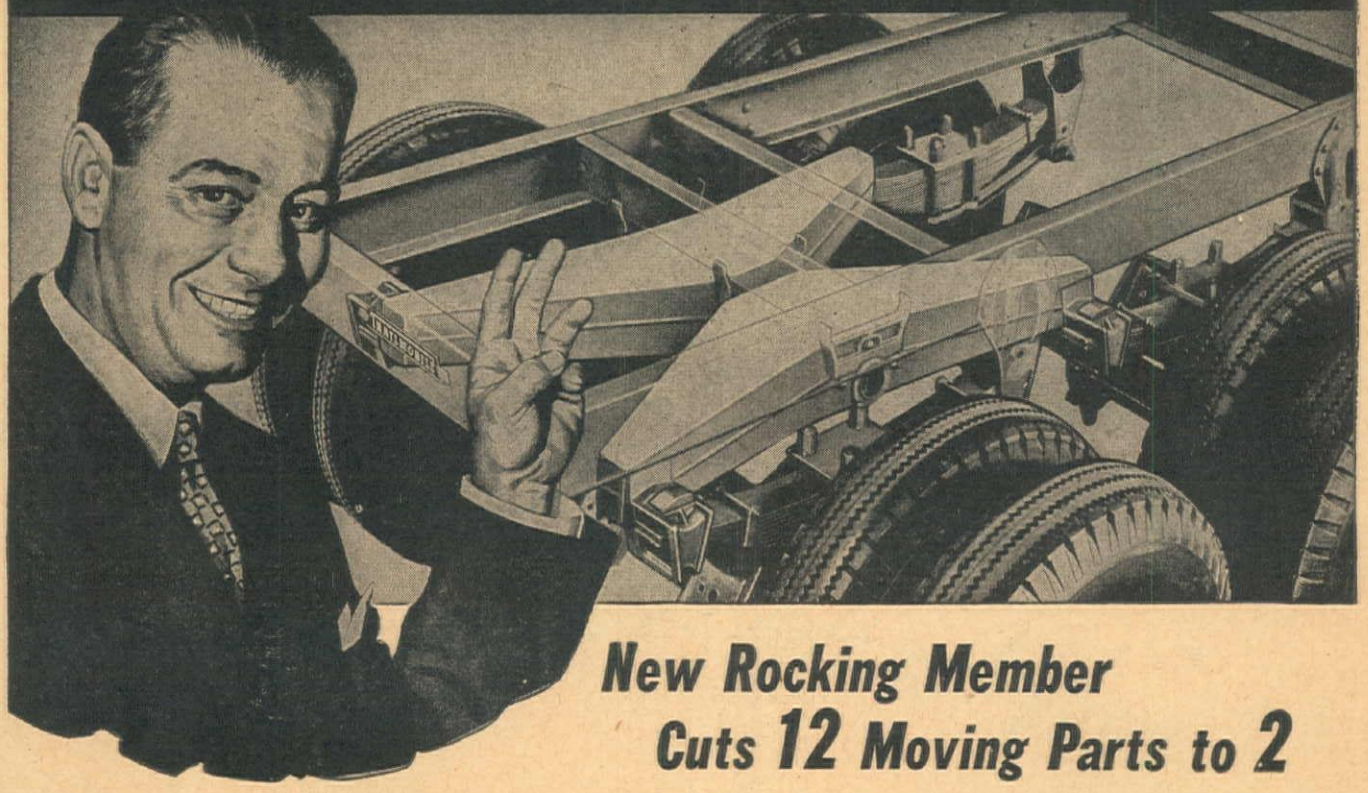
NEW YORK, ROOM 920, 270 BROADWAY · CHICAGO, 1226 FIRST NATIONAL BANK BUILDING

DALLAS, 1227 PRAETORIAN BUILDING · SAN FRANCISCO, 629 RIALTO BUILDING

SEATTLE, 530 FIRST AVENUE, SOUTH

UTTERLY NEW TANDEM ACTION

solves All 3 Old-Tandem Troubles!



New Rocking Member Cuts 12 Moving Parts to 2

Smooth and Easy BALANCING Stops Scuffing, Saves Tires – Parts are STANDARD – Available Everywhere

The tandem is now a unit without vibration—a suspension which equalizes loads onto double axles in a way that *smooths* and *steadies* even the toughest braking action. Tires are no longer unduly scuffed, and therefore, last *much* longer!

And it is a tandem practically without wear and maintenance. It has only two moving parts, instead of the old 12-piece, rattling, extra-mechanism. And these two moving parts have big, over-sized bearings.

Better still, all parts of this new-type tandem are standard, and completely interchangeable—quickly available at every Trailmobile Service Center, in all principal cities.

Now, no longer do needless parts *"fight against"* each other. Instead, only 2 rugged, "rocking-beams" *within* the frame *"ride with"* each shocking force—they pick-up road-shocks promptly, and then "lazily" transfer and *distribute* stresses *throughout* the *entire tandem structure!* Furthermore, these rocking-beams maintain *absolute* and constant load balance, between both axles. They do all this despite *extreme* road-shocks or sudden *violent* braking!

So *see* Trailmobile's new tandem at your Trailmobile Branch. *Watch* its "lazy" *gliding* ride! Check for yourself its *complete* specifications. Get *all* its many, extra advantages. You will be very welcome.

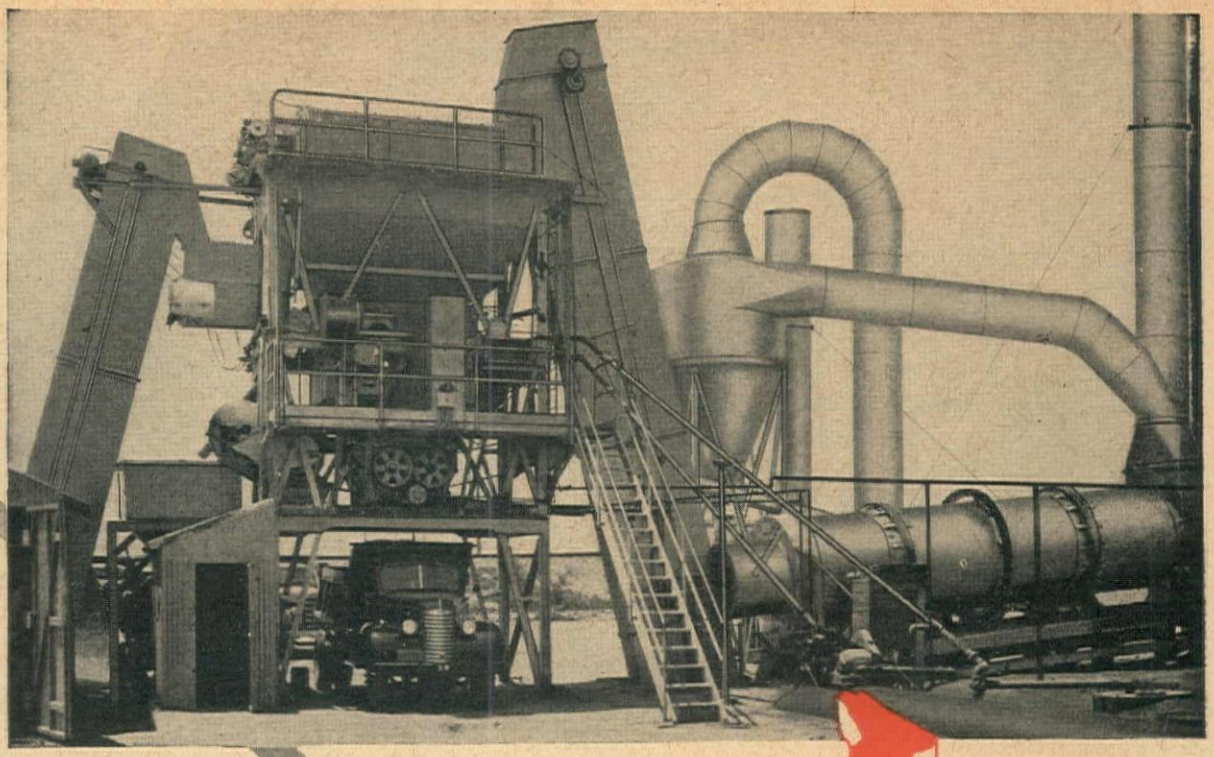
TRUCK DEALERS

You will find it advantageous to contact our nearest Trailmobile Branch, and to discuss Postwar Trailer Opportunities!

The Trailmobile Company,
Berkeley, California

TRAILMOBILE

LOS ANGELES · BERKELEY · SACRAMENTO · FRESNO · SAN JOSE
BAKERSFIELD · STOCKTON · OGDEN · SEATTLE · HONOLULU



Ready for the Nations Highways

TOUGH WAR EXPERIENCE CONDITIONS EQUIPMENT FOR THE PEACE

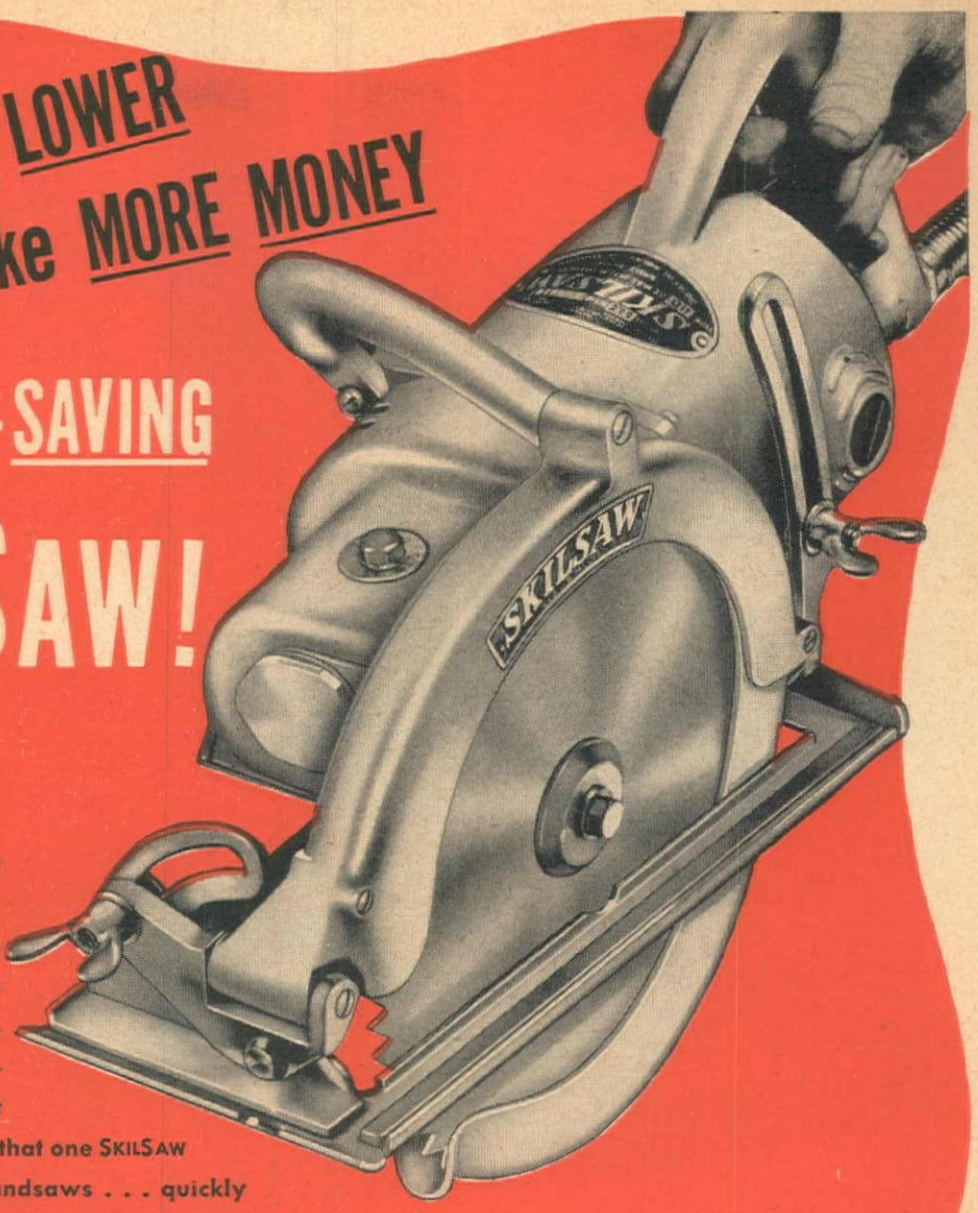
Before the war, Standard Steel's Paving Plants made outstanding production records throughout the country in bituminous road construction. With war, this equipment has played and is playing an important role in the building of many, many airports, both at home and abroad. Performance under the toughest kind of operating conditions has proved the efficiency of this equipment. Not satisfied, however, Standard Steel engineers have plans, already past the drawing board stage, for increasing even more the effectiveness of these great paving plants. It will behoove contractors to keep an eye out for Standard Steel's post-war line of road machinery.

OTHER STANDARD ROAD CONSTRUCTION EQUIPMENT: ROLLERS, SUBGRADERS, BATCHING PLANTS, DRYERS, FINISHERS, BROOMS

STANDARD STEEL CORPORATION

General Offices and Plant: 5001 South Boyle Avenue
Los Angeles 11, California

You can BID LOWER And Still Make MORE MONEY with TIME-SAVING SKILSAW!

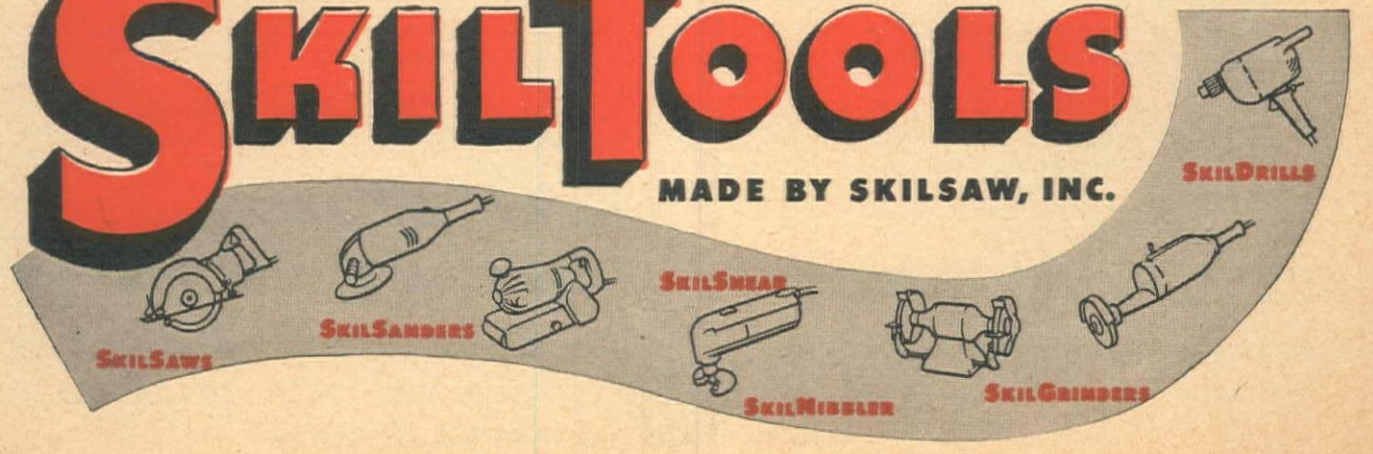


With SKILSAW as your helper you can bid every job lower... handle more jobs faster . . . cut costs on every cut in wood, metal, stone and compositions...make more profit on every job. Remember that one SKILSAW does the work of 10 handsaws . . . quickly pays for itself, then goes on making money for you for years. Ask your distributor today for a demonstration on your own work.

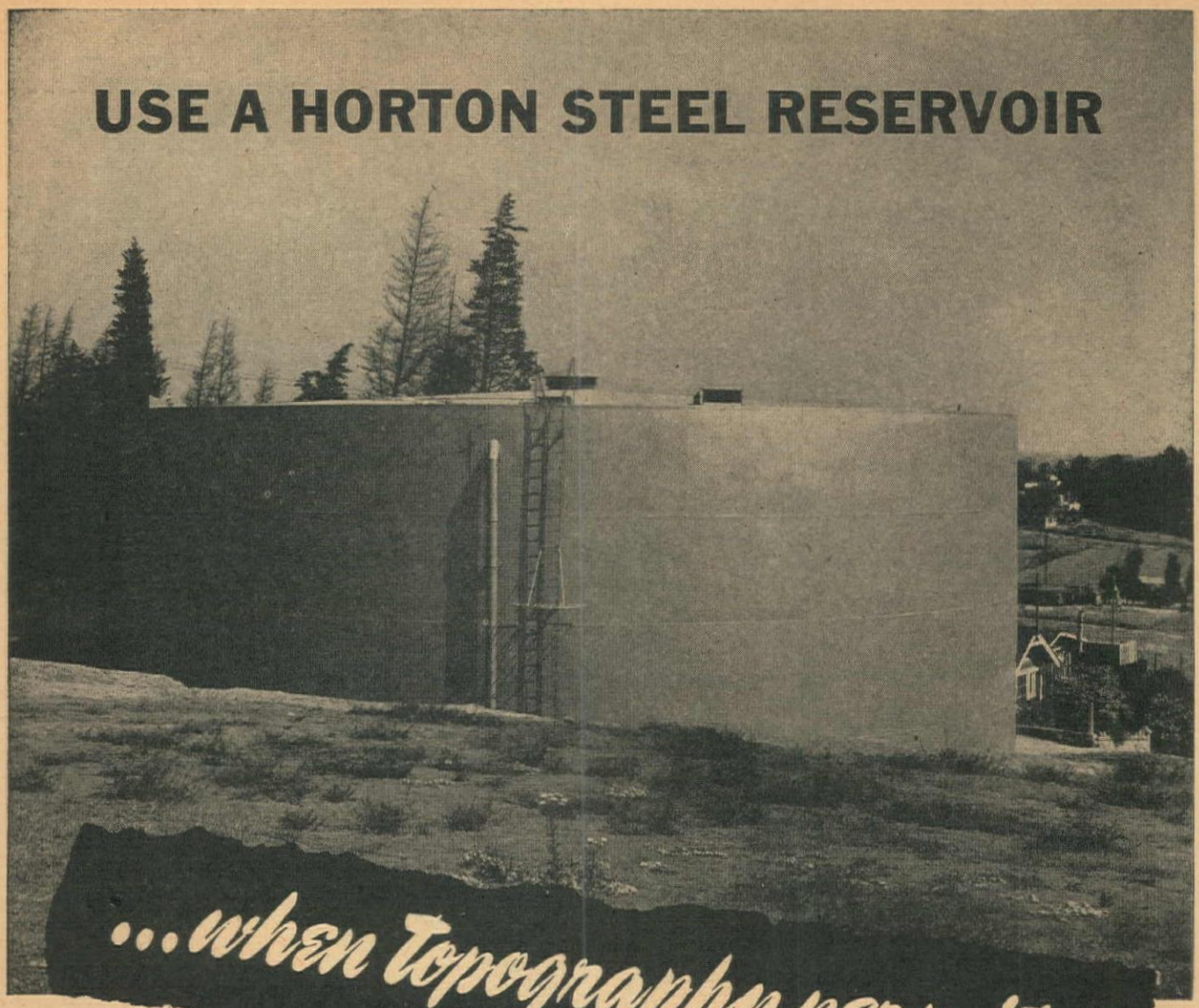
SKILSAW, INC. 5033-43 Elston Ave., Chicago 30, Ill.
Factory Branches in All Principal Cities

PORTABLE ELECTRIC SKILTOOLS

MADE BY SKILSAW, INC.



USE A HORTON STEEL RESERVOIR



...when topography permits

THE ABOVE VIEW shows how a steel reservoir may be used to provide gravity water pressure for municipal or industrial needs. This reservoir was installed by the California Water Service Company at Hermosa Beach, Calif. It is 76 ft. in diam. by 30 ft. high and holds 1,000,000 gals.

Steel reservoirs have a number of definite advantages. Steel will not crack and develop leaks if there is uneven settlement. The tank may be either welded or riveted, and the size or proportion of the structure may be varied to suit local requirements. Maintenance costs are low, for regular painting inside and outside will keep the steel in good condition. If it is desirable to place the steel tank underground, or partially so, this may be done by covering the tank with a protective coating.

Under some circumstances engineers find it desirable to recommend a standpipe-type of reservoir. These reservoirs may be given special architectural treatment to harmonize with the surrounding territory. Write our nearest office for quotations on flat-bottom steel reservoirs or elevated steel tanks for municipal or industrial service.

CHICAGO BRIDGE & IRON COMPANY

SAN FRANCISCO • ATLANTA • BIRMINGHAM
CHICAGO • HOUSTON • NEW YORK
PHILADELPHIA • DETROIT • WASHINGTON
CLEVELAND • TULSA • LOS ANGELES

Plants at BIRMINGHAM, CHICAGO, and GREENVILLE, PENNSYLVANIA

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

January, 1946 — Vol. 21, No. 1

1946 Means Action

By HENRY J. KAISER

WHAT WILL HAPPEN to our country in 1946 will not be determined by talk, but by the WILL TO WORK.

For more than 300 years, since the landing at Plymouth Rock, our people have worked their way. Once again we have worked our way to victory in war. There is no other road to peace.

A forecast of the progress of America in 1946 calls for more than a statement of ideals. There is need for ACTION —courageous and immediate action.

Number one on the program is housing. Here is an unparalleled demand which cannot be satisfied in 1946 or 1947, or even in 1948. So crucial is the housing shortage that the effort to meet it has become a crusade. It is now a matter of national honor.

Here is a wholly unique opportunity in terms of human necessity, in terms of employment, in terms of social progress. If every American would contribute something toward meeting this demand, it would generate a productive power to match or even exceed the war effort.

Our faith is based FIRST on the belief that American workmen will be as effective in building homes for themselves as they were in building ships for the war. SECOND, that manufacturers of building materials and equipment will not fail to produce the steady flow of every essential required for the volume production program on which reduced costs and lower prices rest.

In war we have just met the greatest crisis in history. Our ability to deal with the housing problem will test our capacity for peace. Not only national welfare but the American way of life is in the balance. This is the moment to take a long chance, not on the fluctuating values of the market but on our willingness to work for the common good. The record of 1946 will be written in terms of work and sacrifice.

More Government Competition

THERE IS MUCH FEELING, and rather justifiably so, among private consulting engineers over the recent announcement by the Bureau of Reclamation that it would design a huge irrigation and power facility for the government of China. Elsewhere in this issue mention is made of the first payment by China to the U. S. government of $250,000 for preliminary engineering. The total contract with this government amounts to a half million dollars.

This is a sum not to be sneezed at, and one can scarcely blame the private engineers for wishing it were coming their way. But over and above any natural desire to get in on big-paying jobs, their position is undoubtedly justified on the basis of the oft-repeated but nonetheless true remarks about government in competition with private business.

Valid arguments in favor of the work being done by the Bureau include the fact that their engineers have designed the largest dams in the world today, and that they have available the facilities of possibly the finest concrete and engineering laboratory in the country. These facts are admitted freely, but they do not make it true that Bureau engineers are the **only** ones with experience or training or ability sufficient to design great projects, or that testing facilities may not be found outside Denver.

Probably also something will be said about foreign policy and extending a helping hand to China, and like pious sentiments. Overlooking the question of whether or not the U. S. has a planned foreign policy, it is still not a valid excuse for entering into competition with qualified citizens. The helping hand will still be extended, for undoubtedly the $500,000 is our own money, lend-leased or otherwise given to China, and our foreign policy of friendly cooperation can be just as well, if not better, served by engineers not in government service. They would probably be more efficient, and would certainly be less inclined to spend time in promoting non-engineering ideologies.

Western Construction News agrees heartily that the United States should do everything in its power to assist poor, retarded China. We feel so, not only from an honestly humanitarian standpoint, but also from a selfish standpoint, for it must be obvious that a well-developed China would be one of our best customers and most fruitful suppliers of raw material. The desire to do something for China is not the question here at all—it is in this case, just as in the Authority issue—the will and purpose of some leaders of government here to destroy private enterprise, private initiative, and eventually the traditional American system of life, which, prior to the advent of those schemers into our government, had produced the highest civilization known on the face of the earth.

Careful on Postwar Execution

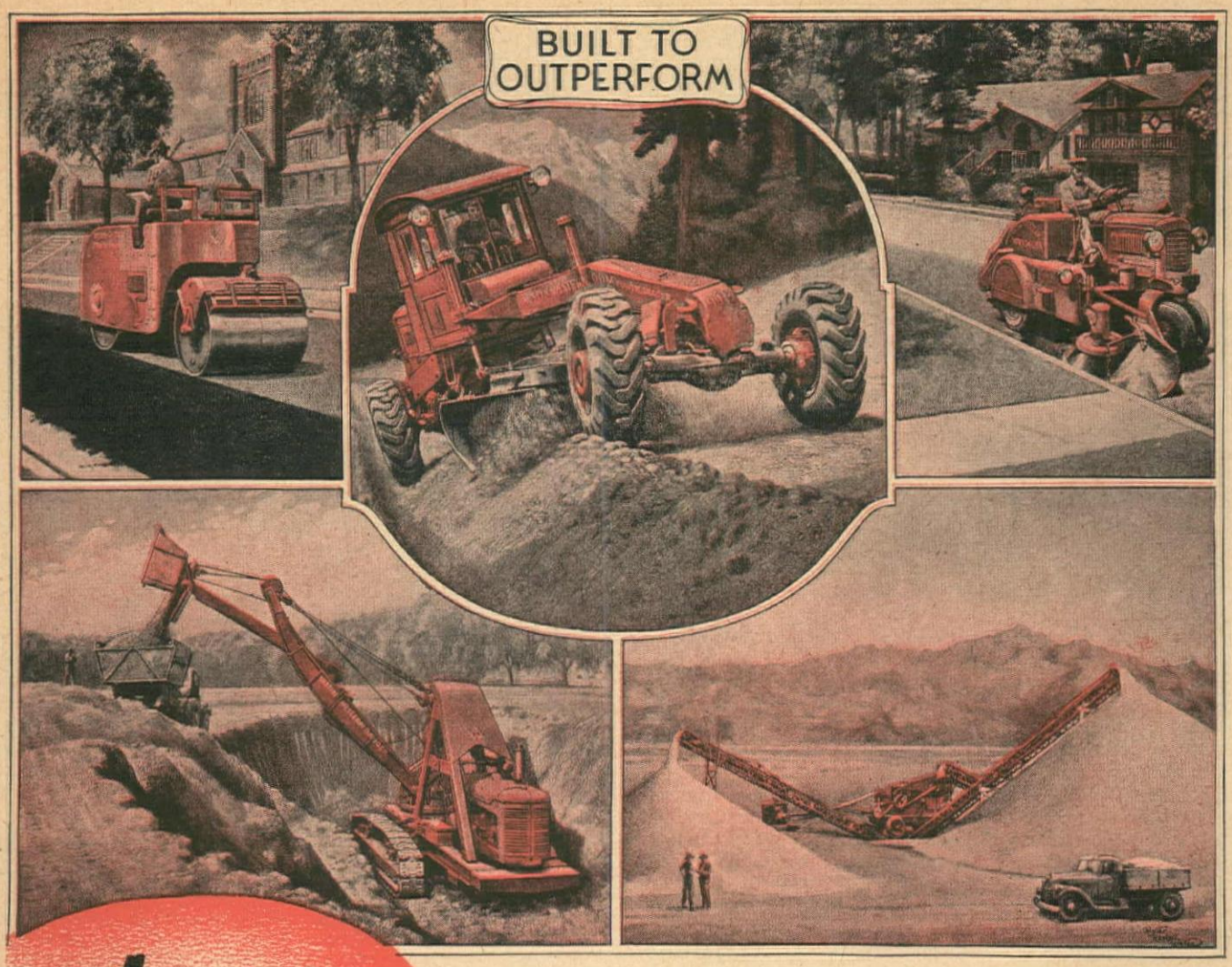
EVER SINCE JANUARY, 1943, when *Western Construction News* published the first article in any engineering journal on the need for adequate postwar planning, that subject has been widely discussed by every organization and every individual in the construction business. Many new organizations were formed to promote it, and finally the word became so common as to be trite.

Interestingly enough, however, many government and private engineering agencies **did** actually get to work, and now most state highway departments, federal agencies, municipalities, and industrial and utility companies have completely or partially developed sets of postwar plans. We will all agree this is good, in fact excellent, and will be a mighty factor in averting any economic depression in the immediately approaching years.

But we observe a tendency in many directions to immediately start construction, because the plans are ready. It is inevitable that some of the planned facilities are more important than others. For instance, a deplorable housing shortage exists. Further, practically every Western city is in desperate need of extensive additions to its sewerage facilities. And most Western highways are now inadequate to care for the traffic and in a deplorable state of maintenance. Some cities are badly in need of additional water supplies.

It is impossible for one individual to dogmatically say that one variety of construction should be undertaken ahead of all others, but every community should consider carefully which parts of its postwar construction program should be undertaken first. Even though plans are completed for a new park, for instance, or a beach-building program, that construction should not be pushed ahead of the repair of deteriorated sanitary facilities, or correction of a hazardous road condition. First things should very definitely be put first in this matter. The construction industry does not need to do all its work in one year, nor should engineers or agencies strive to achieve personal glory by having a great project built, if it is not of first importance at this time.

Proper order in timing public works and private construction will result in better completed facilities for the citizens, more economical construction, and a prolongation of the prosperity so much desired by everyone.



Built to Outperform

Whether it's . . .

√ The matchless performance of All-Wheel Drive and All-Wheel Steer in a Power Grader . . .

√ Vibrationless operation in a Road Roller . . .

√ The "no conveyor" feature in a Street Sweeper . . .

√ ¾-swing for greater work output in a Crawler Shovel . . .

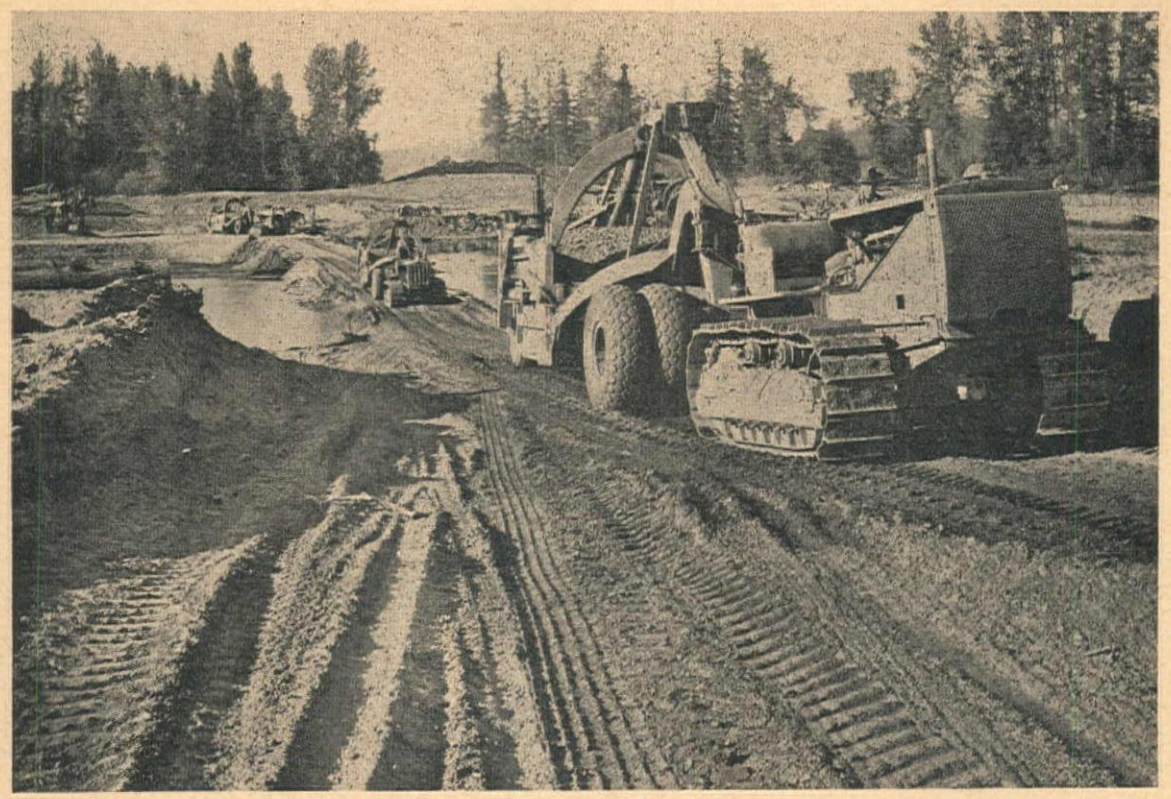
√ Deeper jaws and higher operating speeds, for greater capacity in a Jaw Crusher . . .

. . . whether it's one of these things, or something else, you can buy any Austin-Western product with confidence that it will OUTPERFORM in ways that mean more work, better work—faster and cheaper.

AUSTIN-WESTERN COMPANY, AURORA, ILL., U.S.A.

ARIZONA—SMITH BOOTH USHER COMPANY	Phoenix
CALIFORNIA—EDWARD R. BACON COMPANY	San Francisco 10
SMITH BOOTH USHER COMPANY	Los Angeles 54
COLORADO—LIBERTY TRUCKS & PARTS CO.	Denver 1
MONTANA—WESTERN CONSTRUCTION EQUIPMENT COMPANY	Billings
WESTERN CONSTRUCTION EQUIPMENT COMPANY	Missoula
NEVADA—C. D. ROEDER EQUIPMENT CO.	Reno
NEW MEXICO—WESTERN STATES WELDING & PRESS CO.	Albuquerque
OREGON—COLUMBIA EQUIPMENT COMPANY	Portland 14
UTAH—WESTERN MACHINERY COMPANY	Salt Lake City 13
WASHINGTON—COLUMBIA EQUIPMENT COMPANY	Seattle
WYOMING—WILSON EQUIPMENT AND SUPPLY CO.	Cheyenne

WESTERN CONSTRUCTION NEWS
JANUARY • 1946



HEAVY TRACTORS and scrapers haul heavy rock gravel across a temporary bridge and fill over the Santiam river, to construct the Salem-Albany cutoff. The haul averaged 1,000 ft. and the load about 16 cu. yd.

Oregon Builds Regional Link

New highway location by-passes arduous mountain route bottleneck with a 10-mile short cut to save 2 miles in the Pacific Highway — The 200-ft. right-of-way provides for the future expansion to a 4-lane structure — Right-of-way deeds prohibit advertising structures on abutting property within 500 ft. of freeway

By F. D. EASON
Division Engineer
Oregon State Highway Department
Salem, Oregon

THE PACIFIC HIGHWAY (U. S. 99-E) in Oregon is the main route north and south through the state. The north end is at the state line on the Columbia River near the state's metropolis, Portland, from whence it winds for 340 miles through the most populous portions of the state to the California state line. Since it serves the greater portion of the state's population, it received the first and greater attention in the early days of Oregon's highway construction program and was the first highway in Oregon to be paved throughout its length.

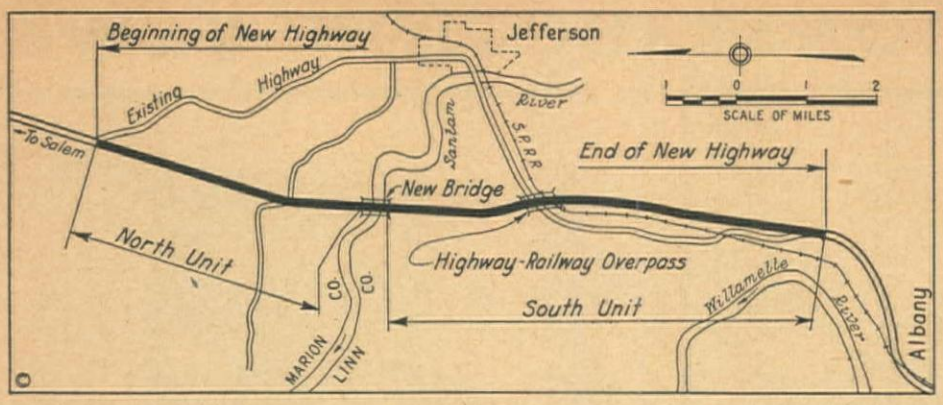
In those early days of highway building, Oregon was very much in the mud in road transportation, and speed and economy were prime factors in the road program. Consequently standards were of a lower order, and alignments were very poor as measured by present-day needs. The Pacific Highway in Oregon was no exception to this rule and many sections, though satisfying the traffic needs of the day, were so replete with sharp curves, that they have become serious bottlenecks for present-day traffic. Just prior to World War II, and even during the war period because of war requirements, a number of these bottlenecks have been reconstructed to modern standards, and the postwar highway construction program will see all remaining tight spots straightened, widened and modernized to present and anticipated traffic needs.

Part of inter-regional network

The Pacific Highway is one of the selected routes of the Federal Strategic Highway System and the Steiwer Hill-Albany project is being constructed to the standards and in accordance with the federal regulations applying to that class of projects. Right-of-way, 200 ft. in width, has been secured to provide for a future four-lane highway. The present improvement is being made on the east side of the center line of the right-of-way and provides a 50-ft. width of subgrade, 24-ft. width of concrete pavement, with 10-ft. crushed rock shoulders.

Interesting and important features of this project are the controlled access and the agreement with all adjacent property owners for limited advertising. No access to the new highway is permitted except as is now necessary and agreed to. Right-of-way deeds contain the following clauses with reference to advertising:

"It is further agreed, as part of the



STEIWER HILL-ALBANY highway location showing the improved cut-off with new bridge over the Santiam River and the overcrossing at the Southern Pacific railway junction. The new route will eliminate about 4 mi. of narrow, circuitous mountain road.

consideration above stated, that no part of the abutting private property of the grantors within a distance of five hundred (500) ft. from the above described land shall ever be used for the placing and/or maintenance of advertising signs, bills or posters; provided, however, that these grantors reserve the right to use any part of said private property for the advertising of farm names or for the sale, renting or leasing of said property or for the sale of livestock or commodities or products produced or raised thereon. These burdens and covenants shall run with the land and shall forever bind the grantors and their successors in interest."

Contracts awarded

Among the several bottlenecks upon which improvement was requested by the War Department, and the last one to be put under contract, is the Steiwer Hill-Albany Section of the Pacific Highway south of Salem. The section was let by the Oregon State Highway Commission last May in two unit contracts for grading and paving, and two unit contracts for bridge structures. The new line leaves the existing Pacific Highway at Milepost 63.16, about 9.3 mi. south of Salem, and follows a direct route to the end of the improved section just north of Albany at Milepost 75.33. The total length of the new line is 10.17 mi. and thus is a saving of 2 mi. over the existing route.

Warren Northwest, Inc., Portland, Ore., bid in the two units for grading and paving, with the R. A. Heintz Co., Portland, Ore., as subcontractor for the clearing, grading and culverts. The work got under way soon after the award, with clearing and culvert installations preceding the grading operations on the North Unit. The 160,000 cu. yd. of roadbed excavation and 140,000 cu. yd. of gravel borrow on the North Unit was pushed during the summer period, while clearing, culverts and other preparations were being carried out on the South Unit. The roadbed excavation was performed by four tractor carryall units of 18-cu. yd. capacity and one unit of 12-cu. yd. capacity, two 10-cu. yd. scraper units, and one 15-cu. yd. unit. Also used were a ripper, two push dozers and two grader blades.

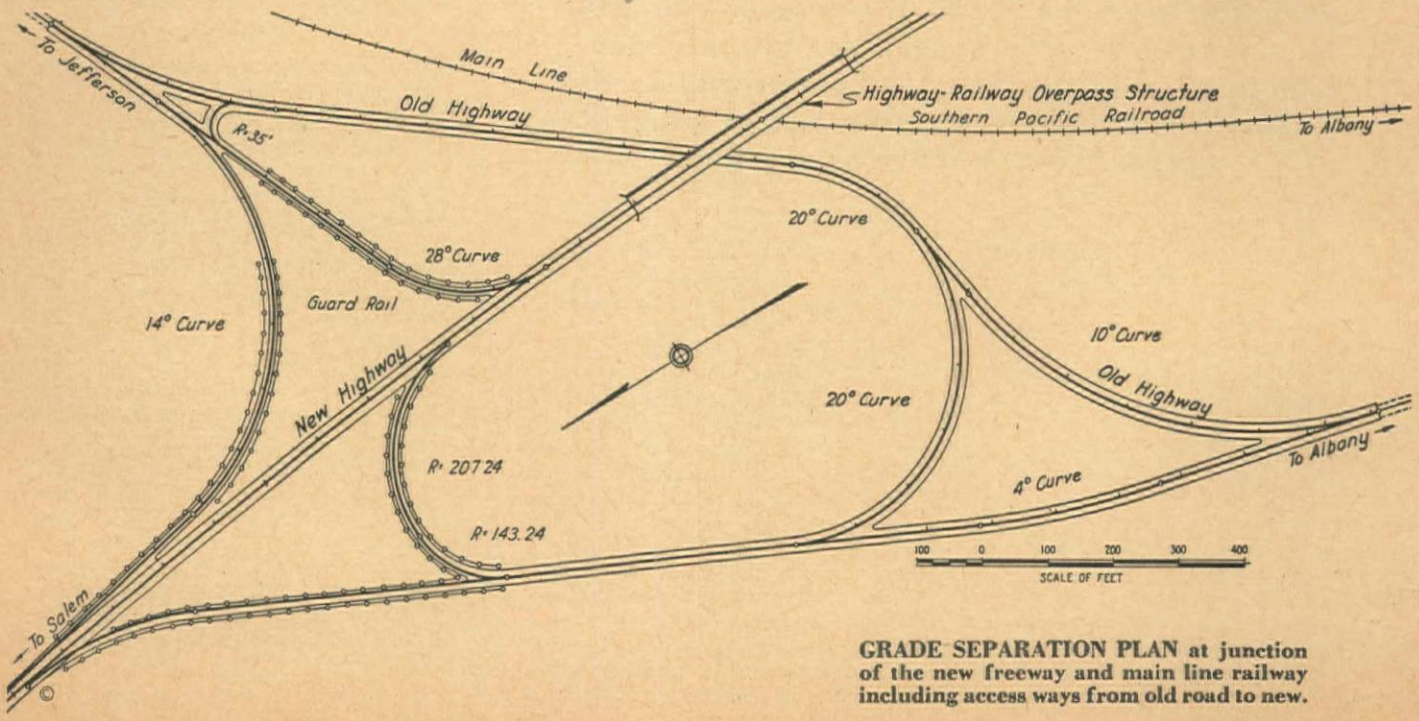
The gravel borrow, which came from the Santiam river bar at the south end of the North Unit, and made the grade on the south mile of the section, was loaded by a 1¼-cu. yd. shovel into 10-cu. yd. Euclids and the rubber-tired units listed above. Later 8-cu. yd. trucks were substituted for the Euclids. This latter work was accomplished in September and early October while the river was at its lowest level, and simultaneously the 54,000 cu. yd. gravel borrow for the South Unit just south of the Santiam river crossing was also excavated from the same bar and hauled across the river on a temporary log bridge constructed across the main channel for the purpose and as a means for the bridge contractor, Montag & Sons, to get materials and equipment from his north side set-up to the south side piers.

While the gravel borrow was in progress the contractor used the tractor-operated equipment on the grading work on the South Unit north and south of the Southern Pacific Railroad overcrossing. By mid-November, the grading work was complete on the North Unit and of the 331,000 cu. yd. total on the South Unit approximately 80 per cent was moved into place. The major portion of the uncompleted yardage was in the big cut adjacent to the overcrossing, and, since 80 per cent of this cut must be moved across the S. P. main line railroad for the north approach to the overcrossing structure, the movement must await the completion of the structure. The contractor plans to complete this grading work just as early in the spring as weather conditions will permit.

In the meantime, the contractor is opening up the old Kern & Kibbe quarry a mile southwest of the overcrossing to provide the 8,000 cu. yd. of riprap required under the North Unit contract.

Paving rock production

Since the completion of all work on



GRADE SEPARATION PLAN at junction of the new freeway and main line railway including access ways from old road to new.

both units is called for by Sept. 30, 1946, the paving work must get under way in the early summer period of next year, so Warren Northwest, Inc., erected their crushing and screening plant on a big gravel bar on the north side of the river 1,000 ft. west of the new grade. Paving aggregates, base course material, crushed shoulder surfacing and cushion materials were produced and stockpiled near the bridge end for the North Unit use. This operation was completed in December. The plant was then moved to the South Unit for the production of the needed materials for that section.

At the railroad overcrossing adjacent to the existing Pacific Highway, 1½ mi. south of Jefferson, provision has been made for complete separation of traffic to and from the old and new highways in either direction by the construction of ramp fills to the new road and realigning the old highway under the new overcrossing structure. This cloverleaf arrangement also provides for the future addition of two lanes on the new route.

The south end of the project traverses a section that is being developed for small tract home sites close to the city of Albany. In order to better control this traffic, a service road is being built along the eastern right-of-way with entrances to the new highway at the north and south ends only. Eventually a similar service road will be built along the expected development on the west side of the highway.

As is indicated by the accompanying sketch map, the location of the new line is on the most direct and shortest route between the termini, topography and existing railroad considered. The four light curves, easy grades and ample sight distance, together with the 2-mi. saving in distance will make for faster and safer speeds with appreciable time saving.

Paving operations

The 24-ft. concrete pavement is to be built in two 12-ft. strips with a deformed joint and tie bars between the strips. The specifications call for a uniform 8-in. slab thickness, laid on a four-inch gravel base, smoothed to exact grade with ½—0 in. crushed cushion material. There will be no expansion joints in the pavement except at the bridge ends, and no dowels are required.

The grading and paving contracts of the two units cover a net total distance of 9.85 mi. of main highway, plus ramps, connections and realignment of old highway at the overcrossing junction. The principal items of the two units totaled: 631,000 cu. yd. roadbed excavation and borrow, 8,000 cu. yd. rock riprap, 84,000 cu. yd. rock base and crushed shoulder material, 140,000 sq. yd. concrete pavement; and the total contract amount is $772,724.50.

Overcrossing structure

The bridge work within the project

HEAVY DUTY DIRT MOVERS used on the south unit to transport 54,000 cu. yd. of gravel borrow, top. Tractor and scraper units loading sub-grade material for north unit. 16 cu. yd. outfit averaged 8 trips per hr. over 1,000 ft. haul in Santiam River.

GRAVEL BAR BUILT up by contractor to facilitate operations at Pier No. 3. Sheet piling being driven for Pier No. 2 in the background, upper. Pouring a reinforced concrete pier cap, and in background, excavating and driving piling for Bent 4, lower.

was let in two contracts. The overhead structure was taken by Lindstrom Bros. of Portland. This contract covers the construction of a 395-lin. ft. reinforced concrete deck girder bridge on concrete columns supported on spread footings on a gravel foundation. There are nine spans: two 58 ft. (one will provide for the rerouting of the existing Pacific Highway), one 56 ft. 6 in. to span the main line S. P. Railroad, two 54 ft., one 44 ft., one 42 ft. 6 in. and two end spans of 12 ft. and 15 ft. 7¾ in. The deck roadway is 30 ft. between curbs and provides also one 3½-ft. sidewalk on the east side. Handrail is of the Oregon standard metal type.

Considerable difficulty was encountered in securing a stable foundation for the columns supporting the spans over the railroad, requiring a lowering of the footings to a considerably greater depth than plan elevations. This operation also caused a settlement and movement of the railroad roadbed and concrete box culvert under the railroad with attendant constant track maintenance.

Progress on this contract indicates a completion about Jan. 1st. Contract bid amount is $64,160. The supervision of this work is under Bridge Resident Engineer Joe Skelton.

Santiam river bridge

The Santiam river crossing and ten composite type pile trestles are under contract to C. J. Montag and Sons of Portland.

The composite trestles consist of two 2-span structures of 19-ft. and 21-ft. spans, with 44-ft. deck width and no sidewalks. The other eight trestles total 31 spans of 21 ft. and 25 spans of 23 ft., all with 30-ft. roadway and 3½-ft. sidewalk along the east side.

The main bridge structure, the crossing of the Santiam river, provides for two 50-ft. reinforced concrete deck girder spans on the south end, one 180-ft., one 240-ft. and one 180-ft. structural steel tide arch spans on concrete piers; and four 50-ft. reinforced concrete deck girder spans on the north end for a total distance of 910 lin. ft. The plans call for 30-ft. roadway width and two 3½-ft. sidewalks. The pier foundations were carried to 21 ft. below the stream bed. A concrete seal and steel sheet piling was used for the footings.

The piers are two octagonal tapered columns per pier with a web wall between columns extending from the deck to low water elevation. The contractor has spent the past summer and fall in pier and bent construction of this structure. Three piers are complete to deck, and the fourth is complete up to low water elevation. It is planned to complete all bents and the remaining pier by March when the steel erection can get under way. In the meantime other bridge crews will get the 10 trestles under way, so as to be in the clear for the paving work, which should start by May 15th. All bridges under this contract have the Oregon standard steel handrail.

Aggregate materials for the Montag contract were produced by Vernie Jarl with a gravel screening plant set-up on the north bar below the bridge site. This material was all produced during the early summer and stockpiled near the north bridge and for easy handling for the concrete operations as the work progressed.

Personnel and costs

The Montag contract is under the direct supervision of L. L. Jensen and O. R. Kennen, resident engineer and inspector. The amount of this contract is $545,923.50.

The total estimates of the grading and paving contracts are: North Unit, $320,400; South Unit, $452,324.50, and a total for all contracts on the project of $1,382,808. This, with 10 per cent allowance for engineering and contingencies, gives a grand total estimated cost for the project of $1,521,089.

Work on the North Unit grading and paving contract is performed under the direction of Hedda Swart, resident engineer, and the South Unit is under the direction of A. V. Benedict, resident engineer.

The entire project is under the general supervision of F. D. Eason, division engineer; G. S. Paxson, bridge engineer; H. G. Smith, construction engineer; R. H. Baldock, state highway engineer; and C. B. McCullough, assistant highway engineer.

For the contractors, Warren Northwest, Inc., appointed Henry Walder general superintendent; R. A. Heintz Co. has R. A. Heintz as project manager and W. C. Smith as general superintendent; Lindstrom Bros. named D. E. Johnson project manager and Elmer Lindstrom general superintendent for the bridge work.

Donald R. Warren Engineers Awarded Navy Merit Citation

DONALD R. WARREN CO., consulting engineers of Los Angeles and San Francisco, Calif, have been awarded a Navy Certificate of Achievement for the excellent work carried out by the firm on the War Production program.

The letter recommending the award was signed by Comdr. S. J. Singer, and the certificate itself awarded on Dec. 6, 1945, by H. Struve Hensel, Assistant Secretary of the Navy. The award is given, it states, "In recognition of exceptional accomplishment in behalf of the U. S. Navy and of meritorious contribution to the national war effort." Among the projects on which part or all of the engineering design was performed by the Warren organization, were the Rough and Ready Island annex to the Oakland Naval Supply Depot, near Stockton, Calif., the reserve fleet berth pier at Mare Island Navy Yard, the Seabee center at Pleasanton, Calif., and other Navy projects.

Heaviest Army Runway Paving

Fairfield-Suisun Airfield, with sub-base of 48 in. of crushed rock and concrete surface 18 to 27 in. thick, being constructed to accommodate planes heavier than any now known—Runways parallel and offset, with control center in between, offers most economical operation

FAIRFIELD-SUISUN Army Airfield project is a joint venture being constructed under the supervision of the U. S. Army Engineer Corps by Morrison-Knudsen Company, Inc., of Boise, Ida., and Stolte, Inc., of Oakland, Calif. The airbase is favorably located about 6 mi. northeast of Fairfield, California, in a fog-free area where the winds are practically constant in direction.

The runways are orientated in harmony with the prevailing winds so that planes will have the advantage of the additional lift of the wind in both take-off and landing approximately 80 per cent of the time. This is accomplished by two 8,000-ft. runways located with their longitudinal axes offset 1,000 ft., or the width of the operations center, which is situated between the two runways. The arrangement of the field eliminates the necessity for a long taxi run to place the plane in a starting position or to return to the terminal area. This feature alone makes the Fairfield airport an outstanding accomplishment in airfield design.

Layout is not the only unusual feature involved in the construction of this project, for it is designed with a thought of larger planes in the future.

New runway

The new runway will be the heaviest paved landing strip in existence, with a total of 64 in. of prepared material above the compacted subgrade. In preparing the runway the topsoil was excavated to a depth of 6 ft. and the underlying subsoil ripped and compacted with heavy sheepsfoot rollers. The subbase of 48 in. of 3-in. or less crushed rock was applied in layers and compacted with a 150-ton pneumatic-tired roller. Over the base rock, 10 in. of top course of 1-in. maximum size was laid, and this topped with 6 in. of asphaltic concrete.

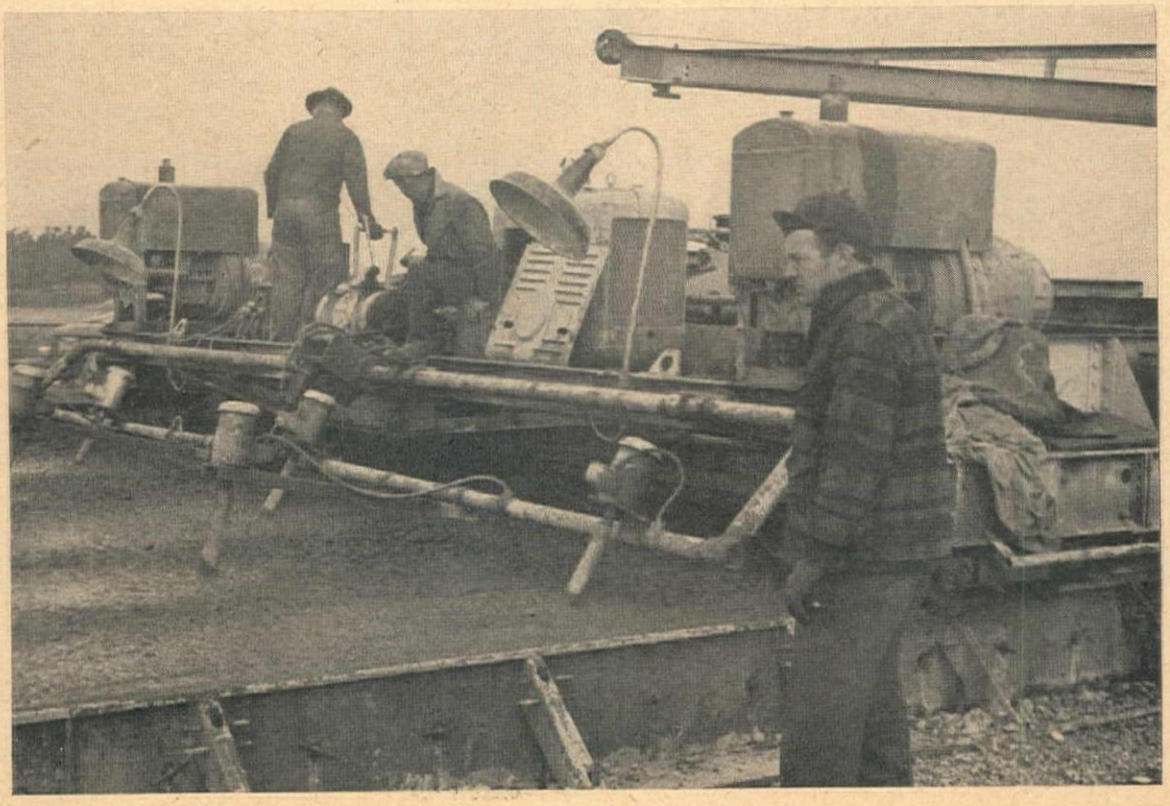
The main runway is 200 ft. wide and is flanked with 50-ft. shoulders that have the same subbase rock course but with the asphaltic paving reduced to a 2-in. thickness. Beyond the shoulders on both sides are 100-ft. parking strips of compacted earth with an oiled surface.

Asphaltic paving will cover 6,000 ft. of the new runway and the remaining 2,000 ft. of the 200-ft. center strip will be paved with class A Portland cement concrete. This pavement is a minimum of 18 in. thick at the center line and continues the same depth to a point 25 ft. from the pavement edges. At this point the concrete depth is increased until it reaches a maximum of 27 in. at the edge of the pavement. This unusually heavy pavement, which is designed to withstand a 300,000-lb. gross load and the 25 per cent increased load factor of the shoulders illustrates pioneering that is being accomplished in the building of this Army Transport Command base. It is apparent that this runway and taxiways are intended to withstand the terrific shock and vibration that four to six large engines can transmit to the pavement when their full horsepower is turned on in either warm-up or take-off.

Ample surface drainage is assured by a transverse slope of 1½ per cent from the center line of the runway. This slope is increased to 2 per cent at the shoulders and continues on that slope to the 10:1 open gutters located on both sides of the runway area. Subbase drainage is accomplished by the installation of a line of open-joint 6-in. pipe laid in a crushed rock filter situated at the lower edge of the shoulders and just above the top of the compacted subgrade. This collecting line is connected to the open drain by lateral pipe at intervals of 200 ft.

Paving

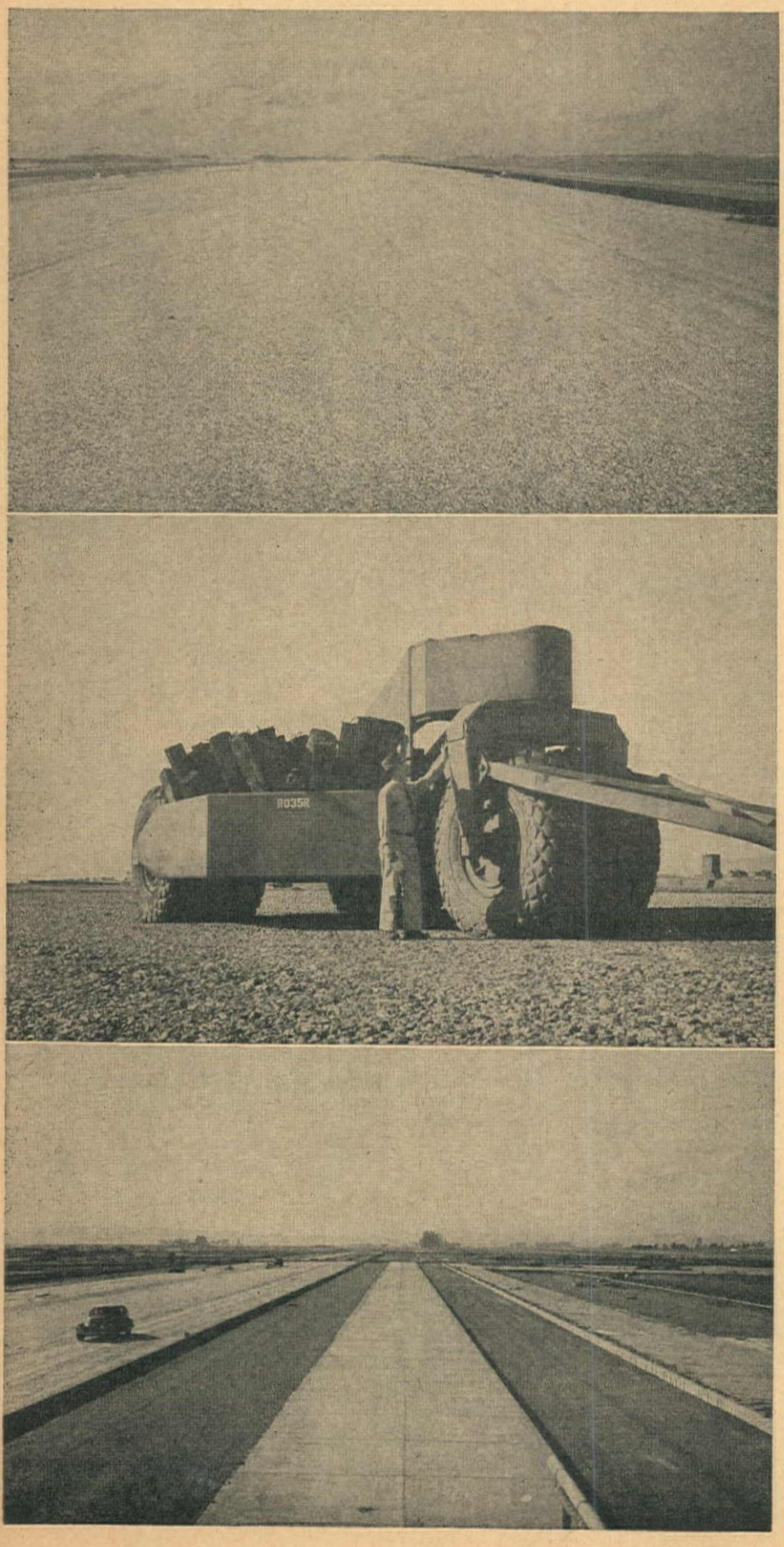
The asphaltic concrete for the runway consists of 3½ in. of binder course, then



TO PREVENT SLUMP toward low side, vibrator plungers were offset into two rows of three each. Runways slope 1½ per cent.

a track coat, topped with 2½ in. of surface course and a seal coat. The hot plant which will supply this mix is a compact 125-ton per hr. unit fed by a belt conveyor running in a tunnel under the stockpiles.

Concrete is prepared in a double dry batching plant with two 2,500-bbl. cement silos. One batcher is semi-automatic in operation and the other is fully automatic. The mix is delivered from the batching plant in 3-compartment dump trucks, each compartment of which contains a 1⅓-cu. yd. charge. This fleet of trucks delivers the dry batch concrete to two pavers working in the runway area, one located on each side of the strip being poured. They in turn wet mix and distribute the concrete over the 25-ft. strip. The concrete is necessarily mixed with a low water-cement ratio to produce a stiff batch that will retain the 1½ per cent side slope.



The initial strip poured has a line of dummy dowels set at 18-in. intervals and attached to the form rails with wing bolts. When the forms are stripped the wing bolts are removed in order to pull the forms and a bar equipped with a claw attachment withdraws the dummy dowels with the aid of the re-inserted wing bolts. When the contiguous strip is poured the permanent 1½-in. steel dowels are inserted in original holes left by the dummy dowels and the second strip poured around them.

Steel side rail forms are used with the usual pin and wedge brace fastenings. Supported on the rail forms and following the pavers, the contractors have employed self-propelled spreader and finishing machines. Attached to the spreader and supported on tubular steel frames equipped with a hydraulic lift and controls are six Viber Company internal slab vibrators. The vibrators were originally mounted in a straight line across the 25-ft. strip approximately 4 ft. apart. In this position they caused the concrete to slump excessively to the lower side of the slab, thus destroying the 1½ per cent slope.

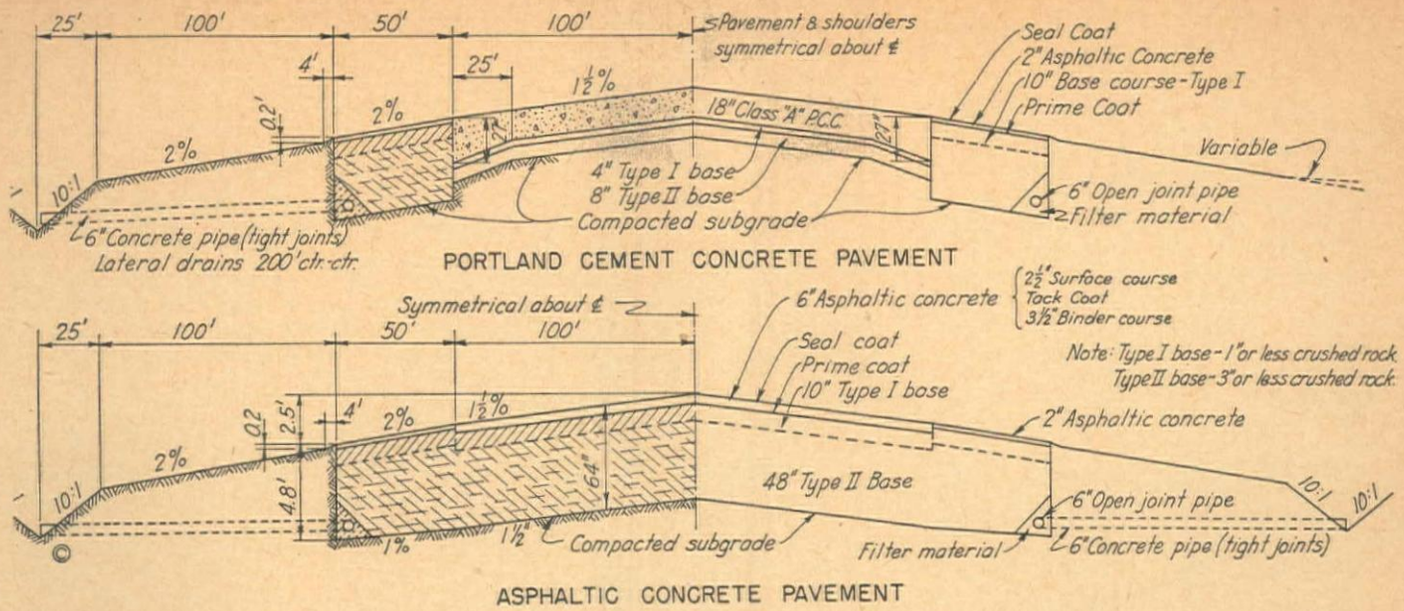
To correct this difficulty the vibrators were staggered in two batteries of three machines set in lines 4 ft. apart and at the same interval across the slab. The 3-in. stingers are submerged to the full depth of the 18-in. slab and run at 9,500 r.p.m. In the new position the vibrators produce satisfactory concrete density without the detrimental flow.

An interesting innovation is the vibrator drive screed used to cut the finished surface into 12½-ft. squares for the insertion of expansion joint blanks. The screed is carried on the rails behind the finisher and can be lowered onto the top surface of the slab at the will of the operator. After the surface has been marked with the vibrating screed the crew of hand finishers insert the greased blanks from their carriage following the machine finisher. As soon as the concrete is sufficiently cured the strips can be removed and the expansion joints filled with an asphaltic compound. Paul R. Stevens, M-K paving superintendent, states that this time- and labor-saving machine was devised on the project.

Rock plant and aggregates

The subbase rock was furnished from the contractor's quarry opened at the site of an old cement plant, locally known as "Cement." A Portland cement plant operated here from 1900 to about 1926, when it was abandoned. This old quarry furnished a good grade of limestone, and to move it to the runways a

NEW 8,000 FT. RUNWAY with the 48-in. base course completed, top. It was compacted with the 50-ton pneumatic-tired roller shown, center. The partially completed Portland cement pavement was laid in 25-ft. strips.



TYPICAL CROSS-SECTIONS of two principal runway types at Fairfield base.

short haul road of 3½ mi. in length was constructed.

However, the interbedded argillaceous members of the deposit turned to mud when winter rains saturated the quarry. The clay content screened out readily during dry weather operations, but caused the abandonment of the pit for the wet season. A superior grade of rock is now being shipped from a deposit near Marysville, Calif. The 18,000-ton per day rock plant at "Cement" quarry was described in the October issue of *Western Construction News*.

The aggregates supply for the concrete used on the project is delivered to the batching area by rail from Marysville and dumped into pockets below the tracks. From the pockets the previously graded aggregates are elevated by conveyor belts to four stockpiles ranging from a maximum size of 2 in. to sand. The various sized aggregates are transferred to the batching plant, located just north of the stockpiles, by another conveyor belt fed by draw chutes in the tunnel that runs under the aggregate supply.

Incidentals

In addition to the airstrip the contractors have installed over 30,000 ft. of storm sewers on the project. Included in this installation are 3,000 ft. each of 72 and 75-in. precast concrete pipe sewers. Unfortunately, the timing of the construction in the winter season has not allowed the surface drains to be sufficiently completed so as to alleviate the contractors' seasonal struggle with mud.

The relocation of the Sacramento Northern Railroad to a position outside the airfield area and the construction of a sewage disposal plant are among the major items to be undertaken by the contractors. Critical electrical gear for the railway is not yet available, and for that reason the relocation work is delayed, although the existing roadbed runs through several of the new building sites.

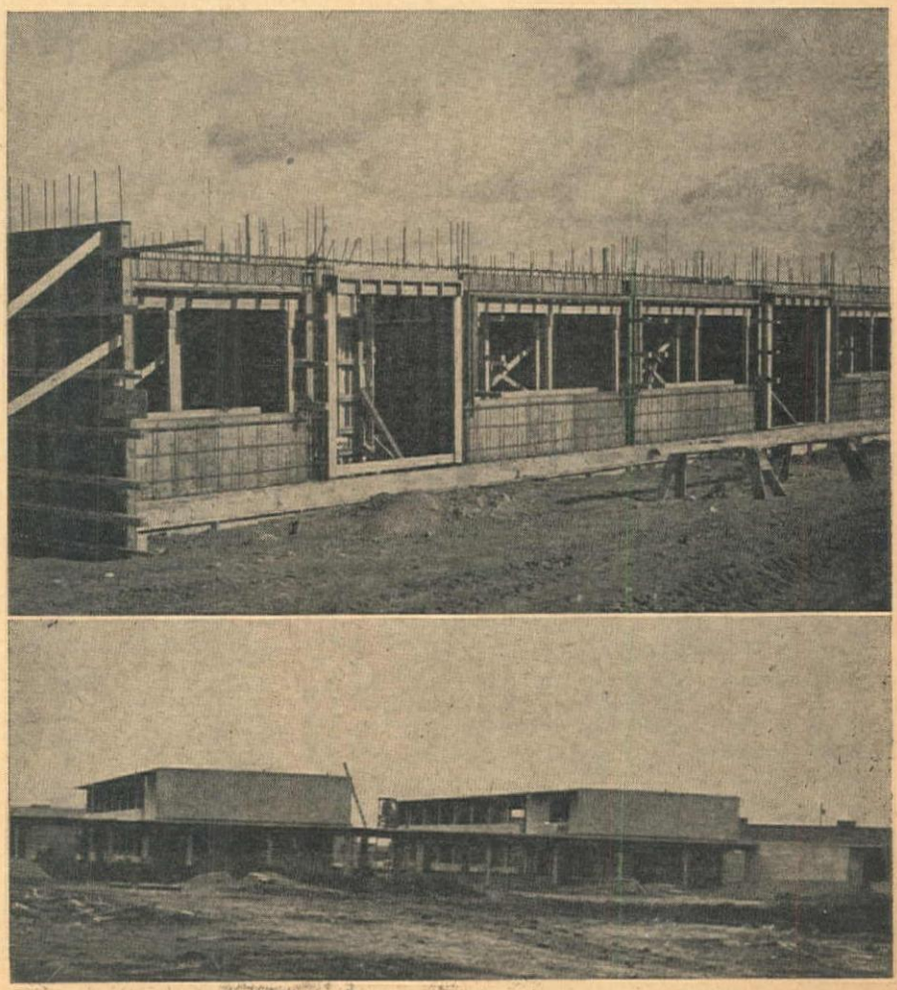
The completion of these buildings is held in abeyance until such time as the track can be removed. Concrete for the buildings thus affected has been poured on each side of the track and the intervening gap will be closed when the rails are removed from the area.

Buildings

To fulfill the extensive building program called for on the project and to overcome the shortage of dimensioned lumber and skilled architectural concrete form carpenters, Stolte, Inc., has set up a lumber manufacturing area on this project. All buildings are reinforced concrete and the extent of the building program will require great quantities of form lumber.

The mill consists of two 8-in. band resaws, a 4-head sticker, circular rip and cutoff saws and several variety saws at the head of the production benches.

REINFORCED CONCRETE buildings at Fairfield-Suisun; above, officer quarters, below, enlisted barracks. Ample light is provided and access is by covered arcade.



With this equipment the contractors are able to resaw and finish the heavy lumber now available from the mills into their specific requirements. The yard is laid out with several parallel production benches for the purpose of assembling form panels in mass production.

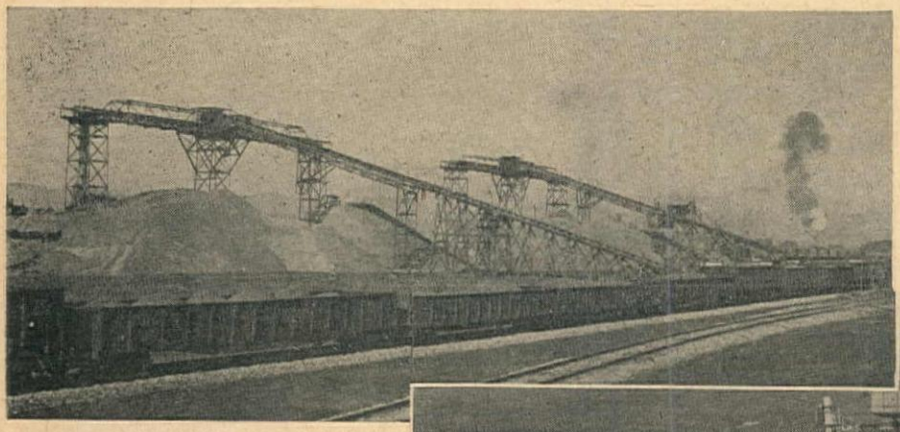
To accomplish this Fred Weiss, resident engineer for Stolte, Inc., directs a six-man staff of engineer-draftsmen in the detailing of complete form plans from the construction drawing. Each panel is detailed, with a code designation for each panel. Two copies of the prints are made, one going to the yard where the carpenters prefabricate, mark and oil each panel needed, the other print being delivered to the construction area together with the finished panels, to guide the form erection crews.

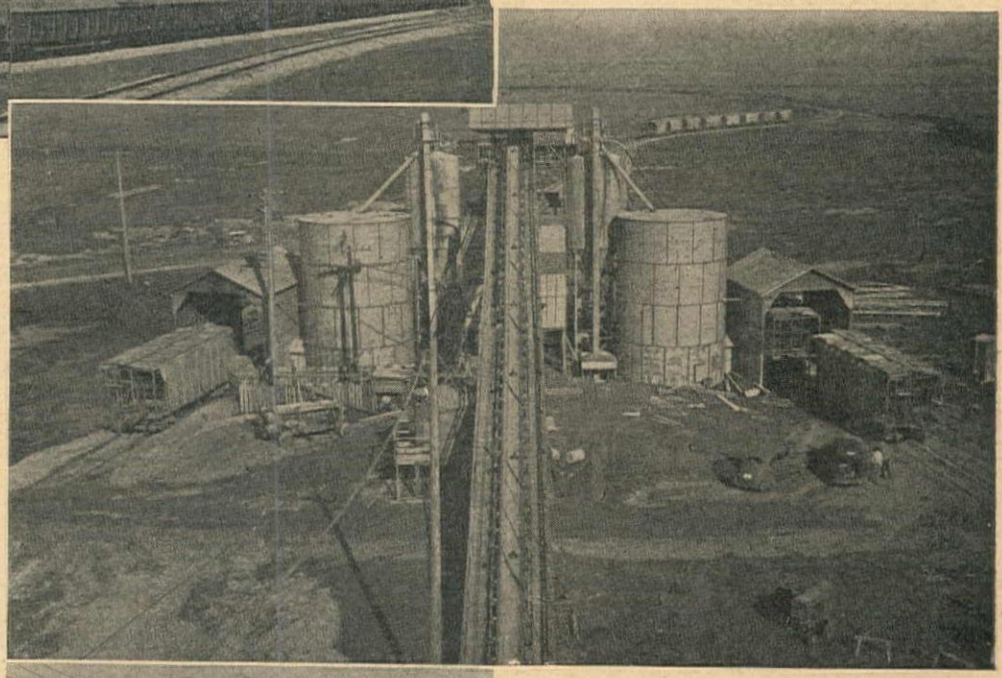
Where several buildings of the same architectural design are to be erected, the forms can be used several times to save time and lumber. Plywood is now available for the form sheeting and is used in all current forms. All lumber and finished panels are moved and distributed by mechanical carriers. The work is always kept stacked close to the workmen on carrier skids. No time is wasted in repiling or hand-moving any material.

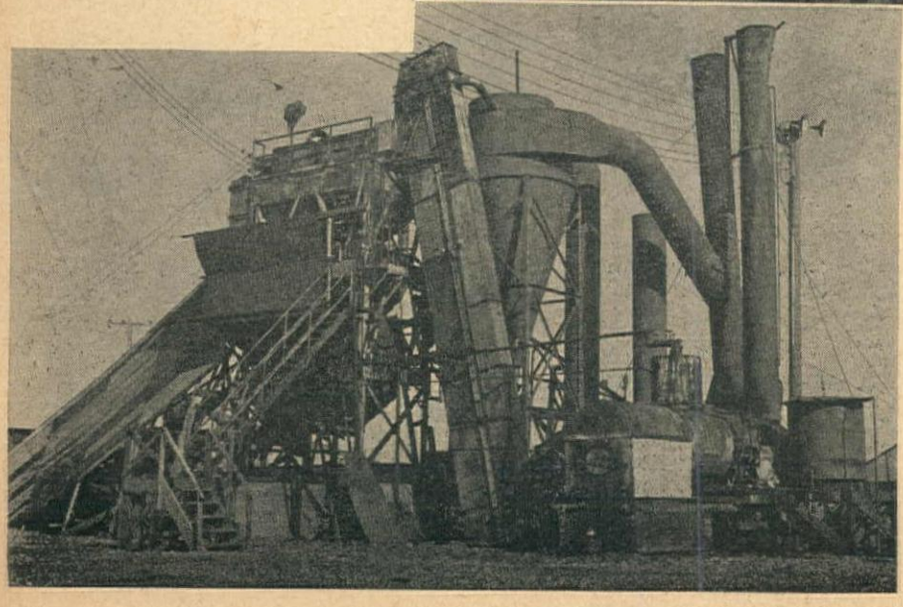
Each machine in the mill area is served with a pipe connection from an overhead cyclone blower, which removes chips and sawdust to a large bin. The refuse from this bin is regularly removed in trucks to reduce fire hazard in the area.

The principal buildings now under construction for the airbase include a two-story administration structure, freight and passenger terminals, operations building, crash station, officers' club, seven two-story enlisted men's barracks and consolidated mess hall, 28 bachelor officer quarters, field house, post exchange and theater, a new hangar, hospital, chapel and incinerator. All buildings will be fireproof construction of reinforced concrete.

Concrete for these buildings is wet batched and delivered to the site in transit-mix trucks. The mix is 6 sack per cu. yd., designed to develop 3,400 psi. concrete under standard tests. The maximum size of aggregate used in the footings is 1½ in., while for the walls and slabs ¾ in. is maximum size.







AGGREGATES FOR THE PROJECT are sized and shipped from Marysville, Calif., by railway cars and conveyed from the track pockets to the stockpiles, above. The cement batching plant, with two 2,500-bbl. silos, is equipped with one automatic and one semi-automatic batcher, right. Asphaltic concrete for the runway pavement will be prepared in a 125-ton per hr. hot plant, below. The most modern equipment is used throughout by Morrison-Knudsen Co., Inc., contractors on the runway paving. Maximum materials handling efficiency is secured in aggregate works by extensive use of belt conveying systems.

Personnel

Col. L. F. Rhodes, Sacramento district engineer for the U. S. Engineer Department, is in over-all charge of the construction, and Capt. Kelley is resident officer in charge of construction.

For the joint venture, James N. Wells is project manager, a young man with an impressive record of construction administration. J. B. Kirkpatrick is office manager.

The Morrison-Knudsen personnel is headed by A. H. Johnson, general superintendent, and M. Hjalmarson as chief engineer. Stolte, Inc., representatives are George Waters, project manager; Elof Gustafson, general superintendent; and Fred Weiss, resident engineer.

Donald R. Warren Co., engineers of San Francisco and Los Angeles, prepared the plans and specifications for the buildings, and the Sacramento Engineer District designed the runways and operations center for the Army Transport Command.

Lining Gives Smooth Concrete Finish

Dense, smooth concrete surfaces required for separator structures at Southern California synthetic rubber plant secured by use of new form lining material, Hydron, an absorptive substance eliminating air pockets on surface of finished concrete

IN MEETING RFC specifications for separator structures of a dense and smooth concrete surface at the Southern California Synthetic Rubber Project, the Fred J. Early, Jr., Company, San Francisco contractors, experimented with a technique of forming concrete using absorptive lining panels which, according to W. J. Nicholson, engineer for Early on the job, proved remarkably successful.

The separators, part of a $300,000 industrial waste disposal system to be erected for the co-polymer plants operated by United States Rubber Company and the Goodyear Synthetic Rubber Corporation, near Torrance, will be scraped and cleaned periodically to salvage the waste matter, and consequently a flush surface is needed. This stipulation induced the Early Company to try out a new technique which promised automatically to provide the required surface with less of the expensive sanding and polishing operations which would be required if ordinary wooden concrete forming were used.

The absorptive lining used on the job consists of a thin sheet of material resembling tough cardboard, faced with cotton fabric on the porous fiber backing. Being light weight and extremely flexible, the lining panels are easily handled and readily shaped to curved or arched forms.

Finish surfaces contrasted

Contrast in results between the regular plywood lining method and the new technique as applied by the Early Company was dramatically shown on the present project, since both methods were used. The plywood method was utilized for the outer surfaces of the separator while the absorptive lining technique was used to provide the required flush, unpitted inner surface. The former method produced the usual grained and pitted surfaces while the use of absorptive lining resulted in a dense, unbroken inner facing.

Experiments with the material taught the construction company the importance of proper methods of application. Aided by United States Rubber Co. engineers, which company manufactures the lining, techniques were involved which produced the desired results.

Application methods

According to a report by Nicholson, the following steps in application were followed on the job:

The material, called Hydron, was supplied in 6x4-ft. sheets. Each panel is 0.08 in. thick and weighs approximately 7½ lb. These sheets were stapled to plywood facings on the forms.

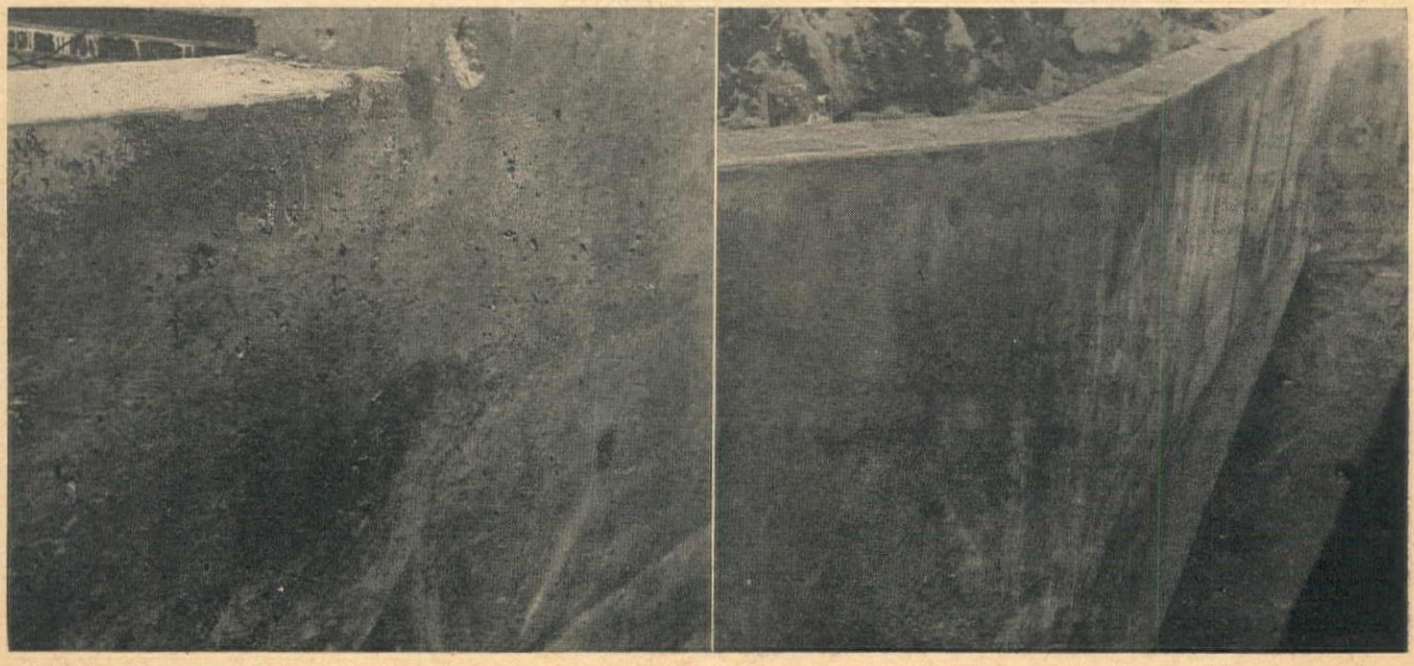
The stapling operation is of utmost importance. If improperly done there will be bulges in the panels or separations in the connecting edges, and this condition will result in irregularities in the finished surface. Best results were obtained by stapling in an even line with staples spaced 6 in. apart. The second line of staples, spaced 6 in. below the first horizontal line, was staggered in relation to the first line. The third line of staples, spaced 6 in. below the second, was set in line with the first line, etc. Butted edges of the adjoining sheets were straddled with staples spaced 2 in. apart. At the top of the form the sheet of lining was secured with a wood trim strip which is removed when the pour reaches the top of the form.

Staples were driven flush with the fabric inner face, and care was taken to bring the connecting edges together but without bunching. Since the Hydron will absorb air and moisture from the atmosphere as well as the concrete, precautions were taken to keep it dry at all times. Between the mounting of the material and the pouring of the concrete, the lining was protected by a tarpaulin cover.

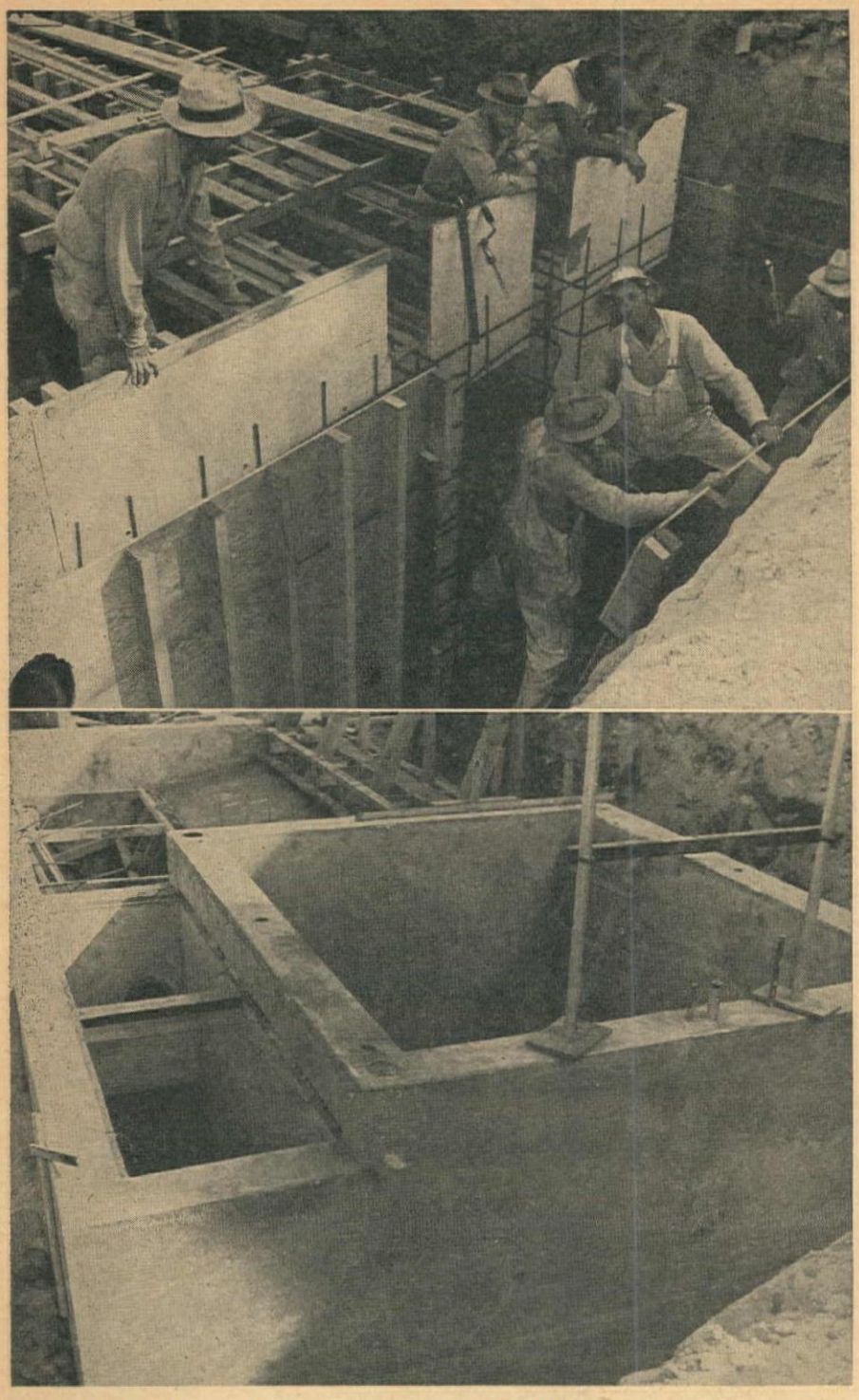
Form stripping

Experience showed that the sheets can be peeled from the concrete surface by hand, without tools. If the absorptive lining is allowed to remain on the concrete for more than two weeks without wetting, it has to be scraped off with putty knives or other implements. When the forms are removed the Hydron can be left on the finished concrete up to two weeks to control drying. However, it should be removed within the two-week period to facilitate the stripping operation. A thorough soaking of the lining will reduce the stripping pull necessary.

By following these application techniques, the result was a smooth, clear finish, completely free from blemishes.



THE ORDINARY method of using plywood forms for concrete facing results in the blemishes, pits and streaks, left. The absorptive lining technique produced the smooth surface on the right.



WORKMEN FROM Fred J. Early, Jr., Co. install Hydron form panels at synthetic rubber plant, at top. Lines of staples are staggered throughout panel, and wood strips hold top of panels. At bottom is plywood formed facing which doesn't withstand wear of scraping and cleaning of synthetic rubber plant's waste disposal system.

The Hydron process case-hardens the concrete to a depth of at least one inch, United States Rubber Co. engineers claim, with a gradual change in the water-to-cement ratio and density from the surface into the bulk concrete.

The technique is declared to be a way to form concrete of a greater durability through its resistance to abrasion and weather. The case-hardened, Hydron formed, concrete was shown in U. S. Rubber Company tests to absorb 40 per cent less moisture than the concrete formed with oiled plywood. Its excellent abrasion resistance was demonstrated in a comparative test made by the manufacturer of the material. Two concrete test blocks, one formed with Hydron, the other with plywood, were subjected to steel shot blasting. Stop-watch timed blasting of both surfaces resulted in deep pock-marked craters in the plywood formed concrete while concrete formed by the new method showed only slight indentations.

With the trend toward the use of mixes with low water-cement ratios and the necessary use of vibrators to expel trapped air, the absorptive lining method adapted by the Fred J. Early Company appears to become of increased importance as a means to dispose of the air collecting at the surface of the forms.

Air pockets at the surface have always been responsible for pits in the finished surface, and free water caused streaks and other disfigurations. Both problems were solved at the synthetic plant job by the use of the absorptive form lining, according to Nicholson.

Industrial Reconversion Speeded by Plant Sales

IMPETUS TO WESTERN industrial reconversion is being measurably speeded by sales, leases and pending sales and leases of several general purpose and special purpose war plants in the West, according to a summary issued by Reconstruction Finance Corporation, designated as plant disposal agency under the Surplus Property Act.

Included in the list of Western plants sold for a total recovery price of $171,000 are: Compak Foods, Inc., Santa Ana, Calif.; Coast Carbons, Inc., Tacoma, Wash.; Westvaco Chlorine Products Co., Newark, Calif. These plants were originally built for $603,481.

The sale value represents better than 28 per cent of the original cost to the government, and information indicates that the plants will for the most part be used for continued production of the products for which they were originally erected.

Very satisfactory lease arrangements affecting 5 plants with leases running from one to five years are reported and original value of plants now under lease amounts to $2,667,440.

Fourteen government-owned plants are continuing operation on a 30-day notice of termination basis, and one plant in Los Angeles operated by Phelps-Dodge Corp. will continue to operate until March 31, 1946, while another in the same city operated by Pacific Aviation, Inc., is on a 90-day termination of lease basis.

Many pending deals

Lease negotiations for plants throughout the country, including Basic Magnesium and Kinner Motors Corp. in the West, are expected to be completed within a short time, RFC states, and these plants will further the reconversion of industry.

Many of the plants are offered on a ready-to-go basis and provide tools, machinery, personnel facilities, office and laboratory equipment and miscellaneous handling equipment for in-plant use.

"Several multiple tenant contracts have been negotiated and several multiple tenant deals are pending with industrial groups, Chambers of Commerce coordinating committees and other trade organizations seeking to sustain local economic stability," the agency declares, "and a number of very interesting negotiations have been entered into through established real estate brokers who enjoy commission recognition when they bring about suitable contracts."

Rock Plant on Road Contract

Washington State Highway contracts for ballast and surfacing rock aggregates to improve State Route No. 12—Contractor establishes complete rock crushing plant at considerable distance from construction site to avoid pollution of streams

WHEN D. F. WHITTAKER, contractor, of Seattle, Wash., was last winter awarded a contract to furnish aggregate for ballast and base course rock on Washington State Highway No. 12, his first obligation was to set up a complete rock crushing plant.

The contract, which amounted to $69,628, included two sections of road, the first located between Johnson's Landing and Deep River, a distance of 12.4 mi., and the second, extending from Johnson's Landing to Middle Nemah, was 4.23 mi. long.

Description of work

The resurfacing is being done with a layer of ballast material, varying from 4 to 9 in. in depth, and this is then finished off with an additional base course of rock and gravel to a depth of 4 in. The surfaced road will be 20 ft. in width, with 3-ft. shoulders on either side. The highway is not a realignment project, but a modernization of an existing road servicing the cities along the southern Washington coast. Primary traffic on the road is made up of heavy logging trucks. Maximum grade near the summit of the road is 5.5 per cent.

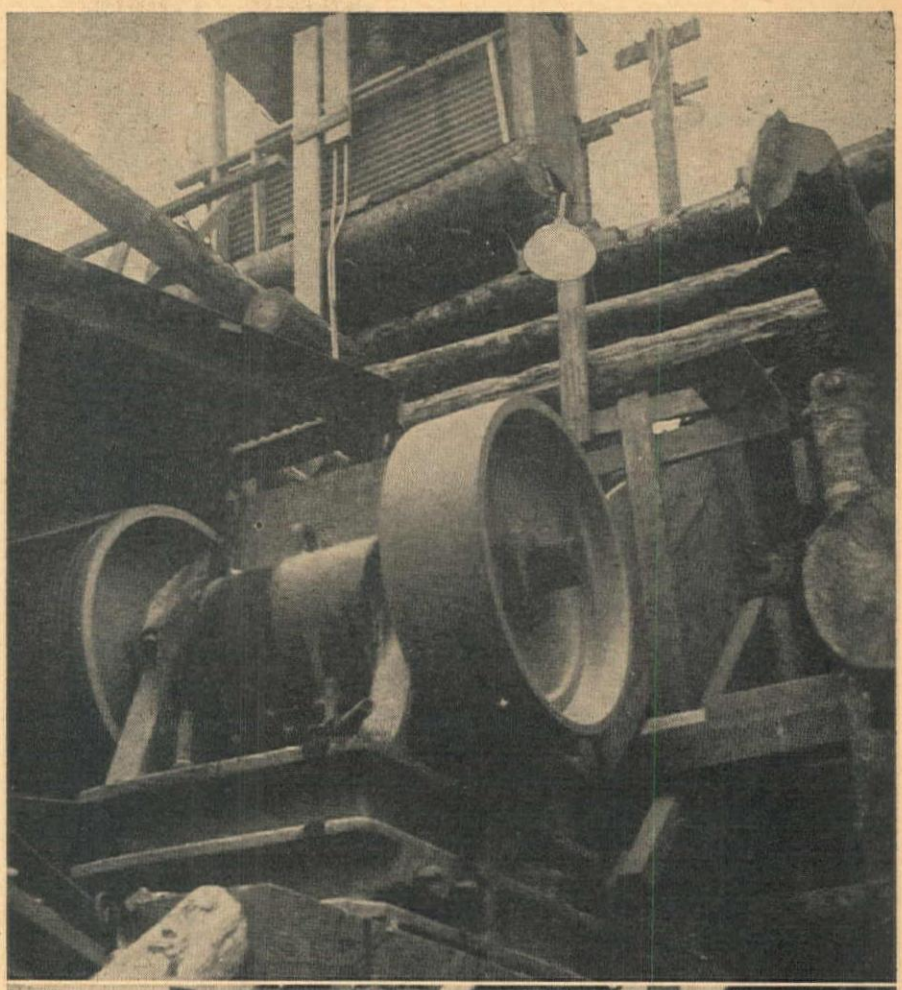
Used in the ballast is rock of 3-in. maximum diameter, varying down to 0, and the base course is composed of 2-in. minus rock, with the top layer gravel of 5/8 in. to 0. On the first section, ballast in place will consist of 65,260 cu. yd., base course 14,980 cu. yd. and the top course 5,690 cu. yd. On the second section, 25,040 cu. yd. of ballast will be required, along with 4,980 cu. yd. of base course and 4,450 cu. yd. of top course.

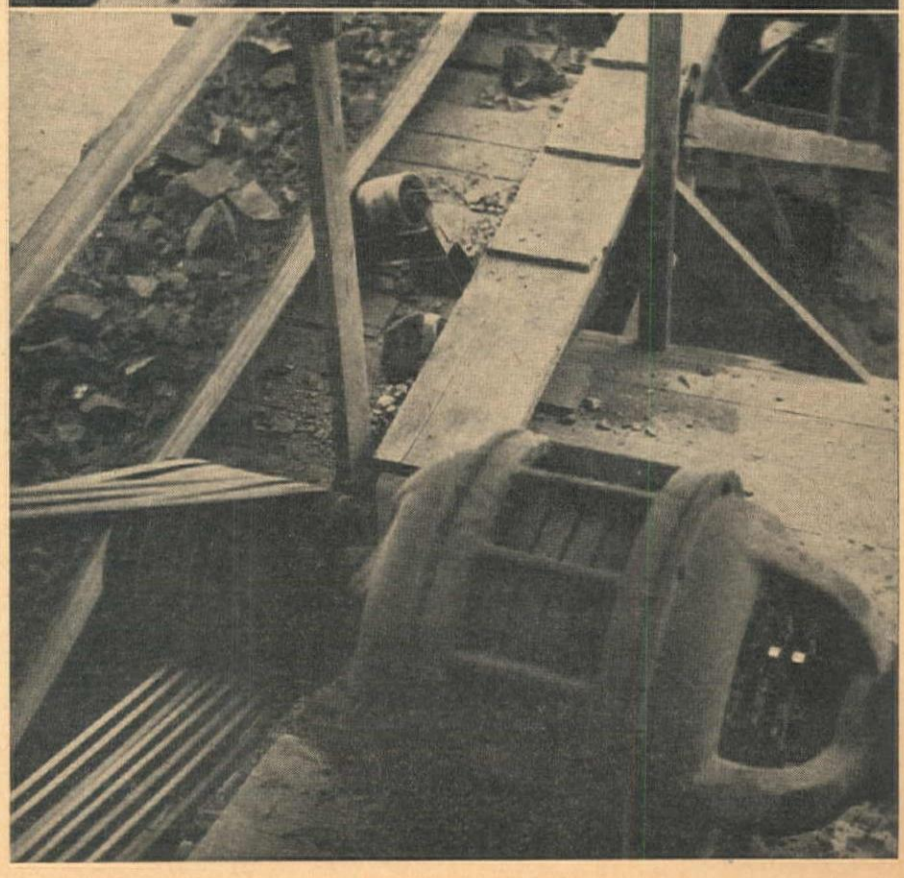
The State Highway Department's estimate of total cost, including both grading and oil surfacing is $253,581.

Rock crushing plant

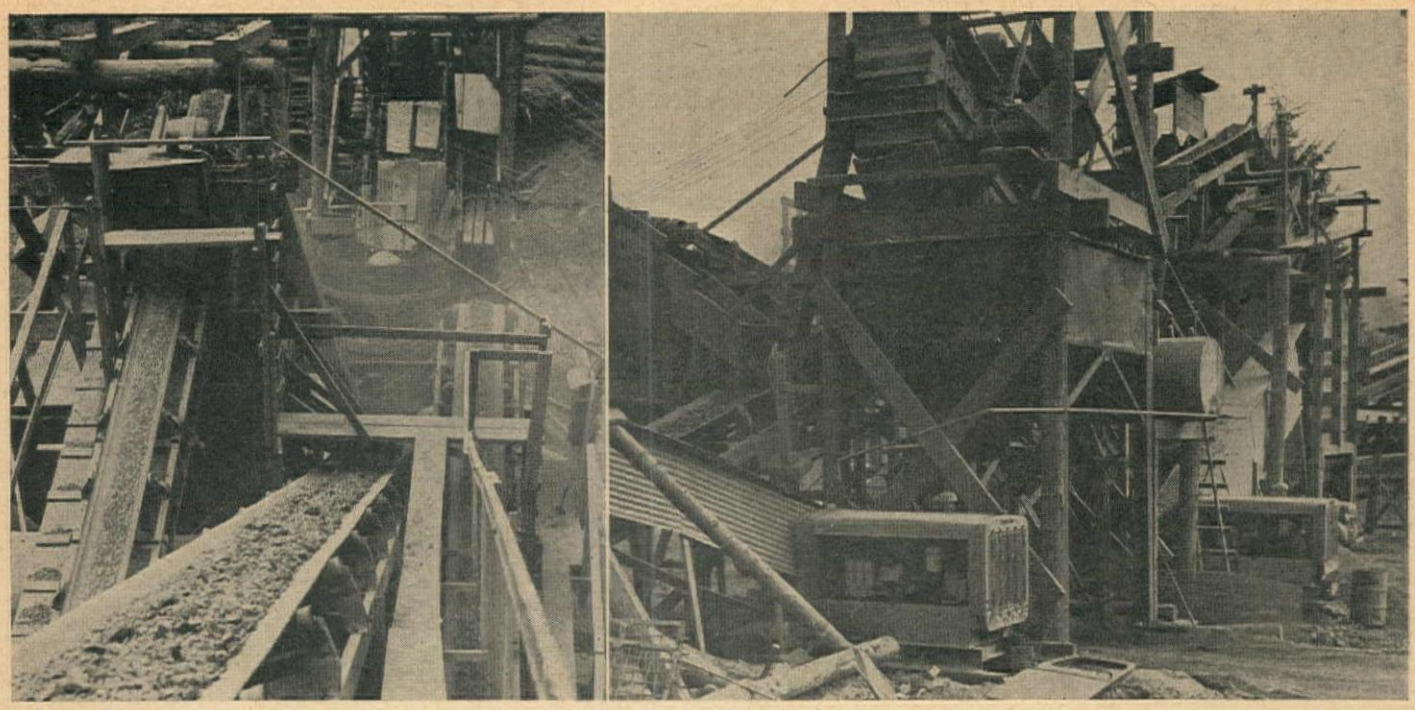
In setting up his rock crushing plant, Whittaker was able to make use of about 85 per cent new equipment, which has proved successful in meeting the scheduled requirements of a primary state highway.

Most of the rock is received from a





QUARRY ROCK is fed through this 50-cu. yd. hopper to the 24 by 36-in. Lippman primary crusher, above; thence past the electric drive to the scalping screens, below.



SECONDARY CRUSHER, left, handles the oversize from the live screens to produce the aggregates for the Deep River to Johnsons Landing unit of Washington's Route 12. Two Diesel power units operate sizing screens used to produce specification rock.

quarry three-quarters of a mile from the crusher. The quarry is located on O'Connor Creek, off the main highway. The crushing plant was situated at this distance from the quarry because of certain restrictions by the state governing the operation of equipment, and further to keep the creek free from debris and overburden, since the water from the stream is used in fish ponds of a state hatchery a short distance below the quarry site. Trucks deliver quarry rock to the crushing plant every 5 min., feeding it into a 50-cu. yd. hopper which is located 35 ft. above the jaw crusher, a 24x36-in. jaw machine electrically driven.

From the crusher, the rock is conveyed on a 36-in. belt conveyor for a distance of 85 ft. and delivered into a 4x12-ft. scalping screen. Here the 3-in. minus rock drops onto the main conveyor and may be directed either to stockpiles or to a secondary crusher. All over-size rock is conveyed directly to the secondary crusher, which produces 1-in. material to compose the aggregate required by state specifications.

Another conveyor 120 ft. in length leads to the stockpile, where Whittaker has devised a workable mixing system. The conveyor discharges through a long overhanging spout, which is easily swung through a 60-deg. sweep, permitting the over-all distribution of rock and finer aggregate to accord with the stockpile specifications.

The over-all length of the plant is 350 ft. and the stockpile holds approx. 5,000 cu. yd. of material, and the key rock pile at the quarry contains about 1,500 cu. yd. of rock.

The highway work is under direction of M. P. Brislawn, district construction engineer for the State Highway Dept. at Vancouver, Wash. Resident engineer on the project is F. E. Clark of Raymond, Wash.

Initial Units of Missouri River Flood Control Ready for Contract

SEVERAL OF THE INITIAL units of the Missouri river basin developmental plan, authorized by Congress in the Flood Control act of 1944, will be ready for construction during the current fiscal year, Mills E. Bunger, chief of the Missouri Basin Reports staff, has announced.

As chief of the Missouri Basin Reports staff, Bunger coordinates the progress reports on the engineering and economic investigations by the various agencies interested in the Missouri river development plan and supervises the preparation of a comprehensive monthly report.

"Through the full development of the Missouri River Basin it is planned to irrigate about five million acres of land now dry-farmed and furnish supplemental water for one million acres of additional land now inadequately irrigated," Bunger pointed out. "With the yardstick of feasibility now in use, it is also planned to develop around 5 billion kilowatt-hours of electric power annually at present, with about 10 billion kwh. for the ultimate development.

"A year ago Congress approved the Pick-Sloan plan for the development of the Missouri river basin and authorized 29 units for construction. The Bureau of Reclamation has chosen 11 of these units to be ready for actual construction by July 1, 1946, including the Canyon Ferry near Helena and the Marias near Havre, both in Montana; Heart River near Bismarck, N. D.; Angostura near Rapid City, S. D.; Owl Creek and Boysen near Thermopolis and Kortes and Glendo, near Casper, all in Wyoming; Frenchman-Cambridge, near McCook and Bostwick near Red Cloud, in Nebraska, and the Kirwin unit near Phillipsburg, Kansas.

"This program has been approved and work is now under way. The progress curve shows an upward trend and with continued acceleration it is anticipated that preconstruction work on initial units of the Missouri river plan can be completed as scheduled on July 1, 1946. Several units of the initial program, such as Kortes, Angostura, and Boysen should be ready for advertisement in advance of that date."

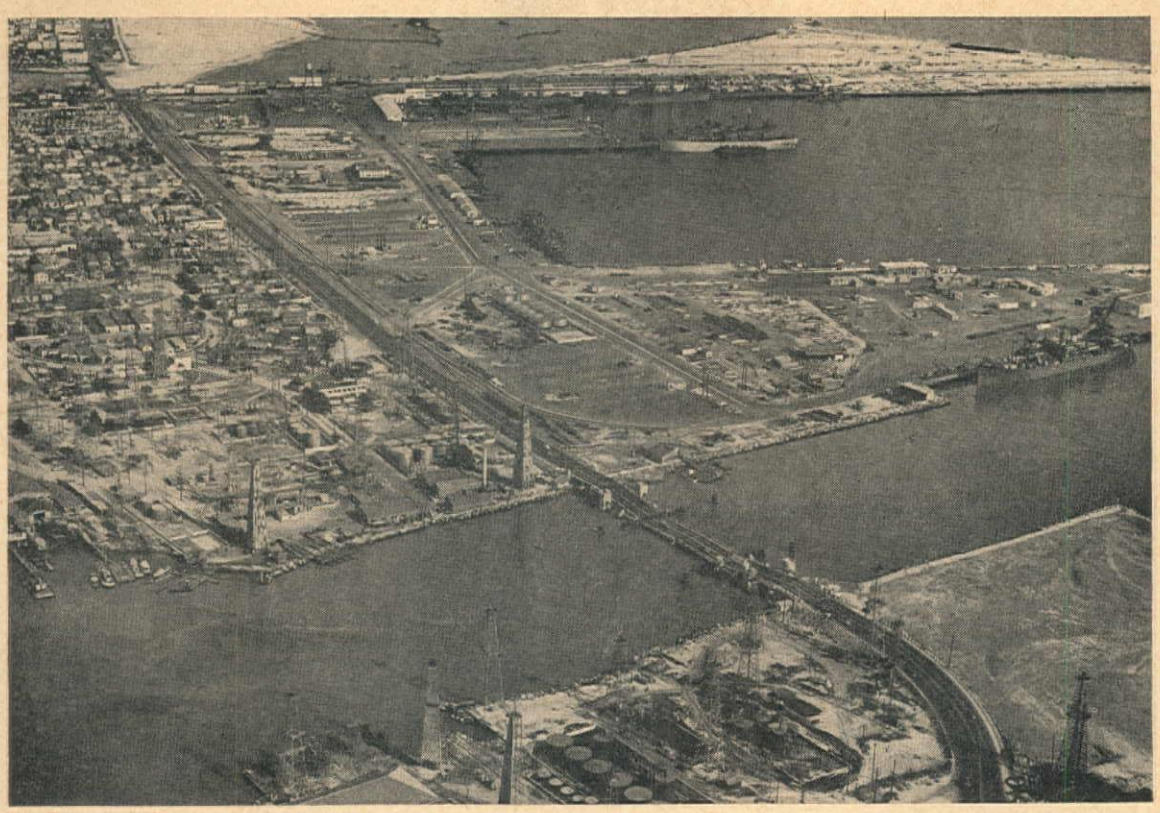
Other agencies cooperating with the Bureau of Reclamation and Corps of Engineers in the development of the Missouri river basin are the Geological Survey, Fish and Wildlife Service, National Park Service, Indian Service, General Land Office, Grazing Service, and Bureau of Mines.

At this time the Bureau of Mines is working only on the Chamberlain, South Dakota manganese deposit. The successful development of this project is important as it might effect the use of power which will be made available at the Oahe dam near Pierre, S. D.

The Federal Power Commission is engaged in making an over-all power study in the Missouri basin and is being called on to make detailed studies of the Boysen, Canyon Ferry and Garrison units.

Construction of the entire Missouri river project will cost about $400,000,000.

Long Beach Plans Super Harbor



THE CITY OF LONG BEACH built this fine harbor from mud flats and a stormy anchorage. Oil wells in the foreground made the feat possible. Over the entrance channel is a four-lane retracting pontoon bridge of reinforced concrete. (See Western Construction News, July, 1945.)

Land-filled piers aided development of both oil fields and Port of Long Beach, thus enabling community to create a great commercial and naval harbor—Future plans include extensive construction, land-filling, diking, dredging, land and pier developments, bridge improvements, fire alarm system, sewers and storm drains

By R. R. SHOEMAKER
Chief Engineer
Port of Long Beach
California

THE GREAT IMPETUS which recent events have given maritime activities in the Pacific basin is perhaps more strikingly demonstrated by construction activities at the Port of Long Beach, California, than at any other point.

Long Beach has been known as a port for many years, but its location immediately adjacent to the Port of Los Angeles, combined with its relatively small beginning, detracted from its vital potentialities which now are looming as the most apparent of any shipping point on the coast. The port is compact and is located at the very front door of the city, thus adding emphasis to its startling transformation.

To visualize the strange and sudden transformation that this remarkable commercial port has undergone requires more than mere comparison of statistics or the viewing of "before and after" photographs. The change has been from a peaceful, uninterrupted strand of quiet, recreational bathing beach, four miles long, to a port area which now teems with an excess of one hundred commercial and naval craft at one time; from an open expanse of blue Pacific fishing waters, crashing surf and a pelican-ruled harbor entrance channel to five miles of deep-sea terminals, hundreds of acres of man-made land and myriads of producing oil wells; from the idle mud flats and swamps of early century real estate hopes to miles of privately-owned, deep-water frontage on the inner harbor and the largest producing oil field in the state of California.

Here is the site of sudden contrasts. One year an anchorage swept by unruly storm waves with little protection, the next year the same area a protected haven for fleets of ships; one year great expanses of water, 35 ft. in depth, the next year tracts of land worth $40,000 per acre, fully improved.

Development seems fantastic

The description sounds fantastic, but truly indicates what can and does happen when the strange and unusual combination exists of extensive publicly-owned tidelands which are under the exclusive jurisdiction of a municipality, together with natural resources, the correct location commercially and industrially, local initiative and enthusiasm to see that improvements are made, and, finally, the funds with which to make them. That, in a word, is the situation at Long Beach.

In its early days, Long Beach harbor consisted of a combination of public and private development in a privately-owned swamp land area reached by a simple entrance channel dredged through the surf from the open sea and protected by entrance channel jetties to prevent silting. This privately-owned swamp land had been laid out by real estate interests to form a harbor, and all harbor channels were deeded to the city. Railroad rights-of-way were deeded to the railroads. The city dredged the channels, thus opening the property to industrial development of great advantage to the community. The railroads developed the rail access, providing the shore connections. As the city owned very little inner harbor property, municipal terminals could only be developed by ac-

quiring private property at vastly increased values, or by voting bond issues for building municipal terminals in the exposed open areas of the municipal tidelands seaward of the surf line or beach line. The city boldly chose the latter course.

Aggregate bond issues of eight and one-half million dollars voted by its citizens weighed heavily on the community, particularly since most of it had to be expended for breakwaters and dredging, leaving little for the development of port units capable of producing operating revenue. Everything came the hard way. Federal aid was hardly known.

Black gold

A condition of near stagnation had existed for eight years when oil was discovered. Before legal authority could be had for municipal drilling on these tidelands, the productive capacity of the oil field was so well determined that the city was able to obtain extremely satisfactory drilling and operating contracts for the development of its property.

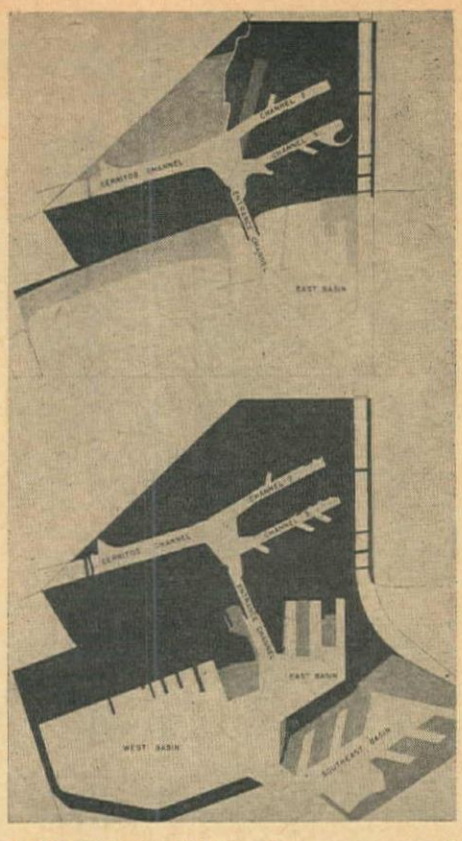
Then commenced a continuous cycle of activity which is without parallel. The most economical way of obtaining drill sites for oil wells was to create land fills in the open ocean. Since this open ocean was navigable water, the logical procedure was to design these land fills for port operations. As rapidly as land fills are created, they become the site of well-dispersed and well-planned oil well sites so arranged as not to interfere with port operations. The basic cost of creating ideally located land-filled piers in correct relationship to deep-water, protected anchorage, open sea, industries, the business community, etc., is written off immediately by the returns from the oil wells. Furthermore, the funds left after writing off the cost of the land and the cost of producing the oil must be expended for port improvements, for retiring bond issues and paying interest on those bonds. This setting was the beginning of a radical structural change.

Development schedule

Reacting to this unusual set of circumstances, the first move of the port was to comprehensively plan the Port District for a program of twenty-five years to build a port and develop an oil field. The second move was to expand the basic land fills to best permit an orderly development of both oil and port. The third move—of doubtful possibility except for the first two—was to anchor the United States Navy to the port by deeding a large share of the Outer Harbor West Basin area to the United States for the hundred million dollar Roosevelt Base and United States Navy Drydocks. The fourth move was to expand the commercial port as rapidly as finances, material shortages and labor shortages would permit, so that it served a part in World War II, not only through the Navy, but also through the Army Port of Embarkation activities. The port is now embarked upon its fifth move, that of providing for the commercial activities of the immediate future with a vast construction program.

After the six-year, fantastic oil-war period of its history, Long Beach finds itself with the following major assets:

1. 20 improved municipal deep-water berths.
2. 11 improved private deep-water berths.
3. 16 improved Federal Government deep-water berths.
4. A naval base second to none.
5. A quiet, deep-water harbor immediately off the open roadstead.
6. Total deep-water frontage in the port of 85,280 lin. ft.
7. Improved private frontage of 15,200 lin. ft.
8. Improved municipal frontage of 12,000 lin. ft.
9. Municipal port assets, not including value of tidelands, totaling $18,500,000.
10. Bond and bond interest obligations fully paid.
11. Over 180 producing oil wells.
12. A cash reserve sufficient to assure the continuance of the construction program.



LONG BEACH HARBOR has progressed rapidly since 1925. The reclaimed land up to that time is in black at top. The gray areas are land reclaimed between 1925 and 1939. At the bottom the black areas show reclaimed land of the port today, and the gray shows the land reclamation program of the future. The Navy controls the land and mole around the west basin.

Construction program

The current construction program, and that of the immediate and near future, is broad in scope. It is revealed as follows:

1. Wharf, bulkhead and terminal improvements of 2,600 ft. of frontage are being constructed at Berths 4 to 7, inclusive, Pier A, at a cost of approximately $2,250,000. This work includes material contracts by the city and heavy operations in four major construction contracts let to Macco Construction Co., E. B. Bishop, Sully-Miller Contracting Co., and Sharp, Fellows and Smith.

2. Land filling, diking and dredging operations at several sites involving contracts with equipment rental organizations and with Newport Dredging Co., Standard Dredging Corp. and C. R. Butterfield Co.

3. Four new transit sheds to be erected on foundations, either now under construction, or installed during the past several years:

(a) 120 by 832-ft. reinforced concrete and structural steel, one-story shed at Berths 3 and 4, to be advertised before the end of the year.

(b) 120 by 608-ft. reinforced concrete and structural steel, one-story shed at Berth 5, to be advertised early in 1946.

(c) 200 by 1,120-ft. reinforced concrete and structural steel, one-story shed at Berths 6 and 7, to be advertised in 1946.

(d) 140,000-sq. ft. area shed at Pier 2 in Inner Harbor, to be advertised as soon as current lessees make site available, probably late 1946.

4. Further land development, one or more shipside warehouses, a pilot house, street and bridge improvements, fire alarm system, sewers, storm drains, new pier developments and miscellaneous improvements.

Here is a municipal enterprise in which local interests can be proud, arising from the long-established state ownership of tide and submerged lands. The state deeded these lands to Long Beach in trust for fishing, navigation and commercial purposes. The community, wisely guarding its assets, through the medium of a harbor board of five citizens having a large degree of autonomy, and an efficient port manager, has not only developed these oil-producing properties with greater net returns to the owning public than under any known oil contract, public or private, but has also created the means by which it will continue to prosper.

Utility Companies Ownership Changes Approved in N. Mex.

THE FEDERAL POWER Commission has authorized the Southwestern Public Service Company, Roswell, N. Mex., to acquire from Robert K. Johnston of Oklahoma City, Oklahoma, for a cash price of $115,000, electric facilities serving Santa Rosa, N. Mex., and vicinity. The properties were formerly owned by United Power Company.

Also included in the purchase, at an additional cost of $32,000, are water facilities serving the same community and formerly the property of United Water Company. The electric facilities consist of a generating plant and distribution system serving some 433 customers in Santa Rosa and vicinity, and are located about 100 mi. from the nearest point on the Southwest Public Service Company's system.

Utah Construction Co. Lowest Bidder on Davis Dam Project

OPENING OF BIDS on Davis Dam by Bureau of Reclamation at Kingman, Ariz., was attended by many interested contractors. Bids were read by H. F. BAHMEIER, construction engineer, shown at end of book file. Dark-haired man facing camera is H. E. McIMIS, engineer on the project. At his right is BERT LUCAS, planning engineer.

BIDS FOR CONSTRUCTION of the multimillion dollar Davis dam and power plant on the Colorado river, 34 mi. west of Kingman, Ariz., were publicly opened Dec. 21 in the office of Construction Engineer H. F. Bahmeier, who will direct work on the project.

Calling for the completion in mid-1949 of the Bureau of Reclamation's largest undertaking in the Southwest since it built Boulder Dam, 67 mi. upstream, the contract will be awarded soon, provided the bids received are acceptable, it was stated by E. A. Moritz, Regional Director of the Bureau's Region III, with headquarters at Boulder City, Nevada.

The low bid was submitted by the Utah Construction Co. of San Francisco, holders of the original contract which was terminated in 1943 because of the war.

Contractors and their bids are as follows: Dam Builders, Inc., Los Angeles, Calif., $27,481,947.50; Davis Constructors, Los Angeles, Calif., $23,242,990; Arizona-Nevada Constructors, Phoenix, Ariz., $22,805,940; Utah Construction Co., San Francisco, Calif., $21,462,505.

These bids represent contract costs only, exclusive of materials, equipment and supplies furnished by the government.

Originally called Bullshead dam, the project was renamed in 1941 in honor of the late Arthur Powell Davis, who, as one of original builders of the old Reclamation Service beginning with its inception in 1902, and later as Director of the Service from 1914 to 1923, laid the foundation for the development of the Colorado river.

Although designed principally to generate electrical energy and to regulate the flow of the river, the project also will afford incidental fishing and other recreational facilities for tourists.

The cost of Davis Dam Project is estimated at about $77,000,000—$47,000,000 for the building of the dam, spillway, power plant, and other appurtenant works at the dam, and $30,000,000 for the construction of a power transmission system which will be inter-connected with the Boulder and Parker dam systems.

Located in Pyramid Canyon, the dam will be an earth-and-rock-fill embankment creating a reservoir with a capacity of 1,940,000 ac. ft., which will be about three times the volume of Lake Havasu, created by Parker Dam. The dam's crest will be 138 ft. above the river bed.

Almost four million cubic yards of earth and rock will be required to form the dam and about 455,000 cu. yd. of concrete and 15,000,000 lb. of steel reinforcing bars will go into the forebay, spillway, and power plant structure.

An open channel on the Arizona side will carry the flow of the river around the dam while it is under construction. This channel will be a permanent feature for the power plant forebay, spillway, and for non-power water releases. Water will flow to the power plant, to be built on the Arizona side, through five 22-foot diameter penstocks connecting with the forebay.

Five 45,000-kw. units will provide an installed capacity of 225,000 kw. for the power plant. A 230-kv. switchyard will be located adjacent to the plant.

Water released from Boulder Dam will be stored again at Davis Dam for re-regulation and release according to downstream needs, including those required by the provisions of the recently ratified treaty between the Republic of Mexico and the United States. This treaty provides for the division of the waters of the Colorado, Tia Juana, and the Rio Grande between the two republics, and obligates the Bureau to complete Davis Dam within the next five years.

Except during flood stage or to fulfill requirements of the Mexican treaty, water released by Boulder, Davis, and Parker will be through the turbines of the respective power plants. In this way the water will be used, and reused for power purposes.

To provide residences, offices, and shops for workers, the government and the contractor each will erect construction camps near the dam site.

Some preliminary excavation of the diversion channel of the dam was done by the Utah Construction Company, original holder of the contract to construct the dam. The contract was awarded in June 1942, and work was halted in December of the same year by a War Production Board stop order. The contract was formally terminated in February of 1943.

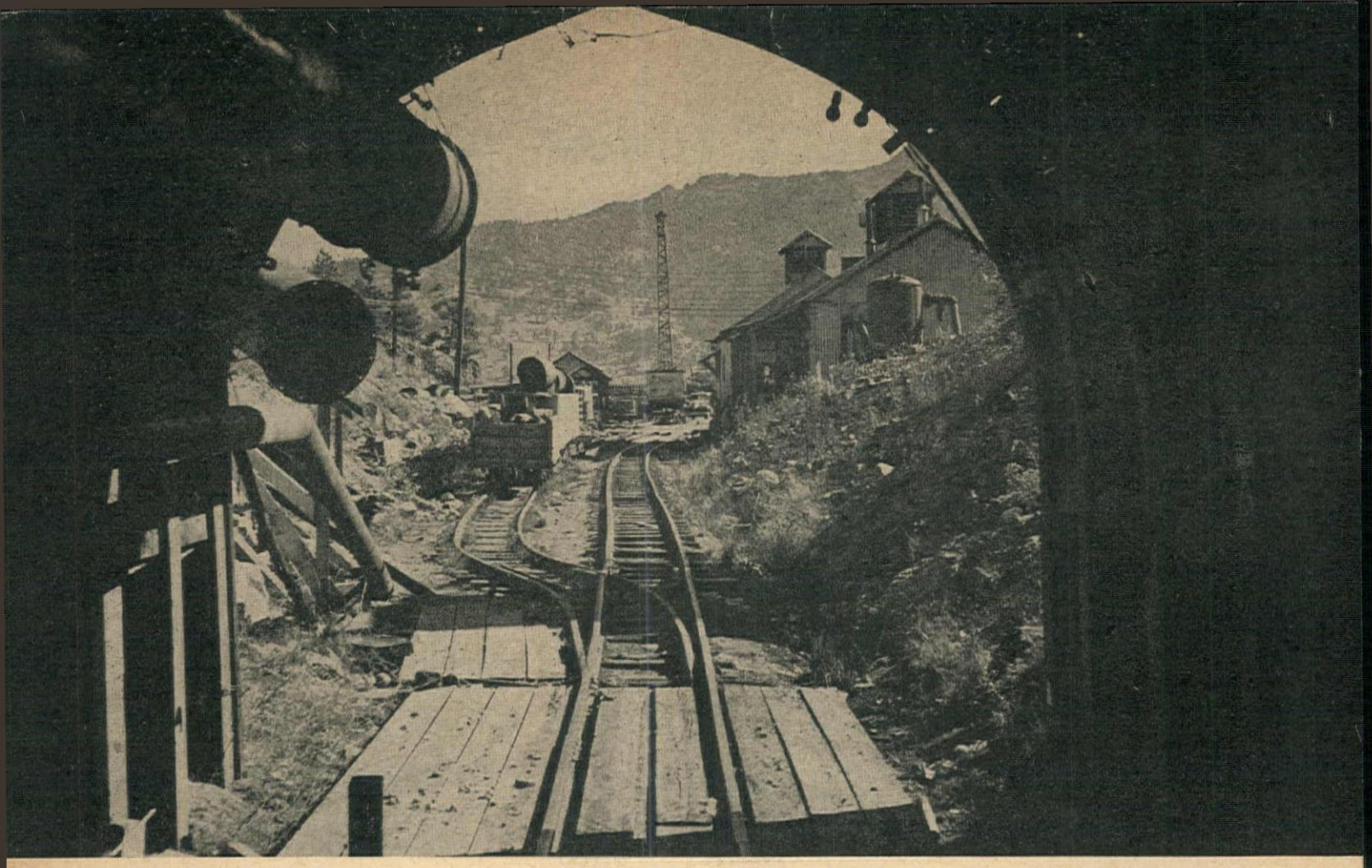
Bahmeier, one of the Bureau's ablest construction engineers, returns to the project in the same position he held at the time the contract was cancelled. In the interim, he was construction engineer of the Anderson Ranch Dam in Idaho.

Distributors to Advise Surplus Disposal Board

IN RESPONSE to a request from the Surplus Property Board, the Associated Equipment Distributors has nominated seven outstanding distributors of construction equipment, from all sections of the country, to serve on an Industry Advisory Committee to consult on the problems involved in the disposal of war surpluses of road building and construction machinery.

Western distributors nominated by A. E. D. were G. H. Jamison of A. H. Cox & Co., Seattle, Wash., William Nosman of Coast Equipment Co., San Francisco, Calif., and D. U. Rakestraw of Contractors' Equipment & Supply Co., Albuquerque, N. Mex.

A. E. D.'s committee on government surplus has recommended that the Department of Commerce, disposal agency for all surpluses, carry on a material advertising campaign, that it continue the present method of spot sales, and that manufacturers be urged to acquire new and unused parts for disposal through regular channels.



Concreting the Adams Tunnel

Colorado-Big Thompson project key unit, the Continental Divide diversion tunnel, to be ready for passage of water next summer, as concrete lining progresses rapidly from both ends—Work speeded by collapsible forms, exterior batching, and Pumpcrete mechanical placing

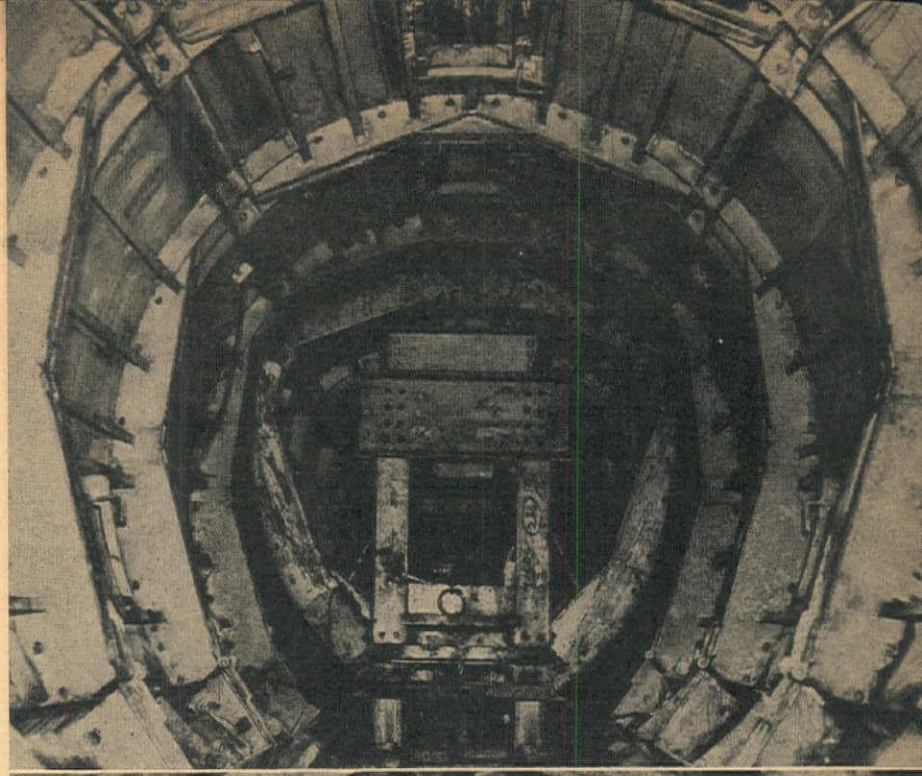
THE ALVA B. ADAMS TUNNEL, 13.1 mi. long, the longest ever driven from two portals, is now being lined with concrete by the same contractors who completed the excavation. S. S. Magoffin Co. is working from the east end of the tunnel and Stiers Bros. Construction Co. from the west end. The tunnel runs from Grand Lake on the western slope of the Continental Divide in Colorado to a point near Estes Park on the eastern slope, and is a key unit of the Bureau of Reclamation's Colorado-Big Thompson project. Water from the Colorado River will be delivered to irrigable land in the valley of the North Platte river and its tributary, the Big Thompson river.

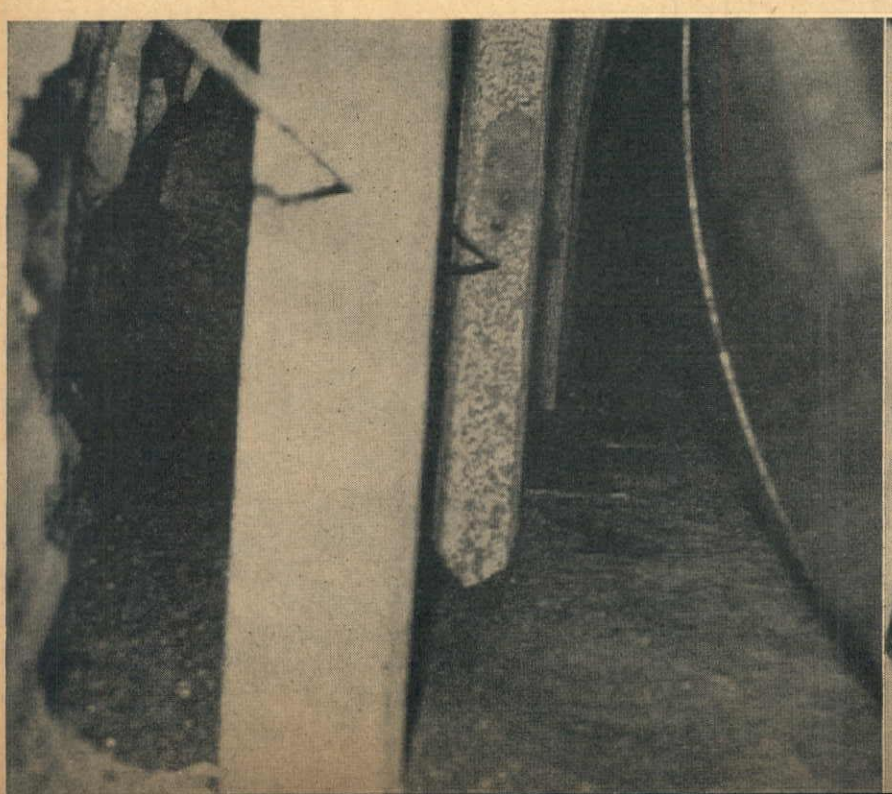
Photographs on the opposite page show (top) the shops of the Magoffin Co. from the east portal of the tunnel. Because of soft ground it was necessary to support the overburden with steel I-beam ribs at the east entrance. (Bottom, left): The batching plant of the Magoffin Co. at the east portal. The aggregate bin is divided into three compartments and has a heaped capacity of 300 tons. The bulk cement bin has a capacity of 1,500 bbl. The aggregates are elevated by means of a belt conveyor and an electrically-driven elevator delivering 50 tons per hour moves the bulk cement into its container. (Bottom, right): Tunnel entrance and batching plant of Stiers Bros. at the west portal. With the approach of winter the batcher was closed in with timber and roofing paper to afford protection from the elements. Also the portal shed in the foreground was closed in and doors placed to permit passage of mine cars.

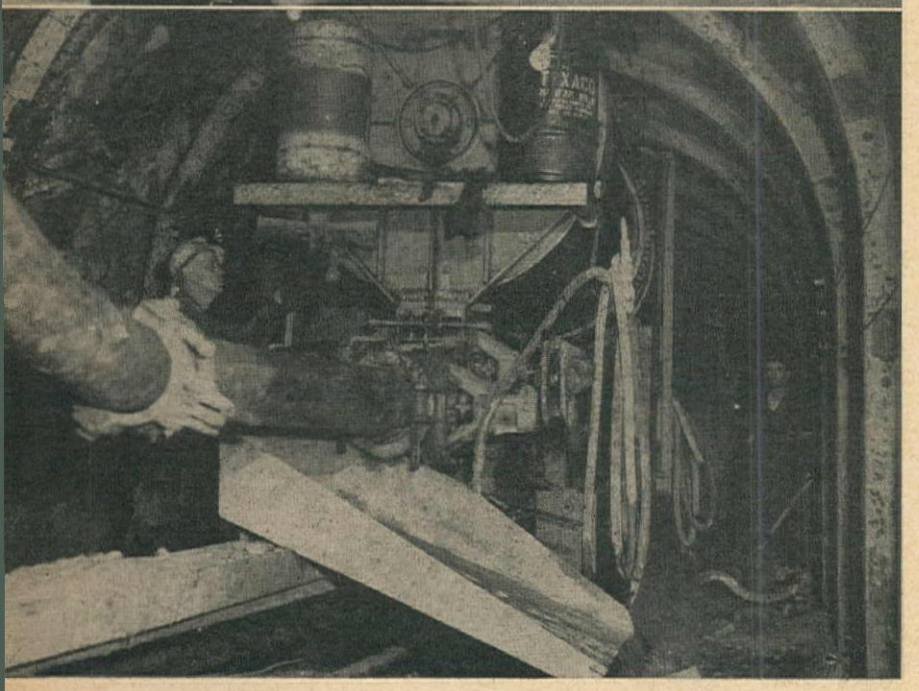
Photos at the right show the collapsible interior forms employed in the lining operation. At the top, one of the forms has been collapsed onto the car and is ready to be advanced through the form in the foreground to be placed at the next pouring position. In the center, the workmen are adjusting a new section and placing the bulkheads at the end of the form. Forms collapse on the hinges at the upper third points and also at hinges near the bottom. I-beam tunnel supports are not removed, but become part of the reinforcement of the lining.

In the picture below, poured concrete behind the steel shell is visible. It is placed by pumpcrete machines, the pouring nozzle of which discharges through windows left in the forms. As the depth of concrete increases the windows are progressively sealed and the nozzle placed in a higher aperture. At the right is a mechanical vibrator, also operating through one of the windows.

Photos by Thos. J. Barbre







CONCRETE POURING inside the Alva B. Adams tunnel is by pumpcrete machine shown in the center photo. At the batching plants outside the portals the aggregates and cement are accurately measured in 1 cu. yd. charges and are discharged into batch boxes mounted on narrow gauge cars for hauling in to the mixer.

Supervision of the concreting work on the tunnel for Stiers Bros. is by RAY BLASONGAME, shown at the right in the upper photo, and LEW STILES, his assistant, shown at the left.

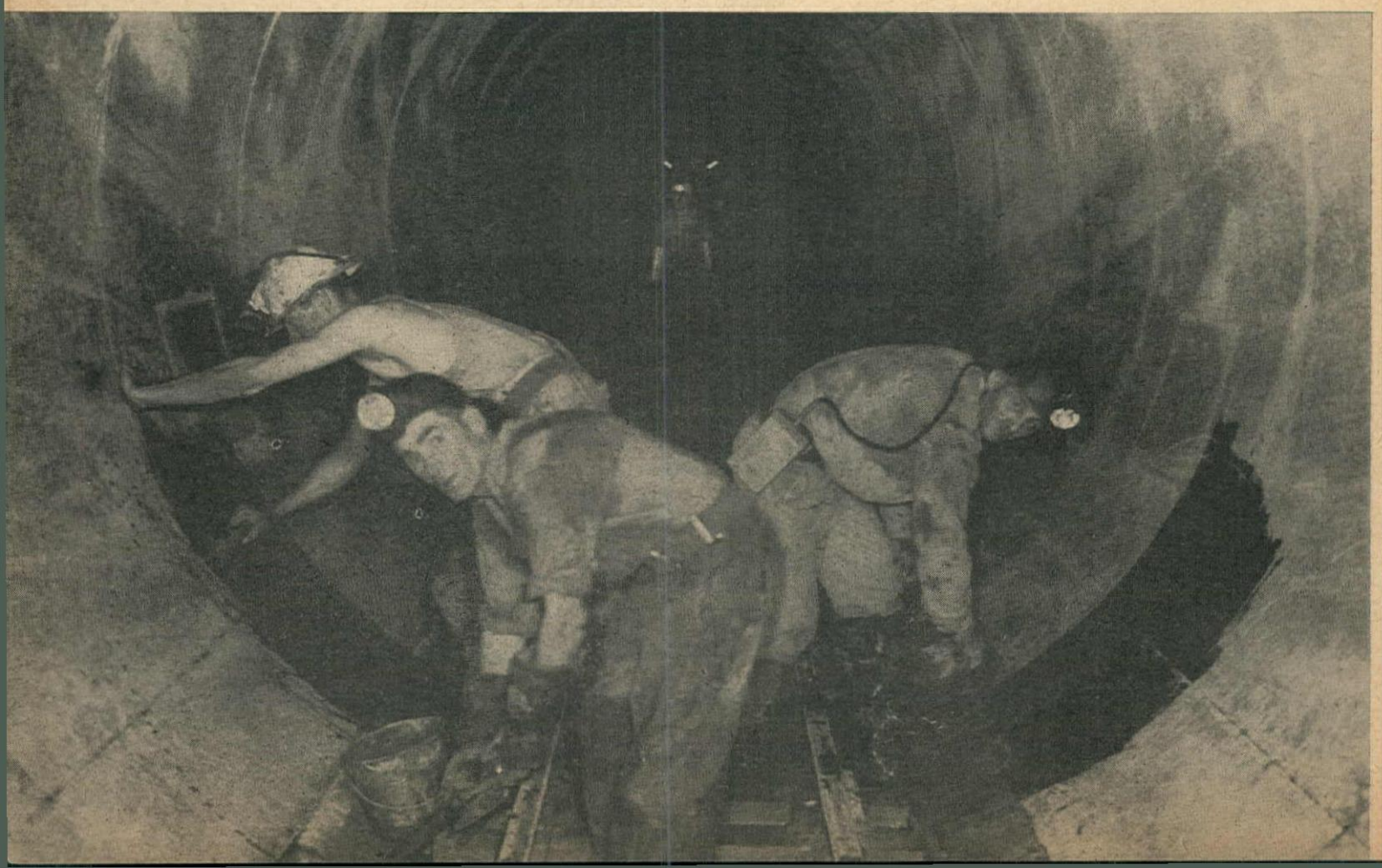
At the bottom of the page is a view of the practically finished tunnel. The men are withdrawing water from air holes in the concrete. These holes will then be plugged with fresh concrete. The surface is finally polished with steel wire brushes so as to give an absolutely smooth surface. Specifications require that the concrete must be kept moist for two weeks after placing, or approved curing compounds may be applied.

The finished inside diameter of the tunnel is 9 ft. 9 in. and the cross section is continuously circular. The lining is reinforced with a minimum of 6 in. of concrete between the bars and the final inside surface. In the west end of the tunnel 35,000 ft. of invert has been poured and 12,000 ft. of arch. In the east end about 18,000 ft. of arch has been completed.

The tunnel runs on a tangent for its entire length and is on a gradient of .00155. Loss in elevation between the portals is 109 ft. Capacity of the tunnel will be 550 cu. ft. per sec. Water will enter the tunnel at the west portal at about 5 ft. below the surface elevation of Grand Lake. Concreting will be completed some time in the summer of 1946.

The Colorado-Big Thompson project is being constructed by the Bureau of Reclamation, of which WALKER B. YOUNG is chief engineer. C. H. HOWELL is project engineer for the Continental Divide tunnel. Driving of the tunnel began on July 15, 1940, and was completed on June 9, 1944. Excavation cost $6,800,000 and it is estimated that the lining will cost about $3,000,000.

Photos by Thos. J. Barbre



Bolivian Transporter Bridge

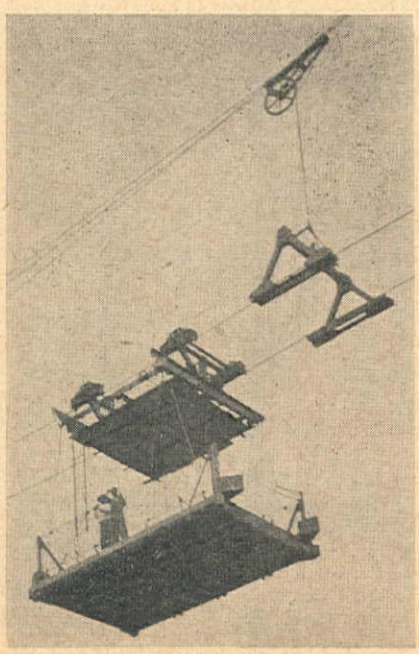
AERIAL SPAN over Rio Espiritu Santo is 885 ft. in length and the crossing can be made in approximately 1½ minutes, above. Transporter car in a position near the compensating cable support shows arrangement of A-frame and track cables, below.

The usual sag in aerial bridge spans is eliminated by the newly-devised compensating cable supports for the main track cables—The new system reduces the cost of operation and transmits a smooth horizontal motion to the car using only a 20 H.P. engine—Built by the Bolivian government, this bridge will open communications with the hitherto practically isolated provinces of Chapare and Beni

A COMPENSATED CABLE transporter bridge high over the Espiritu Santo river in the depths of the Matto Grosso jungle of Bolivia has opened to convenient access a previously practically isolated rubber-growing area of that country. The transporter bridge, upon which the path of the ferry car remains practically level, instead of alternately rising and sagging over the supports and sags of the tramway, was devised by engineers of John A. Roebling's Sons Co., of Trenton, N. J., with William A. Reeve, as senior bridge engineer, in charge.

The bridge is located on a road constructed some years ago by the Bolivian government into the provinces of Beni and Chapare, which have always been virtually isolated by the high ranges of the Andes mountains and numerous turbulent rivers. The road extended 117 mi. from Cochabamba to the Espiritu Santo, a tributary of the Amazon, but because of unstable foundation conditions and lack of adequate funds, it was impossible to erect a standard bridge or trestle across the stream.

Furthermore, it was not possible to supply satisfactory ferry service or fording, because the bottom of the stream is very irregular and constantly shifting, moving bars often appearing above the water surface, only to subside a few days later. After considerable study, the Roebling transporter design was adopted.

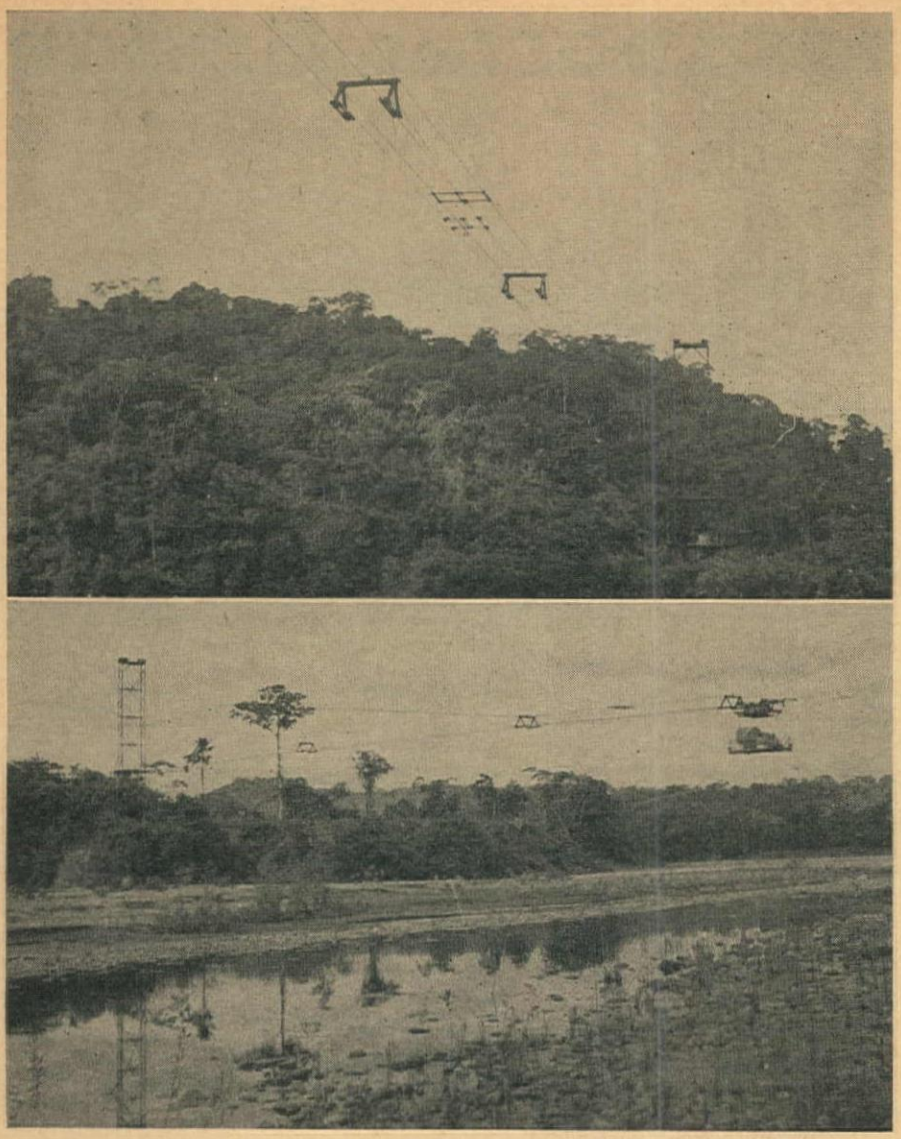


Span of 885 ft.

As installed, the transporter has a single span of 885 ft. between main towers, one of which is 100 ft. high, the other being 120 ft. This long span, however, is broken into 5 sub-spans of approximately equal length, each of which is supported by an A-frame track rope saddle riding on the overhead supporting cable. These intermediate supports diminish the more extreme portion of the sag which would result from passage of the load across a single cable span.

Two overhead support cables pass over the towers, and are 14 ft. center-to-center on the tower. However, they are brought together above the first compensating A-frame out from each tower and pulled apart again to pass over the central A-frames on the 10-ft. centers. This zig-zag position of the support cables in the horizontal plane has a decided damping effect on all the lateral sway of the system, and prevents any build-up of sway in gusty winds. Further reduction of sway is effected by the fact that the two track cables are in a horizontal plane, 7 ft. on center. These track cables are suspended from the support cables by the A-frames and upon them the ferry car is carried.

Concrete block counterweights are hung over arms inclined away from each tower, there being two such counter-



THE CABLE TRAM was built in the jungle with unskilled Bolivian labor. The truck shown above, made one of the first crossings on the transporter car, which is capable of carrying a load of 6 tons. Shifting gravel bars and the existence of rock ridges in the stream channel prevent the use of ferry service commonly used in such areas.

weights at each end of the system. Those which balance the track cables have only a slight movement, usually about 4 in., while those attached to the support cables have a much greater range of movement. In order to avoid friction and abrasion the support cables are carried on four-wheeled trucks over the tower tops, these trucks running on rails which are a part of the tower.

In addition to the support and track cables, two tie cables link the tops of the towers together for the purpose of resisting creep toward the main span, and the ends of those are then also tied to the inclined anchorage frames.

The ferry car

The suspended ferry car is a platform 20 ft. long and 9 ft. clear width with steel mesh sidewalls 3½ ft. high and cable end gates. It can safely carry a loaded 6-ton truck or an equivalent weight of livestock across the river.

The car is hung from a multi-wheeled carriage running on the two track cables. At either end of the run, the car passes partly through the tower structure to meet the loading dock, and remains suspended during loading and unloading operations. Access to the car is by means of a counterweighted entry bridge which lowers into position and is hooked securely to the car.

Level riding of the car in crossing the 885-ft. span is not only accomplished by breaking into 5 sub-spans, as described above, but is further facilitated by means of a compensating support system by which the support ropes from the overhead cable to the A-frames nearest the towers are interconnected to an independent, spring-loaded tension rope which operates over sheaves on a carriage which slides on the main support cable.

The actual operation of the sag-reducing system is simple. A tension frame is suspended on the overhead main cables. A compensating rope, the ends of which are fastened to the two support A-frames nearest the tower, passes through the sheaves in the tension frame. When a load is concentrated at or near one of the A-frames, it produces an uplift reaction on the ropes at the corresponding point near the far tower, and the reaction is transmitted through the compensating rope and tension frame so as to put part of the load at the point of uplift, thus reducing the sag at the car.

Slight power for hauling

An unexpectedly small amount of hauling power is required to move the transporter car. Because there is little or no sag and the movement is virtually horizontal, there is no need for power braking as the car approaches the center of the span, nor for an excess of power as it nears the farther tower.

The hauling rope is a ⅜-in. flexible steel cable which passes around a gypsy spool to which driving power is furnished through a clutch by a 20-hp. gasoline motor. The hauling rope is an endless cable and is held at a nearly constant tension by a spring-loaded sheave at the end of the bridge opposite from the engine. The engine is mounted on a welded steel bedplate, imbedded in one of the concrete kicker blocks supporting the counterweight frame. In case of engine failure while the car is part way across the span, the cage can be moved by hand to the anchorage.

The haul rope moves always in the same direction, and the direction of movement and stop and start controls are on the car itself.

No sag in the haul rope

To reduce sag in the haul rope, two carriages are provided, approximately 442 ft. apart, each equipped with supporting sheaves through which the haul rope may run. The carriages are connected by another light rope spliced so as to be endless. Whenever the ferry platform is at one of the towers, one of the carriages is always at midspan, the other outside the car. As the car moves toward the center, the support carriages are stationary, but upon reaching the center, it pushes the carriage from that point ahead of it, dragging the other 442 ft. behind, thus at no time allowing a span in the haul rope of more than half the total length of the transporter.

The design and fabrication of the transporter was carried out in the Roebling plant at Trenton, N. J. It was shipped by steamer to Arica, Chile, thence by train to La Paz, Bolivia, and finally to the erection site by truck, mule-back and canoe.

FLASH

Morrison-Knudsen Co., Boise, Ida. has announced that, associated with S. D. Bechtel & Associates, of San Francisco, it will participate in reconstruction work in the Philippine Islands, and other Pacific war areas. A Philippine subsidiary has been formed, known as Soriano & Co., with Col. Andres Soriano, formerly aide to Gen. MacArthur, as chairman of the board. No work has yet been officially announced, but the company is getting equipment and resources organized for an early start. No announcement has been made concerning employment possibilities for American construction men.

Housing Needs Greatest in Industry

WESTERN CONSTRUCTION NEWS counts it a privilege to reproduce herewith the timely message delivered by AGC National President Dick at the Annual Meeting of the Southern California Chapter of the association in Hollywood on Dec. 14. It is believed that a frank review of the difficulties facing the postwar construction industry is a healthy thing.

By HARRY A. DICK
President
Associated General Contractors of America
President, Gilpin Construction Co.
Portland, Oregon

ABUNDANT EVIDENCE already confronts us as to the difficulty in shifting from an all-out and united war effort to peacetime operations in our industry and all industry. Pent-up and piled-up demands resulting from restricted civilian production in the war, together with the scarcity of materials, are raising problems of paramount importance, not only to our industry but also to our national economy, and indeed, to our system of free enterprise and American way of life.

In the immediate present the most discouraging outlook is the strike situation. Industrial strife unquestionably is slowing the pace of reconversion. Price difficulties are also a deterrent factor in the expanded operations picture. Construction is vitally affected by developments in all these fields—since the extent to which construction demands can be met depends in large measure on developments in our national economy.

In solving our present problems, sincere and united effort is needed of the type that was used in the war. In many respects these problems are as important to our national welfare as those involved in the war—and our problems in the construction industry must be considered from the viewpoint of our national welfare.

Immediate problems of the industry

Now is the time for those who are a part of the construction industry, and those of the general public who expect something from the construction industry, to face some hard and unpleasant facts.

Throughout the land, in the halls of Congress and in offices of the administration, there is a clamor for sufficient housing for returned veterans and their families, and others who do not have adequate places to live.

The first fact to be faced squarely is that there will not be within the next year, or the next few years after that, the kinds of places available in which everyone would like to live. This fact is unpleasant, but the quicker it is recognized, the better for everyone concerned.

As the National Housing Agency has pointed out, the nation entered the war with a deficit of good houses. During the war most home construction, except temporary housing for war workers at sites of war industries, was stopped. During the war period there were an unusual number of marriages, and an unusual number of babies, so that there is suddenly a tremendous demand for places for families to live.

Now with this deficiency in housing and tremendous increase in the number of families, we are confronted with shortage of construction materials and construction labor.

In spite of all the miracles which the construction industry performed for the war effort, and in spite of its tremendous potentialities for construction today, the demand for housing and other construction cannot be met overnight.

Our deficit of housing and our current shortage of housing materials, and the current shortages of construction labor, are symptoms of how drastically normal operations of the construction industry were curtailed for the war effort.

Scarcity of materials

Lumber is one of the scarce materials for housing. The war effort has stripped clean our stocks of lumber. Even though there was a great increase in lumber production, war demands literally grabbed lumber out of the forests. At present there is little seasoned lumber which is suitable for construction of good houses. Uncured lumber which will start to curl as soon as it is nailed to a studding is hardly satisfactory for the kind of a house most of our veterans want.

Brick, another important material for housing construction, and structural tile, were materials which were little used for war purposes. Many plants manufacturing these materials were closed during the war, and existing stocks were used up. Now the industries producing those materials must re-open their plants and reassemble their working forces.

One of the factors retarding a high volume of production in such industries is a shortage of labor. Labor is scarce because previously wages in many of the industries producing construction materials had been low. The low wages helped to hold down costs of those materials, and of the completed structure. Now, with the general demand for wage increases, workers are unwilling to return to the plants even for wages considerably higher than had been paid previously. Wage increases sufficient to attract labor to those plants must be approved by the federal government. Such wage increases require an increase in the sale price of those materials unless the manufacturer is to produce them at a deficit. No good comes to anyone if a producer goes broke, and hence out of business, producing a commodity at a loss.

Securing the necessary governmental permission for those wage and price increases takes time. Substantial progress is being made in increasing the production of scarce construction materials, and by spring, the production should, according to statement of the producers, be adequate to supply all needs. Production by spring, of course, will not put a roof over the head of anyone during the winter months.

HARRY A. DICK

Shortage of construction labor

The construction industry is experiencing another difficulty besides scarcity of materials. That is the shortage of skilled and unskilled labor for all types of construction.

This is true in spite of the fact that by and large the construction industry pays the highest hourly wage rates of all industries. Where construction labor has disappeared is a question hard to answer. During the war period contractors somehow found sufficient labor to complete war jobs on time. In a free country such as this there are not, and should not be, laws to compel a man to work when he does not want to. But the fact remains that in spite of all the fears of unemployment, in spite of all the statistics about unemployment, the industry with the highest average hourly wage rates in America cannot find enough workers throughout the country to carry on its work in a manner satisfactory to its customers.

Plans on housing

In this period of a housing shortage, many suggestions have been put forward for its cure. One suggestion is to

stop all types of construction other than housing in order to force the construction of homes for veterans. Another is to restore the allocation and priority system for construction materials and allocate the major share to housing construction.

The suggestion to stop all other types of construction is put forth sincerely, but it would not add substantially to the construction of housing. The stoppage of work on a highway project in Arizona, or a levee in Missouri will not result in one more house in New York, Chicago or San Francisco. The stoppage of such types of construction as highway, airport, railroad, flood control, irrigation, sewer, and water works, industrial and others throughout the country would release few materials and little manpower for construction of housing in places where it is needed most.

Should highway construction, for example, be shut off? Estimates are that unless our major highways are improved, and unless there is more moderation in driving on our highways, the casualties in our highway next year will equal our deaths in World War II. Certainly that type of improvement cannot be neglected.

To be sure, corporations and individuals will make money from industrial and commercial construction which is undertaken now, but such construction will enable increased production and consequently greater employment.

Cannot meet demand immediately

We cannot fulfill all of the old, deferred, and new demands for all of these facilities at one time. The war has too much depleted our supplies of materials and scattered our labor force to care for all of these demands tomorrow. What is to be done?

The thing to do is, of course, the best we can under the circumstances. Shutting off other types of construction will not help the housing situation very much. Or where it does, it can be at the expense of another type of construction which is also needed urgently.

The other suggestion made is that the allocation and priorities system should be revived and the majority of construction materials should be set aside for housing construction. This suggestion also should receive some attention.

This suggestion means the return of governmental controls, and the resumption of centralized planning and authority for the solution of a problem which is widespread but varies from community to community. To carry it out requires an admission that the normal American manner of meeting a local problem—even though widespread—has broken down.

I am not trying to minimize the seriousness of the current housing shortage. Nor do I say that the government should take no part in helping to solve the problem, or that the industry should refuse the help of government. But I do not believe that an allocation system administered from Washington at this time can channel equitably the scarce construction materials to the projects for which they are most urgently needed in each community. I believe that this is a job which must be done by those in the respective communities.

Most urgent needs first

In many communities throughout the nation, housing will be most urgently needed type of construction. In others it may be hospitals. In others it may be new commercial and industrial facilities to provide jobs. In others it may be flood control protection, irrigation facilities, power transmission lines, new highways to reduce accidents, or schools. Many communities may need several of these types of construction with varying degrees of urgency.

I recommend that the determination of what is needed most urgently in each community, and to which materials and manpower should be given first preference, should be made by those in that community. That decision should be arrived at by public officials, industrial executives, citizens' committees, and the general public through their newspapers and other means of public expression.

It is the recommendation of the directors of the Associated General Contractors of America that every contractor use his knowledge of the industry and of the construction needs of his community to recommend to those responsible for starting new construction the order in which projects of varying degrees of urgency should be undertaken in cases where all construction needs cannot be fulfilled immediately because of shortages of materials and manpower.

That recommendation, as I interpret it, means that there will be times when you, and they, must conscientiously suggest postponement of work which would be of immediate profit to you, which, in the public interest, should be deferred because of some urgent work.

Want free private enterprise

We are a part of what we are proud to call free, competitive enterprise. If we are to be free and stay free, we must satisfy our customers and act in the public interest. We know that even if this industry nationally now were operating at the rate of $15,000,000,000 a year—greater than any previous volume in history—it would still require several years to fulfill the current demands. But this nation wants construction, and needs construction, and we must do everything within our power to satisfy those demands.

This is not a time when we can shrink from taking risks. The future may be uncertain. Costs may be uncertain. But you are not truly in business unless you are willing to take risks. I hardly need to say that to you general contractors whose whole business consists in taking calculated risks, but I do not believe that the fact can be over-emphasized that we must be willing to venture into the unknown in order to do our best to satisfy the needs of the public for construction now.

And finally, as to prices. You contractors who meet your clients from day to day know the difficulties you face in explaining that the increases in construction costs compared with pre-war times are reasonable and justified, and are in line with general increases for most commodities and services.

Although I urge none of you to depart from sound financing principles, I do believe that all of us must carefully consider the fact that there is a tremendous accumulated demand for construction and that pent-up needs will not be met immediately, so that this industry can count on a number of years of good business. We can, and should, base our prices on a reasonable percentage of profits to be secured over a period of years. The greatest black eye which this industry could receive from the public is to try to take advantage of the unprecedented demands for new construction to increase our prices over those for sound operations.

Conclusion

I have not meant to scold. As your elected president of the Associated General Contractors of America I have presented my views on problems now facing the construction industry. As a part of that industry I am proud to believe that it is one of the greatest in the nation.

Lieutenant General Eugene Reybold, who just retired as Chief of Engineers, U. S. Army, has stated that the one manner in which our enemies consistently underestimated us was our ability for construction, both at home and on the fighting fronts. Such an industry is not going to fail in doing its share for peace. It is big enough and alert enough to meet and solve its problems as they arise. In imagination, originality, and adaptability, no industry is more resourceful than the construction industry.

In solving industry problems, cooperative effort is required on both the local and national level — through our local chapter and through your national association. Your national association pledges its continued and unrelenting endeavor to help meet and solve the problems of the industry as they arise in the national field and to give support and guidance to the local chapter and its members in solving local problems.

Canada to Keep Alaska Road Open for Traffic

THE ALASKAN HIGHWAY will be open for civilian traffic as soon as possible, and persons may establish themselves in providing facilities along its route, according to Alex Aitken, secretary of the United States-Canada-Alaska Highway Association.

Aitken said the Canadian Minister of Trade and Commerce and the Minister of Natural Resources told him that the highway will be maintained at its present standard by the Dominion government and two individual provinces. The Dominion will be responsible for the portion within the Northwest and Yukon territories, and the areas within British Columbia and Alberta will be the responsibility of those provinces.

"It is anticipated the expenditure for maintenance will run around $2,000,000 a year," Aitken said, "The Dominion government will not really get into effective control until around next June."

Low Cost Home of Plywood and Steel

A plan for national distribution of interchangeable house parts through retail lumber dealers will provide comfortable, durable HomeOla manufactured houses to low-income groups—A five-room, two-story home can be erected in less than a day by a small crew

A PLAN FOR MAKING and marketing house parts that may well bring home ownership within the reach of many minimum-income families for the first time, has been evolved by Jacques Willis of Chicago, long-time proponent of "manufactured" houses. Since most of the fabrication is to be carried out in the West, Tacoma, Wash., was the scene recently of the first demonstration erection of one of the Willis units.

Convinced that the key to reduced cost of adequate, comfortable shelter lies in efficient distribution of factory-produced parts, Willis has devised a merchandising method incorporating these two striking features:

1. National distribution of interchangeable house parts through retail lumber dealers because the more than 21,000 such dealers comprise the largest, most potent distribution system for house components.

2. Complete manufacture of the parts at the sources of raw materials by experienced, mass-production enterprises and shipment of the packaged parts direct to retail dealers in carload lots.

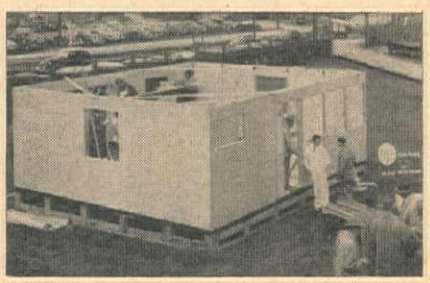
The objective: supply new homes within the reach of returning GIs and others with incomes under $3,000.

House a reality

This advanced plan for "house selling" is built around a newly-designed, two-story structure, called HomeOla, which in itself is both interesting and attractive. First of the HomeOlas was that erected at Tacoma, and 100 more demonstration houses are to go up immediately in 28 different states as ordered by the first dealers.

In the new structure, plywood and steel are combined for the first time as the two basic structural materials. Designers of the house point particularly to its steel "chassis" which consists of steel joists for both the first and second story. Steel stairs and window frames also are used.

All wall and floor panels are of plywood stressed-skin construction with the panels glued to both sides of light wood framing members. Floor sections are in four-foot squares and have special wearing surfaces of vertical grain fir. Wall panels are 4x8 ft. Blanket insulation in both wall and floor units is placed during fabrication.



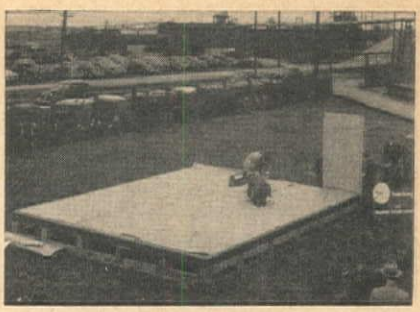
BY 10:30 A.M. the four walls of first story are all in place and steel beams to support second floor are being installed by small crew of workers. Plywood and steel, the two basic structural materials, are combined here.

Unique built-up plywood roof rafters, completely fabricated at the factory, have been developed, over which longitudinally braced plywood roof decking is placed; finish roofing is conventionally applied. Roof insulation, in blanket form, is attached to the back of second-story wall and ceiling panels.

Low cost

Exclusive of lot, the structure is intended to sell complete for less than $3,000. The house would be erected, finished and equipped with such essentials as plumbing and heating. Several variations of the basic design, which is 20x24 ft., are to be available with other models offered for those who desire more space, attached garage, etc. The basic house has a 12x20 ft. living room, dining space, kitchen and bath downstairs and two bedrooms on the second floor.

SECOND FLOOR is in place by lunch time. The bottom surface is ceiling of the first story. Steel stairway and load bearing walls on either side of it were installed before upper level plywood panels were carried upstairs.



ERECTION OF the factory-made house begins at 9:30 a.m. with assembly of steel chassis (floor joists), over which pre-finished floor panels are laid and covered with protecting paper. Then outer wall panels, of plywood, glued to framing members, are applied.

In perfecting the new house, emphasis was placed not only upon creation of a livable, durable home but likewise on ease of erection by crews maintained by or hired by the local lumber dealers.

Actually, the HomeOla parts will originate in more than one plant because a basic principle governing development of the house is the belief that all parts of the home should be brought to a completed state in the original manufacturing process if possible. Thus, fabrication of all plywood and lumber parts will be done in the Pacific Northwest at the source of the raw material and where methods for manufacturing those products have been perfected. Steel parts will be produced elsewhere.

Competitive selling

There will be no exclusive franchises, Willis has announced, and the HomeOla can be handled by any active retail building material dealer. Although shipment of the house parts will be to the dealer as a package, recognized distributors will perform a function in the distribution of the house similar to that now provided by them in handling plywood, doors and other materials.

Wall, floor and roof parts for the original HomeOla were manufactured by Buffelen Lumber & Mfg. Co. at Tacoma, Wash., which already produces lumber,

LOWER ROOF serves as horizontal bracing for fabricated plywood rafters of top roof. Over these is laid braced plywood roof decking. Gable ends are placed as decking is added. Insulation is attached to walls and ceiling panels.

HOMEOLA IS completely enclosed in afternoon. No special equipment is needed because no wall or floor part weighs more than 75 pounds. This house is 20 x 24 ft., with large living room, dining section, kitchen and bathroom downstairs and two bedrooms upstairs.

plywood and doors. (For that reason Tacoma was chosen as the site of the first erection.) The firm now is tooling up its assembly line for production of the 100 units already ordered by lumber dealers scattered throughout the country. Washington Veneer Co., of Olympia, Wash., another large producer of fir plywood, also will manufacture the wood-glue-plywood parts.

All steel parts—including the chassis, window frames, stairs and plumbing assemblies—are being manufactured by Manitowoc Shipbuilding Co. of Manitowoc, Wis.

U. S. Engineers to Study Alaska Harbor Projects

RESOLUTIONS DIRECTING the Army Engineers to review navigation development reports on six Alaskan civil works projects have been received from the House of Representatives' Rivers and Harbors Committee by the Seattle District U. S. Army Engineers, according to an announcement by Col. Conrad P. Hardy, district engineer.

Ordered studied to determine advisability of developing projects are Douglas Harbor near Juneau, report previously submitted by Army Engineers May 14, 1937; Homer Harbor on Kachemak Bay, Cook Inlet near Anchorage, previously reported to Congress Feb. 25, 1937; Kake Harbor, Kupreanof Island, northwest coast of Frederick Sound, navigation improvements reported on by Engineers Nov., 1936; and channel across Prince of Wales Island to avoid navigation in open seas, previously reported to Congress Jan. 5, 1937.

Ordered studied to determine advisability of modifying existing projects are Dry Pass, 50 mi. southwest of Wrangell on the West Coast of Prince of Wales Island, channel constructed by Seattle Army Engineers in 1937; and Ketchikan, small boat basin with protective breakwater, completed by Seattle Engineers in 1933.

According to Col. Hardy's announcement, studies of the six localities will be undertaken as soon as previously scheduled hearings and reports already projected for development of Alaskan harbors have been completed.

Commerce Department Reports Serious Shortages for 1946

DESPITE RECENT GAINS in the production of many critical construction materials, the overall outlook for early 1946 is pessimistic with serious shortages plaguing the industry, according to a December report by the Construction Division, Department of Commerce.

In many cases production appears to be ample to meet demands, but production of brick, cast iron soil pipe, gypsum lath, lumber and lumber products, cast iron radiation and small steel boilers must be stepped up sharply over the present rate if 1946 requirements are to be met.

Furthermore, dealers' inventories of these products are virtually exhausted and shortages will doubtless continue until these can be rebuilt to near normal levels.

According to the report, the current outlook for specific materials is as follows:

Steel: Current production reaching higher levels than anticipated. If the strike called for January 14 does not materialize, outlook is good, otherwise priorities may have to be reinstituted.

Cast Iron Soil Pipe: Production improving but supply still short, with little stock available. Some evidence of a return of labor to the industry and of foundry re-openings.

Cast Iron Pressure Pipe: Position somewhat better than soil pipe. Orders very heavy and increasing.

Portland Cement: Now in ample supply; but lack of coal and manpower impeding building up of inventories.

Building Blocks: Orders increasing.

Concrete Pipe: Plants operating to capacity of present labor supply. Adequate labor supply dependent on wage increases.

Gypsum Board: Supply generally adequate for current construction activity.

Asphalt Roofing, Siding, Felts: Heavy demands by floor covering and automotive industries causing shortages for construction. Large maintenance and repair demands in prospect.

Common and Face Brick: Estimates indicate increasing production adequate to meet construction activity.

Structural Clay Tile: Recent spot survey forecasts sharp gains in production.

Vitrified Clay Sewer Pipe: Shipments continue to exceed production. Production slowly improving, but not in proportion to increasing backlog of orders.

Lumber: Production declining. Labor difficulties in winter producing areas, cost-price relationships and continued manpower shortages principal contributing factors. Mill and distributors' stocks at an all-time low.

Hardwood Flooring: Not keeping pace with construction demands.

Wood Shingles: Current production negligible. Shortage of labor and logs are the deterrents.

Plywood: Production off; but some gains reported in warehouse inventories.

Steel Windows: Both industrial and residential windows continue in tight supply. Stocks low.

Hardware and Hand Tools: Supply of better grades of hardware sufficient for current needs. Less expensive hardware short due to lack of gray iron castings. Hand tools, ladders, and wheelbarrows in short supply.

Nails: Small size nails continue in short supply.

Cast Iron Boilers (steam and hot water): Production slow. Small house sizes critically short.

Cast Iron Radiation. Production low. Stocks extremely low. Situation shows no improvement.

Electrical Materials: Factory shipments of supplies will lag behind orders 2 to 3 months, and fixtures from 3 to 6 months.

Soldiers Told How Much Cement in Grand Coulee

THANKS TO DETAILED records maintained by the Bureau of Reclamation, a group of soldiers at Stinson Field, Texas, now can settle their long-standing wager regarding the amount of cement used to date in the building of Grand Coulee dam, largest concrete structure in the world.

The answer, as supplied by Chief Engineer Walker R. Young, is 9,706,106 bbl. of cement in the dam proper, plus 436,714 bbl. in the two powerhouses—a total of 10,142,820 bbl. Young added that 214,000 bbl. of cement were used for grouting and not in making concrete, and thus are not counted in the totals.

Young's reply was in response to a request from James S. Davis, who said he was writing in behalf of his fellow soldiers in the 1002d Air Materiel Squadron, 564th Air Service Group, Stinson Field, San Antonio. Without "acceptable proof" the wagers could not be settled, Davis explained.

Although the bets centered around the quantity of "cement" used in Grand Coulee dam, Young thought the soldiers might have confused this ingredient of concrete with the concrete itself. So he also supplied Davis with information on the amount of concrete used as follows: 10,230,776 cu. yd. in the dam and all structures considered part of the dam; 321,113 cu. yd. in the two powerhouses. Total: 10,551,889 cu. yd. of concrete.

"With this information I trust that your wager can be settled," Young concluded in his letter to Davis.

More FWA Aid for Planning West's Public Works Projects

MORE CONSTRUCTION PLANNING loans have been made by the Federal Works Agency, Bureau of Community Facilities, to western communities. These loans are made in order to facilitate immediate planning of facilities projects in the areas and are to be repaid without interest when construction is begun. The new advances are as follows:

Arizona

Coconino county was allotted $1,500 for planning a recreation building at Flagstaff, estimated to cost $40,000; Maricopa county received $28,400 to design court house extensions at Phoenix, which will probably cost $757,400; and Safford was awarded $3,700 for planning a water system and storage facilities, at an estimated cost of $81,100.

California

Chowchilla school district was given $6,900 to plan an elementary school, estimated to cost $136,575; El Cajon received $3,000 for planning sewer system additions and a treatment plant which will cost $66,300; Los Gatos received two allotments totaling $5,850 for planning street lighting and storm drain improvements which will cost in the aggregate $123,000; and five advances were made to Redondo Beach, as follows: $625 for equipment yard, cost $32,000; $375 for park improvements, cost $21,250; $425 for storm drains, cost $17,800; $375 for recreational center, cost $50,000; $6,375 for city hall, cost $300,000.

Earlimart was given $3,600 to design an elementary school which will cost $73,300; Eastbay Municipal Utility District, Alameda Co., was allotted $50,230 to assist in planning the $9,192,810 East Bay sewage disposal program; Groveland received $200 to design sewage facilities expected to cost $9,900; Laguna Beach, awarded $7,500 to plan a seawall costing $188,000; Long Beach Unified School District was allotted $18,946, in seven advances, all for school facilities, amounting to a total of $434,004; Los Gatos received $900 to lay out park improvements estimated to cost $17,000; Marysville was advanced $3,000 to design a $64,000 fire station; and Merced county received an allotment of $3,900 to plan school buildings at Atwater, estimated to cost $77,000.

Monterey School District was given $16,000 to use in planning an elementary school at Seaside, to cost $320,500; Oakland was advanced $8,000 to design four fire stations which will cost $42,500 each; Redondo Beach was awarded $1,950, in two allotments, for planning street improvements estimated to cost $136,000; Richmond was granted $30,000 to plan a storm drainage system which will cost $1,036,500; and Riverside county was advanced $12,750 to design a courthouse addition costing $305,000, and $20,400, in two amounts, for planning hospital facilities valued at $512,000.

Nevada

Reno was advanced $15,000 to plan a water distribution and irrigation system, cost estimated at $415,000; Reno school district was awarded $7,740 to plan an elementary school, which will cost $232,610; and the state of Nevada received two advances, $8,000 for a $217,400 receiving and observation hospital near Reno, and $6,500 for a classroom building at the University of Nevada, to cost $473,000.

New Mexico

Eastern New Mexico College at Portales received two advances totaling $2,750 for improvements which will cost a total of $129,359; Farmington was allotted three advances, totaling $6,440, to plan an irrigation system to cost $22,340, park and playground improvements valued at $42,400, and street improvements which will cost $163,000; Miners Hospital at Raton was allocated $5,000 for advance planning of a new medical wing to cost $250,000; and Roswell was given $3,600 to lay out a fair ground which will cost $119,500.

North Dakota

Bismarck Board of Education was granted $2,660 with which to plan an addition to an elementary school, estimated to cost $107,765.

Oklahoma

Elk City received an advance of $5,444 for planning sewer extensions and plant alterations which will probably cost $141,820, and another advance of $8,000 for planning a municipal building, estimated at $227,750.

Oregon

Lincoln County School District was allotted $4,850 for planning a grade school addition at Newport, which will cost $135,000, and $3,200 for a similar addition at Siletz, which will cost $78,000; Lane County School District received $4,296 for designing a grade school at Springfield, which is estimated to cost $127,000; and Oregon City was advanced $10,000 for planning an interceptor sewer and treatment plant, estimated to cost $216,000.

South Dakota

Newell was advanced $1,500 to design a water supply and distribution system which is estimated to cost $32,400.

Texas

The Brazos River Conservation and Reclamation District was allocated $15,000 to assist in planning a dam and power plant, which it is estimated will cost $4,420,000; Del Rio School District received two advances of $1,800 each for two high school improvements, each of which will cost $81,025; Fort Worth was advanced $6,000 to design an addition to a water pumping plant which will probably cost $210,000; Munday received $4,400 for designing paving and other street work, estimated to cost $162,920; and Rocksprings received an advance of $3,510 for planning street work, estimated to cost $99,000, and $1,399 to plan the rehabilitation of 8.75 mi. of water distributing system, which will cost $39,468. Southwest Texas Teachers College in San Marcos got two advances, $4,500 for a $175,000 dormitory, and $2,000 for a $71,000 dormitory.

Eleven advances have been made to Temple, aggregating $30,566, for carrying to the contract stage $1,075,601 worth of projects, all school facilities; Terry county received three advances for planning secondary road improvements, totaling $13,406, for 33 mi. of road which will cost $314,486.

Utah

Delta was awarded $760 to design a municipal swimming pool at an estimated cost of $22,800; Ferron received two advances, $625 for planning livestock buildings which will cost $17,500, and $570 for extensions to the water distribution system, cost $15,900; and Ogden also received two advances, $4,560 for a fire station to cost $138,200, and $1,140 for a second fire station which will cost $33,800.

Washington

Langley was advanced $400 to aid in planning a new city hall to cost $10,650; Morton received $1,200 to design a water storage tank, costing $47,600; Mt. Vernon High School District was allotted $16,500 to lay out numerous high school improvements to cost a total of $445,000; Pierce county received $10,100 to design a juvenile detention home at Tacoma, which will cost $275,000; and Rockford School District was loaned $1,900 to design additions and alterations to a gymnasium, total cost $38,900.

Wyoming

Basin has received $2,500 to plan a municipal auditorium which will cost $93,842; Newcastle was advanced $2,000 to design a sewer system and disposal plant at an estimated cost of $75,000; and Sheridan county, $800 for planning fair ground improvements, cost $22,150.

Hawaii

County of Hawaii has been given four advances for planning, as follows: $9,000 for a hospital at Honokaa, to cost $209,000, $2,000 for water supply additions to cost $52,000, $1,400 for water system improvements costing $28,400, and $5,000 for water system improvements at Hilo estimated at $261,000; Honolulu was advanced $50,000 to design a water conduit which will probably cost $1,080,000; Kauai county three advances, $1,500 for waterworks to cost $50,000, $3,750 for a police and court building at Lihue, estimated at $78,750, and $1,450 for a similar building at Hanapepe, which will cost $30,450; and Maui county received $8,000 in advances, all for waterworks, estimated to cost in the aggregate, $220,700.

NEWS OF WESTERN CONSTRUCTION

JANUARY, 1946

China Remits First Payment For U. S. Engineering Services

A PAYMENT OF $250,000 has been made by the government of China to the United States Bureau of Reclamation to cover initial costs of services to be rendered by Bureau engineers in working out plans for a basin-wide development program in the Yangtze river valley, it has been announced.

The payment was made in accordance with terms of a recently negotiated contract under which the staff of the Bureau of Reclamation will prepare the plans for huge irrigation and hydroelectric projects to conserve and control waters of the Yangtze river for the agricultural and industrial growth of China.

Plans for the proposed development to be undertaken by the government of China call for construction of the largest dam ever built, the world's largest hydroelectric plant, hundreds of miles of irrigation canals, a network of smaller dams and other facilities to regulate the river and its tributaries.

Bureau engineers, in addition to working out the overall plan for comprehensive development of Yangtze basin resources, will prepare the designs, specifications and cost estimates of the engineering works to be constructed. Estimated cost of this planning work is $500,000. The initial $250,000 payment to the Bureau was made through the New York office of the National Resources Commission of China.

The contract provides only for technical assistance of the Bureau in planning and designing. Financing and construction of the proposed development will be entirely in the hands of the Chinese government.

Key engineering feature of the project would be a dam larger than Grand Coulee to be located in the gorge of the Yangtze near Ichang. It would create a reservoir 250 mi. long and, with other works to be constructed, would provide water for irrigating ten million acres of land and otherwise control the flow of the river to free millions of people from the famines and floods which have ravaged the valley for centuries.

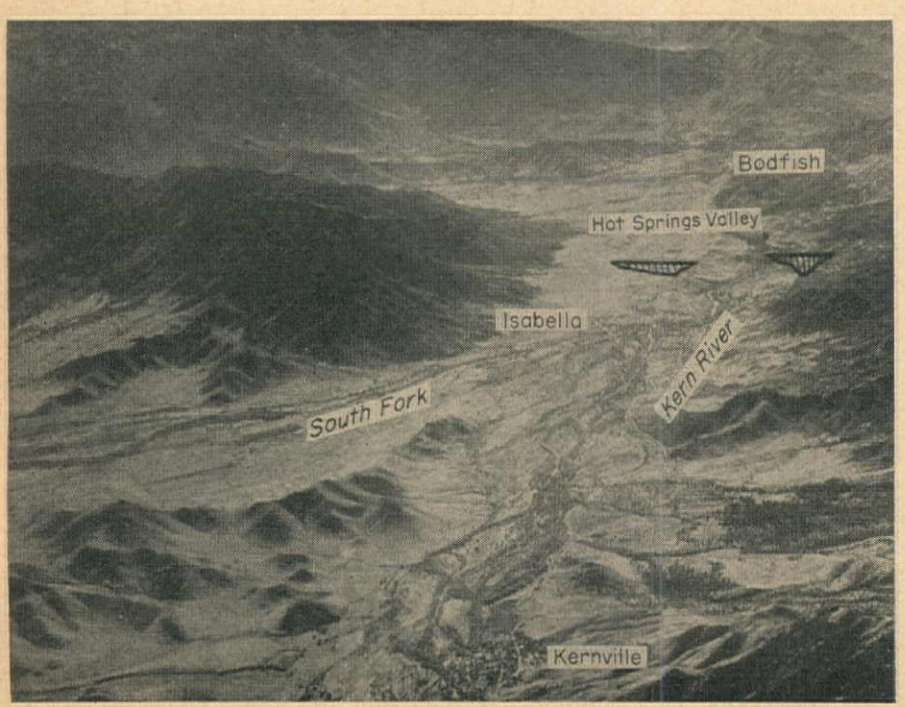
Development plans also provide for the generation of huge quantities of electric power for industrial development, and for the improvement of navigation to permit ocean-going steamers to penetrate far into the interior of China.

Commissioner of Reclamation Michael W. Straus, recently appointed by President Truman, said that the design and planning work by Bureau technicians will be done at the Denver office under the general supervision of Chief Engineer Walker R. Young. In direct charge will be John Lucian Savage, until recently chief designing engineer of the Bureau and internationally known as the designer of Boulder and Grand Coulee dams. Savage spent several months in China last year preparing the preliminary report on the development.

Part of the work on the plans and designs for Yangtze basin projects will be done by engineers and other technicians from China, working under the Bureau's engineering staff.

ISABELLA DAM ON KERN RIVER TO REQUIRE TWO STRUCTURES

PLANS OF THE U. S. Engineer Department, Sacramento, Calif., District for Isabella Dam on the Kern River south of Bakersfield, Calif., indicate the need for two structures. The main dam will be of reinforced concrete, 175 ft. high, with a 17-ft. roadway across the crest, 1,880 ft. long. A compacted earth dike will cross Hot Springs valley east of the main river. The dike will be 900 ft. long, 88 ft. high. Storage will be 550,000 ac. ft. The pool will reach 8 mi upstream. A 10-ft. tunnel will divert water to the Arvin - Edison water storage district.



Peru to Spend Huge Sum On Highway Construction

PERU WILL SPEND at least $10,000,000 for highway construction equipment in the next five years, according to Eduardo A. Salgado, Assistant Director of the Peruvian Highway Department, and Juan Quirago, the department's

chief designing engineer. These engineers have just arrived in Washington as the guests of the Office of Inter-American Affairs. They expect to spend three months here visiting road building machinery plants and studying U. S. highway construction methods. The American Road Builders' Association and the Public Roads Administration are cooperating in their tour.

"Peru has embarked on a five-year highway building program that will involve an expenditure of over $50,000,000," they announce. "Of this amount, at least 20 per cent will go for equipment and machinery. Twenty years ago, Peru had less than 2,000 kilometers of usable highways. Today the republic has nearly 32,000 km., and the five-year program will extend it much farther."

The Peruvian section of the Pan-American Highway has been completed. It extends from the border of Ecuador to the border of Chile and more than half of the 2,936 km. have already been asphalted. The visitors added that the Pan-American Highway across Colombia from Venezuela to Ecuador had also been completed.

Construction Industry To Aid Vet Employment

"AT LEAST 600,000 men now in the armed forces have had military training or civilian experience in phases of construction work," Sen. James E. Murray (Montana), chairman of the Senate Small Business Committee, stated, in announcing hearings by his committee to explore the opportunities for veterans in construction and the timing of construction to meet employment needs.

"The construction industry," Senator Murray continued, "will require more skilled workers than before the war, if postwar construction volume is to be maintained at the high levels we need to meet the accumulated demand of postponed construction."

Construction is, in normal times, the largest non-agricultural activity in the nation. It can contribute in a large measure to postwar full employment, if restrictions are removed as quickly as improvement in the war situation permits. Employment for millions of returning veterans and discharged war workers can be provided in the construction industry.

Representatives of the War and Navy Departments, the Retraining and Reemployment Administration and the building trades unions have been asked to appear before the committee to state what is being done by their organizations to aid veterans and war workers who want work in construction. The Office of War Mobilization and Reconversion has been asked to explain the Government's policy on construction during the reconversion period. The United States Chamber of Commerce has been asked to report on what private industry wants government to do to maintain employment in construction.

Michael W. Straus Takes Over Reclamation Commission Job

MICHAEL W. STRAUS

PRESIDENT TRUMAN on Dec. 12 announced the appointment of Michael W. Straus as Commissioner of Reclamation and the retirement of Harry W. Bashore from that office. It is expected that Straus will carry forward the plans for an extensive postwar reclamation and natural resource development.

Straus resigned his office as Assistant Secretary of the Interior, a post he has held for 12 years, to undertake the new task when Commissioner Bashore insisted upon exercising his retirement rights at the end of 39 years of service with the Bureau of Reclamation.

Commissioner Straus was born in Chicago in 1897 and attended the University of Wisconsin, specializing in chemical engineering until the first World War when he enlisted in the Navy. After that war he entered newspaper work, including a term as managing editor of a Chicago afternoon daily and national editor of a New York afternoon daily, eventually coming to Washington as a press association correspondent.

He entered government service in 1933 as an assistant to the Federal Public Works Administrator. In various offices and in extended visits to the areas of operations in the West, Mr. Straus has devoted his effort since joining the federal service to resource development and construction with the exception of one period. At the request of Donald Nelson, Straus was drafted into the War Production Board for a year as director of the War Production Drive Labor-Management Committee.

He returned to the Interior Department in 1943 as First Assistant Secretary of the Interior. Since then he has had immediate supervision of the Bureau of Reclamation, the Bureau of Mines, the Geological Survey, and the Petroleum Conservation Division—all western resource development agencies of the Department. He has worked with the late Commissioner of Reclamation Elwood Mead, former Commissioner John C. Page, and retiring Commissioner Harry W. Bashore and their staffs.

Former Commissioner Bashore has established an outstanding record in his long service in all branches of the Bureau of Reclamation in the field and in Washington. Under his guidance the Bureau was reorganized on a regional basis and investigation on 15 major river basins, including the Missouri river, was undertaken. Commissioner Bashore knew the Bureau from its very beginning, for he joined its staff in 1906 when the agency had been in existence only four years. His first task was as engineering aide and later superintendent on the North Platte Project in Nebraska and Wyoming.

In 1930, he was called to Spokane, Wash., where for two years he made the engineering investigations that preceded the building of Grand Coulee dam on the Columbia river. In 1932 he went to Sacramento to conduct preliminary investigations on another great reclamation project—the 2,000,000-ac. Central Valley development in California.

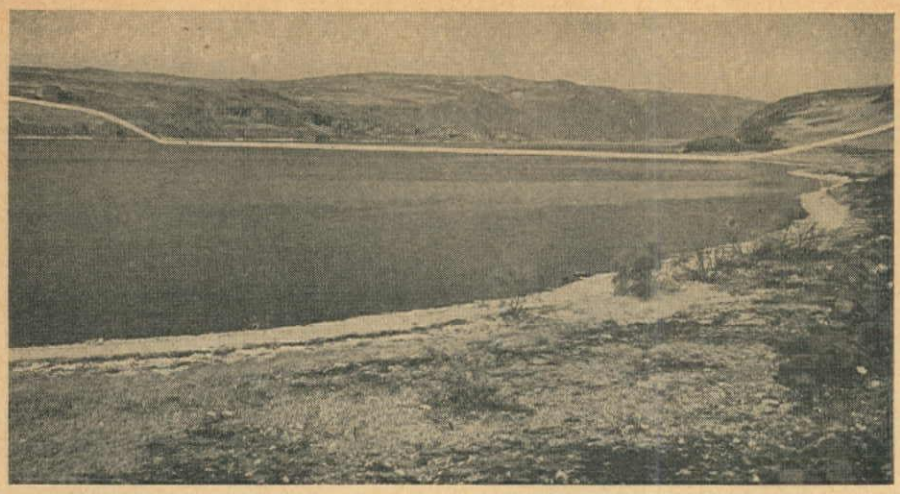
The following year he became construction engineer and supervised the building of the Alcova and Seminoe dams on the Kendrick Project in Wyoming. He was appointed Assistant Commissioner of the Bureau of Reclamation in 1939, and succeeded John C. Page as Commissioner in 1943.

Year's Gravel Output Shows Value Increase

A REPORT of the California Division of Mines shows that 35,370,143 net tons of miscellaneous stone, including sand, gravel, crushed rock, rubble and riprap, were produced in 1944 and were valued at $25,138,003. This production was about 220,000 tons less than that of the preceding year, but approximately $3,500,000 greater income was received.

Alameda County led in the production with an output worth over $6,000,000. Los Angeles County was second, with production valued at $4,500,000, and San Diego County was third, producing $1,600,000. Every county in the state, with the exception of Kings, had some production.

A considerable part of the gravel is passed through grading and washing plants, and the material over two inches in diameter is crushed, much of it being utilized in concrete mixtures. Most of the gravel used for road surfacing and railroad ballast is creek run material which has not been graded or washed. Material excavated for these purposes totaled 21,318,163 tons.



MILE-LO' G COLUMBIA BASIN SIPHON WILL CROSS SOAP LAKE

AN 18-FT. STEEL SIPHON IS PLANNED by the Bureau of Reclamation, to span Soap Lake, Washington, as part of the Columbia Basin irrigation system. The lake is 3,580 ft. wide at the siphon site and two principal plans for supporting the steel structure are being studied by the Bureau engineers. One would make use of a rock fill for a foundation; and the other would employ concrete piers to hold the pipe.

American Air Lines Make Record Gain

OPERATIONS OF THE 24 domestic and international airlines of the United States broke all records in their history for the year 1945, according to a review prepared by the Air Transport Association of America.

All categories of traffic registered unprecedented gains over 1944, ranging from 57 per cent in revenue passenger miles to about 39 per cent in ton miles of express and freight.

The number of planes in the domestic airline fleet reached the total of 402 as of Dec. 15, as compared with the pre-Pearl Harbor peak of 359, with scores more in process of reconversion and other new models coming off the production lines. The overseas fleet totaled 100 planes. But the aircraft were still insufficient to handle the steadily increasing demand for seats, particularly on the eastbound transcontinental trips when in December the Army and Navy temporarily took over 70 per cent of the eastbound space for returning soldiers and sailors. Passengers were looking toward the early months of 1946 when the flow of planes on order will reach substantial volume and bring the total fleet to more than 1414 planes, seating 58,284 passengers, before the end of the year 1946.

The principal categories for the domestic airlines are as follows:

Revenue passenger miles: A total of 3,525,619,866 as compared with 2,246,894,489 for 1944.

Revenue miles: A total of 219,169,459, as compared with 144,240,440 for 1944.

Revenue passengers: A total of 6,621,842, as compared with 4,575,716 for 1944.

Ton miles of mail: A total of 72,231,126, as compared with 51,143,837 in 1944.

Ton miles of express and cargo: A total of 24,505,243, as compared with 17,694,988 in 1944.

The network of air routes for the transportation of passengers, airmail, and cargo in the United States was increased by 4,034 mi. The total number of route miles which the airlines were authorized to fly by the Civil Aeronautics Board reached the all-time high of 66,971.

OBITUARIES . . .

John L. Newell, 38, project engineer for the Bureau of Reclamation at Balmorhea, Tex., and son of R. J. Newell, regional director of the Bureau's office at Boise, Ida., died recently following an illness of several weeks. Newell joined the Bureau soon after graduation from the University of Washington in 1930. He was employed in the Bureau's branch of design and construction at Denver, Colo., and also worked three years with the concrete control section at Boulder Dam during the construction stage.

* * *

James R. Fauver, 65, who has been Chairman of the National Reclamation Association Budget and Finance Committee, Chairman of the Tulare County Water Commission, Vice President of the Central Valley Project Association since 1937 and State Director of the National Reclamation Association for California for seven years, died Dec. 9 while on a fishing trip in Northern California.

* * *

Walter B. Tomlinson, 51, died recently in Walla Walla, Wash. He had been in charge of the carpenter shop at the Walla Walla army air field for three years. Previously he was a general contractor in that city.

* * *

Alfred A. Newton, civil engineer, died recently at Venice, Calif. He was one of Southern California's beach development leaders, being prominent in highway and recreational planning all along the shores of Santa Monica Bay.

Panama Shovels Rebuilt In Special Outdoor Shop

ONE OF THE BIGGEST single salvaging jobs undertaken by the Corps of Engineers was the repair of five 120-B Bucyrus-Erie, five cubic-yard, electrically operated, combination draglines and shovels. These five giant shovels had been used in important construction on the Panama Canal and had become badly worn through heavy use and exposure to the tropical climate.

Their work done in Panama, the giant shovels, costing $80,000 apiece, were needed elsewhere. Standing 27 ft. from the ground to the top of the cab, each shovel has an 80-ft. boom. Thirty-seven flat cars were required to transport the five shovels from the West Coast to the Missouri River Division Engineer Repair Shop at Kearney, Nebraska.

Special concrete aprons were poured to provide outdoor work areas for the repair of the machines, which were too large to be taken inside the shop. Special drying ovens were also required to handle the electrical motors and parts. All bronze bushings and other parts not readily available were made in the Engineer Repair Shop. At the end of 120 days—good time for a job of that sort—four of the shovels were rebuilt and the fifth was sold to an American coal mining company for $55,000.

James H. Rowe, one of Montana's foremost citizens, who helped pioneer the state's present system of highways, died suddenly Dec. 2 of a heart attack. He was a member of the Montana highway commission between 1920 and 1934, when the foundation of the highway system was laid.

* * *

George F. Cooper, formerly with the building division of the Frank Meline Realty Co., Los Angeles, Calif., died Dec. 7. He was at one time general manager of an Ohio city water company.

* * *

Arthur B. Campbell, employee of the Linnecke Electric Co., Sparks, Nev., died Dec. 1 after a brief illness. For 27 years he was an electrical contractor in Orland, Calif. He was 61 years old.

* * *

James Anderies, retired Denver, Colo., building contractor, died recently. He was 77 years old and had retired from business 15 years ago.

* * *

E. U. Hooper, Reno, Nev., building contractor, died at his home in Reno. He had conducted his business for many years there.

* * *

George Robert Carson, Vancouver, B. C., building contractor, died in Vancouver recently. He was 83 years old.

* * *

Enoch Nyland, building contractor, died in Los Angeles, Calif. He was 63 years old.

WASHINGTON NEWS

. . . for the Construction West

By ARNOLD KRUCKMAN

WASHINGTON, D. C.—Kenneth W. Markwell, Assistant Commissioner of Reclamation, is the sole professional man with active engineering experience in the type of work for which the Bureau of Reclamation is responsible, now functioning among the top triumvirate of the Bureau. The new Commissioner of Reclamation, Michael W. Straus, is a professional newspaperman with considerable experience in Chicago, the home town of his sponsor, Harold L. Ickes, whose boast is that he has held a Cabinet job longer than anyone in the history of the United States. Commissioner Straus came into the Department of Interior as public relations channel for Mr. Ickes, bearing the rating of an assistant to the Federal Public Works Administrator, one of the numerous Ickes' early jobs. The other Assistant Commissioner of Reclamation, William E. Warne, also a professional newspaperman with varied experience as a correspondent, editor, reporter and publicity man, first came to notice in the Department as assistant to Straus, particularly as a member of the publicity staff of the Bureau of Reclamation. The close relationship of Commissioner Straus and Assistant Commissioner Warne, during the past stormy years, has been regarded in the Department of Interior itself as one of those Damon and Pythias intimacies which make history.

Why was Straus appointed?

In order to understand what the people in the Capital think about the Straus appointment, it is necessary to know some of the remoter background. As we all now know, the President insists the Army and Navy over-all direction should be vested in a Department of National Defense, with a new Cabinet job for a Secretary of National Defense. The Navy has obviously been most vigorously opposed to the idea. The Secretary of the Navy, Forrestal, has made no secret of his dislike for the plan. Forrestal, also, has made an effort to quit the Navy job. At the same time, historic Harold of the Department of Interior has not been so anxious to quit, but it was the general impression that some Senators have made his eventual disappearance an issue with the President.

The great problem connected with the political erasure of Chicago's contribution to Cabinet history was where to find a successor. Many were mentioned but none quite qualified. There was hope that Sen. O'Mahoney might be the man; but it finally was top-bracket Democratic opinion that the translation of O'Mahoney to the Cabinet post would give the Republicans a grand chance to send a Republican Senator in his place from Wyoming. It also was thought for a time that the appointment of Ed Pauley of California, the Democratic National Treasurer, to the Secretaryship of the Interior, would solve two problems: put a real Westerner with an understanding of Western business in a top Western place, and would enable the President to fulfill the promise he is said to have given Pauley to appoint him **to the next Cabinet job.** However, despite Pauley's powerful cinch on the funds doled out to those who come up for election, there were enough Senators whose objections made it quite certain Pauley could not be confirmed for the Interior job. Pauley's connection with oil, and with off-shore oil lands, are said to have been the chief reason. The Senators had nothing against Pauley personally, but they were unwilling to risk more Republican grand strategy along these lines.

On the other hand, for esoteric political reasons which are not understood by this un-subtle reporter, it was generally assumed the same Senators would have no objection to Ed Pauley, and his conjunction with oil, in the post of Secretary of the Navy. Be that as it may, the combination of Pauley and the Navy Secretaryship seems to have approached a climax the week before Christmas. Pauley suddenly flew back from Japan, and dropped into the Capital without the benefit of publicity.

The President moved the purely theoretical discussion of the Department of National Defense into a specific proposal by putting it up to Congress in very clearly defined terms to enact a law creating the Department. Almost simultaneously the President politely suggested he should hate to see Mr. Forrestal leave the headship of the Navy.

Delicate solution

Whether Forrestal actually will go early in the year, is not clear the last week in December. Nor is the Pauley situation quite clear. Clarification has an interest to the Department of the Interior, and to those who are particularly interested in the future of the Bureau of Reclamation. We get the idea here that Pauley is considered as AAA priority for the potential job of Secretary of National Defense. But it is not very certain when that job may be established. It might suddenly be rushed through early during the first quarter of 1946, or it may drag along with hearings and debates until late in the year. Apparently some of the subsurface factors may jell during the holiday recess, and it may become clearer how long it will take to put the new Department through the processing of Congress. This solution also might determine whether Pauley becomes Secretary of the Navy, or waits for the new job.

But more important still, there is the Interior Department Secretaryship. It seems to be the idea that it should, if possible, be left as is until the Navy portfolio, or the potential National Defense portfolio, are filled. This is said to be entirely agreeable to Harold Ickes, who thus prolongs the historic record of continuous occupancy of the Cabinet job, a duration record something like those endurance performances of the flyers who used to remain in the air for weeks, or months. It seems to be understood that when the time is right, the job will be bestowed upon former Senator D. Worth Clark, Democrat, of Idaho. He lives in Pocatello, is a lawyer, and knows the problems of the West from all angles. The word is that the post has been tentatively proposed to him, and that the various steps necessary to make certain it will be filled with a minimum of friction have been taken. The successive negotiations which have finally narrowed the choice to Sen. Clark have been in process for more than a year. He seems to satisfy the irrigation people, the mining people, the cattle interests, the ranchers, the industrialists, and the Democrats. The President likes him. If there is no slip between the cup and the lip, a contingency always present in politics, it seems certain Mr. Clark will be the next Secretary of the Interior.

The appointment of Straus is regarded as a logical part of the process. He gave up the place of First Assistant Secretary of the Interior to take over the Reclamation Commissionership. The local assumption is that he will remain there until the new Secretary is settled in his job, and until a new man, with engineering background, acceptable to the West, is found to fill the Reclamation Commissionership. After all this is accomplished, it is expected that Straus will go back to his First Assistant Secretaryship.

Inside maneuvers

Naturally, all this can come to pass only if someone does not derail the train of events. It must always be remembered, in matters affecting the Department of Interior, that it has a Palace Guard, and it has a group of glassy smooth politicians who seek to build up their own power by communizing the electrical power produced by the various activities under the control of the Department.

Abe Fortas, the Undersecretary, next in rank to Harold himself, is generally credited with an eager and active interest in the power problems. The Division of Power of the Department of the Interior is headed by Arthur E. Goldschmitt; Joel David Wolfsohn is the Executive Secretary of the National Power Policy Committee, headed by Ickes, and having its offices in the Department of Interior. Dr. Paul J. Raver, Administrator of the Bonneville Power Administration, is obviously one of the most powerful factors in the Interior power hierarchy, so important that he was often mentioned as the permanent successor of Harry W. Bashore.

Commissioner Straus and Assistant Commissioner Warne are not regarded as particularly feverish over the program to give away the power produced by Interior; they are not regarded as natural left-wingers, they are just normal, ambitious young men, who earnest-

ly hope to make their way smartly in Government with a minimum of friction. Under the Roosevelt administration, preferment apparently came most readily to those who could devise means by which national resources might be distributed with the least cost to those who benefited. The Truman administration presumably is following in the Roosevelt footsteps; but obviously the trail to the left often is lost. It is not so certain now that all the sweeping reforms suggested by the original White House Palace Guard are as apt to lead a young man to glory under the Truman banner. The political atmosphere is foggy, and the light is often dim, and it is a tough job for a young man to hold to the true path which may lead to success.

It is no secret that Harry W. Bashore quit the Reclamation Bureau because he found the Department policies were not consistent with his own ideas. Bashore resisted efforts to induce him to stay because he felt he could not be true to himself professionally or otherwise. He did not claim he held the ultimate answer to all problems, nor did he imply that everyone else is wrong. The effort that was made, when he left, to make it appear that he was too old for the job, or that he failed in the job because he permitted the Army Engineers to get the best of him, is the sort of smart slippery nastiness which makes substantial people disgusted, and causes them to hesitate to take government jobs.

Fortunately there are few agencies where conditions permit such practices.

Deficiency funds approved

The $2,500,000,000 Deficiency Appropriation finally was settled in conference between the House and Senate committees, providing, in round figures, $84,000,000 new funds for Reclamation Bureau expenditure. Davis Dam was finally allocated $5,900,000; Colorado - Big Thompson, $5,750,000; the Columbia Basin, $10,275,000; Colorado River, $1,000,000; Missouri River development, $10,780,000; Fort Peck Project, $800,000; general investigations, $1,000,000. The Central Valley was given $1,600,000 for installation of switch yards.

The most surprising item was the sum of $780,000, which was supplied by reason of the insistence on the part of the Senate, to begin construction of power lines and substations between Oroville and Sacramento, Calif. The action was unexpected because the item had been eliminated by the House. Members of the House Appropriations Committee had threatened to resign if the Ickes demand for transmission lines was allowed. It was forcibly pointed out that even a small sum, such as the $780,000 allowed, would be in effect an entering wedge which would establish the principle. Why the concession was made by the conferees the last days before adjournment is not clear. In essence it clears the way for installation of transmission lines by government anywhere to take power from government projects wherever they may be built.

The Deficiency Appropriation also carried $125,000,000 for flood control and harbors projects. It is estimated approximately $50,000,000 of this sum will be spent in the West. Some of the items are: Los Angeles and Long Beach harbors, $7,100,000; Suisun Canal, $160,000; Sacramento River, $390,000; San Joaquin River, $150,000; Santa Fe, Calif., reservoir, $900,500; Los Angeles River, $2,000,000; Big Dry Creek reservoir, $435,000; McKenzie River, Ore., $62,000; Detroit reservoir, Ore., $2,000,000; Dorena reservoir, $1,000,000; Mill Creek, Wash., $125,000; Mud Mountain reservoir, $257,000; Tacoma, Wash., $700,000; Yakima, Wash., $134,000. Advance planning: Creede, Colo., $6,000; Kings River, Tulare Basin, Pine Flat, Folsom reservoir, Table Mountain-Iron Canyon site, Terminus reservoir, Isabella reservoir, Calif., $600,000; Lookout Point reservoir, and Quartz Creek, Ore., $250,000; Success reservoir, New Melones reservoir, Calif., $175,000. The Deficiency Appropriation supplied Federal Works Agency with $12,500,000 for grants to states to make advance plans for public works; and $25,000,000 for federal-aid highways. Department of Agriculture received $18,000,000 to build forest roads.

Maj. Gen. Lewis A. Pick, who built the Stilwell Road in Burma, and who is author of the Pick Plan for the development of the Missouri River Basin, has been sent back to Omaha, Neb., as division engineer, Missouri River Division, Army Engineers, presumably to push through the plan by which Army Engineers combine with other government agencies to do the same job advocated by the backers of the MVA program. His immediate predecessor, Brig. Gen. Roscoe C. Crawford, is transferred from Omaha to Washington, D. C., as Assistant Chief of Army Engineers.

Surplus plants available

The Army, in mid-December, declared as surplus, for disposal through RFC: the Kaiser Industries, near Fontana, Calif.; the Sky Harbor Airport, Phoenix, Ariz.; Axelson Manufacturing plant, Vernon, Calif.; Basic Magnesium, Las Vegas, Nev.; Bohn Aluminum & Brass plant, Los Angeles; Douglas Aircraft plants, 3000 Ocean Park Blvd., Santa Monica, and at 1380 Sepulveda Blvd., Los Angeles; Electro Metallurgical plant, Spokane, Wash.; Hughes Aircraft plant, Culver City, Calif.; McKinney Aluminum plant, Vernon, Calif.; Consolidated-Vultee plant, near Tucson, Ariz.; Continental Airlines plant, Denver; United Airlines plant, near Cheyenne; Vard plant, Pasadena; Weber Showcase Co., Los Angeles.

Later in the month, RFC also offered Consolidated Vultee Aircraft plant, San Diego; Mohawk Petroleum plant, Bakersfield, Calif.; Rohr Aircraft plant, Chula Vista, Calif.; a coke production plant, Tacoma; coal-processing plant, Wilkeson, Wash.; Aircrafts Mechanics plant, Colorado Springs, Colo.; Channel Type Carbon Black plant, Monument, N. M.; 114-ac. farm tract, near Troutdale, Ore.; the Geneva Steel plant, with coal mines at Columbia, Utah; iron ore facilities at Cedar City, Utah; and quarry facilities at Payson, Utah. Bids for the Geneva plant will be opened March 1 in Washington, D. C.

The housing bill

The Wagner-Ellender-Taft housing bill, known formally as S. 1592, and H.R. 4899, is one of the heaviest documents offered for Congressional consideration the past few months. The House version, introduced by Congressman Patterson of California, consists of 110 printed pages. It is considered a very left-wingish housing bill. Sen. Taft's identification with it is a puzzle. It is generally assumed the Ohio man tacked his ideas onto the bill with the hope that his effort to speed housing might come more swiftly in connection with this bill.

The proposed law was before the Senate Banking and Currency Committee for approximately a month of daily hearings. There is little hope it will be reported for some time after the Congress returns in the middle of January. The bill stems from the minds of Leon H. Keyserling, one of the leading left-wingers in the National Housing Agency, and John B. Blandford, Jr., head of NHA and courageously left-wingish when the left wing is beginning to trail. The bill seeks to combine the National Housing Agency, the Federal Home Loan Bank Board, the Federal Housing Administration, the United States Housing Authority, and other agencies. It embraces all the public housing programs that apparently have ever been proposed.

The U. S. Chamber of Commerce opposed the measure, and analyzed the existing acute shortage as "the result of wartime restrictions on construction, a greatly increased marriage rate, and because reconversion has not yet reached the stage at which houses can be produced in volume. The problem cannot be solved by such legislation as S. 1592, directed primarily at increasing the supply of credit. It can be solved only by industry and community action to speed up production of building materials and houses and to lower costs." The bill is considered inflationary, and disturbing to the economy.

Personals

Maj. Gen. Thomas M. Robins, long the moving force in the civilian affairs of the Army Engineers, was given a very imposing review parade at Ft. Belvoir, Va., during which he was presented with another Oak Leaf Cluster to his DSM. Shortly after the review, Gen. Robins, now retired, started west, where he and Mrs. Robins will make their permanent home in Portland, Ore. Thomas Robins, Jr., recently out of the service, already is in Portland. . . . Lt. Col. Stanley L. Stewart, of Bisbee, Ariz., Maj. Horace S. Benbow of Colorado Springs, and Maj. Harold A. Fidler of Berkeley, Calif., all engineers, were awarded the Legion of Merit for distinguished services in connection with the production of the atomic bomb. . . . The State Department has issued several statements concerning the expulsion of an American civil engineer from Ecuador, who was charged with conspiring to overthrow the South American government. The name of the engineer, and of his company, is not given. The State Department does not approve of the alleged action of the engineer.

Farmers, Miners Oppose Idaho Dam

PLANS OF THE United States Engineer Corps for a dam at Springston, Kootenai county, Idaho, on the Coeur d'Alene river, have given rise to a strong controversy, which finds the farmers of the Coeur d'Alene river valley and the miners of Shoshone county aligned solidly against the Corps of Engineers and the Bonneville Power Administration, plus a group of farmers in the Rathdrum Prairie area, north of the city of Coeur d'Alene, who want the water to irrigate some 31,000 ac. of land.

Hearings have been held, at which both sides have been represented, and decision has been withheld.

The proposed dam would be earth and rock filled, 130 ft. above the valley floor. The reservoir will cover 31,000 ac., with a storage capacity of 2,800,000 ac. ft. The backwaters of the reservoir will reach to the outskirts of Kellogg, home of the giant Bunker Hill & Sullivan mine and smelter, and will menace the land on which the zinc conversion plant has been built, according to mining men.

Col. Conrad P. Hardy, Seattle district engineer, under whom the proposed project would come, summarized three major advantages of the proposal: (1) flood control for the Spokane-Columbia river basins; (2) irrigation water for the Rathdrum project; (3) a backlog of water for the Columbia river and Spokane river power plants. As auxiliary benefits he mentioned the fact that it would maintain Lake Coeur d'Alene at a firm level, and would provide better navigation for logs from the upper country.

The objections voiced by opponents are principally concerned with the feared damage to the rich mining area of the Coeur d'Alenes. While no workings would be directly affected, the great Osburn fault, which cuts a swath through the entire district, it is feared, might cause flooding of some of the underground workings.

It is estimated that if the proposal is carried out the state will have to spend about $7,000,000 for road relocation, and the Union Pacific railroad also will be faced with an undisclosed cost of relocation.

Much of the area to be flooded consists of lush bottom farm lands, many occupied by the families which hold the original patent, producing dairy and poultry products for the Shoshone county mining region. Aside from sentimental considerations, these farmers are relucant to abandon such a location so close to the mining areas with an assured market and low transportation costs.

BULLDOZER FOUND EFFECTIVE IN MOVING RAILROAD TIES TO MARKET

THE ORDINARY CONSTRUCTION bulldozer is shown in above U S. Forest Service photo being employed by the Wyoming Tie & Timber Co. to push 8x8-in. railroad ties into a river to float to the nearest railroad connection. The drive began August 4.

GAP LEFT IN BUILDINGS TO PERMIT PASSAGE OF ELECTRIC RAILROAD

DURING CONSTRUCTION of housing facilities at Fairfield-Suisun airport, it was found impracticable to remove a branch line of the Sacramento Northern Railway, which passed through the site of some of the enlisted men's barracks. Consequently the contractors, Stolte, Inc., Oakland, Calif., erected the buildings complete up to the right-of-way line on each side and left an unfinished gap. When tracks are removed later the uncompleted portion will be filled in. The complete story of construction of the buildings and runways at Fairfield-Suisun will be found on page 89 of this issue.

Los Angeles Pays Power Charges Far in Advance

ADVANCE PAYMENTS totaling more than $8,500,000 have been made during 1945 by the city of Los Angeles on generating charges in connection with the purchase of power from the plant at Boulder Dam. The payments were made to the Bureau of Reclamation and deposited in the United States treasury.

Power from the Boulder plant is allocated for sale by the Department of the Interior under contract with the city of Los Angeles and several other California municipalities and private utilities. These allottees under terms of the contract, are obligated to purchase the power output of the plant at rates computed to repay to the United States the construction cost of Boulder Dam and power plant, plus the cost of installing, operating and maintaining the generating equipment.

Payments by each allottee are based on the cost of the generating facilities allocated to its use. Rates are fixed to repay over a 50-year period, at 3 per cent interest, the amounts appropriated for such equipment by the Federal government, with title to the plant and its facilities remaining with the United States. Payments of generating charges for use of the equipment are in addition to payments made for the purchase of energy.

Revenues in excess of $31,000,000 have been received thus far from power sales at the Boulder plant. Of that total, approximately $9,490,000 has been received in advance payments on generating charges and toward repayment of costs for generating equipment. Substantial advance payments have also been made by the cities of Burbank and Pasadena in addition to those from Los Angeles. The Metropolitan Water District and other cities also use Boulder power.

Speaking of Employment . . .

JOBS

HELP WANTED

Salesman, estimator, supt. for large Building Material Dealer in San Joaquin Valley. Must have experience in construction, grading, excavating, concrete paving, asphalt paving. This would be permanent for the right party.

Write BOX 959
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

MEN WANTED

Laborers • Cement Men • Carpenters
Apply at Copperton, Utah Job or at
Bowers Building & Construction Co
1033 So. State St., Salt Lake City Utah

MEN

GRADUATE ENGINEER

Discharged Army Officer, graduate engineer, age 46, desires position with contracting or engineering firm. Experienced in design and construction of highways, flood control, drydocks and municipal improvements.

Write BOX 957
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

STRUCTURAL ENGINEER

Registered, civil, structural, age 34, experienced in industrial commercial buildings, invites correspondence leading to part-interest in private practice or responsible connection with firm of consulting engineers.

Write BOX 960
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

BLACKSMITH—TOOL SHARPENER

Employment recently terminated with war contract. Desires reemployment in San Francisco Bay Area, but will consider job in other locations offering steady employment on large contract. Good references and experience record including 8 yr. on Hetch Hetchy. Write Box 943, Western Construction News, 503 Market Street, San Francisco, California.

CIVIL ENGINEER

Graduate 1939, recently released from Army after 2½ years' service, desires position with contractor, estimating or field. Four years' experience office engineering in hydraulics, highways and structural steel design.

Write BOX 963
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

CONSTRUCTION ENGINEER

Discharged Navy Seabee Officer, 32 years of age, ten years' experience in earthwork, surfacing, utilities, and small building construction, graduate civil engineer, wants connections with construction outfit on West Coast.

BOX 965
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

CIVIL ENGINEER

Age 27, 3 years' construction experience including roads, airports, and buildings. 1½ years' executive and administrative experience with planning and supervision of demolition courses at the Engineer School. Desires position with future possibilities. Location not too important. Available after discharge from Corps of Engineers January 15, 1946.

BOX 956
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

SURVEYOR

Land Surveys—Hydrographic Surveys
Geodetic Surveys—Topographic Surveys
Building and Subdivision Layouts

ALBERT W. DANIELS
Licensed Land Surveyor
State of California

930 Armada Terrace, San Diego 6, Calif.
Phone Bayview 4957

Formerly with District Engineers Office, U. S. Coast Guard, 11th Naval District, and County Surveyor's Office, San Diego.

CAPABLE GRADUATE ENGINEER

35 years of age, with lots of push, wishes connection with construction contractor. Ten years' engineering experience in supervisory capacity. Small salary and bonus on production desired. Write your proposition to

R. BAKER
203 N. 86th St., Wauwatosa 13, Wisconsin

Sales Manager and General Purchasing Agent

University graduate, experienced in purchasing construction equipment, lumber, tools, steel camp equipment and commissary supplies; also fine record as Salesman and Sales Manager in Steel, Oil and Gasoline. Now employed but desires change.

Write BOX 964
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

CONSTRUCTION SUPERINTENDENT

Returning Lieutenant, C.E.C., U.S.N.R., is interested in obtaining position with heavy construction contractor in Northern California. Just completed three years service with the Seabee Corps, supervising construction of roads, air strips and naval installations in Pacific area. Formerly six years resident engineer, highway construction for California Division of Highways.

REPLY TO BOX 955
WESTERN CONSTRUCTION NEWS
503 Market Street, San Francisco 5, Calif.

Permanent Position Wanted

as CONSTRUCTION SUPERINTENDENT or SALES ENGINEER. Age 37, with background of college, surveying, inspection, general construction (3 years in Central America), engineering salesman of construction equipment, and civil engineer officer in Navy. Prefer position with large construction firm, or international sales organization selling construction equipment. Speak Spanish very well. Will accept foreign employment. Write Box 961, Western Construction News, 503 Market Street, San Francisco, California.

BULLDOZER and CARRYALL OPERATOR

anxious to secure employment outside United States. 16 years' experience. Reference furnished.

Write BOX 962
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

CONSTRUCTION FOREMAN OR SUPERINTENDENT

Construction Foreman or Superintendent, Veteran, age 25, excellent at reading blue prints, figure cost estimates, experienced in hiring. Will go anywhere in United States or will accept foreign contract.

BOX 958
WESTERN CONSTRUCTION NEWS
503 Market St., San Francisco, California

NEW BOOKS...

DESIGN—A Data Book for Civil Engineers — by Elwyn E. Seelye. Published by John Wiley & Sons, Inc., New York 16, N. Y. First of 3 vol. 539 pages, 9 x 11½. Price $7.50.

This large volume is packed with practical data arranged in a useful, easy-to-read form with abundant illustrations and tables useful to the civil engineer. The book includes important material on structures, sanitation, water supply, drainage, roads, airfields, dams, docks, bridges, and soils. It gives constants of nature, rules of practice, design formulas, details of engineering structures. Two other volumes will complete the set, one on specifications and costs, now in the press, and the other a "Field Manual."

* * *

APPLIED HYDRAULICS — By Herbert Addison. Published by John Wiley & Sons, Inc., London, reprinted in U. S. A. 614 pages, 5½ x 8. Price $6.50.

Revised third edition of this book presents the fundamental liquids and their properties both static and in motion. A full treatment is given the application of fluids in pipe systems, the control of water in open channels, the construction and performance of hydraulic turbines, and hydrostatic transmission and storage of energy. Pumping and pumping machinery are given thorough treatment by the author. Included in this volume are numerous problems with illustrated solutions as an aid to the reader.

* * *

URANIUM AND ATOMIC POWER—By Jack DeMent and H. C. Dake. Published by Chemical Publishing Co., Inc., Brooklyn, New York. 343 pages, 5 x 8½. Price $4.00.

The atomic bomb, the culmination of three years of intensive work by science, industry and the military forces, has made the man in the street aware of the danger to him and his family of the uncontrolled use of the basic power of the universe. Thus atomic power has become a great interest and concern to millions, whereas it was previously only of interest to a limited number of scientists. Here in a practical, clearly-written volume are all the underlying principles and theories essential to a thorough understanding of atomic power. Two chapters are devoted to the various occurrences of uranium and other associated minerals, with comprehensive treatment of their recognition by the use of spot tests, microchemical analysis, the use of fluorescence in testing and prospecting for radio-active minerals. An understandable discussion of the physics and chemistry involved in the extraction of uranium from its ores and the ultimate refining of the products to the point where nuclear fission can be accomplished is also provided in this volume.

Columbia River Cities Asked To Remove Pollution Sources

THE BUREAU of Reclamation has asked that all Washington cities bordering the Columbia River take steps to eliminate any sources of pollution to that stream which may exist in their boundaries. The request of the Bureau was concurred in by the Washington State Parks Board and the Columbia Basin Commission.

At the same time, Claude Greiger of the National Park Service informed the city of Spokane that his department would refuse to consider establishment of a proposed recreation area at the junction of the Spokane and Columbia rivers until the city had solved its pollution problems.

The joint request was made because of increasing use of Columbia River for irrigation, and the possibility which exists for contamination of fresh vegetables irrigated by polluted water. The addition of the extensive acreage of the Columbia Basin Project will further spotlight this need for clean water.

PERSONALLY SPEAKING

Brig. General Richard E. Mittelstaedt has been released from military service and has returned to his former position as Superintendent of the City Water Department in Sacramento, Calif. During his military career Mittelstaedt was commanding officer at Fort Richardson, near Anchorage, Alaska, for over a year. He has served 22 months in Hawaii and the South and Southwest Pacific theaters. **Carl Hoskinson,** who was appointed acting head of the water department during Mittelstaedt's absence has resumed his position as chief engineer of the department.

* * *

Robert Digges has been appointed general manager of Marinship Corp., Sausalito, Calif. He succeeds **William E. Waste,** who has become president of Bechtel Brothers, McCone Co., San Francisco, Calif. Taking Digges' former position as administrative manager of Marinship Corp., is **William R. Ayers.** Digges has had wide experience in construction work. In 1940 he was assistant to the general manager for Atkinson-Pollock Co. during construction of a $50,000,000 Navy fleet base on Terminal Island, Calif. He has built many of the skyscrapers in Chicago, Ill., and planned dredging operations for the Great Lakes. As one of the top executives with Marinship Corp., he is credited with the construction of the $17,000,000 shipyard.

* * *

Lt. Col. Norman Haner, civil engineer and former Seattle, Wash., consulting engineer, has been assigned to the Seattle District Army Engineers. In 1942, when Haner was called to active duty, he was sent to Recife, Brazil, for airport construction, and in 1944 was transferred to the Wilmington Engineer District. He was executive officer of the Boston Engineer District before being transferred to Seattle. Immediately preceding his army career he worked on fortification design for the San Francisco Engineer District and on flood control and fortification work in Providence, R. I., District.

* * *

The 6-member water resources board set up in California to draft a long-range plan for placing all the state's water resources to maximum beneficial use has been appointed by the Governor. Those named to the board are: **Lester Ready** of San Francisco, Calif., former chief engineer for the State Railroad Commission and consulting engineer for many water and power projects; **Prof. B. A. Etcheverry** of Berkeley, Calif., consulting engineer for the State Reclamation Board for 30 years; **Howard F. Cozzens,** Monterey Co. surveyor; **Roy Meikle,** chief engineer of the Modesto-Turlock Irrigation District since 1914; **Royal Miller,** Sacramento, Calif., businessman and civic leader; former Congressman **Phil D. Swing,** San Diego, Calif., co-author of the Swing-Johnson bill authorizing construction of Boulder dam and former chief counsel for the Imperial Irrigation District.

* * *

Eleven members of the Los Angeles, Calif., section of the American Society of Civil Engineers have been presented with Life Certificates of Membership. They are: **Jean M. Allen,** consulting engineer; **John P. Churchill,** consulting engineer; **Spencer V. Z. Cortelyou,** district engineer of State Division of Highways, L. A.; **George Cromwell,** San Diego Co. Water Co. engineer; **Robert H. Foster,** president of Mexico Coal & Coke Co.; **Willis T. Knowlton,** consulting engineer; **Charles T. Leeds,** consulting engineer; **John W. Miller,** Vega Aircraft Corp. engineer; **Robert B. Moran,** consulting engineer; **Henry Z. Osborne,** City Engineer's Office, L. A.; **Adalbert G. Volck,** A. G. Volck, Inc.

* * *

E. F. Halloran, former Deputy Regional Director WPB, has been appointed Acting Regional Director of CPA. He has jurisdiction over the agency's activities in Calif., Nev., Ariz., southern Ida. and Hawaii. His headquarters are in San Francisco, Calif. In private life he is an engineer and contractor. **James A. Folger** and **Don S. Neher** have returned to private business in San Francisco, Alameda and San Mateo counties. **Louis M. Dreves** is continuing as Deputy Regional Director in Charge of CPA at Los Angeles, Calif.

* * *

Walter L. Dickey, just released from the Navy with the rank of Commander in the Civil Engineer Corps, has been appointed chief engineer of the San Francisco, Calif., contracting firm of Erbentraut & Summers. At the outbreak of the war he was supervising construction on Midway Island, and later was in direct charge of much of the construction of the Hunters Point Navy Yard on San Francisco Bay.

N. G. Ayyangar, Chief Engineer for Irrigation of the Government of Madras, India, is touring the Bureau of Reclamation's projects in the West to study engineering methods. The government of India plans to start work on a $200,000,000 mile-long dam across the Godavari river within the next year or two. It hopes to obtain the services of **John Lucian Savage,** designer of Grand Coulee, Boulder and Shasta dams, and **Dr. Karl Terzaghi,** authority on soil mechanics.

* * *

Glenn Simmons has received a new assignment from the Bureau of Reclamation. He is now assistant superintendent of the Minidoka Project and has under his supervision the construction of a series of dams and canals on the south, north and main channels of the Snake river in Idaho. Since 1934 Simmons has been superintendent of operations and maintenance at Jackson Lake dam in Wyoming, and he has also supervised the Grassy Lake dam near Yellowstone. **James Bramen,** recently discharged from the Army, has taken over Simmons' duties as Jackson Lake superintendent.

* * *

Ben W. Creim is the Bureau of Reclamation's new Regional Power Manager at Sacramento, Calif. For the last 3½ years he served with the Navy as Administrative Officer for the Supervisor of Shipbuilding at Portland, Ore. Before entering the service, Creim was in charge of all of the Bonneville Power Administration's electrical construction work. Previous to that time he was with the Rural Electrification Administration in charge of design and construction of 70 projects in the 11 Western states. He has also served as consulting engineer for the city of Tulare, Calif., and as chief electrical engineer for the Modesto Irrigation District, Calif.

* * *

W. H. Penfield, chief engineer of the Milwaukee Road since 1935, has retired. He is succeeded by **R. J. Middleton.** Penfield entered the service of the road in 1899 as a construction and location engineer and had a prominent part in locating and building the Milwaukee lines from South Dakota to Washington. Middleton started with the road in 1906 as a draftsman in the bridge and building department. In 1913 he became engineer of track elevation in the Chicago area and was promoted to assistant chief engineer of western lines in 1918. In 1933 he moved to headquarters in Chicago as assistant chief engineer.

* * *

Henry Karrer has recently been appointed field office superintendent for the Kern County area by the Bureau of Reclamation. His previous positions include: field superintendent for the Balfour-Guthrie Investment Co., in Brentwood, Calif., irrigation engineer for the Emergency Rubber Project, and manager of the Patterson Water Co. at Patterson, Calif. Karrer replaces **Harry S. Riddell,** who has resigned to accept private employment.

* * *

Major Charles A. Jackson, Jr., civil engineer, has received his honorable discharge from the Army and is returning to his pre-war post of civilian engineer with the Seattle, Wash., District, Army Engineers. Before his discharge, Jackson served the Seattle District as chief of the Civil Works Branch. Prior to that position, he was assistant Olympic Area engineer at Port Townsend, Wash. In 1942 he was made area engineer in charge of airfield construction at Moses Lake, the largest runway project in the district, and also was in charge of construction for the Ephrata, Wash., Airbase, a $9,000,000 training center for the Air Corps.

DR. K. L. ROA is touring Bureau of Reclamation projects in the West as an assistant to N. G. Ayyangar, Chief Engineer for Irrigation of the Government of Madras, India. They are studying U. S. dams in preparation for building a dam in India which will cost $200,000,000 and will be a mile long, 400 ft. high and will block the second largest river.

* * *

Lt. General John C. H. Lee, in an article in a recent issue of the "Military Engineer," credited such projects as the Bonneville dam with developing superior military engineers for the U. S. Among engineering officers credited for their outstanding service in the war were: **Brig. General T. D. Weaver,** former resident engineer at Bonneville, who was petroleum planning and supply officer for the SHAEF; **Maj. General Cecil R. Moore,** former district engineer at Portland, Ore., who was chief engineer for the U. S. Army in England; and **Col. C. H. Bonesteel III,** former executive to Gen. Weaver at Bonneville, who was active in instructing mixed classes of British, Dominion and American engineering officers in England.

* * *

Lee C. Prickett has been appointed agricultural engineer in charge of the Bonneville Power Administration's rural utilization program. Previously, while he was with the War Department in Washington, D. C., he helped to engineer supply requirements for the African invasion. He also prepared reports on the electrical facilities of Palestine, Iran, Indo-China, Borneo and the Philippines. Prior to that, he spent 7 years with the Tennessee Valley Authority and Rural Electrification Administration.

* * *

Frederick W. Anderson, civil engineer, is now doing structural engineering work for Isadore Thompson in San Francisco, Calif. After graduation from the University of California in 1942, he accepted a position as structures engineer in the Stress Department of Boeing Aircraft Co., Seattle, Wash.

Col. Ralph A. Tudor has received his release from the U. S. Army where he served in the Corps of Engineers as the District Engineer of the Portland, Ore., District. Previous to May, 1943, when he entered the service, Tudor was the principal engineer for the Oakland-San Francisco Bay Bridge. His present affiliation is with Morrison-Knudsen Co., assigned to San Francisco, Calif., where he is assistant to the president, **Harry Morrison.** He is in charge of foreign projects for the company and will travel to India soon to see about construction projects there.

* * *

Sixteen members of the San Francisco, Calif., section of the American Society of Civil Engineers have been presented with Life Certificates of Membership. They are: **Augustine H. Ayers, Henry J. Brunnier, Reginald G. Clifford, Henry D. Dewell, Sinclair O. Harper, Everett H. Hatch, Charles H. Lee, Henry D. McGlashan, Charles C. Morris, Leon H. Nishkian, Otto W. Peterson, Leland S. Rosener, Felix H. Spitzer, Harry E. Squire, James J. Walsh,** and **Cyril Williams, Jr.**

* * *

N. E. Fordham, who has been employed by the Bureau of Reclamation for the past 35 years as master mechanic and inspector, has retired at the age of 70. He first started construction work in 1894 on the Chicago Drainage Canal. When Fordham began working for the Bureau in 1907, he was put on the Boise, Ida., project and later moved to the Arrowrock, Owyhee, Shoshone, Pathfinder, Guernsey, and other projects. His most recent work was on Shasta dam in California.

* * *

Fourteen applicants have received certificates to practice professional engineering in Oregon. They are: **Alton E. Alspaugh, Mark M. Clayton, Lester D. Copenhagen, Paul L. Dillon, Albert P. Ding, Lawrence T. Fisher, Roger Gillam, Edward J. Jaros, William L. Sasser, Robert C. Schuknecht, Carl R. Skooglund** and **Charles W. Harrison,** all of Portland, **Clifford McLean** of Valsets, and **Richard Rosecrans** of Salem.

* * *

Lt. Col. Edgar W. Blom is on terminal leave from the Corps of Engineers and has recently been appointed city manager of Redwood City, Calif. He succeeds **Robert W. Mead,** who resigned. After graduating from Iowa State College, Blom was with the Iowa State Highway Department for 10 years and later became assistant city manager of Ames, Iowa, before entering the service.

* * *

N. B. "Burt" Smith, after five years in the Army, has returned to Southern California, where he has been appointed city engineer of the city of San Gabriel. Prior to the war Smith was an engineer on the Colorado River Aqueduct. In the Army he was a Major in the Corps of Engineers and his principal assignment was with the Headquarters Western Defense Command, Presidio of San Francisco, Calif.

* * *

Oscar Thompson is vice president and manager of H. H. Larsen Co., San Francisco, Calif. Previously he was general superintendent for that company on the construction of the $12,000,000 powerhouse at the Pit River Project of the Pacific Gas &

Electric Co. In 1941 he was superintendent for Engineers, Ltd., in charge of construction of Alpine dam near Fairfax, Calif.

* * *

Robert B. Elliott is now chief of the Bonneville Power Administration's utilization section. Before joining the staff, he was with the War Production Board as head of the Office of Civilian Requirements for Oregon and southern Washington. He has had 18 years' experience in the utility sales field including 5 years as sales promotion and advertising manager for Portland Gas & Coke Co.

* * *

Lt. D. A. Gray is division officer in charge of the southern division of the San Diego Aqueduct. **H. J. Dickinson** is the division engineer, **Adolph Bock** is senior inspector, and **James Keith** is office manager at the Escondido, Calif., office. These men are in charge of all the tunnels on this Navy project.

* * *

James M. Orr, Jr., civil engineer at the AAF Overseas Replacement Depot at Kearns, Utah, has been presented the emblem for meritorious civilian service at an army installation. During his 3 years at Kearns he has developed many labor- and time-saving operations, among which is a new method of disposal of sludge manufactured by the sewage disposal plant.

* * *

Master Sergeant Grover E. Hillygus has received his discharge from the Army and has returned to Carson City, Nev. While in the service, he was a road designer with an engineer battalion and was awarded the Victory medal, the Asiatic-Pacific ribbon and the American Theater ribbon. Before entering the Army, Hillygus was deputy surveyor general of Nevada.

* * *

Raymond Matthew, supervising hydraulic engineer of the California Division of Water Resources, has recently been appointed chief engineer of the Colorado River Board, a state agency dealing with development on that river.

* * *

W. E. Orr, Jr., has been released from the Seabees where he was a lieutenant (sg) in the Mediterranean area. He is now with his father's firm in Phoenix, Ariz., as a junior member. The W. E. Orr contracting concern is well known for heavy and highway construction work.

* * *

Don C. Davis is now employed as a full-time city engineer in Turlock, Calif. Since his graduation from the University of Kansas he has done engineering work for Glendale, El Centro and other cities and counties. He was planning engineer in Modesto, Calif., before going to Turlock.

* * *

Leland Hill and **Lee Hostteter** have both transferred to the Bureau of Reclamation in the Branch of Operation and Maintenance with headquarters in Sacramento, Calif. They were previously with the Army Engineers in Sacramento.

* * *

Major Oliver C. Jessup is now on terminal leave from the Army. He will resume his position as president of Contractors Equipment Corp., Portland, Ore., when he receives his discharge in February. Among his military decorations is the Legion of Merit for operation of truck battalions in Africa, Sicily and Italy.

FRANK A. BANKS (left), known throughout the world as the man who constructed the Grand Coulee Dam, is now devoting his full time to carrying on construction of the million-acre Columbia Basin Project, of which he is supervising engineer. R. J. NEWELL (center) has replaced him as Regional Director for the Bureau of Reclamation in the Pacific Northwest. ROY B. WILLIAMS (right) is at Coulee Dam as assistant supervising engineer for the Columbia Basin Project. Williams has been with the Bureau 33 years, supervising work on the Friant Dam of Central Valley Project, Calif., and the Kittitas Division of the Yakima Project, eastern Washington.

* * *

George W. Buckley, formerly temporarily with the A. G. C. in Los Angeles, is now manager of the new building division of the Vinnell Co. at 108 West 6th St., Los Angeles, Calif. Other key men are **G. Warren Schloot** and **George A. Smith.**

* * *

R. E. McGowan, engineer on the Columbia basin project, has left Coulee dam to go to Boise, Ida. There he will be on the regional engineering staff for Region 1 of the Bureau of Reclamation. He first worked for the Bureau in 1934.

PHIL DICKINSON, civil engineer with 12 years' experience as a newspaperman on Central Valley, Calif., irrigation problems, has recently been appointed the assistant regional director of the Bureau of Reclamation in Sacramento.

Frank Lubin, former Federal Public Housing Authority area project engineer, has been moved to Seattle headquarters from Vancouver, Wash. He has been appointed technical adviser to FPHA for Region 9, covering Alaska, Wyoming, Oregon, Washington, Idaho and Montana. Lubin will aid with disposal of thousands of Northwest houses and with any new construction work.

* * *

Myron C. Gould is resuming his consulting mechanical engineering practice at 86 Third St., San Francisco, Calif. He is specializing in the design and engineering of power and pumping plants and heating and refrigeration plants.

* * *

Leland E. Lyon has taken over his duties as assistant division engineer of the Tucson division of the Southern Pacific Railroad at Tucson, Ariz. He succeeds **Joe Williams**, who has gone to Dunsmuir, Calif., to become division engineer of the railroad there.

* * *

Don W. Robins is assuming new duties as city engineer of Compton, Calif. He had served for 18 years as an employee of the Burbank, Calif., Water Division of the City Engineer's department before taking his new position.

* * *

A. B. Paulson has returned to private business at 727 Continental Bank Building, Salt Lake City, Utah. For the last four years he served as state architect and superintendent of construction for the Utah State Building Board before tendering his resignation.

* * *

Howard B. Carter, Santa Monica City Engineer for the last 22 years and well-known authority on beach erosion and protection, has resigned his position. He has been on sick leave since May, 1945.

* * *

H. E. (Mike) Adams is located in Santa Barbara, Calif., where he is doing trenching and pipeline contracting. Between 1924-1940 he was in the same business in Santa Barbara, and has been in military construction work since that time.

LT. COL. D. W. MORRISON is a civilian now, but still in charge of the design branch, U. S. Engineer office, Sacramento, Calif., where he'll continue design studies of California dams. During the war Morrison headed the Engineer sub-offices at San Bernardino and Victorville, Calif.

SUPERVISING THE JOBS

Eugene M. Howell will replace **B. V. Howe** as sanitary engineer in charge of the inspection of sewage disposal plants for the state of Colorado as soon as he is released from the Army. Howell is a graduate of Colorado School of Mines and holds a Master's degree in sanitary engineering from Michigan University.

Calvin Dodson has resumed his position as Sparks, Nev., city engineer since his release from the Army. **George Schilling,** who served as city engineer during Dodson's absence, has been named engineer for four federal works projects in Sparks.

Walter A. Ewell is now senior civil engineer, doing general design work for the Austin Co., Oakland, Calif. He was formerly with Kaiser Engineers in Oakland, Calif.

Jim Graves, Melba, Ida., and **Charles Henry,** Nampa, Ida., were reelected commissioners of the Nampa Highway District for four-year terms. Graves represents district No. 1 and Henry acts as secretary of the district and represents district No. 2.

L. W. Irwin, civil engineer, is now field engineer for Winston-Utah-Vinnell Cos. on the Lytle Creek improvement project at San Bernardino, Calif. He was formerly a lieutenant colonel in the Army but was released from active duty in October, 1945.

Richard F. Goforth is an instrumentman for the Bonneville Power Administration at Bellingham, Wash. He is making a field survey for power lines there. Goforth was formerly with Kaiser Co., Inc., in Vancouver, Wash., as a shipwright engineer.

R. T. Austin now owns and operates a Standard Oil Co. service station in Goleta, Calif. He was previously chief inspector of construction, Public Works Department, for the 11th Naval District.

George W. Stevens has returned from military service and has resumed his former position as city engineer of Culver City, Calif. He had been on a five-year military leave.

H. F. Bahmeier, construction engineer on Anderson Ranch dam in Idaho, will be in charge of construction work at Davis dam, on the Colorado river, soon. He held that position in 1942 when work was halted by WPB order.

T. E. Bokemeir is now service manager for Bunting Tractor Co. in Burley, Ida. Previously he was personnel manager of Tractor Training Service.

Alfred D. Coons has resigned as city engineer of Davis, Calif., to become city manager of Pacific Grove, Calif.

Elmer Clark is general superintendent in charge of the sand and gravel operations of the Fisher Construction Co. of Phoenix, Ariz. **T. B. (Cy) Cysensky** is carpenter foreman for the gravel plant being constructed adjacent to the company's shops. The whole area now covers about 6 ac. On the concern's new contract at Mecca, Calif., **R. L. Spangler** is to have charge of excavation, **Jack Moylan** is in charge of equipment and **Bob Brererton** is office manager.

C. C. "Whitey" De Armand, general superintendent for Joshua H. Marks Co. of Los Angeles, Calif., is now supervising construction of a 3-story building for the May Co., located at Crenshaw and Santa Barbara Blvds., Los Angeles, Calif. He is assisted by **L. W. Cook,** assistant superintendent; **Albert Nicoson,** general labor foreman; **Gene Davis,** concrete foreman; **Bob "Pappy" Cole,** chief engineer, and **Snow Price,** office manager. **Dutch Carter** has returned to the group after spending 2 years in the service in the Pacific.

Joe E. Skorpick is project superintendent and **E. O. Earl** is general superintendent for the P. D. O. C. Co., Tucson, Ariz., on their new contract for the Payson-Ajo highway in Arizona. **T. E. Moore** and **Floyd Ballew** are superintendents, **William Delaney** is master mechanic, **M. M. Balentine** is truck foreman, **D. M. Kelly** is engineer and **V. P. Stewart** is purchasing agent at P. D. O. C.'s Tucson yard.

Tom J. Collins is general superintendent for the Vinson Construction Co., Phoenix, Ariz., on their joint venture with the Morrison - Knudsen Co., Inc., Los Angeles, Calif., on tunnel relining work on the Kern river in California. The company has recently established a building division at Phoenix, Ariz., under the direction of **Rex B. Mesny. J. W. Ruggles** is office manager and **Jack Dunne** is engineer on the project.

F. L. Stewart, Glendale, Ariz., contractor, is engaged in extensive land leveling on the K. H. Harmon and E. M. Smith ranch near Glendale. It is one of the largest projects in the vicinity, since it consists of ditching, banking and leveling 525 ac. and of using as many as 10 dirt-moving units on one operation. **F. L. Stewart** is in direct supervision and he has employed **A. F. (Frank) Adams** as general foreman and **Sam Berger** as engineer for the project.

Walter E. Sims is in charge of Parker dam power line construction for the Bureau of Reclamation at Phoenix, Ariz. **Vaud Larson** is in charge of project planning, **A. F. Wilbur** is office engineer and **Fred E. Domino** is electric foreman. Key engineers on the project are **Bert Lucas, W. G. Gookin, P. E. Coe, S. C. Burdsall, John T. Crisp, R. H. Fisher** and **R. I. Meeker.**

Frank H. Packard is project manager, **James B. Lewis** is purchasing agent, **Don F. Micklethwaite** is general superintendent and **J. Kenneth King** is material expediter for a grade school building on Peck's Drive in Everett, Wash. The Atherton Construction Co., Seattle, Wash., holds the $184,946 contract. Building will start as soon as lumber is available.

R. S. Hardie is superintendent for the 5 million dollar federal prison being built at Camp Cooke, Calif., by Robert E. McKee, Glendale, Calif., contractor. **Charles Kistenmacher** is chief engineer and **Carl Marrs** and **Ed Thomas** are field engineers for the job.

D. D. Conn, for 3 years with Hodges and Karn at San Diego, Calif., is now shop foreman at the quarry on the Lytle Creek project for Winston-Utah-Vinnell. **Raymond O. Morris** is now their rock quarry foreman at San Bernardino, Calif.

A. M. Beuerlein is superintendent and **J. B. Beuerlein** is assistant general superintendent for the Koss Construction Co., Des Moines, Iowa. They will reconstruct the parking apron at the Roswell, N. M., airport. **Harold Whitney** is construction engineer for the $565,895 job.

K. A. Clark is project manager, **E. W. Simpson** is superintendent of pipe lines and **Sam Ross** is superintendent of tunnels for the S. A. Healy Co., of Escondido, Calif., on the San Diego Aqueduct. Master me-

chanic is **L. L. Lauver**, chief electrician is **Carl Mazano**, carpenter foreman is **L. E. Cannon**, shop foreman is **Bob Neely**, and labor foreman is **Henry Adams**.

* * *

Charles S. Bradley, project engineer, has been appointed assistant project manager at Anderson dam, Ida. He is working for Morrison-Shea-Winston-Twaits, who have the joint venture contract. In 1941 he was project engineer at the Santa Fe dam and engineer for the Coachella canal in California. In 1942 he was made project manager for an airbase in Jefferson Co., Ore., and most recently he has been with the Contractors Pacific Naval Air Bases in Tacoma, Wash.

* * *

Alvin Hotz is job superintendent and **Clint Alsobrook** is assistant superintendent for a $600,000 housing project in the Van Nuys district of Los Angeles, Calif., and a $240,000 housing project in Beverly Hills, Calif. The contractor is Allied Contractors, Inc., of Los Angeles, Calif.

* * *

O. F. (Orr) Mahaffey and **N. W. (Axe) Axline** are foremen for the Tiffany Construction Co., Phoenix, Ariz., on work in Phoenix. **H. C. Tiffany** is in charge of the plant. They have recently added a new sand and gravel plant to their facilities.

* * *

J. J. McCarthy is project manager, **O. K. Oltmans** is purchasing agent and **D. J. Roy** is job superintendent for J. O. Oltmans, Los Angeles, contractor, for a church building at Sepulveda Blvd. and Elderwood St., Los Angeles, Calif.

* * *

W. Edward Naumann is operations manager for the M. M. Sundt Construction Co., Tucson, Ariz., on their various projects there. **Burr Du Bois** is design engineer, **Charles Whitehead** is mechanical superintendent and **C. W. Eggleston** is electrical superintendent.

* * *

Edward F. Emmick is resident engineer, **J. S. Ward** is project manager and **A. J. Hyde** is general superintendent for Cascade Contractor, Inc., of Seattle, Wash. They are redecking the Wishkah River bridge near Aberdeen, Wash.

* * *

Al R. Kingaard and **R. A. (Bob) Bowers** are owners of a new concern known as the Pacific Construction Co. at 321 Spruce St., San Diego, Calif. Their first job is at Camp Pendleton, Calif., where **Tom Hysham** is superintendent.

* * *

William R. Bushelle is job superintendent for the Guy F. Atkinson Co. of Long Beach, Calif., on a $230,850 harbor steam plant job at Wilmington, Calif. **Jack Murphy** is excavation superintendent and **Harold Walker** is timekeeper.

* * *

Cecil Wing is general superintendent for Cliff Maddox, Phoenix, Ariz., contractor, and **William Trumpeter** is general foreman on the Shell Oil Co. chemical plant being built at Phoenix, Ariz., by Maddox.

* * *

Charles Meade is general superintendent and **W. A. (Al) Denton** is concrete superintendent for the American Pipe and Construction Co., Los Angeles, Calif., on the San Diego Aqueduct. **R. C. (Bob) Sargent** is engineer on the subcontract. **Buck Roberts** is steel superintendent and **Garney Maple** is office manager.

CHARLES S. BRADLEY

* * *

Paul F. McKenzie, Jr., is the job superintendent for Paul F. McKenzie, Long Beach, Calif. They are constructing six 8-unit, 24-room apartment buildings on Ocean Blvd., E. First St., Roswell Ave., and Ximeno Ave. in Long Beach, Calif.

* * *

T. P. Tulloch is general superintendent for The Daley-Tulloch Construction Co., Phoenix, Ariz. **Willis Smith** is plant superintendent, **Les Perkins** is foreman and **C. A. Roberts** is office manager.

* * *

George Askins is superintendent for J. F. Johnston, Newberg, Ore., on the $140,847 steel bed span, concrete viaduct and road widening job through the Pudding River Bridge Section of the Pacific Highway in Oregon.

* * *

William F. Johnson, for many years with Coast Construction Co. of Portland, Ore., is now general foreman for M. L. Poze on the Hebrew School and other structures at Tucson, Ariz.

* * *

Frank A. Barnes and **Kenneth L. Smith**, who operate the Salt River Sand & Gravel Co., have recently taken over the Valley Sand Co. plant at Phoenix, Ariz. **Glenn Truitt** is general foreman there.

* * *

P. L. Vail is superintendent and **F. R. Cole** is construction manager on a $75,000 store building job at 354 S. Western Ave., Los Angeles, Calif. Stronach Construction Co., Inc., Los Angeles, Calif., is the contractor.

* * *

James D. McClary is the project manager and **Robert Nall** is the job superintendent for Morrison-Knudsen de Mexico, Mexico, D. F., on a 12,000,000-peso job calling for excavation and fill work for the Sanalona dam, across El Rio Culiacan, 35 mi. from Culiacan, Mexico. Other key men include: **Allen B. Mourtsen**, assistant superintendent, and **Richard Brown**, equipment superintendent.

* * *

Loren W. Hunt is job superintendent and **Al Clayton** is assistant superintendent for the $769,000 contract for reserve fleet berthing facilities at Mare Island Navy Yard, Calif., which Healy & Harrelson of San Francisco, Calif., hold jointly.

* * *

Jeff R. Mitchell, who has been with Sundt Construction Co. at Tucson, Ariz., since 1941, is now superintendent of construction at the Consumers Market in Tucson, Ariz.

* * *

M. C. Brown is the job superintendent for Robert E. McKee, El Paso, Tex., on buildings and utilities of the Veterans Administration Construction Service in Legion, Tex. It is a $1,877,000 contract.

* * *

Walter J. Crawford is manager, **Harold Myers** is plant superintendent, **Fletcher Callahan** is shop foreman and **John Landes** is rigger foreman at Bowen & McLaughlin's Phoenix, Ariz., plant.

* * *

W. T. Larry is job superintendent for H. L. Royden, Phoenix, Ariz., on a $59,548 contract to redeck the Red Rock railroad bridge for highway use at Topock, Ariz.

* * *

A. "Dutch" Wetterauer, Sr., is job superintendent for E. F. Shuck, Seattle, Wash., on a $55,000 contract to build a warehouse addition at 812 Howell St., Seattle. **E. F. Shuck, Jr.**, is field supervisor.

* * *

P. L. (Shorty) Taylor is superintendent for Buttress & McClellan of Los Angeles, Calif., on building construction work at Flagstaff, Ariz. **J. F. Collins** is carpenter foreman.

* * *

R. E. Bruce is personally supervising work on various buildings in the Phoenix, Ariz., area for the R. E. Bruce Co. **J. W. Tucker** is assisting him as superintendent.

* * *

Allan A. Rogers is job superintendent on the Canada Dry Building at San Diego, Calif., for the Trepte Construction Co., San Diego, Calif. **Hugo Peterson** is foreman for the project.

* * *

Orville Lyon is carpenter foreman for the Vinson Construction Co., Phoenix, Ariz., on the new building for Lee Redman Co. at Phoenix.

* * *

Lou Parker is job superintendent for Baruch Corp., Los Angeles, Calif., on their million dollar expansion work on the tuberculosis hospital in Duarte, Calif.

* * *

Russ D. Keltner is general foreman for McGinty Construction Co., Phoenix, Ariz., on the Murphy School at Phoenix.

* * *

Harold Spiess is job superintendent for L. C. Anderson Co., San Diego, Calif., contractors, on the Simon Levi building.

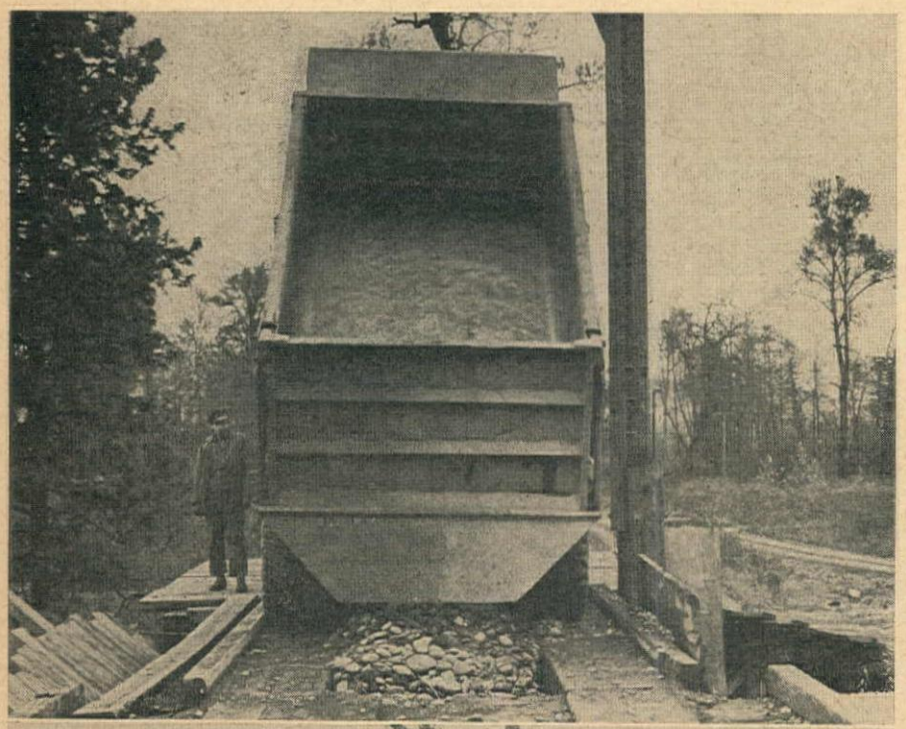
HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD EDITOR'S NOTEBOOK

Rock Truck Ramp Kept Clear By Use of Tail Gate Hopper

THE TAIL GATE CHUTE shown below directs the flow of gravel or rock from the dump body to the center of the rock crusher pocket and thus prevents the overflow of gravel to the edge of the ramp where it would interfere with the efficient passage of trucks over the bin ramp.

The auxiliary hopper was designed and installed in the shops of Springfield Sand and Gravel Co., Springfield, Oregon, under the direction of Wilson Jewett, Jr., manager. The device saves time and helps maintain the plant's year-around capacity of 700 cu. yd. of gravel per day.



The hopper is constructed of arc-welded steel plate forming an inverted truncated pyramid, which is suspended just below the tail gate on a pair of triangular plates. These plates cover the side openings of the tailgate to prevent any material escaping above the hopper. Spreader chains may be used to prevent a sudden surge of rock from lifting the tail gate and overshooting the control hopper. The hopper throat is the same width as the truck body it is designed to fit, and the discharge end reduces the rock flow to the width of the underlying rock pocket. The hopper is supported on horns situated near the upper tail gate hinge. Suspended from these horns it is free to swing under the tail gate as the dump body is raised. In this way it is automatically in position to control the gravel discharge for any angle the dump body may be raised. A ring is welded to each support arm to facilitate lifting the hopper while it is engaged or removed from a truck body.

Tractor Cab Made With Steel Frame

THE WELDED CRAWLER TRACTOR CAB, shown above, was made by Roy M. Johnson, Moscow, Idaho. It is ruggedly constructed with 1½ x 1½ x ¼ in. angle iron and the corner braces are 1¼ x ¼ in. bar iron. The side and rear openings were fitted with wood panels in which plate glass windows were rigged to raise and lower. On each side a door of 20 x 48 in. plate glass enclosed in a 3-in. frame provides easy access to the cab. An old two-piece car windshield was cut down to fit the front opening and can be opened to any desired angle, providing the operator with an unobstructed view.

EXTRA ENDURANCE

For the Hard Pull!

When the next-to-impossible Wire Rope job comes up . . . one that requires the utmost in strength and ENDURANCE, just call in "HERCULES" (Red Strand) . . . for here is a Wire Rope that through the years has proved its 'extra' *endurance* every time it has been put to work.

PIONEERING in heavy duty performance on tough wire rope jobs, "HERCULES" (Red Strand) has been adopted in one industry after another. That's why we say . . . for that *extra* endurance, flexibility, strength, elasticity and adaptability, *always specify* "HERCULES" (Red Strand), and you'll come in first with the job well done.

Made in Round Strand and Flattened Strand constructions . . . Preformed or Non-preformed—there's a type and construction to meet *any* heavy duty demand.

Consult our Engineering Department on *your* Wire Rope requirements—they'll be glad to work with you.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS
5909 KENNERLY AVENUE

ESTABLISHED 1857
ST. LOUIS 12, MISSOURI, U. S. A.

NEW YORK 6 . . . . 90 West Street
CHICAGO 7 . . 810 W. Washington Blvd.
DENVER 2 . . . 1554 Wazee Street

SAN FRANCISCO 7 . . 520 Fourth Street
PORTLAND 9 . . 914 N. W. 14th Avenue
SEATTLE 4 . . . 3410 First Avenue South

UNIT BID SUMMARY

Irrigation . . .

California—Imperial County—Bureau of Reclam.—Earthwork & Structs.

Clyde W. Wood, Inc., Los Angeles, submitted the low bid of $271,005 to the U. S. Bureau of Reclamation, Yuma, Arizona, for the construction of earthwork and structures at Sta. 48 plus 50 All-American Canal as specified in No. 1106. Unit bids and quantities are listed below:

(1) Clyde W. Wood, Inc. $271,005
(2) Guerin Bros. 298,274
(3) Fisher Contracting Co. 302,367
(4) Rhodes Bros. & Shofner 311,230
(5) M. H. Hasler $343,175
(6) Ralph A. Bell and A. F. Heinze 403,803
(7) Mittry Bros. Constr. Co. 403,580
(8) The Concrete Pipe Constrs. 497,572

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
175,000 cu. yd. excav. for bypass	.25	.38	.50	.48	.50	.74	.65	.62
10,000 cu. yd. const. dike embankments	.20	.65	.95	.66	.50	3.00	1.50	3.00
12,400 cu. yd. excav. for structure	1.25	1.10	1.00	1.50	2.50	1.50	2.00	3.00
4,600 cu. yd. compacted fill under struct.	1.50	1.20	2.50	1.80	1.00	1.25	3.00	3.00
110 cu. yd. constr. of reverse filter	3.00	7.00	4.57	8.00	4.50	7.00	10.00	4.00
4,000 cu. yd. backfill about structure	.35	1.00	.72	.60	.45	.55	.50	1.25
2,400 cu. yd. compacting backfill	2.00	1.10	2.38	1.50	2.50	1.25	3.50	3.25
10,000 cu. yd. removing dike embank.	.30	.55	1.00	.51	.50	.65	1.50	1.70
175,000 cu. yd. backfill in bypass channel	.20	.30	.23	.26	.30	.31	.20	.20
500 cu. yd. placing riprap 12 in. thick	3.00	6.00	5.00	5.00	4.00	5.00	7.00	10.00
5,500 cu. yd. placing riprap 24 in. thick with 6-in. gravel blanket	3.00	4.50	4.23	5.50	3.50	5.00	5.00	10.00
970 cu. yd. conc. in paving panels	22.00	19.00	18.00	19.00	21.00	22.00	32.00	25.00
1,460 cu. yd. conc. in struct. except in paving panels	50.00	32.00	32.00	33.00	43.00	46.00	47.50	71.00
340,000 lbs. placing reinf. bars	.04	.032	.032	.03	.05	.04	.04	.06
160 lin. ft. placing asbestos-cem. pipe	1.50	3.00	1.60	1.00	2.50	1.30	1.50	1.00
1,820 sq. ft. placing elastic jt.-filler matl.	1.50	1.50	.80	1.00	1.00	.65	1.00	.60
1,780 lin. ft. placing rubber water stops	.50	1.00	.95	1.00	2.00	.65	1.00	1.00
4,410 lin. ft. driving steel sheet piling	1.00	2.90	1.58	2.00	2.00	1.80	2.00	3.00
148,000 lbs. install. radial gates and hoists	.15	.10	.06	.08	.06	.05	.10	.10
7,700 lbs. install. miscl. metalwork	.20	.35	.19	.20	.50	.30	.15	.40
700 lin. ft. install. elect. metal conduit	.50	2.00	.72	1.00	.50	1.25	1.50	.40
50 lbs. install. elect. ground wires	.50	5.00	1.60	1.00	4.00	1.25	1.50	2.00

California—Madera County—Bureau of Reclamation—Aggregates

George Pollock Co., Sacramento, submitted the low bid of $207,500 to the Bureau of Reclamation, Friant, for the preparation and stockpiling of aggregates for the concrete work in the construction of Friant-Kern Canal, Specifications No. 1821-D. Summary of the unit bids submitted follows:

(A) George Pollock Co. $207,500
(B) Marshall S. Hanrahan 239,500
(C) E. J. Warner 249,500
(D) W. G. Davis, Jr. 251,000
(E) A. Teichert & Son, Inc. 279,000
(F) Rhodes Bros. & Shofner 284,500
(G) Claude C. Wood 287,500
(H) Triangle Rock and Gravel Co. $289,000
(I) E. B. Bishop 385,000
(J) Fredrickson Bros. 416,700
(K) Lester L. Rrice 431,500
(L) Pacific Rock and Gravel Co. **444,700**
(M) Herbert H. Everist & Peter Kiewit Sons Co. 448,500
(N) Larsen & Harms 457,500

(1) 50,000 cu. yd. excavation, stripping deposit
(2) 110,000 cu. yd. preparing and stockpiling sand
(3) 40,000 cu. yd. preparing and stockpiling crse. aggregate 3/16 to ⅜ inch in size
(4) 70,000 cu. yd. preparing and stockpiling crse. aggregate ⅜ to ¾ inch in size
(5) 80,000 cu. yd. preparing and stockpiling crse. aggregate ¾ to 1½ inch in size

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
(1)	.25	.05	.25	.20	.24	.20	.35	.20	.20	.30	.23	.15	.15	.18
(2)	.65	.79	.79	.60	.89	.915	.90	.93	1.25	1.339	1.00	1.47	1.47	1.40
(3)	.65	.79	.79	1.00	.89	.915	.90	.93	1.25	1.339	2.00	1.45	1.47	1.55
(4)	.65	.79	.79	.90	.89	.915	.90	.93	1.25	1.339	1.80	1.45	1.47	1.55
(5)	.65	.79	.79	.90	.89	.915	.90	.93	1.25	1.339	1.30	1.45	1.47	1.55

Bridge and Grade Separation . . .

California—Yuba-Sutter—State—Steel and Concrete

J. H. Pomeroy & Co., Inc., San Francisco, submitted the low bid of $1,879,340 to the Division of Highways, Sacramento, for the construction of a bridge across Feather River at Marysville and Yuba City, and at Sutter Street in Yuba City an overhead crossing, undercrossing and approaches.

(A) J. H. Pomeroy & Co., Inc. $1,879,340
(B) United Concrete Pipe Corp. & Ralph A. Bell 1,956,023
(C) Clinton Construction Co. 1,966,719
(D) A. Soda & Son 2,033,745
(E) Pacific Bridge Company $2,069,614
(F) George Pollock Co. 2,099,016
(G) Johnson, Drake & Piper, Inc. 2,252,417
(H) Guy F. Atkinson Company 2,357,155

(1) 10 cu. yd. removing concrete
(2) Clearing and grubbing
(3) 9,000 cu. yd. roadway exc.
(4) 2,500 cu. yd. struc. exc. (Type "A")
(5) 14,800 cu. yd. struc. exc. (Type "B")
(6) 2,800 sq. yd. compacting orig. ground
(7) 8,000 cu. yd. imp. borrow (Type "A")
(8) 183,000 cu. yd. imp. borrow (Type "B")
(9) Dev. water supply and furn. watering equip't
(10) 3,400 M. gal. applying water
(11) Finishing roadway
(12) 1,600 tons crusher run base
(13) 15 tons liq. asph. SC-1 or SC-2 (pen. tr.)
(14) 12 tons sand (pen. tr.)
(15) 4,400 cu. yd. Cl. "A" P.C.C. (footing blocks)
(16) 11,930 cu. yd. Cl. "A" P.C.C. (structures)
(17) 12 lin. ft. rubber waterstops
(18) 7,735,000 lbs. furnishing struc. steel
(19) 7,735,000 lbs. erecting struc. steel
(20) 76,400 lbs. cast steel
(21) 81,050 lin. ft. furnishing steel piles
(22) 1,627 each, driving piles
(23) 1,230 sq. yds. waterproofing
(24) 57 lin. ft. 12-in. R.C.P. (std. str.)
(25) 123 lin. ft. 18-in. R.C.P. (std. str.)
(26) 160 lin. ft. 24-in. R.C.P. (std. str.)
(27) 36 lin. ft. 8-in. C.M.P. (16 ga.)
(28) 7 each, spillway assemblies
(29) 170 lin. ft. 8-in. C.M.P. downdrains (16 ga.)
(30) 2,493,500 lbs. furn. bar reinf. steel
(31) 2,493,500 lbs. placing bar reinf. steel
(32) 5,688 lin. ft. steel railing
(33) 5 each, salv. exist. frames and covers
(34) Lighting equipment
(35) Misc. items of work

(Continued on next page)

DAWSON CONSTRUCTION CO.

DIGS WASHINGTON DRAINAGE DITCHES WITH NEW ¾-YD. LORAIN

Their first Lorain (purchased in 1940) is still giving Dawson Construction Co. of Bellingham, Washington, such excellent service and low operating cost after toughing it out under the rugged conditions of the Alcan Highway and Canol Project, that they made Lorain their choice for a 2nd unit—a new ¾-Yard Lorain. It's shown here averaging 800 yards per 8 hours with a ¾-Yard bucket on a drainage ditch job at Snohomish, Washington.

The big drive is on! Across America contractors are modernizing with fast, efficient, new Lorain shovels, draglines, clamshells, backhoes and cranes. New design features throughout the Lorain line will make your excavation equipment the finest in your territory. The Lorains of today are faster in operation, handle bigger capacity loads, give more hours of uninterrupted work . . . to give you the edge on those big and little jobs where profits count. Get set for the big construction era ahead . . . modernize with Lorains. Your Thew-Lorain Dealer offers a complete assortment of sizes, a full line of convertible front end equipment, in crawler or rubber-tired mountings—with gas, Diesel or electric power. Act now—see your Dealer listed below!

THE THEW SHOVEL COMPANY, LORAIN, OH!

CRANES • SHOVELS • DRAGLINES • CLAMSHELLS • MOTO-CRANES

See Your **thew-Lorain** *Dealer*

Le Roi-Rix Machinery Co., Los Angeles 11
Cate Equipment Co., Salt Lake City 4
Liberty Trucks & Parts Co., Denver 1
Coast Equipment Company, San Francisco 1
A. H. Cox & Co., Seattle 4, Washington
Bunting Tractor Co., Inc., Boise, Twin Falls, Gooding, Fairfield, and Burley, Idaho; LaGrande, Oregon
Connelly Machinery Company, Billings and Great Falls, Montana
Sanford Tractor & Equipment Co., Reno, Nevada
The Mountain Tractor Co., Missoula, Montana
The Tractor & Equipment Co., Sidney, Montana
P. L. Crooks & Co., Portland 10, Oregon

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(1)	11.00	10.00	2.25	10.00	13.00	5.00	6.40	5.00
(2)	$1,300	$10,000	$1,100	$10,000	800.00	500.00	$2,978	$1,000
(3)	3.75	1.00	.45	.70	.45	1.40	.83	.60
(4)	11.00	10.00	20.60	20.00	21.00	15.00	23.73	12.00
(5)	3.00	2.00	5.00	2.50	2.50	2.00	2.11	3.00
(6)	.11	.20	.05	.20	.08	.10	.12	.10
(7)	.60	1.50	1.00	1.30	.84	.75	1.19	1.10
(8)	.50	.80	.67	.40	.67	.75	.90	.55
(9)	$4,000	$3,000	$3,400	$1,000	$2,200	$2,000	$5,127	$2,000
(10)	1.00	1.50	1.40	1.50	1.65	1.50	2.10	1.60
(11)	$1,100	$3,000	$1,100	$1,000	560.00	500.00	$1,430	$1,000
(12)	2.85	3.00	2.80	3.00	3.60	2.50	2.78	2.75
(13)	16.80	30.00	45.00	30.00	34.00	28.00	30.00	30.00
(14)	5.00	5.00	5.50	7.00	8.00	5.00	4.00	6.00
(15)	18.00	18.00	13.00	15.00	16.00	19.00	14.76	12.50
(16)	32.00	34.00	38.50	40.00	43.00	39.50	45.75	61.25
(17)	5.25	3.00	2.25	10.00	6.50	5.00	4.00	6.00
(18)	.075	.07	.077	.075	.08	.08	.085	.09
(19)	.025	.03	.019	.035	.03	.025	.027	.03
(20)	.13	.30	.255	.12	.21	.20	.24	.20
(21)	1.90	1.70	1.54	2.00	1.36	2.00	1.74	2.00
(22)	35.00	40.00	48.00	30.00	30.00	50.00	60.00	40.00
(23)	.75	.50	.45	.40	1.00	1.00	.60	.60
(24)	1.90	3.00	2.80	2.00	3.00	2.50	6.00	2.00
(25)	2.40	4.00	4.00	3.00	4.00	3.50	7.00	3.00
(26)	3.20	6.00	5.00	4.00	4.50	4.00	7.00	4.00
(27)	1.35	2.00	2.00	2.00	1.50	1.00	2.00	1.50
(28)	26.00	20.00	250.00	30.00	35.00	20.00	49.00	30.00
(29)	1.35	3.00	2.00	2.00	1.50	1.00	2.00	2.00
(30)	.043	.04	.043	.042	.04	.05	.036	.04
(31)	.015	.02	.0085	.01	.015	.02	.018	.01
(32)	6.30	9.00	9.00	8.00	10.00	6.50	11.00	8.00
(33)	30.00	10.00	11.00	20.00	11.00	10.00	73.00	25.00
(34)	$21,500	$15,000	$22,500	$22,000	$22,000	$20,000	$20,324	$22,000
(35)	$2,500	$4,000	$3,000	$20,000	$2,200	$3,000	$2,339	$2,000

California—San Diego County—State—Reinf. Concrete

Harry L. Foster, San Diego, submitted the lowest bid of $183,791 to the Division of Highways, Sacramento, for the construction of a reinforced concrete bridge across the San Diego River in the City of San Diego on SR 77. The following is a summary of the bidders and the unit bids submitted by them.

(A) Harry L. Foster $183,791
(B) Byerts & Dunn 188,520
(C) Oberg Bros. 191,070
(D) M. H. Golden Const. Co. 191,087
(E) Griffith Co. 198,733
(F) E. B. Bishop 218,608
(G) Spencer Webb $224,920
(H) Guy F. Atkinson 228,550
(I) Contracting Engrs. Co. 234,087
(J) Macco Construction Co. 249,210
(K) Baruch Corp. 259,918

(1) 1,500 cu. yd. structure excavation
(2) 2,300 cu. yd. Cl. "A" P.C.C.
(3) 2,042 lin. ft. concrete railing
(4) 10,080 lin. ft. furnishing concrete piles
(5) 210 each, driving concrete piles
(6) 1,400 cu. yd. heavy stone riprap
(7) 675,000 lbs. furnishing bar reinforcing steel
(8) 675,000 lbs. placing bar reinforcing steel
(9) 6,000 lbs. miscellaneous iron and steel
(10) Miscellaneous items of work

(1)	2.00	1.50	2.00	1.40	1.40	2.50	1.00	3.00	1.50	.50	1.26
(2)	37.00	38.00	40.00	42.50	40.00	45.00	46.00	48.00	55.00	57.00	64.46
(3)	3.50	3.00	5.00	5.00	4.40	6.50	5.00	5.00	3.50	10.00	7.30
(4)	1.80	1.80	2.00	2.65	2.05	2.00	2.00	3.00	2.00	3.00	2.30
(5)	70.00	80.00	70.00	36.00	79.00	100.00	100.00	60.00	78.00	70.00	84.00
(6)	8.00	7.00	5.00	4.00	8.40	10.00	10.00	12.00	7.00	6.00	4.40
(7)	.04	.04	.04	.04	.045	.04	.05	.04	.05	.04	.046
(8)	.02	.02	.02	.017	.02	.015	.02	.02	.02	.02	.0207
(9)	.50	.25	.25	.28	.26	.50	.50	.40	.35	.25	.36
(10)	$1,000	$6,000	$2,000	$1,000	$1,200	$2,800	$2,000	900.00	$2,500	$1,600	697.00

California—Santa Clara County—State—Steel Girder

Earl W. Heple, San Jose, submitted the low bid of $274,758 to the Division of Highways, Sacramento, for the construction of steel plate girder bridge across Coyote Creek and a steel beam undercrossing to be erected at Coyote road about 6 mi. south of San Jose on the Bay Shore Freeway.

(A) Earl W. Heple $274,758
(B) Dan Caputo & Edward Keeble 307,067
(C) J. H. Pomeroy & Co., Inc. 311,708
(D) Carl N. Swenson Co. 316,636
(E) Chas. L. Harney 319,805
(F) J. D. Proctor, Inc. 319,252
(G) Fredrickson & Watson Const. Co. $331,523
(H) Macco Construction Co. 338,844
(I) Fred J. Maurer & Son 345,042
(J) E. W. Elliott Const. Co. 361,850
(K) Guy F. Atkinson 361,889
(L) Pittsburgh-Des Moines Steel Co. 369,912

(1) 1,700 cu. yd. struc. exc. Type A
(2) 1,500 cu. yd. struc. exc. Type B
(3) 780 cu. yd. Class "A" P.C.C. (footing blocks)
(4) 2,410 cu. yd. Class "A" P.C.C. (structure)
(5) 1,258,000 lbs. furn. structural steel
(6) 1,258,000 lbs. erecting structural steel
(7) 11,510 lin. ft. furn. Douglas fir piles
(8) 8,100 lin. ft. furn. treated Douglas fir piles
(9) 454 each, driving timber piles
(10) 500 lin. ft. furn. steel piles
(11) 20 each, driving steel piles
(12) 350,000 lbs. furn. bar reinf. steel
(13) 350,000 lbs. placing bar reinf. steel
(14) 2,314 lin. ft. steel railing
(15) Miscel. items of work.

(1)	4.00	6.00	5.99	8.25	11.20	12.55	9.48	11.35	6.00	10.00	12.00	8.00
(2)	3.00	3.00	1.34	4.10	3.30	7.40	2.86	11.50	4.00	3.00	3.00	4.00
(3)	12.00	16.00	16.80	10.75	16.50	20.00	19.10	13.75	17.00	18.00	32.00	30.00
(4)	30.00	40.00	38.08	36.75	35.00	33.50	40.00	45.50	42.00	57.00	35.00	48.00
(5)	.073	.07	.082	.08	.0866	.075	.0835	.075	.085	.08	.087	.085
(6)	.022	.02	.023	.02	.0123	.02	.023	.02	.024	.02	.0209	.025
(7)	.40	.50	.64	.47	.615	.50	.54	.56	.60	.50	.75	.50
(8)	.90	1.15	1.40	1.00	1.35	1.25	1.28	1.20	1.30	1.00	1.50	1.25
(9)	40.00	24.00	28.00	34.00	28.40	22.00	18.50	18.80	40.00	28.00	75.00	40.00
(10)	2.00	2.00	2.20	2.60	2.15	2.00	2.00	1.60	2.25	2.00	2.50	2.00
(11)	50.00	30.00	28.00	65.00	28.40	70.00	29.00	27.50	40.00	30.00	75.00	40.00
(12)	.031	.0325	.0347	.039	.033	.03	.03	.03	.0325	.03	.04	.04
(13)	.01	.01	.0076	.009	.0085	.015	.0116	.01	.015	.01	.02	.01
(14)	6.00	9.00	5.78	8.80	11.00	11.00	9.30	8.15	8.90	8.00	5.00	8.00
(15)	$2,000	$7,000	$1,290	$5,000	$1,650	$1,500	$3,200	$3,500	$2,500	$2,500	$1,750	$1,000

Washington—Skagit County—State—Bridge Approach

Hawkins & Armstrong, Seattle, were awarded the contract on the low bid of $33,314 by the Department of Highways, Olympia, to construct the Skagit River bridge approaches on SR No. 1-A. Unit bids received are as follows:

(Continued on next page)

AIR POWER THAT BEATS SCHEDULES

On those jobs you win with a sharp pencil, there's no room for compressors and air tools that waste air or have a habit of quitting at the wrong time. Avoid interruptions and air-power losses by using Blue Brutes.

Let's take a 315′ Blue Brute Portable Compressor, for example. You'll like the way light, tight, quiet Feather* Valves help squeeze the most air out of each gallon of fuel . . . the way special unit coupling in 3-point suspension cushions engine and compressor against vibration, shocks, distortion . . . the way the smooth-running Diesel or gasoline engine drives the compressor. And especially will you like the way it powers such air tools as Rock Drills, Paving Breakers, and Wagon Drills.

If you don't know it already, it will pay you now to investigate why a Blue Brute air-power team beats construction schedules and keeps costs low by saving hours and dollars by speeding up the work. You'll find, as others have before you that in construction equipment *there's more worth in Worthington.*

*Reg. U. S. Pat. Off. H5-13A

KNOW YOUR BLUE BRUTES

Your Blue Brute Distributor will gladly show you how Worthington-Ransome Blue Brute construction equipment will put your planning on a profitable basis and prove that *there's more worth in Worthington.* Act now! His name is listed on page 126.

RANSOME EQUIPMENT

Blue Brutes include: Pavers, Concrete Spreaders**, Concrete Mixers, Concrete Placing Equipment, Big Mixers, Finishing Machines**, Pneumatic Placing & Grouting Equipment, Truck Mixers, Plaster & Bituminous Mixers, and related equipment.

WORTHINGTON EQUIPMENT

Blue Brutes also include: Diesel, gasoline and electric driven Portable Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs; Rock Drills and Air Tools in a wide range of weights and sizes; Contractors' Pumps**.

**To be announced

Get more WORTH from air with WORTHINGTON

BUY BLUE BRUTES

Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs. Rock Drills and Air Tools that have always set the pace for easy operation — available in a wide range of weights and sizes.

WORTHINGTON

Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division Holyoke, Mass.

(1) Hawkins & Armstrong $33,314
(2) Cascade Contractors, Inc..... 39,160
(3) Doolittle Construction Co. 40,420
(4) Prefabricated Lumber Products Co..... 43,460
(5) E. W. Elliott $43,872
(6) C. W. Larsen 48,844
(7) James Construction Co..... 50,000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
230 MFBM Timber and lumber (untr.) in place..	90.00	130.00	108.00	120.00	130.00	135.00	140.00
9,000 lin. ft. furn. timber piling (untr.) at site.....	.43	.30	.40	.30	.50	.32	.40
228 only, driving timber piles in place.....	23.00	20.00	35.00	20.00	24.00	25.50	30.00
Lump sum, remov. portions of exist. struct.....	$3,500	$2,000	$4,000	$8,600	$4,000	$9,100	$7,360

Sewerage . . .

California—Riverside County—City—Treatment Plant

Hoagland-Findlay Engineering Co., Long Beach, submitted the low bid of $457,454 to the City Council, Riverside, for the construction and installation of a sewage treatment plant and appurtenances. Unit bids are as follows:

(A) Hoagland-Findlay Engr. Co..... $457,454
(B) Contracting Engineers Co..... 473,853
(C) Wonderly Const. Co..... 476,914
(D) Fred J. Early Jr. Co., Inc..... 483,242
(E) Drainage Construction Co. and Joseph W. Huntley..... 497,098
(F) W. E. Kier Construction Co..... $512,916
(G) Peter Kiewit Sons Co..... 514,967
(H) H. B. Nicholson..... 520,068
(I) J. S. Barrett..... 540,700
(J) Guy F. Atkinson Co..... 549,355
(K) Byerts & Dunn..... 583,162

(1) general grading
(2) 20,500 cu. yd. excav. and backfill
(3) 3920 cu. yd. Class A concrete
(4) 45 cu. yd. Class B concrete
(5) 10 cu. yd. Class C concrete
(6) 330,000 lbs. reinforcing steel
(7) 1800 lin. ft. 4-in. C.I. pipe
(8) 20 lin. ft. 6-in. C.I. B&S pipe
(9) 1950 lin. ft. 8-in. C.I. B&S pipe
(10) 360 lin. ft. 4-in. C. I. flanged pipe
(11) 42 lin. ft. 6-in. C.I. flanged pipe
(12) 40 lin. ft. 8-in. C.I. flanged pipe
(13) 7800 lbs. C.I. fittings, B&S
(14) 5600 lbs. C.I. fittings, flanged
(15) 20 lin. ft. 6-in. C.I. soil pipe
(16) 110 lin. ft. 12-in. conc. pipe
(17) 280 lin. ft. 24-in. conc. pipe
(18) 760 lin. ft. 4-in. vitr. clay pipe
(19) 1400 lin. ft. 6-in. vitr. clay pipe
(20) 190 lin. ft. 15-in. vitr. clay pipe
(21) 380 lin. ft. 21-in. vitr. clay pipe
(22) 725 lin. ft. 24-in. vitr. clay pipe
(23) 100 lin. ft. 27-in. vitr. clay pipe
(24) 1 6x4-in. vitr. clay wye
(25) 6 4-in. vitr. clay bends
(26) 10 6-in. vitr. clay bends
(27) 6 21-in. vitr. clay bends
(28) 2 24-in. vitr. clay bends
(29) 16,000 sq. ft. 4x4-in. x 14x14 welded wire mesh
(30) 325 lin. ft. ½-in. std. wrought steel pipe
(31) 100 lin. ft. ¾-in. std. wrought steel pipe
(32) 850 lin. ft. 1-in. std. wrought steel pipe
(33) 1200 lin. ft. 1½-in. std. wrought steel pipe
(34) 650 lin. ft. 2-in. std. wrought steel pipe
(35) 35 lin. ft. 2½-in. std. wrought steel pipe
(36) 550 lin. ft. 3-in. std. wrought steel pipe
(37) 45 ½-in. mal. iron fittings
(38) 5 ¾-in. mal. iron fittings
(39) 40 1-in. mal. iron fittings
(40) 25 1½-in. mal. iron fittings
(41) 40 2-in. mal. iron fittings
(42) 5 2½-in. mal. iron fittings
(43) 35 3-in. mal. iron fittings
(44) 10 4-in. pipe supports
(45) 2 6-in. pipe supports
(46) 2 8-in. pipe supports
(47) 4 4-in. pipe hangers
(48) 5 4-in. dresser couplings
(49) 3 6-in. dresser couplings
(50) 1 8-in. dresser coupling
(51) 12 ½-in. screw end, gate valves
(52) 2 ¾-in. screw end gate valves
(53) 12 1-in. screw end gate valves
(54) 2 1½-in. screw end gate valves
(55) 6 2-in. screw end gate valves
(56) 20 4-in. flanged gate valves
(57) 12 4-in. flanged gate valves
(58) 2 6-in. flanged gate valves
(59) 3 8-in. flanged gate valves
(60) 3 4-in. flanged gate valves
(61) 30 1-in. hose valves
(62) 1 2½-in. fire hose valve
(63) 1 2-in. lubricated plug valve
(64) 4 3-in. lubricated plug valves
(65) 1 24-in. mud valve with floor stand
(66) 2 20-in. slide headgates
(67) 7 24-in. slide headgates
(68) 2 4-in. floor stands
(69) 1 automatic screen cleaning mechanism, bar screen and adjustable baffles
(70) 2 mechanical coagulators
(71) 2 primary sludge collecting mechanisms
(72a) 1 gas holder cover
(72b) 1 floating cover
(73) 3 rotary distributor and dosing syphons
(74) 15,500 cu. yd. filter aggregate
(75) 36,000 lin. ft. Plymouth drain tile
(76) 1 secondary sludge collecting mechanism
(77) 2 primary sludge pumps
(78) 1 secondary sludge pump
(79) 1 digester sludge recirculating pump
(80a) 1 (name of manufacturer) turbine pump
(80b) 1 (name of manufacturer) turbine pump
(80c) 1 (name of manufacturer) turbine pump
(81) 1 pressure pump and tank
(82) 1 sump pump
(83) 1 chlorinator
(84) 1 Scott-Darcey dosing equipment
(85) 1 hypo-chlorinator
(86) 1 influent Parshall recorder
(87) 1 effluent Parshall recorder
(88) 1 4000-gal. pressure tank
(89) 1 2½-in. fire hose
(90) 9 outdoor light standards
(91) 1 electric panel, wiring, etc.
(92) 1 gas protective device
(93) heating
(94) cooling
(95) miscellaneous steel and iron
(96) chemical and laboratory building
(97) 14,000 sq. ft. conc. paint (Tremetank) or equal
(98) 30,000 sq. ft. conc. paint
(99) 1200 sq. ft. conc. paint (floor)
(100) 5500 sq. ft. conc. paint (interior mill white)
(101) 1325 lin. ft. pipe railing
(102) 325 sq. ft. floor grating
(103) 205 lin. ft. baffle guides
(104) 340 lin. ft. 16-oz. copper seal
(105) 46 lin. ft. 26 gauge galv. iron (48-in. wide)
(106) 5 MBM baffle boards and board covers
(107) 500 glass blocks
(108) 0.15 M face brick
(109) 16 lin. ft. 8½x13-in. TC flue lining
(110) 46 lin. ft. 13x13-in. TC flue lining
(111) 20 manhole steps
(112) 1 built-up roofing and insulation
(113) 2 roof ventilators
(114) 125 lin. ft. rubber joint filler
(115) 200 lin. ft. premoulded expansion joint
(116) 2 louvres, nonadjustable
(117) 1 hatch cover
(118) 3 steel sash
(119) 1 door
(120) laboratory equipment and tools
(121) 1 for chemicals
(122) 2 gas masks
(123) sludge bed grading
(124) 22 8-in. test plugs
(125) 4600 sq. yd. roads, etc.
(126) turbine pump house building
(127) 1200 lin. ft. effluent canal lining
(128) 3500 sq. yd. excavation for effluent canal

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
(1)	$13,000	$12,000	$12,000	$31,820	$30,000	$11,528	$15,000	$45,000	$8,625	$25,000	$25,000
(2)	1.25	.90	.98	2.00	1.10	1.20	1.66	1.25	1.04	1.60	2.00
(3)	40.00	28.00	38.00	33.00	41.00	38.50	35.70	35.00	41.60	39.00	46.00
(4)	40.00	20.00	33.50	40.00	36.00	71.50	58.00	35.00	34.00	20.00	38.00
(5)	40.00	20.00	14.00	40.00	35.00	39.00	24.00	35.00	34.00	15.00	35.00
(6)	.065	.08	.0738	.075	.07	.085	.07	.07	.08	.08	.10
(7)	1.10	1.62	1.30	2.00	1.10	1.20	1.73	2.00	1.13	2.00	2.00
(8)	1.50	3.10	2.00	3.00	2.00	1.20	3.00	2.25	1.60	3.00	3.00
(9)	2.20	3.52	2.40	3.00	2.10	2.75	2.78	2.50	2.36	3.30	3.00
(10)	6.00	4.48	2.90	4.00	4.00	3.60	6.40	4.00	3.35	7.00	7.00
(11)	7.00	7.33	4.50	7.00	8.15	3.85	7.50	6.00	3.60	8.00	8.00
(12)	8.00	8.07	5.75	10.00	6.20	4.30	10.65	8.00	4.00	11.00	12.00

(Continued on next page)

(13)	.14	.162	.135	.20	.0125	.18	.26	1.00	.17	.35	.35
(14)	.15	.305	.28	.25	.28	.28	.42	1.00	.26	.45	.50
(15)	1.50	3.00	2.15	3.00	2.00	1.85	3.15	2.00	1.75	3.50	3.50
(16)	1.20	1.85	2.40	1.50	2.10	1.75	1.25	1.50	3.00	2.25	2.00
(17)	4.50	4.00	3.80	3.00	4.20	5.05	5.50	2.50	6.67	4.00	4.00
(18)	.60	.60	.60	.50	.60	.90	1.20	.75	1.74	.60	1.25
(19)	.80	.88	.76	.75	.91	1.10	1.25	1.25	2.00	.70	1.40
(20)	2.30	2.70	2.20	2.00	2.40	3.20	3.15	3.00	4.00	2.00	3.75
(21)	4.10	4.55	3.55	3.50	3.60	5.50	5.20	3.50	5.82	3.00	5.50
(22)	5.20	5.90	4.50	4.60	4.45	7.40	5.10	4.00	7.00	4.00	5.50
(23)	7.00	7.70	5.75	6.00	7.00	8.35	7.77	6.00	9.11	6.00	8.25
(24)	2.00	3.30	2.25	3.00	2.00	3.00	3.00	3.20	3.75	2.00	3.00
(25)	1.25	2.50	1.50	2.00	1.50	2.20	2.00	2.00	3.75	1.70	2.50
(26)	1.75	3.30	2.10	3.00	2.00	2.65	3.00	2.50	3.75	2.00	3.25
(27)	12.00	16.70	11.50	15.00	12.00	17.50	6.00	15.00	18.57	10.00	30.00
(28)	15.00	20.60	14.50	20.00	20.00	23.50	34.00	20.00	22.67	14.00	38.00
(29)	.02	.024	.0175	.025	.03	.023	.02	.03	.063	.025	.02
(30)	.20	.33	.38	.20	.25	.25	.90	.40	.22	1.10	.90
(31)	.25	.31	.71	.25	.29	.25	1.00	.50	.23	1.30	1.15
(32)	.30	.53	.46	.30	.30	.25	1.00	.60	.24	1.25	1.25
(33)	.40	.67	.57	.50	.45	.40	.95	.70	.40	1.20	1.20
(34)	.50	.94	.70	.70	.50	.50	1.25	.80	.45	1.50	1.40
(35)	.70	1.47	.90	1.00	.80	.90	2.00	.90	.82	2.40	2.15
(36)	1.00	1.73	1.10	1.25	.85	1.00	1.95	1.00	.94	2.40	2.15
(37)	.30	.40	.15	1.00	1.40	.15	.30	.10	.13	.45	.40
(38)	.35	.53	.20	2.00	1.50	.20	.40	.20	.16	.55	.50
(39)	.40	.67	.33	2.00	1.60	.30	.60	.30	.25	.85	.70
(40)	.60	.87	.60	2.40	2.43	.50	.65	.50	.45	.90	.75
(41)	1.00	1.20	.85	3.50	3.40	.90	1.40	.80	.81	2.00	1.70
(42)	1.50	2.43	1.50	5.00	3.85	1.20	2.00	1.00	1.12	2.50	2.25
(43)	2.00	3.33	1.80	6.00	4.35	2.40	4.00	2.00	2.25	5.00	4.25
(44)	2.00	10.70	11.30	20.00	10.00	12.00	6.00	10.00	11.00	7.50	7.00
(45)	2.50	11.30	12.30	20.00	12.00	10.40	7.00	10.00	9.66	9.00	8.00
(46)	2.50	13.30	13.64	20.00	12.00	10.73	8.50	9.00	9.96	11.00	9.00
(47)	1.50	5.30	2.00	4.00	15.00	2.48	3.50	2.00	2.00	4.50	4.00
(48)	4.50	9.40	5.00	7.00	9.00	4.52	14.00	4.00	4.20	18.00	15.00
(49)	6.00	12.00	7.50	10.00	10.00	8.71	16.00	10.00	6.23	20.00	18.00
(50)	8.00	14.00	9.50	12.00	12.00	8.29	18.00	11.00	7.70	23.00	20.00
(51)	3.50	2.70	4.50	3.00	3.00	2.57	3.00	2.50	2.40	4.00	3.25
(52)	5.00	3.33	5.35	3.50	4.00	3.24	3.50	3.00	2.65	4.50	4.00
(53)	6.00	4.70	7.50	4.00	4.00	4.33	6.00	4.00	4.03	8.50	7.00
(54)	11.00	8.00	12.00	7.00	7.50	7.89	9.00	9.00	7.29	11.00	10.00
(55)	17.00	8.90	19.00	9.00	8.50	10.69	15.00	12.00	9.92	19.00	17.00
(56)	34.00	41.30	35.00	32.00	45.00	47.50	54.15	40.00	44.13	80.00	70.00
(57)	45.00	63.00	43.00	45.00	83.00	56.75	67.00	50.00	52.72	80.00	70.00
(58)	55.00	70.00	60.00	50.00	50.00	80.13	63.00	75.00	74.43	75.00	75.00
(59)	80.00	111.00	88.00	110.00	90.00	109.82	115.00	90.00	102.00	140.00	125.00
(60)	35.00	81.00	62.00	32.00	70.00	42.47	52.00	40.00	39.45	65.00	60.00
(61)	2.25	3.33	2.50	4.00	3.00	3.47	9.50	3.00	3.22	11.00	10.00
(62)	35.00	45.30	38.00	30.00	15.00	24.14	28.00	20.00	22.43	37.00	35.00
(63)	10.00	12.00	9.00	12.00	11.00	8.37	20.00	8.00	7.77	26.00	25.00
(64)	18.00	21.30	18.00	18.00	20.00	21.23	28.25	20.00	19.72	34.00	35.00
(65)	400.00	658.00	495.00	440.00	480.00	530.60	504.00	125.00	730.25	600.00	500.00
(66)	45.00	58.00	43.50	50.00	45.00	42.90	38.00	75.00	80.50	50.00	40.00
(67)	50.00	68.00	50.00	50.00	55.00	49.40	52.00	85.00	86.25	65.00	50.00
(68)	40.00	170.00	68.50	50.00	62.00	66.58	70.00	35.00	27.00	95.00	75.00
(69)	$2,920	$3,970	$3,280	$3,125	$3,500	$3,511	$2,926	$3,100	$3,197	$3,600	$3,100
(70)	$2,730	$3,600	$3,234	$3,700	$3,000	$3,289	$3,070	$2,850	$3,115	$3,300	$2,800
(71)	$6,600	$8,300	$7,251	$7,800	$8,560	$7,519	$6,730	$7,300	$7,282	$8,000	$7,000
(72a)	$10,300	$15,240	$10,125	$14,000	$11,450	$20,066	.....	$10,800	$13,732	$14,500	$10,500
(72b)	$10,450	$12,733	$12,841	$11,000	$9,764	$11,080	$10,360	$9,800	$11,339	$12,000	$10,000
(73)	$4,300	$3,580	$6,021	$4,900	$5,180	$6,864	$4,580	$3,500	$4,590	$3,500	$3,000
(74)	4.40	5.35	5.00	3.00	4.35	5.33	5.90	6.00	4.33	6.50	5.00
(75)	.45	.55	.4325	.064	.63	.58	.56	.60	.90	.55	.75
(76)	$10,350	$9,532	$11,459	$11,000	$13,000	$12,305	$9,835	$8,500	$11,444	$9,900	$10,500
(77)	$2,000	$2,400	$2,082	$2,500	$1,800	$2,291	$2,185	$1,900	$1,945	$2,300	$2,400
(78)	700.00	870.00	626.00	900.00	500.00	793.00	720.00	$1,200	862.00	$7,000	800.00
(79)	400.00	510.00	331.00	750 00	500.00	620.10	415.00	900.00	878.00	750.00	425.00
(80a)	$1,600	$2,600	$2,045	$1,790	$1,600	$2,080	$2,120	$2,485	$1,600	$1,850	$2,200
(80b)	$2,000	$2,600	$2,045	$1,800	$1,600	$2,353	$2,000	$2,380	$2,024	$2,300	$2,300
(80c)	$2,000	$2,025	$1,585	$1,900	.....	$2,353	.....	$2,150	$2,023	$2,300	$2,250
(81)	$1,170	$1,244	$1,070	$1,500	685.00	$1,529	$1,400	850.00	$2,418	$1,200	400.00
(82)	200.00	187.00	268.00	250.00	190.00	250.12	200.00	125.00	200.00	220.00	215.00
(83)	$5,200	$6,300	$5,722	$6,000	$5,750	$6,500	$6,800	$5,500	$5,578	$6,300	$7,000
(84)	$8,400	$10,128	$9,675	$9,500	$9,000	$10,450	$8,900	$8,500	$9,727	$10,000	$9,250
(85)	400.00	436.00	393.00	500.00	520.00	455.00	535.00	350.00	383.00	440.00	575.00
(86)	700.00	872.00	659.00	700.00	675.00	728.00	700.00	350.00	646.00	700.00	700.00
(87)	700.00	872.00	659.00	700.00	725.00	660.00	700.00	450.00	646.00	700.00	700.00
(88)	$1,200	$1,355	$1,726	$7,000	$1,270	$1,365	$1,600	$1,500	$1,400	$1,800	$1,650
(89)	300.00	412.00	364.00	300.00	330.00	452.00	400.00	350.00	400.00	450.00	400.00
(90)	175.00	177.00	171.00	145.00	120.00	189.00	140.00	260.00	175.00	200.00	160.00
(91)	$3,500	$4,400	$3,421	$3,400	$2,000	$4,370	$3,200	$3,500	$3,744	$4,000	$3,500
(92)	750.00	780.00	864.00	800.00	$1,400	$1,146	$1,090	975.00	$1,000	$1,000	$1,200
(93)	$5,000	$9,580	$6,037	$8,500	$6,060	$5,941	$6,925	$5,000	$5,250	$11,000	$7,500
(94)	400.00	500.00	402.00	500.00	435.00	494.00	500.00	800.00	440.00	500.00	600.00
(95)	$1,000	$1,100	543.00	$2,000	635.00	678.00	$2,080	$2,000	$1,780	$1,500	$1,500
(96)	$10,000	$22,700	$10,038	$10,000	$13,150	$12,946	$24,145	$15,000	$12,785	$11,000	$25,000
(97)	.06	.10	.045	.08	.10	.18	.10	.07	.15	.20	.13
(98)	.08	.10	.06	.07	.10	.18	.075	.10	.18	.20	.11
(99)	.10	.10	.07	.07	.10	.13	.07	.15	.18	.20	.12
(100)	.08	.10	.07	.07	.10	.18	.05	.10	.21	.20	.10
(101)	1.80	2.00	1.10	2.00	1.00	1.90	1.50	1.60	1.63	1.80	2.00
(102)	2.20	2.30	1.85	2.00	1.80	2.10	2.40	2.00	2.30	2.00	1.80
(103)	1.30	.50	.60	2.00	2.10	1.30	2.10	2.60	11.50	.60	2.00
(104)	1.00	1.15	.465	2.00	1.00	.73	1.10	1.00	1.50	.80	1.00
(105)	3.00	5.00	.11	2.00	5.00	5.75	4.60	5.00	5.00	5.50	5.00
(106)	160.00	175.00	150.00	260.00	250.00	195.00	300.00	160.00	195.00	25.00	200.00
(107)	.80	1.30	.83	.65	1.00	1.04	1.00	2.50	.86	1.00	1.25
(108)	140.00	160.00	140.00	200.00	670.00	130.00	200.00	500.00	132.00	200.00	200.00
(109)	1.00	1.30	1.25	1.50	2.70	2.10	1.00	2.50	2.16	1.25	1.50
(110)	1.50	2.00	2.00	2.00	3.80	2.50	1.20	2.75	2.83	2.00	2.00
(111)	1.50	2.00	2.35	1.75	3.80	2.60	1.00	2.00	1.15	2.00	1.50
(112)	150.00	100.00	183.00	200.00	400.00	442.00	350.00	150.00	330.00	250.00	125.00
(113)	40.00	60.00	46.00	50.00	70.00	45.00	48.00	50.00	16.10	60.00	40.00
(114)	.60	.90	1.40	1.40	1.00	3.90	1.00	1.00	1.75	1.60	1.00
(115)	.50	.40	1.35	1.00	1.00	1.00	.40	.75	1.04	1.60	.35
(116)	10.00	15.00	12.00	35.00	25.00	10.50	27.00	40.00	5.75	8.00	15.00
(117)	25.00	50.00	21.00	50.00	40.00	52.00	30.00	70.00	77.25	50.00	200.00
(118)	25.00	35.00	16.00	35.00	25.00	26.00	35.00	75.00	17.25	25.00	50.00
(119)	50.00	120.00	30.00	50.00	50.00	83.00	116.00	60.00	28.75	100.00	100.00
(120)	$1,460	$2,000	$1,720	$1,600	$1,150	$1,612	$1,550	$1,500	$1,650	$1,750	$1,500
(121)	40.00	160.00	38.00	40.00	35.00	32.00	32.00	100.00	62.00	40.00	30.00
(122)	25.00	40.00	26.00	25.00	30.00	13.00	50.00	50.00	26.50	30.00	25.00
(123)	$5,000	$7,500	$11,346	$7,500	$6,200	$4,350	$6,150	$1,500	$5,525	$6,000	$9,000

(Continued on next page)

CONSTRUCTION PLANT AND EQUIPMENT FROM SHASTA DAM, CALIFORNIA

AVAILABLE FOR SALE — IMMEDIATE DELIVERY

CABLEWAYS AND HOISTS

3—Lidgerwood, 3-drum electric hoists with 500 h.p. G. E. motors. Ward Leonard control, complete with controls and all electric equipment.
2—Lidgerwood, 3-drum electric hoists with 500 h.p. Westinghouse motors complete with controls and all electrical apparatus.
5—Cableway towers, structural steel, 3—125 ft.; 1—75 ft. and 1—45 ft., complete with travel mechanism.
6—Complete sets of carriages, main and auxiliary, fall and dump blocks, fall rope carriers, buttons, takeup bars and takeup sheaves.
1—American pillar crane. Cap. 5 T. at 48½ ft. and 15 T. at 25 ft. radius.
1—Colby elevator hoist, double drum, 75 h.p., equipped with brakes and emergency equipment, including one hoist cage. 15 ton capacity.
12,000 lin. ft. of used 3" dia. locked coil cable in length from 500 to 2600 lin. ft.
Misc. lot of sheaves, jewels, blocks, etc.

CEMENT PLANT

1—Dual No. 265 Fuller Fluxo cement pump, duplex type complete with gravity feed and automatic control equipment. 400 bbls. per hr. capacity. Pumping distance 3300 ft.
1—Fuller-Kinyon pump—type "D," 125 h.p., complete with air hose power control cable, control cabinet.
1—C-200 Fuller single stage rotary compressor Westinghouse motor 100 h.p.

CONVEYORS

66—Motor operated gates for sand and gravel up to 6" cobbles with 1-h.p. Allis-Chalmers gear motor.
2—Complete sets, including 42" tandem drive pulleys, 42" head pulleys, 36" tail pulleys.
3—150 h.p. Westinghouse gear motors, 144 r.p.m., 2300 volts, 3-phase, 60 cycle.
1—Airplane tripper for 36" belt with two 17' wing belts, capacity 1,000 T. per hour, complete with pulleys, drives and gear motors.

12—White Dump Trucks Model 1580-691, 24 cu. yd. capacity in good condition.

DRILLING EQUIPMENT

2—Mod. 315 I-R portable compressors, gas driven.
5—I-R paving breakers.
8—I-R drifters DA35.
1—I-R-54 drill sharpener.
10—I-R jackhammers.

TANKS AND RECEIVERS

10—8 cu. yd. steel hoppers, including gates and air rams.
2—Water filters.
2—Wallace & Tiernan chlorinators.
1—9500 bbl. all welded water tank, 48' dia., 30' high.
1—5400 bbl. all welded water tank, 36' dia., 30' high.
1—200 bbl. steel water tank.
10—Sandblast tanks 24" x 96" with hoppers and fittings.
10—Lubricator tanks 14" x 30"; 24" x 48"; and 24" x 60".

PUMPS

3—Bingham type SVD submersible pumps.
1—Byron-Jackson 150 h.p. 10 in. deep well.
2—Byron-Jackson 200 h.p., 5 K-H type 8Q1 deep well turbine pumps.
1—Gardner-Denver grout pump, model FD-FS, 10" x 2½" x 10", with case-hardened liners and Calmex pistons and rods, 1,000 lb. pressure at 90 lb. air.
10—I-R No. 25 sump pumps.

MIXING PLANTS

1—3000 cy. bin with 5 compartments for aggregates, 2 compartments cement, incl. turnhead, gates.
1—Complete set C. S. Johnson fully automatic batching equipment for 5 aggregates, cement and water for 4 cy. batchers.
5—4 cy. Koehring concentric zone mixers, including batchmeters, timers, consistency meters.
1—100-ton steel bin.

MISCELLANEOUS

1—P.A.X. automatic telephone switchboard with 76 phones.
Pole line hardware.
Floodlites—500 to 1500 w.
1—1¼ cu. yd. heavy duty clamshell bucket.
12—Muck skips, 7—14 cu. yds.
50—Chicago pneumatic concrete vibrators, Nos. 417, 518 and 519.
Several sizes of monkey wrenches, wood borers, chipping and riveting guns.
New and used rubber hose, ¾" to 4".

MACHINERY AND SUPPLIES

1—125 kw. motor generator set, 275 volts D.C.
Complete stock of warehouse supplies.
Complete line of transformers and electric motors.

ALL ITEMS SUBJECT TO PRIOR SALE

PACIFIC CONSTRUCTORS, INC.

GENERAL CONTRACTORS—BOX 898, REDDING, CALIFORNIA — **Phone 512 REDDING**

The OWEN BUCKET Co. 6060 BREAKWATER AVE., CLEVELAND, OHIO
BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIF.

(124)	5.50	8.00	5.75	7.00	4.25	5.65	5.00	5.00	4.83	7.00	6.00
(125)	.60	1.00	.51	.75	.65	.22	.30	.40	1.15	.30	.20
(126)	250.00	400.00	445.00	$1,000	500.00	780.00	630.00	500.00	345.00	600.00	750.00
(127)	2.50	3.00	1.95	5.00	2.50	4.70	2.45	3.00	4.60	2.50	3.00
(128)	1.00	1.15	1.60	1.50	.50	.83	.85	1.25	1.73	.90	2.50

Highway and Street...

Arizona—Graham County—State—Grade and Surface

R. H. Martin Construction Co., Tucson, submitted the low bid of $319,060 to the Highway Department, Phoenix, for the grading, draining, and bituminous surfacing of 8.4 mi. of the Douglas-Safford Highway. The work extends northerly from the Cochise County line. Unit bids submitted follow:

(1) R. H. Martin Constr. Co. $319,060
(2) The Tanner Const. Co. 338,992
(3) W. J. Henson, Contr. 347,734
(4) W. E. Orr, Contr. 349,308
(5) Phoenix-Tempe Stone Co. $353,364
(6) Packard Const. Co. 355,718
(7) L. G. Lunch, Contr. 362,095

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
135,199	cu. yd. rdwy. excav. (unclas.)	.75	.60	.66	.82	.60	.85	.80
3,250	cu. yd. overbreakage (for 75% of unit bid price for Item 1)	.5625	.45	.495	.615	.45	.6375	.60
3,250	cu. yd. slides (for 50% of unit bid price for Item 1)	.375	.30	.33	.41	.30	.425	.40
9,170	cu. yd. drainage excav. (unclass.)	.30	.75	.52	.65	.30	.50	.40
9,400	lin. ft. grader ditches	.05	.10	.05	.10	.11	.10	.15
2,878	cu. yd. structural excav. (unclass.)	1.50	2.00	2.50	2.00	1.40	2.50	2.00
141,069	sta. yd. station yard overhaul	.01	.01	.03	.02	.015	.015	.02
4,256	cu. yd. mi. cubic yard mile haul	.40	.20	.32	.30	.35	.20	.35
6,148	cu. yd. imported borrow (CIP)	.75	.60	.65	.50	.60	.57	.80
81,393	ton select material (CIP)	.50	.65	.52	.55	.65	.36	.50
6,822	M. gal. sprinkling (CIP)	2.00	3.00	4.00	3.25	5.75	4.20	3.50
1,938	hour rolling	5.00	5.00	5.00	5.00	5.60	5.75	5.00
2,249	cu. yd. Cl. "A" conc. (incl. cement)	30.00	31.00	36.00	30.00	30.00	33.00	35.00
247,090	lb. reinf. steel (bars) (CIP)	.07	.08	.065	.07	.10	.08	.075
1,560	lin. ft. 24-in. C.M.P. (CIP except excav.)	3.50	3.85	4.00	3.60	3.90	3.20	3.40
210	lin. ft. 30-in. C.M.P. (CIP except excav.)	5.00	4.60	4.50	4.35	4.80	4.00	4.20
944	lin. ft. 36-in. C.M.P. (CIP except excav.)	5.50	6.75	6.75	6.50	7.30	6.30	6.40
382	lin. ft. 42-in. C.M.P. (CIP except excav.)	8.00	8.10	7.75	7.50	8.70	7.50	7.60
188	lin. ft. 48-in. C.M.P. (CIP except excav.)	10.00	9.70	9.00	9.00	10.30	8.50	8.80
175	cu. yd. plain riprap (CIP)	5.00	6.00	6.50	3.00	7.00	5.00	12.50
89,448	lin. ft. std. line fence (CIP)	.10	.18	.13	.10	.12	.14	.15
17	each std. wire gates (Type 2) (CIP)	10.00	15.00	10.00	10.00	12.00	15.00	20.00
1	each std. steel gates (Type 1) (CIP)	50.00	35.00	40.00	40.00	35.00	35.00	40.00
200	lin. ft. rail bank protectn. (Type A) (CIP)	6.00	6.50	6.50	6.50	5.60	6.00	7.50
900	lin. ft. rail bank protectn. (Type B) (CIP)	5.00	5.00	5.00	5.50	3.85	4.05	5.50
589	each guide posts (CIP)	4.00	6.50	5.00	5.00	5.60	5.50	5.00
74	each right of way mkrs. (Type E) (CIP)	5.00	6.00	6.00	5.00	5.60	6.10	6.00
98,085	gal. road oil (SC-2) (for B.S.T.) (CIP on road)	.10	.10	.10	.105	.12	.09	.10
172	ton road oil (SC-6) (for B.S.T.) (CIP on road)	29.00	30.00	30.00	30.00	36.00	30.00	27.50
655	ton blotter material (CIP)	1.00	4.00	3.25	3.00	2.80	4.00	3.00

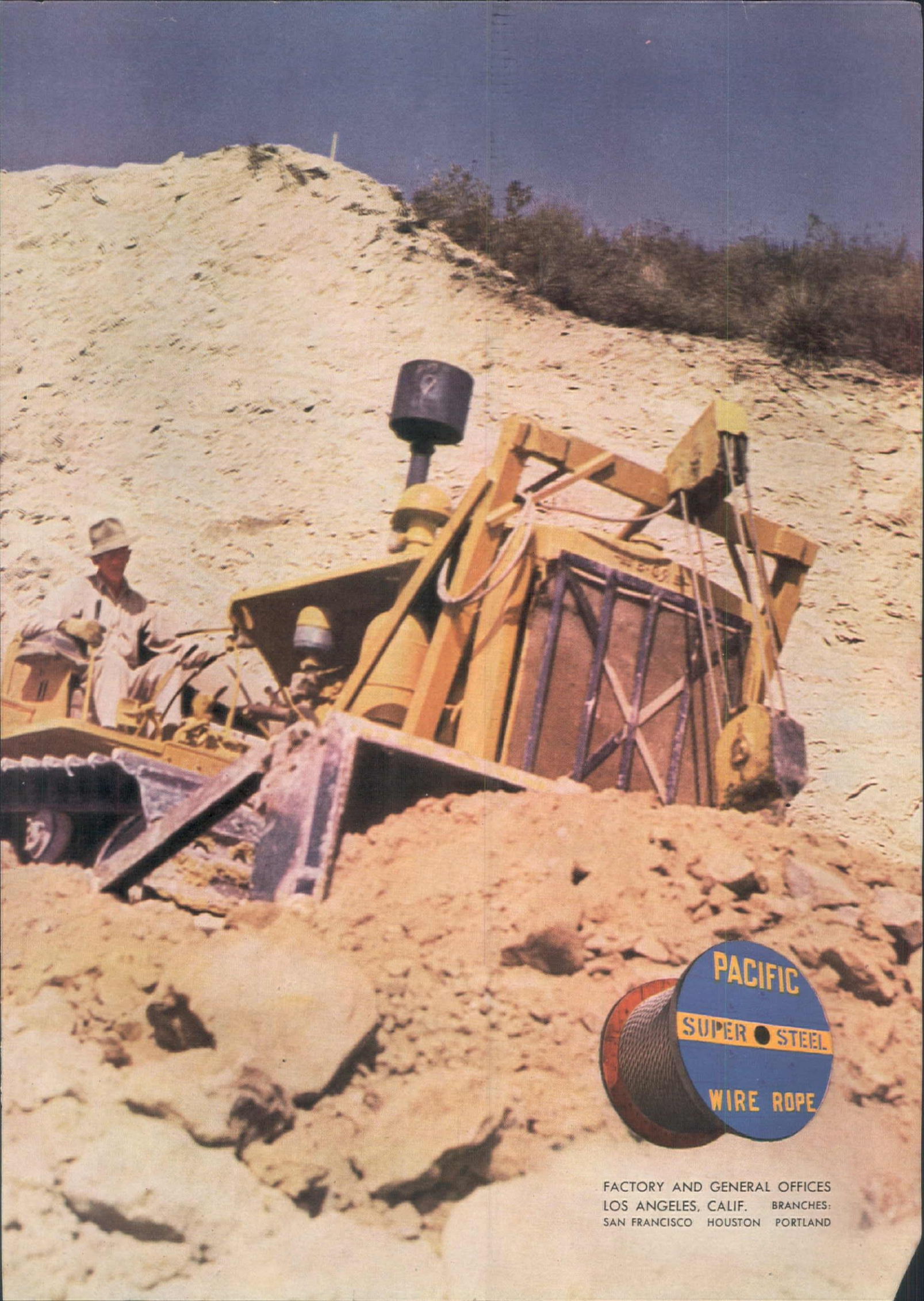
Montana—Flathead County—State—Grade and Surface

Nyberg Construction Co., Yardley, Washington, was awarded the contract on the lowest bid of $108,949 by the State Highway Commission, Helena, for the construction of 3.8 mi. U.S. Route 2 of the Kalispell-Libby Highway. The following is a summary of the unit bids received for the project:

(A) Nyberg Construction Co. $108,949
(B) S. Birch & Sons Const. Co. 113,812
(C) R. P. Herrick Co. 120,550
(D) Union Construction Co., Inc. 127,885
(E) Nilson Smith Const. Co. 132,806
(F) McLaughlin, Inc. $135,937
(G) Clifton & Applegate 141,753
(H) Max J. Kuney Co. 149,785
(I) L. A. Woodward Const. Co. 157,285
(J) Big Horn Construction Co. 168,077

(1) 131,966 cu. yd. unclass. excav. and borrow
(2) 16,771 cu. yd. selected borrow material
(3) 483 cu. yd. culvert excavation
(4) 198,000 sta. yd. overhaul
(5) 26.93 acre clearing
(6) 19.29 acre grubbing
(7) 20,915 tons base course cr. gravel surf.
(8) 11,275 tons Gr. A top course cr. grav. surf.
(9) 638 tons stone chips
(10) 1,400 cu. yd. binder
(11) 2,800 yd. mi. overhaul on binder
(12) 3,448 M. gal. watering
(13) 274 units rolling
(14) 3.779 miles processing
(15) 2,218 gal. pr. coat oil (SC-2 asph. rd. oil)
(16) 62,079 gal. appl. of SC-4 asph. rd. oil
(17) 17,736 gal. seal coat oil (150-200 A cmt.)
(18) 64 lin. ft. 15-in. corr. metal pipe culv.
(19) 76 lin. ft. 18-in. corr. metal pipe culv.
(20) 768 lin. ft. 24-in. corr. metal pipe culv.
(21) 270 lin. ft. 36-in. corr. metal pipe culv.
(22) 32 lin. ft. relaying pipe culverts
(23) 2 each concrete project markers
(24) 56 each conc. r/w monuments
(25) 21 each conc. station markers
(26) 570 ton stockpiled gravel

		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
(1)		.28	.225	.24	.35	.30	.33	.42	.43	.38	.50
(2)		.50	.60	.40	.50	.80	.72	.60	.80	1.00	.90
(3)		1.50	1.00	1.00	1.00	1.00	2.00	1.50	2.00	2.00	1.50
(4)		.01	.01	.015	.01	.01	.01	.015	.02	.02	.01
(5)		200.00	210.00	400.00	250.00	400.00	300.00	170.00	200.00	450.00	250.00
(6)		200.00	225.00	275.00	250.00	200.00	250.00	170.00	170.00	300.00	250.00
(7)		.65	.85	.90	.80	.80	.90	.90	.90	1.00	1.00
(8)		.80	1.05	1.25	1.10	1.00	1.10	1.20	1.00	1.20	1.70
(9)		4.00	6.00	4.50	4.00	5.00	6.00	5.00	2.75	5.00	6.00
(10)		.01	.01	.20	.05	.05	.10	.20	.10	.05	.01
(11)		.01	.01	.15	.05	.05	.10	.20	.10	.05	.01
(12)		2.00	2.00	1.50	1.50	2.00	2.00	1.50	2.50	3.00	1.50
(13)		5.00	6.00	5.00	6.00	5.00	6.00	7.00	6.50	7.00	7.00
(14)		900.00	600.00	700.00	700.00	800.00	$1,000	$1,000	$1,000	$1,000	$1,500
(15)		.11	.18	.20	.20	.20	.20	.12	.24	.12	.15
(16)		.11	.14	.12	.12	.15	.12	.12	.14	.10	.10
(17)		.11	.15	.15	.15	.15	.15	.12	.15	.10	.10
(18)		2.00	1.80	2.90	2.00	2.50	2.25	3.00	3.00	2.00	3.00
(19)		2.50	2.15	3.25	3.00	3.00	3.00	4.00	3.50	2.20	4.00
(20)		4.00	3.25	4.10	4.00	5.00	4.00	5.00	5.00	3.00	5.00
(21)		6.00	6.40	6.75	6.00	9.00	6.00	8.00	9.00	6.00	8.00
(22)		2.00	2.50	2.00	1.00	2.00	3.00	2.00	1.50	2.00	2.00
(23)		10.00	11.00	15.00	25.00	15.00	20.00	30.00	14.00	25.00	20.00
(24)		3.00	4.15	3.25	5.00	3.00	4.00	5.00	4.00	5.00	6.00
(25)		5.00	7.00	5.00	6.00	5.00	6.00	7.00	6.00	5.00	10.00
(26)		.70	1.00	1.10	1.25	1.00	1.00	1.00	.95	1.20	1.00



FACTORY AND GENERAL OFFICES
LOS ANGELES, CALIF. BRANCHES:
SAN FRANCISCO HOUSTON PORTLAND

Washington—Cowlitz County—State—Grade and Surface

N. Fiorito Co., Seattle, submitted the low bid and was awarded the contract for $393,790 by the Department of Highways, Olympia, for the construction of 5 mi. of SR-1 between Martins Bluff and Kalama River. The following is a summary of the quantities and unit bids received:

(1) N. Fiorito Co. $393,790
(2) Porter W. Yett 400,692
(3) Peter Kiewit Sons Co. 418,176
(4) Fiorito Bros. $433,801
(5) E. W. Elliott 434,827
(6) Erickson Paving Co. 473,832

	(1)	(2)	(3)	(4)	(5)	(6)
Lump sum, clearing and grubbing	500.00	$3,000	600.00	$2,500	900.00	$2,500
1,550 cu. yd. unclass. excav., including haul	.40	1.00	.35	.75	1.00	1.00
195 cu. yd. structure excavation	3.00	3.00	3.50	2.50	5.00	3.00
270.0 stas. (100 ft.) finishing roadway	15.00	15.00	12.00	12.00	12.00	20.00
65,720 cu. yd. sel. rdwy. borrow in pl., incl. haul	.90	.85	.95	1.45	1.20	1.50
6,300 cu. yd. cr. stone surf. top crse., in place on rdwy.	3.25	3.00	3.25	3.20	3.40	3.40
7,250 cu. yd. cr. stone surf. base crse., in place on rdwy.	3.25	3.00	3.00	3.20	3.40	3.40
183 M. gals. water	4.00	3.00	2.50	2.50	2.50	2.50
85,831 sq. yd. cement conc. pave., std. 14 da. mix, 9-in. sec. in pl.	2.70	2.90	2.97	2.77	2.88	3.10
1,120 sq. yd. cement conc. pave. high early strength, 9-in. section in place	3.15	3.40	3.70	3.15	3.65	3.50
2,592 only, dowel bars with rubber caps in place	.25	.30	.25	.28	.28	.27
2,508 lin. ft. special cement conc. curb in place	1.50	1.00	1.25	1.50	1.50	2.10
1,818 lin. ft. reflect. traf. curb Type A in place	1.75	1.50	1.85	1.75	1.80	1.75
1,382 sq. yd. one cr. cem. conc. sidewk. std. 14 day mix, in place	2.00	2.00	2.35	2.00	2.40	2.00
963 tons Type I 1 asph. conc. pave., Cl. C wearing crse., in place	9.50	9.00	9.50	9.00	9.45	9.00
2,414 tons Type 1-1 asph. conc. pave., Cl. E, leveling crse., in place	9.50	8.00	9.50	9.00	9.45	9.00
300 lin. ft. std. beam gd. rail, Type 1 or 2, des. 6 in pl.	2.00	1.50	1.50	2.00	2.00	2.00
78 only, spot posts (treated) in place	5.00	5.00	6.00	5.00	6.00	6.00
18 only, std. conc. catch basin, complete in place	100.00	50.00	75.00	50.00	80.00	75.00
214 only, asphaltic conc. traf. buttons, in place	4.00	3.00	1.65	3.00	4.00	3.50
4 only, temp. bdg. across pave. (take down type), in place	100.00	100.00	210.00	100.00	200.00	150.00
3 only, adj. ex. manhole ring and cover to grade	25.00	25.00	75.00	10.00	100.00	75.00
122 sq. yd. remove ex. conc. pavement	1.00	1.00	.40	.50	1.00	.50
855 sq. yd. remove. ex. asphaltic conc. pavement	.25	.50	.35	.50	1.00	.50
796 sq. yd. remov. ex. concrete sidewalk	.40	.25	.25	.50	1.00	.50
564 lin. ft. remove. ex. concrete curb	.50	.10	.25	.25	1.00	.50
985 lin. ft. remov. ex. guard rail	.25	.50	.50	.25	.40	.25
4 only, remov. ex. concrete catch basins	20.00	5.00	60.00	15.00	25.00	5.00
1 only, remov. and reset. ex. fire hydrant	100.00	50.00	175.00	100.00	100.00	100.00
80 lin. ft. haul. and place 8-in. cast iron water pipe	3.00	1.00	6.00	1.00	2.00	2.00
450 lin. ft. pl. conc. or V.C. sewer pipe 8-in. dia. in pl.	1.00	1.00	.95	1.00	1.50	1.00
36 lin. ft. pl. conc. or V.C. culv. pipe 12-in. dia. in pl.	1.50	1.50	1.50	1.50	2.00	1.50
66 lin. ft. std. reinf. conc. culv. pipe 18-in. dia. in pl.	2.75	2.50	3.25	3.25	3.00	3.00

California—Santa Barbara County—State—Grade and Surface

Dimmitt & Taylor, Los Angeles, submitted the low bid of $493,273 to the Division of Highways, Sacramento, for the construction and paving of 4.7 mi. SR 2 between Fairview Ave., and Tecolote Cr. Quantities and unit bids submitted are as follows:

(A) Dimmitt & Taylor $493,273
(B) N. M. Ball Sons 505,888
(C) Tanner Construction Co. 513,801
(D) Fredrickson & Watson Constr. Co. 526,639
(E) Basich Bros. Constr. Co., and Nathan A. Moore 564,626
(F) Guerin Bros. 569,232
(G) A. Teichert & Son, Inc. $570,997
(H) Clyde W. Wood, Inc. 579,793
(I) Griffith Company 603,381
(J) J. E. Haddock, Ltd. 645,519
(K) Morrison-Knudsen Company 683,937
(L) Peter Kiewit Sons Co. 688,986
(M) Ralph A. Bell 722,397

(1) 420 cu. yd. removing concrete.
(2) 251 sta. clearing and grubbing.
(3) 347,500 cu. yd. roadway excavation.
(4) 3,800 cu. yd. structure excavation.
(5) 1,600 cu. yd. ditch and channel excavation.
(6) 3,065,000 sta. yd. overhaul.
(7) 21,000 sq. yd. compacting original ground.
(8) 52,000 cu. yd. imported borrow.
(9) 900 cu. yd. imported top soil.
(10) 58,800 sq. yd. preparing slopes (slope erosion prot'n.)
(11) 45 tons straw (slope erosion prot'n.)
(12) 1,650 lbs. western rye grass seed (slope erosion prot'n.)
(13) 11,400 ea., Mesembryanthemum Edule cut'gs.
(14) Develop water supply and furnish equip't.
(15) 13,950 M. gal. applying water.
(16) 251 sta. finishing roadway.
(17) 39,000 tons imported base material.
(18) 270 tons liquid asphalt SC-2 (prime coat).
(19) 22,100 tons mineral aggregate (P.M.S.)
(20) 1,205 tons paving asphalt (P.M.S.)
(21) 27 tons liquid asphalt SC-3 stockp. (P.M.S.)
(22) 50 lin. ft. raised bars (P.M.S.)
(23) 21,000 sq. ft. placing P.M.S. (slope drains and ditches).
(24) 94 tons asphalt emulsion (seal coat).
(25) 800 tons screenings (Class C, fine seal coats).
(26) 1,360 cu. yd. Class "A" P.C.C. (structures)
(27) 220,200 lbs. bar reinf. steel.
(28) 60 ea., monuments.
(29) 2,450 lin. ft. laminated guard railing.
(30) 360 lin. ft. move and reconst. exist. guard rail.
(31) 225 ea., culv. markers, proj. markers, gd. posts
(32) 4.5 miles new property fence.
(33) 14 ea., drive gates.
(34) 0.5 miles remove and reconst. exist. barbwire fence.
(35) 0.09 mile remove and reconst. exist. chain link fence.
(36) 1,050 lin. ft. 24-in. std. str. R.C.P.
(37) 600 lin. ft. 36-in. std. str. R.C.P.
(38) 140 lin. ft. 36-in. extra str. R.C.P.
(39) 550 lin. ft. new 8-in. 16 gauge C.M.P. downdrains.
(40) 23 ea., new spillway assemblies.
(41) 176 lin. ft. salvage exist. spill. assemb'y downdrains.
(42) 176 lin. ft. relay salv. spill. assemb'y downdrains.
(43) 3 ea., salvage exist. spillway assemblies.
(44) 3 ea., install salvaged spillway assemblies.
(45) 24 ea., downdrain pipe anchors.
(46) 3 ea., cast steel frames and covers for D.J.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
(1)	4.35	2.50	7.50	3.00	4.00	8.00	2.50	5.00	5.00	3.60	10.00	5.10	5.00
(2)	30.00	73.00	20.00	40.00	20.00	68.00	50.00	75.00	34.00	62.00	145.00	48.70	75.00
(3)	.26	.275	.30	.24	.25	.35	.25	.275	.32	.44	.39	.34	.38
(4)	1.50	1.25	1.30	2.00	3.50	1.25	2.50	2.00	1.90	3.00	2.00	1.25	2.50
(5)	1.00	1.00	1.00	1.75	1.50	1.00	1.20	.75	1.10	2.40	1.30	.50	1.25
(6)	.005	.005	.006	.005	.005	.005	.005	.004	.006	.006	.012	.004	.006
(7)	.02	.025	.06	.05	.06	.05	.05	.03	.07	.0325	.03	.015	.06
(8)	1.25	1.07	.90	1.50	1.80	1.25	1.78	1.90	1.70	1.56	1.10	3.50	2.00
(9)	2.00	2.00	2.00	2.35	1.50	8.00	1.00	2.00	2.00	1.90	.90	1.45	2.00
(10)	.04	.13	.10	.11	.04	.08	.05	.05	.12	.035	.06	.06	.12
(11)	40.00	38.00	40.00	50.00	100.00	110.00	70.00	50.00	51.00	39.00	143.25	45.00	30.00
(12)	.35	.75	.50	.60	.40	3.85	1.15	.65	.23	.26	.85	.45	.40
(13)	.04	.07	.05	.06	.015	.08	.06	.05	.09	.04	.085	.05	.05
(14)	$3,000	$6,000	500.00	$3,200	$1,000	500.00	$1,500	$6,000	$8,000	$14,500	$5,775	$6,000	$12,500
(15)	.85	1.50	1.30	1.40	2.00	2.00	1.50	.50	1.75	1.40	2.00	1.10	1.50
(16)	10.00	6.25	7.50	10.00	10.00	6.00	8.00	10.00	5.00	12.00	11.55	10.00	12.50
(17)	2.30	2.25	2.60	2.29	2.35	2.25	2.50	2.45	2.60	2.70	2.04	2.75	3.50
(18)	12.50	15.60	14.00	12.70	13.00	16.00	15.40	13.50	14.00	15.50	18.48	15.00	19.00
(19)	4.00	3.31	4.00	3.89	3.75	3.70	3.70	4.40	4.30	3.85	5.10	3.75	5.30

(Continued on next page)

(20)	11.00	12.50	12.00	11.60	12.00	12.00	13.20	14.50	13.00	12.15	16.00	12.00	17.00
(21)	12.50	14.30	14.00	12.70	13.00	20.00	14.50	16.00	13.00	14.40	17.40	14.75	20.00
(22)	.75	1.00	1.00	2.30	.50	2.00	1.00	2.00	1.00	1.00	1.75	1.00	1.50
(23)	.17	.10	.10	.05	.10	.06	.12	.13	.25	.32	.14	.06	.15
(24)	18.00	23.50	35.00	21.00	20.00	22.00	23.00	35.00	33.00	25.00	23.10	20.00	30.00
(25)	5.00	4.16	6.00	4.10	5.00	4.00	4.00	3.50	5.25	4.50	4.62	4.50	4.40
(26)	29.00	33.00	28.00	38.75	45.00	36.00	52.00	37.50	34.50	37.50	60.00	43.00	40.00
(27)	.063	.065	.07	.06	.07	.06	.07	.065	.07	.07	.07	.008	.065
(28)	4.00	5.00	5.00	3.50	5.00	5.00	3.50	6.00	5.00	6.00	6.00	5.50	6.00
(29)	1.90	1.75	2.10	2.10	3.00	2.50	1.50	1.50	2.40	1.60	2.00	2.50	2.50
(30)	1.50	1.30	2.00	2.30	3.00	2.50	1.00	2.00	1.90	1.50	1.25	3.00	1.75
(31)	3.00	4.00	4.00	3.00	3.50	4.00	2.50	5.00	4.00	4.00	6.00	4.00	3.00
(32)	750.00	740.00	850.00	700.00	750.00	$1,200	900.00	$1,250	900.00	$1,900	$1,940	$1,400	900.00
(33)	25.00	52.00	30.00	50.00	40.00	40.00	30.00	38.50	40.00	55.00	60.00	45.00	30.00
(34)	400.00	600.00	$1,000	700.00	650.00	675.00	600.00	700.00	800.00	$1,580	$1,280	770.00	$1,250
(35)	$10,000	$2,000	$8,000	$2,600	$6,000	$5,500	$6,500	$5,500	$6,300	$5,000	$2,100	$6,300	$8,000
(36)	4.50	4.47	4.20	4.50	4.50	4.00	4.25	6.00	4.80	4.00	4.50	6.00	5.00
(37)	7.50	8.62	7.20	8.00	8.00	8.00	7.00	11.00	8.50	7.45	8.40	10.00	9.00
(38)	9.00	10.87	8.50	10.00	9.00	10.00	9.00	13.00	10.00	8.35	9.75	12.00	11.00
(39)	1.25	1.25	1.50	1.25	1.50	1.40	1.20	1.50	1.35	1.20	1.50	1.50	1.75
(40)	25.00	26.00	25.00	21.00	25.00	25.00	35.00	25.00	27.00	23.00	30.00	20.00	25.00
(41)	.50	.60	1.00	.60	.75	1.00	.50	1.00	.50	.25	.60	.70	1.25
(42)	.50	.90	1.00	.60	.75	1.00	.50	1.00	.50	.30	.75	.70	1.25
(43)	10.00	12.00	10.00	6.00	10.00	15.00	10.00	10.00	6.00	9.00	12.00	5.00	12.00
(44)	10.00	18.00	10.00	6.00	15.00	15.00	10.00	10.00	6.00	11.00	12.00	9.00	12.00
(45)	15.00	12.00	15.00	12.00	8.00	15.00	15.00	20.00	10.00	10.00	9.40	11.50	9.00
(46)	70.00	60.00	75.00	45.00	75.00	75.00	75.00	75.00	75.00	75.00	80.00	85.00	50.00

Washington—Cowlitz County—State—Grading

Peter Kiewit Sons Co., Omaha, Nebraska, was awarded the contract for the low bid of $476,363 by the Department of Highways, Olympia, for the construction of 5.7 mi. SR-1 Woodland to Martins Bluff road. The following is a summary of the unit bids received for the project.

(1) Peter Kiewit Sons Co. $476,363
(2) E. W. Elliott 480,125
(3) Porter W. Yett 518,367
(4) N. Fiorito Co. 521,958
(5) Erickson Paving Co. $541,677
(6) Fiorito Bros. 544,252
(7) Warren Northwest, Inc. 648,329

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Lump sum, clearing and grubbing	600.00	$1,000	$3,000	$2,000	$2,000	$5,500	$2,000
9,080 cu. yd. common exc., incl. haul of 600 ft.	.35	.41	.35	.35	.45	.35	.35
112,650 cu. yd. unclass. exc., incl. haul of 600 ft.	.78	.77	1.00	.85	1.15	.75	1.20
130 cu. yd. com. trench exc., incl. haul of 600 ft.	2.50	1.90	3.00	2.50	2.00	2.50	4.00
10 cu. yd. solid rk. tr. ex., incl. haul of 600 ft.	10.00	7.50	5.00	5.00	5.00	10.00	15.00
21,591 cu. yd. stas. overhaul on above matls.	.02	.025	.01	.02	.02	.02	.02
2,731.83 M. cu. yd. stas. overhaul on above matls.	4.50	4.50	6.00	5.00	6.00	5.50	12.50
150 cu. yd. structure excav.	4.00	6.00	2.50	2.50	3.50	2.50	5.00
3,900 lin. ft. slope treatment	.25	.11	.20	.15	.20	.25	.20
300.8 stas. (100 ft.) finish roadway	12.00	14.50	15.00	20.00	20.00	15.00	10.00
50 cu. yd. gravel backfill in place	4.00	4.00	4.00	7.00	4.00	5.00	4.00
29,310 cu. yd. sel. rdwy. borrow in pl. on rdwy., incl. haul	.97	1.90	1.50	1.65	1.75	1.75	2.25
6,600 cu. yd. cr. stone surf. top cr. in pl. on rdwy.	3.60	3.25	4.00	3.25	3.40	3.30	3.75
7,330 cu. yd. cr. stone surf. base cr. in pl. on rdy.	3.40	3.25	4.00	3.25	3.40	3.30	3.75
185 M. gals water	2.50	2.00	2.50	5.00	2.50	2.50	3.00
79,523 sq. yd. cem. conc. pav. std. 14 day mix, 9-in. sec. in pl.	3.09	2.83	3.00	3.30	3.00	3.60	3.79
960 sq. yd. cem. conc. pav., 9-in. sec. in pl.	3.95	3.22	3.10	3.75	3.20	3.85	4.10
2,500 only, dowel bars with rubber caps in pl.	.25	.28	.29	.30	.25	.30	.30
1,540 lin. ft. refl. traffic curb Type A in pl.	1.85	2.00	1.50	1.75	1.90	1.75	2.00
669 lin. ft. refl. traffic curb Type C in pl.	2.40	3.00	1.50	2.20	2.35	2.25	2.75
3 only, refl. curb nosing in place	15.00	20.00	100.00	15.00	11.00	15.00	35.00
452 tons Type I-1 asph. conc. pave. Class C wr. cr. in pl.	10.00	9.00	9.00	9.50	9.00	8.50	9.00
1,145 tons Type I-1 asph. conc. pav. class E lev. cr. in pl.	10.00	9.00	8.00	10.50	9.00	8.50	9.00
1.25 cu. yd. conc. Class C in place	60.00	80.00	50.00	75.00	50.00	50.00	100.00
7,400 lin. ft. std. beam gd. rail type 1 or 2, desg. 6 in pl.	1.50	1.50	1.50	1.65	2.00	2.00	1.60
56 only, spot posts (treated) in place	6.00	7.00	5.00	4.00	4.00	2.50	5.00
136 only, asph. conc. traffic buttons in place	1.65	4.00	2.00	4.00	3.50	3.50	3.00
6 only, temp. bdg. across pav. (take down type) in place	210.00	200.00	150.00	75.00	135.00	75.00	300.00
2 only, embk. protector with Type A spillwy.	25.00	150.00	250.00	30.00	10.00	25.00	40.00
6,592 sq. yd. remov. exist. conc. pavement	.40	.70	.35	.25	.50	.75	1.00
1,273 lin. ft. remov exist. guard rail	.50	.25	.50	.40	.10	.25	.50
1 only, remov. and reset. exist. conc. monu.	120.00	25.00	50.00	25.00	10.00	25.00	100.00
60 lin. ft. pl. conc. or V.C. culv. pipe 12-in. dia. in place	1.50	1.60	1.50	1.45	1.00	1.75	1.50
51 lin. ft. std. reinf. conc. culv. pipe 18-in. dia. in place	3.25	2.70	2.75	3.60	1.75	3.25	3.50
132 lin. ft. std. reinf. conc. culv. pipe 24-in. dia. in place	4.50	3.90	3.00	5.25	3.00	4.00	5.00
54 lin. ft. std. reinf. conc. culv. pipe 36-in. dia. in place	10.00	8.10	10.00	10.00	10.00	10.00	15.00
96 lin. ft. bit. coated corr. metal culv. pipe No. 16 gauge, 8-in. dia. in place	1.75	1.50	2.00	1.10	2.00	2.25	1.75

California—Kern County—State—Grade and Surf.

Arthur A. Johnson, Laguna Beach, Calif., submitted the low bid of $68,532 to the Division of Highways for the construction of 8.2 mi. of highway between route 145 near Rademacher and Inyokern-Trona Road. A summary of the unit bids submitted is as follows:

(1) Arthur A. Johnson $68,532
(2) R. R. Hensler 68,963
(3) Vinnell Company $71,103

	(1)	(2)	(3)
431 sta. grader work	50.00	45.00	75.00
26 cu. yd. structure excavation	3.00	2.50	5.00
9,300 cu. yd. imported borrow	2.00	1.85	1.10
Lump sum, dev. water supply and furn. watering equip.	500.00	800.00	500.00
700 M. gal. applying water	3.50	3.50	2.00
431 sta. finishing roadway	8.00	10.00	5.50
912 T. liquid asph. MC-2 or MC-3 (B.S.T.)	16.50	20.00	17.00
99,300 sq. yd. prep., mix. and shaping surface (B.S.T.)	.06	.06	.08
20 ea. monuments	6.00	10.00	10.00
50 lin. ft. 12-in. unreinf. conc. pipe (2000-D)	6.00	2.00	4.00
60 lin. ft. 18-in. unreinf. conc. pipe (2000-D)	8.00	4.00	5.00

CONSTRUCTION SUMMARY

The following pages contain the most complete available tabulation of construction contracts awarded in the eleven western states during the past month. Except for certain instances, contracts amounting to less than $10,000 are not listed. Space is not available to list more than a small proportion of the proposed projects. For your convenience, all items are prepared in an identical manner to provide the following information: County of job location (capital letters); name and address of contractor (bold face); bid price; brief description of work; awarding agency; and approximate date of award. More detailed information on many of these projects is often available, and will gladly be furnished upon your request to the Editor, WESTERN CONSTRUCTION NEWS, 503 Market Street, San Francisco.

CONTRACTS AWARDED

Large Western Projects . . .

George Herz, San Bernardino, Calif., was awarded a $632,869 contract for surfacing and grading 5.9 mi. of highway with plant-mix surface on cement-treated base, betw. Mira Loma and 2.5 mi. west of Riverside, by the Calif. Division of Highways, Sacramento.

Guy F. Atkinson Co., San Francisco, Calif., has a $1,683,674 contract to grade and pave 4.1 miles with Portland cement concrete and build freeway structures on the North Sacramento freeway between North Sacramento viaduct and a mile east of Ben Ali, from the Calif. Division of Highways, Sacramento.

N. M. Ball Sons, Berkeley, Calif., was given a $1,178,869 contract by the State Division of Highways to do 8.1 mi. of grading and paving between San Jose and 0.6 mi. south of Ford Road.

Gibbons & Reed Co., Salt Lake City, Utah, will receive $744,056 for 14.5 mi. of highway from one mile southeast of Glendale, Nev., to a point near Crystal, from the Nevada Department of Highways, Carson City.

United Concrete Pipe Corp., Los Angeles, Calif., holds a $5,299,000 contract for a vertical lift bridge, 80 ft. wide and 3,976 ft. long, spanning the Cerritos Channel at Terminal Island, from the Bureau of Yards and Docks, Washington, D. C.

J. H. Pomeroy & Co., San Francisco, Calif., have a $1,879,340 contract for bridge, bridge approaches, undercrossing and overhead crossing on the Feather river at Marysville-Yuba City and in Sutter Co., from the Calif. Division of Highways, Sacramento.

Fredrickson & Watson Construction Co., Oakland, Calif., will build $1,446,454 worth of runways, taxiways, aprons, grading and paving, aviation lighting and drainage system work at Moffett Field, Calif. The contract was awarded by the Bureau of Yards and Docks, Washington, D. C.

T. C. Bateson, Dallas, Texas, was awarded a $2,058,000 contract by the Dallas City Council to add and improve on the city's water purification plant.

H. Earl Parker, Marysville, and **N. M. Ball Sons,** Berkeley, will build a dam and appurtenances for $1,123,191 at the Rector Creek reservoir near Napa, Calif., for the Calif. Division of Water Resources, Sacramento.

Clyde W. Wood, Los Angeles, Calif., will do canal work on the Tucumcari project near Tucumcari for the Bureau of Reclamation, Denver, Colo., on a $285,865 contract.

Peter Kiewit Sons' Co., Los Angeles, Calif., have a contract of $4,996,800 for a two-story reinforced concrete administration and laboratory building, and a one-story shop building at the Naval Ordnance Testing Station at Inyokern, Calif., from the Bureau of Yards and Docks, Washington, D. C.

Mapes Hotel Construction Co., Reno, Nev., will build a 10-story steel and concrete hotel with a 70-car garage, banquet room, stores and glass-enclosed skyroom roof, for $1,000,000, at First and Virginia Sts., in Reno, for themselves.

The Chicago Bridge & Iron Works, Chicago, Ill., have a contract

of $518,000 to remove part of a power house and penstock No. 1 and do preparatory work for installing another generating unit at Fort Peck dam, Montana, from the U. S. Engineer Office, Seattle, Wash.

J. F. Pritchard & Co., Kansas City, Mo., will receive $2,000,000 to build a repressuring and natural gasoline plant in Archer City, Texas.

J. H. Pomeroy & Co., San Francisco, Calif., was awarded the first of the Pacific area construction contracts, which is an $8,300,000 award to build a rock-filled breakwater in Apra harbor, Guam, from the Bureau of Yards and Docks, Washington, D. C.

Highway and Street...

Arizona

GILA CO.—**Evans & Sprawls**, 412 W. 3rd St., Winslow—$86,256 for construction of the Bridgeport-Roosevelt Dam road in Tonto National Forest, total distance of 2.9 mi.—by Public Roads Administration, Phoenix. 12-28

GILA CO.—**Tanner Construction Co.**, Box 1832, Phoenix—$92,383 for 5.2 mi. of Payson-Colcord Mountain road, Tonto National Forest—by Public Roads Administration, Phoenix. 12-7

PINAL CO.—**Tanner Construction Co.**, Box 1832, Phoenix—$23,815 for highway improvements on the Casa Grande-Gila Highway, 14 mi. west of Casa Grande—by Arizona State Highway Dept., Phoenix. 12-28

YUMA CO.—**Tiffany Construction Co.**, Box 846, Phoenix—$11,325 for surf. roads at the Imperial Dam engineer station, Yuma—by U. S. Engineer Office, Los Angeles, Calif. 12-14

California

EL DORADO CO.—**E. W. Elliott Construction Co.**, 80 Laidley St., San Francisco—$221,032 for 2.7 mi. of road betw. Placerville and Lake Tahoe—by Public Roads Administration, San Francisco. 12-14

KERN CO.—**Gunnar Corp.**, 272 Annandale Rd., Pasadena—$211,964 for 7.2 mi. of grading and plantmix surf. between Cameron and Mojave—by Calif. Division of Highways, Sacramento. 12-14

LOS ANGELES CO.—**Ansco Construction Co.**, 2725 Atlantic Ave., Long Beach—$11,364 for paved area at the U. S. Naval Hospital, Long Beach—by Bureau of Yards and Docks, Washington, D. C. 11-30

LOS ANGELES CO.—**George J. Bock Co.**, 1120 N. Las Palmas Ave., Los Angeles 38—$10,737 for laying of tile duct and manholes at 3rd St. and Wood Ave. and in Eastern Ave., betw. Lynfield and Navarro Sts., Los Angeles—by Southern California Telephone Co., Los Angeles. 12-7

LOS ANGELES CO.—**Bodum and Peterson**, Box C-43, Surfside—$12,152 for street improvements on Clark and Cerritos Ave., between Imperial Highway and Mandale St., Los Angeles—by Board of Supervisors, Los Angeles. 12-14

LOS ANGELES CO.—**Fred D. Chadwick**, 4335 Brewster Ave., Lynwood—$10,005 for repaving excavations in Manchester Blvd., and Prairie Ave.—by City Council of Inglewood. 12-7

LOS ANGELES CO.—**Hood Construction Co.**, 3326 E. Florence Ave., Huntington Park—$41,501 for construction of manholes and single and multiple tile duct in and adjacent to Saturn Ave., Brompton Ave., Bell Ave., Wilcox Ave. and Florence Ave., in Huntington Park and Bell—by Southern California Telephone Co., Los Angeles. 12-7

LOS ANGELES CO.—**Tomei Construction Co.**, 4737 Orion St., Van Nuys—$16,000 for street and sewer improvements in Cashio St. and Doheny Dr., Los Angeles—by George J. Heltzer, Los Angeles. 11-30

LOS ANGELES CO.—**Tomei Construction Co.**, 4737 Orion St., Van Nuys—$36,500 for grading, paving and curb and sidewalk work in Tract 13381, Venice District—by United Building Co., Los Angeles. 11-30

RIVERSIDE CO.—**George Herz**, Box 191, San Bernardino—$632,869 for 5.9 mi. of surf. and grading with plantmix surf. on cement-treated base between Mira Loma and 2.5 mi. west of Riverside—by Calif. Division of Highways, Sacramento. 12-20

SACRAMENTO CO.—**Guy F. Atkinson Co.**, 662 Russ Bldg., San Francisco—$1,683,674 for 4.1 mi. of grading and paving with portland cement conc., and freeway structures on North

Sacramento freeway between North Sacramento viaduct and 1 mi. east of Ben Ali—by Calif. Division of Highways, Sacramento. 12-21

SAN DIEGO CO.—**Basich Brothers Construction Co.** and **Basich Brothers,** Box 151, Alhambra—$557,229 for widening and paving 4.9 mi. of highway between San Luis Rey River and 0.2 mi. north of Alliso Creek—by Calif. Division of Highways, Sacramento. 12-11

SAN DIEGO CO.—**R. E. Hazard,** Box 1951, San Diego—$19,350 for 4-in. base course material and 2-in. asph. conc. pave. of 100,000 sq. ft. of mustering area at Naval Training and Distribution Center, Camp Elliott, San Diego—by Bureau of Yards and Docks, Washington, D. C. 12-5

SAN MATEO CO.—**L. C. Smith,** 1st and Railroad, San Mateo—$27,001 for improvements to streets involving grading, paving, curbs, gutter, sewers and walks, in Laurel Hills section of San Mateo—by City Council, San Mateo. 12-19

SANTA CLARA CO.—**N. M. Ball Sons,** 685 Delaware St., Berkeley 2—$1,178,869 for grading and paving 8.1 mi. between San Jose and 0.6 mi. south of Ford Road—by California Division of Highways, Sacramento. 12-27

SHASTA CO.—**A. A. Tieslau,** 1220 Eastshore Blvd., Berkeley —$124,427 for reinf. conc. culvert at Seaman's Gulch, north of Ingot, and about 0.8 mi. of roadbed to be graded and surfaced—by Calif. Division of Highways, Sacramento. 11-30

SOLANO CO.—**Parish Bros.,** Box 6, Benicia—$11,175 for resurf. artillery yard at Benicia Arsenal, Benicia—by U. S. Engineer Office, San Francisco. 12-17

Idaho

BANNOCK, BEAR & POWER COS.—**Nic Burggraf,** Box 397, Idaho Falls—$44,600 for crushed gravel and cover coat material stockpiles on Highway No. 30 North and SR No. 34—by Idaho Bureau of Highways, Boise. 12-5

BENEWAH & KOOTENAI COS.—**Nyberg Construction Co.,** Yardley, Wash.—$57,935 for resurf. with crushed rock on 7.6 mi. between St. Maries and Mission Point and furnishing stockpiles on U. S. Highway 95—by Idaho Bureau of Highways, Boise. 12-20

LEWIS CO.—**Max J. Kuney Co.,** N. 120 Ralph St., Spokane, Wash.—$29,000 for crushed rock stockpiles and cover material near Highway No. 95 near Winchester and Craigmont—by Idaho Bureau of Highways, Boise. 12-11

Kansas

MEADE CO.—**Miller-Clarkson,** Dodge City—$39,108 for 2.7 mi. of highway grading—by Kansas State Highway Commission, Topeka. 12-12

MEADE CO.—**San-Ore Construction Co.,** McPherson—$19,632 for 2.7 mi. of dense graded surf. course—by Kansas State Highway Commission, Topeka. 12-12

NESS CO.—**Miller-Clarkson,** Dodge City—$75,679 minus 12.2 per cent, for 11 mi. highway grading—by Kansas State Highway Commission, Topeka. 12-12

RUSH CO.—**E. W. Geiger,** Leavenworth—$89,311 for 8.9 mi. of highway grading—by Kansas State Highway Commission, Topeka. 12-12

RUSH CO.—**J. H. Shears' Sons,** Hutchinson—$10,772 for 14 mi. detour surfacing—by Kansas State Highway Commission, Topeka.

Montana

MISSOULA CO.—**L. A. Woodward Construction Co.,** Missoula—$47,757 for highway improvements, including bridge construction, on the Yellowstone Highway—by Public Roads Administration, Missoula. 11-30

Nevada

CLARK CO.—**Gibbons & Reed Co.,** 259 W. 3rd South St., Salt Lake City, Utah—$744,056 for 14.5 mi. of highways from a point near Crystal to one mi. southeast of Glendale—by Nevada Department of Highways, Carson City. 12-20

Oregon

BAKER CO.—**E. C. Hall Co.,** Eugene—$109,120 for 2.5 mi. of grading, surfacing and oiling, and placing 2,500 cu. yd. crushed rock in stockpiles on the Ruckles Creek-Middle Bridge section of the Baker-Homestead Highway—by Oregon State Highway Commission, Salem. 12-14

GRANT AND WHEELER COS.—**Vernie Jarl,** Gresham—$25,292 for placing approximately 10,000 cu. yd. crushed rock in stockpiles in the Mitchell-John Day Rock Production Project on the Ochoco Highway—by Oregon State Highway Commission, Salem. 12-14

JEFFERSON & CROOK COS.—**R. A. Heintz Construction Co.,** Portland—$128,473 for 5 mi. of grading and topping on the Jefferson County line-Lytle Creek section and 10 mi. of grading on the Madras-Lamonta section of the Madras-Prineville Secondary Highway — by Oregon State Highway Commission, Salem. 12-14

LINCOLN & TILLAMOOK COS.—**E. C. Hall Co.,** Eugene—$28,820 for placing 10,000 cu. yd. of crushed rock in stockpiles on the Cloverdale - Oceanlake Rock Production Project, Oregon Coast Highway—by Oregon State Highway Commission, Salem. 12-13

WHEELER CO.—**Vernie Jarl,** Gresham—$37,212 for 4 mi. of grading and topping on the Porcupine Butte-Chichester Gulch section of the Shaniko-Fossil Secondary Highway—by Oregon State Highway Commission, Salem. 12-13

Texas

BEXAR CO.—**Colglazier & Hoff, Inc.,** 326 Sequin Rd., San Antonio—$72,000 for streets, curbing, gutters and drainage on New Braunfels Ave., Fay Rd. and Klaus Rd., to Austin Highway, San Antonio—by W. K. Ewing and Frank H. Wolff, San Antonio. 12-6

BEXAR CO.—**Colglazier & Hoff,** 326 Sequin Road, San Antonio —$11,779 for furnishing and placing 5.2 mi. of pave. on Blanco Road from city limits to Salado Creek, and 3.6 mi. of pave. on Nacogdoches Road, from Harry Wurzbach Highway to Lockhill-Selma Road—by Bexar County Auditor. 12-21

BROOKS CO.—**E. B. Darby & Co.,** Pharr—$112,609 for 15.1 mi. of widening conc. pave. of U. S. 281, Jim Wells county line to 12.6 mi. s. of Falfurrias—by State Highway Dept., Austin. 12-21

CAMERON CO.—**Dodds & Wedegartner,** San Benito—$314,878 for 10.9 mi. of grading and structures on U. S. 77 and 83, 1.4

miles N. of Harlingen to connect with U. S. 83, 0.6 mi. S. of Harlingen, and from Harlingen to 2.1 mi. SE. of San Benito—by State Highway Dept., Austin. 12-3

DALLAS CO.—**Markham & Brown, Kearney, Crame Co.,** Box 2056, Austin—$330,840 for grading and drainage work on the Red Bird Airport, Dallas—by City Council, Dallas. 12-4

DALLAS CO.—**Texas Bitulithic Co.,** 111 W. Commerce St., Dallas—$25,760 for paving alleys for city of Dallas—by City Council, Dallas. 12-21

GRAYSON CO.—**Public Construction Co.,** Box 380, Denton—$51,540 for 26.8 mi. of asph. underseal for conc. pave. from Collin county line to Red River on U. S. Hwy. 74—by State Highway Dept., Austin. 12-3

TAYLOR & CALLAHAN COS.—**Harry L. Campbell,** 2435 Winton Ter., West, Fort Worth—$278,851 for 19.4 miles of grading, flexible base and double asph. surf. treat. on Hwy. 36, 4.5 mi. SE. of U. S. 80 to U. S. 183—by State Highway Dept., Austin. 12-3

Wyoming

FREMONT & SWEETWATER CO.—**Knisely-Moore Co.,** Box 77, Douglas—$144,778 for 14.3 mi. of grading, drainage, etc., on the Lander-Farson Rd.—by Wyo. State Highway Department, Cheyenne. 12-13

HOT SPRINGS CO.—**Gilpatrick Construction Co.,** Riverton—$19,609 for 8.5 mi. of surf. on Lucerne-Kirby Creek Rd.—by Wyo. State Highway Department, Cheyenne. 12-13

JOHNSON CO.—**Big Horn Construction Co.,** Sheridan—$348,-499 for 4.9 mi. of grading, drainage, and surf. on the Tensleep-Buffalo Rd.—by Wyo. State Highway Department, Cheyenne. 12-13

WASHAKIE CO.—**Tony J. Palesky & Sons,** Sheridan—$17,278 for 11.3 mi. surf. on the Tensleep-Nowood River Rd.—by Wyo. State Highway Department, Cheyenne. 12-13

Bridge & Grade Separation...

California

KERN CO.—**E. W. Elliott Construction Co.,** 80 Laidley St., San Francisco—$93,612 for 2 bridges across Los Angeles Aqueduct

and Cache Creek, west of Mojave—by Calif. Division of Highways, Sacramento. 12-14

LOS ANGELES CO.—**United Concrete Pipe Corp.,** Box 1, Station H, Los Angeles—$5,299,000 for vertical lift bridge, 80 ft. wide and 3,976 ft. long, at Terminal Island, spanning the Cerritos Channel east of the existing bascule bridge—by Bureau of Yards and Docks, Washington, D. C. 12-21

MERCED CO.—**Roy Kruger,** Gustine—$16,000 for reinf. conc. bridge over canal on Hartly Rd., timber bridge over Bear Creek on Gurr Rd., timber bridge over Los Garsas Creek on Northern Rd., and timber bridge over canal on Charleston Rd.—by Board of Supervisors, Merced. 11-30

SAN DIEGO CO.—**Harry L. Foster,** 2260 Main St., San Diego—$183,791 for reinf. conc. bridge across San Diego River in the city of San Diego—by Calif. Division of Highways, Sacramento. 12-14

SAN DIEGO CO.—**M. H. Golden Construction Co.,** 3485 Noell St., San Diego—$155,183 for 3 reinf. conc. overcrossings over Balboa Park Freeway at Date St., Upas St. and Quince St., San Diego—by Calif. Division of Highways, Sacramento. 12-7

SANTA CLARA CO.—**Earle W. Heple,** 494 Delmas Ave., San Jose—$65,031 for structural steel undercrossing on Bayshore Freeway at Ford Rd., about 6 mi. south of San Jose—by Calif. Division of Highways, Sacramento. 12-14

SANTA CLARA CO.—**Earl W. Heple,** 494 Delmas Ave., San Jose—$274,758 for reconstruction of a steel plate girder bridge across Coyote Creek and a steel beam undercrossing at Coyote Rd., on Bayshore Freeway, about 6 mi. south of San Jose—by Calif. Division of Highways, Sacramento. 12-6

SOLANO CO.—**Fredrickson Brothers,** 1259 65th St., Emeryville—$527,735 for grading and paving 6 mi. of highway and building bridges across Horse Creek and Gibson Canyon Creek, between Ulatis Creek and Midway—by Calif. Division of Highways, Sacramento. 12-7

YUBA & SUTTER COS.—**J. H. Pomeroy & Co., Inc.,** 333 Montgomery St., San Francisco—$1,879,340 for bridge, overhead crossing, bridge approaches and undercrossing on the Feather River at Marysville-Yuba City and in Sutter Co. over the Southern Pacific Railroad and at Sutter St. in Yuba City—by Calif. Division of Highways, Sacramento. 12-20

Kansas

MEADE CO.—**Miller-Clarkson,** Dodge City—$10,864 for 7 x 9 x 32 ft. reinf. conc. culvert—by Kansas State Highway Commission, Topeka. 12-12

Texas

HOOD CO.—**Wallace & Bowden,** 5513½ E. Grand Ave., Dallas—$104,844 for 0.6 mi. underpass and roadway approaches on U. S. Highway 377 about 1 mi. north of Tolar—by Texas State Highway Dept., Austin. 12-7

Wyoming

FREMONT & SWEETWATER CO.—**George M. Carruth & Sons,** Evanston—$35,640 for 2 bridges, 3 culverts and misc. work on the Lander-Farson Rd. — by Wyo. State Highway Dept., Cheyenne. 12-17

Airport...

California

SANTA CLARA CO.—**Fredrickson & Watson Construction Co.,** 873 81st Ave., Oakland—$1,446,454 for runways, taxiways and apron grading and paving, also aviation lighting and drainage system work at Moffett Field—by Bureau of Yards and Docks, Washington, D. C. 11-30

Water Supply...

California

LOS ANGELES CO.—**Merritt Welding Contractors,** 9651 S. Alameda, Los Angeles—$3,937 for installation of water mains in Tweedy Blvd. at Atlantic Ave., South Gate—by City Council, South Gate. 12-7

LOS ANGELES CO.—**Roscoe Moss Co.,** 4360 Worth St., Los

Angeles—$7,370 for drilling a well in Monrovia—by City Council, Monrovia. 12-7

LOS ANGELES CO.—**Sully-Miller Contracting Co.**, 1500 W. 7th St., Long Beach—$32,300 for water main, sprinklers, walks, curbs and lighting in Admiral Kidd Park, Long Beach—by City Council, Long Beach. 12-7

RIVERSIDE CO.—**Tom L. Gogo,** 10024 S. Figueroa St., Los Angeles—$89,955 for wells and water supply main at the Naval Hospital, Corona—by Bureau of Yards & Docks, Washington, D. C. 12-18

SAN DIEGO CO.—**Carroll & Foster,** 2260 Main St., San Diego—$21,478 for water mains in Boundary St., San Diego—by City Council, San Diego. 12-20

TULARE CO.—**E. T. Haas Co.,** Box 411, San Mateo—$6,124 for installation of additional water lines in El Monte Way, Palm Dr. and First Ave., Dinuba—by City Council, Dinuba. 12-28

Idaho

BONNEVILLE CO.—**A. J. Scoonover & Son,** Burley—$23,725 for drilling of a well in Central Park, Idaho Falls—by City Council, Idaho Falls. 11-29

Texas

COLLIN CO.—**C. M. Hight,** McKinney—$26,980 for 200,000-gal. conc. reservoir, brick pump bldg. and pipe work in McKinney—by City Council, McKinney. 12-7

DALLAS CO.—**T. C. Bateson Co.,** 622 Irwin-Keasler Bldg., Dallas—$2,058,000 for additions and improvements on city water purification plant—by City Council, Dallas. 12-20

DALLAS CO.—**Pittsburgh-Des Moines Steel Co.,** 1015 Tuttle St., Des Moines, Iowa—$51,860 for 500,000-gal. tank on steel tower at Bachman Water Purification Plant—by City Council, Dallas. 12-20

HIDALGO CO.—**Mitchell Darby Construction Co.,** Pharr—$17,000 for water mains in McAllen—by City Council, McAllen. 11-29

POTTER CO.—**Chicago Bridge & Iron Works,** Tulsa, Okla.—$95,625 for 1,000,000-gal. elevated steel tank in Amarillo—by City Council, Amarillo. 11-29

Washington

PIERCE CO.—**Paine & Gallucci, Inc.,** 1521 S. Grant, Tacoma—$17,702 for installation of cast iron mains in area bounded by S. 12th, Lawrence, 25th and Wilkeson Sts., Tacoma—by City Council, Tacoma. 12-21

WALLA WALLA CO.—**A. A. Durand & Sons,** Walla Walla—$17,301 for water well in Walla Walla—by City Council, Walla Walla. 12-3

Sewerage . . .

California

KERN CO.—**H. B. Nicholson,** 572 Chamber of Commerce Bldg., Los Angeles—$41,784 for sewage disposal plant and appurtenances at Muroc Flight Test Base, Muroc—by U. S. Engineer Office, Los Angeles. 11-30

LOS ANGELES CO.—**P. & J. Artukovich,** 13305 S. San Pedro St., Los Angeles—$17,172 for 0.7 mi. of sanitary sewers and appurtenances in Darnell and Stevens Aves.,

Los Angeles—by Board of Supervisors, Los Angeles. 12-14

LOS ANGELES CO.—**P. & J. Artukovich,** 13305 S. San Pedro St., Los Angeles—$56,326 for 2.5 mi. of sanitary sewers and appurtenances in Olive and Myrrh Sts., Lime Ave., Linsley and Rose Sts., Frailey and Gibson Aves., and alleys, Los Angeles—by Board of Supervisors, Los Angeles. 12-14

LOS ANGELES CO.—**Burch & Bebek,** 8003 S. Broadway, Los Angeles—$76,721 for sewers in Ira Ave. and other streets in Los Angeles—by Board of Supervisors, Los Angeles. 12-21

LOS ANGELES CO. — **Nick R. Gogo,** 1596 Waldron Ave., Los Angeles—$6,734 for sewer line in Fulton Ave. and Longbridge Ave., Los Angeles—by Board of Public Works, Los Angeles. 12-14

LOS ANGELES CO.—**Ivan M. Metkovich,** 143 E. 81st St., Los Angeles—$2,570 for sanitary sewer in Ewing St. and right-of-way west of Park Dr., Los Angeles—by Board of Public Works, Los Angeles. 12-14

LOS ANGELES CO.—**Peter S. Tomich,** 301 N. Del Mar Ave., San Gabriel—$2,800 for a sanitary sewer on the west side of Atlantic Ave., between Southern Place and Southern Ave., South Gate—by City Council, South Gate. 12-14

LOS ANGELES CO.—**R. A. Wattson Co.,** 5528 Vineland Ave., North Hollywood—$25,192 for sanitary sewer and appurtenances in Ithica Ave. and Belleglade Ave., Los Angeles—by Board of Public Works, Los Angeles. 11-30

LOS ANGELES CO.—**Webster W. Willoughby,** 13922 S. Main St., Los Angeles—$47,382 for sanitary sewer and appurtenances in Hazeltine Ave. and a right-of-way betw. 2,500 ft. north of Valerio St. and Van Owen St., Los Angeles—by Board of Public Works, Los Angeles. 12-18

RIVERSIDE CO. — **Hoagland - Findlay Engineering Co.,** 3254 Cherry Ave., Long Beach—$457,454 for sewage treatment plant and appurtenances near the Santa Ana River bottom below the Union Pacific Bridge, Riverside—by City Council, Riverside. 12-5

SAN BERNARDINO CO.—**Bressi & Bevanda Constructors, Inc.,** 208 W. 8th St., Los Angeles, and **Macco Construction Co.,** 815 Paramount Blvd., Clearwater—$21,975 for side drainage structures and appurtenances on the Lytle Creek Channel — by U. S. Engineer Office, Los Angeles. 12-14

SAN DIEGO CO.—**V. R. Dennis Construction Co.,** Box F., Hillcrest Station, San Diego—$13,948 for sanitary trunk sewer, laterals, manholes and appurtenances on the city tidelands near Belt St., Harbor Dr. and Sampson St., San Diego—by City Council, San Diego. 12-21

SAN MATEO CO.—**McGuire & Hester,** 796 66th Ave., Oakland—$1,588 for conc. pipe storm water sewer in block No. 79 in South San Francisco — by City Council, South San Francisco. 12-12

SANTA CRUZ CO.—**J. L. Kruly,** 1785 N. Eastern Ave., Los Angeles—$3,516 for sanitary sewer system in Crystal Ave. and 17th Ave., Santa Cruz—by Twin Lakes Sanitation District, Santa Cruz. 12-14

Texas

BEXAR CO.—**Trueheart & Caldwell,** 509 American Hospital & Life Bldg., San Antonio—$14,000 for sewers in New Braunfels Ave., Fay Rd. and Klaus Rd., to Austin Highway in San Antonio—by W. K. Ewing and Frank H. Wolff, San Antonio. 12-6

DALLAS CO.—**Ben Sira & Co.,** 3901 Elm St., Dallas—$55,765 for water mains and sanitary sewers in Shannon Estates, and water mains in S. Marsalis Blvd. and in Terrace Drive—by City Council, Dallas. 12-20

DALLAS CO.—**P. C. Sorenson Co.,** Southland Life Bldg., Dallas—$55,347 for improving street and storm sewer on Clarendon Drive, Ewing Ave. to 13th St.—by City Council, Dallas. 12-20

DALLAS CO.—**Williams & Whittle,** 5422 Mockingbird Lane, Dallas — $14,191 for storm sewer improvements on Ware St., Caldwell to Barry, Dallas—by City Council, Dallas. 12-6

LUBBOCK CO. — **R. H. Fulton & Co.,** Lubbock—$55,936 for sanitary sewer interceptor for city of Lubbock—by City Council, Lubbock. 12-3

TARRANT CO.—**Glade Construction Co.,** Century Bldg., Fort Worth—$399,613 for improving sewage treatment plant of city—by City Council, Fort Worth. 12-12

Washington

KING CO.—**M. Moschetto,** Seattle—$231,234 for pipeline on 8th Ave., SW., Seattle—by Board of Public Works, Seattle. 12-14

Waterway . . .

California

LOS ANGELES CO.—**Newport Dredging Co.,** 631 31st St., Newport Beach—$36,-

000 for dredging 225,000 cu. yd. of sand from Alamitos Bay and pumping it onto the east beach of the peninsula at Long Beach—by City Council, Long Beach. 11-30

SAN FRANCISCO CO.—**M. B. McGowan Co., Inc.,** 625 Market St., San Francisco—$18,156 for repairing fender line on Pier 29 with eucalyptus piles in San Francisco—by Board of State Harbor Commissioners, San Francisco. 12-14

Canada

BRITISH COLUMBIA—**Dawson Wade & Co., Ltd.,** Vancouver, B. C.—$152,000 for fish ladder at the junction of Bridge River with Fraser River—by International Pacific Sockeye Salmon Commission, Vancouver. 12-8

Territories

ISLAND OF GUAM—**J. H. Pomeroy & Co., Inc.,** 333 Montgomery St., San Francisco, Calif. — $8,320,000 for rock-filled breakwater in Apra Harbor—by Bureau of Yards and Docks, Washington, D. C. 12-19

Dam . . .

California

NAPA CO.—**H. Earl Parker,** 12th and F Sts., Marysville, and **N. M. Ball Sons,** 685 Delaware St., Berkeley—$1,123,191 for dam and appurtenances for the Rector Creek reservoir near Napa—by Calif. Division of Water Resources, Sacramento. 12-20

Montana

TOOLE CO.—**Square Deal Transfer Co.,** Havre—for test pits at the Tiber dam site on the Marias river—by the Bureau of Reclamation, Washington, D. C. 12-6

Irrigation . . .

California

IMPERIAL CO.—**Clyde W. Wood, Inc.,** 306 Architects Bldg., 816 W. 5th St., Los Angeles—$271,005 for check at Station 48 plus 50, All-American Canal, Boulder Canyon Project—by Bureau of Reclamation, Washington, D. C. 12-19

New Mexico

QUAY CO.—**A. S. Horner Construction Co.,** 118 S. Pecos, Denver, Colo.—$252,934 for check at Station 3067 plus 55, Conchas Canal; also earthwork and structures, Station 3188 plus 52 to Station 3343 plus 17, Conchas Canal, and Station 0 plus 00 to Station 417 plus 80, Hudson Canal, Tucumcari Project—by Bureau of Reclamation, Washington, D. C. 12-19

QUAY CO.—**Clyde W. Wood, Inc.,** 306 Architects Bldg., 816 W. 5th St., Los Angeles, Calif.—$285,865 for canal work on Schedule No. 1 on the Tucumcari Project, near Tucumcari—by Bureau of Reclamation, Denver. 12-19

Building . . .

California

ALAMEDA CO. — **Beckett & Federighi,** 1441 Franklin St., Oakland — $250,000 for stadium type theater bldg. to seat 950 at 148th Ave. and E. 14th St., Hayward—by Rene LaMarre and George Drummond, Oakland. 12-4

ALAMEDA CO. — **Doty & Lockwood,** 2003 E. 14th St., Oakland—$90,000 for remodeling former Natl. Guard Armory for use as warehouse, and building 2 conc. block bldgs. for wholesale automotive store and tire department, between Grove St. and San Pablo Ave., Oakland—by Cox-Wellman Co., Oakland. 12-18

ALAMEDA CO.—**N. H. Sjoberg & Son,** 5604 E. 16th St., Oakland—$148,473 for 3-story addition to Home for the Aged in Oakland — by Little Sisters of the Poor, Oakland. 12-10

CONTRA COSTA CO.—**Barrett & Hilp,** 918 Harrison St, San Francisco—$198,666. for warehouse addition, with conc. flooring, wood walls, trusses and roof at Tenth and Hall Sts., Richmond—by Filice & Perrelli Canning Co., Inc., Richmond. 12-18

FRESNO CO.—**Couture & Carr,** Huron—$200,000 for reinf. conc. frame and structural steel ice plant and a structural steel and corrugated steel warehouse in Huron—by selves. 11-30

KERN CO.—**Peter Kiewit Sons' Co.,** 650 S. Grand Avenue, Los Angeles—$4,996,800 for 2-story reinf. conc. administration and laboratory bldg. and 1-story shops bldg. at the Naval Ordnance Testing Station, Inyokern—by Bureau of Yards and Docks, Washington, D. C. 12-5

LOS ANGELES CO. — **Allied Contractors, Inc.,** 9700 W. Pico Blvd., Los Angeles—$178,600 for 20 six-room frame and stucco dwellings in West Los Angeles—by Alco Manufacturing Corp., Los Angeles. 12-14

LOS ANGELES CO.—**James I. Barnes Construction Co.,** 1119 Montana Ave., San-

ta Monica — $502,600 for construction of intermediate air terminal buildings at the Los Angeles Airport—by City Council, Los Angeles. 12-7

LOS ANGELES CO.—**Bechtel Bros.-McCone Corp.,** 601 W. 5th St., Los Angeles—for sulphur dioxide treating plant at El Segundo Refinery of Standard Oil Co., El Segundo—by Standard Oil Co. of Calif., San Francisco. 12-18

LOS ANGELES CO.—**C. F. Braun & Co.,** 1000 S. Fremont Ave., Alhambra—$150,000 for 2-story office bldg. at 1000 S. Fremont Ave., Alhambra—by self. 11-30

LOS ANGELES CO.—**C. M. Brown,** 436 N. Rodeo Dr., Beverly Hills—$100,000 for 2-story, frame and stucco apartment bldg. at 2431 S. Sepulveda Blvd., West Los Angeles—by Adah Investment Co., Beverly Hills. 12-14

LOS ANGELES CO.—**J. Paul Campbell,** 5601 W. Manchester Ave., Los Angeles—$1,200,000 for 200 frame and stucco bldgs. in Westchester Terrace, at Centinella and 88th Sts., Venice District—by Homes at Wholesale Co., Los Angeles. 11-30

LOS ANGELES CO.—**George Clar,** 1471 Sherbourne Dr., Los Angeles—$107,700 for store and hotel bldg. at 4618-48 Santa Monica Blvd., Los Angeles—by Willie Clar, Los Angeles. 11-30

LOS ANGELES CO.—**Anthony and Victoria Connelly,** 361 N. Mansfield Ave., Los Angeles—$44,500 for a 24-room, frame and stucco hotel bldg. at 1014 S. Norton Ave., Los Angeles—by self. 12-14

LOS ANGELES CO.—**Anthony Connelly,** 361 N. Mansfield Ave., Los Angeles—$44,500 for 24-room, frame and stucco hotel bldg., 4901 Beverly Blvd., Los Angeles—by self. 12-14

LOS ANGELES CO.—**The Contracting Engineers Co.,** 2310½ W. Vernon Ave., Los Angeles—$50,000 for alterations to a garage, bowling alley and restaurant bldg. at 843-53 S. Spring St., Los Angeles—by Avodon Co., Los Angeles. 11-30

LOS ANGELES CO.—**The Contracting Engineers Co.,** 2310½ W. Vernon Ave., Los Angeles—$56,729 for general mill factory bldg. at Imperial Blvd. and Alameda St., Lynwood — by India Paint and Lacquer Co., Los Angeles. 12-12

LOS ANGELES CO.—**The Contracting Engineers Co.,** 2310½ W. Vernon Ave., Los Angeles—$100,000 for 1-story and mezzanine store bldg. at 8821 Wilshire Blvd., Beverly Hills—by M. Gold, Los Angeles. 11-30

LOS ANGELES CO.—**S. J. Cook,** 2504 Crenshaw Blvd., Los Angeles—$62,962 for 1-story classroom bldg. at 11562 Richland Ave., West Los Angeles—by Board of Education, Los Angeles. 12-3

LOS ANGELES CO.—**William C. Crowell Co.,** 170 E. California St., Pasadena—$325,600 for 3-story and basement office and warehouse bldg. at corner of Arroyo Parkway and Bellevue Ave., Pasadena—by Cornet 5-10-25 Cent Stores, Pasadena. 12-19

LOS ANGELES CO. — **J. F. Cummins,** 245 E. Olive Ave., Burbank—$62,425 for bleachers and shower bldg. at the Olive Ave. Park athletic field, Burbank — by Parks and Recreation Commission, Burbank. 12-14

LOS ANGELES CO.—**De Camp-Hudson Co., Ltd.,** 1277 W. 24th St., Los Angeles—$46,700 for 4-unit classroom bldg. at the Fern Ave. School in Torrance—by Board of Education, Los Angeles. 11-30

LOS ANGELES CO.—**W. O. Garbe Co.,** 527 N. Lucerne Blvd., Los Angeles—$45,000 for reinf. conc. and brick, 1-story addition to factory bldg. at 144 W. 37th Place, Los Angeles—by Mission Hosiery Mills, Los Angeles. 11-30

LOS ANGELES CO.—**Gilmore Steel & Supply Co.,** 4820 Santa Fe Ave., Vernon—$70,000 for a warehouse and office bldg. at 4820 Santa Fe Ave., Vernon—by self. 11-30

LOS ANGELES CO.—**Howard Hastings, Inc.,** 1135 N. Las Palmas Ave., Los Angeles—$72,000 for reinf. conc. warehouse and office bldg. at 1707 S. Los Angeles St., Los Angeles—by Klein-Norton Co., Los Angeles. 12-13

LOS ANGELES CO.—**Allison Honer Co.,** 103 E. 3rd St., Santa Ana — $40,000 for frame and stucco machine shop bldg. at 5801 Firestone Blvd., South Gate — by Overmyer Mould Co., Los Angeles. 12-5

LOS ANGELES CO.—**Gordon R. Howard and George S. Freuhling,** 6546 San Vincente Blvd., Los Angeles—$87,000 for construction of twenty 4-room frame and stucco dwellings in Venice District — for selves. 12-7

LOS ANGELES CO.—**R. C. Johnson,** 809 Heartwell Bldg., Long Beach—$50,000 for two 24-room, 8-unit apartment bldgs. at 1916-20 Locust Ave., Long Beach—by self. 11-30

LOS ANGELES CO.—**Joseph G. Klapper,** 800 S. Oak Knoll Ave., Pasadena—$40,000 for chapel and 5-room apartment on the

second floor at 61 N. Hill Ave., Pasadena—by E. Robert Farley, Pasadena. 12-14

LOS ANGELES CO.—**Jackson Brothers,** 547 S. Fairfax, Los Angeles—$50,000 for altering a restaurant bldg. at the corner of La Brea and Wilshire Blvd., Los Angeles—by T. D. Harder, Beverly Hills. 12-14

LOS ANGELES CO.—**MacIsaac & Menke,** 3440 E. 22nd St., Los Angeles—for new steel plant, containing 150,000 sq. ft. of floor space for the handling and storage of fabricated steel, on Bandini Blvd., 1 mi. west of Atlantic Ave., Los Angeles—by Joseph T. Ryerson & Son, Inc., Los Angeles. 12-5

LOS ANGELES CO.—**W. H. McCune,** 232 N. Myrtle Ave., Monrovia—$45,000 for 1-story, light-steel tire patching factory bldg. at the Santa Fe tracks on S. California St., Monrovia — by Gross Manufacturing Co., Monrovia. 11-30

LOS ANGELES CO.—**Hal McGrew,** 2951 Long Beach Blvd., Long Beach—$40,000 for 7-room store bldg. at 1400 W. Willow St., Long Beach—by N. H. Stearns, Long Beach. 11-30

LOS ANGELES CO.—**E. S. McKittrick Co.,** 7839 Santa Fe Ave., Huntington Park—$160,000 for one-story light manufacturing bldg., at 5717 Lemon Grove Ave., Los Angeles—by Paramount Pictures, Inc., Los Angeles. 12-17

LOS ANGELES CO.—**William J. Moran Co.,** 1011 S. Fremont Ave., Alhambra—$70,000 for factory bldgs. at 2209 Santa Fe Ave., Vernon—by Plomb Tool Co., Vernon. 11-30

LOS ANGELES CO.—**William P. Neil Co.,** 4814 Loma Vista Ave., Vernon—$114,500 for factory bldg. at the corner of 50th and Gifford Sts., Vernon—by Boyle Midway, Inc., Vernon. 11-30

LOS ANGELES CO.—**William P. Neil Co.,** 4814 Loma Vista Ave., Los Angeles—$1,000,000 for new rubber plant on a 20-ac. tract on Cherry Ave., north of Artesia Blvd., Long Beach—by Ohio Rubber Co., Willoughby, Ohio. 12-4

LOS ANGELES CO.—**William P. Neil Co.,** 4814 Loma Vista Ave., Vernon—$82,000 for factory and office bldg. at the corner of Boyle and Leonis Ave., Vernon—by Chicago Metallic Manufacturing Co., Vernon. 11-30

LOS ANGELES CO.—**J. O. Oltmans & Son,** 810 E. 18th St., Los Angeles—$55,300 for brick factory bldg., 1457 E. Washington Blvd., Los Angeles—by H. M. Richards and John A. Wagner, Los Angeles. 12-14

LOS ANGELES CO. — **Joseph Papotta,** 482 S. Fraser Ave., Los Angeles—$47,700 for one-story garage bldg. at administration center, 1600 Whittier Blvd., Montebello—by Unified School District, Montebello. 12-14

LOS ANGELES CO. — **J. Roy Parker,** 2354 Riverdale Dr., Los Angeles—$57,000 for construction of three one- and two-story frame and stucco motel buildings at 17656 Ventura Blvd., Van Nuys District—by Mrs. C. B. Stanford, Long Beach. 12-7

LOS ANGELES CO.—**C. L. Peck,** 223 H. W. Hellman Bldg., Los Angeles—$70,000 for reinf. conc. store bldg., 2 stories high, at 16th and Hope St., Los Angeles—by Ray Thomas, Los Angeles. 12-14

LOS ANGELES CO.—**A. W. Peetz,** 2231 Manning Ave., West Los Angeles—$50,000 for medical bldg. on northwest corner of

Bay State St. and Stoneman Ave., Alhambra—by Dr. Henry J. Safarik, Alhambra. 12-17

LOS ANGELES CO.—**Pueblo Courts, Inc.**, 2875 N. Broadway, Los Angeles—$77,500 for frame and stucco court at 1750 Colorado Blvd., Eagle Rock—by self. 12-14

LOS ANGELES CO.—**David Rice**, 4105 W. Victory Blvd., Burbank—$135,000 for 27 6-room frame and stucco dwellings in Alondra Park District — by Thorson Homes, Los Angeles. 12-14

LOS ANGELES CO.—**J. L. Schimmer, Jr.**, 1424 4th St., Santa Monica—$60,000 for one-story, frame and stucco store bldg. at 1651-57 Westwood Blvd., West Los Angeles—by Roy C. Morris, Whittier. 12-21

LOS ANGELES CO.—**Walter B. Sprowls**, 12364 Oxnard St., N. Hollywood—$86,000 for twelve 5-room, frame and stucco bldgs. in Van Nuys—by self. 11-30

LOS ANGELES CO.—**Stronach Construction Co.**, 115 North Robertson Blvd., Los Angeles—$50,000 for 8 shops in the Beverly Wilshire Hotel at 9514 Wilshire Blvd., Beverly Hills—by Beverly Wilshire Hotel, Beverly Hills. 12-17

LOS ANGELES CO.—**Del E. Webb Construction Co.**, 408 S. Spring St., Los Angeles—$50,000 for conc. steel and wood frame loading dock at 1271 Rio Vista St., Los Angeles—by Southwestern Freight Lines, Los Angeles. 11-30

PLACER CO.—**W. P.** and **C. T. Stover**, Claremont—$400,000-$500,000 for 50-room, 2½-story hotel at Crystal Bay, Lake Tahoe—by Harry Brody and Harold Wyatt, Reno, Nev. 11-29

RIVERSIDE CO.—**Scherer & Prichard**, 208½ Orange St., Redlands—$48,000 for office and garage bldg. at 2936 La Cadena Dr., Riverside—by George W. Carter, Riverside. 11-30

SACRAMENTO CO.—**A. J. Hopper Co.**, 243 Langton St., San Francisco—$124,448 for fruit packing and storage plant in Walnut Grove—by Calif. Fruit Exchange of Sacramento, Sacramento. 12-19

SACRAMENTO CO.—**Jere Strizek**, 1916 Broadway, Rm. 430, Oakland—$100,000 for a 2-unit, steel and frame store and theater bldg. at Marconi and Fulton Aves., Sacramento—by self. 11-30

SACRAMENTO CO.—**Swinerton & Walberg**, 225 Bush St., San Francisco—$100,000 for 2-story, tile and plate glass front, store bldg. at 923-37 K St., Sacramento—by Joseph Magnin Co., Inc., San Francisco. 12-18

SAN BERNARDINO CO.—**Ted Rehwald Construction Co.**, 209 Professional Bldg., San Bernardino—$50,000 for remodeling a market bldg. at 632 Base Line Blvd., San Bernardino — by James W. Gerrard, San Bernardino. 11-30

SAN DIEGO CO.—**L. C. Anderson Co.**, 3040 Hancock St., San Diego—$60,000 for one-story, frame and stucco store bldg. at Ocean Beach subdivision, San Diego—by William Cords, San Diego. 12-14

SAN DIEGO CO.—**M. H. Golden Construction Co.**, 3485 Noell, San Diego—$52,556 for swimming pool and facilities at the Naval Hospital, Santa Margarita Ranch, Oceanside—by Bureau of Yards and Docks, Washington, D. C. 12-14

SAN DIEGO CO.—**San Diego Building and Remodeling Service, Inc.**, 4030 El Cajon Blvd., San Diego — $46,598 for retail stores and apartment bldg. on Newport Ave., Ocean Beach—by Joseph R. Lownes, Ocean Beach. 12-14

SAN FRANCISCO CO.—**Cahill Bros.**, 206 Sansome St., San Francisco—$170,000 for 3-story, reinf. conc. refrigerated storage bldg. at Newhall and Carroll Sts., San Francisco—by General Brewing Co., San Francisco. 12-18

SAN MATEO CO.—**S. J. Amoroso Construction Co.**, 2136 Alemany Blvd., San Francisco—$79,321 for addition to Millbrae Sanitarium, Hemlock Ave., Millbrae—by Millbrae Sanitarium, Millbrae. 12-5

SAN MATEO CO.—**C. F. Parker**, 135 South Park, San Francisco — $50,438 for elementary school bldg., Beresford Park School, 28th Ave., San Mateo—by San Mateo Elementary School District, San Mateo. 12-6

Idaho

NEZ PERCE CO.—**The General Construction Co.**, Box 3244, Seattle, Washington—$60,000 for administration building and hangar at Lewiston Airport—by City Council of Lewiston and County Commissioners of Nez Perce County. 12-27

Nevada

WASHOE CO.—**Ludwig Flyge**, 1010 Holcomb Ave., Reno—$68,000 for warehouse at 145 West St., Reno—by Saviers Electrical Products Co., Reno. 12-1

WASHOE CO.—**Mapes Hotel Construction Co.**, Reno—$1,000,000 for a 10-story, steel and conc. hotel bldg. with 70-car garage, banquet room, stores, glass-enclosed

skyroom roof, to be located at First and Virginia Sts., Reno—by Mrs. Charles W. Mapes and Charles W. Mapes, Jr., Reno. 12-5

WASHOE CO.—**Moore and Roberts,** 693 Mission St., San Francisco—$60,000 for theater bldg., to seat 800 persons, in Sparks—by T. & D. Jr. Enterprises, Inc., San Francisco. 12-17

WASHOE CO.—**Rocky Mount Manufacturing,** Box 606, Reno—$150,000 for sash and door manufacturing plant at the end of Valley Rd., Reno—by selves. 11-30

Oregon

CLACKAMAS CO.—**The Frank Watt Construction Co.,** Portland—for two building units for automobile and truck agency in Oregon City—by Hubach & Parkinson Motors. 12-13

MULTNOMAH CO.—**L. H. Hoffman,** 715 SW. Columbia, Portland—$1,000,000 for building expansion consisting of 3-story and basement addition to store building, a 1-story and basement sales addition with roof parking facilities, a garage building and relocation of service station, and an additional block of parking facilities at 524 Grand Ave., Portland—by Sears, Roebuck & Co. 12-14

MULTNOMAH CO.—**The Kaiser Co.,** Vancouver, Wash.—$600,000 for racetrack facilities, including grandstand and club house, at the Peninsula golf course and Vanport housing project, Portland—by Portland Bay Meadows, Portland. 12-19

Texas

BEXAR CO.—**G. E. Myer,** 1760 Division Ave., South San Antonio—$65,000 for building church in 600 block, Main Ave., South San Antonio—by South Antonio Baptist Church. 12-12

CAMERON CO.—**J. R. Fitzgerald,** Harlingen—$100,000 for steel frame office bldg. in Harlingen—by self. 11-28

DALLAS CO.—**Cedric Burgher,** 3027 Main St., Dallas—$50,000 for apartment at 226 Lancaster St., Dallas—by self. 11-28

DALLAS CO.—**Joseph Bell Martin,** 4455 Falls Rd., Dallas—$50,000 for 48-unit tourist court with cafe, filling station, stores, drives and office, at 1714-36 Ft. Worth Ave., Dallas—by self. 12-6

EL PASO CO.—**J. E. Morgan & Sons,** 210 N. Campbell St., El Paso—$236,384 for addition to administration building—by City Council, El Paso. 12-26

FRIO CO.—**Charles Huie, Sr.,** Pearsall—$50,000 for hotel bldg. with 27 rooms, of stucco exterior, conc. frame, in Pearsall—by J. B. Little, Pearsall. 12-6

NUECES CO.—**E. Eisenhauer,** Corpus Christi—$100,000 for automobile bldg. having 22,500 sq. ft. of floor space at 722 Water St., Corpus Christi—by Roy Murray Motors, Corpus Christi. 11-29

POTTER CO.—**Arch Munn,** 5319 Junius, Dallas—$125,000 for building one-story bus terminal with conc. and steel frame, terra cotta and face brick wall, and conc. and terrazzo floors, at 9th and Taylor, Amarillo—by Western Greyhound Lines. 12-3

TARRANT CO.—**Andrews & Osborne,** 3320 W. 7th St., Fort Worth—$45,500 for one-story, steel frame, conc. foundation office bldg. at 2908 W. Lancaster, Fort Worth—by Refrigeration Fixture Co. and J. P. Bowlin Sales Agency, Fort Worth. 12-4

TARRANT CO.—**Homer A. Parkes Construction Co.,** 222 Construction Bldg., Dallas 1—$250,700 for church building with two stories and basement of brick, stone and reinforced concrete, at 3000 Ave. D, Fort Worth—by Polytechnic Baptist Church, Fort Worth. 12-3

Utah

IRON CO.—**Moroni Perry,** Cedar City—$60,000 for tourist motel at Cedar City. 11-29

SALT LAKE CO.—**E. H. Dorland,** 1877 Michigan Ave., Salt Lake City—$75,000 for bldg. at 345 South 2nd East, Salt Lake City—by Packard Automobile Co., Salt Lake City. 12-13

SALT LAKE CO.—**C. A. Chidester,** Salt Lake City—$98,600 for auto court on South Temple St., between First and Second West, Salt Lake City. 12-20

Washington

CLARK CO.—**George H. Buckler Co.,** 704 Lewis Bldg., Portland, Ore.—$800,000 for modernization of office and shop, eight storage bins, enlargement of the kiln room and addition of ten drums to drum room at malting plant in Vancouver—by Great Western Malting Co., Inc., Manitowoc, Wis. 11-29

KING CO.—**Kuney-Johnson Co.,** 235 Ninth Ave., N., Seattle—about $600,000 for cement plant in Seattle—by Permanente Cement Co., Oakland, Calif. 12-8

KING CO.—**Carl Nilson,** Auburn—for a

masonry building in Auburn—by the Wilson Equipment Co., Auburn. 12-12

KITSAP CO.—**The Henrik Valle Co.,** 407 Third Ave. W., Seattle—Over $300,000 for 5-story and basement office building on Fourth St. between Pacific and Washington Sts., Bremerton—by Joseph Haas & Son, Port Orchard. 12-19

SKAGIT CO.—**T. D. MacNeil,** Mount Vernon—$156,278 for store building in Mount Vernon—by Sears, Roebuck & Co., Chicago, Ill. 12-12

Canada

VANCOUVER—**Dominion Construction Co.,** Vancouver, B. C.—$1,000,000 for conc. and steel addition to store on Hastings St., Vancouver—by Woodward Stores, Ltd., Vancouver. 12-8

Miscellaneous . . .

California

LOS ANGELES CO.—**Tomei Construction Co.,** 4737 Orion St., Van Nuys—$65,000 for sewer and street improvements on Hayden, Steller, Warner and Higuera Sts., in Culver City—by Sam Hayden, Culver City. 12-14

SAN DIEGO CO.—**Automatic Sprinklers of the Pacific, Inc.,** 5508 Alhambra Ave., Los Angeles—$69,380 for automatic sprinkler and draft curtains in Building No. 78 at Naval Repair Base, San Diego—by Bureau of Yards and Docks, Washington, D. C. 12-7

SAN DIEGO CO.—**California Electric Works,** 424 8th Ave., San Diego—$44,400 for alteration of electric distribution system at the Naval Hospital, San Diego—by Bureau of Yards and Docks, Washington, D. C. 11-30

SAN MATEO CO.—**L. C. Jensen,** 2525 64th Ave., Oakland—$44,988 for street, sewer and water improvements in Capuchino District opposite Lomita Park—by County of San Mateo, Redwood City. 12-5

SAN MATEO CO.—**Edward Keeble,** Box 64, Tully Rd., San Jose—$61,632 for street, sewer and water improvements in Capuchino District, opposite Lomita Park—by County of San Mateo, Redwood City. 12-5

TULARE CO.—**Case Construction Co.,** Box 6, San Pedro, and **Macco Construction Co.,** 815 N. Paramount Blvd., Clearwater—$90,790 for additional work on the water conduit of the Kaweah No. 2 hydro plant, on the Kaweah River—by Southern Calif. Edison Co., Los Angeles. 12-17

Colorado

CHAFFEE CO.—**Wasatch Electric Co.,** 406 S. State St., Salt Lake City, Utah—$86,263 for improvements to existing distribution system and 73 mi. of transmission line near Salida—by Sangre de Cristo Electric Association, Salida. 12-14

DOUGLAS CO.—**A. B. Reither,** 1908 Clermont St., Denver—$50,407 for 70 mi. of transmission lines—by Intermountain Rural Electric Association, Littleton. 12-3

Montana

BLAINE CO.—**The O'Neill Construction Co.,** Havre—$228,000 for 222 mi. of transmission lines between Harlem and Saco—by Big Flat Cooperative, Inc., Turner. 12-19

PARK CO.—**D. M. Manning,** Hysham—$99,692 for 82.9 mi. of electric lines—by Park Electric Cooperative, Inc., Livingston. 11-26

VALLEY CO.—**The Chicago Bridge & Iron Works,** Chicago, Ill.—$518,000 for removing part of power house and penstock No. 1 and doing preparatory work for installation of a second generating unit at Fort Peck — by U. S. Engineer Office, Seattle, Wash. 12-6

VALLEY CO.—**D. M. Manning,** Hysham—$196,082 for 178 mi. of line to serve 275 members—by Valley Co. Electric Cooperative Inc., Glasgow. 12-21

Nebraska

DAKOTA CO.—**Jensen & Krage,** 209 Wright Bldg., Sioux City, Iowa—$99,709 for 100 mi. of rural electric line to serve 254 members—by N.E. Neb. Rural Public Power District, Emerson. 12-21

MADISON CO.—**Douglas Contractors, Ltd.,** Omaha—$149,231 for 172 mi. of rural electric line to serve 332 members—by Madison Co. Rural Public Power District, Battle Creek. 12-21

New Mexico

DONA ANA CO.—**C. H. Leavell,** 1900 Wyoming St., El Paso, Tex.—$153,797 for additional industrial facilities, including cranes, water line, pole line, roads, apron and fence, at the White Sands Proving Ground, east of Las Cruces—by U. S. Engineer Office, Albuquerque. 12-19

OTERO CO.—**Reynolds Electric Co.,** 708 North Piedras, El Paso, Tex.—$51,596 for 17 mi. of 33-kv. transmission line, also $100,412 for 70 mi. of line—by Otero Co. Electric Cooperative, Inc., Cloudcroft. 12-5

Oklahoma

BECKHAM CO.—**Reinhart & Donovan,** 804 Commerce Exchange Bldg., Oklahoma City—$104,736 for 116.2 mi. of electric lines—by Northfork Electric Cooperative, Inc., Sayre. 11-26

HARMON CO.—**R. E. Mattison,** Box 492, Britton—$211,403 for 225 mi. of rural electric lines—by Harmon County Electric Cooperatives, Hollis. 11-28

TILLMAN CO.—**Lincoln, Brillhart & Wright,** Oklahoma City—$79,978 for 100 mi. of rural electric lines—by S. W. R. Electric Cooperative, Tipton. 11-28

Oregon

CLACKAMAS CO.—**L. H. Hoffman,** 715 S.W. Columbia St., Portland 1—more than $1,000,000 for construction of 4 mill bldgs., all of steel and reinf. conc.; one 3-story processing plant, one 5-story coating plant, remodeling and additions to Mill D, and a 5-story bleaching plant; at West Linn—by Crown Zellerbach Co., San Francisco, Calif. 1-1

WASCO AND SHERMAN COS.—**Electrical Construction Co.,** 1650 Center St., Tacoma, Wash.—$296,845 for 265 mi. of power line—by Wasco Electric Cooperative Inc., The Dalles. 1-8

Texas

ARCHER CO.—**J. F. Pritchard & Co.,** Fidelity Bldg., Kansas City, Mo.—$2,000,000 for building repressuring and natural gasoline plant in Archer City. 12-17

BEXAR CO.—**Martin Wright Electric Co.,** Auditorium Circle, San Antonio—$670,000 for changes and additions to electric distribution system at A. A. F. Convalescent and Regional Hospital and Redistribution Station, San Antonio—by U. S. Engineer Office, Fort Sam Houston. 12-7

KAUFMAN CO.—**B & C Construction Co.,** 1302 Seevers Ave., Dallas—$94,899 for 119.3 mi. of electric line to serve 285 members—by Kaufman Co. Electric Cooperative, Inc., Kaufman. 12-21

LAMB CO.—**Taylor & Montgomery,** Lubbock—$95,609 for 118 mi. of transmission line—by Lamb County Electric Cooperative, Inc., Littlefield. 12-5

NUECES CO.—**C. R. Cento,** Box 112, R.F.D. No. 3, San Antonio—$91,813 for 110 mi. of transmission line—by Nueces Electric Cooperative, Inc., Robstown. 12-5

SWISHER CO.—**Taylor & Montgomery,** Lubbock—$124,951 for 150 mi. of electric line—by Swisher County Electric Cooperative, Tulia. 12-4

TRAVIS CO.—**McCann Construction Co.,** 1813 E. Lancaster, Box 2079, Fort Worth—$160,985 for removal of 150 victory type hutments from near New Orleans, La., and reassemble at three sites in Austin—by University of Texas, Austin. 12-10

Washington

SPOKANE & STEVENS COS.—**Roy L. Bair & Co.,** W. 1220 Ide St., Spokane—$63,650 for clearing right-of-way for 67 mi. of 115-kv. transmission line from Spokane to Colville—by Bonneville Power Administration, Portland, Ore. 12-21

Wyoming

HOT SPRINGS CO.—**Olson Construction Co.,** 250 East First St., South, Salt Lake City, Utah—$97,150 for 102.6 mi. of transmission line—by Hot Springs Rural Electric Association, Inc., Thermopolis. 12-5

PROPOSED PROJECTS

Building . . .

California

ALAMEDA CO.—A $2,000,000, 14-story, reinf. conc. and structural steel hotel bldg. is being planned by Bruce Holman & Associates, Oakland, to be erected on the east side of Harrison St., near 15th St., Oakland. 12-19

LOS ANGELES CO. — Plans are being completed on a $4,000,000 project for frame and stucco, one-story apartments, accommodating a thousand families, located on Avalon Blvd., near Wilmington, for the Western Defense Housing Co., Pasadena. 12-20

SAN BERNARDINO CO.—San Bernardino County Board of Supervisors are preparing plans for a 1-story, 50-bed, frame and stucco isolation hospital, costing $201,000. 12-3

Nevada

WASHOE CO.—Plans are being made for a $1,400,000 El Rancho style hotel, with a large outdoor pool, riding stables, stores, etc., to be built in Reno, at the United Airport.

Texas

DALLAS CO.—Plans are being developed for a 35-story hotel of 700-800 rooms, at Commerce, Ervay, Jackson and Lane Sts., Dallas, to cost $5,000,000. 12-6

DALLAS CO.—Union Terminal, costing approximately $1,500,000, and street developments around the terminal, costing approximately $2,000,000, have been proposed for Dallas by the Trinity River Area Committee. 12-6

DALLAS CO.—A $2,500,000, 9-story hospital, a $1,300,000 tuberculosis hospital, a $750,000 nurses' home and a $250,000 convalescent home have been proposed for Dallas. 12-6

DALLAS CO.—J. D. Blanton, Shreveport, La., is planning a community center which includes 100-unit tourist court, stores, theater and gasoline service station for Dallas, costing $750,000. 12-11

DALLAS CO. — Cary-Schneider Investment Co., Dallas, is planning a brick, stone addition to Medical Arts Bldg. which will cost approx. $1,500,000. 11-28

GAINES CO.—The Board of Education of Seminole is planning a new high school, costing $350,000. 11-29

HUNT CO.—East Texas State Teachers College, Commerce, is planning dormitories costing $600,000. 11-29

Highway & Street...

Texas

BEXAR CO.—The city of San Antonio is making surveys for a $8,250,000 inter-regional super-highway to be constructed through the city. 11-7

Airport . . .

Territories

PANAMA—A new $7,000,000 airport is being designed to accommodate planes larger than the B-29 Superfortress. There will be a two-story reinf. conc. terminal bldg., which will be air-conditioned, and it will house restaurants, maintenance shops and observation terraces. 11-22

Waterway . . .

California

LOS ANGELES CO.—The Malibu Quarterdeck Improvement Co., Beverly Hills, has plans for a yacht harbor at the Malibu Creek Inlet, Malibu. It will accommodate 600 pleasure craft and will include a 2-story seaside clubhouse for 1000 members. 12-5

Dam . . .

California

SANTA BARBARA CO.—The Bureau of Reclamation is planning a low dam on the Santa Ynez River as the initial project for the county. The whole program will include 7 main reservoirs, irrigation canals, water conduits and a fish hatchery, all of which will cost $46,400,000. 12-6

TRADE WINDS

News of Men Who Sell to the Construction West

CALIFORNIA

Stockholders of KINNER MOTORS, INC., Glendale, Calif., have voted to change the firm's name to GLADDEN PRODUCTS CORP. Directors continue in the new corporation. They are: **John N. Gladden,** president; **G. Brashears,** vice president; **Murray Wilson,** secretary-treasurer; **T. E. Madere, Victor F. Collins** and **Harold J. Lane.**

☆ ☆ ☆

Alden K. Smith, western service manager for TIMBER ENGINEERING CO., has closed his office in San Francisco and returned to Washington, D. C., to have charge of the development of the new Teco-Post Spindle system of construction. The Teco distributor in California is now TIMBER ENGINEERING CO. OF CALIFORNIA located at 85 Second St., San Francisco.

☆ ☆ ☆

EDWARD R. BACON CO. announces the appointment of **B. D. McClure** as sales representative in its Sacramento, Calif., branch. He was formerly owner of a construction machinery company in El Paso, Tex., and later was general superintendent of construction on the Pan-American Highway in Costa Rica and Panama. More recently he has been associated with Joshua Hendy Iron Works as district sales representative.

INTERNATIONAL HARVESTER CO. has established its first Pacific Coast motor truck manufacturing plant at Emeryville, Calif. It will produce six models of heavy duty International trucks for distribution in the eleven Western states. Key personnel at the new plant are: **Adolph W. Engstrom,** works manager; **Robert Urich,** chief engineer; **F. C. Miller,** auditor; **E. H. Bickell,** material controller; **E. C. Becker,** buyer; **H. E. Straub,** general foreman; **H. W. Timm,** service engineer; and **A. S. Busselle,** parts manager.

☆ ☆ ☆

R. R. Robinson has been named assistant chief engineer in charge of engine design for CATERPILLAR TRACTOR CO. He has been with the company since 1934, holding several different positions, the last of which was general supervisor of the engine design division.

☆ ☆ ☆

Five new vice presidents have been elected by UNITED STATES RUBBER CO. Each is general manager of one of the company's divisions. The men are: **Ernest G. Brown,** mechanical goods; **John P. Coe,** synthetic rubber; **H. Gordon Smith,** textiles; **John W. McGovern,** tires; and **Elmer H. White,** footwear and fuel cells.

☆ ☆ ☆

E. L. Oliver, president of OLIVER UNITED FILTERS, INC., announces the election of **L. R. Boling** as treasurer of the corporation. He has been controller of the company for the past five years. The board also elected **Edwin L. Oliver, Jr.,** son of the president, secretary of the corporation. He will continue as assistant to the executive vice president, **P. A. Hoyt.**

☆ ☆ ☆

S. Herbert Lanyon of San Francisco has been appointed to handle the DAVEY COMPRESSOR CO.'s line of air compressors in Northern California. His assistant is **C. B. Smith.** His organization will serve as direct factory agents.

☆ ☆ ☆

BETHLEHEM PACIFIC COAST STEEL CORP., a subsidiary of BETHLEHEM STEEL CORP., with general offices at 20th and Illinois Streets, San Francisco, Calif., announces that it has acquired all the businesses of BETHLEHEM STEEL CO. on the Pacific Coast, except those of shipbuilding and ship repairing. The properties will be operated by the Bethlehem Pacific Coast Steel Corp. under the direction of **H. H. Fuller,** president. Other officers of the corporation will be **P. W. Cotton, T. S. Clingan** and **E. F. Gohl,** vice presidents, and **E. B. Hill,** secretary-treasurer.

☆ ☆ ☆

Several new appointments are announced by BROWN-BEVIS EQUIPMENT CO., Los Angeles distributors of construction, mining and industrial machinery. **M. J. (Jim) Crossett** has been appointed assistant to **C. M. Weinberg,** president, and he will specialize on branch office operations. It is planned to locate new offices in sev-

eral southwest cities. **Charles E. Sell,** formerly associated with the Lang Company and the Lund Company, both of Salt Lake City, Utah, is a new member of the sales force. Two other sales appointments are, **Brette Brown** and **Herb Matthews.** The former will specialize on engines and motors, the latter will serve as field service specialist.

☆ ☆ ☆

THE CALIFORNIA WIRE CLOTH CORPORATION, West Coast subsidiary of COLORADO FUEL & IRON CORPORATION, will manage sales and service operations of the parent company on the Coast for the following C. F. & I. subsidiaries: WICKWIRE SPENCER STEEL DIV., WICKWIRE SPENCER METALLURGICAL CORPORATION, COBURN TROLLEY TRACK DIV. and AMERICAN WIRE FABRICS CORPORATION.

☆ ☆ ☆

AMERICAN MARIETTA CO. announces the acquisition of the LEON FINCH CO., LTD., of Los Angeles, Calif., manufacturers of lacquers and enamels since 1931. **Leon Finch** will remain as president and general manager. Having recently purchased two Seattle, Wash., companies, Marietta now has complete manufacturing facilities on the Pacfic Coast.

☆ ☆ ☆

BETHLEHEM PACIFIC COAST STEEL CORP. has acquired the business and plant of PACIFIC COAST FORGE CO. of Seattle, Wash., and it will be operated as a part of the parent corporation.

☆ ☆ ☆

Lt. Thomas M. Riley has been appointed manager of advertising for the Pacific Coast Paint Div. of PITTSBURGH PLATE GLASS CO., with offices in Los Angeles. He will direct all advertising for the company's forty retail paint stores in the Pacific Coast states. He has been in the Supply Corps of the Navy for the past forty-two months.

☆ ☆ ☆

The UNITED STATES STONEWARE CO., Akron, Ohio, announces the acquisition of the plant, processes, equipment and personnel of PLASTI-SPRAY CORP., 927 North Sycamore St., Hollywood, Calif. The new division will operate under the name of WESTERN PROCESS EQUIPMENT CO. **J. A. Maher,** who has been in charge of U. S. Stoneware's Los Angeles branch for the past several years, has been named vice president and general manager of the new division, which, in addition to continuing operations in metal impregnation and baked-on phenolic coatings, will also make available on the West Coast, Acikote and Duralon "hard coatings," and installation of Tygon tank linings.

☆ ☆ ☆

COAST EQUIPMENT CO., San Francisco, has just been appointed to handle the Blue Brute line of mixers and pavers for RANSOME MACHINERY CO.

☆ ☆ ☆

Willard S. Briscoe has been appointed head of Publications Division, West Coast, for BETHLEHEM STEEL CO., to be in charge of the company's press relations in the Pacific Coast area. Briscoe will succeed **M. D. Salisbury,** who is returning to the general offices of the company at Bethlehem, Pa., to resume his post as head catalog writer for the concern. **Gordon H. Dent** has been named assistant to Briscoe, and was formerly a member of the Industrial Relations Dept. of Bethlehem's San Francisco, Calif., shipyard. Briscoe was in charge of the company's exhibit at the San Francisco World's Fair, and later supervised publications and press relations work at Tulsa, Okla. After the advent of war, he was assigned to the Baltimore district, where Bethlehem has three shipyards and a steel plant. He will represent both the steel and shipbuilding operations of the company on the West Coast, having his central office in San Francisco, with offices also at Los Angeles and Seattle.

☆ ☆ ☆

Alex Kostyzak has been appointed general manager of the construction equipment division of SMITH BOOTH USHER CO., Los Angeles distributor of construction and industrial machinery. Since 1936 he has been a sales engineer with the company and had fifteen years of construction experience prior to joining the firm.

☆ ☆ ☆

Robert T. Kain, recently released from his post of lieutenant commander in the Navy, has been appointed San Francisco district manager of the industrial products sales division of B. F. GOODRICH CO. He succeeds **H. A. Schulz,** who retires after serving with the company for thirty years, and as San Francisco manager for the past four years.

☆ ☆ ☆

John C. Neidlinger, Los Angeles, Russell W. Jamison and Harry C. Maybee,

Portland, **Nels A. Johnson,** Seattle, **Fred B. Hengehold,** San Francisco, and **Richard C. Lang,** Sacramento, were Pacific Coast sales representatives of MACK - INTERNATIONAL MOTOR TRUCK CORP., who recently made a thirty-day trip through Mack plants in Pennsylvania and New Jersey.

☆ ☆ ☆

INTERMOUNTAIN

L. R. Austin of Billings, Mont., has been appointed distributor for WICKWIRE SPENCER wire rope in Montana, Wyoming and Idaho. He will stock inventories at Billings and Cut Bank, Mont., and at Casper, Wyo. Main sales offices will be in Billings.

☆ ☆ ☆

J. P. Griffin has been appointed Western District Sales Manager for BUFFALO-SPRINGFIELD ROLLER CO. His territory will include all of the eleven Western

states. He has been with the company for more than thirty years, most recently as purchasing agent.

☆ ☆ ☆

Recent changes in western branch management personnel announced by INTERNATIONAL HARVESTER CO. include: **S. A. Hayes,** manager at Seattle, Wash., before the war, is moved to Minneapolis, Minn., where he will be manager of the motor truck branch, succeeding **C. A. Samuelson,** who moves to a similar position in St. Louis, Mo. **G. C. Murnan,** formerly assistant manager of the general line branch at Portland, Ore., becomes branch manager at Cheyenne, Wyo., succeeding **E. N. Black, Sr.,** who moves to a similar position at Springfield, Mo. **E. E. Krogstad,** a lieutenant commander in the Navy, returns as assistant manager of the Tulsa, Okla., motor truck branch. **W. O. Bolitho,** formerly assistant manager at Cheyenne, returns from the Army to become assistant manager at Billings, Mont.

☆ ☆ ☆

Floyd S. Adams of Ada, Okla., is now a member of the sales staff of WORTHINGTON PUMP & MACHINERY CORP.'s construction equipment division and has been assigned the Texas and Oklahoma territory. He has just completed three years in a Texas war industry.

☆ ☆ ☆

PACIFIC NORTHWEST

HOWARD-COOPER CORP., logging and construction machinery company of Portland, Ore., announces the opening of

four new branches in Oregon. At Albany **F. W. Crawford** will be manager, at Roseburg **G. N. Siefarth** will be in charge, and at Klamath Falls **W. E. Peet** is manager. The fourth branch will be at Central Point, but no manager has as yet been named.

☆ ☆ ☆

Samuel G. Baker, a native of Tacoma, Wash., has been appointed assistant general manager of the Electrochemicals Department of the Du PONT COMPANY. **Milton Kutz,** who has been in this position, has been named a special assistant to **F. S. MacGregor,** general manager. Baker was formerly director of sales in the Explosives Department.

☆ ☆ ☆

A firm known as MJM, composed of Morrison- Knudsen Co., Inc., Jackson Implement Co. and Monarch Forge & Machine Works, has taken over the shop and yard formerly occupied by INTER-MOUNTAIN EQUIPMENT CO. at Walla Walla, Wash., to engage in the repair and service of all types of heavy equipment operating on farms, industry and construction projects. **Howard McDuffee** is business manager of the newly-organized firm.

☆ ☆ ☆

Robert P. Moser has been apppointed district advertising and sales promotion manager for GENERAL ELECTRIC CO., Apparatus Department, with headquarters in Portland, Ore., and will supervise those activities in Oregon, Washington, and northern Idaho.

☆ ☆ ☆

PACIFIC CAR & FOUNDRY CO., Seattle, Wash., has announced that its subsidiary, KENWORTH MOTOR TRUCK CORP., has acquired the Fisher body plant in Seattle through purchase from General Motors Corp. During the war the Fisher building had been under lease to Boeing Aircraft Co.

☆ ☆ ☆

AMONG THE MANUFACTURERS

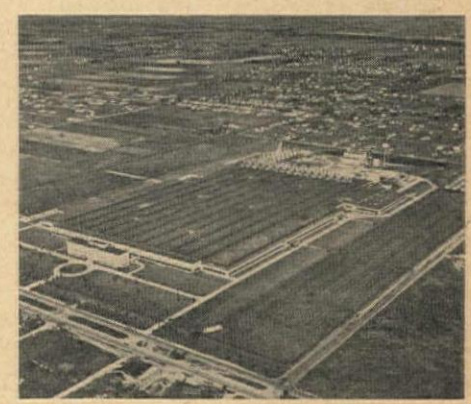
E. J. Schwanhausser, vice president of Worthington Pump & Machinery Co., was elected president of DIESEL ENGINE MANUFACTURERS ASSN. at the association's annual meeting. **Gordon Lefebvre,** president of Cooper-Bessemer Corp., and **J. E. Peterson,** vice president of General Machinery Corp., were elected vice presidents. **Robert H. Morse, Jr.,** general manager of Fairbanks, Morse & Co., was re-elected treasurer and **Harvey T. Hill** was re-elected executive director. New directors are: **A. W. McKinney,** vice president of National Supply Co., and **G. F. Twist,** vice president of Atlas Imperial Diesel Engine Co.

☆ ☆ ☆

Walter W. Walb has been elected president of AMERICAN STEEL DREDGE CO., Fort Wayne, Ind., to succeed his father, the late **Clyde A. Walb.** He was formerly vice president and secretary-treasurer of the company. **Maj. Dean F. Cutchall,** already a vice president, now assumes the office of secretary-treasurer, and **Otto C. Scheimann** is assistant treasurer.

☆ ☆ ☆

INTERNATIONAL HARVESTER CO., Power Div., has just purchased the "Melrose Park Works," operated during the war by Buick Motors in the manufacture of Pratt and Whitney aircraft engines. The purchase includes 135 ac. of land and



2 million square feet of manufacturing floor area. The new plant, located at Melrose Park, Ill., will be used in the production of Diesel engines, gasoline engines and a large, new crawler tractor. The engineering department of the Power Division will also be located at Melrose Park.

☆ ☆ ☆

Charles H. Westphalen has been elected vice president and director of the MASONITE CORPORATION and general manager of its Laurel, Miss., plant. He has been with the company since its inception.

☆ ☆ ☆

Walter Parrish has accepted the position as chief engineer for ROGERS DIESEL AND AIRCRAFT CORPORATION, New York, N. Y. He will take charge of the engineering, research and development facilities of the company, as well as aiding in the formulation of engineering plans for the entire organization including the Edwards Co., North Carolina; Hill Diesel Engine Co., Michigan; Ideal Power Lawn Mower Co., Michigan. Parrish, who for

the past five years has been executive engineer for the Superior Engine Division of National Supply Co., has had a rich background in the automotive and diesel fields, having been associated with many of industry's leading manufacturers.

☆ ☆ ☆

GAR WOOD INDUSTRIES, INC., world's largest maker of truck and trailer equipment, has acquired 92 per cent of the capital stock of BUCKEYE TRACTION DITCHER CO., and it is expected that the Buckeye operations will be considerably expanded under the new association.

☆ ☆ ☆

N. F. Adamson has been elected vice president in charge of sales and engineering of the TWIN DISC CLUTCH COMPANY, Racine, Wis., it was announced recently. Other personnel changes announced at the same time are: **E. C. Billings** appointed sales manager of the Racine division, **Roger G. DeLong** has been named sales manager of the hydraulic division, with headquarters at the company's Rockford, Ill., plant. **G. W. Buelke** is the new chief engineer of the Racine division. The purpose of the new appointments, according to **P. H. Batten**, president of the company, is to provide a closer coordination of engineering, sales and service activities in the Racine and Rockford divisions, and to make closer contact possible between the main offices and users of Twin Disc Clutches and Hydraulic Drives. Adamson, who has been general sales manager for the past two years, has been with the Twin Disc Clutch Co. for more than two decades. He was chief engineer for many years, and prior to that time worked with the sales and engineering departments.

Several changes have been announced in the general sales department of CATERPILLAR TRACTOR CO., Peoria, Ill., including the following: **H. D. Haberkorn** has been appointed assistant sales manager of the central sales division; **C. A. Barabe, Jr.**, assistant sales manager of the eastern sales division, and **F. E. Rusher**, assistant central sales manager since 1937, has resigned to become general sales manager and a director of PEORIA TRACTOR & EQUIPMENT CO., Caterpillar distributor in the Peoria area.

☆ ☆ ☆

Lewis A. Belding has been named president of HARLAN AND HOLLINGSWORTH CORP., Wilmington, Del. He announces that the company will produce freight cars in addition to the manufacture of passenger cars in the future. Belding recently completed an engineering assignment with Henry J. Kaiser Co., following his 15 years of engineering, designing, and selling of railroad cars for General American Transportation Corp. of Chicago and his earlier association with American Car and Foundry Co.

☆ ☆ ☆

Edward J. Maroney has been appointed sales manager of UNITED STATES PLYWOOD CO., upon his return from a leave of absence during which he served as a lieutenant in the Navy Bureau of Aeronautics. Previous to the war he was manager of the company's Philadelphia operations.

☆ ☆ ☆

J. E. Goodman, well-known Toronto engineer, is the new Canadian distributor for Teco Timber Connectors and other products of THE TIMBER ENGINEERING COMPANY, Washington, D. C. The distributorship was transferred from V. H. McIntyre, Ltd., to Goodman, who launched his new company this summer. He will continue the complete timber engineering, lumber information, and sales services established by the McIntyre company under the late **Verne H. McIntyre.**

☆ ☆ ☆

Recent changes in the sales organization of the ALLIS-CHALMERS MANUFACTURING CO., TRACTOR DIVISION, include: **Marshal L. Noel**, previously industrial sales manager, becomes general sales manager; **William J. Faulkner**, formerly manager of the Washington, D. C., office, advances to industrial sales manager, with his assistants **F. B. Harrison** and **E. G. Kullmann**; **Ernest Franks** is in charge of wheel tractor sales for industrial purposes; and **Boyd S. Oberlink**, until recently an assistant industrial sales manager, has been appointed assistant to the vice-president of the Tractor Division.

☆ ☆ ☆

E. M. Ackerman has been appointed sales manager for W. A. RIDDELL CORP., after having been with the company in sales and service work for 18 years. **James E. Jones**, a specialist in agricultural machinery, will supervise sales of that type of equipment and assist Ackerman in the road machinery division.

☆ ☆ ☆

Robert M. Darr has been appointed advertising manager of the LE ROI CO. and CENTAUR COMPANY. He has been with Le Roi since 1941, engaged in the preparation of instruction manuals. The company manufacturers engines and air compressors.

☆ ☆ ☆

E. G. Ackart, chief engineer for E. I. du PONT de NEMOURS & CO., INC., Wilmington, Del., announces an extensive realignment of the engineering department of the Du Pont company. Among the appointments announced were: **T. C. Gary**, design division, becomes department engineer, reporting to **Granville M. Read**, assistant chief engineer. **M. F. Wood**, manager of the construction division, becomes manager of the design division. **F. H. Mackie**, manager of construction of government plants for war production, becomes manager of the construction division. **G. P. Church**, field project manager of the Hanford Engineer Works, Richland, Wash., a major production unit of the government's atomic energy project, becomes assistant manager of the construction division. **O. R. Ames**, manager of general construction, becomes a special assistant to Mr. Mackie. These new changes were necessitated through the shifting from the engineering and construction needed to win the war to that of peacetime. Du Pont's construction program for peacetime production already exceeds $40,000,000 in projects publicly announced thus far for various parts of the country.

☆ ☆ ☆

Stuart Colnon, former lieutenant-colonel in the Army Engineers, has been elected vice president of MATERIAL SERVICE CORP., Chicago, Ill. Colnon, who was commissioned as a captain in 1942, served

in the South Pacific theater for the past two years, retiring to inactive status very recently. Prior to his Army service he was vice president and director of the John E. Colnon Co., Inc., real estate operators, which position he has resumed, along with the vice presidency of Material Service Corp.

☆ ☆ ☆

Officers of UNION CARBIDE & CARBON CORP. recently elected by the board of directors are all officers of subsidiary companies except **Morse G. Dial,** secretary-treasurer. The vice presidents are: **Dr. Joseph G. Davidson,** president of CARBIDE & CARBON CHEMICALS CORP.; **S. B. Kirk,** president of LINDE AIR PRODUCTS CO.; **James W. McLaughlin,** president of BAKELITE CORPORATION; **William J. Priestley,** president of ELECTRO METALLURGICAL CO.; **John H. Rodger,** president of OXWELD RAILROAD SERVICE CO.; **Arthur V. Wilker,** president of NATIONAL CARBON CO., INC.; **H. E. Thompson,** vice president of CARBIDE & CARBON CHEMICALS CORP., and **Robert J. Hoffman,** president of UNION CARBIDE & CARBON RESEARCH LABORATORIES, INC.

☆ ☆ ☆

Four new vice presidents for MINNEAPOLIS - HONEYWELL REGULATOR CO. are, **Paul B. Wishart, Arthur H. Lockrae, John E. Haines** and **C. D. Lyford. C. B. Sweatt** and **W. L. Huff** have been elevated to new positions of executive vice presidents and **John H. Binger** was elected assistant secretary.

☆ ☆ ☆

John R. Hertzler has been elected a vice president of YORK CORPORATION. Since 1942 he has been an officer in the Navy, but for twelve years prior to his enlistment he had been engaged in the organization and supervision of the company's air conditioning operations. His last assignment was that of general sales manager.

☆ ☆ ☆

C. B. Smythe has been elected president of THEW SHOVEL CO., Lorain, Ohio, to succeed his father, **F. A. Smythe,** who died Nov. 8, after serving 46 years as president of the company. C. B. Smythe has been with the company since 1910 and vice president since 1920.

☆ ☆ ☆

THE MARSH TRITROL CO., Chicago, Ill., has broadened its activities to distribute the heating specialties manufactured by the JAMES P. MARSH CORP. The new firm name is MARSH HEATING EQUIPMENT CO. **James Emmett, Jr.,** will be vice president in charge of sales.

☆ ☆ ☆

Walter E. Schott has been elected a director of CLEVELAND PNEUMATIC TOOL CO., CLEVELAND PNEUMATIC AEROL, INC., and CLEVELAND PNEUMATIC TOOL CO. of CANADA, LTD. **Harold C. Schott,** his brother, was also made a director and vice president. The Schotts recently acquired control of these companies and U. S. AIR COMPRESSOR CO.

☆ ☆ ☆

E. W. LaPlant, co-founder of LaPLANT-CHOATE MFG. CO., INC. of Cedar Rapids, Iowa, died December 4 after a long illness, at the age of 73. He started in the house-moving business in 1889 and developed special equipment for this work and later started manufacturing earth-moving equipment. He founded the present corporation in 1912. He had been inactive in the business since 1927, although still a member of the board of directors.

☆ ☆ ☆

Lt. Col. H. P. Valentine has been named manager of MACK TRUCKS, INC, dealer sales operations. He has formerly been chief of the transport and automotive branch of the Army Service Forces, with responsibility for war production of automotive, shipbuilding, construction and railway equipment.

☆ ☆ ☆

Thomas J. Hilliard was recently elected vice president in charge of sales of CARNEGIE-ILLINOIS STEEL CORP., it has been announced. Hilliard has been general manager of sales for this United States Steel subsidiary since 1938. He has been with Carnegie-Illinois since 1936, when he was appointed manager of sales of the Pittsburgh district sales office. Two years later he was appointed general manager of sales. **J. Douglas Darby,** who has been manager of sales for the company in Philadelphia since 1939, will succeed Hilliard to the post of general manager of sales. Two other sales department staff changes an-

nounced are **A. Paul Selby** as assistant general manager of sales, and **Wesley C. Bobbitt** as manager of sales in Philadelphia.

☆ ☆ ☆

J. Joseph Kelleher, special representative of the Contractors' Division, Explosives Dept., HERCULES POWDER CO., has been appointed manager of the division.

☆ ☆ ☆

Leon C. Hulse, formerly head of the termination department of GAR WOOD INDUSTRIES, INC., has been named manager of the company's new plant at Mattoon, Ill., which will fabricate road machinery and various heavy duty truck bodies.

☆ ☆ ☆

Isaac Fogg was elected president of ATLAS POWDER CO., Wilmington, Del., to replace **Leland Lyon,** who resigned his post as president and as member of the executive committee, but retains the post of chairman of the board of directors. Fogg started with Atlas in 1913 and in 1927 was elected treasurer and member of the board and 1931 found him in the capacity of vice president. Also announced recently was the election of **F. S. Polock,** general manager of the explosives department at Atlas to the position of vice president. He came to the company in 1909 as a chemist and in 1942 became director of the Government Ordnance works department, and later in the year acquired the post of manager of the explosives department.

☆ ☆ ☆

Grant Sturgis has been appointed as development engineer, parts and service operations for GMC TRUCK & COACH DIVISION of GENERAL MOTORS, Pontiac, Mich., it has been announced. Sturgis, formerly eastern warehousing manager for Chevrolet Motor Co., will direct the planographing of all parts activities at home office and field warehouses, and handle all field contacts on Division properties, including repairs and maintenance. His department will also handle dealer contacts for GMC Truck & Coach involving dealer plans for new building construction, remodeling and general modernization.

☆ ☆ ☆

John A. Leschen, vice president of A. LESCHEN & SONS ROPE CO., St. Louis, Mo., died on Nov. 13.

☆ ☆ ☆

J. H. Heintz, sales and construction engineer, who has been prominently identified with the construction industry for the past 25 years, has been appointed general sales manager of the C. S. JOHNSON CO., manufacturers of construction machinery and equipment at Champaign, Ill. Before joining the Johnson firm, Heintz was engaged in airport construction in Florida and Central America from 1941 to 1944. Previously for 12 years he had operated his own construction materials and steel jobbing business, later developing into the engineering and general contracting field.

☆ ☆ ☆

Formation of an industrial adhesives division in the UNITED STATES PLYWOOD CORPORATION was recently announced by **Lawrence Ottinger,** president. **W. Robert Goepel** will be manager of the division, with headquarters at the main office of the company at 55 West 44th St., New York City.

☆ ☆ ☆

Donald Williams was named general sales manager and **Donald K. Ballman** assistant general sales manager of THE DOW CHEMICAL COMPANY, Midland, Mich. Williams joined the Dow sales staff in 1924, serving in various capacities until 1933 when he was appointed assistant general sales manager. Ballman came to Dow in the fall of 1935 and was placed in insecticide sales where he was largely responsible for the market development of the Dowicide line of fungicides and wood preservatives. **Leland I. Doan,** who now assumes the position of director of sales, has been general sales manager for the past 16 years, having begun his career with Dow in 1917. He has been a vice president of the company since 1936 and secretary since 1941.

☆ ☆ ☆

GENERAL ELECTRIC CO. expects to double its prewar average production of steam turbines in the postwar period. The company now has a backlog of over 30 million dollars in turbine-generator orders, including over 40 machines.

☆ ☆ ☆

A. C. Fellinger has been appointed sales manager, power transmission machinery, of the LINK-BELT CO., Chicago, Ill. His headquarters will be at the company's Ewart plant in Indianapolis. This change is made to fill the vacancy caused by the untimely death of **C. Walter Spalding.** Fellinger joined the Link-Belt organization in 1916, and is widely experienced in the field of power transmission. Hereafter, **H. F. R. Weber** will head the sale and application of silent chain drives, as divisional sales manager, with headquarters at the Ewart plant also. Weber was formerly central division manager for power transmission machinery, located in Chicago.

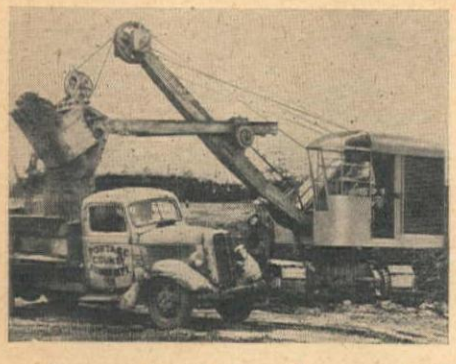
NEW EQUIPMENT

Half-Yard Crawler Shovel

Manufacturer: Byers Machine Company, Ravenna, Ohio.

Equipment: Crawler mounted half-yard excavator.

Features claimed: Combined shovel, crane with all-welded frame construction for rugged operation, the new model 61 is equipped with the same "Airflex" finger-tip air clutches as embodied in the "Traveler" model. The new model has enclosed gears running in forced circulating oil, wide



and large tandem drums and new patented worm-type boom hoist. Clutches for steering crawlers are engaged by the same air pressure that is employed to engage upper deck friction clutches. Crawler steering and chocking brakes are automatically set by spring action when clutches are disengaged. Model 61 embodies the popular feature of being able to hoist, swing, travel and steer at the same time.

Chemical Lubricant

Manufacturer: Carbide and Carbon Chemicals Corp., New York, N. Y.

Equipment: Non-mineral oil lubricant for use in extreme temperatures.

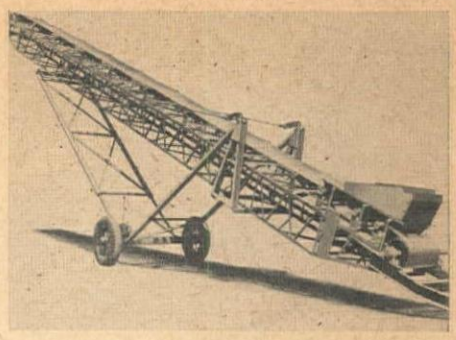
Features claimed: A new internal combustion engine lubricant having unusual advantages over mineral oil, particularly for cold weather use. The lubricant can be manufactured to any desired viscosity and is wax-free. Pour-points vary from –30 to 80 degrees F. Flash points range from 300 degrees F. up. The new materials have densities approximating that of water. Carbon residue values are less than 0.01 per cent, regardless of viscosity. The lubricant is characterized by low change of viscosity with change in temperature, having viscosity indices in the range of 140 to 160. Carbide's new lubricant contains no petroleum oils. Its use in internal combustion engines has been studied and tested in vehicles which have covered a total of over one and one-half million road miles. Large quantities are being used in military equipment. Other applications include lubrication of refrigerating machines and all kinds of machinery operated under conditions of low temperature or where non-sludging oil is required, and as hydraulic fluids, textile lubricants, plasticizers, and heat transfer liquids. At the present time, the sale of these lubricants is restricted to war uses.

Conveyor Truck

Manufacturer: Pioneer Engineering Works, Minneapolis, Minnesota.

Equipment: Hydraulic lift for portable conveyor truck.

Features claimed: A new loading conveyor equipped with a hydraulic cradle truck for use in mines, quarry, or pit. The conveyor is portable and quickly raised or



lowered by one man with the finger-tip, hydraulic control. In lowered position the new truck requires much less head room than the old-style mast truck.

Portable Cement Batching Plant

Manufacturer: C. S. Johnson Company, Champaign, Ill.

Equipment: A twin-silo, portable cement batching plant.

Features claimed: Constructed of all-welded units this new twin cement plant can be set up faster. Even the largest size can be set up without the use of a crane. The leg section on the overhead silo is so

designed that it can pivot on a base plate mounted in the concrete footing. The pivot can then be utilized to tip the entire leg and silo assembly into place by means of a gin pole and a tractor winch. The plants are built in four sizes, 761, 1,044, 1,327, and 1,600 barrels storage capacity. Other equipment designed to be used with this plant are the Johnson cement batcher, bucket elevator and screw conveyor with capacities of 300 barrels per hour. The twin-silo plants may be charged from box or hopper cars, or from trucks.

Stacker-Conveyor

Manufacturer: American Conveyor Company, Chicago, Ill.

Equipment: High-Boy electric conveyor for material stacking.

Features claimed: A drag-chain type 8 and 12 in. wide, 13 to 20 ft. in length for use in stacking or unloading bulk or packaged goods. The new unit can be used to elevate material up to 12 ft. It is portable, being equipped with pneumatic-tired wheels, and will carry a load up to 1,500 lb.

Flexible Heat Ducting

Manufacturer: Arrowhead Rubber Co., Los Angeles, Calif.

Equipment: Flexible material for heat conduction.

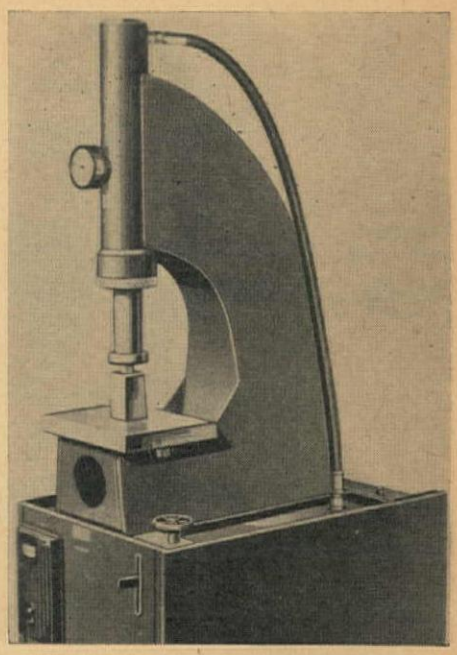
Features claimed: "Airtron," developed during the war for aircraft heating and ventilating, is available for all users of ducting for hot or cold air. It is made of glass, cloth, and rubber, providing high insulation qualities, as well as great flexibility. It will operate indefinitely under conditions which would cause metal ducting to develop fatigue cracks. It is unaffected by air, light, water, gasoline, oil, and some acids, and withstands internal pressures of more than 50 lb. per sq. in. and temperatures from minus 60 deg. to 300 deg. F.

Hydraulic Press

Manufacturer: Munton Manufacturing Company, Franklin Park, Ill.

Equipment: Hydraulic operated production punch press.

Features claimed: A versatile self-contained motor driven press with foot operated control. This leaves the hands free to assemble and feed production work for the press. The presses are available in capacities of 4½, 7, 10, 15, 20 and 25 tons, with means to limit pressures as low as required. Pressure gauges help determine the load being applied, for laboratory work and production tests. A holding valve may be ordered as an extra, enabling the press to be used for certain molding or glue weld operations, by which the ram is held under pressure until the valve is tripped. The presses are especially rugged in construction with heavy reinforcing where needed to make them ideal for use in push-broaching, forming, blanking and squeeze assembly of bushings.



Combination Electrode

Manufacurer: Air Reduction, 60 East 42nd St., New York, N. Y.

Equipment: New Three-Purpose Welding Electrode.

Features claimed: A new combination type welding electrode, Airco No. 315, designed to produce horizonal fillet welds with flat or slightly concave fillets in the flat position, as well as satisfactory deep fillet and deep groove welds. The usual application for the new electrode includes pressure vessels and their connections, heavy machine weldments, structural assemblies such as trusses, girders and connections where high weld quality is important. Airco No. 315 electrode is recognizable by its steady, forceful stray type arc. The thick porous slag which completely covers the weld deposit under practically every condition is readily removed. This electrode can be used for any job that calls for a 6020 or 6030 electrode, and may be applied with either alternating or direct current, straight or reverse polarity.

Cast Iron Electrode

Manufacturer: Harnischfeger Corporation, Milwaukee, Wisconsin.

Equipment: Welding electrode for cast iron.

Features claimed: Harcast, an all-position mild steel electrode for welding and repairing cast iron is the latest development in P. & H. welding equipment. It fuses well with either mild or medium carbon steel, thus making it ideally suited for joining cast iron with other types of steel. With a yield point of 50,000 lb. psi., the deposited metal has an ultimate tensile strength of 60,000 lb. Harcast is usable with either AC or DC machines, straight or reversed polarity on DC, and works well at low amperage. Its use assures a sound, deep weld for any good grade of cast iron.

Steam Cleaning Unit

Manufacturer: Oakite Products, Inc., New York, N. Y.

Equipment: Multiple-duty, oil-fired steam cleaning unit.

Features claimed: Built for continuous, trouble-free service, this Oakite-Vapor cleaning unit is quality engineered. Oil-fired with fuel oil, kerosene, or gasoline it can be operated efficiently at a variety of

steam pressures for many different types of light and heavy-duty cleaning. Exclusive features incorporated in the new unit provide for simplicity and ease of operation and the effective operation of two steam guns simultaneously. Safety against fire hazards and A. S. M. E. safety code standards are fully met.

All-Steel Hand Winch

Manufacturer: American Hoist & Derrick Co., St. Paul, Minn.

Equipment: "Handiwinch" steel lifter.

Features claimed: A drum mounted between side frames, can be driven either through 27:1 double reduction gears for heavy loads, or 4.5:1 single reduction gears for light loads. The winch is equipped with a removable crank, and a band brake mounted on the pinion shaft provides safe handling of heavy loads without creep. The entire assembly, winch, crank, and tail yoke weighs just over 100 lb. All gears are held in place by one simple latch, making shifting or removal of gears a simple task, as is also removal of rope from the drum.

Arc Welder

Manufacturer: Lincoln Electric Company, Cleveland, Ohio.

Equipment: "Fleet-Arc Jr.," a low-priced welder for farm or shop.

Features claimed: The new unit is for 230 volt single phase power lines and meets the limited input requirements of rural utilities. It can be used with standard 3-phase power ordinarily furnished by power companies. Current range is from 20 amperes at 20 volts to 180 amperes at 25 volts welding duty. This gives sufficient capacity for all types of jobs found on most farms or job welding shops. The Fleet Jr. is a mobile unit weighing only 360 lb.

Front-Mounted Cable Control

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Equipment: A single drum, front-mounted cable control.

Features claimed: New easy operating dozer control embodying the Caterpillar multiple disk clutch for use in a front-mounted cable control. The No. 24 control fits all D6, D7, and D8 models. The single drum control has ample line pull to meet the most severe service requirements. Drum diameter for all models is 9 in., and bare drum line speeds for D8, D7, D6 are 357, 375 and 525 F.P.M. respectively. The cable drum is 2½ in. long with a drum flange diameter of 14 in., designed to hold 75 ft. of ½-in. line. The clutch has 12 friction surfaces with an area of 564 sq. in. Weight of each model, including adapter group, is 550 lb.

Diesel-powered Generator

Manufacturer: R. H. Sheppard Company, Hanover, Penn.

Equipment: Load-controlled Diesel-powered generator.

Features claimed: Because load-control cuts operating time of the power plant to periods when power is actually required, it reduces fuel consumption and prolongs the life of the equipment. It will instantly start automatically whenever a light or appliance is turned on to create a current demand for the power plant.

LITERATURE FROM MANUFACTURERS . . .

Copies of the bulletins and catalogs mentioned in this column may be had by addressing a request to the *Western Construction News*, 503 Market Street, San Francisco, California.

McKiernan-Terry Corp., New York, N. Y.—Bulletin 57 calls attention to the addition of a standard line of single-acting pile hammers, supplementing their line of double-acting hammers. The bulletin describes the special purposes for which the single-acting hammers are intended and lists their advantages, including under water operation. A table based on established formulae for bearing power of piling offers assistance in selection of correct hammer size.

Isaacson Iron Works, Seattle, Wash.—Bulletin on the Isaacson Hydraulic Trac-Dozer, with complete description of the various working parts and drawings to indicate the distinctive features and the action of the dozer in removing dirt. The blade can be operated at several different angles and has corner tilt. Specifica[illegible].

Littleford[illegible] Cincinnati, Ohio—Two-color leaflet, [illegible]scribing Littleford road brooms and asphalt spreading tanks and heaters. Pictures of some of the units in operation are given and brief descriptions of the operating features of each.

Timber Engineering Co., Washington, D. C.—File 19-B, describing low cost housing for small airplanes. The pamphlet gives ten reasons why wood hangars are thrifty and shows designs for both single unit and multiple unit hangars. Suggested repair shop units built of timber with Teco connectors are also shown.

Worthington Pump & Machinery Corp., Harrison, N. J.—Bulletin H-450-B33 printed in two colors illustrates and explains the operation of Worthington vertical turbine pumps, with cut-away drawings to show various phases of the operation. Numerous installations of the pumps are also shown and a brief statement is given concerning the compactness, simplicity, adaptability and versatility of this type of pumping installation.

Air Reduction Sales Co., Inc., New York City—A 16-page, illustrated booklet describing the new and improved Wilson "Bumblebee" alternating current transformer arc welding machines. Engineering data and complete specifications are supplied and precise, labeled drawings and numerous photographs supplement the text. In addition to describing the 200, 300, and 500-amp. standard models, additional sections are devoted to small AC welders, shielded arc electrodes and various other equipment items.

J. H. Williams & Co., Buffalo, N. Y.—Bulletin No. 4 devoted to the Saxe welding erection system, enumerates seven reasons why this system is claimed to be superior. Many letters attesting to the merits of the system are reproduced, and pictures and diagrams of the equipment supplement the text.

Koehring Company, Milwaukee, Wis.—A handbook for highway maintenance engineers has recently been issued by the company. It describes in detail the Koehring Mud-Jack treatment for slab pumping and serves to familiarize maintenance men with the early recognizable signs of slab pumping and the measures for stopping it once it is recognized. The book is well illustrated with action pictures, as well as cuts of the equipment.

R. G. LeTourneau, Inc., Peoria, Ill.—Form No. G-1068, an 8-page folder describing the full LeTourneau equipment line, is designed to assist equipment owners and operators in selection of proper tractor tools. The folder describes and pictures current models of carry-all scrapers, tilt-dozers, rooters, cranes and power control units. It includes many on-the-job photos of several types of equipment.

Stacey Bros. Gas Construction Co., Cincinnati, Ohio—A 50-page bulletin covering the design and construction of telescopic, wet seal gas holders. Valuable engineeering data on welding techniques, pressure, painting surface, corrosion and general dimensions of all sizes of gas holders up to 10 million cubic feet are discussed. Numerous cross sections are shown, including information and tables on the operation and care of wet seal tanks. Construction methods are discussed from the very start.

Crocker-Wheeler Division of Joshua Hendy Iron Works, Ampere, N. J.—A 4-

OPPORTUNITY SECTION

Literature From Manufacturers (Continued)

page bulletin recently issued describes the company's sealed power motor. Of exclusive design, this motor was developed for use in dusty locations, in places where there is excessive moisture and for general purpose applications. It is available in sizes from 2 to 15 hp. The bulletin also contains a cutaway view and pictures of six typical applications.

M. W. Kellogg, New York City—A series of five economic studies showing the new and improved methods employed by this company on an individual basis to meet individual needs for reducing over-all manufacturing costs of gasoline. The studies cover five typical American refineries processing crude oils with varying equipment. The studies come in an attractive cover, which also carries an attractive brochure on the independent engineering organization and its function in the development, design and construction of refining facilities.

INDEX TO ADVERTISERS
★ IN THIS ISSUE ★