WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

PUBLISHED MONTHLY
VOLUME XVII, No. 11

NOVEMBER • 1942

35 CENTS A COPY
$3.00 PER YEAR

IN THIS ISSUE

POURING CONCRETE for a blast furnace stockhouse foundation at Geneva Works, $150,000,000 steel plant being built by Columbia Steel Co., near Provo, Utah.

Unretouched photos of roller bearings from one of the largest fleet operations in the world. Note the bearing before use . . . and the plentiful supply of *Texaco Marfak Heavy Duty* still there after 34,000 miles.

THEY PREFER TEXACO

★ More locomotives and cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

IT'S STILL ON THE ROLLERS... AFTER *34,000 Miles*

TO PROTECT the wheel bearings of your trucks, tractors, bulldozers, spreaders and other heavy-duty equipment, the lubricant must stay IN THE BEARINGS.

Contractors everywhere are getting thousands of extra hours of service, safer braking, by lubricating wheel bearings with *Texaco Marfak Heavy Duty.*

As the unretouched photos opposite show, *Texaco Marfak Heavy Duty* stays on the rollers, protecting against wear and friction despite highest operating hub temperatures. It stays off truck brake linings in hottest weather, yet lubricates effectively in coldest winter. *Doesn't need changing for seasonal reasons.*

The outstanding performance that has made Texaco preferred in the fields listed in the panel has made it preferred on prominent construction jobs throughout the country.

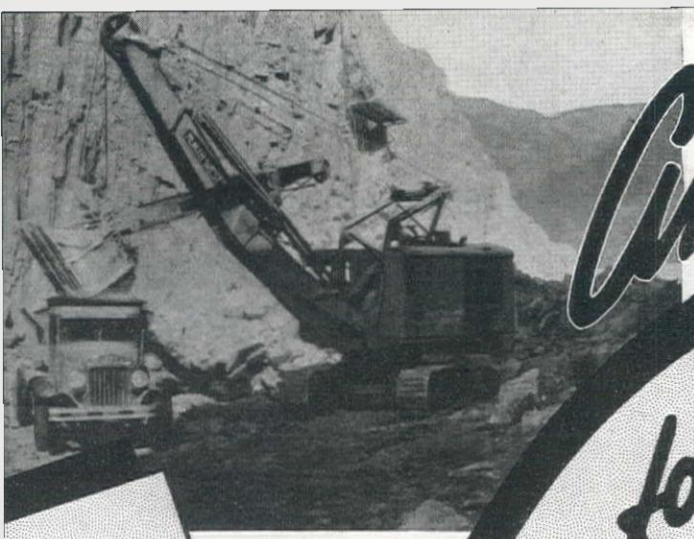
These Texaco users enjoy many benefits that can be yours. A Texaco Automotive Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distributing points in the 48 States, or write:

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

TEXACO

TEXACO MARFAK HEAVY DUTY

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY



Another one heads West—

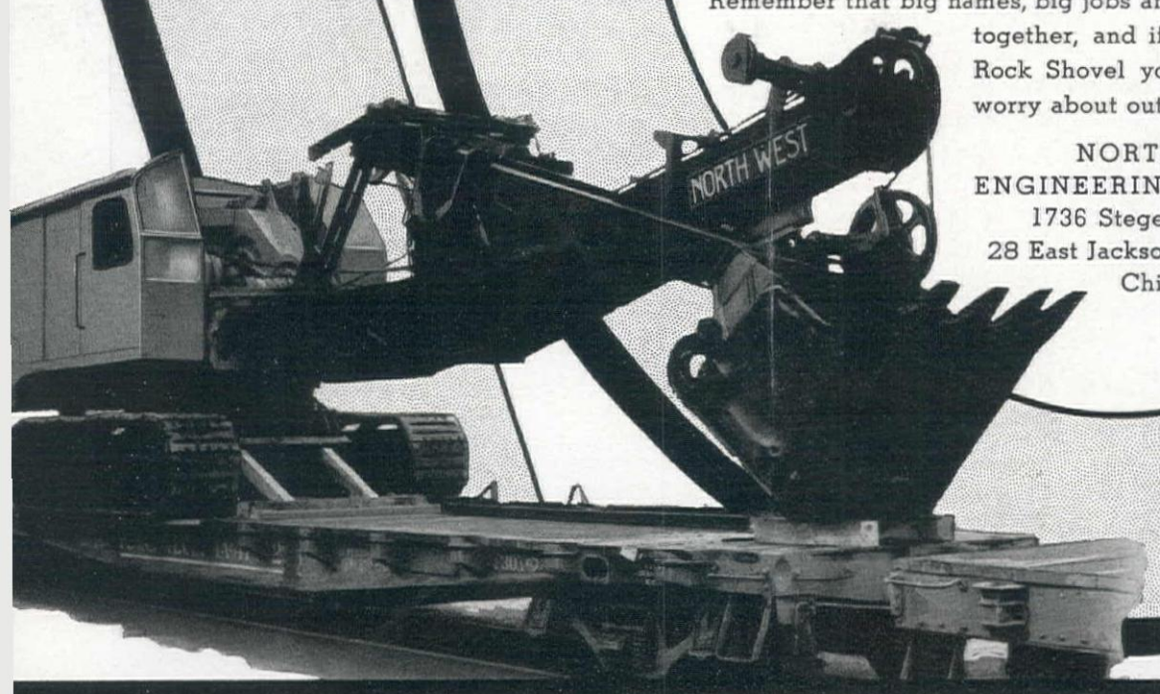
for "GENERAL"

that makes SIXTEEN Rock Shovels for General Construction Co.
Seattle, Wash.

GENERAL Construction Co., proved Northwest on the rock of Bonneville Dam. Lots of rock has passed through their Northwest dippers since then and as a result of satisfactory service they have bought Northwests *again and again.* Fifteen repeat orders make a testimonial that beats all the words that can be written.

Remember that big names, big jobs and Northwests go together, and if you have a real Rock Shovel you never have to worry about output in dirt.

NORTHWEST
ENGINEERING COMPANY
1736 Steger Building
28 East Jackson Boulevard
Chicago, Ill.



NORTHWEST

. . . . If it's a real Rock Shovel you won't have to worry about output in dirt!

Branch Offices: 255 Tenth Street, San Francisco, California; J. L. TALLMAN, 1631 - 16th Ave., Seattle, Washington; 3707 Santa Fe Avenue, Los Angeles, California

Northwest Sales Agents: ARNOLD MACHY. CO., INC., 149 W. 2nd South St., Salt Lake City, Utah; MINE & SMELTER EQUIPMENT CO., P. O. BOX 788, Phoenix, Arizona

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

The National Magazine of the Construction West

Contents for November, 1942

D. F. STEVENS, Editor

SUBSCRIPTION RATES

The annual subscription rate is $3 in the United States and its possessions. In Canada the annual rate is $4. Single copies 35 cents. Foreign subscriptions cannot be accepted for the duration of the war.

Published by King Publications

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

NORTHWEST OFFICE
2267 E. 62nd Street, Seattle, Wash. . . . . Telephone Kenwood 5494
A. G. LOMAX, District Manager

Please address correspondence to the executive offices, 503 Market Street
San Francisco, California

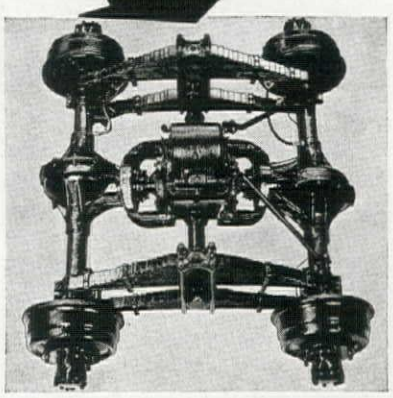
What a Job! All that Men and Machines Can Give!

Here is an accomplishment that is enough to make the old Sourdoughs turn in their graves. Under the urgency of war the unbelievable is being accomplished in record time. Doing their share is a big fleet of trucks with heavy-duty dump bodies and—

THORNTON *Four-Rear-Wheel* DRIVE

You may not be building an Alaskan highway, but you may be building an airport runway or a vital road, or you may be hauling logs or other heavy loads that are essential. You need **BIG-CAPACITY, HEAVY-DUTY TRUCKS.**

Standard heavy trucks are not available—but don't let that stop you. In the U. S. A. and all over the world 1½ to 3-ton trucks have been converted to husky heavy-duty vehicles that do the job better and cost less. Act quickly while Uncle Sam still approves. Contact your nearest Truckstell-**THORNTON** dealer or wire the factory direct. Trained men will engineer this equipment right to your **PARTICULAR JOB.**



Put TWO driving axles under the load instead of one, double the gear speeds, improve springing and load flotation, gain vastly superior tractive ability.

THORNTON TANDEM CO.

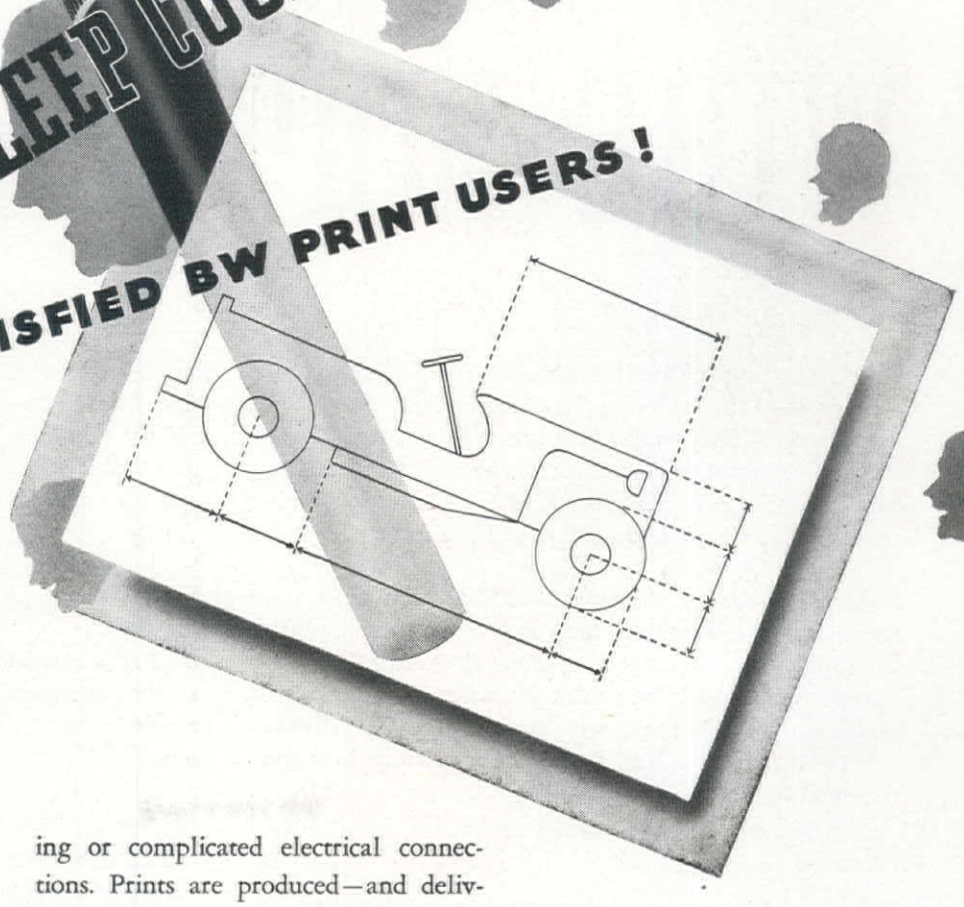
8709-8779 GRINNELL AVE. **DETROIT, MICH.**

Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL

"When you need TRACTION you need THORNTON"

YOU'D GO TO SLEEP COUNTING NOSES

OF SATISFIED BW PRINT USERS!



IF YOU WANT to achieve important time saving in print production—if you want to eliminate the *three* extra time-wasting steps that blue prints require—you'll find the SURE way in Bruning Black and White prints.

That's because Bruning Black and White prints have fully *proved* their time-saving advantages for 12 long years—in hundreds of industries and thousands of businesses—in engineering and drafting departments, in shop and field.

With BW prints, you can reproduce your tracings in seconds—without cumbersome or costly equipment, without bulky tanks or driers, without plumbing or complicated electrical connections. Prints are produced—and delivered dry—in only two steps: Exposure and developing. There's no waiting.

Bruning was the *first* to introduce a successful black and white direct printing process in America—the *first* to demonstrate that these easier-reading black line prints have important advantages over blue prints—the *first* to develop black and white printing and developing equipment which today stands without rival.

Change to Bruning BW prints and be SURE of satisfaction. Mail the coupon for free illustrated booklet on the BW direct printing process.

In this Bruning Printer—one of the many printing and developing machines in the Bruning line—a unique tracing return tray provides far greater speed of handling for the operator—eliminates turning over of tracings. Amazingly compact, this printer provides high volume production in a space of only 62" long and 32" wide.

BRUNING

SINCE 1897

Los Angeles: 919 S. Maple Avenue — San Francisco: 16 Fremont Street

Seattle: 2025 Third Avenue — Chicago: 4700 Montrose Avenue

SPEEDS, SIMPLIFIES AND PROTECTS A NATION'S DRAFTING

CHARLES BRUNING CO., INC. 2118-256R

Los Angeles: 919 S. Maple Avenue
San Francisco: 16 Fremont Street
Seattle: 2025 Third Avenue
Chicago: 4700 Montrose Avenue

Please send me a copy of your free illustrated booklet on the BW direct printing process.

Name.....

Company.....

Address.....

City..... *State*.....

How to choose and use

WIRE ROPE SHEAVES

Practically every piece of wire rope on a "running" job operates over sheaves. By choosing sheaves which are exactly suited to the job, and then keeping those sheaves in good repair, the service life of the wire rope can be greatly lengthened. Here are some simple tips that have been tried and proved in service:

1. *Check groove diameter* — Make sure that the sheave groove is large enough so that it doesn't pinch the rope. The rope must seat freely down into the bottom of the groove. If it rides the sides of the groove, pinching and abrasion will result. Unequal strains will be set up. Much of the service life built into the rope will be lost.

For best results, observe the tolerances listed in the following table:

Nominal wire rope diameter	*Minimum groove tolerance*	*Maximum groove tolerance*
0 to 3/4"	+ 1/32"	+ 1/16"
13/16 to 1 1/8"	+ 3/64"	+ 3/32"
1 3/16 to 1 1/2"	+ 1/16"	+ 1/8"
1 9/16 to 2 1/4"	+ 3/32"	+ 3/16"
2 5/16" and larger	+ 1/8"	+ 1/4"

2. *Check sheave diameter* — The larger the sheave, the longer your wire rope will last. When a rope pulls sharply around a small-diameter sheave, it is subjected to severe bending and crushing. This tends to make the rope "go out of round," causes wear on outside wires, and stresses the various parts of the rope unequally.

It should be remembered that certain machines and equipment must of necessity be designed with smaller sheaves than indicated by best sheave practice. This does not indicate poor design, but means simply that, all factors considered, the disadvantages of smaller sheaves are outweighed by advantages in other features of the design.

But whenever there is a choice between a small sheave and larger one—*the larger diameter sheave should be used.*

3. *Keep grooves and flanges smooth* — After a sheave has been handling heavy loads for some time, the imprint of the rope lay is apt to be worn into the groove of the sheave. A wire rope, working over this sharp-edged imprint, is subject to abrasion and loss of operating efficiency.

If a new rope is put in service over such a sheave, its lay will not fit into the imprints and the "chewing" or "filing" action will be greatly increased. Even if a new rope is not installed, the old rope will be badly abraded as its lay lengthens and enlarges the depth and length of the imprint.

The best way to prevent sheave grooves from wearing prematurely is to select a sheave made of the proper material. Manganese steel sheaves (which are now difficult or impossible to get) are the best all-around sheaves available. Other alloy steels have also been used with success.

However, if you cannot get special sheave steel, the next best thing is to take care of the sheaves you do have. Inspect the sheave grooves frequently. If evidence of wear develops, smooth up the grooves immediately in accordance with groove tolerances which appear in the foregoing table. You will be more than repaid for the effort in longer sheave and rope service and in more efficient operation.

ADAMS EQUIPMENT HELPS TO GET OUR TANKS ROLLING

PHOTO BY U. S. ARMY SIGNAL CORPS

America is building, training and equipping an ultra-modern Armored Force to spearhead our attacks on world-wide fronts. In these vitally important preparations, Adams equipment has done much of the "ground" work . . . Earth has been moved and leveled for war factories to produce tanks, combat cars, trucks and guns; for ordnance and supply depots and training camps. Networks of access roads surround every factory, and every camp is getting its road system and vast motor parks . . . On all these jobs Adams machines have been and are helping to shorten the time table for Victory—to hasten the day when new, improved Adams equipment will again be available for your peace-time needs!

J. D. ADAMS COMPANY

SAN FRANCISCO • LOS ANGELES

● The Adams Heavy-Duty Motor Grader shown above is one of several at work building roads, motor parks, etc., in the United States Armored Force training school at Fort Knox, Kentucky—probably the largest training base of its kind in the world. The tanks shown above are on maneuvers with armored force trainees. The latest models, of course, are reserved for advanced training and combat duty.

ADAMS EQUIPMENT IS SOLD IN THE WEST BY THE FOLLOWING DISTRIBUTORS

HOWARD-COOPER CORPORATION, Portland, Seattle, Spokane, Eugene, Walla Walla; THE LANG COMPANY, Salt Lake City; THE O. S. STAPLEY COMPANY, Phoenix, Ariz.; McKELVY MACHINERY COMPANY, Denver, Colo.; McCHESNEY-RAND EQUIPMENT CO., Albuquerque, New Mexico; INTERMOUNTAIN EQUIPMENT CO., Boise, Idaho; INDUSTRIAL EQUIPMENT CO., Billings, Montana; ALLIED EQUIPMENT, INC., Reno, Nevada; LOWRY EQUIPMENT COMPANY, Redding, Calif.; BUTTE TRACTOR & EQUIPMENT CO., INC., Sacramento, Calif.; GLEN CARRINGTON CO., Fairbanks, Alaska.

ADAMS

ROAD-BUILDING AND EARTH-MOVING EQUIPMENT

Ideas that dare are the Ideas that lead

You never could keep out front by doing "business as usual." This is truer today than ever before. War production calls for daring new ideas, daring new methods.

But to be successful, pioneering must be done with judicious daring—not reckless abandon.

The ability of Shell men to see the *entire* picture, to fit the use of lubricants to the task of greater production, by attacking a problem at its source rather than in its narrow relation to lubrication alone, has won the confidence of busy production executives. Their practical pioneering is saving time, improving products or services, lengthening machine and tool life for industry across the nation.

Are your lubricants tuned to the increased tempo of today's machines? Call Shell and be sure!

OIL IS *Ammunition* -USE IT WISELY

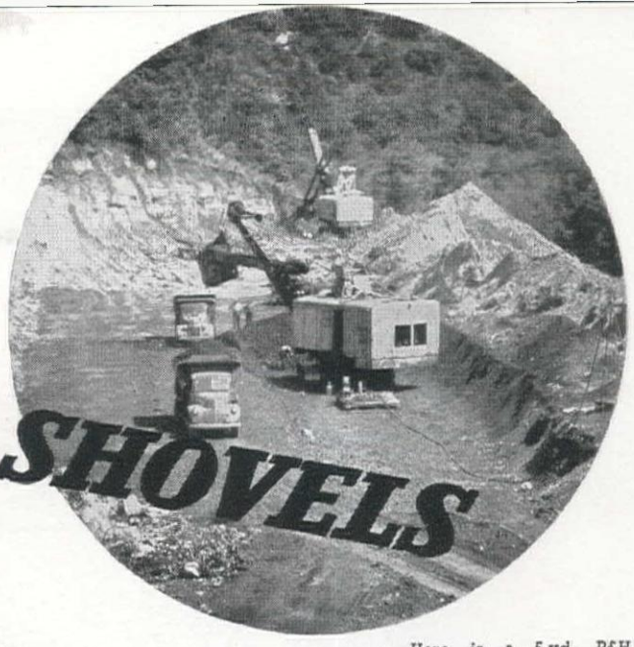
SHELL

SHELL *INDUSTRIAL LUBRICANTS*

★ ★ ★ ★ ★

P&H

ELECTRIC SHOVELS



Here is a 5-yd. P&H Electric Shovel stripping overburden and a P&H 2-yd. Electric loading coal.

Backing up the War effort.

BE A STEP AHEAD WITH P&H

MORE for your excavator dollar.

Behind Uncle Sam's war effort, the big P&H Electric Shovels are in there digging *where* it counts—in the *way* that counts—*swiftly, steadily!*

MORE POWER per yard of dipper than on any other excavators.

GREATER STRENGTH per pound of weight with tougher construction of rolled alloy steels.

EXTRA RIGIDITY with both upper and lower structures welded as single units.

These and other basic P&H advantages are found throughout the entire line of P&H excavators, large and small.

General Offices: 4490 West National Avenue, Milwaukee, Wisconsin

HARNISCHFEGER CORPORATION: 82 Beale Street, San Francisco, Calif.

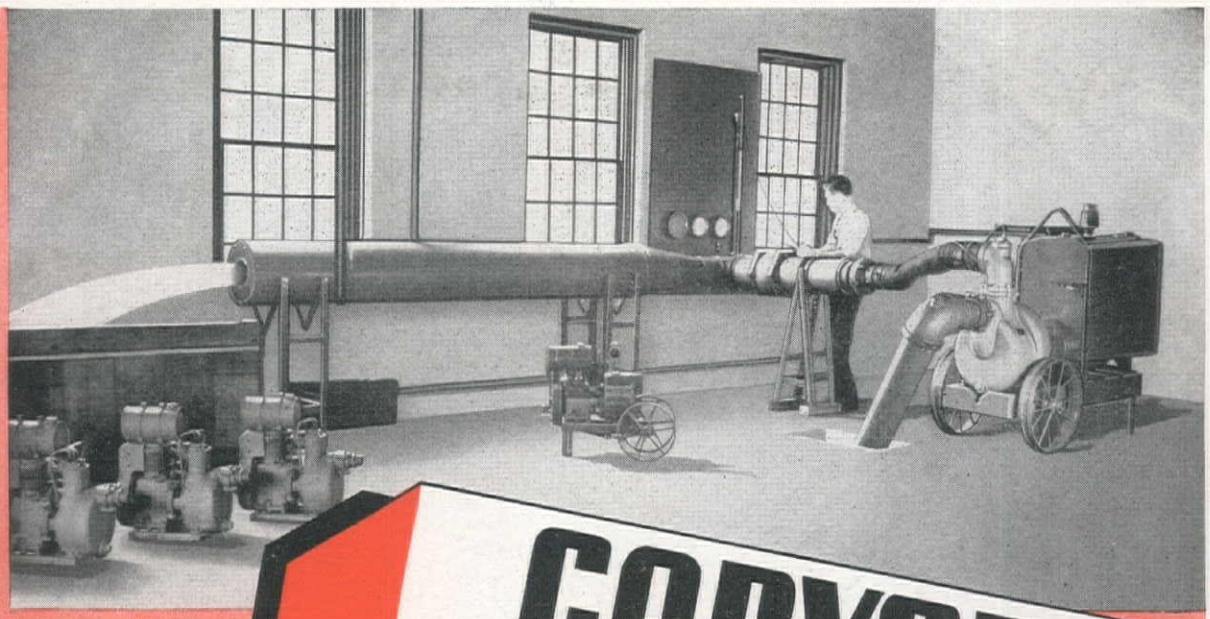
Warehouses, Service Stations: Seattle, Los Angeles, San Francisco

Portland, Ore.: Loggers & Contractors Machinery Co., 240 S. E. Clay St.; Reno, Nevada: R. D. Jenkins & Son, 202 E. 2nd St.; Willows, Calif.: Willow Motor Sales Co.; Albuquerque, N. M.: Mr. Floyd Ames, P. O. Box 372; Great Falls, Mont.: Midland Implement Co.; Salt Lake City, Utah: National Equipment Co., 101 West Second St. So.; Seattle, Wash.: Glenn Carrington & Co., 91 Columbia St.; Spokane, Wash.: F. M. Viles & Co., 1007 Second Avenue West; Redding, Calif.: Lowry Tractor & Equipment Co., 2637 Angelo St.; Napa, Calif.: Berglund Tractor & Equipment Co., 1224 Third St.; Prescott, Ariz.: Arizona Mining Supply Co.

Awarded the Navy "E" for excellence in war production, P&H displays it also as a pledge of future effort.

HARNISCHFEGER CORPORATION

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



NO GUESSWORK . . . .

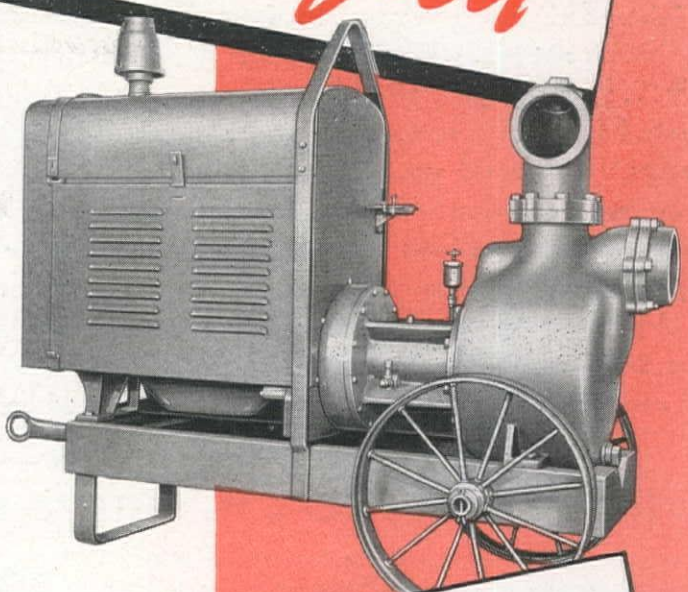
Every Carver pump gets a performance test like this before shipment. Conformance with AGC standards, with our capacity ratings, is thoroughly checked . . . all in addition to rigid inspections for accuracy and quality at every stage of manufacture.

CARVER PUMPS are Certified

YOU *know* what a Carver pump will deliver *before* you buy one, because Carver performance is *certified*. Every pump is thoroughly checked for performance at the factory . . . when it gets to your job, you can be sure it fully conforms to AGC specifications and our own high performance standards.

On construction jobs all over the world, Carver pumps are setting records for steady, unfailing performance under all conditions . . . handling jobs too tough for other pumps, staying on pump-killing jobs month after month without a let-down.

Capacities range from 5,000 to 120,000 GPH, gas-engine or electric motor-driven, in a variety of portable and stationary mountings. Prompt deliveries on orders carrying A-1-C or better priorities . . . write, wire or phone for full information.



DEALERS WANTED

Carver's complete pump line is available to aggressive dealers in several U. S. territories. Ample plant capacity assures prompt service; full support with extensive advertising and sales helps offered. Write or wire for details of Carver dealership plan.

CARVER PUMP CO.
Muscatine
Iowa

CARVER CENTRIFUGAL *Certified* PUMPS

SERVICE

...as close as your phone

You awoke on the morning of December 7, 1941, to the dawn of the biggest revolution in the dirt-moving industry. Jobs so big have since been awarded it has been necessary to pool equipment and resources to get 'em done on time. This may have taken you to new lands... far from your original camping grounds.. far from your original Allis-Chalmers dealer. But it has not taken you away from Allis-Chalmers service. Wherever you are... you can get the same A-1 service to which you are accustomed. Spread over the U. S. A., in Alaska, Canada, in neutral and Allied Nations around the world are Allis-Chalmers dealers ready and anxious to keep your equipment rolling. They are as near as your 'phone — with a staff of factory-trained mechanics, whose skilled hands quickly adjust, repair or rebuild — no matter what the job might be... no matter the time of day or night. For your convenience, a booklet "Service At Your Door" has been prepared, showing where the continental Allis-Chalmers dealers are located and the territories they serve. Send for it... keep it... use it!

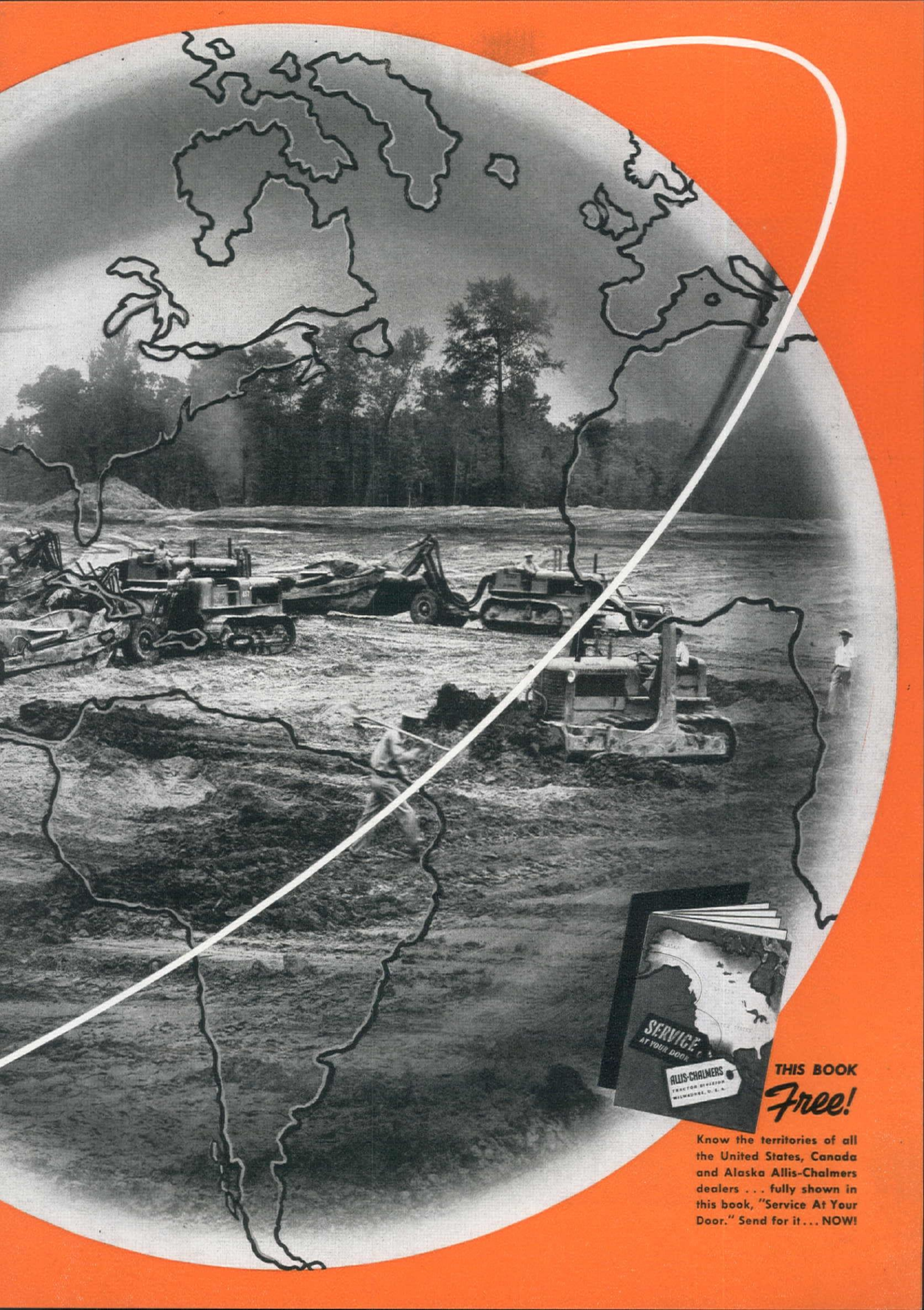
• • •

PLENTY OF LIFE LEFT IN THIS OLD BOY!

Have your Allis-Chalmers dealer look over some of the machines you've discarded because they appeared a bit obsolete. Chances are, he can put them back in operating shape — at least for limited or standby service. Every machine is needed to whip the Axis! The demand for roadbuilding equipment is 3 to 4 times the supply! If you have no use for your old outfits, your Allis-Chalmers dealer probably knows someone who does. Cooperate to help win the war!

ALLIS-CHALMERS

TRACTOR DIVISION · MILWAUKEE · U. S. A.



THIS BOOK

Free!

Know the territories of all the United States, Canada and Alaska Allis-Chalmers dealers . . . fully shown in this book, "Service At Your Door." Send for it . . . NOW!

LIMA CRANES meet demands for Extraordinary Service

Cranes - LIMA Type 750

Boom - 120′—machine has been in operation on similar work since December, 1941 never using less than 100′ boom. Original boom hoist cable is still in use. (June 20, 1942)

Jib - 20′

Bucket - 46 Cubic Feet

Weight of Bucket and Material - 8400 lbs. or over 4 Tons

Hoist - Single Line

Job - Ft. Greene Housing Project

Location - Brooklyn, N. Y.

Contractors - Three Companies, Inc.

CORBETTA CONSTRUCTION CO., INC.
WILLCOX CONSTRUCTION CO., INC.
KNICKERBOCKER CONCRETE ARCH CONSTRUCTION CO., INC.

On the $21,000,000 Fort Greene Housing Project in Brooklyn, New York, LIMA cranes are showing the way to hoist concrete on a single line to a height of 14 floors and do it quickly, safely and economically.

General Superintendent P. L. Moccia has this to say about the LIMA cranes:

"The heavy truck-frame casting, massive crawlers and resulting low center of gravity on these LIMA cranes enables them to handle a long boom without tendency toward tipping. The positive lever control makes it possible for the operator to have the feel of his load at all times and to work surely and quickly. This saves us time on the job."

Mr. C. H. Davidson, Project Manager, also points out that their exceptional progress was further due to planning the job so as to permit continual pouring by cranes on one or another of the 38 units which he admits, required streamlined coordination.

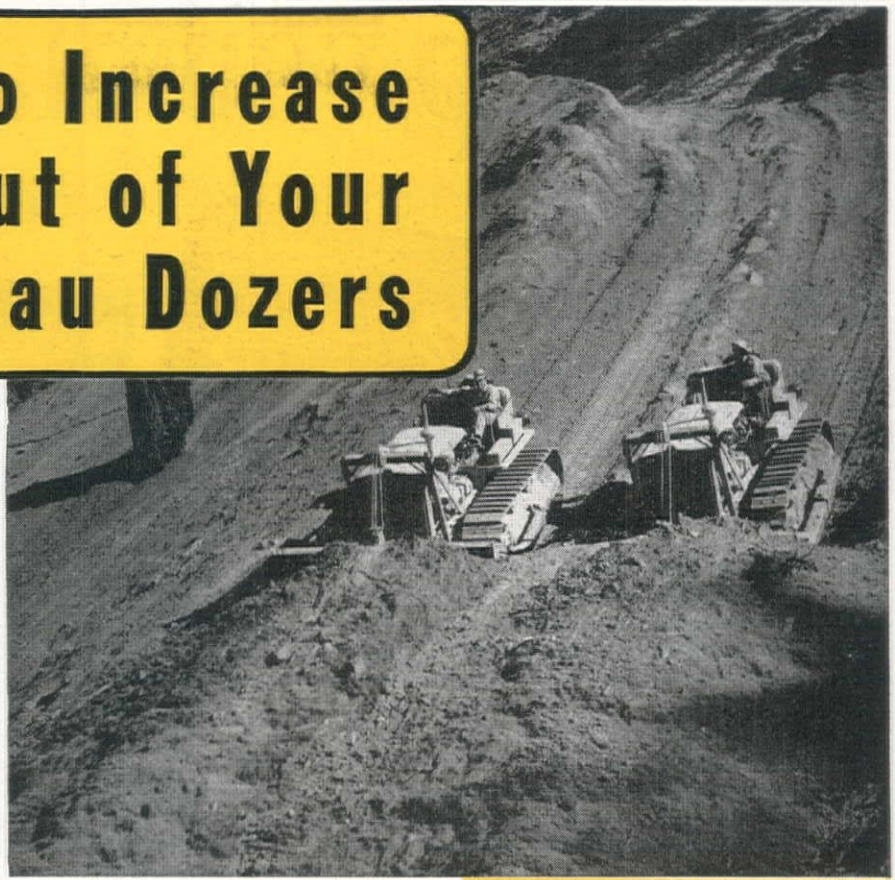
LIMA LOCOMOTIVE WORKS, INC., Shovel and Crane Division, Lima, Ohio. In the West: Seattle: Branch Office, 1932 1st Ave. So. Spokane: General Machinery Co., E. 3500 Block. Riverside. Portland: Feenaughty Machinery Co., 112 S. E. Belmont St. Boise: Feenaughty Machinery Co., 600 Front. San Francisco: Garfield & Co., 1232 Hearst Bldg. Los Angeles: Smith Booth Usher Co., 2001 Santa Fe. Denver: F. W. McCoy Company, 956 Cherokee St. Phoenix: Smith Booth Usher. Helena, Mont.: Steffect Equipment Company, Main and Cutter Sts.

LIMA

SHOVELS ◆ CRANES ◆ DRAGLINES

A TYPE AND SIZE FOR EVERY JOB

2 Ways to Increase the Output of Your LeTourneau Dozers



These operators make use of LeTourneau Dozers side by side doubly effective by dozing several loads to the brink of the hill before starting the trip down together.

Doze in Slot or Work Two Dozers Side by Side to Step Up Yardage

Here are two operating tricks, which will enable you to increase Dozer yardage on excavating and stripping jobs. Try them with your LeTourneau Dozers on such work as:

Short haul excavation; shoving sand, gravel or ore to hoppers, conveyors or grizzlies; stripping overburden on short hauls; wasting spoil, especially in large banks; feeding material to shovels.

See for yourself how they increase the material you can handle without extra men or extra tractors.

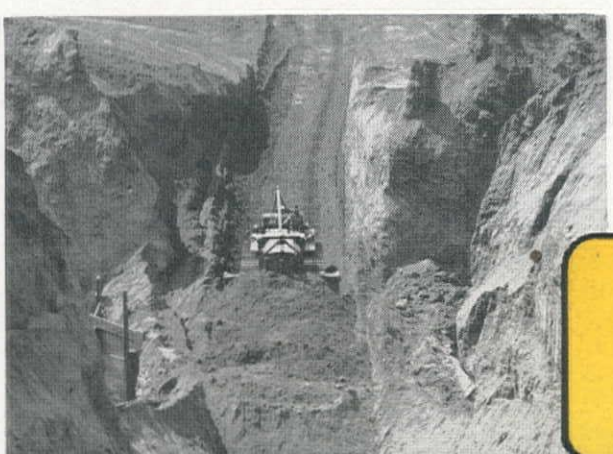
Build Up Load by "Slot" Dozing

With a single Dozer you gain extra yardage by working in a narrow bowl-wide cut or "slot." Sides of cut act as side-boards, keep material from windrowing out the ends, and build up the load ahead.

Working Two Up

If you have two tractors equipped with LeTourneau Dozers, work them side by side whenever possible. The extra material which rolls along between the Dozer bowls will give you an extra yard or two each trip.

EXTRA PAY YARDAGE PER TRIP



LeTourneau Dozer feeds clay to portable trap for truck loading at Santa Fe Dam. Note how "slot" keeps material from windrowing and helps build up load.

Got a Tractor, But No Dozer?

"Caterpillar" tractors at work are more valuable right now than gold. If your job carries a priority and you need a LeTourneau Dozer or Power Control Unit to keep your "Caterpillar" tractor busy, we can supply you without a WPB release (order L-53). Ask your LeTourneau "Caterpillar" dealer for details NOW. He can help you with your service and repair problems, too. Make him your Victory Construction headquarters.

LETOURNEAU

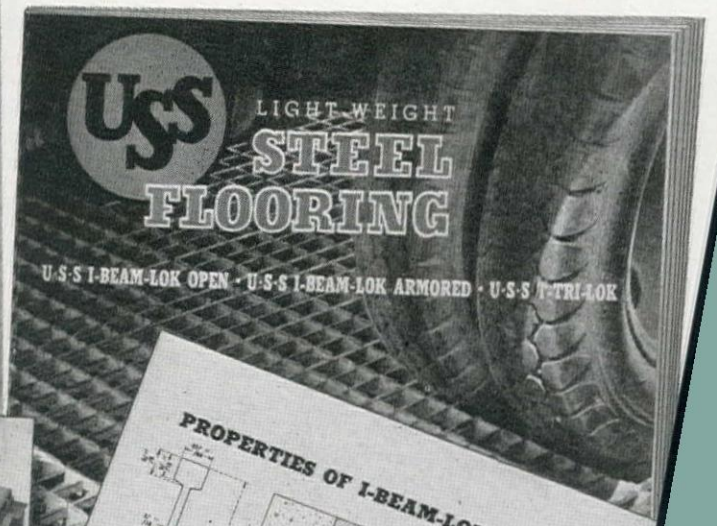
PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

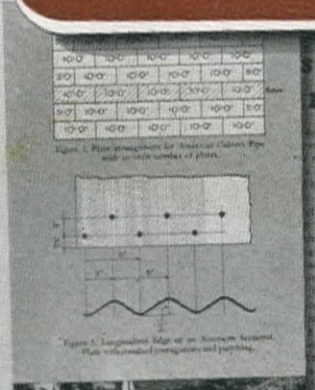
Manufacturers of DOZERS, CARRYALL* SCRAPERS, POWER CONTROL UNITS, ROOTERS*, SHEEP'S FOOT ROLLERS, TOURNAPULLS*, TOURNAROPE*, TOURNATRAILERS*, TOURNAWELD*, TRACTOR CRANES. *Name Reg. U. S. Pat. Off.

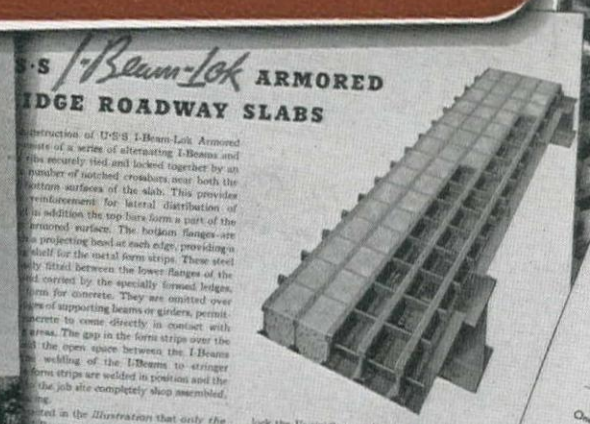
To help you plan *better*

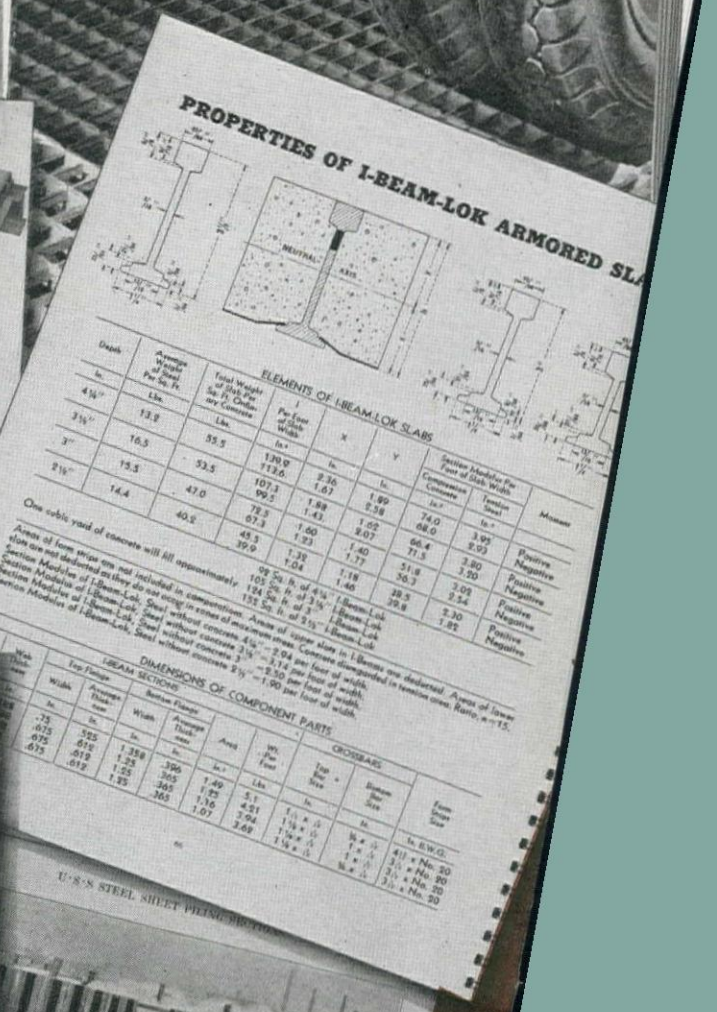
Send for these catalogs!

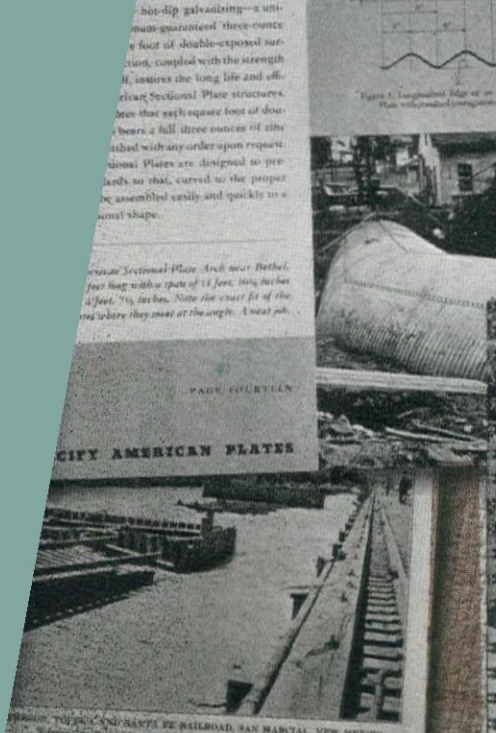
crammed with facts, engineering data and practical information that will help make your efforts more productive

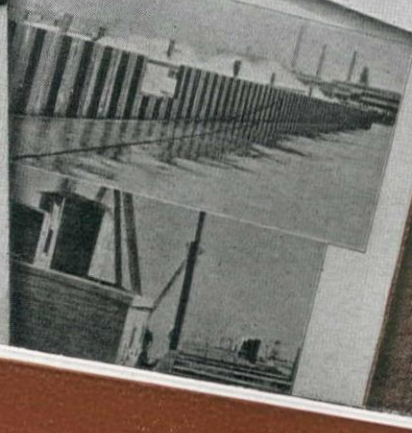












POURING AND FINISHING CONCRETE

No special equipment is required for mixing or depositing concrete. The concrete can be delivered direct to the point of pouring or placing by means of transit mixers, trucks or other conveyances. Prior to the pouring of the concrete the U·S·S I-Beam-Lok Armored units should be cleaned out with compressed air or flushed out thoroughly with water from a hose. The concrete should be poured and leveled off so that it is at least 1¼" above the top of the finished surface prior to vibrating.

In order to assure a good job without voids the use of a vibrator is necessary. A light jack hammer or pavement breaker with a steel plate or angle cushion between the hammer head and the I-Beam-Lok unit will be found satisfactory. Vibrators are also satisfactory. [illegible] of the type which

It is essential that ample concrete be deposited so the finish can be worked down to the desired level. Addition of thin layers of concrete to compensate for underfilling may lead to serious difficulties later, such as peeling or chipping of the added layers after a short life under traffic.

While the water-cement ratio must be kept down so as to produce a slump not exceeding four inches, a smooth flowing workable mixture is desirable. The design of the concrete or the proportions of the aggregates should be such that harshness in the concrete is avoided. Harshness, in addition to increasing the difficulties of placing, also has a tendency to reduce the imperviousness of the slab.

The slab should be screeded and floated to a smooth finish as quickly as practicable after pouring. Excessive work on the top surface should be avoided, limiting the finish to that secured by a wooden float.

U·S·S I-BEAM-LOK

U·S·S STEEL SHEET PILING

UNITED

and build *faster*...
on vital war construction jobs

HERE, boiled down for your ready reference, are the pertinent and essential facts covering U·S·S Steel Bearing Piles, U·S·S Steel Sheet Piling, U·S·S Lightweight Floors, U·S·S Culverts.

Written by engineers for engineers, the data assembled in these catalogs are designed primarily to assist you in the most practical manner to make your planning more effective—and to help you expedite construction, where you have been granted sufficiently high priorities to use these products.

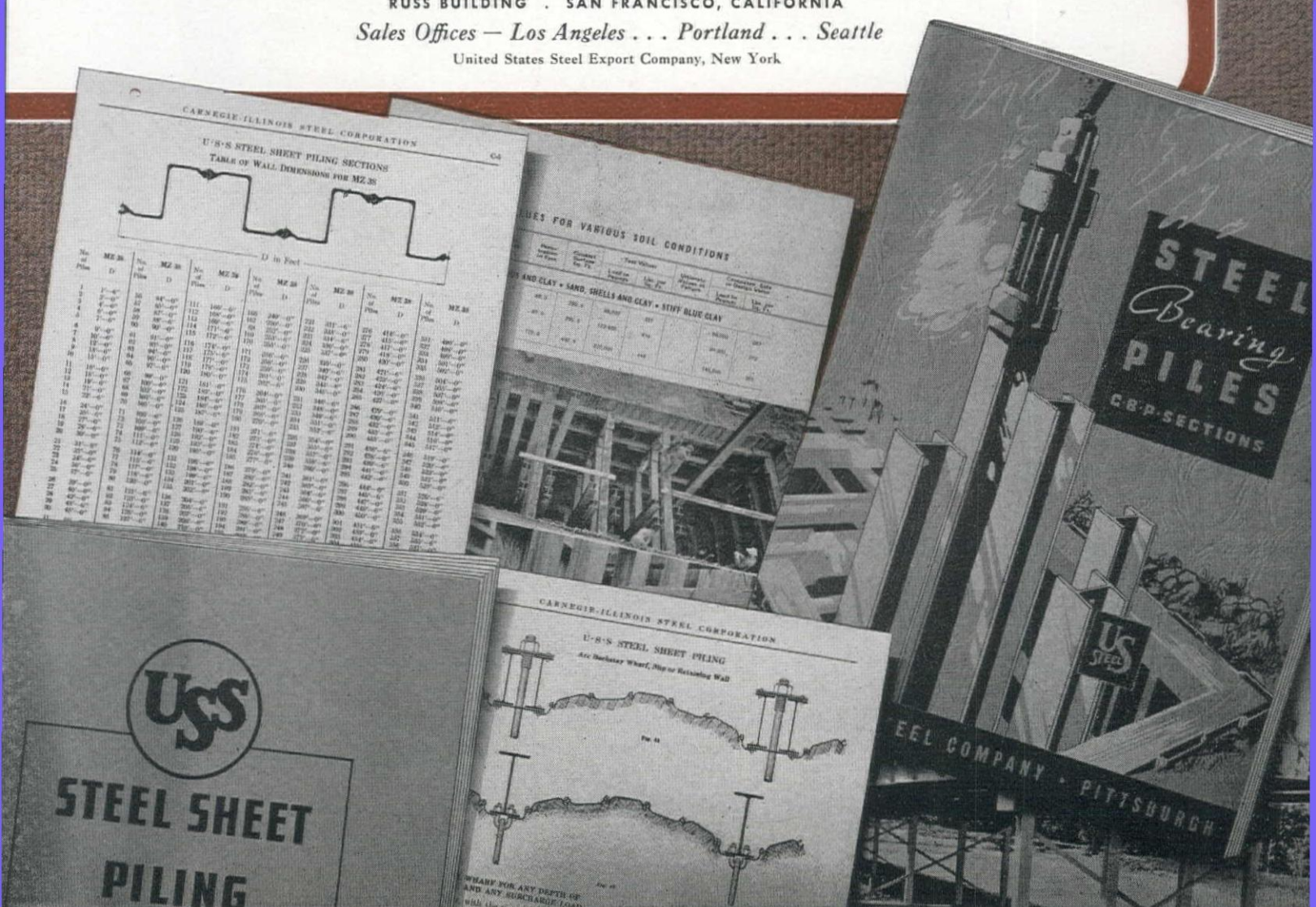
If your particular problems go beyond the comprehensive limits covered in these pages, the services of our engineers are available. Not only is their cooperation and assistance valuable in applying these well known U·S·S products most efficiently to your designs, but they are prepared to work with you in figuring out alternate construction that, wherever possible, will save steel for other vital national requirements. (Please write for these catalogs on your company letterhead.)

COLUMBIA STEEL COMPANY

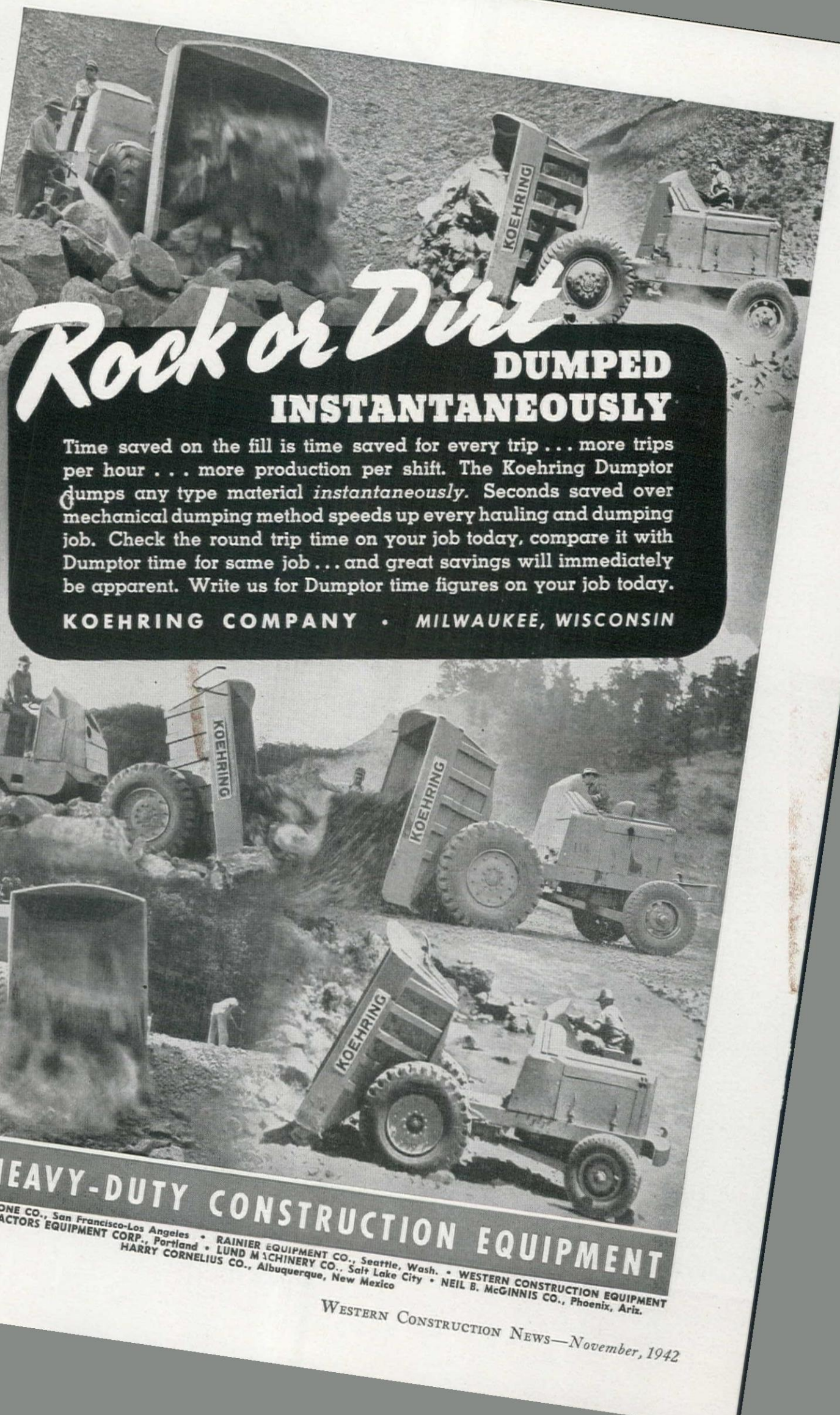
RUSS BUILDING . SAN FRANCISCO, CALIFORNIA

Sales Offices — Los Angeles . . . Portland . . . Seattle

United States Steel Export Company, New York



STATES STEEL



Rock or Dirt DUMPED INSTANTANEOUSLY

Time saved on the fill is time saved for every trip . . . more trips per hour . . . more production per shift. The Koehring Dumptor dumps any type material *instantaneously*. Seconds saved over mechanical dumping method speeds up every hauling and dumping job. Check the round trip time on your job today, compare it with Dumptor time for same job . . . and great savings will immediately be apparent. Write us for Dumptor time figures on your job today.

KOEHRING COMPANY • *MILWAUKEE, WISCONSIN*

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

HARRON, RICKARD & McCONE CO., San Francisco-Los Angeles • RAINIER EQUIPMENT CO., Seattle, Wash. • WESTERN CONSTRUCTION EQUIPMENT CO., Billings • CONTRACTORS EQUIPMENT CORP., Portland • LUND MACHINERY CO., Salt Lake City • NEIL B. McGINNIS CO., Phoenix, Ariz. HARRY CORNELIUS CO., Albuquerque, New Mexico

MACMILLAN PIONEERS AGAIN!

New 1-Quart Container Without Metal for RING-FREE MOTOR OIL!

NON-REFILLABLE

HERE IT IS! The quart container for motor oil which motorists and dealers have been expecting!

And it's Macmillan who pioneers again! A "can" without metal for RING-FREE!

With the steel mills converted to war purposes, the supply of metal cans for oil has dwindled and virtually disappeared. That was natural and right.

But motorists, wanting to be sure of getting RING-FREE—in its own quickly identified quart containers—have been hoping that this difficult packaging problem would be solved.

Now the new quart is ready! Now every *independent* dealer selling RING-FREE can open this new container and put in the fill of RING-FREE every car has been thirsting to get!

Among other things, Macmillan pioneered with RING-FREE motor oil ten years ago. There never has been an oil like it. There can't be, because it's refined by an exclusive, patented process.

That's why it removes carbon, saves as high as 10 per cent on gas, reduces friction fast, saves wear and repairs and lengthens the life of your car.

Now Macmillan pioneers again—after months of search and research—bringing out a metal-less container to assure motorists of getting RING-FREE!

The Macmillan sign is shown at *independent* filling stations, garages, and car dealers. Drive in and get your fill of RING-FREE today!

MACMILLAN
RING-FREE
MOTOR OIL

35c
A QUART IN U.S.A.

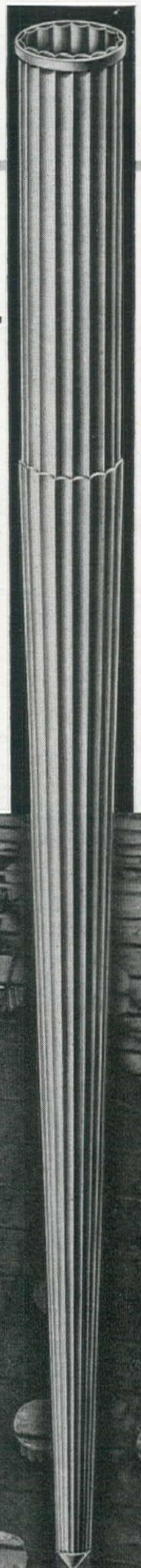
MACMILLAN PETROLEUM CORPORATION
50 West 50th Street, New York
624 South Michigan Avenue, Chicago • 530 W. 6th Street, Los Angeles

Like Driving Nails in a Board!

MONOTUBES Go Down Easy— Speed Foundations FOUR WAYS

WHEN you're driving to beat wartime construction schedules; when every minute counts and you can't afford delays anywhere along the line; get off to a flying start by using Union Metal Monotubes for the installation of cast-in-place concrete piles.

Tapered for fast penetration, all-steel for strength and rigidity, Monotubes provide these four time-saving advantages:



1 ***SPEEDY Handling.*** Monotube steel casings are light in weight for fast and economical handling.

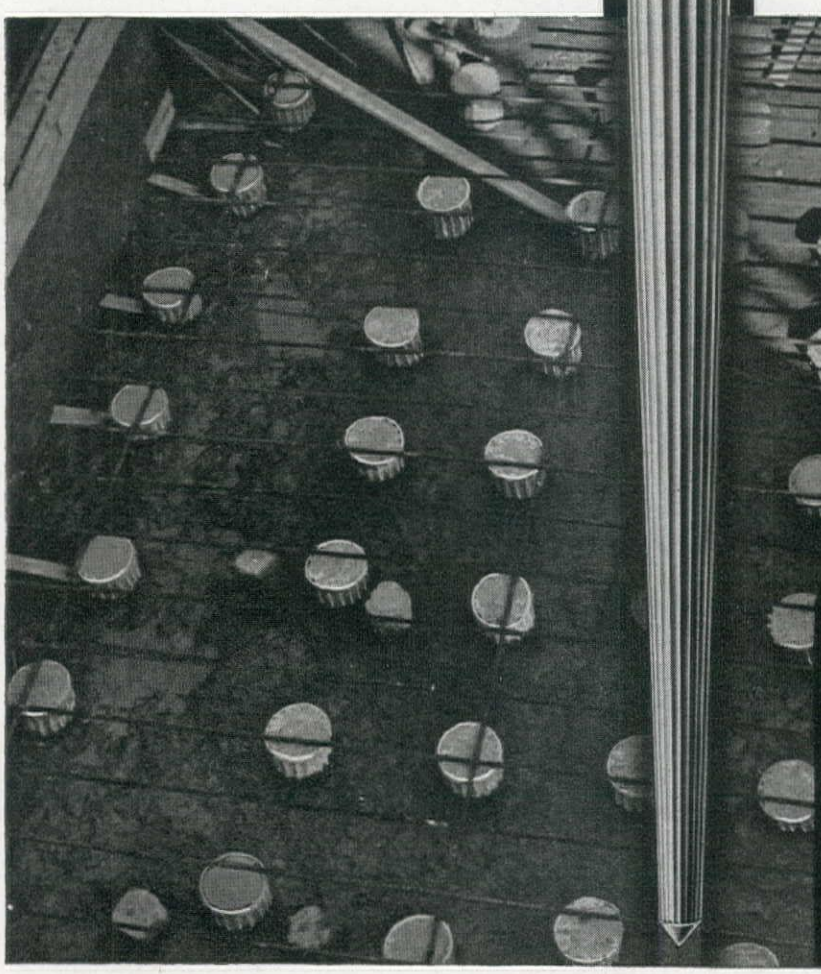
2 ***SPEEDY Driving.*** Tapered Monotubes are so strong and rigid they require no heavy core or mandrel and can be driven with average job equipment (crawler crane, equipped with standard leads and hammer).

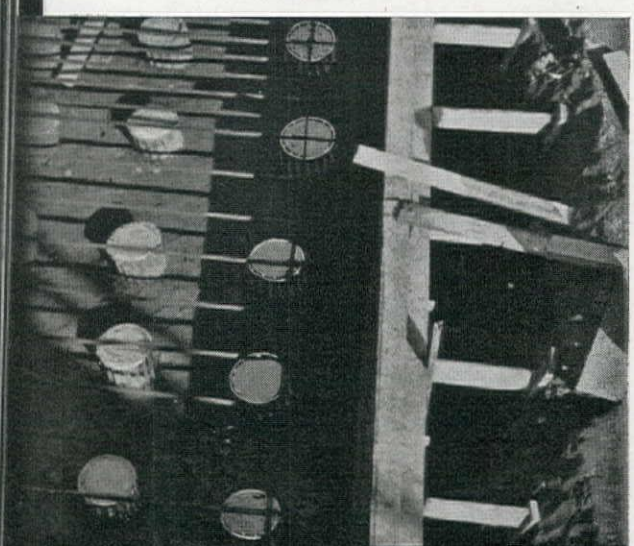
3 ***SPEEDY Extension.*** Use of Extendible Monotubes permits installation of varying pile lengths on the job without delay or waste—even in low headroom.

4 ***SPEEDY Inspection.*** Hollow, tubular design enables you to inspect casing quickly and thoroughly from top to toe, prior to concreting.

Monotubes are available in a wide range of gauges, sizes, and tapers to meet the most exacting requirements in any soil condition, and Union Metal engineers are always at your service. Write for your copy of the Monotube catalog 68A.

Remember—*"More Production means Axis Destruction"*





THE UNION METAL MANUFACTURING CO.
CANTON, OHIO

SPEEDING JOBS with COMPRESSED AIR

Saving Fuel and Time with MOBIL-AIR

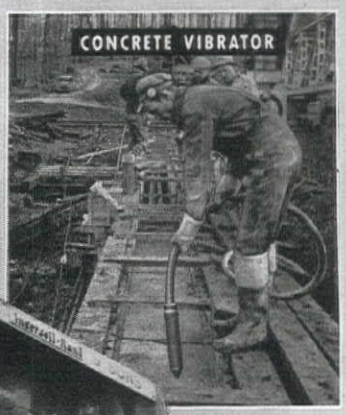
A few pounds of metal...a Jackhamer, for instance, operated by compressed air...transforms a man of the street into a tower of strength. By multiplying his efforts a hundredfold and thus increasing his productivity, he becomes a better soldier on the home front...just as formidable to a mountain of rock as a Flying Fortress bombardier is to his target.

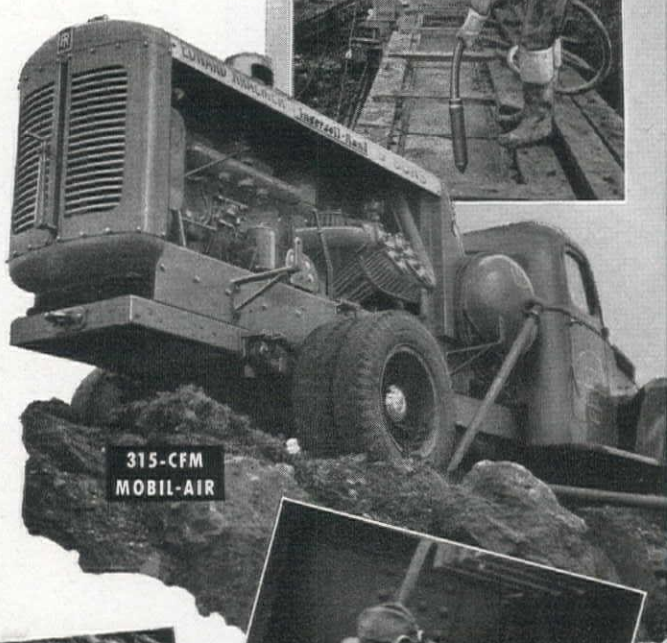
Compressed-air-operated tools are light in weight, easily handled, quickly adapted to many kinds of work, and economical to operate and maintain. Many jobs cannot be done as well, or even at all, with any other form of power. These are a few of the reasons why Ingersoll-Rand compressors and air tools are so necessary in building our vital roads, air fields, runways, pipe lines, bridges, tunnels, factories, planes, tanks and ships.

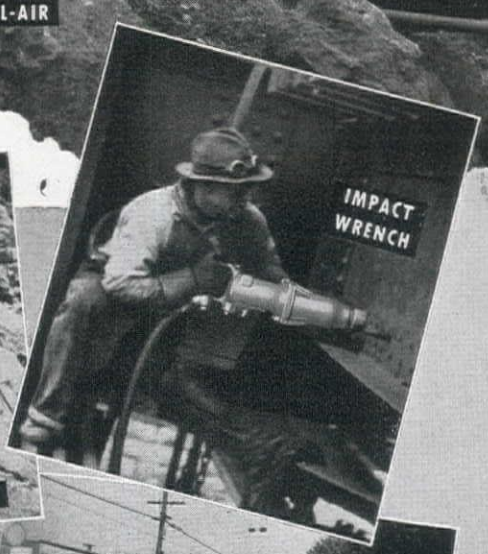
This page illustrates outdoor applications of typical Ingersoll-Rand air tools and Ingersoll-Rand's MOBIL-AIR. And here's what users are reporting about this portable compressor:

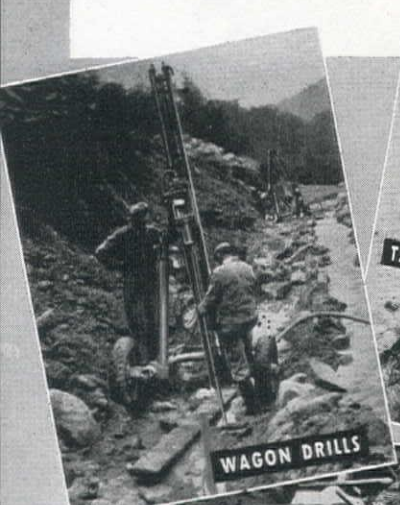
Fuel Savings of 35% or more—based on comparisons with conventional-type portables. One reason is the patented Drill-More Regulator, which adjusts the engine speed to the amount of compressed air consumed. Wasteful idling periods are eliminated.

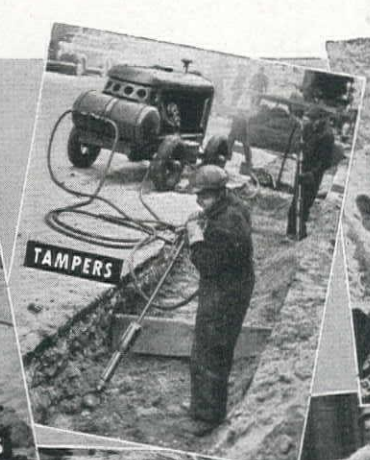
Speedier Work by Air Tools—and a consequent speed-up of jobs—is effected by the action of the Drill-More Regulator. MOBIL-AIR Compressors maintain more uniform and higher average air pressures...air tools operate as much as 15% faster than the same tools used with conventional portables.

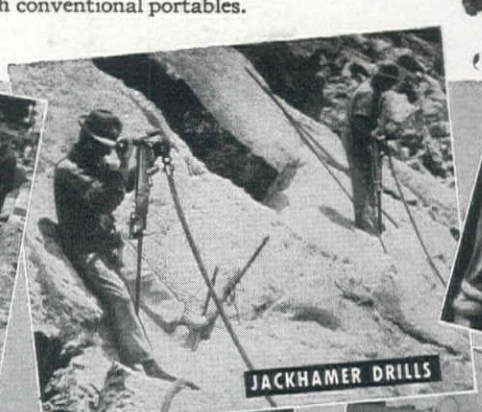


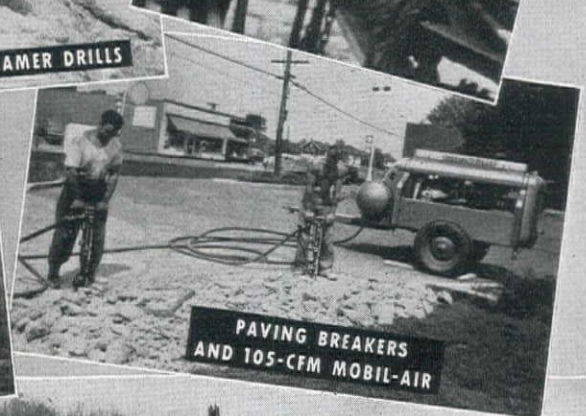


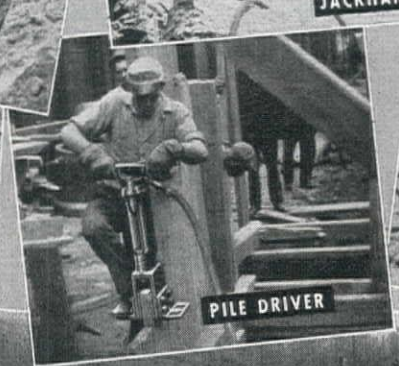




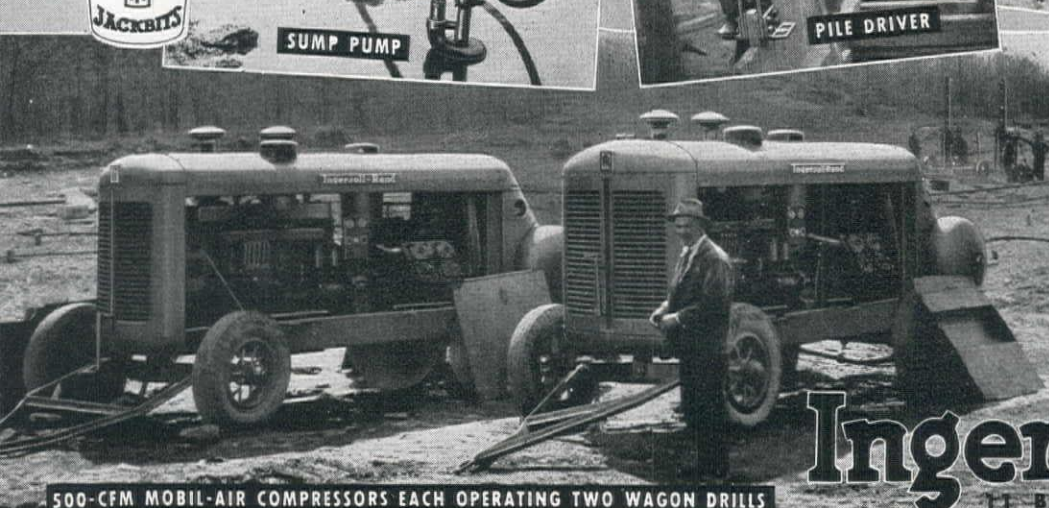








SOLVE YOUR DRILLING PROBLEMS WITH JACKBITS



Ingersoll-Rand

11 BROADWAY, NEW YORK, N.Y. 2-202

DON'T JUNK IT!

Airco Apparatus Repair Stations are located in the cities shown above.

HAVE ITS LIFE RENEWED
AT AN AIRCO APPARATUS STATION

New oxyacetylene torches, tips and regulators are becoming more and more difficult to obtain every day. Therefore, it's imperative to make existing apparatus last as long as possible.

Worn or damaged Airco equipment should never be scrapped before it is examined at an Airco Apparatus Repair Station. In most cases it will be repairable—and returned to you, quickly, as good as new.

Avail yourself of Airco's national repair service — staffed by company trained and supervised men. Regardless of your location, there's an Airco Station in your area.

Air Reduction

General Offices: 60 EAST 42nd ST., NEW YORK, N. Y.

IN TEXAS

MAGNOLIA-AIRCO GAS PRODUCTS CO.

General Offices: HOUSTON, TEXAS

OFFICES IN ALL PRINCIPAL CITIES

AIRCO WILSON

OXYGEN IS PRODUCTION — *Don't Waste it!*

WESTERN OFFICES: EMERYVILLE, CALIF. • PORTLAND, OREGON • LOS ANGELES, CALIF. • SEATTLE, WASHINGTON

THE JOB WILL BE DONE

IT'S FORTUNATE for industry that "Caterpillar" Diesel Tractors, Motor Graders, Engines and Electric Sets have always been built "better than they had to be." It's doubly fortunate that "Caterpillar" has built up the strongest dealer-service organization in the heavy-duty machinery business.

Because today these tough machines have got to shoulder a load beyond their expected years of service or rated capacity — to carry their share of the toughest construction and production job in history.

Your "Caterpillar" dealer has met this challenge. He knows the sturdy quality that's in "Caterpillar" equipment. He knows the equipment itself — down to the last nut and bolt. He has confidence in the ability of the machines now in use, and in his own ability to keep 'em rolling.

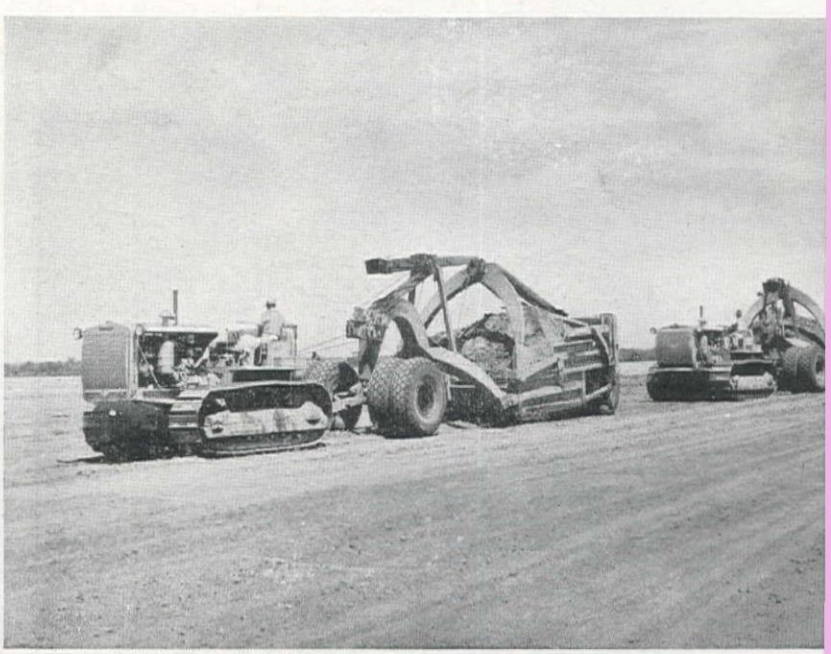
Look into his parts room. Right now he has a bigger stock of genuine "Caterpillar" replacement parts than ever before. Look at the service facilities he maintains — the specialized tools and the trained mechanics, ready to do a thorough job on your tractor or engine, night or day.

You're working all your machinery extra hard. Time is vital on the jobs you're doing. So don't put off servicing your "Caterpillar" equipment till you're stopped by a major breakdown. An inspection now by your "Caterpillar" dealer may save you a lot of hours — and dollars.

When there's a war to win, it's a comfort to know good men are fighting on your side. Your "Caterpillar" dealer is right with you. He's ready to help you look your "Caterpillar" equipment over — *get it fixed* if it needs repairs — *keep it working* where its rugged power and fuel economy will count — and *make it last* till the day of victory comes.

SEVEN WAYS TO LENGTHEN THE LIFE OF YOUR "CATERPILLAR" EQUIPMENT

- *Follow implicitly the Operator's Instruction Book.*
- *Have a complete inspection check made.*
- *Have track pins and bushings turned to increase track life.*
- *Have worn track rollers built up.*
- *Have valves ground and valve seats renewed.*
- *Have clutches relined.*
- *Have cylinder liners etched for added life.*



CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

CATERPILLAR TRACTOR CO. • SAN LEANDRO, CALIFORNIA • PEORIA, ILLINOIS

TO WIN THE WAR: WORK—FIGHT—BUY U. S. WAR BONDS!

Investment in the FUTURE

NOW - That Future is Today!

We prepared for the future—back in those pre-war days when Hercules engineers developed SPEEDRAULIC Hoists, incorporating the exclusive Hercules "Center Lift" principle of hoist action in a complete series of powerful and easy acting hoist units for every dump body requirement.

With the guts to handle the full capacity of any truck chassis, SPEEDRAULIC Hoists and dump bodies are paying dividends today. Dividends of bigger loads, faster action and longer service on construction fronts all over the world. The brute strength of the Hercules "Center Lift" hoist mechanism is transmitted to the dump body by bridge type lift arms, and controlled by a Balanced Piston Valve which assures finger tip control of hoist action at all times. SPEEDRAULIC Hoists mount with bodies of any length. There are no chains, springs or "gadgets" required.

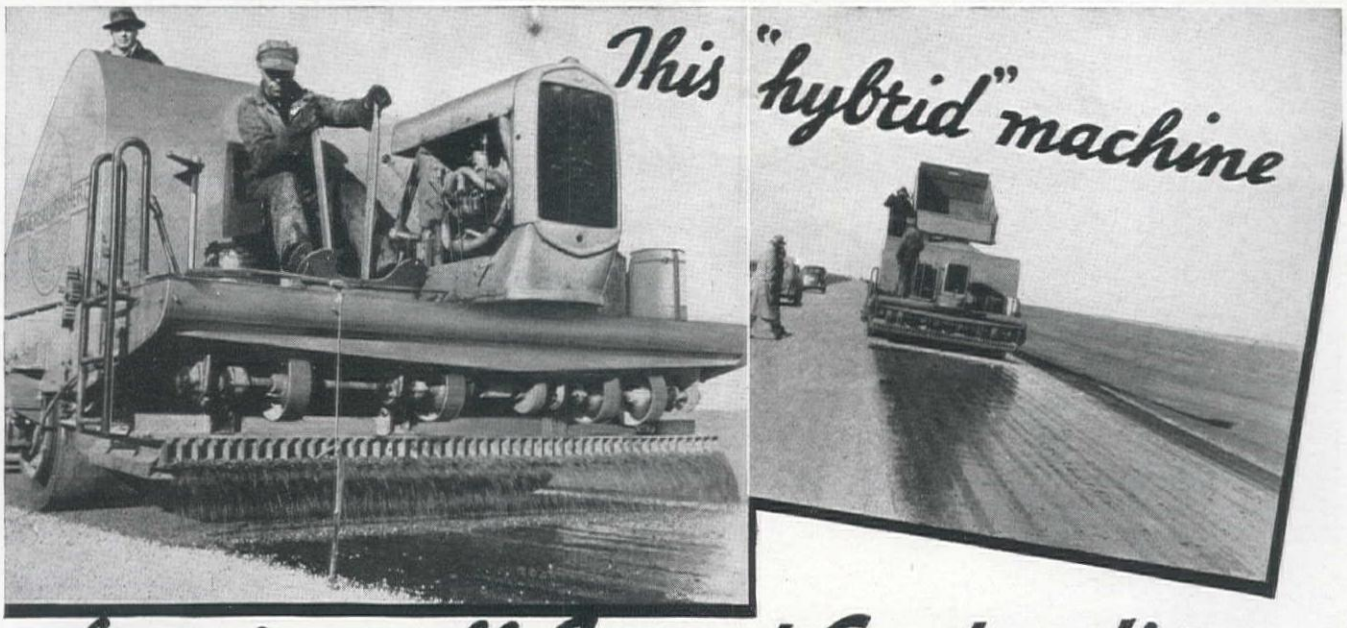
HERCULES SPEEDRAULIC HOIST SPECIFICATIONS

Hoist Model	Wt. Lbs.	Dia. Cyl.	Displ. Cu. In.	Length Cyl.	Length Stroke	Dia. of Piston Rod	No. of Piston Rings
6X	1130	6"	593	28"	21"	2"	4
7X	1170	7"	809	28"	21"	2"	4
8X	1200	8"	1055	28"	21"	2½"	4
10X	1450	10"	1963.5	32"	25"	3"	4

SPEEDRAULIC HERCULES HOISTS

HERCULES STEEL PRODUCTS CO.
GALION, OHIO

UTILITY TRAILER SALES, Seattle, Wash.; NEWELL TRUCK EQUIPMENT CO., Portland, Oregon; A. PASTERIS CO., Oakland, Calif.; STANDARD CARRIAGE WKS., INC., Los Angeles, Calif.; STANDARD IRON WORKS, San Diego, Calif.; SAWTOOTH CO., Boise, Idaho; WESTERN CONSTRUCTION CO., Billings, Montana; WYOMING AUTOMOTIVE SUPPLY CO., Casper, Cheyenne, Rock Springs, Sheridan, Wyoming; McKELVY MACHINERY CO., Denver, Colo.; MORROW & CO., Albuquerque, New Mexico.



clips days off Airpott Construction

We crossed a material spreader with a road roller and made the Universal "Chip-Top" Spreaderoller. In fact, the Spreaderoller is more than either for it screens as it spreads—depositing coarse material first, medium next and chips on top—and it simultaneously rolls a 10′ wide strip, firmly and smoothly, once over.

One machine—one operator—does an excellent seal coat paving job in one operation. Does a spreading job that cannot be duplicated by regular spreaders or by hand spreading. Deposits 15 to 25 lbs. per sq. yd. Hopper is loaded from towed ramp—fewer trucks required. Rolls with no seams —no broken shoulders. *Surfaces up to 1 mile of runway or road per hour.*

LET'S GO! U.S.A. KEEP 'EM FLYING!

This unique equipment is helping Uncle Sam with the big job of building pilot training centers and defense air bases. Their speed, performance and economy on these jobs are a matter of record.

Get the facts on this "war machine" that has the answer to fast, low cost post-war bituminous paving and maintenance. Send for Bulletin 800-B.

UNIVERSAL ENGINEERING CORP.

323 8th Street, West **Cedar Rapids, Iowa**

Western Representatives:

LeRoi-Rix Machinery Company Los Angeles	F. W. McCoy Company Denver, Colo.
Morrow & Co. Albuquerque, N. M.	Contractors Equipment Corp. Portland, Ore.
The Sawtooth Co. Boise, Idaho	J. D. Evans Equipment Co. Casper, Wyo.
L. A. Snow Co. Seattle, Wash.	Empire Equipment Co. Spokane, Wash.
Landes Tractor & Equipment Co. Salt Lake City, Utah	O. C. Bell Reno, Nevada
Western Traction Company San Francisco, Calif.	States Tractor & Equipment Co. Phoenix, Ariz.

Midland Implement Co., Billings, Montana

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

Snake Holes!

WHETHER you call them, in your part of the country, "snake holes", or "toe holes", or simply "flat holes"— it's all the same to a Cleveland DR30 wagon drill. These low, slightly angling holes are just one kind that the Cleveland handles extremely well. It drills in any position, at any angle — straight down, flat, breast high, or higher than your head, or within four inches of the ground level — even straight up, when such a hole is needed. You will like the way it cleans the hole, and the drill runner will be enthusiastic with its ease of moving from one position to another. The DR30 has a feed capacity of more than eight feet. It handles depths to twenty-five feet, and more. You will want to see the recoil device, the handy centralizer, the double-screw, geared-together mechanism for raising the U-bar. Demonstration will be arranged to suit your convenience. May we send new Bulletin 132?

WESTERN BRANCHES

BERKELEY, CALIFORNIA
572 Santa Barbara Road

WALLACE, IDAHO
518 Cedar Street

SALT LAKE CITY, UTAH
65 West Fourth South St.

EL PASO, TEXAS
1417 Texas Street

BUTTE, MONTANA
41 East Broadway

CALIFORNIA DISTRIBUTORS

LE ROI-RIX MACHINERY COMPANY
3817 Santa Fe Avenue, Los Angeles

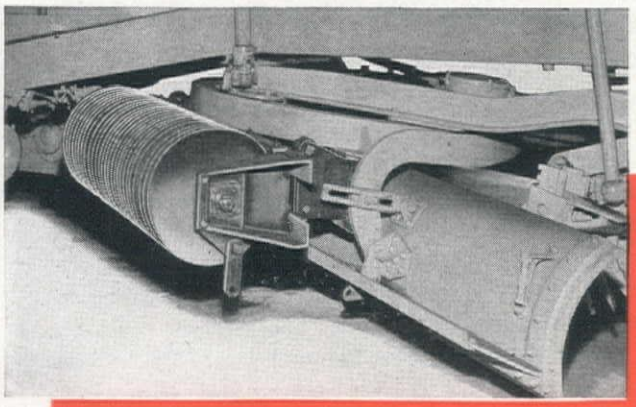
THE RIX COMPANY, INCORPORATED
582 - 6th Street, San Francisco

★ Due to the necessity for conserving rubber, we can supply pneumatic tires only on special order for Government projects. You will find the broad-rimmed steel wheels a satisfactory substitute. There is a suitable price adjustment on account of omitting the rubber tires.

★ ★

THE CLEVELAND ROCK DRILL CO. CLEVELAND, OHIO

It's Prest-O Change-O!



Fits Any Grader—
Model 149-A Front Mounting
Model 249 Rear Mounting

and your Motor Grader is a Road Disc.....

Baker Disc Attachments fit right into today's picture when it's so necessary to get the job done with the equipment you have.

Now it's more important than ever before to keep roads in good shape, to protect tires and to conserve materials and funds.

You can quickly mount a Baker Disc Attachment on the moldboard of your patrol or motor grader. Gives you two machines in one. Cuts up bituminous, black-top, stabilized soil or graveled roads and streets. Ideal for giving shoulders a going-over and for one-lane slabs widened with black-top.

Grader controls give you desired penetration. Discs can be readily spaced for dense or soft surfaces. Disc gang makes 4' wide cut, swings up out of way when not in use. Tough crucible steel discs dished for maximum cutting. Two types—Model 249 for rear mounting; Model 149-A for front mounting. Bulletin No. 831 gives all the facts!

The Baker Mfg. Co.
521 Stanford Avenue
Springfield, Ill.

BAKER

The Modern Tractor Equipment Line for
EARTH MOVING
LEVELING AND GRADE BUILDING
SNOW REMOVAL
ROAD MAINTENANCE

Plenty Tough...

but it still needs Lubrication

Wham! The bouncing jeep refuses to be stopped. And one big reason is: The boys keep it in fighting trim with *regular* lubrication. Give your wire rope the same care and its resistance to destruction will also be something to talk about.

When wire rope leaves the factory it is lubricated clear through. Inside wires bear on each other with minimum friction as they bend around drum or sheave. If it's a hemp center rope, the saturated core feeds more lubricant to wires and strands as loads are applied. The lubricant on outer wires checks dirt and moisture, too.

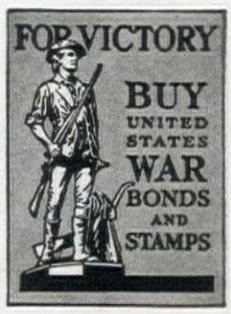
But weather, pressure, heat and corrosion will eventually exhaust the protection unless the lubricant has been *renewed* in time. A dry core or rusted inner wires won't be visible to the eye. So, if it's sound to "grease" jeeps and trucks at stated intervals in order to *prevent* damage, it's sound to do the same for wire rope.

A good lubricant penetrates to the core and still has viscosity to cling to individual wires. Major oil companies make excellent products for this purpose. Get a supply and use it regularly. If you wish detailed lubrication instructions or any other assistance in conserving rope, feel free to call on B & B engineers. Remember . . . Uncle Sam will thank you for making your wire ropes *last longer.*

BRODERICK & BASCOM ROPE CO., ST. LOUIS

Branches: New York, Chicago, Houston, Portland, Seattle
Factories: St. Louis, Seattle, Peoria

YELLOW STRAND
PREFORMED
WIRE ROPE



A MAINSTAY OF WAR PRODUCTION

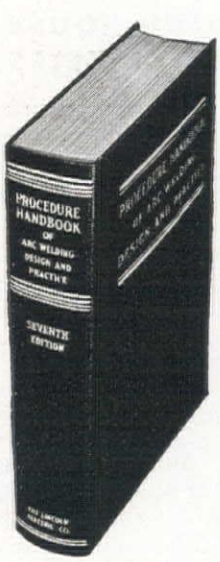
WPB ORDERS WELDING

TO CONSERVE STRUCTURAL STEEL

ONE of the provisions of the new ruling of the War Production Board requires the person responsible for the design of a steel building to certify that the new specifications have been complied with, and that "the building has been designed to secure the greatest savings of steel practical through continuity in design and welded fabrication." The new specifications, established September 10th, become mandatory on November 9, 1942, but all agencies are empowered to put them into effect immediately, wherever possible. Emergency specifications complying with the W P B ruling are available at American Institute of Steel Construction, 101 Park Ave., New York, N. Y. (Price 25c).

HERE IS STRUCTURAL WELDING INFORMATION

to guide you in complying with WPB national emergency specifications for design, fabrication and erection of structural steel for buildings.



The "Bible" on Arc Welding—New 1308-Page "Procedure Handbook." Contains 282 pages on all phases of structural design—columns, beams, girders, trusses, rigid frames—plus chapters on welding technique, procedures, speeds, costs, testing and application studies. 1810 illustrations. Price $1.50 postpaid in U.S.; $2.00 elsewhere. Mail the coupon to Lincoln.

Studies in Structural Arc Welding. Issued periodically. Gives pertinent information on various aspects of structural welded design. Next study discusses anchor attachments to column bases. Free to engineers and designers. Mail the coupon to Lincoln.

THE LINCOLN ELECTRIC COMPANY
CLEVELAND, OHIO

MAIL THE COUPON FOR WELDING INFORMATION

THE LINCOLN ELECTRIC COMPANY, Dept. WC, Cleveland, O.

☐ Rush me postpaid.....copies of the New Procedure Handbook of Arc Welding Design and Practice. ($1.50 in U.S.; $2.00 elsewhere). Am enclosing $.....

☐ Mail me free copy of Studies in Structural Arc Welding as issued.

Name _____

Position _____

Company _____

Address _____

City _____ State _____

ARE YOU TAKING FULL ADVANTAGE OF THE SERVICES OFFERED BY YOUR *Cummins Dealer*?

A CLEARING HOUSE FOR SERVICE HELPS

As a result of the war emergency, short-cuts and new ideas are being continually discovered by Cummins maintenance and service men throughout the country. Because your Cummins dealer is in constant touch, not only with the Cummins factory, but with a nation-wide dealer organization, he is a clearing house for the best practices on parts reclamation. He can show you how to get the maximum use out of every part.

TRAINING NEW MECHANICS

Are your new men thoroughly familiar with Cummins' program of preventive maintenance? Do they completely understand the best methods of servicing your engines? Your Cummins dealer will welcome the opportunity to work with your mechanics . . . make certain their information is up-to-date . . . keep it up-to-date with Service Bulletins and the latest Operator's Manuals. A complete maintenance and service training program is available for any mechanic unfamiliar with the care and operation of the Cummins Diesel. Talk to your dealer about it.

MAINTENANCE SERVICE

If you do not employ your own mechanics, your Cummins dealer offers you a complete maintenance service at a moderate cost. Discuss your problems with him.

REMEMBER THIS

The Cummins Customer Service Policy was built around your needs. Unnecessary duplication of parts stocks is avoided. This assures maximum parts stocks at one centrally located, and easily accessible point. Continuously working with the dealer organization are direct, factory sales and service representatives. This gives you an immediate factory contact, with no red tape . . . "owner-to-dealer-to-factory."

★ ★ ★

You owe it to yourself to know how we are insuring a better, "after-the-war" diesel . . . one which will do your job at a lower cost, over a longer period, with less maintenance and service. Ask your dealer for the new booklet, "Threshold to the Future" or write direct to the CUMMINS ENGINE COMPANY, *Columbus, Indiana.*

SALES AND SERVICE

Fresno, California	Watson & Meehan
Los Angeles, California	Diesel Motor Sales & Service Corporation
Nanaimo, B. C.	Cummins Diesel Sales of B. C., Ltd.
Phoenix, Arizona	Watson & Meehan
Portland, Oregon	Cummins Diesel Sales of Oregon, Inc.
Salt Lake City, Utah	Cummins Intermountain Diesel Sales Corporation
San Francisco, California	Watson & Meehan
Seattle, Washington	Cummins Northwest Diesel Sales, Inc.
Spokane, Washington	Cummins Diesel Sales of Spokane
Vancouver, B. C.	Cummins Diesel Sales of B. C., Ltd.

"Hey, Joe! Spool that new line right the FIRST time...

"YOUR UNCLE SAM'S AIR CORPS uses a lot of wire rope, Joe. Uses it right, too, because wire rope's got a lot of important jobs in this man's flying army: swinging half-ton eggs into bomb racks and towing planes out of hangars —big ropes for the cranes that "walk away" with damaged craft and fine cables for control in the air . . ."

Let's look at it this way: wire ropes, like people, pick up habits quick and easy, lose 'em hard. A wire rope's habits, in the Air Corps or any other place, begin when it's first spooled off the reel—and *bad* habits in a wire rope mean shorter rope life, sloppy service. When you spool a new line onto the drum, observe the following rules:

Wind the rope with *special care* the first time you do it. A little extra time spent on the first wind will pay big dividends. *Guide the first layer carefully into place.* With a smooth-faced drum, this means to make each turn fit snug against its neighbor *without* interlocking of strands. For best results, the dead wraps must be wound tight against the drum face.

Be sure there's a brake on the reel. This provides uniform winding tension which produces necessary snugness and prevents rope damage due to over travel of reel. Mount the reel on substantial cribbing some distance from the drum so that rope pulls off the underside. If the reel must be placed close and the rope wound to top side of drum, the rope should pull off top of reel, but here special care is needed in braking the reel to avoid upsetting. Be sure the rope lead from reel to drum is straight and unobstructed.

By following these simple rules in spooling new line, you'll be helping

that line to work better and longer. With Roebling "Blue Center" Steel Wire Rope, that means getting all the *extra* value built in by Roebling's 100 years of wire-rope engineering, means keeping that wire rope on the job for Victory.

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA
San Francisco • Los Angeles • Seattle • Portland

★ PROMPT SERVICE
★ on essential orders from warehouse
★ stocks or mill

ROEBLING
"Blue Center"
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

Oh, the North Countree is a hard countree,
And it's tough on Diesel oil—
But hark while we chant of a cold storage plant
(Where you keep things, lest they spoil).

Back in April, 'Forty—yes, 1940—
A big six-cylinder Dies'
Went to work with a will, creating a chill—
Its motto: "I aim to freeze."

Oh, the North Countree is a hard countree,
And a year is twelve months long;
Yet, it's perfectly true that in March, '42,
This Diesel still ran like a song!

Oh, oil-buyers wary, oh oil-buyers chary,
You can see that the moral is clear:
Your Diesel runs swell-o on RPM DELO
And does so for many a year!

EVER since the Marshfield Cold Storage Company of Marshfield, Wisconsin, installed its International UD-18 6-cylinder, 108-H.P. Diesel in April, 1940, the engine has been lubricated exclusively with RPM DELO. It has had 10,000 hours of continuous operation—and here are the results:

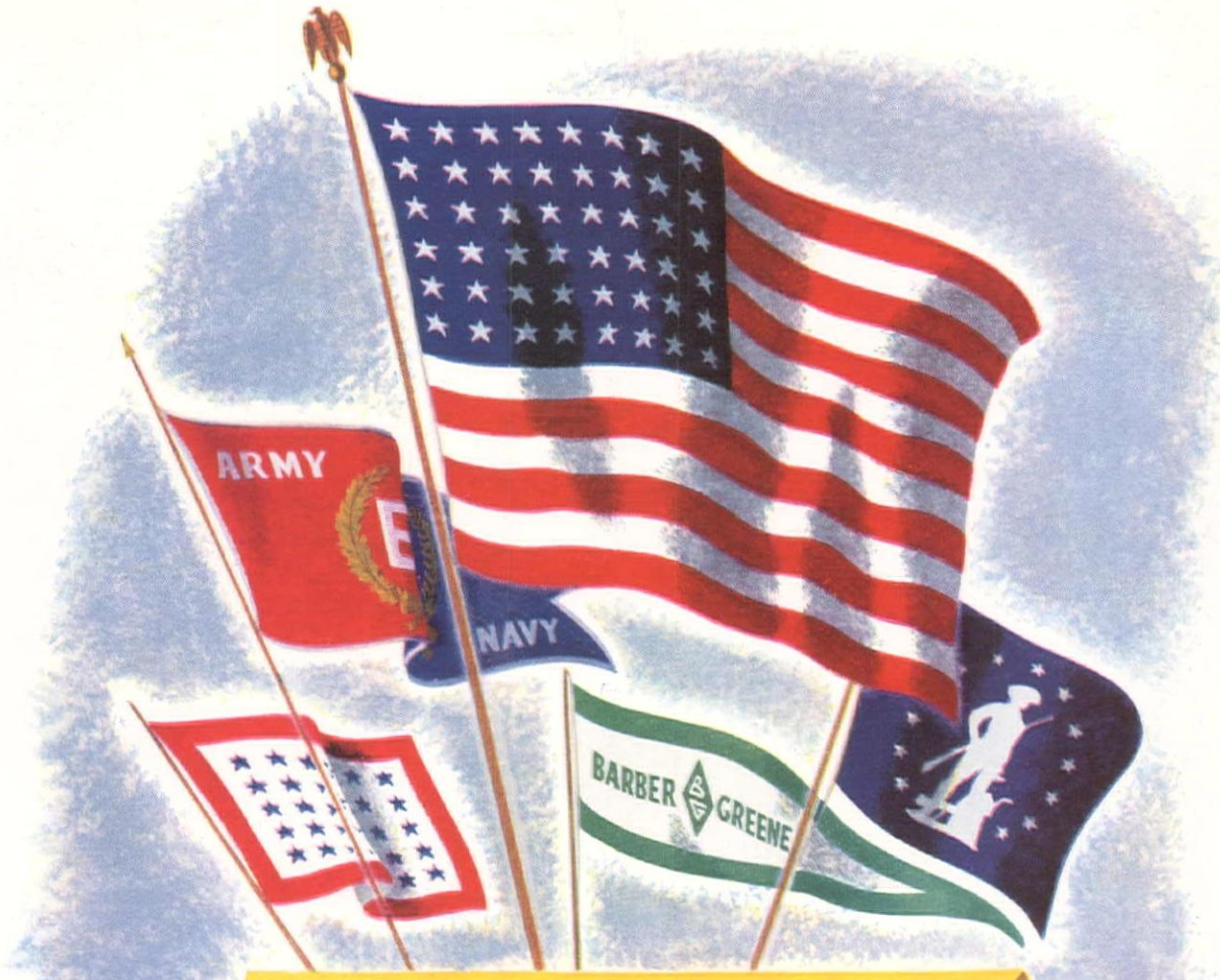
When the engine was thoroughly overhauled last March, cylinders showed less than .0035 inch maximum wear, pins were all tight and showed less than .002 inch wear, rod bearings were in "exceptionally fine condition." No wonder the company says, "we are indeed happy we selected RPM DELO as our lubricant and would not hesitate to highly recommend it."

STANDARD OF CALIFORNIA

Get extra performance with STANDARD DIESEL FUEL

Standard Diesel Fuel is 100% distilled—"vapor-cleaned" for long injector and fuel pump life. You get extra performance for your money—more complete combustion because of carefully controlled self-ignition values and other characteristics.

RPM DELO
REG. TRADE-MARK
DIESEL ENGINE LUBRICATING OIL



OUR FLAGS

Old Glory—symbol of our democracy—of the freedom it guarantees—of the goal it struggles toward—of ideals it embodies—of sacrifices, by others, for us. ★ ★ Our Service Flag—our fellow workers, on the battle front. ★ ★ The Minute Man—our share in financial support of their effort. ★ ★ The Army-Navy "E"—awarded the employees of Barber-Greene for efficiency in production. ★ ★ We are proud that machines developed by us for the enrichment of our peacetime way of life, may now serve so effectively in our country's defense. ★ ★ We of Barber-Greene pledge our continued effort to "keep them flying."

BARBER-GREENE COMPANY
AURORA, ILLINOIS, U. S. A.

Buy United States War Bonds Stamps

PRINTED IN UNITED STATES OF AMERICA

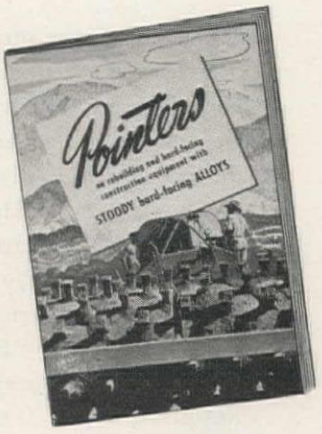
WORN TRACTOR ROLLERS *Outlast* NEW ONES

WHEN REBUILT WITH STOODY SELF-HARDENING

Now that deliveries on replacement parts are slow and down time is so costly, contractors are salvaging worn tractor rollers and other tractor parts by hard-facing with Stoody Self-Hardening.

This hard-facing alloy, because of its hardness and toughness, forms deposits that are decidedly more wear resistant than the original steel. Tractor rollers rebuilt with "Stoody Rod," therefore, outlast new unprotected rollers two to one, and in many cases the ratio is even higher. Furthermore, the hard-facing operation can be repeated as often as necessary. For this reason tractor parts that were formerly scrapped after a few weeks service can now be made to last months and even years. 3/16" and 1/4" diameter Stoody Self-Hardening for electric application is priced at 50c per pound, f.o.b., Whittier, California. Prompt deliveries are currently being made on orders carrying ratings of AA-4 or higher.

Stoody's new 16-page folder, "Pointers on Rebuilding and Hard-Facing Construction Equipment" explains procedures for rebuilding tractor parts and other types of construction equipment with Stoody alloys. To obtain your copy, just fill in and mail coupon.



STOODY COMPANY

1134 WEST SLAUSON • WHITTIER, CALIFORNIA

STOODY COMPANY *Hard Facing Alloys*

YOUR NAME_____

POSITION_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

THERE ARE TIMES WHEN ORDINARY GREASE ACTUALLY *CREATES FRICTION!*

Alemite "Sub-Zero" Keeps Bearings Safe at Temperatures Down to 40° Below!

THIS winter more machines than ever before must operate at full speed outdoors in extreme cold! Ordinary grease can cease to be a lubricant at extreme cold temperatures. In fact, it *actually creates friction.* But bearings can be safeguarded by using Alemite Sub-Zero Lubricant, a semi-fluid designed especially for such use. It meets government specifications types "D" and "F" applying to Class-14 of General Schedule of Supplies, U. S. Treasury Department, also U. S. Army specifications.

This is only one of many Alemite Specialized Lubricants which meet extraordinary conditions. There are those which withstand extreme heat, others which work under water. All are proved by years of successful service to industry. They can help you prolong machine life and maintain uninterrupted production at a time when delays must be avoided.

SEND FOR YOUR COPY!

The Alemite Industrial Lubrication Manual contains specific recommendations for meeting literally hundreds of industrial lubrication problems. Write for your FREE copy today!

Another Product of STEWART WARNER

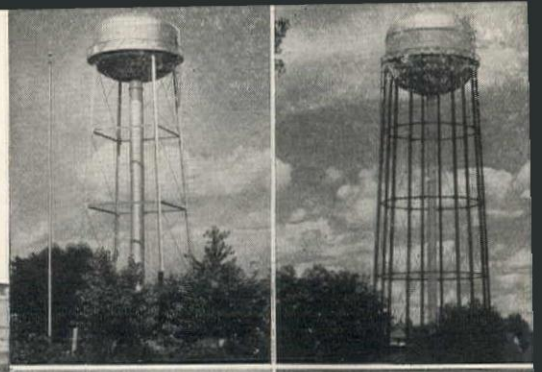
ALEMITE

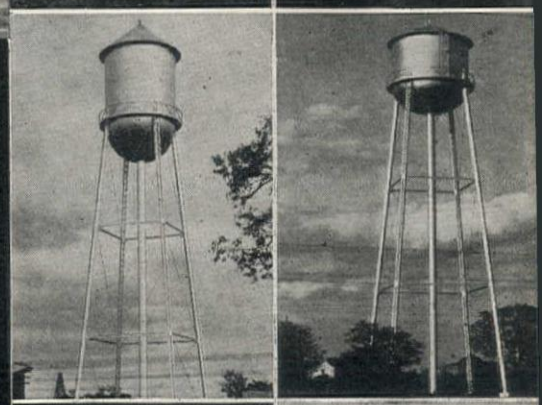
REG. U. S. PAT. OFF.

Industrial LUBRICATION

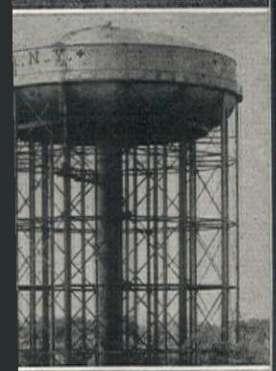
1819 Diversey Parkway, Chicago, Ill. • Belleville, Ontario

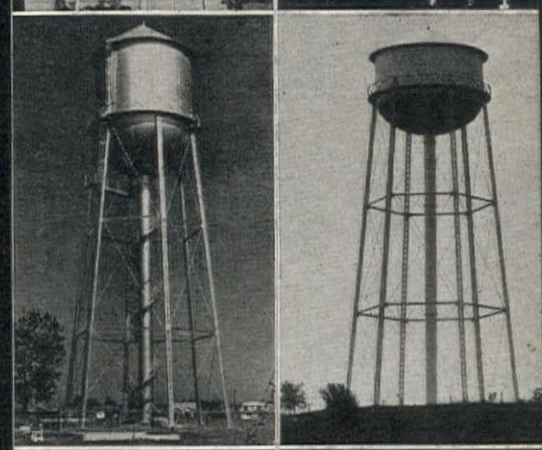
Ask Anyone in Industry!

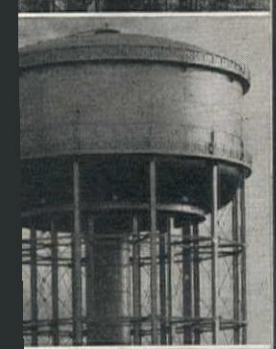


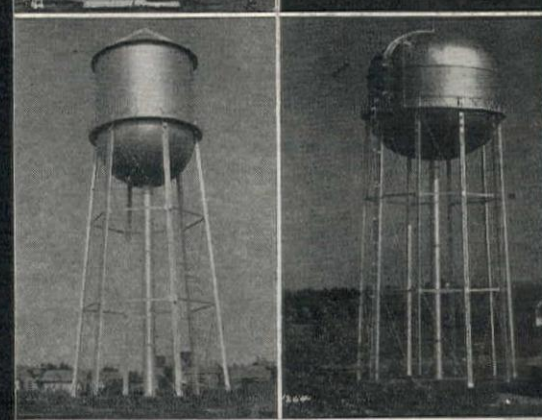


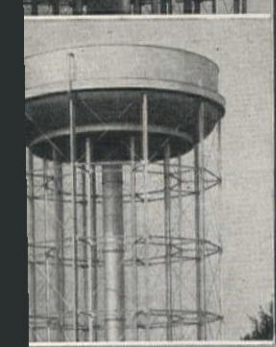
PITTSBURGH •DES MOINES *Elevated* WATER STORAGE











• In your water-storage planning for the *future*, use Pittsburgh-Des Moines' project counsel today! The skill and experience which have built P.DM Elevated Steel Tanks of every type for communities throughout America is at your service—without obligation.

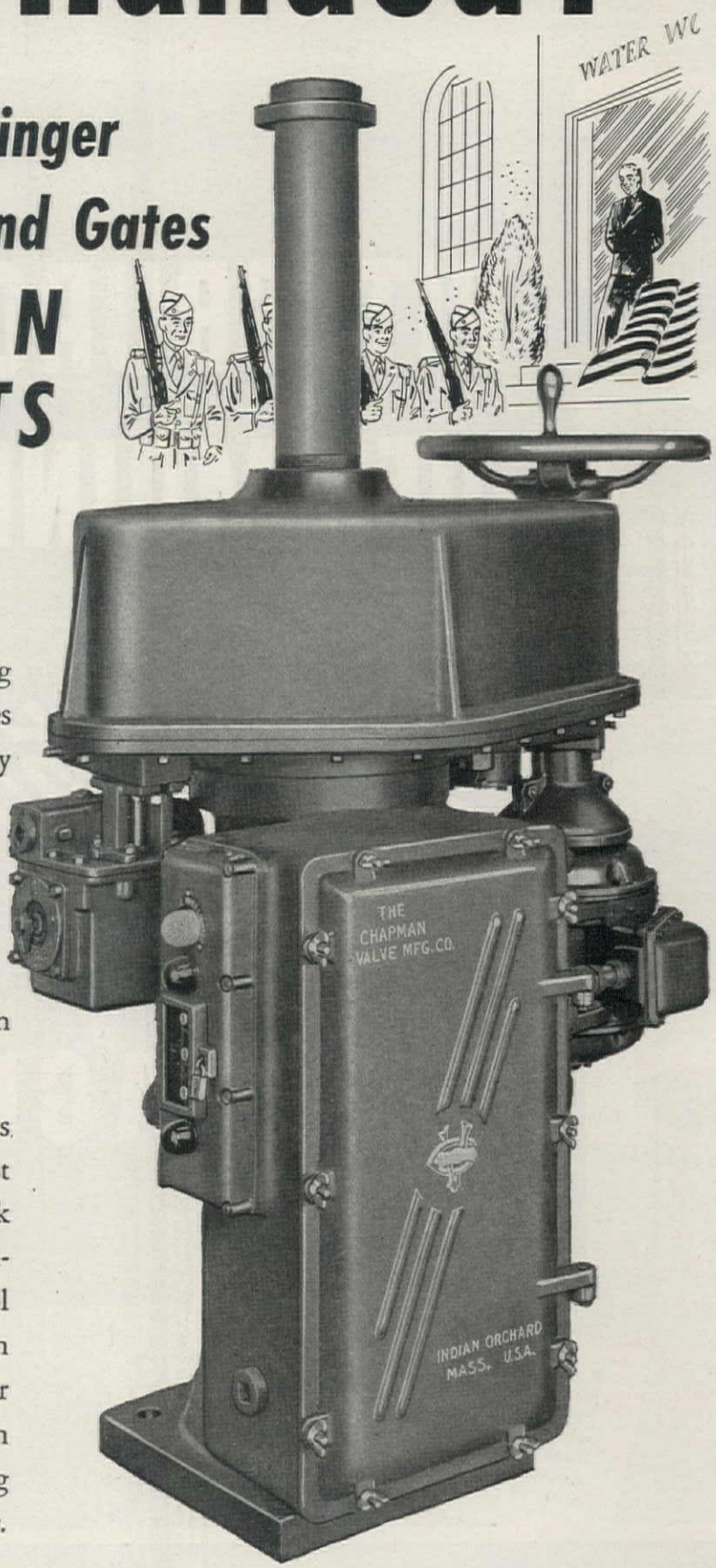
PITTSBURGH • DES MOINES STEEL CO.

SAN FRANCISCO, CALIF., 627 RIALTO BUILDING—DES MOINES, IOWA, 921 TUTTLE STREET
SEATTLE, WASH., 1128 EIGHTH AVENUE, SOUTH

DALLAS, 1225 PRAETORIAN BUILDING . . . CHICAGO, 1224 FIRST NATIONAL BANK BUILDING
PITTSBURGH, 3420 NEVILLE ISLAND . . . . . NEW YORK, ROOM 919, 270 BROADWAY

Short-Handed?

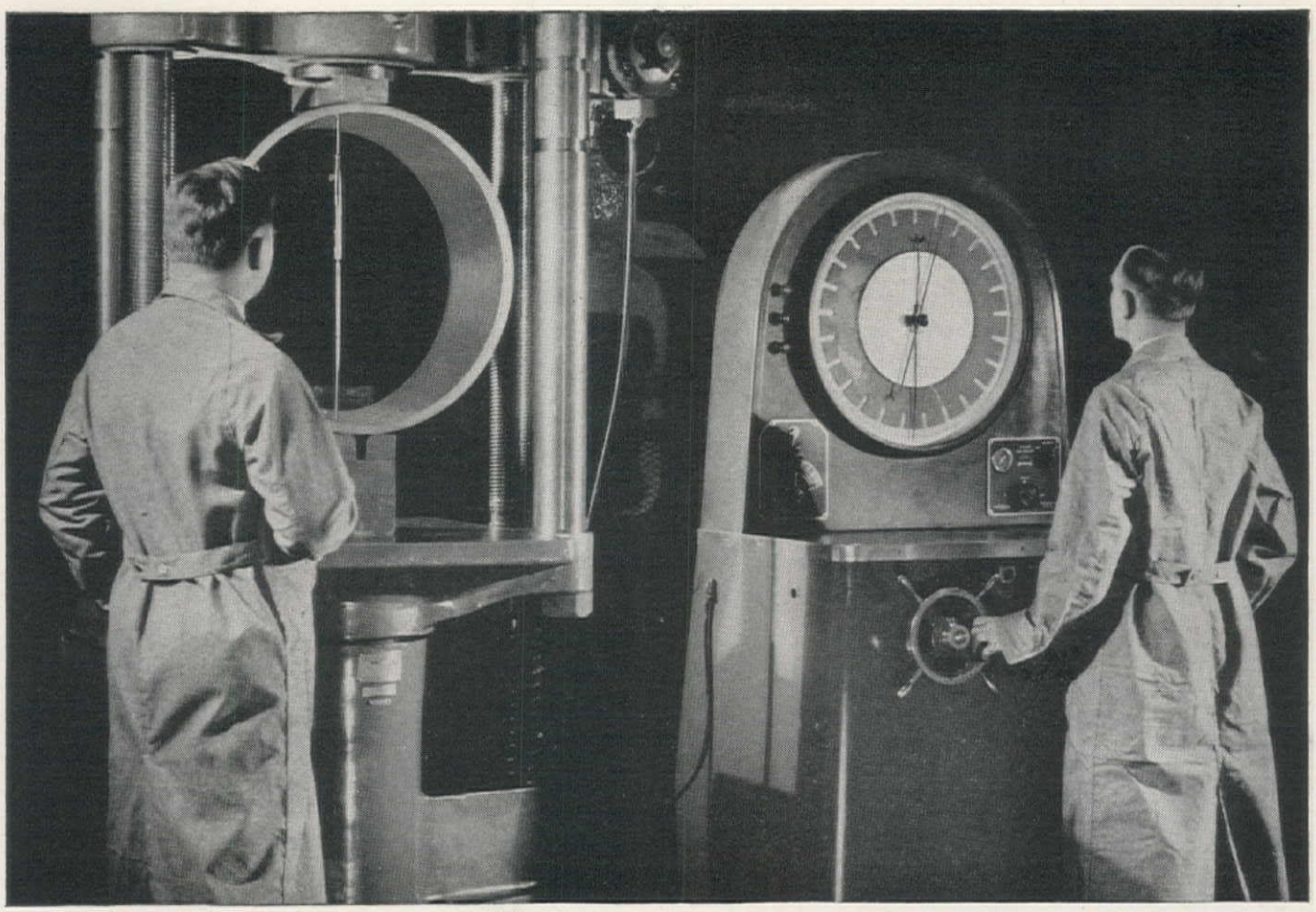
It Takes Only One Finger to Operate Valves and Gates with CHAPMAN MOTOR UNITS



Labor problems need not be operating problems . . . if your valves, sluice gates and floorstands are instantly, electrically controlled by Chapman Motor Units. For then control not only becomes *single-handed* over the most widespread network of equipment . . . it also becomes far quicker, more positive, and better co-ordinated than it has ever been before.

Chapman Motor Units seat all valves without jamming, protect them against damage in operation, and shift them back to hand-operation in event of power failure. These labor and time-saving control units can be installed in any position on any valve equipment, indoors, outdoors, or completely submerged. See what they can do to fit your system for wartime operating conditions . . . write for all the facts *today*.

THE CHAPMAN VALVE MANUFACTURING CO. • INDIAN ORCHARD, MASS.

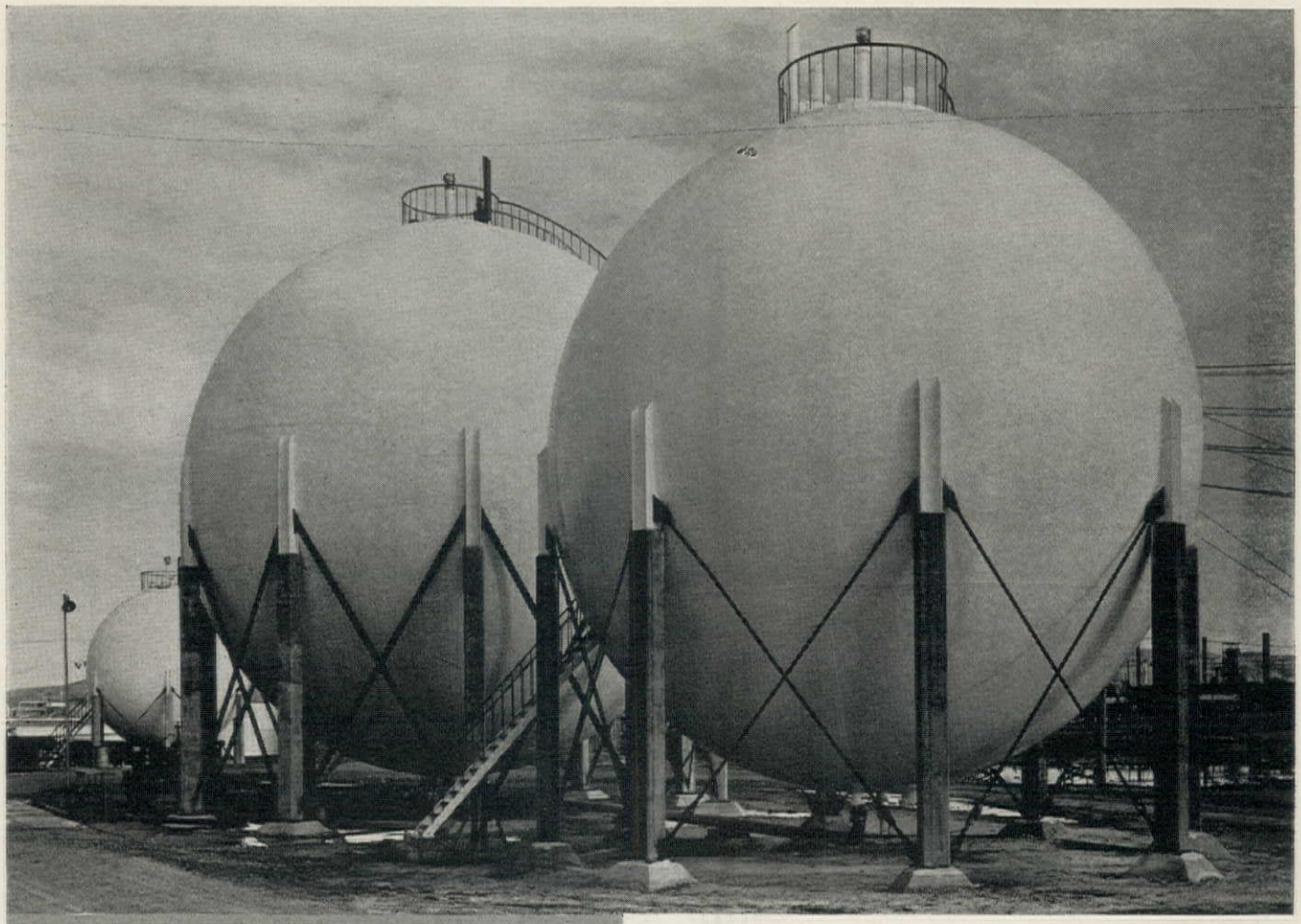


* This illustration shows the "Ring Test" to determine the modulus of rupture. A ring cut from the pipe is subjected to progressively increased crushing load until failure occurs. Although not a required acceptance test, it is one of the additional tests regularly made by this Company to further check and maintain the quality of its pipe so that it will adequately meet severe service requirements. *United States Pipe and Foundry Co., General Offices: Burlington, New Jersey.* Sales Offices in Principal Cities.

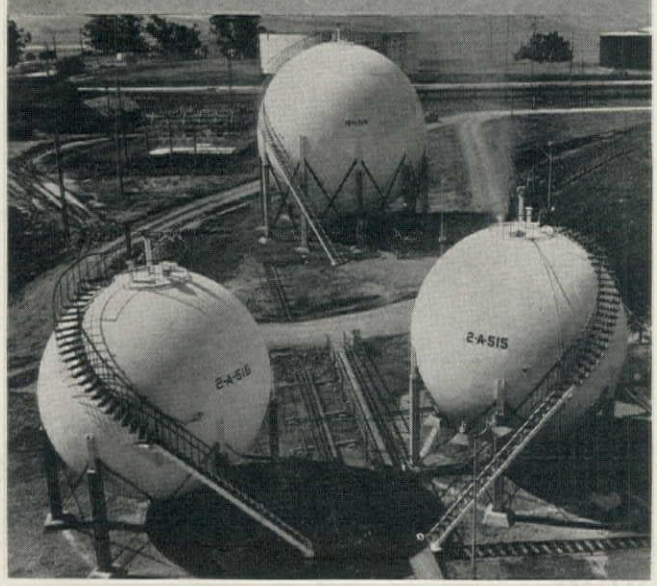
*** One of a series of controls in operation at each of our plants, beginning with inspection and analysis of raw materials and ending with tests of the finished product, all subject to the central control of our headquarters staff at Burlington.**

U.S. cast iron PIPE

Centrifugally or Pit Cast for water, gas, sewerage, drainage and industrial services.



• *Above: 2,000-bbl., 12,000-bbl. and 5,000-bbl. Hortonspheres at a Pacific coast refinery producing high octane motor fuels.*
• *Below: Another view at this same refinery, showing three Hortonspheres. They operate at 50, 60 and 75 lbs. pressure.*



"Working Partners" for WARTIME PRODUCTS

CONSERVATION, the watchword of a nation at war, is vitally important wherever gases or volatile liquids are handled or stored. The utilization of HORTONSPHERES as "working partners" for these wartime products, helps to eliminate deterioration and vapor losses.

Being a closed container, the HORTONSPHERE eliminates operating difficulties caused by severe weather conditions. And, because of the absence of moving parts, except for relief valves, the need of constant supervision is eliminated, thereby helping to conserve manpower. It's a wise operator who considers HORTONSPHERES as a "working partner" for gases and volatile liquids.

HORTONSPHERES

CHICAGO BRIDGE & IRON COMPANY

San Francisco.....1013 Rialto Bldg.	Havana.....402 Edificio Abreu	Cleveland.....Guildhall Bldg.
Greenville.....York Street	Houston.....5621 Clinton Drive	New York.....165 Broadway Bldg.
Birmingham.....1598 N. Fiftieth Street	Tulsa.....Hunt Bldg.	Philadelphia....1700 Walnut St. Bldg.
Chicago.....McCormick Bldg.	Detroit..... Lafayette Bldg.	Washington.....330 Bowen Bldg.

Plants at BIRMINGHAM, CHICAGO, and GREENVILLE, PA. *In Canada:* HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

WESTERN CONSTRUCTION NEWS
WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

November, 1942 Vol. 17, No. 11

More Paper Work

THERE ARE TIMES when it becomes somewhat difficult to understand the confusingly devious ways of the various war agencies of the Federal Government. To the maze of paper work now required of contractors, the Office of Price Administration has just added a new price regulation covering everything "from the simple repair of a leak in the roof to the construction of a great project like Boulder Dam." Known as Maximum Price Regulation No. 251, the latest OPA masterpiece is designed, according to the official statement, "to maintain the March, 1942, price level (with some exceptions); to afford a workable means for determining a maximum price at this level; and to maintain a constant observation over prices of construction not already under the control of other government agencies in order to disclose any activity where existing controls are not adequately preventing inflationary pricing."

Not only is the wisdom of issuing such a regulation at this time open to serious questioning, but the necessity for it appears to be doubtful. To begin with, the great majority of construction contracts will not be governed by the regulation by reason of the fact that those contracts with agencies of the Federal Government which are subject to renegotiation have been excepted from the provisions of MPR 251. Since any reasonable estimate would show 60 to 70 per cent of all construction work now in progress is being performed under contract with the War and Navy Departments and the U. S. Maritime Commission, it follows that the provisions of the regulation will actually apply to a relatively small percentage of the total volume of construction work. Furthermore, the regulation will not apply to contracts entered into prior to the effective date of the regulation which is November 5, 1942. Recent actions of the War Production Board toward a reduction of all construction work, military as well as industrial and civilian, indicates that there will be still fewer construction projects undertaken which would be subject to the provisions of the maximum price regulation.

Most important of the considerations, however, is the time and manpower factor. During the past few months a special committee of the War Production Board has been making a real effort to reduce the amount of paper work required of war contractors while the Office of Price Administration has been constantly increasing it. Bedeviled first by priorities, then by limitation of construction, later by literally hundreds of maximum price regulations applicable to everything used by the construction industry including equipment rentals, more recently by the equipment inventory and gasoline rationing, and most recently by the Certificates of Necessity required by the office of Defense Transportation for all commercial vehicles, not to mention renegotiation of Army, Navy, and Maritime Commission contracts, the contractors are in a fair way to be completely snowed under in a blizzard of applications, certificates, reports, and records.

Under normal conditions it would be difficult to support the huge office force required by even a small contractor to maintain properly and on schedule the even flow of applications and reports to the various governmental agencies requiring them. Under present conditions it is little short of miraculous that contractors have been able to continue operations in the record breaking way that they have. While it is undeniably true that there are many excellent reasons for the existence of the thousands of regulations and their accompanying applications, reports, and records, it does seem that a better balance in favor of speed, accomplishment and labor conservation could be achieved by a reduction in the tremendous amount of paper work now involved in any construction contract. Particularly in many sections of the West, where there are extreme shortages of all types and classifications of labor, will these superfluous paper work requirements be felt severely.

In the construction maximum price regulation the West again may be the principal sufferer under the provisions for calculating the margins of reserve for contingencies and profit. For many types of construction work the calculation of a reserve for contingencies may be a relatively simple matter, but for many types of heavy construction which are typical of western projects the contingencies are extremely hard to foresee with any degree of accuracy. Consideration of this factor may not seem important at a time when most normal construction activities are being forced to close, but there remains a strong possibility that WPB will be forced to revise its present views as to the relative necessity of some western construction projects, particularly water supply projects in critical industrial areas of the Pacific Coast.

Calculation of the margin of profit may also be found somewhat difficult on western projects for much the same reasons as those given above for the contingencies margin. The regulation states that the profit margin is to be based on similar work during a 3-year base period, but it is commonly recognized that there are hardly any two western projects involving engineering construction where conditions and project plans are exactly comparable, even on work more or less similar in appearance. As to the workability of these provisions for contingencies and profit, much will depend upon the OPA interpretations of reasonableness and good faith, factors which are of the most intangible consistency when applied to actual cases.

In view of all these considerations, because construction costs are already well limited by the various ceilings on materials, supplies, services, equipment rentals, and because present income tax laws will permit only a limited profit in any case, the necessity for a special limit applied to construction work is open to question. The wisdom of increasing the contractors' work in connection with construction, in view of present limited labor resources and the necessity of rapid completion of construction projects, also makes it difficult to understand the purposes of the Office of Price Administration.

WHEREVER WAR NEEDS PUT A PREMIUM ON RESULTS THERE'S A NEW APPRECIATION OF "99M" PERFORMANCE

Says
H. R. ANDERSON of Robert R. Anderson Co., Chicago:

"While working on a government job we used a '99' to establish the grade for the forms. Its 4-wheel drive eliminated the danger of wheel-spinning and gouging, and as a result the work this machine has done has been accurate and very satisfactory. It's really the busiest machine on the job. The same '99' that handled the form grading was used to build the truck roads to the job and to maintain them."

● Today . . . when excuses just don't go . . . when war needs make it vital to get even the toughest jobs done ahead of schedule . . . owners and operators are gaining a new appreciation of the 99M's ability to handle an almost unlimited variety of jobs a lot better and quicker.

Because of its exclusive features, the "99M" handles bigger loads. Its powerful all-wheel drive, power-operated steer on all four wheels, power blade shift, and effective neutralization of blade side-draft combine to clean up job after job away ahead of schedule. It's versatility and unmatched "working weight" permits the use of many practical attachments . . . eliminating the need for much auxiliary equipment. The 99M keeps busy under conditions that stall ordinary rear wheel drive motor graders. No matter which type of job it's drafted for, this versatile Power Grader "delivers the goods" whether working in clay, sand, gravel, or loose soil . . . whether the footing is slippery, sloping, loose, irregular or rough.

Operating views shown here illustrate but a fraction of the types of jobs on which 99M's are making it possible for operators on vital war construction to *deliver enough on time.*

THE AUSTIN-WESTERN ROAD MACHINERY CO.
Aurora, Illinois

Austin-Western

99M's are playing an important part in the construction of America's vital airfields, from the first rough grading to the final spreading of the asphalt.

99M's help speed up construction of roads through new shipyards. The powerful 4-wheel drive keeps them on the job when ordinary equipment is bogged down.

In strip mines providing ever increasing quantities of critical war materials, 99M's are successfully handling almost all road maintenance jobs.

Builders of war plants find 99M's outstanding on the accurate grading required for form work. 4-wheel drive prevents wheels digging and spinning.

Where roads are being cut through the wilderness to tap new sources of critical materials, 99M's are proving their ability to "take-it."

HIGHWAY EQUIPMENT CO., San Francisco, Calif.; COLUMBIA EQUIPMENT CO., Portland, Oregon; Spokane and Seattle, Wash.; Boise, Idaho; SMITH BOOTH USHER CO., Los Angeles, Calif., and Phoenix, Ariz.; THE HARRY CORNELIUS CO., Albuquerque, N.M.; LIBERTY TRUCK AND PARTS CO., Denver, Colo.; WESTERN MACHINERY CO., Salt Lake City, Utah; C. D. ROEDER COMPANY, Reno, Nevada; WILSON EQUIPMENT & SUPPLY CO., Cheyenne, Wyoming; WESTERN CONSTRUCTION EQUIPMENT CO., Billings, Mont.

WESTERN CONSTRUCTION NEWS
NOVEMBER • 1942

Old C. M. P. Forms Part Circles

Salvaged metal culverts from 12 to 20 years old after being removed to make way for a channel improvement project were rerolled and used as part circle drains solving priority problem on city street job

By CLAYTON W. PAIGE
Formerly City Engineer
Burbank, Calif.

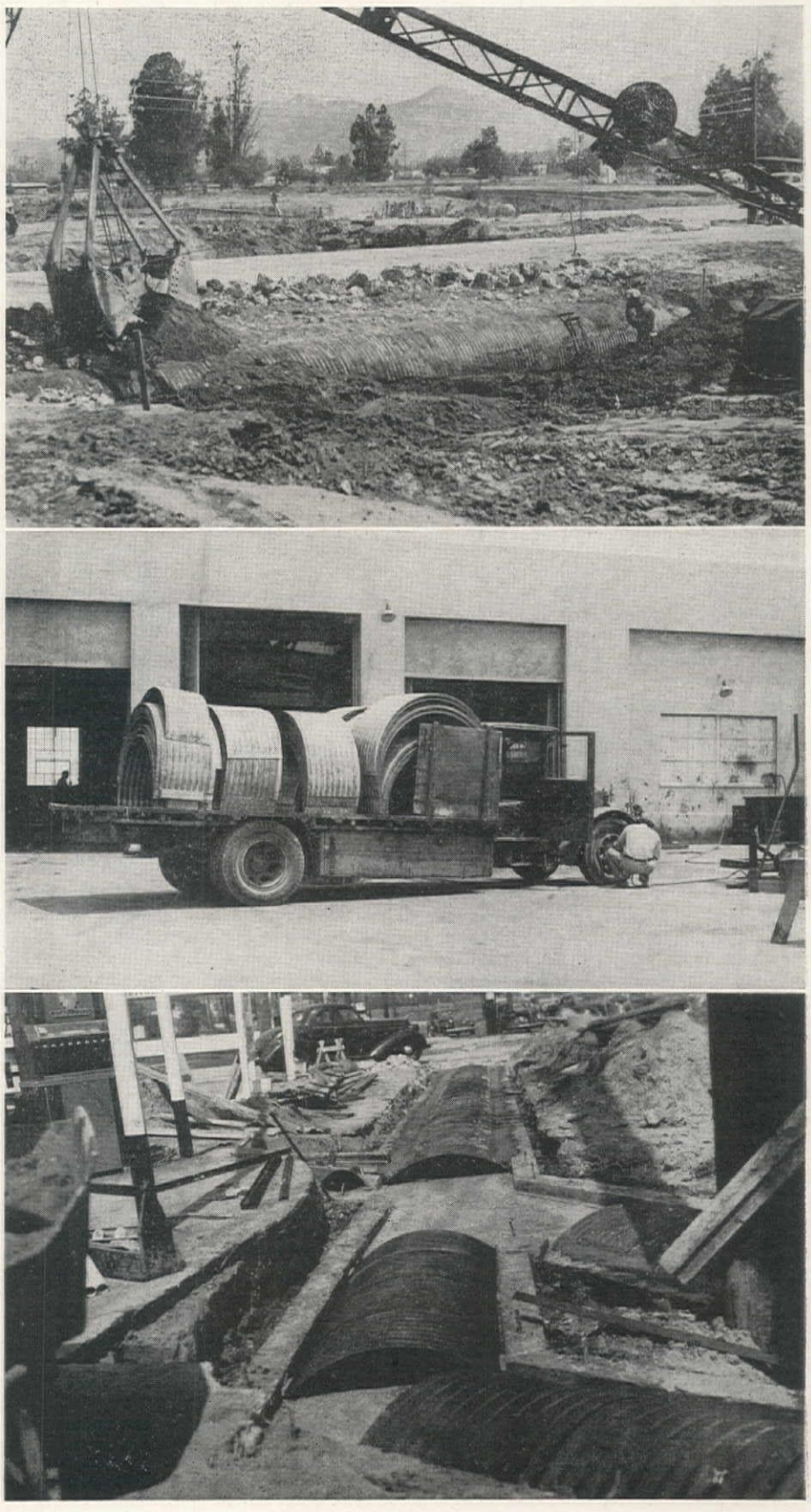
A MUCH NEEDED street reconstruction project in an important war production area in southern California was saved from failure this year by the use of salvaged corrugated metal pipe for part circle culverts which had been specified for three major intersections on the project. Salvage of 12 to 20-yr. old pipe which was being removed from a U. S. Engineer Department river channel improvement, and rerolling of the pipe into part circle structures permitted completion of the project as planned.

Victory Boulevard street improvement in the city of Burbank, Calif., is planned from the south city limits of Burbank at Glendale, northwesterly and westerly a distance of 4 mi. The improvement consists of widening the right-of-way, and the construction of curbs and gutters to provide a 76-ft. roadway.

Contract but no materials

The first unit of this job was awarded to the Southwest Paving Co. of Roscoe, Calif., on April 24, 1942, at a cost of $90,000. This contract of 2.25 mi. extended from the intersection of Burbank Boulevard with Victory Boulevard westerly to Clybourn Avenue which is the boundary between Los Angeles and Burbank. The old existing pavement consisted of a 24-ft. concrete strip 6 in. thick which was beginning to crack and check, and was not able to handle adequately the peak traffic loads.

Traffic counts last January totaled over 20,000 cars daily, and during shift changes in the airplane plants traffic was



METAL PIPE removed by Army engineers in the course of constructing a channel improvement project in Burbank, Calif., (upper right) was cleaned, the rivets removed, and rerolled (center right) for use as metal part circle culverts at major intersections. Before installation the rebuilt culverts were coated with asphalt (lower right).

continually held up. The street is constantly used by roving patrols of the Army, and it is not uncommon to see troop movements along this street. Daily, too, you see the transportation of airplanes and fuselages over the street.

In the designing of the improvement part circle culverts were planned at the three most important intersections, namely Hollywood Way, Buena Vista and Burbank. The city of Burbank realized before starting construction that the contractor might have difficulty in getting the metal part circle culverts, so the city called for bids several weeks in advance of letting the construction contract. The material was actually purchased by the city, subject to securing adequate priority ratings. Before the ratings were secured, however, the Federal Government had frozen all such metal, but in the construction contract the city had obligated itself to furnish the metal for the culverts.

Materials are found

This situation seemed effectually to block our plans. The project had been approved under FWA proceedings, and involved the use of corrugated metal culverts. However, a solution was found in salvaged material. The U. S. Engineer department was constructing a drainage channel in Burbank, and where the channel crossed certain streets, old full circle culverts had to be removed. These pipes were of different ages, from 12 to 20 years. Being found in good condition, they were judged adequate in part circle form for the new work.

Accordingly, the rivets were removed from the old pipes and the sections cleaned and re-rolled as part circles. The arches were then given a coating of asphalt and put into place as illustrated by the accompanying photographs. Something over 30 tons of material were thus salvaged at a time when such reclaiming work is of national importance.

Problems of War-Time Irrigation Are Discussed at Reclamation Convention

THE FATE OF IRRIGATION projects during and following the war was the principal subject of discussion during the 11th Annual Meeting of the National Reclamation Association in Denver, Colo., Oct. 14 to 16. Attended by nearly 500 advocates of irrigation from the seventeen western states, the association meeting was opened by individual caucuses of the seventeen state groups, who re-elected all of the seventeen directors with the exception of Texas, which appointed William B. Arnold of San Antonio to succeed the late R. E. Baskin.

Urge priority for water projects

During the second session of the meeting, John C. Page, commissioner of the Bureau of Reclamation, told the assembled delegates that the Bureau of Reclamation has not yet reached a halfway mark in the construction program which was inaugurated in 1933. Expenditures in this program to date amount to $851,000,000. John W. Haw, director of the Agricultural Development Department, Northern Pacific Railway Co., speaking at a luncheon on the second day of the convention urged that agricultural water supply projects be given priorities equal to those of other industries. Industrial and military establishments, Haw said, have unbalanced food production. During the past two years, the population of the seventeen western states has increased between 2,000,000 and 3,000,000 over the 1940 census count. Since this cannot be considered to be a temporary condition, it is sound wartime economy to rush to completion projects scattered through the West which supplement irrigation water supplies. Completion of projects now under construction could be carried out by contractors who are now nearing the completion of army and navy camps, assembly centers, air field and industrial plants.

At an evening session presided over by John S. Moore, general supervisor of operation and maintenance, Bureau of Reclamation, J. M. Dille, secretary and manager of the Northern Colorado Water Conservancy District, Greeley, discussed the irrigation problems in northern Colorado, with particular emphasis on the Colorado-Big Thompson project now under construction.

Post-war development

Post-war reclamation development was discussed from a number of points of view at the last morning session of the meeting. Don McBride, director of the Division of Planning and Water Resources, Oklahoma Planning and Resources Board, discussed preparations for post-war reclamation development. The future of the water conservation and utilization program was discussed by a panel of three, including M. O. Ryan, executive secretary of the Republican Valley Conservation Association, McCook, Nebr., Wesley Nelson, chief of the engineering division, Bureau of Reclamation, Washington, D. C., and Clifford Willson, area director, Farm Security Administration, Denver, Colo.

Major General Eugene Reybold, chief of Army Engineers, Washington, D. C., in discussing the post-war development of river basins, told convention delegates that all national problems must be considered with the war as a background, and that all activities must contribute to the war effort.

Resolutions adopted at the closing session of the meeting urged passage of uniform water codes by all states, promotion of irrigation projects for the production of guayule, and the enactment of federal legislation to provide that water uses in connection with a federal project should be in accordance with the laws of the state in which the project is situated.

Western State Engineers Are Planning For Development in Post-War Period

POST-WAR DEVELOPMENT and Federal control of streams were the principal topics of discussion at the Fifteenth Annual Convention of the Association of Western State Engineers held in Denver, Colo., Oct. 12 and 13. Presiding over the convention as president of the association, Alfred Merritt Smith, state engineer of Nevada, stressed the importance of the water resources of the nation to the war effort. Gov. Ralph L. Carr of Colorado, in welcoming the engineers, urged co-operation among all of the western states toward solution of interstate water problems as the best preventive measure against Federal intervention.

At a luncheon following the first session of the convention, Dr. Harlan H. Barrows, Department of Geography, University of Chicago, and planning consultant, U. S. Bureau of Reclamation, described future possibilities in development of the West. The afternoon session of October 12 was occupied principally by reports of activities from each of the eleven western state engineers in attendance.

At the convention session on the morning of Oct. 13, John C. Page, commissioner of the Bureau of Reclamation, spoke informally, and M. C. Hinderlider, state engineer of Colorado, reviewed the 15-year history of the Association of Western State Engineers. Mr. Hinderlider's address is published in detail on page 488 of this issue.

Edgar S. McCandless, senior engineer of the U. S. Engineer Department at Denver, described the organization of the department and the Corps of Engineers, and outlined the procedure involved in preliminary investigation and planning of flood control projects. At the annual banquet, Judge Clifford H. Stone, director Colorado Water Conservation Board, and chairman of the Committee of Fourteen of the Colorado River Basin States, discussed the changes which have taken place in water problems in recent years.

Wardner G. Scott, state engineer of Nebraska, was elected president of the Association, succeeding Alfred Merritt Smith, state engineer of Nevada, who was made a member of the executive board. L. C. Bishop, state engineer of Wyoming, was elected vice-president.

Pioneer Alaska Road Now Near To Completion

SECRETARY of War Stimson has announced that the 1671-mi. pioneer highway connecting Edmonton, Canada, with Fairbanks, Alaska, is now open to essential truck use. Ten thousand soldiers, 2000 civilian workers, and innumerable machines were used to complete the 24-ft. roadway. Two hundred streams were bridged, and most of the materials used were obtained on the site. The U. S. Army photos on this page show some of the incidental uses to which tractors have been put. The upper picture shows a tractor operating a sawmill by means of a belt pulley drive. It also handles the logs, moves sawdust, and does other mill work. In the center, a trailer load of workmen's supplies is being moved over an unfinished road. In the lower illustration, a tractor with bulldozer attachment is removing a sandbar to deepen a river so that pontoons may be used to float a bridge.

Fifteen Years of Service —In Water Problems of the West

Association of Western State Engineers forms an effective, cooperative body to protect and promote conservation and efficient use of the water resources of the seventeen irrigation states—Founding and history of organization reviewed by its oldest member at the fifteenth convention.

By M. C. HINDERLIDER
State Engineer of Colorado
Denver, Colo.

AT THE FIFTEENTH annual convention of the Association of Western State Engineers held last month in Denver, Colo., M. C. Hinderlider, state engineer of Colorado and dean of western state engineers, presented to the Association members the history of their organization which appears on these pages. Because it not only furnishes a history of the organization, but also carefully details the official activities of the state engineer, who is charged with safeguarding the West's most precious resource — water, *Western Construction News* is pleased to present the history of the Association on the occasion of the fifteenth anniversary of its founding.—Editor.

JUSTIFICATION for the existence of any group, or organization, such as the Association of Western State Engineers, is the need for the same, and the degree of effectiveness with which it meets such need. This Association was founded 15 years ago at a meeting in Denver of the Governors of the seven Colorado River Basin states called to consider momentous problems with which those states were then confronted, and the successful meeting of which would have a vital bearing upon their future development.

Upon that occasion George W. Malone, then state engineer of Nevada, his mind unfettered by traditions or years of interstate embroilments and administrative headaches, had a vision of the need for an organization of this character. Such an organization could be of service not only to its members, but also to their respective states, and to those associated in the effort to protect and promote in the largest possible measure, the conservation and efficient use of the water resources of these western states, and assist in the solution of their major problems of development. And, George Malone, endowed with this vision, convinced the state engineers who attended that conference of Governors, of the desirability of an organization of western state engineers.

Purposes set forth

It was my privilege to serve as chairman of the Committee on "Permanent Organization" which prepared the constitution of our Association, that has endured through 15 years without change.

As stated in our constitution, the purpose of this Association is, and has been,

> "To formulate broad principles, applicable to all of these states for the use, control and regulation of the waters thereof,
>
> To assist one another in the solution of individual problems through the exchange of ideas and experiences,
>
> To co-operate in making common cause for the preservation to the states of their inherent sovereign right to use, control and distribute the waters thereof, and to facilitate the adjustment of interstate problems,
>
> To help stabilize the commercial phases of use of water by encouraging the perfecting of the laws relating thereto, and by other proper means,
>
> To circulate among members such information as may be helpful in the discharge of their official duties."

As to the meritoriousness of the objectives set forth in our constitution, we believe there can be no question. It is now in order to ascertain, by its activities, how well this Association has measured up to its objectives, and as to whether its continued existence is justified. During its life of 15 years, our Association has held one preliminary, and Fourteen Annual Conferences, and is now in the midst of its Fifteenth Annual Conference.

Conference discussions

The results of these Conferences are set out in the Annual Proceedings thereof. A casual review of these proceedings will disclose that practically every major question relating to the ownership, conservation, development and administration of the water resources of the arid and semi-arid west, has had the careful consideration of this Association. Our proceedings contain many valuable articles by eminent authorities of the legal profession, on water laws, court decisions and relations between the State and Federal governments, and by experts on the economic aspects of western reclamation. There will be found in these Proceedings, digests of state water laws and court decisions; articles on interstate water problems; inter-state compacts and litigation; administrative procedure and its related problems of hydrography, hydrology, meteorology, return flow, underground waters, and laws relating thereto; flood runoff, soil erosion, duty of water, state supervision over the design and construction of dams, and many other similar subjects of vital interest to the western states.

Other articles treat on the reclamation policies of these states, organization for, and planning of the development of water resources, penalties for lack of forethought, correlation of effort between Federal and State agencies in water matters, coordination of multiple uses of the waters of our western streams, stabilization of commercial phases in uses of water, industrialization of the West, analysis of so-called Federal Authority bills and threats, digests of State and United States Supreme Court decisions in litigation over water problems, Federal vs. State ownership of the unappropriated waters of the West, co-operation between State and Federal departments, ownership of return flow, refinancing of irrigation, drainage and levee districts, economic phases of the uses of our western waters, drought conditions, digests of the engineers' registration laws of the United States, the place of the state engineers in a program of national defense, reviews of project investigation, planning and development in the western states, and many other pertinent subjects.

State water rights upheld

With respect to questions of State and Federal relations, this Association, by appropriate resolutions, has invariably endorsed, in the strongest terms, the closest possible co-operation between our respective offices and the various Federal departments and bureaus, and has urged and worked for appropriations for effectuating our common objectives in the interest of western development. Its members have supplied much basic data on stream flow, diversions and uses of water in the western states, collected and presented information on needs for flood control, and on soil conservation, reservoir sedimentation, and on many other subjects, and

MEMBERS and associate members of the Association of Western State Engineers attending the Fifteenth annual convention included: (front row, left to right) Edward Hyatt, state engineer of California; M. C. Hinderlider, state engineer of Colorado; Alfred Merritt Smith, state engineer of Nevada and most recent AWSE past president; Wardner G. Scott, state engineer of Nebraska and AWSE president; L. C. Bishop, state engineer of Wyoming and AWSE vice president; Fred S. Buck, state engineer of Montana; Charles E. Stricklin, state engineer of Oregon; (back row, left to right) S. T. Harding, professor of irrigation, University of California; E. V. Berg, commissioner of reclamation of Idaho; Thomas M. McClure, state engineer of New Mexico; George S. Knapp, chief engineer of water resources of Kansas; Frank Raab, National Reclamation Association director for Oklahoma; Don McBride, director of the Division of Water Resources, Oklahoma; G. L. Parker, chief hydraulic engineer, U. S. Geological Survey; Dan S. Jones, Jr.; John C. Beebe, western regional engineer, Federal Power Commission; Wells A. Hutchins, Division of Irrigation, Soil Conservation Service; and Perci A. Cupper.

have advised on all these, and related matters, with Federal agencies and our Congressional delegations at Washington. More recently some of our members and associates have been able to contribute our bit to the war effort in the way of reports on availability of water supplies, raw materials, locations for war activities, etc.

On the other hand, this Association has invariably stood for what its membership conceived to be the constitutional and legal rights of these western states, to the ownership, control and administration of their water resources, subject only to the constitutional rights of the Federal Government to regulate the waters of navigable streams, and has strenuously opposed attempted encroachments upon such rights by Federal bureaus and departments.

In making this statement, the writer wishes it to be clearly understood that the position of our Association, and its individual members, is based upon our concept of the dual authorities and responsibilities of the States and the Federal government, and this position is not to be regarded in any sense as a criticism of the local representatives of the various Federal bureaus with whom the members of this Association very generally have had the most cordial relations and finest co-operation.

Responsibilities of state engineer

Years of service and experience in administering the duties of our respective offices have amply demonstrated the need for facts, reliable data and information at apt times with which to evaluate conflicting claims and upon which to make intelligent and logical decisions, and for an adequate understanding of the problems of the other fellow with whom we must deal. As announced in our constitution, this is one of the main purposes for which this organization was created, namely, an exchange of experiences, ideas and suggestions for the purpose of improving methods of procedure of our respective offices, and our services to the public.

The statutory responsibilities of the members of this Association, in their capacities as state engineers, are of a peculiarly different nature than those of any other State or Federal official, in that they are not only administrative, but, to a certain extent, quasi judicial in character. We are charged by law not only with the duty of collecting and publishing factual data covering the water resources of our respective states, but more particularly with the great responsibility of protecting every decreed appropriator in his rightful use of the public water supplies of these western states by a proper administration of court decrees or a system of water permits which frequently requires the exercise of quasi-judicial functions.

We are also charged by law with the grave responsibility of passing upon the adequacy and safety of large engineering works required for the conservation and regulation of the waters of these western states, all of which constitute, in some degree, a potential menace to life and property. To a number of our membership have been delegated, from time to time, the responsibility of negotiating inter-state compacts, and, later, the administration of the same. The writer knows of at least one of our group who is responsible for the administration of two decrees of the Supreme Court of the United States and may be charged with the administration of others in the not too distant future. Also, many have been required, from time to time, to collect, correlate and prepare engineering data for use in inter-state litigation, and have been called upon to testify at length in these suits.

Relationship with the public

Probably all of our members have been called upon to make preliminary engineering and economic studies of proposed projects for water conservation and flood control, and on the need for supplemental water supplies for older irrigated areas, and to prepare reports in support of the same. These duties have required no small part of the time from our regular statutory duties, and also innumerable trips to the seat of government, in attempts to obtain the necessary financial support for the construction of such projects.

Our responsibilities call for decisions which may be far-reaching in their effect, and which may involve not only the property rights of individuals and groups thereof, but our relations with sister states, and the good faith of our own individual state. In our administrative capacities, we are called upon to dispassionately ponder innumerable controversies between water users, and to evaluate the opinions of the legal fraternity, and to interpret laws, court decrees and decisions, the meaning of many of which lawyers are not always in agreement, and which the courts themselves are not always able to harmonize.

If, in the light of experience, we exact over-much in the way of plans and specifications for, and in the construction of important storage works which affect the lives and properties of the citizens of our respective states, we may be criticized by those who must finance the cost of such works, while, if such structures fail, we are criticised for carelessness and neglect. We, as state engineers, are called upon almost daily to deal with one of the most illusive and intangible of elements—namely flowing water—and other unpredictable vagaries of the natural elements affecting its distribution, and, last, but not least, with human nature.

When some of our members have been so fortunate as to get by with our own water users, we are called to account by some brother state engineer for having stolen all the waters of a common inter-state stream, or are cited into court on a charge of contempt for violation of a court decree or compact. If, in an attempt to improve our services to the public, we ask our legislatures for larger appropriations, we are met with the argument that our claims are not logical because we managed to get by in

previous years with a lesser appropriation, or perchance (by skimping) were able to return to the general fund some unexpended balances.

The manner in which these varied responsibilities are discharged daily affect not only the property rights of a large percentage of the citizens of these western states, but also the lives of thousands of inhabitants thereof. These duties are of such character as to demand of our membership a solemn consciousness of our responsibilities to the public, and a high regard for our individual state and inter-state obligations.

Services of the Association

The articles and discussions coming out of the meetings, and deliberations of this Association, have been a most valuable contribution to the general fund of information derived from hard experience. They have definitely indicated the need for improvements in administrative procedure, a better understanding of one another's problems and methods for meeting the same, and a greater degree of co-operation in meeting these problems. These meetings which have afforded opportunity for representatives of Federal bureaus to explain their functions and activities as they touch upon or fit into our own particular activities, and to become better acquainted with our problems and views, have been of inestimable value to the members of our organization, and we believe in turn, have been of assistance to them.

On fundamental questions involving conflicting State and Federal views on many matters having to do with western development, as heretofore stated, this Association has never hesitated to announce its stand, as shown by many of the resolutions it has adopted and urged upon Federal bureaus and the Congress. On the other hand, this Association has a consistent record of supporting in the fullest degree Federal activities and appropriations designed for the development of these western states, and in cooperating with the Federal bureaus charged with such responsibilities.

In addition to the sponsoring of resolutions on pertinent problems by our Association, its members have been active in sponsoring legislation in their respective states tending to improve administrative procedure, or which were designed to encourage the conservation and development of the water and land resources of the western states. The members and associates of this organization we feel need no stimulant or "prodding" to make them mindful of their individual responsibilities and duties in this time of National peril, and I feel sure that we, as an organization, and as individuals, will not and must not be found wanting in this great emergency.

From the foregoing review of its aims, activities and accomplishments, it must be apparent that this Association has lived up to the high objectives of its constitution, and has fulfilled at least in a major degree, the expectations and hopes of its founders. And if, in the future, we adhere to these ideals and principles, this Association can be of even greater value to these western states in assisting in the solution of grave post-war problems, than it has been in the past.

Steel Will Not Be Replaced By Synthetics, A. I. S. C. Is Told

CONTROL OF STEEL fabrication by federal war agencies, emergency specifications for steel construction, and post-war planning were the principal subjects under discussion at the Twentieth Annual Convention of the American Institute of Steel Construction, held Sept. 29 to Oct. 2, in Colorado Springs, Colo. Restrictions on the use of steel for other than war purposes threaten to close down one-half of the structural steel fabricating capacity of the United States during the coming year, Clyde G. Conley, A.I.S.C. president, told assembly members at the institute at the convention's opening session.

New specifications

Jonathan Jones of the Bethlehem Steel Co., and chairman of the A.I.S.C. Committee on Specifications, reported the issuance of a tentative specification for the design, fabrication and erection of structural steel for buildings by arc and gas welding. Embodying appropriate portions of a newly revised building code of the American Welding Society, A.I.S.C. specifications augment this code by adding details regarding loads and unit stresses for the design of main members, as well as design of welding.

A committee appointed by the Federal government, on which the institute is represented by F. H. Frankland, director of engineering, issued a new temporary emergency specification devised to conserve the use of steel during war emergency, which sanctions the use of 24,000 lb. per sq. in. in tension and a proportionate increase in shear, but no increase in column stresses.

The A.I.S.C. committee on specifications recommended to the board of directors that no A.I.S.C. designation be attached to the National Emergency Specification inasmuch as it could be used to produce somewhat dangerous structures in unskillful hands, or with improper motives. The committee on specifications also recommended to the board of directors that the Institute approve as co-sponsor with the American Society of Civil Engineers the building code requirements for structural steel of the American Standards Association.

Research continued

Research in structural steel fabrication is being continued by A.I.S.C. Research Fellows, according to a report delivered at the convention by F. H. Frankland, director of engineering for A.I.S.C. Principal items of structural research are studies of steel columns of rolled wide flange section; continuity in riveted building connections; stability of stiffened plates in compression; compressive properties of perforated cover plates for steel columns; and strength and rigidity of rigid frame knees commonly used in ship construction.

Synthetic construction materials will not replace steel construction in the post-war period, according to V. G. Iden, A.I.S.C. secretary, in his report to the Twentieth Annual Convention. The volume of factory construction during the second quarter of 1942 was larger than the total volume of factory construction in the United States throughout the year 1929, according to Mr. Iden. The present rate of highway expenditures is not sufficient even to maintain our highways at the level of excellency which existed in 1941, and the resulting deterioration is indicative of the post-war planning that must be done now. Studies already made indicate that a system of inter-regional roads, amounting to some 30,000 mi., must be built at the end of the war, and much money must be spent on the existing 200,000-mi. federal highway system to bring those roads back to pre-war efficiency.

Potential reclamation projects

John C. Page, commissioner of the Bureau of Reclamation, in a message to the A.I.S.C. convention, said that the second important consideration is the laying of a foundation for the post-war period. In considering the post-war problems of the West, Mr. Page pointed out that the economic foundation of the West has been—and will always be—the proper utilization of its water supply, including irrigation of agricultural lands, production of hydroelectric power, provision for industrial and municipal water supplies, and regulation of streams for flood control and navigation. Of the 20,000,000 acres now being irrigated in the West, about 11,000,000 acres require supplemental water to maintain agricultural production. Projects in the present program of the Bureau of Reclamation are designed to furnish supplemental supply for about half the acreage. Bureau of Reclamation engineers estimate that the water resources of the West can be conserved to provide adequate supplies for all land now irrigated, and an additional 20,000,000 acres.

Government construction was estimated to be 71 per cent of all construction for the first six months of the year, and is expected to reach 82 per cent in the last six months, according to T. H. Hendrix, director of statistics of the American Institute of Steel Construction, in his annual report at the Institute convention.

WATER from the wrecked reservoir is shown flowing through the only culvert provided under the highway. At the time of this picture, the crest of the flood had passed, and the culvert was handling the normal thaw flow.

Dam Break Jams Nevada Highway With Ice Flood

AN ICE FLOOD was the cause of a traffic block on U. S. Highway No. 50 west of Eureka, Nevada, in March, 1942. This unique experience in a district generally considered to be desert, piled cakes of ice over the highway across the entire width of a flat streambed depression, a distance of 500 ft., and made the use of heavy equipment necessary to reopen the road.

The flood occurred when a period of warm weather, accompanied by a warm rain, caused an excessive run-off from an extensive drainage area which was covered with 6 to 8 in. of snow lying on ground which had been frozen from 18 to 36 in. in depth.

The pressure from this heavy run-off caused a small earth dam about a mile above the highway to burst, and the full capacity of the reservoir came against the roadway embankment. The one small culvert which had been provided in the embankment was unable to carry the main body of this water, and for about two hours, the highway was inundated.

Ice which had formed on the reservoir during the winter broke up when the water level suddenly subsided, and the blocks floated downstream with the water, many coming to rest on the roadway. The blocks were about 2 ft. thick, and ranged from 3 ft. square to 20 ft. square. All of those which lodged on the embankment did so between the upstream shoulder of the highway and the center line. Blocks which passed the crown were able to slide down the other side and continue downstream.

It was necessary to employ one of the state highway department's ½-yd. Northwest power shovels to remove the cakes of ice from the road. An ordinary highway scraper was first tried, but proved to be neither large enough nor heavy enough for the massive chunks. There was no more permanent damage to the embankment or the bituminous surface of the highway than would be caused by an ordinary water flood of the same proportions.

Robert A. Allen is state highway engineer of Nevada, and A. G. Kinne, division engineer, is in charge of the section in which this ice flood took place. The photos were taken by Kinne.

PRACTICALLY ALL THE ICE was deposited between the upstream shoulder of the road and the center line. The cakes were about two feet thick, and as much as 20 ft. square. The roadway was not seriously damaged.

THE BLOCKS were so large that they could not be moved by an ordinary road scraper, and it was necessary to employ a ½-yd. power shovel to clear the road and permit its restoration to traffic. Some bank erosion can be seen on the downstream shoulder.

Substitute Materials—
Highway Construction Suggestions Revised

Changes in availability of many critical materials result in revision of suggested substitutes as outlined by the WPB Conservation Division six months ago—Principal changes include lead from critical to available and structural lumber from available to critical classifications

ELIMINATION of the use of critical materials from the construction of highways and highway structures was first considered early this year, and about the middle of March the Public Roads Administration made public a list of possible substitute materials for use in highway and bridge construction together with a division of construction materials into three groups termed critical, moderately critical, and available, respectively. These recommendations, prepared by the Specification Branch of the Bureau of Industrial Conservation, WPB, were published in full in the June, 1942, issue of *Western Construction News*.

Early last month the Specifications Branch issued a revised list of critical materials with suggested substitutions for the construction of highways, bridges, and culverts. Many of the suggested substitutions remain the same as in the original list, but the situation of many materials as regards availability has changed considerably in the past six months. This is particularly true in regard to the availability of many grades of lumber and present indications are that lumber will become even more critical in the next few months.

Rather than publish the changes which have occurred in the availability of critical materials and their substitutes since the issuance of the original recommendation, the complete new recommendation is published herewith. The list of substitutions and suggested alternate designs is intended only as a guide and does not preclude the use of other substitutions, provided no critical materials are employed. Any construction or maintenance work done must, of course, comply with all of the directives for war-time construction issued by the War Production Board.

Engineers and contractors will quickly recognize that the materials and suggested substitutions included on the following list are the principal construction materials used on any type of heavy construction project, and the suggestions included are applicable in many types of construction in addition to highways and bridges. The suggestions should be carefully applied to all construction; to that performed by the Army, Navy, and other war agencies, as well as highway departments.

As far as the three groups of critical materials (listed in an accompanying tabulation) are concerned, it should be borne in mind that Group I—Critical Materials includes those of which there is an inadequate supply available for war and essential civil use, and, in many cases, for war use alone; Group II—Moderately Critical Materials includes those which are essential to the war industries, but the supplies are not as limited as those in Group I; and Group III—Available Materials includes those which are available in significant quantities as substitutes for scarcer materials, but their supply may be restricted by labor, manufacturing, or transportation difficulties. Since the critical status of materials with respect to supply and demand is continuously changing, the grouping is subject to change from time to time. The accompanying list is based upon informatory grouping of materials according to the relative availability as of Oct. 5, 1942.

The following paragraphs list items of construction in which currently critical materials were usually used (in bold face), the critical material involved, and suggested substitutions of less critical materials. Almost no material may be said to be completely free from some restriction, however.

Blast plates—Wrought iron or alloy steel usually used.

Substitute heavy corrugated asbestos-cement composition board if adequately supported and sufficiently high above exhaust blast of locomotives. Blast protection may be provided by extra thickness of concrete or corrosion and acid resistant paint or enamel.

Bridge rail—steel or iron usually used.

Substitute temporary wooden rail with wooden posts designed for future replacement with steel, or reinforced concrete posts and rail; or concrete posts with temporary wooden panels designed for future replacement with steel panels. Permanent reinforced concrete rail or adequately designed timber rail may be used where traffic considerations dictate.

Bridge shoes—bronze or steel usually used.

Substitute malleable iron plates or steel plates separated by lead plates, or with graphite coating. Roller or rocker type of shoes should be employed to avoid sliding plates. Bronze should be used only where essential as on movable span bridges.

Bridge shoe seatings—lead usually used.

Substitute, where satisfactory results can be obtained, cement grout or duck (heavy canvas) approximately 12-oz. swabbed with lead paint. Lead is less critical than previously reported, and thin sheets may be employed where needed.

Concrete curing material — burlap usually used.

Substitute curing for concrete pavement and other slabs may be accomplished by any of several methods, as follows:

(a) Wet cotton mat coverings for entire curing period.

(b) Initial wet cotton mat coverings, or, if not available, water spray followed by application of continuous sprinkling; ponding; coverings of wet earth, sand, sawdust, straw or hay; waterproof paper; membrane seal coats; calcium chloride, or sodium silicate.

(c) Seal coats of membrane compounds or waterproof paper.

Sisal fibre is scarce and should not be called for in curing papers. The use of bituminous curing compounds is somewhat restricted.

Substitute curing for concrete structures may be accomplished by the use

Group I—Critical Materials

Alloy iron
Aluminum
Brass
Bronze
Copper
Wrought iron
Alloy steel
Steel plates
Structural steel and piling
Wire rope
Wire products
Rails and reinforcing steel
Pipe
Burlap
Manila fiber hemp
Sisal hemp
Lumber: All structural grades;
- No. 1 and 2: So. Pine, Doug. Fir, Western Hemlock, Sitka Spruce
- No. 2 and 3: White Pines and Pond. Pine
- F.A.S., Select and No. 1: Hardwoods except gums

Tung oil
Pig or hog bristles
Rubber

of cotton mats, continuous sprinkling or colorless membrane seal coats.

Concrete curb nose — metal usually used.

No substitute material recommended. Omit all metal curb noses.

Concrete forms—wood and steel usually used.

No removable steel forms should be used except those already fabricated.

Concrete form lining — plywood or fibre board usually used.

Substitute form linings, or omission where practical, should be included in specifications. Plywood for form lining is still available in many parts of the country if phenol-formaldehyde binder is not used. Preference ratings will not be extended for form linings.

Cribbing—galvanized iron is usually used.

Substitute treated timber or gravity type concrete.

Culverts—metal plate usually used.

Substitute masonry arches, gravity type concrete arches, wood box culverts, or reinforced concrete boxes, wood pipes, concrete pipes or clay pipes. Avoid usage of metal plate except where loads to be carried and type of subsoil are such that integrity of structure depends upon strength combined with flexibility.

Group II—Moderately Critical Materials

Gray cast iron
Malleable iron
Pig iron
Acetic acid
Cork
Linseed oil
Lumber: Select Grades So. Pines and West Coast No. 1 and Select West. Pine Assn.

Culverts—concrete usually used.

Substitute concrete arches, gravity type concrete walls with wood tops, wood boxes, or pipes. Use as little steel as possible.

Dowell caps—rubber sometimes used.

Substitute cardboard or other suitable material.

Electrical equipment

Substitute reconditioned used motors where electric motors are essential as for operating pumps or draw spans. Unless immediate service is essential, installation of electrical equipment, including lighting systems, should be postponed. Non-metallic conduits may be provided for future installation of wires.

Expansion bolts—metal usually used.

Substitute ferrous material with non-metallic coating. Fastening with lead is permissible.

Expansion dams in bridge floors—structural steel usually used.

Substitute open joints with light steel edges and reinforced concrete diaphragms wherever practicable. If water falling through open joints is objectionable, it may be collected in small non-metallic troughs or gutters on top of concrete bents.

Group III—Available Materials

Lead
Muriatic Acid
Asbestos (short fiber)
Asphalt
Brick
Cement (Portland)
Coal Tar pitch
Concrete, plain
Lead pigments
Lumber and millwork:
Low common grades:
Soft and hardwoods
All grades gums
Paper
Paperboard
Plywood

Expansion joint filler—cork or rubber usually used.

Substitute bituminous or other suitable material. Eliminate both cork and rubber.

Fence—galvanized wire usually used.

Substitute wood posts and wood fence wherever possible. Ferrous metal wire fencing weighing not more than 2 lb. per lin. ft., or not more than .33 lb. per sq. ft., mounted on wood posts, and without metallic top rails may be used. Ferrous metal gates and gate posts permitted for openings wider than 10 ft. Zinc coating permitted on wire mesh only.

Fertilizer—commercial forms usually used.

Avoid using ammonium salts and all nitrates in form of commercial fertilizers.

Flashing in joints of concrete walls or abutments—copper usually used.

Substitute lead sheets with protective coatings where possible. Insofar as practicable, joints should be designed without flashing. Copper should not be used.

Other possible substitutes for copper flashing are:

(a) 26-gauge galvanized iron or steel (Fed. Spec. E-QQ-I-696).

(b) 26-gauge black iron or steel painted with two coats of coal tar pitch paint (Fed. Spec. E-QQ-I-696 for black iron or steel).

(c) 26-gauge black iron or steel painted with one coat of red or blue lead and two coats of iron oxide or hydroxide paint. (Fed. Spec. TT-P-20, or TT-P-31.)

(d) Membrane consisting of a wire mesh embedded under pressure between two layers of asphaltic felt.

(e) Bentonite held in place by 26-gauge iron protected by fabric waterproofing.

Floors—open steel grid or steel plate usually used.

To be used only on movable spans and for emergency repairs of existing bridges.

Gratings—cast iron usually used.

Substitute designs involving only concrete and wood as far as possible. Gray iron castings may be used where essential for installations carrying direct wheel loads of vehicular traffic.

Guard fence—metal plate rail or wire cable with steel, concrete, or wood posts usually used.

Substitute wooden rail on wooden posts, wooden posts alone, or stone.

Gutters and downspouts — copper, lead, galvanized ferrous materials usually used.

Substitute wood, asbestos-cement pipe, terra cotta, painted or zinc coated ferrous metals or lead.

Hardware on timber bridges—galvanized iron usually used.

Substitute asphalt coated hardware where possible. Zinc coated hardware may be used on timber bridge construction where advisable, especially in seacoast areas.

Lamp standards—metal is usually used.

Substitute wood.

Manholes—brick or reinforced concrete is usually used.

Substitute brick, plain concrete or vitrified clay.

Manhole covers and frames—iron is usually used.

Substitute reinforced concrete or wood.

Masonry anchors, clamps and ties—galvanized metal is usually used.

Substitute uncoated or non-metallic coated ferrous metal.

Nails—galvanized ferrous metals are usually used.

Substitute uncoated ferrous metals where climate and usage permit.

Name plates, plaques and ornamental fixtures—metal is usually used.

Omit all such metal fixtures.

Paint—aluminum is usually used.

Substitute zinc base paint except "French process" zinc oxide if essential because of atmospheric conditions. Avoid usage of aluminum.

Paint—red lead, blue lead, white lead usually used.

Available for essential uses.

Paint brushes—pig and hog bristles usually used.

Substitute spray painting where necessary equipment is already available. Precautions should be taken to conserve brushes as far as possible. Where brushes are necessary, they should conform to Emergency Alternate Federal Specifications.

Pipe culverts—corrugated galvanized metal usually used.

Substitute wood, concrete, or vitrified clay pipe. Corrugated metal pipes should be used only where extensive articulation is needed to allow for differential settlements as in culvert pipes carrying heavy and uneven loads and supported on flexible bases, and only where other types will allow failure of the roadway.

Pipe culverts—concrete usually used.

Substitute plain concrete, vitrified clay, wood, or other types not requiring metal. Use reinforcement only in larger pipe sizes (in excess of 24-in. diameter).

Pipe—cast iron usually used.

Substitute wood, asbestos-cement pipe or reinforced concrete where practicable.

Pipe—wrought iron or steel usually used.

Eliminate unless essential.

Piling—steel sheet usually used.

Substitute timber cofferdams as much as possible. Use steel sheet only where

essential, and then pull for reuse if at all possible. Loose rock or unreinforced concrete should be employed as riprap for scour protection.

Piling—steel H-beams usually used.

Substitute timber piles, but where they cannot be safely used, precast reinforced concrete piles may usually be employed. Use steel beams only where essential.

Piling—reinforced concrete usually used.

Substitute timber piles where practicable. Use reinforced concrete piles of either precast or cast-in-place (steel shell) type only where soil conditions render timber piles unsatisfactory. Piles should be designed to employ a minimum amount of steel and be so placed as to require a minimum number of piles.

Piling—timber usually used.

(See item concerning timber bridges.)

Reinforcing steel bars and wire mesh—new billet steel, rail steel and axle steel usually used.

Substitute design structures to employ a minimum amount of reinforcing steel consistent with the integrity of the structure. The following design practices are recommended:

(a) Designs requiring the use of compressive reinforcement in flexural members should be avoided wherever possible.

(b) Where practicable the width and depth of members shall be increased to minimize the use of web reinforcement and special anchorage.

(c) Where the sizes of the members are not increased unduly, use plain concrete or masonry for footings, walls and piers of substructures.

(d) Use gravity or semi-gravity type retaining walls and buttresses where limitations of space or foundation conditions do not prohibit.

Use a value of n equals 10 for most concrete, and 8 if 4,000-lb. concrete is secured. Use an allowable working stress of f_s equals 22,000 lb. per sq. in. for intermediate grade steel bars, and hard grade bars (billet steel, rail steel or axle steel) and 20,000 lb. for structural grade reinforcing steel.

Specifications might well allow minor deviations of reinforcing bar size and spacing so as to permit a contractor to utilize miscellaneous sizes of bars locally available.

In concrete pavement the use of reinforcement should be reduced or eliminated by the substitution of non-reinforced slabs for reinforced slabs. Details of recommended designs employing the minimum amount of steel are shown in issue No. 3 of "War-Time Road Problems" published by the Highway Research Board.

Riprap.

Substitute loose rock where available. If concrete is the only suitable material, it should be used in bulk, not reinforced, and not in burlap bags.

Road signs—metal usually used.

Substitute wood.

Scuppers—wrought iron or cast iron usually used.

Substitute designs to avoid usage of metals. This can be done by forming necessary openings in bridge floor concrete in positions where discharged water will not be objectionable, or by employing asbestos-cement or vitrified clay pipes.

Structural steel—plates and shapes usually used.

Substitute plain masonry, wood or reinforced concrete, wherever practicable. Structures should be designed to require a minimum poundage of structural steel.

Where structural steel is the only material suitable for the design of any structure, the sizes and shapes employed should be limited to the abbreviated list of shapes now being produced. This list of shapes was prescribed by the Office of Production Management in a general letter to all steel producers dated Oct. 22, 1941. (See *Western Construction News*, Dec. 1941.) Copies of the list with characteristics and design data are available from most major steel companies.

Timber bridges—wood usually used.

Substitute plain concrete or masonry for wood wherever possible. There is a shortage of certain structural grades of lumber, especially in the larger sizes and higher fiber stress grades. This shortage includes practically all grades of Southern Pine and Douglas Fir. There is also a shortage of transportation equipment for moving lumber. In temporary bridges, and in sign posts, etc., only lumber which is locally available should be required. Many lower grades of hard wood lumber are especially adaptable, and are more available than some soft woods. Ring connectors or other devices should be employed to reduce as far as possible the amount of wood required.

There is also a shortage of creosote, especially in certain sections of the country, and as much untreated timber as possible should be used. Where treatment is necessary, a minimum amount of oil should be used. Timber treated with zinc chloride or borax or boric acid and borax mixture may be used.

Traffic control devices—signal lights usually used.

Avoid or postpone installations unless immediate control is essential.

California A.W.W.A. Section Hears of War-Time Problems

Emergency repairs, camouflage, substitute materials, and maintenance occupy the attention of water works engineers and superintendents at the twenty-third annual meeting of the section held last month in Oakland as a war-time conference

ATTENDED by more than 500 water works engineers and superintendents, the California Section, American Water Works Association, held its Twenty-Third Annual Meeting, featuring a Wartime Conference Program, at Oakland, Oct. 28 to 30. With wartime problems a feature of the program, the large majority of the discussions was devoted to this subject.

Following the opening of the conference, John S. Longwell, chief engineer and general manager of the East Bay Municipal Utility District, discussed the wartime problems encountered by his organization. Lieut. Col. Frank V. Ragsdale, speaking on "Water Works in Wartime," reported that distribution problems for army projects are, in many respects, similar to civilian problems. A feature of army water supply development is the unusual sources which have been uncovered in many instances. One particular difficulty in designing water supply systems is the speed with which construction is undertaken. When errors are made in plans, they can seldom be corrected by erasure the following day, but usually require the tearing up of the work which was accomplished the previous day. Col. Ragsdale stated that fire protection facilities often cost more than the structures being protected, but the saving is considered in the possible loss of time and facilities.

Guarding utilities

George A. Hunt, guard co-ordinator for the Pacific Gas and Electric Co., described the problems of plant security for utilities. Most utilities, Mr. Hunt said, must have private guards working under the general supervision of the Army. Such guards are paid by the organization, but selection, training and operation is supervised by the Army. It is considered practically impossible to protect widely scattered utilities against organized sabotage; consequently, the sensible aim is to protect with armed guards against the casual saboteur. Limited funds will limit protection to only the most essential facilities. Structural protection—such as sandbags, barricades and other physical property—may be considered a better means of protection, since the structures will have some salvage value, while money spent in guards is completely consumed without possibility of return. Internal security supervision on the Pacific Coast has been taken over by the IX Service Command, and will be administered in California from offices in Los Angeles and San Francisco.

New drinking water standards proposed by the U. S. Treasury Department represent an invasion of the field by the Federal Government, according to Ray F. Goudey, sanitary engineer with the Bureau of Water Works and Supply, Los Angeles, who discussed this subject. Application of the proposed changes from the standards will result in the abandonment of many present sources

of supplies, according to the speaker, who recommended that the A.W.W.A. act to amend the new standards.

Metallic spray maintenance

Metalizing sprays offer a valuable method of conserving metal in water works maintenance, according to J. S. Stevens, superintendent of yards and shops for the East Bay Municipal Utility District, Oakland. Metallic spray methods have been developed to a more satisfactory efficiency during the past few years, but the limitations of the process should be observed. The principal use of metallic sprays is in protection against corrosion. Users should keep in mind the fact that sprayed metal is essentially cast metal, and has no tensile strength, lacking the welding action since base metal is not heated during the application. A most important consideration in the use of metallic sprays, Stevens said, is preparation of the base. A sand-blast has been found to give a satisfactory surface, while threading of small cylindrical shapes, such as pipes, followed by a flattening of the threads, has worked quite well. In one instance, the East Bay Municipal Utility District coated sixty-four metal troughs for a filter plant as corrosion protection. Exhaust pipes of air compressors have been coated with aluminum by the same process.

Water works engineers need to study oil field methods, Richard Bennett, hydraulic engineer for the Phoenix, Ariz., water department, told those attending the conference in a discussion of the use of substitute materials in the water works industry. In these days, engineering ingenuity is more important than money, and pioneering work undertaken in new fields at this time may result in important developments for later use. Among the substitute materials which Bennett discussed briefly was cement-asbestos for well casings and screens. Concrete and wood have been used for the same purpose. Plastics have not yet been used successfully for such facilities. Bennett recommended against any attempt at increases in filter capacity, and suggested instead that installed equipment be operated at overloads. Substitute materials will be used in chlorinators in the future, and the water works operators were cautioned to utilize clay products such as brick, tile and gypsum, wherever possible.

Wartime problems

Speaking on the mobilization of the civilian army, Capt. Wm. Ingram of the U. S. Public Health Service, emphasized the fact that the damage which would result from an enemy aerial attack cannot possibly be visualized until it has actually been seen, and that the only method by which preparation may be made for such attacks is by the constant use of incident drills which simulate an attack as well as possible. Such drills should include all of the necessary movements, rather than merely simulation of the movements, Captain Ingram said. Some difficulties connected with incident drills may be overcome by the use of props where the actual facilities cannot be handled or placed in position for drills. Incident drills may also be used to check the work of crews, and to carry out routine tests of valves. The incident drills will help to establish the training and temporary work which is essential for the proper functioning of a civilian army during an emergency.

Camouflage methods and materials were discussed by Sterling S. Green, materials engineer for the Los Angeles Bureau of Water Works and Supply. The most important consideration in the preparation of camouflage is availability of materials and financing. In war industry areas, water works structures are more likely to be important as landmarks than as objects of direct attack. A complete concealment is not considered necessary. In planning such concealment to confuse air-raiders, consideration should be given to surrounding vegetation, natural cover, and paint. For exposed pipes and tanks, the water-based paint in shades matching the adjacent vegetation was found to be the most satisfactory, although problems arose in securing a bond between the existent aluminum paint and the new cover. Because seasonal changes in vegetation coloring will require repainting, the use of an inexpensive paint is justified, and a water-based material was found to be more satisfactory than oil-based, since it was unnecessary to wait for structures to dry completely following showers or heavy dew.

Smoke screens appear to be the best method of concealing large reservoirs. Pits can be dug by bulldozer on the prevailing wind side of the reservoir and filled with oil, to be lighted at the beginning of a raid. The greatest concealment was accomplished by placing the pit about 2,000 ft. from the reservoir, which gave the smoke sufficient time to spread before reaching the shore line.

Emergency repairs

An efficient and economical water supply and treatment plant was demonstrated by George L. Woods, water superintendent of Bishop, Calif. A limited budget, due to the city's furnishing water to residents without cost, required the development of a water source and treatment plant which could be operated at as little expense, and with as few men as possible. Illustrated by motion pictures and models, Woods proved the soundness of his accomplishment to all those attending.

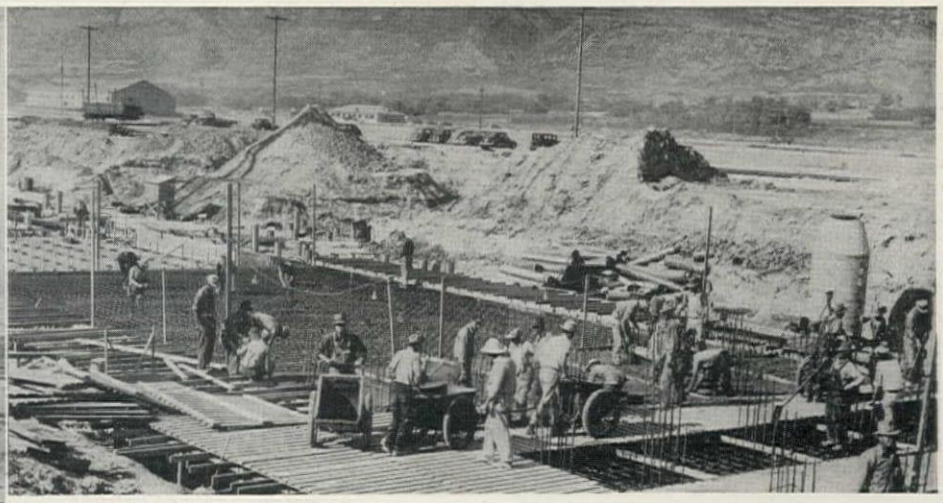
Little practical knowledge is available so far as the subject of emergency repairs to water systems is concerned, George W. Pracy, superintendent of city distribution, San Francisco water department, told the engineers attending the convention. Most of the knowledge available comes from reports made by water supply engineers in England. The plan developed in San Francisco provides for temporary plugging of broken mains during the night, and more complete repairs during daylight hours. The city has been divided into 22 districts, ranging from three-quarters to four sq. mi. in area, with six men assigned as emergency crew for each district. At the present time, one-third of the emergency crew is on immediate call each night, and is actually on duty whenever preliminary air raid warnings are received.

It has been found possible to put crews on the street within 10 min. after a warning has been received. For emergency use, the water department has compiled a list of contractors having construction equipment available in San Francisco which would be available in an emergency. In the case of a major failure in the water supply system, it is believed that water could be supplied to the city by sprinkling trucks from the street department. This system was satisfactorily operated during an emergency several years ago at the Golden Gate International Exposition.

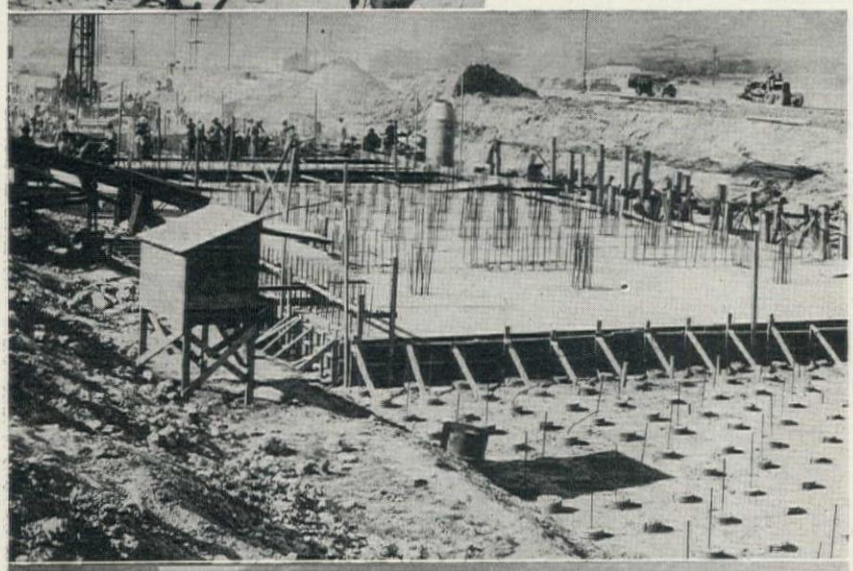
War industry areas

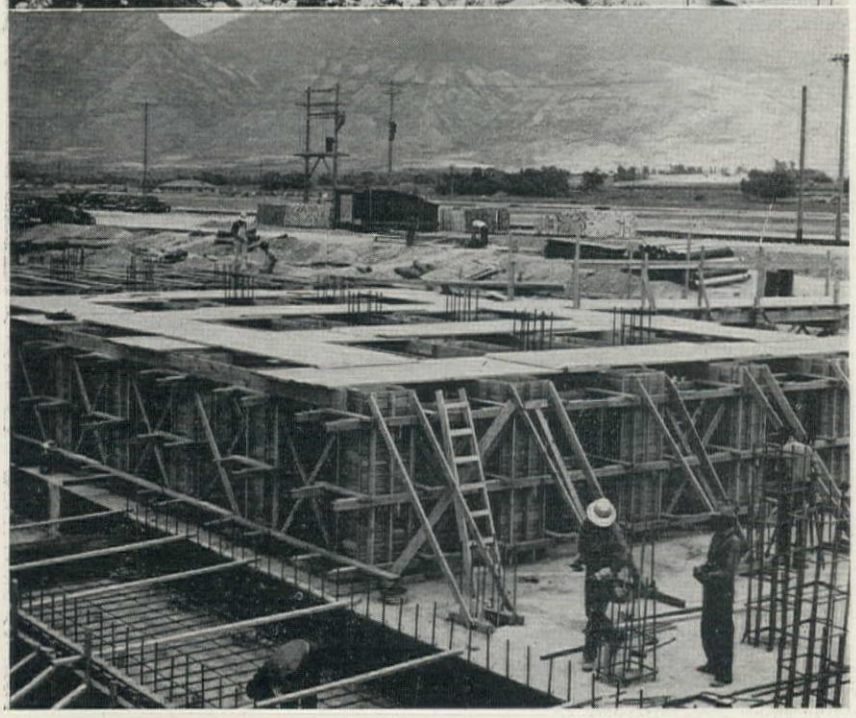
F. A. Rhodes, director of Public Works, San Diego, presented a graphic picture of what has happened in some communities during the past two years, and the accompanying problems as to sewage disposal. In 1939, San Diego had a population of less than 200,000. The 1940 census indicated a population of 203,400, with a rate of growth of about 6,000 per year. At that time, the water and sewerage systems were adequate for a population of about 215,000, and steps were undertaken to increase and improve these facilities. In November 1941, the Public Works Department began a program of water and sewer improvement which should have been sufficient for 15 years, but in 1941, the population had increased to 230,000, and by September 1942, the population was stated to be 320,000 plus an unknown number of troops. To meet the demands presented by this tremendous increase in population, it has been necessary to exceed the normal capacity of water transmission lines and to by-pass filter plants. Unessential uses, such as park and lawn irrigation, have been reduced by one-third and the use of chlorine has been increased. The city faces a shortage of water if a dry year should occur in the next two or three years. With insufficient terminal storage, transmission and filter capacity, the ultimate solution of San Diego's water supply problem depends on the development of a source independent of climatic conditions.

At the business dinner held on Friday evening, J. S. Peters, chief engineer and general manager of the Marin Municipal Water District, San Rafael, was elected chairman of the California Section, succeeding Morris S. Jones, chief engineer and general manager of the Pasadena Water Department. Entertainment during the convention included the Purification Division dinner on Wednesday evening, and the Manufacturers' dinner dance on Friday evening. During the opening day of the convention, the afternoon was spent inspecting the shipbuilding operations of the Moore Drydock Company in Oakland.



Utah Steel Plant—





GENEVA WORKS, which will ultimately be one of the nation's largest steel plants, is at present the largest construction project in progress in the eleven western states. It is being constructed by the Columbia Steel Co., of San Francisco, Calif., a subsidiary of the United States Steel Co., for Defense Plant Corp., an agency of the Federal Government. Estimated cost of the completed plant was originally set at $125,000,000 but this has recently been increased to $150,000,000.

In the amount of construction work to be accomplished the project compares favorably with Grand Coulee dam, but the much shorter construction schedule of the steel plant provides, in effect, a larger job. More than 8,000 men are now employed on the project by Defense Plant Corp., Columbia Steel Co., Utah-Pomeroy-Morrison who are contractors for the excavation and foundations, and dozens of other prime contractors and sub-contractors. To house the workmen ten 100-man barracks have been constructed, and twenty more units are under construction. Restaurant and canteen facilities now in operation have a seating capacity of 1,600.

In addition to the Geneva Works, Columbia Steel Co. has completed a railroad to Geneva coal mine, a highway from Columbia, Utah, to Geneva mine, facilities for increased production of iron ore at Iron Mountain, Utah, and is installing a second blast furnace at the Ironton, Utah, steel plant, also near Provo.

At the Geneva Works, railroad facilities have been nearly completed and most of the foundation work illustrated on these pages has been finished. A 310-ac. storage reservoir for the water supply system is likewise completed.

FOUNDATION AND PAD construction for a battery of coke by-product ovens is shown in the series of four pictures on this page. TOP LEFT: driving Raymond-type, cast-in-place, concrete piles for oven foundations. TOP RIGHT: pouring foundation pad over concrete piles. All concrete for the entire project is mixed in a central plant and trucked to the pouring site. CENTER: a completed section of the foundation pad with placed and poured piles in an adjacent section. BOTTOM: column forms in place between the bottom pad and floor of coke by-product ovens.

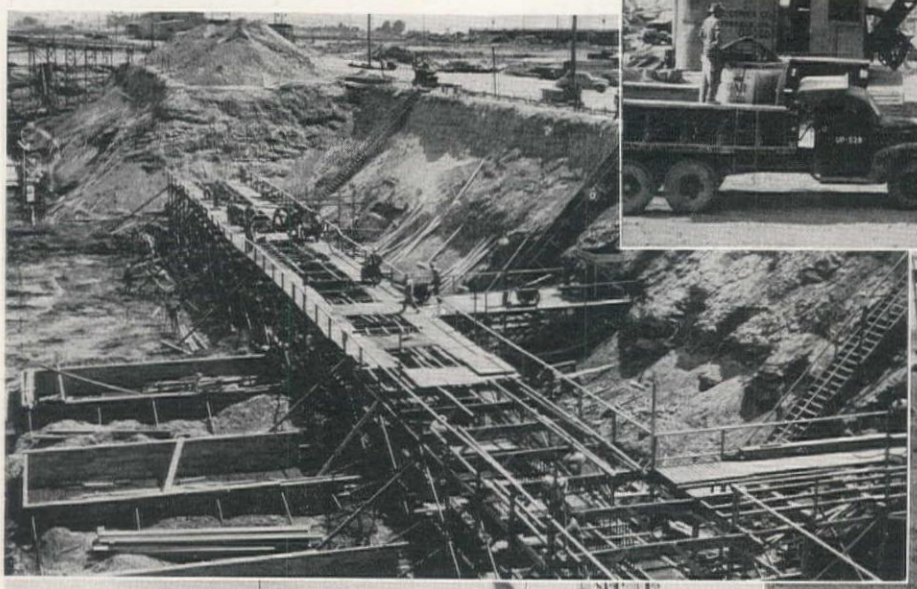
—Columbia Steel Co. Photos.

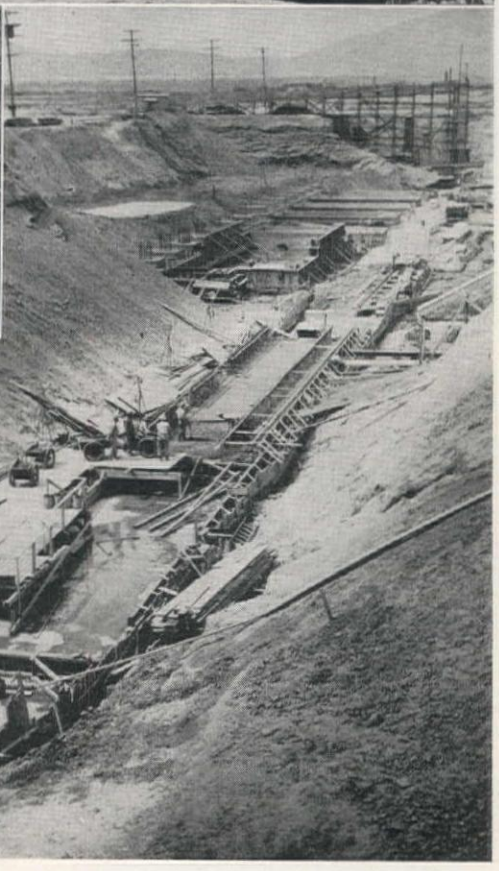
WITH STEEL PRODUCTION scheduled to begin in about six months, foundation construction for the Geneva Works is well along toward completion. LEFT: Excavation for the Columbia Steel Co. administration building which has been completed and is in use; RIGHT CENTER: Concreting the foundation for a blast furnace stockhouse; LEFT CENTER: Pouring concrete in the water intake tunnel slab of the turbine room; LEFT BOTTOM: Driving piles for the blast furnace stove footings at the Ironton plant; RIGHT BOTTOM: Construction of turbine room foundations for steam power plant at Geneva Works.

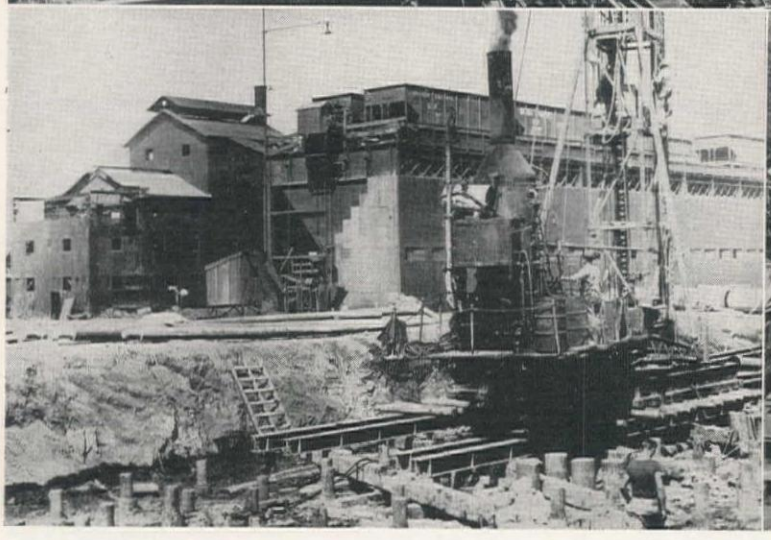
—Columbia Steel Co. Photos.

West's Biggest Job

In charge of all operations is E. M. Barber, vice-president of the Columbia Steel Co., and R. C. Talbot is resident engineer. F. P. Jacobs is civil engineer. M. B. Sheik is project manager. G. R. Putnam is general superintendent for Utah-Pomeroy-Morrison.





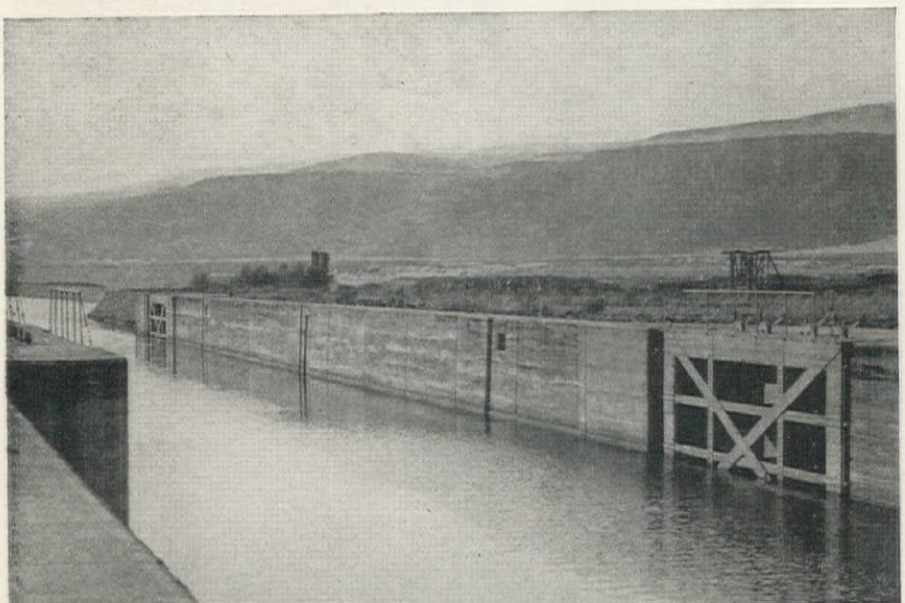


The Scrap Campaign —
Mills Need Still More Steel

Construction industry of the eleven western states must overlook no possibilities in reporting the locations of abandoned construction machines for salvage as scrap—New western mills coming into production during coming months will increase the demand for scrap in this region

ABANDONED construction equipment still represents a fruitful source of metal scrap in the West. Response by the construction industry to the suggestion put forth in *Western Construction News* two months ago, that all information leading to the possible recovery for scrap of all abandoned construction equipment in the eleven western states be turned in to the Industrial Salvage Section of the War Production Board, has been excellent and has resulted in the discovery of a considerable quantity of scrap metal. However, there still remain many abandoned construction machines scattered throughout the West and it is up to those who know where it is—the men who are working on construction jobs and traveling around the western states—to make the location of such scrap possibilities known to the officials in charge of the scrap collections.

TYPICAL of the many photographs of abandoned construction equipment and structures suitable for reclaiming as metal scrap are the three below which have been submitted by readers of *Western Construction News*. Immediately below are 25-ton gate leaves of the Ten-Mile locks on The Dalles-Celilo canal in Oregon. The lock is now unused. At the lower left is one of two abandoned railroad shovels in southeast California, and at the lower right is an abandoned dredge near San Rafael, Calif.



Special projects expedited

To assist in the development of special projects for the salvage of large amounts of iron and steel scrap, WPB formed the Special Projects Salvage Section within the Conservation Division. This organization, working in co-operation with War Materials, Inc., a newly organized subsidiary of the Reconstruction Finance Corp., expedites the movement of metal scrap where salvage is impeded by legal, financial, and other obstacles. Normal procedure in projects of this type consists of location and investigation of the scrap source by the Special Projects Salvage Section and advisory activity to facilitate transfer of title to War Materials, Inc.

War Materials, Inc., is primarily concerned with the financing of special salvage projects. Where necessary it engages and pays contractors for the demolition of structures or other salvage activities. A wide variety of projects have been undertaken including the salvaging of sunken vessels, iron and steel from mines, quarries, gravel pits, abandoned bridges, buildings, pipe lines, and logging camps. Street car rail salvage in a number of cities has been handled with the assistance of the Work Projects Administration. A typical example of the work of the Special Projects Section is the dismantling of the towers and main cables of the Tacoma Narrows bridge in Washington. Although not directly responsible for the dismantling of the structure which failed two years ago, the Special Projects Section was instrumental in arranging for the salvage of the cables, which, under the original dismantling plans, were to have been dropped into Puget Sound.

Assistance in locating possibilities for special projects was requested of all citizens last month by Lessing J. Rosenwald, director of the conservation division, a month after the same action was suggested to the readers of *Western Con-*

THROW YOUR SCRAP INTO THE FIGHT!

struction News. "There is a vast amount of useful metal, idle and unused," said Rosenwald. "It is in many different forms—abandoned bridges, mines, buildings, railroad and street rails, saw mills, tanks, sunken ships, and a great many other forms. Primary tasks of the Special Projects Sections are to locate equipment of this kind and take the necessary steps to get the metal into the flow of remanufacture. In this effort we need the help of every willing person."

Scrap need still great

That the need for scrap is still great and will continue to be so was indicated by Donald M. Nelson, chairman of the War Production Board, in a statement to the public less than a month ago. "During the second quarter of 1942 we must get at least 12,000,000 tons of scrap from industrial firms," Nelson said. "We must reach that goal before winter, when normal supplies of scrap fall off. Excellent co-operation can be expected from the WPB Industrial Salvage Section."

There is much that everyone in the construction industry can do in the way of turning in locations of abandoned construction machinery, structures, and other possible sources of scrap metal. As long as there are abandoned construction machines and structures in existence, there will continue to be a need for reporting information concerning them, and the responsibility of the construction industry in this regard will not lessen. From recent returns of the coupon published in *Western Construction News* which provided space for listing information regarding possible scrap sources, the following paragraphs are taken to illustrate the type of information that can be useful in this phase of the war effort.

Abandoned equipment

On the shore of Lake Tahoe in northern California an abandoned rock crusher was reported by a reader of *Western Construction News*, and the report forwarded to the Industrial Salvage Section at San Francisco.

An abandoned dredge with donkey engine, winch, cable, and miscellaneous metal parts was reported on the Marin County shore of San Francisco Bay.

One hundred tons of steel were reported as being unused in the abandoned Ten Mile lock on The Dalles-Celilo canal in northern Oregon.

Two large railroad shovels, unused for many years, were spotted in the extreme southeast corner of California. The shovels had formerly been used in the construction of a large irrigation canal.

A pile of scrap metal machine parts including large gears, wheels, boilers and shafts was reported near San Rafael, Calif.

Suggestions such as these are invaluable and usually prove to bring out worthwhile sources of scrap. The need is no less than it was—send in your suggestions concerning the location of abandoned construction equipment and structures that should be scrapped. Do it today.

Letter to the Editor—
Scrap Old War Relics

Sir:

It is my opinion that there are numerous obsolete cannons and cannon balls scattered around our country which should serve as additional material for the national scrap-pile. Certainly they are of no use. Whatever historical importance may be imputed to them is far overshadowed by their potential importance in history now in the making if they were transformed to meet present necessities, particularly in view of the fact that—to quote from the current issue of *Western Construction News*—"the last quarter applications demanded four times as much steel as could be supplied."

Very truly yours,
Robert G. Davies,
Registered Civil Engineer.

1317 Eighteenth Street
Santa Monica, California
October 27, 1942

CLIP THE COUPON, fill in the information called for, and send it to *Western Construction News*, if you know of the whereabouts of any abandoned construction equipment that could possibly be salvaged for scrap iron and steel. Don't wait until tomorrow, don't hesitate because someone else might have sent in same information.

To: WESTERN CONSTRUCTION NEWS, 503 Market St., San Francisco, California
Here's some scrap that should be salvaged for war production:

Type.....
(Shovel-tractor-crusher-truck-compressor-roller-bridge)

Location.....

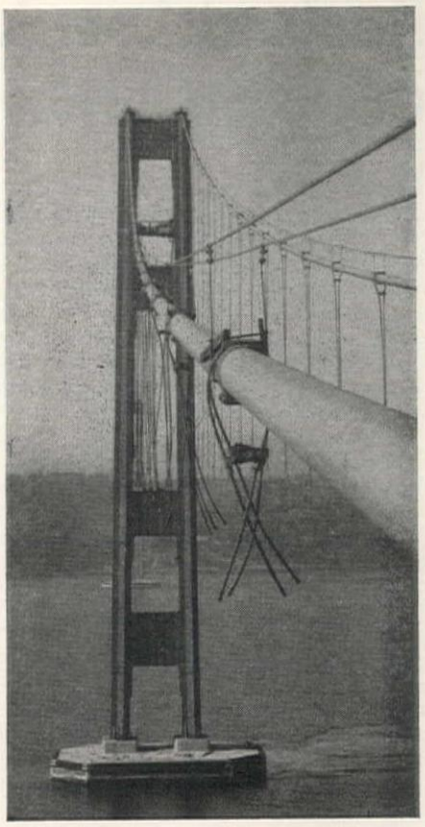
Owner (if known).....
(Name) (Address)

Approximate weight..... **Remarks**.....

.....

.....

From.....
(Your name) (Your address)



STAGING for dismantling the cables of the Tacoma Narrows bridge is swung between the cables in the center span, and crews have completed unwrapping. Unspinning of the cables was scheduled to begin Nov. 7, under the direction of G. A. McLain.

Mountain Pacific A.G.C. Opens Training Program

WITH A SERIOUS shortage of capable and qualified operators for power shovels, tractors and other power equipment, the Mountain Pacific Chapter of the Associated General Contractors, in cooperation with the U. S. Department of Labor and local Union 302 of the Operating and Hoisting Engineers, has prepared an apprenticeship program for the training of heavy equipment operators. A Joint Apprenticeship Committee, with representatives of labor, the U. S. Department of Labor, and the Associated General Contractors, has prepared a program of instruction in related school subjects, which apprentices will be expected to complete in not less than 144 hours per year during their apprenticeship. The sixteen related subjects include such courses as arithmetic, shop mathematics, mechanical drawing, shop mechanics, general overhaul, and first aid and safety. Instructors from the University of Washington will donate time to the presentation of these classes, and contractors and equipment firms have indicated that they will grant access to their equipment for the apprenticeship classes. W. D. Shaw, manager of the Mountain Pacific Chapter, A.G.C., is chairman of the Joint Apprenticeship Committee, and Ed Kingsley, secretary of Local 302, is secretary.

Revised Los Angeles Building Code Effective January 1, 1943

THE NEW BUILDING CODE of the City of Los Angeles, which will become effective Jan. 1, 1943, was signed on Oct. 3 by Mayor Fletcher Bowron. The signature of this Code concludes ten years of agitation led by the Associated General Contractors and the Chamber of Commerce, for a revision of the antiquated and obsolete City Building Code, which was more than 27 years old.

Upon signing the Code, Mayor Bowron complimented the construction industry for the broadminded procedure followed and stated that practically no protests had been filed against the Code. He said that he expected the Code to reduce building costs and increase the safety of Los Angeles buildings by establishing reasonable and safe building standards, permitting the use of new and better materials with proper provision for earthquake resistance installed under continuous inspection, with the use of substitute materials permitted where they do not jeopardize the safety of building.

When Mayor Bowron was first elected to office, the Chamber of Commerce and the Associated General Contractors requested him to give this matter preferred attention as the most important legislation needed for city building construction. The Mayor immediately appointed active construction men to the Board of Building & Safety Commissioners, and upon their request the Chamber of Commerce was designated to correlate the suggestions and cooperation of the construction industry. A Code Committee was immediately appointed with Earl T. Heitschmidt as chairman, assisted by Earl S. Anderson, Frank J. Connolly, Emile Pozzo, Paul Jeffers, C. J. Wailes, Ben Schiewe, Loy Johnston, and Harlow Potter.

This committee held prolonged discussions with the Board of Building & Safety Commissioners about the principles to be followed, and it was finally decided to write a code which would state "the results to be achieved, rather than the methods to be used," and establish certain requirements and prohibitions between which the individual is given as much latitude as possible with unnecessary arbitrary requirements eliminated. The completed Code follows this principle eliminating the usual "can't" of legal terminology and repetition of nearly synonymous words. The customary "and/or" and "to wit" are completely omitted.

Continuous inspection was emphasized in compiling the Code because of the belief that work performed under continuous inspection is assumed to have twice the structural strength of that receiving only routine supervision. Residential construction is to be done under the "called inspection system" in accordance with the residential code section, which contains a schedule of requirements and enables the builders to construct dwellings without calculating stresses. The earthquake requirements include an allowance for the effect of structural elasticity which, for buildings within the height allowed in Los Angeles, are in excess of state requirements. A uniform code system of classifying both by occupancy and type of construction has been used.

Watching while Mayor Fletcher P. Bowron, of Los Angeles signs new building code, are Frank J. Connolly, AGC manager, seated, and Ray J. Daum, contractor and president of city Building and Safety Commission, Earl T. Heitschmidt, Building Industries code commission, and Earl S. Anderson, of Los Angeles Chamber of Commerce.

NEW BOOKS...

USE OF WATER BY NATIVE VEGETATION—Bulletin No. 50—By Arthur A. Young, associate irrigation engineer, and Harry F. Blaney, irrigation engineer, both of the Division of Irrigation. Published by the Division of Water Resources, California Department of Public Works, in co-operation with the Division of Irrigation, Soil Conservation Service, U. S. Department of Agriculture. 160 pages, 6x9. This bulletin may be purchased from the State Bureau of Publications and Documents, Sacramento, Calif.

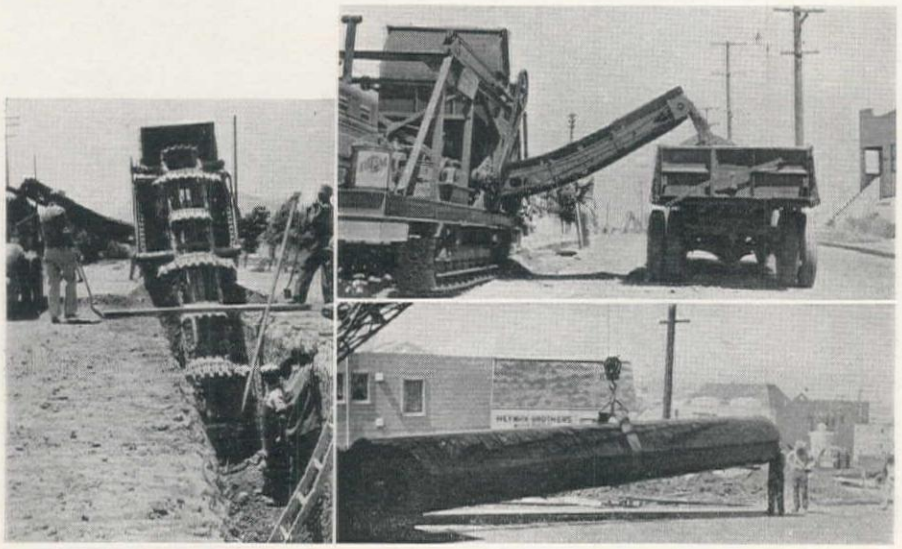
One of the problems of considerable concern to irrigation engineers is the use of water by vegetation occurring around reservoirs and along canal banks. This bulletin is the result of investigations made of the use of water by various species of vegetation native to the western states, including saltgrass, wire rush, willow, Bermuda grass, tules and cattails, brush, grass and weeds, and sedge. In closed basins, the consumptive water use of native vegetation can be considered a practical measure of the amount of underground water recoverable for other uses. Among the factors governing water consumption by vegetation is the precipitation which usually establishes the type of vegetation present in climate and depth to water table. In areas of high ground water are found plants which send their roots to the water table, and those which live in the water and are responsible for a considerable draft upon the water supply of the region.

BUILDERS' MACHINERY AND EQUIPMENT—Prepared by a staff of technical experts under the direction of E. Molloy. Published by the Chemical Publishing Co., Inc., Brooklyn, N. Y. 128 pages, 5½x8½. Price $2.50.

Those who are interested in equipment and construction methods in localities other than the West will find this book to be a detailed description of equipment employed in England. While much of the equipment is similar to that used in this country, the nomenclature varies considerably. The greater part of the book is devoted to discussion of building construction equipment, including shores, hoists, scaffolding, small tools, concrete mixers, concrete forms, and temporary timbering. One chapter is devoted to a discussion of excavating equipment, and one for temporary timbering for trench excavation.

HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD EDITOR'S NOTEBOOK



Ditcher Cutters Widened to Dig Trench for Large Pipe

TO accommodate a 44-in. water line in San Francisco, Calif., a trench of more than average width was required, and Pacific Pipeline Construction Co., of Oakland, Calif., hit on the idea of widening the cutter teeth on their 30-in. ditcher to accomplish the task.

The $100,000 contract called for installation of 9,500 ft. of 44-in. all-welded steel pipe on the City of San Francisco's main cross-town discharge line. To take care of the over-size pipe and still allow working room, a 60-in. trench was required.

The equipment used by the contractor was a Model 120 Buckeye ditcher, which is designed to dig trench up to 30 in. in width. By building 15-in. sidecutters on both sides of alternate buckets of the ditcher, it was possible to cut a trench of the required width in one operation, and practically as fast as a narrower cut.

Material encountered was of every grade, varying from sandy soil to typical San Francisco red rock. Some portions of the job were dry, and in other sections water seeped into the excavation. The altered ditcher was used in all of the different situations.

The depth of the ditch varied from 8 ft. to 18 ft. Maximum reach of the ditcher was 11½ ft., and depths below that were excavated with a clamshell bucket. The extra-size ditcher buckets worked smoothly even at their maximum depth, and only in the hardest material encountered did the wings have a slight tendency to tear off due to lack of back support. However, this trouble was at no time serious and the plan resulted in a saving of time and work.

Another problem adding to the difficulty of the operation, was the impossibility of stacking the dug material at the side of the trench. Streets were so narrow along the route of the pipe line that to permit spoilbanks in them would have completely stopped the flow of traffic, a situation which was specifically forbidden by the city.

To meet this situation the spoil carrier of the ditcher was extended somewhat and all excavated material was loaded into trucks and carried off the street. It was then necessary to pick the material up a second time and return it in trucks to be used for backfilling after the pipe was laid.

The line was a portion of the distribution system of the City of San Francisco's Hetch Hetchy Aqueduct water supply. The contractor, Pacific Pipeline Construction Co., is a well-known California firm, with offices in Oakland, Los Angeles, Bakersfield, and Avenal. Superintendent of this project for the contractor was Bob Wilson, who is in charge of the Oakland office.

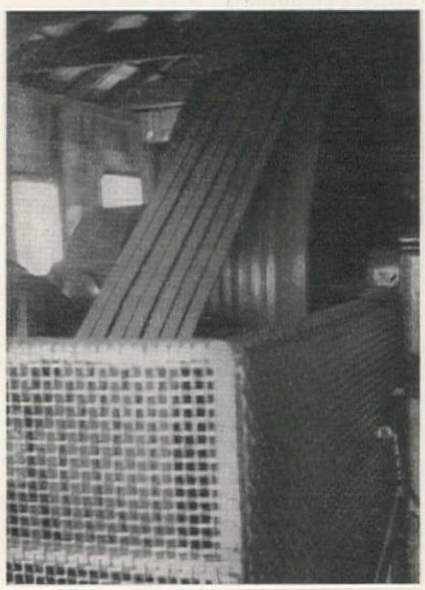
V-Belts Used to Drive Compressor

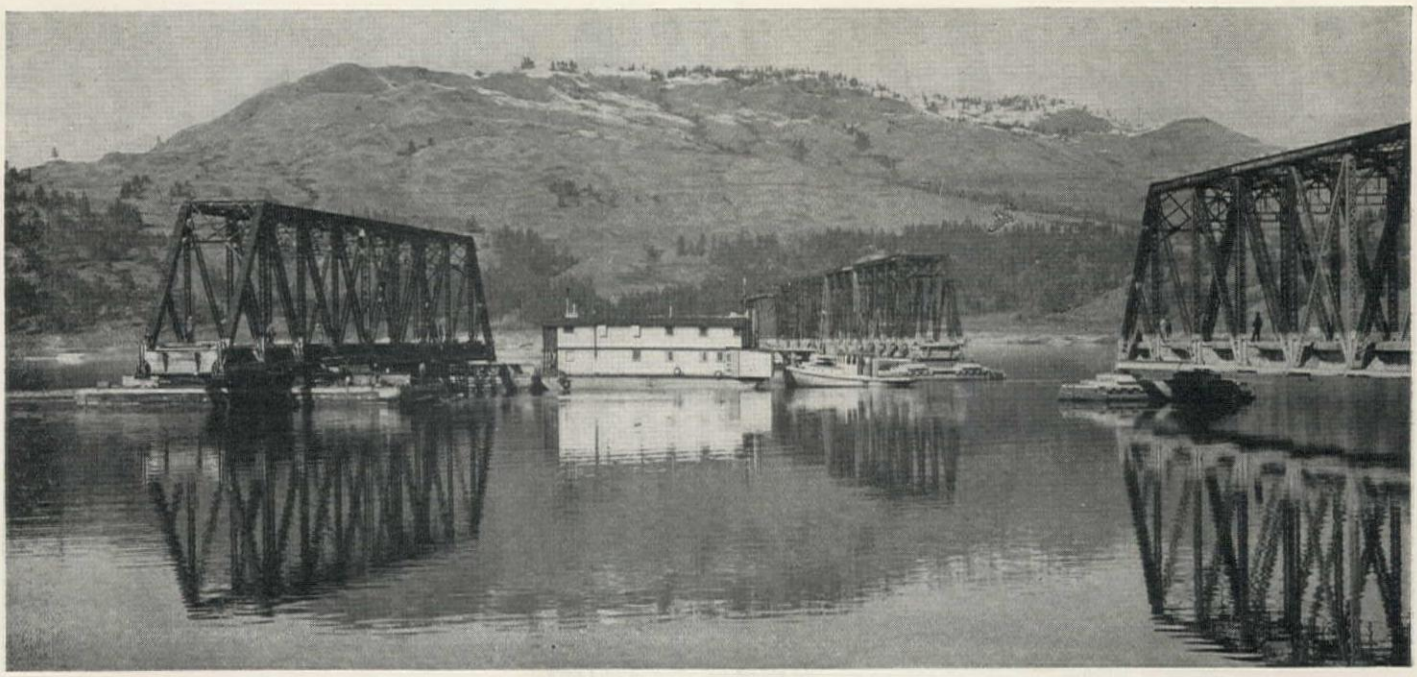
Machining a crowned compressor pulley to a flat surface, and using seven V-belts to transmit the power from the motor, S. S. Magoffin Co., contractors on the east portal of the Continental Divide tunnel in Colorado, secured a quiet and efficient unit.

The compressor is an Ingersoll-Rand, of 1,100 cu. ft. capacity, the pulley having a diameter of 9 ft. The pulley on the motor has a diameter of 32 in. and the perimeters of the wheels are separated but 1 foot. The compressor pulley was of the standard crowned type, designed for use with a leather belt. The motor pulley was already grooved.

An engineer for a rubber manufacturer suggested the idea of planing the crowned surface to a flat one, and letting the inside surface of the V-belts run directly on it. The suggestion was tried and found to be entirely satisfactory. Efficiency is equal to that of leather belt operated compressors in the same room, and noise has been almost entirely eliminated.

The Continental Divide tunnel is a unit of the Colorado-Big Thompson Reclamation project, and will carry surplus water from the west slope of the Rocky Mountains to the east slope, where it will be used for irrigation in northeastern Colorado. The work is under direction of the Bureau of Reclamation, John C. Page, commissioner, and S. O. Harper, chief engineer.





Railroad Bridge Floated 113 Miles at Grand Coulee Dam

A railroad bridge, one link of the Spokane-Republic line of the Great Northern Railroad, which would be inundated by the rising water of the Columbia River reservoir, back of Grand Coulee dam, was floated 113 miles from its original location at Marcus, to the dam, where it was dismantled and used as the framework for a large equipment storage and fabricating plant.

At the time the bridge was removed, the deck was already under water, and in order to permit the placing of barges under the spans, the lake level was lowered about 14 ft. After barges were placed under each span and it was jacked off its supports, it was towed the 113 miles, a trip of about 24 hours, by the Bureau of Reclamation motor barge "Paul Bunyan," and escorted by a tugboat and double-decker house boat in which the crew was housed.

There were 965 tons of structural steel, 306,000 board feet of timber, and 150 tons of miscellaneous metal in the entire structure. Each of the seven spans was moved separately, and preliminary dismantling work was done during transit. Rivets of the lateral and wind bracing were cut and replaced with nuts and bolts, and decking was removed.

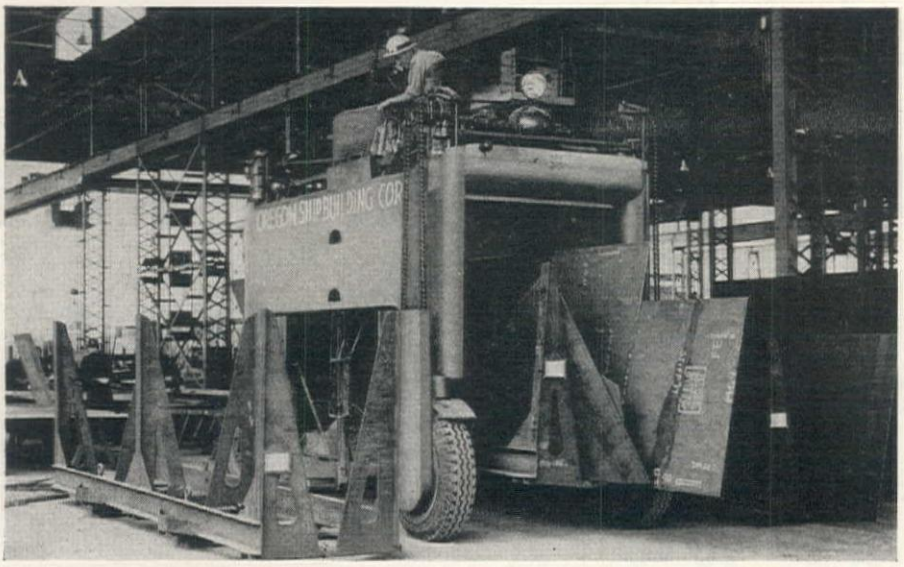
For emergency use, two-way short-wave radio sets were installed on the bridge of the "Paul Bunyan" and in an automobile which was driven along the shore. This communication system was proved very useful during fogs, and on the occasion of break-downs in the flotilla. In the case of fog, the navigation was directed from shore, and when break-downs occurred, orders for parts could be quickly relayed.

The railroad line has been relocated, and a new crossing bridge erected at the site of the former Kettle Falls. During the trip to the dam, the spans of the old structure passed under those of the new.

The reservoir, which is now filled to capacity, extends 151 mi. above the dam. Generator units 1, 2, and 3, and two station service generating units are now in service at the west powerhouse of Grand Coulee dam, producing a total of 344,000 kva., and it is expected that the two generators originally designed for Shasta dam, but recently diverted to Grand Coulee, will add to that power in the next few months. Work on the east powerhouse has recently been stopped by order of the War Production Board. In addition to power generation, the Columbia Basin project also embraces flood control, navigable stream regulation, and irrigation. The work at Grand Coulee dam is under direction of the Bureau of Reclamation, and Frank A. Banks is supervising engineer of the whole project.

DUMP TRAILER TRAINS TRANSPORT 80-TONS AVERAGE LOAD

To carry limestone from quarries at White Mountain in southern California to the Southwestern Portland Cement Company's private railroad into the mill at Victorville, Calif., a fleet of specially designed Fruehauf semi-trailers, to which are added additional 6-wheel trailers, has been employed. Each unit makes 7 trips in an 8-hour day, and each trailer has a capacity of 24 yds. or approximately 40 tons. An entire carload of rock is side-dumped at one time from the train of trailers.



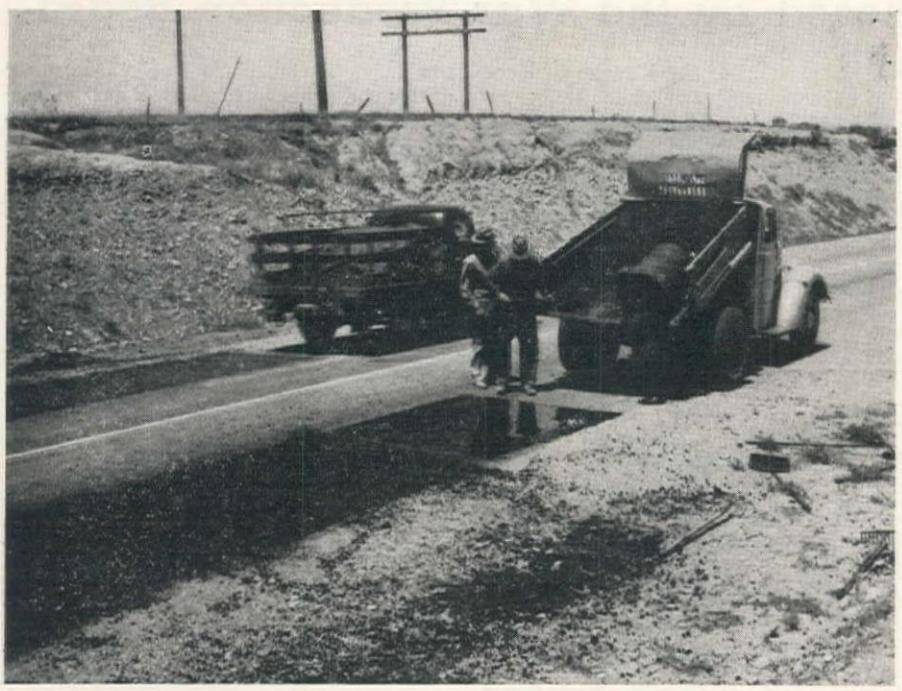
Straddle Truck at Work In Shipyard

Straddle trucks, formerly used almost entirely in the lumber industry, have recently been found useful in the manufacture of ships in the busy Oregon Shipbuilding Co. yards at Portland, Ore. With a load space 108 in. high and 57 in. wide, it can conveniently carry cut and formed plates and shapes up to 90 in. wide, when stacked vertically in special racks, one of which is shown alongside the loaded truck in the illustration. The truck will transport loads up to 30,000 lbs. Almost no time is lost in picking up or dropping the load. The steel is left in the rack until it is needed, and thus additional time is saved by eliminating loading and unloading.

Kaiser Early User Of Diesel Tractor

Construction equipment is practically all diesel powered now-a-days, but few realize that Henry J. Kaiser, national industrial figure, was largely responsible for its use in tractors and construction machinery in the United States. In 1929, the Kaiser Paving Company, one of his early ventures, in cooperation with Allis-Chalmers, converted four of their Monarch gasoline tractors to diesel power by the addition of an Atlas diesel engine, thus becoming the first to employ this form of equipment.

Today in his shipyards, industrial plants, and other endeavors, Kaiser is one of the country's foremost users of construction equipment, nearly all of it being operated by the type of power he helped pioneer.



Oil Carried With Premix Surfacing

In patching Colorado roadways, the maintenance division of the State Highway department has combined in one piece of equipment all the operations required. Plant mixed surfacing material is loaded into the body of a department truck, and a drum of rapid curing road oil is set at the rear of the truck. Hand tools are carried in holders on the sides of the truck body.

The procedure is to spray a coat of the oil on the old surface as a binder, then tipping the truck body to desired slope, drive slowly across the area to be patched, dropping a layer of the surfacing. After this is raked smooth, the surface is rolled with the truck tires until it is firm. This has been found to be an efficient, fast, and permanent patching method, and is being employed throughout the state on major and secondary highways.

NEWS OF WESTERN CONSTRUCTION

NOVEMBER, 1942

Price Ceiling Set on All Construction Work by OPA

ALL CONSTRUCTION work was placed under a maximum price regulation on Nov. 5, with the issuance of Maximum Price Regulation No. 251 covering construction and maintenance services and sales of building and industrial equipment or materials on an installed or erected basis. In announcing the new regulation, the Office of Price Administration stated that the pricing provisions are designed to accomplish three things: (1) to maintain the March 1942 price level (with some exceptions); (2) to afford workable means for determining a maximum price at this level; and (3) to maintain a constant observation over prices of construction not already under the control of other governmental agencies in order to disclose any activity where existing controls are not adequately preventing inflationary pricing.

MPR No. 251 applies to the entire field of construction, ranging from minor repairs of buildings or structures to major engineering construction work, such as Boulder Dam. Establishment of maximum prices is covered in three separate provisions. Where contracts do not exceed $500, the price is to be based on labor and material rates in existence in March 1942, to which shall be added the margin for administrative and overhead costs and profit prevailing at that date. Increases in labor costs between March 1942 and July 1942 may be added, and the resulting figure is the maximum price.

In the case of contracts on the basis of cost plus a percentage of cost, and cost plus a fixed fee, actual prices of materials, supplies and labor are to be included, as well as other actual direct costs, including subcontracts. The cost charge for materials and supplies may not exceed the lowest maximum price which would have been charged under any applicable price regulation, and labor costs must not exceed those in effect on July 1, 1942. The margin to include administrative, supervisory and overhead costs and profits cannot be in excess of the percentage of actual and direct costs that constituted the contractor's highest margin similarly calculated during the base period Jan. 1, 1939 to Mar. 31, 1942 on the most comparable work. The profit margin must exclude any reserve for contingencies. The margin determined by this method must be supported by records of previous transactions occurring during the base period which must be produced at the request of the Office of Price Administration. Within 10 days after entering into any cost plus contract subject to the regulation, the contractor must submit to the nearest district, state or regional office of the OPA a report setting forth a description of the job, an estimate of the costs, and a statement of the percentage margin in dollars and cents, together with an indication of the items of overhead included.

Maximum prices for contracts based on unit prices, or a lump-sum are to be determined by estimated costs of materials and supplies, and estimated labor costs, as well as other estimated direct costs, including subcontracts. In this case, the contractor may include an estimated reserve for such contingencies as he can reasonably foresee in good faith. The estimated costs of materials and supplies may not be calculated on prices in excess of those permitted by any applicable price regulation, and estimated labor costs should be computed on the basis of wage rates in effect in the area of installation on July 1, 1942. The margin for overhead and profit shall be based on comparable work, and costs and profit may not exceed the percentage of direct costs which constituted the contractor's highest margin similarly calculated during the base period on the most comparable work. Within 10 days after entering into final settlement of a lump-sum contract, the contractors must submit to the nearest office of the Office of Price Administration a complete report, setting forth the following seven facts: (1) a complete description of the job; (2) estimated cost of ma-

(Continued on page 505, col. 3)

Six Bureau of Reclamation Projects Closed by the War Production Board

SIX PROJECTS of the Bureau of Reclamation were ordered shut down on Oct. 27 by the War Production Board. Issuing revocations of previously assigned preference ratings, WPB stated that the Bureau of Reclamation should neither perform nor permit any further construction on the projects, except what might be necessary for purposes of health, safety or to avoid undue damage to materials could be continued until Nov. 15. The projects coming under the orders are: Davis dam under construction on the Colorado River near Kingman, Ariz., by the Utah Construction Co.; Keswick dam on the Sacramento River near Redding, Calif., under contract to the Atkinson Kier Co.; four units of the Colorado-Big Thompson project near Grand Lake and Estes Park, Colo., including both headings of the 13-mi. Continental Divide tunnel, and Granby dam; Anderson dam near Mountain Home, Idaho, under contract to Morrison-Knudsen, J. F. Shea, Ford J. Twaits, and Winston Bros.; the east powerhouse at Grand Coulee dam near Spokane, Wash., being constructed by Consolidated Builders, Inc., and manufacture of turbines, generators, and accessories for generating units No. 7, 8 and 9 in the west powerhouse; and manufacture of the fifth hydroelectric generating unit for the Shasta dam powerhouse, on the Sacramento River near Redding, Calif.

Machine Rentals Revised

MAXIMUM PRICE REGULATION 134 covering rental rates of construction equipment has been completely revised, adding numerous items of equipment not previously covered, adjusting former rental prices, and including operating and maintenance services.

The WPB orders permitted completion of the construction of Shasta dam itself and installation of generating units No. 3 and 4; completion of Green Mountain dam, a unit of the Colorado-Big Thompson project near Kremmling, Colo., and installation of generating equipment; installation of four generating units at Parker dam on the Colorado River below Needles, Calif.; installation of five additional generating units at Grand Coulee dam; and installation of two additional generating units at Boulder dam on the Colorado River near Las Vegas, Nev. Several days after the orders affecting the Bureau of Reclamation projects were issued, WPB issued a similar order revoking the preference ratings assigned to the New York Tunnel Authority and halting construction on its projects.

Several of the projects ordered closed by WPB would have been completed next year if construction was permitted to continue. The Continental Divide tunnel, being driven by S. S. Magoffin Co. from the east portal and Stiers Brothers Construction Co. from the west portal was scheduled to be holed through next May, although another year would have been required to complete the concrete lining. Platt Rogers recently completed driving of the diversion tunnel for Granby dam, and a contract had been awarded to John R. Austin Co. for construction of Granby dikes on which work has been started. Plans of the Bureau of Reclamation contemplated award of a contract for construction of the main dam next year.

Keswick dam was to have been completed by February, 1942, and is about 75 per cent complete at the present time. Anderson dam, which had been under construction for a little more than a year, was not scheduled for completion until 1944. Construction of Davis dam began only about a month ago but was well under way when the stop order was issued. The east powerhouse at Grand Coulee was begun nearly a year ago, when the contractors turned the main structure over to the Bureau, and was scheduled for completion early next year. Shasta dam is 75 per cent complete at the present time and will be completed under present plans. The first two generating units had been delivered by the manufacturers, but were transferred to Grand Coulee more than six months ago where they are scheduled to go into power production some time this month.

Northern California A. G. C. Chapter to Meet

THE TWENTY-FOURTH annual convention of the Northern California Chapter of the Associated General Contractors of America will be held at the Palace Hotel, San Francisco, December 11-12, and is expected to be one of the most important business sessions in its history. This will be a war work meeting, and will include a series of discussions that will point to greater accomplishment in the many fields in which the chapter's members are now engaged in furthering the war effort.

The program will also provide for looking ahead to a solution of the problems of peace, when victory is achieved. A definite part of the program will be the consideration of work that will properly replace for peace-time purposes all of the effort now being put into winning the war. Some of the most prominent members of the industry, as well as high-ranking government officials, will take part in the two-day discussion of the problems of the contractors.

The convention will close with its annual dinner meeting at the Palace Hotel on the night of December 12th. Advance reservations for the meeting indicate a record attendance. Oscar Fredrickson is president of the chapter.

Two Western Contractors Establish Canadian Office

TWO UNITED STATES construction companies were recently registered in British Columbia as extra-provincial firms under the B. C. Companies Act. W. E. Callahan Construction Co., has been incorporated with its head offices at 402 Woodmen Accident Building, Lincoln, Nebraska. Paid up capitalization of this company is shown as $312,500. W. A. Bechtel Co., with paid up capitalization of $750,000 has also been incorporated. Registered head offices of this firm are at 155 Sansome Street, San Francisco, Calif. British Columbia offices for both firms are c/o G. Davis, 626 West Pender Street, Vancouver, B. C., and both companies are described in their incorporation papers as general contractors.

Lincoln Welding Winner

ERIC F. BLADHOLM, associate mechanical engineer in the general plant division of the Los Angeles Dept. of Water and Power, was awarded second place in the maintenance classification of the $200,000 Industrial Progress Award Program sponsored by the James F. Lincoln Arc Welding Foundation for his paper on maintenance of hydraulic turbines.

Construction Price Ceiling

(Continued from page 504)

terials and supplies; (3) estimated labor costs; (4) estimated other direct costs, including the cost of each subcontract; (5) estimated reserve for contingencies; (6) estimated margin, and the method by which it is computed; (7) contract price. Less than 10 days before the anticipated final settlement, a further report must be submitted to OPA, setting forth the actual costs for each of the items (2) to (5) inclusive. Estimate sheets, or other working papers may be submitted in place of reports required, provided the required form is fully contained therein.

The Regulation also states that no bonus may be offered or paid for early completion of any contract, except with the specific approval of the Office of Price Administration. Special pricing methods to replace the pricing method set forth in the regulation may be provided by OPA under a special order. Where the total contract price exceeds $500.00, the contractor at the time of final settlement must furnish to the owner a certificate setting forth the selling price as determined under the regulation, together with a statement that the terms of the regulation have been complied with, and a duplicate of the certificate must be filed with the nearest OPA office.

Excepted from the provisions of MPR No. 251 are contracts which were entered into prior to the date of issuance of the regulation, which is Oct. 30, 1942, and contracts with the War Department, Navy or other agency of the United States, provided the agency certifies at the time of making the contract that it has been negotiated, or will be re-negotiated in accordance with a method previously filed with OPA.

All contractors will be considered licensed under the Regulation as of the effective date, and must keep available for inspection of representatives of the OPA for as long as the emergency price control act of 1942 remains in effect, full record of each contract, showing the name of the purchaser, the date of the transaction, and description of the commodities and services involved, and a detailed statement of the method by which the maximum price was calculated, together with all records which the contractor has customarily kept.

Loans Available to Aid Contractors' War Work

CONTRACTORS needing financial assistance in the prosecution of existing or prospective contracts necessary to the War effort may now obtain government-guaranteed loans from their own banks. Applications for such loans, known as "V" loans, may be made through a local bank which will, in turn, transmit them to the Federal Reserve Bank in its district for investigation as to the necessity

of the applicant's contracts in the prosecution of the war. It is anticipated that firms under contract to the Army Engineers for the most part will have no difficulty in obtaining such loans.

"V" loans should be considered only as an additional method of financing supply or construction contractors engaged in the war effort, it was pointed out, as they are not intended to entirely supplant advance payments now available. In certain contracts where advance payments will better facilitate performance, they will continue to be made. However, "V" loans are particularly advantageous in most cases, it was said, as they permit the contractor to deal with his own banking connections and make it possible for him to obtain a proportionately greater sum than would be available under an advance payment.

Arrangements for "V" loans have been made by the War Department under authority granted by Executive Order No. 9112, March 26, 1942. Contractors have been advised to contact their own bank when further information is desired.

WASHINGTON NEWS

. . . for the Construction West

By ARNOLD KRUCKMAN

Washington, D. C.—By the time this is read the Federal Register should carry the announcement of the list of major projects on the West slope which will be wiped out by Donald Nelson's latest stop-construction order. We are told the list will include power, reclamation, highways, rivers-harbors-flood control, and other public projects hitherto considered indispensable for the war effort. The voice is the voice of Nelson, but the words really are the words of Ferdinand Eberstadt and James Byrnes, if responsible gossip has any worth. We are told basic raw materials, including lumber—of all things—are diminishing so alarmingly that no one knows exactly what to do except to cut and cut and cut still more. Naturally the scarcity raises many questions.

Power vs. food

Power will probably feel the squeeze least in the West. They are conscious that power will be needed increasingly, and they are apt to be more tolerant of anything that carries a corollary of power. Therefore Grand Coulee, Boulder and Parker dams probably will have little interference, but the Central Valley project, and similar undertakings, are apt to be slashed tremendously except where power is the justification. The ruthless suppression of reclamation, even supplementary reclamation, is rather a puzzling proposal, if it is carried through. There is not the slightest doubt that food of all kinds will be short as short next year. It is not only that the farmers have labor troubles, and difficulties in obtaining equipment, but they are angry, and their major exacerbation is over the lack of recognition of their legitimate place in the war picture. They have truly struggled to secure a huge production this year under extraordinary difficulties. We in Washington hear their present feeling is that apparently there is no real need for the tremendous effort they have put forth.

It follows there will be great need for more food. Everybody here who speaks with any knowledge and responsibility tells us more food MUST be produced. Consequently the hell-bent plunge to stop reclamation projects in the West is a puzzle. Secretary of the Interior Ickes' program to expand reclamation on the Pacific slope seems one of those rare common sense things that are so startlingly absent here. The most common argument you hear here in opposition to development of western farming, and western mining, and western manufacturing, is that you have no housing for the help that must inevitably be brought there. Some bright soul in the Department of Agriculture who is your friend has suggested there are considerable areas where rain is brief and rare, and that you could get around the materials problem by building 'dobe dwellings. They have worked before; there does not seem to be any sound reason why they will not serve again.

Flight strips to go on

Apparently you will salvage your flight strips out of this wreckage of projects; and you will save some, probably most, of your access roads. What has been built, and what still may be built is one of those deep, hush-hush secrets Wendell Willkie kidded the other night. The general impression here is that very few roads in the strategic network will be built, unless, of course, the West Slope as a unit sets out to demonstrate how necessary some of the highways are. The Public Roads Administration has practically nothing to say about the matter. The determination is vested in the Army and the Navy.

Incidentally, if the western delegation in Congress succeeds in smashing that directive by McNutt which orders Army, Navy, Maritime Commission and Treasury to spend no more money on contracts in the West, on the grounds of labor shortage, many of the roads now put aside, will be built. If the McNutt directive sticks, you will get no more contracts except those for things that cannot be made elsewhere.

TVA program criticised

Col. Miles Reber could not make his proposed trip to the Coast because he had to work literally day and night to prepare a list of rivers, harbors and flood control projects, under the care of the Corps of Engineers, which might be postponed for the duration. Naturally there is no indication yet what those projects will be. It is generally understood here that the over-all national significance in terms of cash expenditures will be $5,000,000,000. The total of projects affected grosses $16,000,000,000. Obviously this means somewhere between $10,000,000,000 and $11,000,000,000 still will be expended after the so-called Nelson Order goes into effect.

We are told the chief cause that exploded this Order was the TVA. It serenely went along building its social betterment projects in the Tennessee Valley at the expense of considerable metal. The indifference to its needs apparently nettled the Army. The Army really has trouble finding steel to make shells. Thus the strenuous Eberstadt secured this Order. Hereafter all new projects must pass the gauntlet of two Boards—the Facility Clearance Board headed by Eberstadt himself, and the Facility Review Board, headed by Eberstadt's subordinate, Col. Gordon E. Textor, U. S. Corps of Engineers. The first Board will pass on all new projects costing $500,000 or more; the second Board passes on all projects, civilian or military, costing between $100,000 and $500,000; and reviews all projects now under way or approved, regardless of cost.

Eberstadt acts upon all state and municipal work as well as Federal jobs. Under the new set-up, the Eberstadt boards take over the functions of the Plant Site Board, the Facility Committee of the Requirements Committee, the Facilities Cut-Back Committee, all of WPB; they also take over the Facilities Clearance Committee of the Army and Navy Munitions Board, and the Special Committee on Facilities of the War Department.

Bear in mind, the new stoppage Order covers State and municipal work which means schools, water and sewage work, municipal improvements, bridges, safety construction, welfare building, public utilities, anything that possibly may be delayed. All construction, heavy and otherwise, military and civilian, anywhere within the jurisdiction of the United States, has been placed in charge of Eberstadt. Lieut.-Gen. Brehon Somervell, Chief of the Army's Services of Supply, remains in charge of the direct supervision of War Dept. activities.

From Gen. Somervell's office comes the word that in negotiating war procurement contracts these regulations govern: delivery or performance for war program comes first; contracts must be placed with those who require least machinery; avoid areas where labor is short; place contracts with firms best able by reason of resources to handle them; place simpler jobs with smaller firms; and place contracts to spread production as widely as possible.

Contract renegotiation

War, Navy, and Maritime Commission, under the new Revenue Law, in renegotiating contracts, have announced when a contract or subcontract has been renegotiated in good faith for a specified period with elimination of excessive profits, the contractor is assured the subject will not be reopened; renegotiation also is prohibited one year from the close of the fiscal year in which the contract or sub-contract was terminated or completed. The contractor is permitted to file financial and cost statements for a prior fiscal period and obtain clearance, unless the War or Navy begins renegotiation within the year.

The new Revenue Law legalizes group contract renegotiation. Excessive profits are determined by an overall study of a company's finances and profits, past and prospective. Renegotiation applies only to War contracts. Every contract of $100,000 or more must have the renegotiation clause. Price reduction by agreement protects the subcontractor against refund or recapture if for any reason the Government does not benefit. Under the new law the contractor is allowed credit for Federal income and excess profit taxes. Treasury also is authorized to renegotiate lend-lease contracts.

Government may exempt contracts from renegotiation. Contracts with other Federal or local governments and foreign governments also are exempted. Contracts for less than $100,000 in a fiscal year are exempt. If excessive profits have been paid, their return may be required. And a contractor is liable for reductions only if he receives the benefit of the reduction. Review of contracts will be made by a joint board authorized to act for all agencies simultaneously. Field auditing units have been set up in Seattle and Los Angeles.

Renegotiation and income taxes

Internal Revenue has announced reduced prices applicable to prior taxable years for which taxes have been paid or assessed. The taxes on such profits are to be credited, the contractor paying only the balance. The amount paid will not be allowed as a deduction in the taxable year in which the payment is made. Internal Revenue will advise about the amount of taxes involved. When a renegotiated agreement provides a reduction for which income tax has not been paid, gross income is to be recorded in the tax returns in conformity with the reduction. If repayment has been made, deduction may be made in computing net income for the year. If tax returns have not been filed, reduction in gross income may be made, or deduction may be made on net income, always providing the reduction is certain, even though the renegotiation agreement has not been completed. The policies also apply to items under cost-plus-a-fixed-fee contract which have been disallowed by Government and the contractor is required to make a repayment.

New emergency specifications

Emergency specifications recently promulgated for steel structures have now been applied to concrete, and probably will be expanded to embrace masonry and wooden construction. Concrete specifications are designed to reduce reinforcement. Permitted stresses in structural-grade bars, intermediate-grade bars, and hard-grade bars are stepped up to 20,000 and 24,000 p.s.i. The unit design compressive stress is reduced, and plain concrete is required where possible. The code was prepared by WPB Bureau of Conservation. Copies may be secured by writing W. L. Wycoff, WPB, Room 1090, Railroad Retirement Building, Washington, D. C.

Army-Navy jointly announced civilians in key positions in specified war industries will not be accepted for commission or enlistment without written release from the industry. The 21 industrial groups listed include the construction industry. All workers employed in construction of industrial plants, houses, hospitals, military projects, repair facilities and corollary services, are scheduled in the construction group.

Wage and Hour Division announced recently it would hereafter confine its inspection activities to the period since October 24, 1940. The Division will not seek restitution prior to October 24, 1940, unless there has been flagrant violation or falsification of records. Department of Labor issued an interpretation stressing that the seventh consecutive day worked in any war employment is the day that shall be paid at the rate of double-time.

Miscellaneous

If you think your accomplishment warrants an Army-Navy "E", write to Robert Stokes, Recorder, Army-Navy E Award Board, Room 2c, Pentagon Building, Arlington, Va. Give Mr. Stokes full information about your production record and your labor relations record. He will then start the machinery.

S 2412, designed to provide benefits for the injury, disability, death, or enemy detention of employees of contractors working for the United States, has been favorably reported to the Congress, and is expected to pass. . . . C. H. Mathiesen, Jr., vice president Hawaiian Pineapple Co., Assistant Director General for Operation, WPB, has resigned and returned to Pasadena, Calif. Mr. Mathiesen started in the war emergency government in February, 1941. . . . Civil Service Commission seeks women, 17 years old or more, to apply for training as draftswomen. The trainees, while learning to use drafting boards, T-squares and compasses, are paid $1,320 per year. When they qualify they earn $1,440. The scarcity is desperate, no specific experience or education is required. They must apply in Washington, D. C.

Tax exempt utility

The new revenue law contains a clause which gives entire tax exemption to a new type of non-profit utility corporation. The utility would be organized upon petition by 10 per cent of the voters in the area to be served. The property would be operated solely for the benefit of the consumers, no profit going to the shareholders. Net income would retire indebtedness. Upon complete liquidation of all indebtedness the property would be turned over to the state, the municipalities, or some agency of the United States, to be operated for the benefit of the taxpayers of the area. If the utility is transferred to any other group, tax liabilities would be enforced since the corporation began its existence. As is apparent, under some enabling act, the corporation could be brought into existence despite the desire of 90 per cent of the voters in the area.

THE HOPIS, up near the Painted Desert, a kindly and domestic people, support themselves chiefly by working on construction jobs, by silversmith work, and by weaving rugs. The war has cut off silver and wool, and has stopped construction jobs in their neighborhood. At best their margin for living is narrow. Your Washington correspondent belongs to the Coyote clan of the Hopis. The other day he received a letter from his sponsor-father, 73 years old. The dignified and kindly old man was injured months ago by a truck. After he came out of the hospital, shaky and weakened, he found his crops had suffered and that it was hard to drag the wood home for the hard winter ahead. He needed clothes. So he wrote his sponsor-son in Washington and told him about it. He said there are a number of the members of the Coyote clan who have had rough going the past year. What they most need are warm clothes. He suggested if Son Black Ear knew anybody who has some old clothes he would be glad if the word might be passed along to send them to Oraibi. So here, with the help of the editor, I, Black Ear, pass along the word. If you have some old clothes you would like to send to my sponsor-father, mail them to Mr. Herbert Yestewa, Box 53, Oraibi, Arizona. I will be glad to reimburse you for the postage if you will let me know what it is. —*Arnold Kruckman.*

Women Successful as Construction Workers

GIRLS have now started work in the construction industry at Calgary, Alta. Fifteen women and girls are employed at construction of the new military hospital on 13th Ave. and 4th St. W., Calgary. Employment of the women was started as an experiment by Graham and Sons, contractors, at the request of W. Harry Ross, local supervisor of the Unemployment Insurance Commission, and the contractors are so pleased with the result that they are planning to employ additional women immediately.

The contractors report that the

women started in so enthusiastically that they were afraid it would not last, but after having been on the job for a number of days they were still going strong and giving extremely satisfactory results. One of the women operates a steam hoist and despite the fact that she never saw one prior to starting on this job she has become extremely proficient. Another woman is operating a steam power hand hoist on the opposite side of the building. Some of the girls are wheeling barrows of bricks onto the hoist and other girls are on duty on upper floors removing the barrows when the hoist comes to their level and returning the empty barrow to the ground.

Federal Funds Assured To Complete Ross Dam

APPROVAL of the $1,864,760 Federal Works Agency grant needed additionally for the proposed construction of the first addition to Ross Dam, was received late in October from Washington, D. C., by E. R. Hoffman, superintendent of Seattle's City Light Department. The additional federal funds will provide a total of $10,164,760 available for the project. First and only bid submitted for the construction contract of $6,146,214 was held up for thirty days pending approval of the extra sum, and then formally rejected on Aug. 6, when it appeared the grant would not be forthcoming.

New calls for bids will be made for the construction contract, according to Hoffman, as well as for the $7,900,000 of City Light bonds, the city's share required to finance the heightening of Ross Dam. Before seeking action on the bids by the city council, Hoffman said a survey of the available supply of labor and critical materials needed on the project would be conducted, also of prices and labor conditions under recent ceiling rulings. A supply of materials had once previously been assured. Need for this information before contractors can intelligently submit their bids was pointed out by Mr. Hoffman.

The construction contract bid which was rejected was made by a joint venture group composed of General Construction Co., Seattle, Wash.; Morrison-Knudsen Co., Inc., Boise, Idaho, and J. F. Shea Co., Los Angeles, Calif.

Standards Bureau Publishes New Hardwood Plywood Rules

A NEW Commercial Standard covering hardwood and eastern red cedar plywood has recently been published by the National Bureau of Standards. Commercial Standard CS35-42 supersedes CS35-31 as the second edition of a voluntary recorded standard covering hardwood plywood. The Standard has been accepted by the trade for new production, beginning July 15, 1942.

WPB, Army Engineers' Pools, Search For Used Construction Equipment

TO SECURE all available construction equipment for use in emergency war construction, such as airfields, industrial plants, cantonments, and arsenals, a new division of the War Production Board has been established. It is known as the Used Construction Equipment Division, and organization is proceeding rapidly along the Pacific Coast. At meetings of municipal, county, state, and district officials connected with construction activities, recently held in southern and northern California, at which WPB and army officials were present, the purpose and aims of the organization were explained.

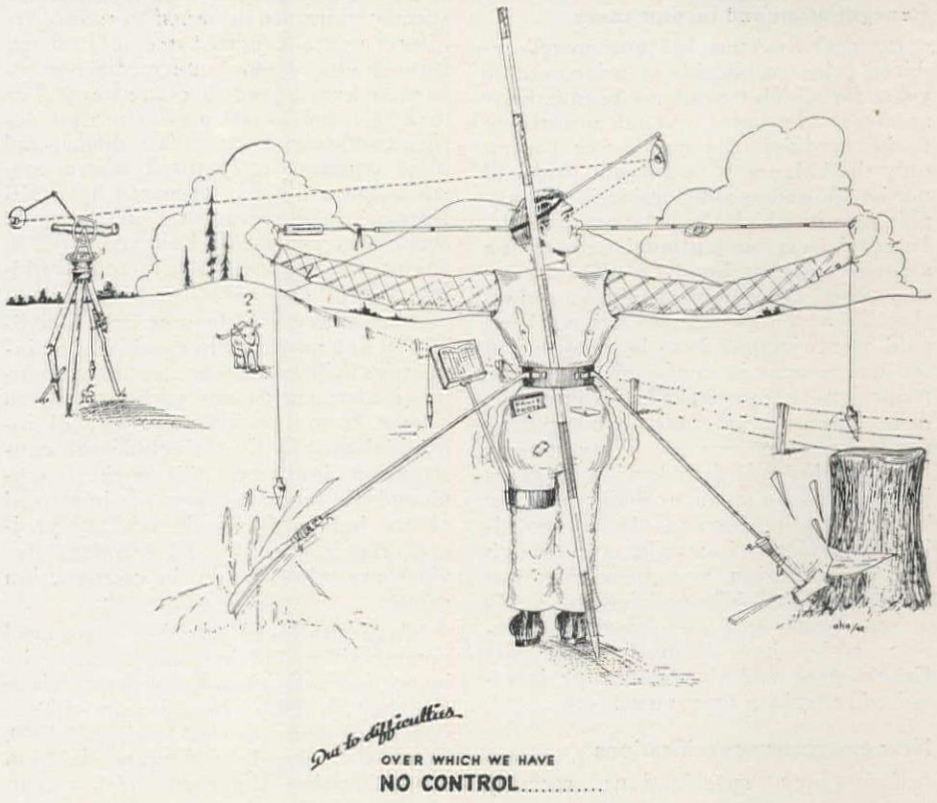
At these meetings it was pointed out that construction activities of U. S. armed forces in foreign countries, combined with lease-lend commitments, are currently using in excess of the entire production of new equipment, and the best pieces of used equipment in the Division engineers' used equipment pools are being added to the items exported. Therefore, in order to keep pace with the great demand for used equipment to complete emergency war projects in the continental United States, it is necessary to uncover every available piece of usable construction machinery in the country. All governmental agencies, public utilities and other organizations owning such machinery have been sent cards asking for a complete description of all machines in their possession, and to what extent they may be available for Federal Government use, either through purchase, or through rent during periods of non-use by the owner. Estimates issued by the Division engineers' pool indicate that about 20% of all equipment in the possession of these local agencies is required at once, and that it may be necessary to ask for an even greater share.

In the event of rental of equipment to the government, the pool undertakes to return it to the owner in the same condition in which it was received, except for "normal wear and tear." In very few cases will the government use the equipment itself, but will in turn rent the machines to contractors performing government contracts, the pool being responsible for maintenance and repair. Under the order establishing the used equipment pools, machinery may be appropriated, but the present intention is to rely on voluntary co-operation by local government officials.

Willis Shepherd has been appointed district manager of the Used Construction Equipment Division for Southern California and Arizona, Chester Deutsch for Northern California and Nevada, and R. E. Williams for the Northwest.

ONE-MAN SURVEY CREW ANSWERS MAN-POWER SHORTAGE

Selective service has so materially reduced the number of men available for work on survey parties, that Adolph H. Anderson, draftsman in the Seattle office of the United States Engineer Department, has visualized a one-man crew, combining instrumentman, chainmen, brushcutters, and note keeper. What! no umbrella holder?



OBITUARIES . . .

Judson R. West, safety engineer of the Waterfront Employers of Washington, and formerly chief engineer and general manager of the Port of Seattle, died in Portland, Ore., on Sept. 8. In addition to having built many of the important terminals at the Seattle port, he spent a number of years in China, where he was professor of civil engineering at Pei Yang University, and engineer-in-chief of the Min River Conservation project, with headquarters at Foochow. He was 60 years old.

* * *

Cyrus F. Tolman, professor emeritus of geology at Stanford University, died Oct. 13 in Spokane, Wash. He was an authority on sulphide enrichment of minerals, having published several books on the subject. He had served as consulting geologist on the design of a number of California reservoirs, ground water control and related problems. He had retired from active teaching in 1938.

* * *

Fremont Ackerman, 83, prominent civil engineer of Los Angeles, Calif., died in that city recently. He was a pioneer real estate subdivider of southern California, and the present day cities of Venice, Manhattan Beach, and Westwood, were first divided into lots and streets under his supervision.

* * *

William Behm, building contractor who built the Philharmonic Auditorium Building, the Henry E. Huntington home, and many other prominent structures in Los Angeles and Southern California, died last month in Los Angeles at the age of 78.

* * *

Erwin Morrison, Sr., civil engineer engaged in railroad work, died Oct. 1 in Salt Lake City. He was 72 years of age.

* * *

Dillard Marshall, 43, of Fort Worth, Tex., who was purchasing director for the H. K. Ferguson Construction Co., died on Oct. 4, in the rugged mountains north of Newport, Wash.

* * *

Martin T. Hooper, power design engineer in the office of the U.S.E.D., Los Angeles, died Oct. 6 in that city.

* * *

William H. Sullivan, 56, long associated with the Washington contracting firm of Teufel & Carlson, and for some time a paving contractor himself, died Oct. 26 in Seattle.

* * *

Bert Peacock, construction engineer, of Los Angeles, Calif., died on Sept. 13 in that city, at the age of 65.

Charles Franklin Arisman, retired building contractor of Los Angeles, Calif., died Sept. 14, at the age of 67.

* * *

William E. Daniell, pioneer building contractor in Washington, died Sept. 10 in Seattle, at the age of 78.

Construction Slump to Permit Bond Retirement

SAVINGS EFFECTED through the curtailment of new highway construction for the duration of the war will enable many of the 41 states having highway bonds outstanding to accumulate funds and pay off their highway bonded indebtedness, according to the American Petroleum Institute. The total bonded indebtedness for roads and bridges under control of the 41 states was $1,803,979,448 as of Jan. 1, 1942, according to figures compiled by the American Association of State Highway Officials. In normal times, about $500,000,000 is expended each year for highway construction by the various states. Although there will be a reduction in highway revenue resulting from gasoline and tire rationing, in some states the savings effected in the stoppage of new construction is expected to exceed the decline in highway revenue. Eight states have already indicated that surplus highway funds will be used to pay off outstanding highway bonds. Among these states are Oregon, Montana and New Mexico.

The Employment Information Corner

Shipbuilders

All classifications of workmen are needed at the three shipyards in Richmond, Calif., with helpers' wages starting at 95c per hour and more skilled occupations going up from there. Particularly in demand are shipwrights (carpenters), boilermakers, welders, crane operators and pipefitters, but all classifications from unskilled labor on up are wanted. Some positions are open for engineers, architects and draftsmen. Plenty of living quarters are available for men without families at $5.50 a week single and $3.50 a week double. Applicants will be put to work immediately upon reporting at the employment office at Ninth and Nevin St., Richmond. Further details are available from the Richmond Shipyards or from *Western Construction News.*

Pearl Harbor, Hawaii

Thousands of workers in 33 different classifications are being sought for work at the Pearl Harbor Navy Yard by the U. S. Civil Service Commission, Federal Office Building, San Francisco, Calif. Positions range from classified labor at 72c per hour to loftsmen at $1.44 per hour. Among the classifications for which workers are being sought are: blacksmith, electrician, engineman, guard, joiner, laborer, machinist, painter, shipfitter, as well as helpers in the classifications of blacksmith, pipefitter, machinist, rigger, shipfitter, and woodworker. Experience requirements for most positions include 4 years of apprenticeship or trade work. Apply to the Civil Service examiner in the nearest first or second class postoffice, or to the nearest U. S. Employment office.

Sanitary Engineer

An examination for assistant sanitary engineer will be held by the California State Personnel Board on Dec. 12, with the final date for filing application set as Nov. 25. For this examination the usual one year's residence in California has been waived and any U. S. citizen is eligible. Experience requirements include graduation from college with major work in sanitary engineering or high school education and five years experience in sanitary engineering. Basic entrance salary is $215 per month plus an additional $15 per month.

Industrial safety engineer

Final date for filing applications for the position of assistant safety engineer has been set as Nov. 25, by the California State Personnel Board which will hold an examination for the position on Dec. 12. Any citizen of the United States is eligible to file an application who has been graduated from college with specialization in engineering and has had two years of safety engineering experience in industrial plants. Additional experience may be substituted for education, year for year. Entrance salary is a basic $230 per month with an additional $15 per month.

Skilled workmen

Blacksmiths, chippers, calkers, drillers, electricians, machinists, sheetmetal workers, shipfitters, and electricians are needed by the U. S. Navy Department for shipyard work in San Francisco, Calif. Men not now working in war production have been urged to apply at their nearest U. S. Employment Office for immediate appointment.

Construction workers

Petty officer ratings in the Navy Construction Corps (Seabees) have been opened again to experienced construction workers. Basic pay ranges from $54 to $126 per month. Service will be overseas following a training period. Particularly in demand at this time are chauffeurs and truck drivers. Civil, architectural and mechanical engineers with field experience in construction work are wanted for appointment as commissioned officers in the Navy Construction Corps. Information may be secured from the nearest Navy recruiting office, or the Office of Naval Officer Procurement, 703 Market St., San Francisco, Calif.

PERSONALLY SPEAKING

Capt. Frank S. McNamara, formerly treasurer of Warren Southwest, Inc., Los Angeles, Calif., has been made deputy director of the Pan-American Highway branch of the U. S. Engineer Department, with headquarters in Los Angeles. He is assistant to **Col. Edwin C. Kelton,** who is directing construction of the important thoroughfare. **Col. E. E. Valentini** has been appointed special assistant and liaison officer, with headquarters in Washington, D. C. **Lt. Col. George Carey** is chief of the operations section, and **Harold Spickard,** formerly right-of-way engineer in the Los Angeles office of the U. S. E. D., is chief of the engineering section. Chief field engineers are **Maj. W. W. Zass,** formerly chief engineer of the Arkansas State Highway department, now stationed at Managua, Nicaragua, and **Capt. Richard Altman,** formerly chief of the survey section at the Los Angeles office of the U. S. E. D., at San Jose, Costa Rica.

* * *

Verne Ketchum, chief engineer of Timber Structures, Inc., formerly located in Portland, Oregon, is now in New York City. His firm specializes in timber trusses and prefabricated structural timber work, and is now furnishing material for large projects all over the United States. Ketchum gave a paper on "Prefabricated and Laminated Timber Construction" at the recent Buffalo meeting of the American Society of Civil Engineers.

* * *

Eleven former members of the State Highway Department of New Mexico were last heard from on Bataan Peninsula in the Philippines. The men, ranging from engineers to laborers were honored in special ceremonies recently. They are: **Elzie Lee Cast, Tom C. Cox, W. A. Foster, Hubert Jeffus, Kenneth Love, Genaro B. Lopez, Virgil Wallace, Everet McLeod, Tony Montoya, James Sadler** and **Billy T. Thomas.**

* * *

D. D. Currier, designer and draftsman with the Western Knapp Co., San Francisco, Calif., is now a lieutenant commander in the U. S. Navy. Two other members of the same firm who have recently entered the armed forces are **Victor Crotchett,** engineering clerk, who is now in the army, and **W. T. Easley,** construction superintendent, who is now a lieutenant, senior grade, in the Navy.

* * *

Sidney C. Dean and **Noble A. Bosley** have been assigned to active duty with the Corps of Engineers. Dean received a commission as captain, and will serve as assistant to the area engineer at Wenatchee, Wash. He was formerly a civilian engineer at the Sand Point naval air station. Bosley, formerly a civilian engineer for Alaska projects, was commissioned a first lieutenant.

COL. EDWARD M. GEORGE, division engineer of the Mountain Division of the U. S. E. D., with headquarters in Salt Lake City, Utah, formerly zone constructing quartermaster of the Ninth construction zone, has been cited for distinguished and exceptionally meritorious service, and awarded the Distinguished Service Medal.

* * *

William H. Holmes has been transferred from the Los Angeles office of the California Division of Water Resources to Sacramento, where he will serve as supervising hydraulic engineer of the dam supervision section, filling the position left vacant by the death of **George W. Hawley.**

* * *

Fremont W. Slattery, president of the New Mexico section of the American Society of Civil Engineers, and until recently assistant regional engineer with the Soil Conservation Service at Albuquerque, is now chief engineer of the Tulelake project of the War Reclamation Authority in California.

* * *

George A. Harker, who has been at Elmendorf Field, Ft. Richardson, Anchorage, Alaska, for the past year, has been named general construction inspector at Bonneville dam in Oregon, working presently on construction of the tail-race and forebay.

The entire staff of the Bureau of Reclamation stationed at Weiser, Idaho, for work on the Mann Creek project, was transferred to the Minidoka relocation project, 20 mi. northeast of Twin Falls, Ida., to layout and supervise construction of a reclamation system for 17,000 acres of brush land. Technical personnel transferred were: **L. B. Ackerman,** resident engineer; **W. E. Wheeler,** office engineer; **H. R. Gray,** chief of party; and **L. A. Thorson,** engineering aide.

* * *

Capt. Grant P. Gordon, assistant to the area engineer at Ft. Lewis, Wash., has been promoted to the rank of major. **E. Ahlberg** of Tacoma, Wash., has been commissioned a captain, and assigned as an assistant to the area engineer in the Olympic area.

* * *

I. L. "Larry" Johnson, formerly a staff engineer with Donald R. Warren, consulting engineer of Los Angeles, Calif., presently stationed at Pearl Harbor, Hawaii, as officer in charge of the public works design section, 14th Naval district, has been promoted from the rank of lieutenant to that of lieutenant commander.

* * *

1st Lt. Donald Morgan, until July, 1942, materials engineer with the Bureau of Reclamation at Friant Dam, Calif., has been recently assigned to duty with the port engineers at San Francisco Port of Embarkation. His first appointment after being commissioned was at the Engineer supply school at Columbus, Ohio.

* * *

Robert C. Mills, formerly resident engineer of the Washington state highway department at Vancouver, has been appointed county engineer of Pacific County. He succeeds **R. E. Woodward,** who is now stationed at Everett, with the U. S. District Engineer.

* * *

Lt. Col. T. W. Bean, former area engineer for the U. S. E. D. at Medford, Ore., has been placed in charge of the area office at Walla Walla, Wash., succeeding **Maj. Chas. C. Phillips,** who has been transferred to Corvallis, Ore.

* * *

William R. Ayers is recording engineer with W. A. Bechtel Co., Marinship division, Sausalito, Calif., in the office of the assistant to the general manager. He heads the statistical department of the organization, preparing reports on progress, efficiency, etc., for the Maritime Commission, for whom Marinship is building merchant ships and tankers.

John D. McCrum and **Harold Brickey,** associate engineers with the Bureau of Reclamation, have both entered the military service. McCrum will be commissioned in the Corps of Engineers and Brickey will be an officer in the Navy. Both had been with the Bureau since 1933 and were in the canals design section of the Denver office.

* * *

Capt. Howard A. Wilson, Capt. Harry R. Powell and **1st Lt. Harold L. Martin** have been commissioned within the last few weeks and assigned to the office of the U. S. District Engineer in Seattle. All three have been appointed assistants to the area engineer at Ft. Lawton, Wash.

* * *

Don A. McKinnon, former state highway engineer of Montana, and more recently project manager for Peter Kiewit Sons' Co. and associated contractors on large construction projects at Parsons, Kans., and La Junta, Colo., has reported for active duty with the Corps of Engineers, with the rank of major.

* * *

C. C. Casad, chief engineer and water department superintendent of Bremerton, Wash., has resigned from that position, but will remain in the city's employ long enough to carry to completion the $400,000 construction project now under way by the water department.

* * *

Robert A. Midthun, public relations director for the Bureau of Reclamation at Shasta Dam, Calif., has been commissioned an ensign in the photographic section of the Navy Air Corps, and is stationed at Pensacola, Fla., for training.

* * *

Col. Harry Schuppner, Maj. Kenneth Campbell, and **Capt. Frank Hummell** have been transferred from the Boise-Pocatello, Idaho, area office of the U. S. Engineer Department to work on the Alaska Highway. Succeeding Col. Schuppner as area engineer will be **Maj. Oliver A. Lewis.**

* * *

LT. ERNEST J. SIMONS, JR., is assistant to Major Arthur C. Nauman, U. S. E. D. area engineer at Spokane, Wash.

C. E. ANDREW, consulting engineer, Washington Toll Bridge Authority, inspects reels for unspinning cables of wrecked Tacoma Narrows bridge. Reels are made of salvaged bridge steel.

Col. Hans Kramer, Corps of Engineers, formerly district engineer at Tucumcari, N. Mex., in charge of construction of Conchas dam, has been promoted to the rank of brigadier general.

* * *

Harmon R. Bennett has been appointed city engineer of Burbank, Calif., to succeed **Clayton W. Paige,** who has resigned to accept a commission in the U. S. Navy.

* * *

Francis Draney, Denver engineer affiliated for the past few months with the architect-engineering firm of Whitman-Requardt & Smith on the Rocky Mt. Arsenal project has accepted a position with the Stearns-Rogers Mfg. Co., of Denver, in its engineering design office.

* * *

Stanley H. Arkwright, of the contracting firm bearing his own name, is now working with Peter Kiewit Sons Co., Omaha, Nebr., contractors, on an airport at La Junta, Colo., where a bomber school is under construction.

* * *

Don M. Hoffman, formerly county engineer of El Dorado Co., Calif., has been promoted to the rank of Lt. Col., and is commanding officer of the Elwood Ordnance plant at Joliet, Ill.

* * *

Maj. Frank M. Keller, area engineer at Ogden, Utah, has been promoted to the rank of lieutenant colonel.

* * *

Capt. Paul S. Bailey, formerly Colorado state bridge engineer, is now assistant area engineer in the U. S. Engineer Corps, stationed at Terre Haute, Ind., where a large ordnance depot is under construction.

* * *

Kenneth A. McGibbon and **James D. Seery,** assistant engineers in the dams design section of the Bureau of Reclamation at Denver, Colo., have resigned to go into military service. McGibbon, with the Bureau since 1936, will be an officer in the Navy and Seery, a Bureau employee for two years, an officer in the Army.

* * *

Jack Pullan, county engineer of Mills Co., Iowa, is now a bridge construction engineer on the Alaska highway project, located at Fairbanks.

* * *

William J. Bardin, regional engineer for the California Corrugated Culvert Co., located at Fresno, Calif., has been commissioned a lieutenant, junior grade, in the Navy.

* * *

Edward L. Green, for nine years with the Bureau of Reclamation at Grand Coulee Dam, has become affiliated with the Kaiser Co., Oakland, Calif.

* * *

Robert W. Mead, formerly director for the WPA in the San Francisco peninsula area, and more lately with the Public Works Reserve, has been named City Manager of Redwood City, Calif., by the council of that city.

* * *

Kenneth J. Greene is now liaison engineer with the Goodyear Aircraft Corp. at their plant in Litchfield Park, Ariz.

* * *

James Gywn has recently resigned from the firm of Whitman-Requardt &

WILLIAM NELAND is an associate civil engineer in the grading and paving section of the Spokane area office of the U. S. Engineer Department.

Smith, engineers on the Rocky Mt. Arsenal, to become affiliated with the Denver & Rio Grande Western R.R. in its Denver engineering offices.

* * *

William M. Cobleigh, has been named acting president of Montana State College. He is dean of the engineering school of the college.

* * *

Olin Kalmback, Denver engineer, for the past two years affiliated with the Panama Canal Commission, has recently become connected with the Tipton Engineering Co., of Denver, and will be located at Grand Island, Nebr., for the firm.

* * *

Charles T. Johnston, investigations engineer with the Los Angeles County Flood Control District, has been commissioned a 1st lieutenant in the Corps of Engineers.

* * *

L. C. Fetter, formerly an engineer aide at the Minidoka relocation project in Idaho, has resigned to accept employment with the Kaiser Co., at Vancouver, Wash.

* * *

F. K. Mittry, one of the firm of Mittry Bros. Construction Co., Los Angeles, Calif., has been commissioned a captain in the Corps of Engineers.

* * *

Frank B. Hayes, county engineer of Umatilla Co., Ore., since 1934, has resigned that position for appointment as city engineer of Pendleton, Ore.

SUPERVISING THE JOBS

C. E. Jones, who has acted as superintendent for Robert E. McKee on constuction jobs in Hawaii, as well as all over California, has been named by the contractor to direct construction on a "more than $100,000" contract for concrete aprons at an airfield in Weber Co., Utah. Other important men on the job are **O. H. Nolte,** office manager, **F. J. McClain,** assistant superintendent, and **R. E. Hackerett,** field engineer.

* * *

John C. Gist is supervising construction on a contract of less than $2,000,000 secured by himself and A. Teichert & Son, Inc., Sacramento, Calif., to construct housing and airfield facilities at an airbase in Cochise Co., Ariz. **Ralph Wigle,** until recently employed on construction of a Sierra Nevada arsenal, and **Adolph Bauer,** are assistant superintendents. **A. J. Twohy** is office manager.

* * *

L. Simpson is project manager on a new housing contract secured by Barrett & Hilp, San Francisco contractors, to build 1500 dormitory units for single men and 600 apartments at the Moore shipyards in Oakland, Calif. Superintendents on the job are **C. Wellnitz** and **P. Anderson.** The cost of the housing units will total $2,875,000.

* * *

Walter D. Merrigan, superintendent, **Hugh Bohne,** foreman, and **Carl Mills,** timekeeper, will direct construction of trainer school buildings at a gunnery school in Clark Co., Nev. The contract for this project was awarded recently to O. J. Scherer of Las Vegas, Nev., at more than $100,000.

* * *

Ernest Friberg is in charge of construction of a gasoline fueling and oil storage system at a military installation in Cascade Co., Mont., for which Central California Construction Co., San Francisco, Calif., was awarded a $100,000 to $500,000 contract.

* * *

J. W. Hess has been named job superintendent for Louis Biasotti & Son, Stockton, Calif., contractors, who were recently awarded a $134,742 contract for 0.5 mi. of grading and cement and asphaltic concrete surfacing, and the removal of a timber bridge at Rindler Creek, Napa Co., Calif. Foreman on the job is **Paul Matus.**

* * *

C. A. Dailey is superintendent for Central California Construction Co., San Francisco, Calif., on the contract to construct a gasoline storage and fueling system at Walla Walla, Wash., airbase. It is a $65,000 contract. On another award in the same amount to the company for similar facilities at the Pocatello, Ida., airbase, **Evald Erickson** is superintendent, and **J. Kenealy** is foreman.

* * *

Wm. H. Wilson, member of the partnership known as Better Built Homes & Associates, Ogden, Utah, building contractors, is in direct charge of construction of 2,000 demountable victory housing units in Ogden, on a contract secured from the U. S. Housing Authority. Assisting him in key positions are **M. E. Walters,** general manager, and **John J. Munselle,** field superintendent.

* * *

T. H. Johanns is project manager for Robert McCarthy Co., San Francisco, on a contract awarded to that company to build 1,900 housing units at the Kaiser Co. shipyards in Richmond, Calif. This is one of three contracts for a total of 6,000 houses in that area. **Tom Curran** is general superintendent for the McCarthy contract.

* * *

George Hill and **Herbert Hill,** brothers, have just returned to the mainland from the islands of the Pacific, where they have been engaged in war project construction. George was a concrete foreman for Contractors Pacific Naval Air

SUPERINTENDENTS for Ford J. Twaits Co., Los Angeles, Calif., contractors, on construction of buildings at a large army air depot in Eastern Washington, are left to right: J. H. Millage, operations building; M. A. Kitchell, general superintendent; Andrew Hartwig, civilian housing, and A. B. Standard, engine test building.

Don't Let *Corrosion* Sabotage Your Wire Rope

The illustration at the right was made from an unretouched photograph of a wire rope used for hoisting in a coal mine. It fell an early victim to corrosion because it was not kept properly lubricated.

Proper Lubrication Helps Wire Rope Resist Corrosion

CORROSION is an enemy saboteur that is constantly trying to destroy your wire rope. Unless combatted by proper lubrication, normal rope life is greatly shortened and a serious hazard to safety created.

Wire Rope is an intricate machine with many "bearings". If it is to give the full service of which it is actually capable, these points of contact — both externally and internally — must be kept correctly and adequately lubricated at all times.

Important

An idle wire rope is more vulnerable to corrosion than one in use, so be sure to give your ropes the protection of a good lubricant when they are not in service.

The right kind of lubricant to use and the frequency with which it should be applied depends upon the conditions under which your rope is operating. When in doubt, we suggest you consult with an experienced wire rope manufacturer.

Now that steel is so urgently needed for so many implements of war, the more "work hours" you can get out of your wire ropes, the more steel you save for other vital purposes. So in all earnestness we repeat— *Don't let Corrosion sabotage your wire rope.*

Western Distributors: ALBUQUERQUE: McChesney-Rand Equipment Co.; BILLINGS: Connelly Machinery Company; BOISE: Olson Manufacturing Company; CHEYENNE: Wilson Equipment & Supply Co.; DENVER: H. W. Moore Equipment Company; EL PASO: Zork Hardware Company; GREAT FALLS: Connelly Machinery Company; HELENA: Caird Engineering Works; LOS ANGELES: Garlinghouse Brothers; PHOENIX: Pratt-Gilbert Hardware Company; PORTLAND: Clyde Equipment Co., P. L. Crooks & Co., Inc.; SALT LAKE CITY: The C. H. Jones Equipment Company, Z. C. M. I.; SANTA ROSA: Berglund Tractor & Equipment Co.; SEATTLE: Clyde Equipment Co.; SIDNEY: Tractor & Equipment Company; SPOKANE: Nott-Atwater Company; STOCKTON: Hickinbotham Bros., Ltd.

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS — ESTABLISHED 1857

5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

HERCULES RED STRAND WIRE ROPE

NEW YORK . . . 90 West Street
CHICAGO . . 810 W. Washington Blvd.
DENVER . . . 1554 Wazee Street

SAN FRANCISCO . . 520 Fourth Street
PORTLAND . . 914 N. W. 14th Avenue
SEATTLE . . 3410 First Avenue South

JOSEPH KARAFFA

Bases Contracts, on naval construction in the Hawaiian Islands, and Herbert has been a carpenter foreman with Hawaiian Constructors on army work in the outlying islands.

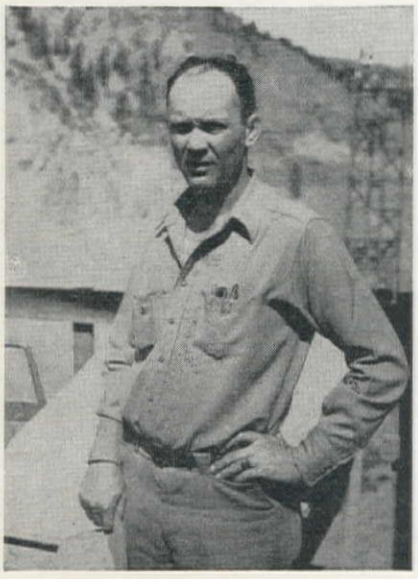
* * *

Robert Hardie, superintendent on many big jobs for Robert E. McKee, Los Angeles, Calif., contractor, has been put in charge of erection of two airplane repair buildings at an airbase in San Bernardino Co., Calif. Assisting him will be **Vern Skinner,** chief engineer and **Henry Harbordt,** office engineer. This contract is for more than a half-million dollars.

* * *

Jerome Snow and **Paul Galloway** are directing the erection of 20 civilian housing dormitories at an army camp in

J. D. FOGG, vice-president and general manager of the Warner Construction Co., Chicago, is in charge of operations at the separation plant processing materials for the impervious core of Green Mountain Dam in Colorado.



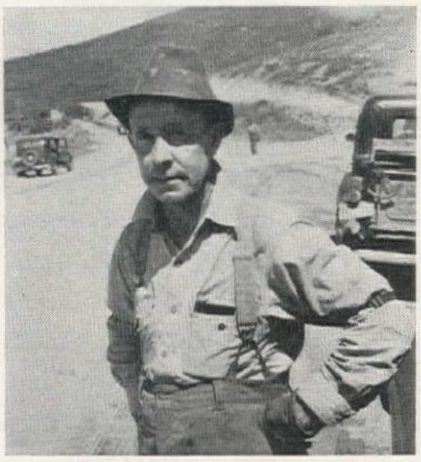
Weber Co., Utah, for James I. Barnes Construction Co., Santa Monica, Calif., who secured the contract at between $100,000 and $500,000.

* * *

Joseph Karaffa is superintendent for the Victory Construction Co. of Great Falls, Mont., on a "$100,000 to $500,000" contract to build frame buildings at a military site in Cascade Co., Mont., and several other defense contracts held by the company. This company is a partnership composed of **Karaffa, Floyd Pappin, Roy Anderson, J. P. Humphrey,** and **Fred Dudley,** individual contractors who combined to handle larger projects. Plumbing and heating is being handled by another group of individuals, namely, **Ray Duggan, G. A. Mehl, Tony Pinski,** and **John Trunkle,** who have formed the company known as Great Falls Plumbing and Heating Co. Electric work on the contracts is handled by **L. B. Lewis,** of the Cascade Electric Co.

* * *

John T. Burt has been made superintendent of a 2½-mi. roadmix surfacing job between Nye's Corner and Wilson



JOHN T. BURT

Lane, in Weber Co., Utah, by W. W. Clyde & Co., Springville, to whom the contract was awarded on a low bid of $258,932. On a $305,147 award to the same company for clearing, grading, paving, and drainage at the airport at Delta, Utah, **Harry J. Clyde** has been named as project superintendent.

* * *

Wilbur Purdin will represent Harris Construction Co., of Fresno, Calif., on its contract valued at over $100,000 to construct a hospital unit at Camp Kohler in Sacramento Co., Calif., as general superintendent. **R. E. Jolly** and **Al Branch** are assisting Purdin as field superintendents. **Lee Robertson** is chief job clerk.

* * *

J. B. Morrison is superintending the job secured by the construction company bearing his name, on its contract to

EMMETT D. FORD is superintendent for Carl E. Nelson, contractor of Logan, Utah, on construction of a military highway between Mountain Home and Hammett, Idaho, a $238,881 contract.

construct an auxiliary landing field and gunnery target at a gunnery range in Pima Co., Arizona. Other key men on the "more than $100,000" contract are **Don Hopper** and **William Stewart.**

* * *

Robert "Bob" Wilson is project manager on a new contract for housing at Richmond, Calif., secured by Oliver M. Rousseau, contractor of San Francisco. **S. B. Davis** is superintendent of the job, which includes erection of 2,200 houses, to be occupied by workers at the Kaiser Co. shipyards.

* * *

A. N. Anderson is superintendent and **K. L. Goulter,** one of the contractors, is supervisor, on an award of over $500,000 to the joint firms of Parker-Schram Co., Portland, Ore., and Erickson & Goulter, Seattle, Wash., for construction of runways, taxiways, and appurtenances in Skagit Co., Wash.

* * *

Karl F. Jacobsen, a member of the firm, is general superintendent for Jacobsen-Jensen Co., Portland, Ore., on their contract of more than $100,000 to construct roads and railroads at a military site in Umatilla Co., Ore. Job superintendent is **Frank Mayo,** and paymaster is **Myron Shipman.**

* * *

Everett S. M. Brunzell of the Brunzell Construction Co., West Los Angeles, Calif., will act as job superintendent during the erection of hospital buildings at Thermal, Calif., a $250,000 job. **F. W. Downum** will be his assistant on the job.

* * *

F. M. George is general superintendent for Gerald Mora, contractor of Houston, Texas, on the contract he re-

A. J. JOHNSON

cently secured to construct more than a million dollars' worth of temporary housing at the Clovis, N. Mex., airfield. **Paul Bacque** is serving as field superintendent and **R. L. Loomis** is mill man for the project.

* * *

E. A. Ridenour is job superintendent, and **M. A. Manderbaugh** is general superintendent for the H. M. Keller Co., Los Angeles, Calif., on that company's contract of more than $100,000 for construction of personnel shelters at a Los Angeles County aircraft plant.

* * *

Mark Monroe, formerly assistant superintendent for Frank Penepacker, Portland contractor, is now grading foreman with the George H. Buckler Co., Portland, on that organization's multi-million dollar contracts for housing projects in the Portland, Ore., and Vancouver, Wash., areas.

* * *

Walter Geiser is serving as job superintendent on a contract valued at more than a half-million dollars for miscellaneous army construction in Kings Co., Calif., recently let to the Owl Truck & Materials Co., Compton, Calif.

* * *

Raymond I. Biggy is directing construction of a 100-ton pilot mill on property of the American Tin Corp. in the Cajalco hills, near Lake Mathews, Calif. He is superintendent for Dodge Construction Co., of Fallon, Nev., contractors for the mill.

* * *

N. H. Anderson will be superintendent of construction on installation of an electrical distribution system at a San Bernardino Co., Calif., air depot, the contract for which was secured by W. T. Drury, contractor of Bakersfield, Calif.

* * *

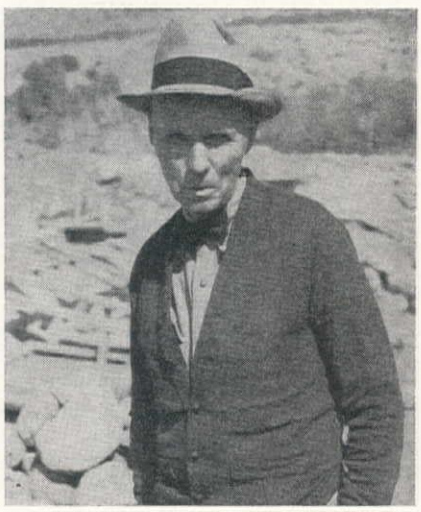
Edwin J. Fierst, shovel and crane operator for T. E. Connolly, Inc., at Provo, Utah, and Cottage Grove, Ore., has recently returned from Trinidad, British West Indies, and has enlisted in the Naval construction battalion as a carpenter's mate, first class.

* * *

David Dorsey is acting as job superintendent on construction of temporary frame buildings in Ada Co., Idaho., on a contract secured from the U. S. Engineer Department by H. J. McNeel, Caldwell, Idaho, contractor, at more than $100,000. On the same job, **A. J. Johnson** is construction superintendent.

* * *

W. H. COOPER, superintendent for Felix Plastino, who had sub-contract to build a 20-ft. span arch culvert 1½ mi. east of King Hill, Idaho. No reinforcement was used in the structure.



DAVID DORSEY

Raymond M. Hay, accountant and assistant secretary of the Isbell Construction Co., Reno, Nev., has been commissioned a major in the army air corps, and is now stationed at a flying school near Chico, Calif.

* * *

Ray Smart, road maintenance superintendent in Union Co., N. Mex., has been named field mechanic for the northeastern district of the state, replacing **Irvin C. Pachta,** who has entered the armed service.

* * *

Harold S. Martin, shop foreman, and **Phil Calabrese,** field mechanic, are additional key men on the J. A. Casson and N. M. Ball Sons joint contract at the Monterey, Calif., airbase. Others were

JOHN R. AUSTIN, superintendent for Stiers Bros. Co., St. Louis, Mo., contractors on the west portal bore of the Continental Divide Tunnel, a unit of the Colorado-Big Thompson project, is running the work from a hospital bed in St. Joseph's Hospital in Denver, where he is spending several weeks due to a heart ailment.

Photo by Thos. J. Barbre.

reported in *Western Construction News* for October.

* * *

EARL W. CHANDLER, is master mechanic for Erickson & Goulter, contractors, on a Pacific Northwest airport project.

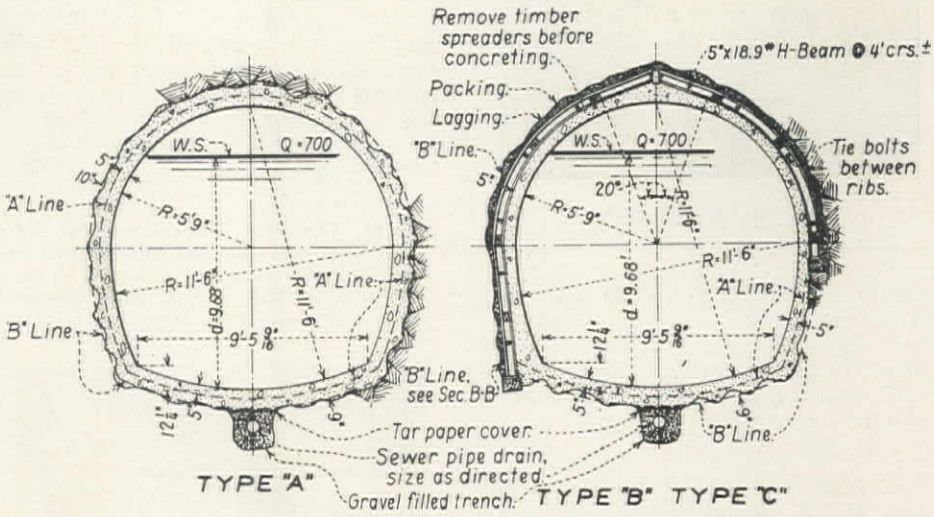
UNIT BID SUMMARY

Tunnel . . .

New Mexico—Quay County—Bur. of Reclam.—Lined Tunnel

Bressi & Bevanda Constructors, Inc., Los Angeles, Calif., submitted the low bid at $752,205 to the Bureau of Reclamation, Tucumcari, for construction of a tunnel and canal between stations 1603+75 and 1684+68 of the Conchas Canal, part of the Tucumcari project. Actual length of tunnel is 7,087 ft. The government is to furnish cement and aggregates for use in concrete, mortar and grout; reinforcement bars; sewer pipe for drains; permanent pipe and fitting installations, and any other materials to become a permanent part of the completed work. The contractor will furnish timber, form materials, backfill material, and all other materials not to become a part of the completed structure. The contractor will haul both materials furnished by himself and those furnished by the government. In the sketch of a typical tunnel section, the "A" line

TUNNEL SECTIONS



HYDRAULIC PROPERTIES

SECTION	A	V	Q	r	n	S
Canal	319.83	2.19	700	5.80	.0225	.0001
Tunnel	99.13	7.06	700	3.52	.014	.00083

indicates the line inside which no unexcavated material, timbering or other parts of the tunnel will be permitted to remain; the "B" line indicates the limits to which payment for excavation will be made. The contracting office may alter the distance between the "A" and "B" lines if the nature of the excavated material seems to warrant it. Bids were submitted by the following:

(1) Bressi & Bevanda Constructors, Inc....$725,205 (2) J. F. Shea Co., Inc.....$838,350

	(1)	(2)
17,000 cu. yds. excavation, common, for canal	1.25	0.95
51,000 cu. yds. excavation, rock, for canal	1.25	0.95
300 cu. yds. removal of loose rock above canal	1.25	2.00
50 cu. yds. excavation, common, for tunnel outlet drain	1.25	2.00
50 cu. yds. excavation, rock, for tunnel outlet drain	1.25	5.00
42,000 cu. yds. excavation, all classes, in tunnel	9.50	13.40
500 cu. yds. backfill	1.25	1.00
200 cu. yds. puddling or tamping backfill	1.25	1.00
11,000 cu. yds. concrete in tunnel lining	14.00	11.50
210 cu. yds. concrete in portal structures and transitions	39.00	35.00
300 cu. yds. pneumatically applied mortar	50.00	30.00
20,000 lbs. placing reinforcement bars	0.09	0.03
600 MFBM furnishing and erecting permanent timbering in tunnel	140.00	100.00
400 lin. ft. drilling grout holes not more than 10 ft. deep	0.50	1.00
200 lbs. placing grout pipe and connections	0.20	0.25
800 cu. ft. pressure grouting	0.50	1.00
1,800 lin. ft. constructing 6-in. diam. tunnel drain	0.50	1.50
1,000 lin. ft. laying 6-in. diam. sewer pipe with cemented joints	0.50	1.00
300 sq. yds. dry-rock paving	6.00	3.00

Sewerage . . .

California—Contra Costa County—WPA—Interceptor Sewers

W. J. Tobin, Oakland, bid low at $245,569 to the regional engineer of the Works Progress Administration, San Francisco, for interceptor sewers in the city of Richmond, to serve the rapidly expanding defense housing areas at that place. Bids submitted were as follows:

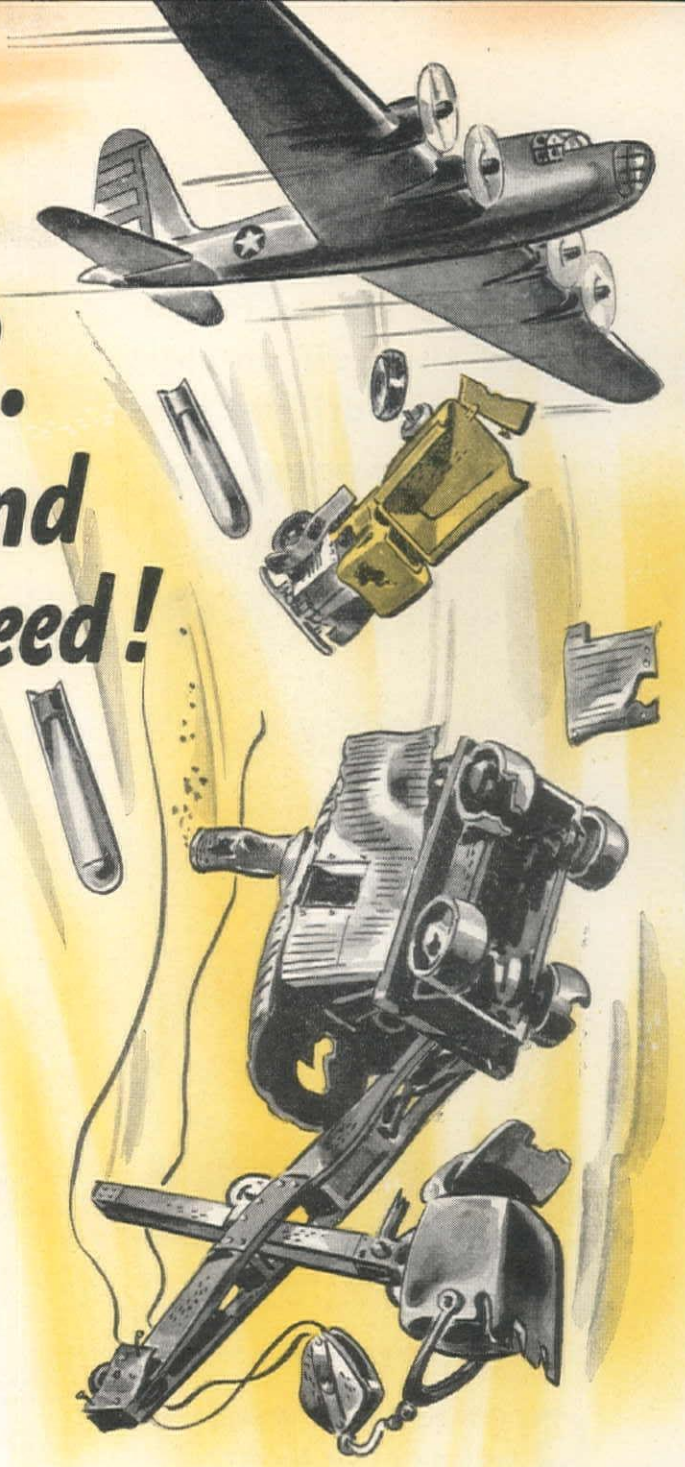
(1) W. J. Tobin.....$245,569 (2) Edwin J. Tobin.....$265,322

SCHEDULE I
No bids received.
SCHEDULE II

	(1)	(2)
2,780 lin. ft. inst. 42-in. reinf. conc. pipe	20.80	25.50
2,780 lin.. ft. const. conc. sewer cast in place	alternate—no bids	
7 ea. 6-ft. brick manholes	$200	$180

(Continued on next page)

SOLD! and Delivered to HIROHITO, ETC. Without Priority - and Fast Delivery Guaranteed!



Yes, sold to Hirohito and his gang—and d... fast delivery guaranteed—even without priority.

Every contractor, county and municipality has obsolete equipment stowed away in hidden by-ways, in forgotten storage, in unused garages—most of it *big* tonnage stuff that has long since lost its value.

Mister, there never was a better time to get rid of those jalopies. Turn them into scrap *now*, and let's deliver them to the Axis in the form of bullets and bombs.

How to make your scrap, scrap for you

Get in touch with your nearest Lorain distributor. He will be glad to help you turn your jalopies into bombs and can advise you on any parts of equipment which should be retained for replacement use on other machines.

Then, too, he can help you do more with your present equipment because he has complete facilities for ***rebuilding, repairing*** and ***servicing.*** For rapid-fire action on today's problems and for the newest developments in shovels, cranes and draglines tomorrow, get acquainted with your Lorain distributor. He's on his toes.

Distributed by: *LeRoi-Rix Machinery Co., Los Angeles, Calif.; Cate Equipment Co., Salt Lake City, Utah; *Liberty Truck & Parts Co., Denver, Colo.; *Coast Equipment Co., San Francisco, Calif.; Wilson Equipment & Supply Co., Cheyenne, Wyo.; A. H. Cox & Co., Inc., Seattle, Wash.; *Columbia Equipment Co., Portland, Ore., Spokane, Wash.; McChesney-Rand Equipment Co., Albuquerque, New Mexico; Bunting Tractor Co., La Grande, Ore., Boise and Twin Falls, Idaho; State Tractor & Equipment Co., Phoenix, Arizona.

(*) Carries a representative stock of spare parts.

THEW CENTER DRIVE

THE THEW SHOVEL COMPANY
LORAIN, OHIO

THEW-LORAIN

CRANES • SHOVELS
DRAGLINES • MOTO-CRANES

40	lin. ft. addit. depth, MH	5.00	20.00
500	T quarry rock fill	6.00	6.00
	SCHEDULE III		
454	lin. ft. 30-in. VCP	15.50	20.70
1,769	lin. ft. 24-in. VCP	12.30	16.60
1,548	lin. ft. 18-in. VCP	10.30	12.20
1,545	lin. ft. 15-in. VCP	9.96	10.80
4,039	lin. ft. 12-in. VCP	10.20	9.10
7,853	lin. ft. 10-in. VCP	8.76	7.50
4	ea. chim. type side sewer connec. to 24-in. sewer main	7.00	35.00
14	ea. connec. to 18-in. main	7.00	30.00
22	ea. connec. to 15-in. main	7.00	25.00
18	ea. connec. to 12-in. main	7.00	22.50
28	ea. connec. to 10-in. main	7.00	20.00
43	ea. wye type side sewer connec. to 12-in. main	5.00	15.00
58	ea. wye connec. to 10-in. main	5.00	12.50
1	ea. inst. 18-in. VCP connec. betw. old and new MH	50.00	90.00
22	ea. 8-in. VCP connec. betw. MH	5.00	75.00
64	ea. 6-ft. brick manholes	140.00	150.00
200	lin. ft. addit. depth of MH	5.00	15.00
200	T quarry rock fill	6.00	6.00
1	ea. const. field office	300.00	250.00
3	ea. project signs	100.00	50.00

Bridge and Grade Separation . . .

Utah—Weber County—State—Concrete Overhead

Young and Smith Construction Co., Salt Lake City, with a proposal of $59,442, were only bidders on the construction of a continuous concrete T-beam overhead structure having a total length of 0.037 mi., between Nyes Corner and Wilson Lane. The width of roadway on the completed structure will be 28 ft. Treated piles are used for foundation support. The unit bids were as follows:

(1) Young & Smith Construction Co. ..... $59,442 (2) Engineer's Estimate $52,992

		(1)	(2)
410	cu. yd. excavation for structures	3.00	2.00
790	cu. yd. concrete, Class "A"	42.00	35.00
427	lin. ft. concrete handrail	7.00	5.00
132,000	lb. reinforcing steel	.08	.10
5,000	lb. structural steel	.25	.20
91	lin. ft. 8-in. perforated C.G.M. pipe underdrains	3.00	2.00
220	lin. ft. 8-in. C.G.M. pipe	3.00	2.00
40	cu. yd. gravel backfill	13.00	2.00
1,440	lin. ft. piles treated (12-in. round)	2.00	2.00
1,200	lin. ft. piles treated (16-in. round)	3.00	2.50
6.5	MFBM lumber treated (timber cribbing)	200.00	170.00
1	each furnishing pile driving equipment	1,000	500.00

California—San Diego County—State—Overhead Crossing

M. H. Golden Construction Co., San Diego, bidding $329,333, was low to the California Division of Highways, Sacramento, for construction of a concrete and timber trestle overhead crossing for Harbor Drive in the City of San Diego, over Switzer Canyon Creek and the tracks of the Atchison, Topeka, and Santa Fe Railway. Untreated timber piles are specified for the structure. Steel railroad rails for reinforcement are to be furnished by the State, but all other material is to be secured by the contractor. Bids were received from the following:

(1) M. H. Golden Construction Co. $329,333
(2) J. E. Haddock, Ltd. 363,531
(3) Trewhitt-Shields & Fisher 373,672
(4) V. R. Dennis Construction Co. 374,867
(5) E. E. Smith 392,235
(6) Carlo Bongiovanni $394,553
(7) Contracting Engineers Co. 411,565
(8) Ralph A. Bell 433,892
(9) United Concrete Pipe Corp. 444,145

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3,000	cu. yd. structure excavation	5.00	6.00	12.00	6.00	10.00	11.00	10.00	20.00	15.00
115	tons mineral aggregate (PMS)	5.40	5.00	5.00	6.00	5.00	8.00	5.00	6.00	7.00
6	tons liquid asph. MC-4 or 5 (PMS)	30.00	30.00	30.00	22.00	25.00	25.00	50.00	30.00	50.00
20	tons liquid asphalt SC-6 (Pr. Ct. & Bit. Mac.)	42.00	25.00	40.00	27.00	30.00	35.00	30.00	30.00	40.00
390	tons rk. and screenings (Bit. Mac.)	3.60	4.00	6.00	4.50	5.00	4.50	3.00	6.00	7.00
608	MFBM redwood timber	179.00	196.00	158.00	190.00	170.00	207.00	180.00	200.00	200.00
1,035	cu. yd. Cl. A P.C.C. (footing blks.)	21.00	16.00	20.00	16.00	34.00	15.00	14.00	30.00	25.00
2,330	cu. yd. Cl. A P.C.C. (structure)	42.00	49.00	38.00	47.00	40.00	52.00	50.00	44.00	50.00
38,550	lin. ft. furn. untreated timber piles	.54	.65	.65	.65	1.00	.54	1.00	.75	.80
860	ea. driving piles	25.00	25.00	57.00	41.00	45.00	18.00	50.00	33.00	40.00
7,000	lbs. misc. iron and steel	.23	.24	.25	.30	.30	.30	.50	.40	.40
485,000	lbs. furnish bar reinf. steel	.044	.0475	.04	.06	.05	.05	.05	.06	.06
485,000	lbs. placing bar reinf. steel	.018	.02	.02	.025	.015	.02	.02	.025	.03
490	sq. yds. mesh reinforcement	.24	.25	.50	.30	.50	1.00	1.00	.60	.50
258,000	lbs. placing R.R. rail reinf.	.017	.02	.03	.025	.02	.04	.02	.03	.04
280	lin. ft. 6-in. vitrified clay pipe	.75	2.00	2.00	1.50	1.00	1.00	3.00	2.00	1.00
Lump sum	miscellaneous items	4,150	6,000	15,000	1,500	10,650	12,050	13,000	5,000	8,000

Airport . . .

Nevada—Humboldt County—C. A. A.—Grade & Surf.

Carl E. Nelson, Logan, Utah, submitted low bid of $300,966 to the Civil Aeronautics Administration, Santa Monica, Calif., for the construction of an airport at Winnemucca, Nev., to include clearing, draining, fencing, and surfacing with a 3-in. crushed gravel base course, 1½-in. plantmix surface course, and sealcoat. Bids were received from the following:

(1) Carl E. Nelson $300,966
(2) Isbell Construction Co. 305,473
(3) Frank West $807,550

	SCHEDULE NO. 1	(1)	(2)	(3)
210	acre clearing	30.00	20.00	65.00
137,500	cu. yd. grading	.35	.40	1.00
6,000	M gal. watering, in place	2.00	2.00	5.00
650	lin. ft. 12-in. vitr. clay pipe	2.00	2.25	5.00
2,200	lin. ft. 18-in. vitr. clay pipe	3.00	4.00	5.50
1,000	cu. yd. struc. excavation	2.00	1.50	4.00
20	cu. yd. conc., headwalls, manhole, etc.	50.00	50.00	60.00
4	ea. manhole frame and gratings	100.00	150.00	250.00
40,000	cu. yd. excav., drainage inlet, outlet, diversion ditches and sump	.40	.40	1.50
1,510	lin. ft. furn. and inst. 3-in. fiber duct, incl. conc. envelope	2.00	2.50	3.00

(Continued on next page)

"THAT SEAMAN PULVI-MIXER IS AN ABSOLUTE 'NATURAL' FOR SOIL-CEMENT!"

Contractors the country over are finding that the sharp increase in military airports and access roads has placed soil-cement in the very front rank as a quick and economical type of construction — one readily engineered to meet the requirements of each particular project. While the SEAMAN PULVI-MIXER is not by any means limited to soil-cement, it is a perfect "natural" for the process. The SEAMAN offers precision control in the processing of materials — and — especially important — in governing moisture.

Any soil stabilization job, with or without binder, is fitted to SEAMAN performance — but we urge the alert contractor to investigate NOW — the possibilities of the SEAMAN PULVI-MIXER in soil-cement construction.

The SEAMAN PULVI-MIXER is a fast, efficient, thoroughly proven piece of equipment that often repays its investment plus a good substantial dividend, even before a job is completed. That the profit comes in time and labor saving, is a vital fact in these days of tight operational schedules and man-power shortages.

SEAMAN Engineers have prepared,— after months of study,— a comprehensive Bulletin on the soil-cement process. It's packed with up-to-the minute information and loaded with construction hints. It's yours for the asking. Write — (and do it now) to

Long before Pearl Harbor, the SEAMAN PULVI-MIXER was employed in the construction of military airports and military roads. Today no one knows in what new foreign lands the PULVI-MIXER will be doing its fast, efficient work.

And those same qualifications that make the PULVI-MIXER an immensely useful part of our War effort can, in turn, be put to profitable service in your own work.

The Seaman Pulvi-Mixer Insures:

1. Precision processing control
2. Better dry-mix processing
3. Better damp-mix processing
4. Better pulverization
5. Faster production
6. Lower operating cost
7. Lower investment

SEAMAN MOTORS

305 N. 25th STREET · MILWAUKEE, WIS.

175	acre smoothing	75.00	75.00	220.00
3,334	sq. yd. plain conc. pavement, warm-up apron	4.00	3.40	5.80
75	ea. tie-down anchors (warm-up apron)	2.00	3.00	2.00
1,200	rod electric fence	2.00	3.00	16.00
1	ea. cattle guard	500.00	500.00	500.00
	SCHEDULE NO. 2			
61,000	ton gravel base course	.80	.75	3.00
30,500	ton gravel leveling course	1.00	1.00	3.00
3,000	M gal. water, gravel base course	2.00	2.00	5.00
102,000	gal. liq. asph., MC-1 (base treat.)	.12	.10	.20
16,500	tons asph. conc.	2.50	2.80	6.00
1,000	tons paving asph. (120-150 penetr.)	25.00	23.00	30.00
51,000	gal. liq. asph., RC-2, seal coat	.12	.10	.20
1,600	tons mineral aggr., seal coat	3.00	3.50	7.00

Oregon—Marion County—State—Flight Strip

Warren Northwest, Inc., Portland, submitted the low bid at $309,990 to the Oregon State Highway Department, Portland, for grading and paving the Aurora flight strip, one of the 88 proposed for construction in the United States as emergency landing fields for military operations. The paving is of asphaltic concrete on a gravel sub-base. An identical bid was submitted using tar for surfacing. Bids were submitted by the following:

(1) Warren Northwest, Inc. $309,990
(2) Porter W. Yett $368,505

		(1)	(2)
	Lump sum clearing and grubbing	25,000	40,000
540	cu. yds. structural excavation, unclassified	1.25	3.00
190,000	cu. yds. general excavation, unclassified	.46	.40
	Lump sum finishing and trimming earthwork	3,500	7,500
750	lin. ft. 18-in. concrete pipe	2.50	2.50
51,000	cu. yds. 3-in. - 0-in. material in sub-base	1.00	2.15
15,300	cu. yds. 1-in. - 0-in. material in base, shoulders and surfacing	3.50	3.10
2,300	M gals. sprinkling	2.50	2.50
8,500	tons class B asphaltic concrete	7.50	7.10
66	tons furnishing and placing emulsified asphalt in seal coat	30.00	40.00
300	tons furnishing and placing aggregate in seal coat	5.00	4.00
1,070	rods woven wire stock fence	4.00	5.00
2	ea. gates in stock fence	25.00	20.00
2	ea. wind cones	100.00	50.00
52	acres seeding	40.00	10.00
	Lump sum preparation of base	2,500	2,500
550	cu. yds. ½-in. - 0-in. material in binder course	4.00	4.00
90	tons furnishing and placing RC-3 asphalt in binder course	30.00	no bid
108	tons furnishing and placing RT-4 tar in binder course	25.00	35.00

Highway and Street . . .

Montana—Lincoln County—State—Surfacing

Union Construction Co., Great Falls, with a bid of $104,841, was low bidder to the Montana Highway Commission, Helena, on surfacing with selected borrow, crushed gravel, and roadmix oil treatment of 6.8 mi. of the Kalispell-Libby road and received the contract for the work. The job carries a preference rating of A-4. A previous advertisement of the same project had brought only one proposal, by the successful bidder in the present invitation, and it was rejected. Bids submitted at this time were as follows:

(1) Union Construction Co. $104,841
(2) Barnard-Curtiss Co. 107,101
(3) Kirkpatrick Bros. $107,391

		(1)	(2)	(3)
20,975	cu. yd. sel. borr. excavation	.70	.75	.50
14,458	mi. yd. overhaul	.20	.25	.15
37,269	ton base course cr. gravel surf.	.90	.75	.75
20,436	ton Grade "A" top course cr. grav.	1.00	1.15	.90
1,359	ton stone chips	3.00	3.00	5.00
4,000	cu. yd. binder	.05	.10	.25
8,000	yd. mi. overhaul on binder	.05	.15	.15
2,200	M. gals. watering	1.50	1.50	2.00
520	hour rolling	5.00	5.00	5.00
110,556	gal. apply asph. rd. oil (SC-3)	.11	.12	.15
6.756	mile processing	700.00	800.00	1,500.00
164	sq. yd. processing rd. apps.	.50	1.00	.24
3,958	gal. tack coat oil shoulders (SC-2)	.12	.12	.12
35,536	gal. seal coat oil RC-3 cutback asph.	.12	.12	.12
1,000	ton stock piled gravel	1.00	1.15	.90

Idaho—Elmore County—State—Surfacing

Quinn Robbins Co., Boise, submitted low bid at $145,331 to the Idaho Bureau of Highways, Boise, and was awarded the contract for the roadbed, drainage structures, and crushed gravel surfacing on 4.1 mi. of the Old Oregon Trail from Glenns Ferry westerly. A feature of the successful bid was its close approximation to the estimate of the engineer. The following bids were submitted:

(1) Quinn Robbins Co. $145,331
(2) Carl E. Nelson 154,862
(3) Tony Marrazzo $158,672
(4) Engineer's Estimate 145,824

		(1)	(2)	(3)	(4)
50	each selective removal of trees	3.00	15.00	2.00	15.00
1,760	lin. ft. remove guard rail	.50	.50	.50	.40
6	each remove conc. or masonry headwalls	5.00	10.00	15.00	15.00
113,000	cu. yd. uncl. excavation	.36	.40	.45	.38
530	cu. yd. exc. for structures	3.00	2.50	2.50	2.00
9,000	cu. yd. borrow	.33	.35	.45	.30
75,000	sta. yd. overhaul	.04	.02	.02	.03
38,000	mi. yd. haul	.20	.20	.16	.18
300	cu. yd. selected borrow sub-base	1.00	1.00	2.00	.55
25	sta. furrow ditches	10.00	10.00	15.00	5.00
7,900	lin. ft. small ditches	.15	.10	.15	.10
39	sta. obliteration of old road	10.00	10.00	5.00	25.00
50	days rolling power roller	30.00	30.00	30.00	25.00
155	days rolling, tamping roller	40.00	30.00	32.00	30.00
4,800	M.G. watering embankments	2.00	1.50	1.00	2.00
1,080	M.G. watering base and surf. courses	2.00	1.50	1.50	2.00
28,000	tons cr. gr. base course 2-in. max.	.85	1.00	.90	1.00
910	cu. yd. binder	.40	.50	.30	.35
11,600	tons cr. gr. surf. courses 1-in. max.	1.00	1.10	1.00	1.00
14,100	tons cr. gr. ¾-in. max. in stockpiles	.95	1.10	1.15	.85

(Continued on next page)

Nearing The End Of Another Speedy GALION Road Repair Job For The War Effort

● *GALION Motor Grader drying out material for a road-mix job on U. S. #101, 15 miles south of Garberville, California.*

...GALION'S Speedy Performance insures a thorough road repair job —keeps it ahead of schedule!

★ To properly surface this important military highway for heavy war traffic, the road mix material must be thoroughly dried before application of oil. GALION'S fast, dependable action speeds the drying out job after initial grading work . . . mixes the oil for the final stage.

★ Maintenance of important routes is vital to the Western War Program. GALIONS, new and old, get the call because contractors know that rugged construction means more repair on the road and less repair on the machine. All over the West, GALIONS speed road repairs . . . keep the work ahead of schedule.

★ GALION continues to produce equipment for the greater strength and security of our country. If unable to secure new models see that your present machines are serviced and reconditioned when necessary by your nearest GALION distributor.

LET YOUR NEAREST DISTRIBUTOR KEEP YOUR GALIONS IN TOP SHAPE

BROWN-BEVIS EQUIPMENT CO., Los Angeles, California and Phoenix, Arizona; F. RONSTADT HARDWARE CO., Tucson, Arizona; H. W. MOORE EQUIPMENT CO., Denver, Colorado; HALL PERRY MACHINERY CO., Butte, Montana; MORROW & CO., Albuquerque, New Mexico; ARNOLD MACHINERY CO., Salt Lake City, Utah; NELSON EQUIPMENT CO., Portland, Oregon, and Twin Falls, Idaho; WESTERN TRACTION CO., San Francisco, California; ORMANDE C. BELL, Reno, Nevada; SERVICE EQUIPMENT CO., Seattle, Washington.

The GALION IRON WORKS & MFG. CO.
GALION . . . . . OHIO

1,900 tons cover coat matl. Type "B" in stockpiles	2.00	2.00	3.00	2.00
185 cu. yd. concrete Class "A"	30.00	30.00	40.00	28.00
6.5 MFBM select structural grade timber creosote treated	150.00	200.00	2.50	200.00
0.3 MFBM No. 1 common timber untreated	150.00	200.00	100.00	100.00
10 cu. yd. loose riprap	2.00	5.00	2.00	2.00
2 cu. yd. gr. backfill Class "A"	2.00	5.00	2.00	2.00
64 each right-of-way markers	4.00	5.00	4.00	5.00
12 lin. ft. 6-in. cast iron pipe	1.00	10.00	2.00	2.00
Lump sum relay and adjust 6-in. cast iron pipe	25.00	200.00	50.00	25.00
Lump sum move fence	549.00	100.00	280.00	115.00
Lump sum move fence	210.00	100.00	375.00	60.00
718 rods construct fence	2.00	4.00	5.00	2.00
10 each construct gates	25.00	40.00	20.00	2.00
100 lin. ft. 12-in. plain conc. pipe	2.50	2.00	3.00	1.75
430 lin. ft. 18-in. plain conc. pipe	3.50	3.00	4.00	2.75
800 lin. ft. 18-in. wood pipe	3.00	5.00	4.00	3.25
100 lin. ft. 24-in. wood pipe	4.00	6.00	5.00	4.00

California—Contra Costa County—State—Pave

Chas. L. Harney, San Francisco, was the lone bidder, at $437,495, to the California Division of Highways, Sacramento, for construction of 2.1 mi. of portland cement and asphaltic concrete on crusher run base between ¼ mi. west of Orinda Jct. and 1¾ mi. west of Lafayette. The State proposes to furnish corrugated metal pipe, perforated metal pipe, and band couplers, and on other materials the following priority ratings have been assigned: A-1-a for ferrous materials, and A-1-e for equipment repair parts. The largest single items in the proposal is the imported borrow, the road being constructed in a canyon bed. The unit bids were as follows:

75 cu. yd. removing concrete	9.00
Lump sum clearing and grubbing	6,000
64,000 cu. yd. roadway excavation	.75
7,000 cu. yd. Ditch E channel excavation	.85
2,200 cu. yd. structure excavation	3.00
1,000,000 sta. yds. overhaul	.01
54,000 tons imported borrow	2.25
49,000 sq. yd. preparing subgrade	.125
Lump sum devel. water supply and furn. watering equipm't	1,500
1,100 M gals. applying water	2.30
113 stas. finishing roadway	22.00
4,600 tons crusher run base	3.90
26,000 sq. yds. removing and salvaging existing surfacing	.17
87 tons liq. asph. SC-3 or SC-4 (shoulders)	22.70
21,500 sq. yds. preparing, mixing and shaping shoulders	.315
6,800 tons asphalt concrete	6.95
475 each raised bars	5.40
15 tons asph. emul. (asph. conc. sl. ct. & paint binder)	30.00
9,325 cu. yd. Cl. "B" P.C.C. (pavement)	12.20
5 each redwood covers for drop inlets	15.00
360 cu. yd. Cl. "A" P.C.C. (structures)	33.00
275 cu. yd. riprap	10.00
125 cu. yd. Cl. "B" P.C.C. (curbs)	31.50
70 each removg. & resettg' existg. culv. mkrs. & grade posts	3.50
316 lin. ft. 60-in. R.C.P. (std. str.)	20.70
12 lin. ft. placing 12-in. C.M.P.	.65
32 lin. ft. placing 15-in. C.M.P.	.80
150 lin. ft. placing 18-in. C.M.P.	1.10
76 lin. ft. placing 24-in. C.M.P.	1.60
8 each moving and resetting exist'g headwalls	58.00
530 lin. ft. 12-in. V.C.P.	1.45
1,400 lin. ft. placing 6-in. P.M.P.	.50
200 cu. yd. rock filling material (underdrains)	5.00
7 tons straw cover	95.00
700 lin. ft. salvaging exist'g pipe culverts	1.20
450 lin. ft. relaying salvaged C.M.P. culverts	1.00
13 ea. salvaging exist'g spillway assemblies	15.00
10 ea. installing salvaged spillway assemblies	15.00

Oregon—Wilson County—State—Stockpile

F. C. Feldschau & Co., Tillamook, at $70,344, was low bidder to the Oregon State Highway Dept., Portland, for the furnishing and stockpiling of 27,000 cu. yd. of assorted crushed road materials on the Wilson River highway between Mills Bridge and McNamars Camp. Bids submitted were as follows:

(1) F. C. Feldschau & Son.....$70,344 (2) Rogers Construction Co.....$76,688

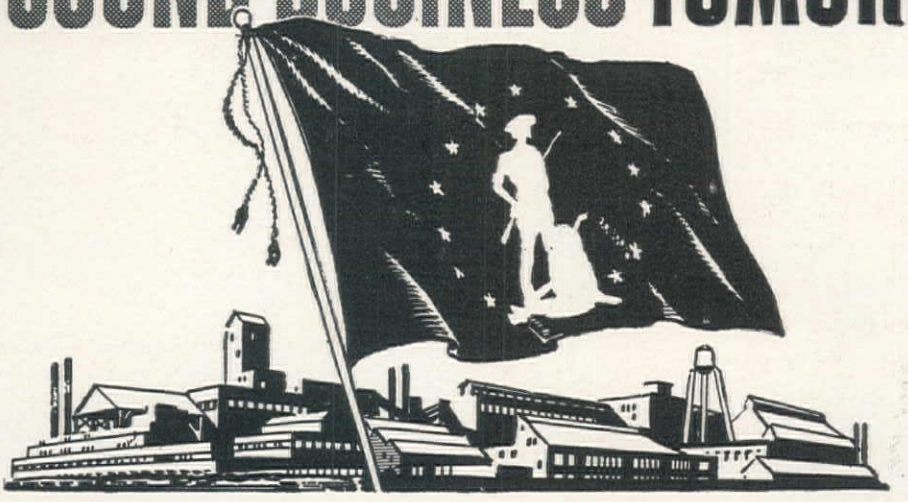
	(1)	(2)
500 cu. yd. 3-in. - 1½-in. crushed material in stockpile	2.62	3.00
13,000 cu. yd. 1½-in. - ¾-in. crushed material in stockpile	2.62	2.75
4,250 cu. yd. ¾-in. - ½-in. crushed material in stockpile	2.62	2.75
5,950 cu. yd. ½-in. - ¼-in. crushed material in stockpile	2.62	3.00
3,300 cu. yd. ¼-in. - 0-in. crushed material in stockpile	2.50	3.00

Washington—Clark County—State—Pave

Porter W. Yett, Portland, Ore., lone bidder, submitted a proposal of $183,429 to the Washington Director of Highways, Olympia, for paving of 2.7 mi. of primary State highway No. 1 between Salmon Creek and Kozy Kamp with portland cement concrete on selected roadway borrow. The bid was rejected. Unit bids were as follows:

2,350 cu. yds. common excavation incl. haul	1.00
10 cu. yds. common trench excavation incl. haul	2.50
30 cu. yds. structure excavation	5.00
655 lin. ft. slope treatment	.10
144.5 sta. finishing roadway	15.00
38,290 tons select. roadway borrow in place incl. haul	1.40
1,680 tons cr. stone surf. top course in place on roadway	2.50
3,520 tons cr. stone surf. base course in place on roadway	2.50
TYPE I-1 ASPHALTIC CONCRETE PAVEMENT	
45 tons Class "C" wearing course in place	10.00
100 tons Class "E" leveling course in place	9.00
18 tons Class "F" leveling course in place	9.00
MISCELLANEOUS ITEMS	
33,542 sq. yds. cem. conc. pavt. std. 14 day 5 sk. mix in place	3.00
1,161 sq. yds. cem. conc. pavt. high early str. 5 mix in place	3.40
4 only temp. br. across pavt. (takedown type) in place	150.00
1.0 cu. yds. concrete Class "C" in place	25.00
1,640 lin. ft. guard rail Type No. 5 in place	2.00
1 only remov. and resett. exist. Federal Aid marker	10.00
240 lin. ft. remov. and resett. exist. beam guard rail	2.00
1,844 sq. yds. remov. exist. conc. pavement	.70
160 sq. yds. remov. exist. bitulithic pavement	.70
111 lin. ft. pl. conc. or V.C. culv. pipe 12-in. diam. in place	1.50
6 lin. ft. pl. conc. or V.C. culv. pipe 18-in. diam. in place	2.50

FOR VICTORY TODAY AND SOUND BUSINESS TOMORROW



Get This Flag Flying Now!

This War Savings Flag which flies today over companies, large and small, all across the land means *business.* It means, first, that 10% of the company's gross pay roll is being invested in War Bonds by the workers voluntarily.

It also means that the employees of all these companies are doing their part for Victory . . . by helping to buy the guns, tanks, and planes that America and her allies *must* have to win.

It means that billions of dollars are being diverted from "bidding" for the constantly shrinking stock of goods available, thus putting a brake on inflation. And it means that billions of dollars will be held in readiness for post-war readjustment.

Think what 10% of the national income, saved in War Bonds now, month after month, can buy when the war ends!

For Victory today . . . and prosperity *tomorrow,* keep the War Bond Pay-roll Savings Plan rolling in *your* firm. Get that flag flying now! Your State War Savings Staff Administrator will gladly explain how you may do so.

If your firm has not already installed the Payroll Savings Plan, *now is the time to do so.* For full details, plus samples of result-getting literature and promotional helps, write or wire: War Savings Staff, Section F, Treasury Department, 709 Twelfth Street NW., Washington, D. C.

Save With

War Savings Bonds

This Space Is a Contribution to America's All-Out War Program by

WESTERN CONSTRUCTION NEWS

503 Market St., San Francisco, Calif.

Nevada—Clark County—State—Surfacing

Silver State Construction Co., Fallon, submitted a low bid of $110,336 to the Nevada Department of Highways, Carson City, for construction of 5.6 mi. of feeder road from the Three Kids Mine to a junction with U. S. Route 93, southeast of Las Vegas. When first offered for bid in July, no bids were submitted. The project was re-advertised and a lone bid of $147,132 was submitted in August by Wallace & Wallace, of Las Vegas. Unit prices on this proposal appeared in the September issue of Western Construction News. This bid was rejected, however, and the present bids are on the second re-advertisement. The project carries an A-4 priority rating. Bids were received from the following:

(1) Silver State Construction Co. $110,336
(2) Russell Olson $143,018

		(1)	(2)
Lump Sum	signs	300.00	300.00
716	lin. ft. remove culvert pipe	1.00	1.00
71,400	cu. yd. roadway excavation	0.65	0.67
179	cu. yd. drainage excavation	0.68	1.00
83	sta. V type ditches	5.00	10.00
98,620	yd. sta. overhaul	0.01	0.30
1,829	yd. mi. overhaul	0.20	0.25
239	cu. yd. structure excavation	2.00	3.00
425	cu. yd. backfill	2.00	2.00
5.61	miles subgrade, type B	200.00	700.00
1,996	M gal. water	4.00	3.00
5,306	ton type 1 gravel base	0.50	1.15
21,055	ton gravel surface	0.70	1.25
39	ton liquid asphalt, type MC-2 (seal)	30.00	30.00
466	ton liquid asphalt, type MC-3 (roadmix)	23.00	31.00
5.61	miles roadmix	700.00	1,200
3	each roadmix intersections	100.00	100.00
122	cu. yd. class B concrete	40.00	40.00
678	lin. ft. relay culvert pipe	2.00	2.00
623	cu. yd. grouted hand-laid riprap	15.00	25.00
28	each culvert markers	5.00	5.00
42	each guide posts	5.00	5.00
34	each monuments	5.00	5.00
4.9	MFBM Port Orford cedar	200.00	175.00

California—Alameda County—State—Pavement

Lee J. Immel, Berkeley, was low bidder at $277,035 to the California Division of Highways, Sacramento, on the project to widen with portland cement concrete and surface the existing pavement with asphalt concrete, 2.5 mi. of the Eastshore Highway from the distribution structure of the San Francisco-Oakland Bay bridge to University Ave. in Berkeley, and was awarded the contract. A priority rating of A-1-a has been assigned for ferrous materials to be used, including nails and hardware, and a rating of A-4 for equipment repair parts. All material is to be furnished by the contractor. The following bids were submitted:

(1) Lee J. Immel $277,035
(2) Piazza & Huntley $290,134

		(1)	(2)
350	cu. yd. removing concrete	10.00	6.00
12,000	cu. yd. roadway excavation	1.30	1.00
4,800	cu. yd. imported borrow	1.00	3.50
30,000	sq. yds. preparing subgrade	.20	.19
Lump sum	developing water supply and furnishing watering equip.	350.00	300.00
120	M gals applying water	2.00	2.00
133	stas. finishing roadway	10.00	12.00
330	tons crusher run base	3.50	3.00
4	tons liq. asph. SC-2 (prime coat)	30.00	35.00
11	tons liq. asph. SC-6 (armor coat)	30.00	35.00
200	tons screenings (armor coat)	5.00	4.50
17,500	tons asphalt concrete	6.50	5.35
52	tons asph. emulsion (paint binder & Sl. Ct.)	30.00	35.00
6,400	cu. yd. Cl. B P.C.C. (pavement)	13.00	14.25
5	cu. yd. Cl. B P.C.C. (curbs)	30.00	40.00
3,500	tons light riprap	3.30	5.25
43,500	lin. ft. salvaging timber curbs	.15	.35
21,750	lin. ft. resetting salvaged curbs	.50	.45
75	MFBM redwood timber, SAH str. gr. (curbs)	200.00	250.00

Idaho—Shoshone County—State—Surfacing

Colonial Construction Co., Spokane, Wash., bid low at $123,987 to the Idaho Bureau of Highways, Boise, and was awarded the contract, for grading, drainage structures and crushed rock surfacing on 1.4 mi. of the Coeur d'Alene-Yellowstone Trail Highway between Teddy Mine and Big Creek. The following submitted bids:

(1) Colonial Construction Co. $123,987
(2) Carbon Brothers 136,118
(3) Engineer's Estimate $117,395

		(1)	(2)	(3)
17,900	cu. yd. unclassified excav. Sched. No. 1	.75	1.00	1.00
131,000	cu. yd. unclassified excav. Sched. No. 2	.38	.45	.40
380	cu. yd. excav. for structures Sched. No. 1	5.00	4.00	3.00
220	cu. yd. excav. for structures Sched. No. 2	1.50	2.00	1.50
9,400	sta. yd. overhaul	.05	.04	.05
23,000	mi. yd. haul	.20	.15	.20
6,400	mi. T. haul on binder	.12	.12	.20
2,500	lin. ft. small ditches	.05	.06	.10
125	days rolling, power roller	24.00	30.00	25.00
40	days rolling, tamping roller	48.00	60.00	30.00
3,750	M.G. watering embankments	.30	1.00	1.00
160	M.G. watering base and surface courses	2.00	1.50	1.00
17,600	tons dump run crushed rock base course	1.60	1.40	.90
1,740	tons binder	.60	.50	.90
210	cu. yd. concrete class A	40.00	35.00	30.00
24.0	MFBM sel. struct. grade timber creosote treated	150.00	200.00	150.00
0.8	MFBM sel. struct. grade timber salts treated	150.00	200.00	150.00
36	lin. ft. 12-in. plain concrete pipe	2.50	2.00	1.50
430	lin. ft. 18-in. plain concrete pipe	3.50	3.00	2.00
620	each guide posts	4.50	4.50	3.50
31	each right-of-way markers	4.50	4.50	5.00
100	lin. ft. install 4-in. steel pipe	1.50	1.25	.50
150	lin. ft. lower 4-in. wood pipe	1.50	1.25	.50

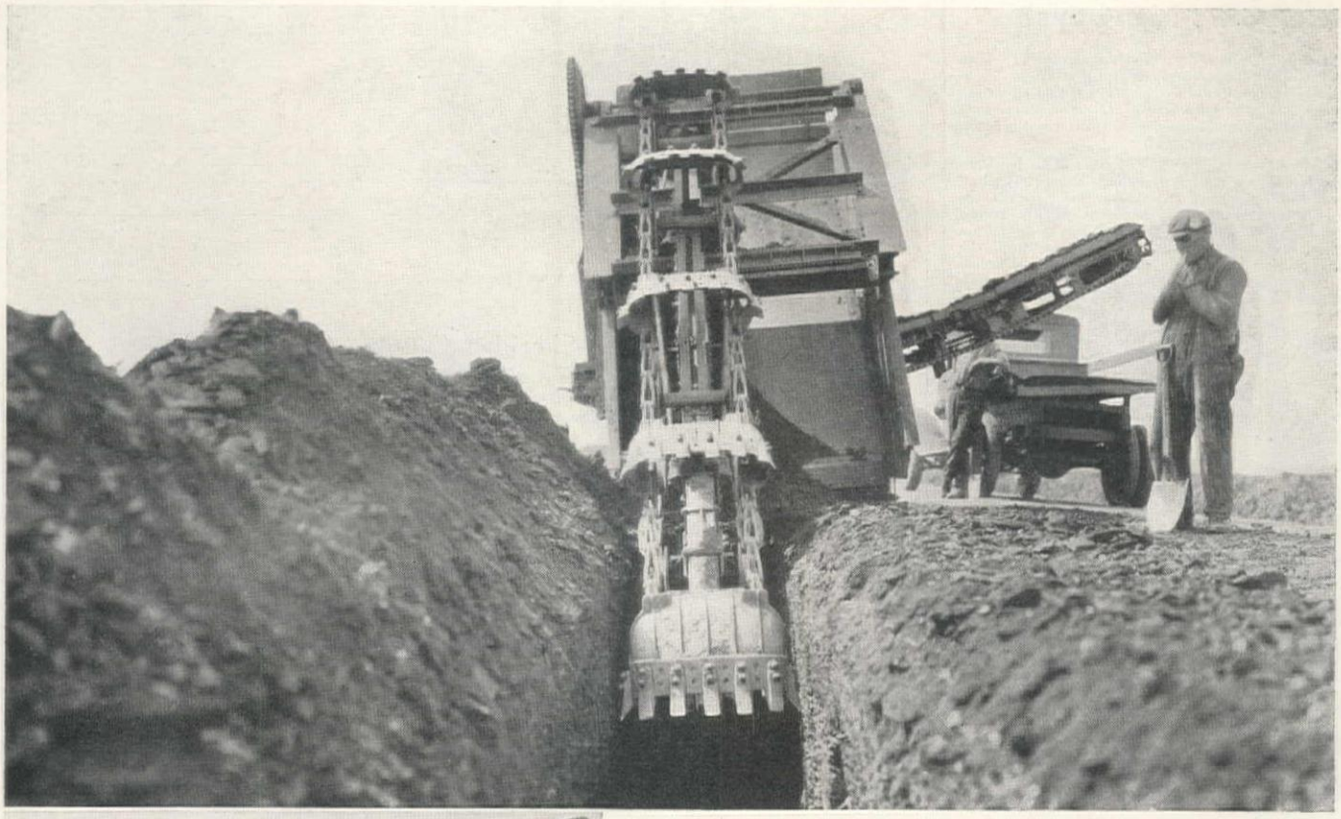
California—Monterey County—State—Pavement

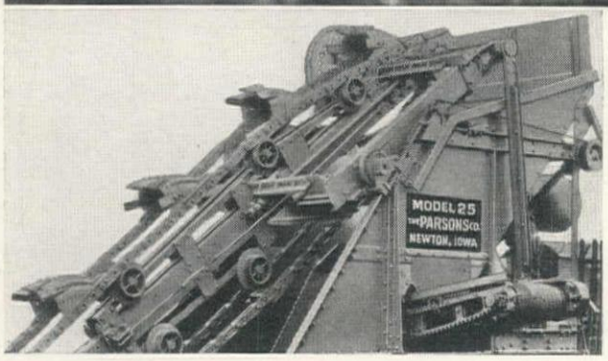
Granite Construction Co., Watsonville, submitted the only bid at $261,212 to the California Division of Highways, Sacramento, for grading and paving with portland cement concrete, about 2.9 mi. between Salinas and Santa Rita. Also included is the widening of a timber bridge. A priority rating of A-1-a has been assigned for ferrous materials to be used on the job, and a rating of A-4 for all other types of material. All structural metal that may be required is to be furnished by the State.

360	cu. yd. removing concrete	4.00
155	stas. clearing and grubbing	25.00
25,000	cu. yd. roadway excavation	.80
400	cu. yd. structure excavation	3.50
50	cu. yd. ditch and channel excavation	3.00

(Continued on next page)

PARSONS





OFFSET BOOM TRENCHING SAVES TIME

Avoid costly hand excavation on difficult trenching by using a Parsons Trencher.

The offset boom, standard on Parsons Trenchers, makes it easy to dig close to steep banks, near trees or poles and next to curbing. The trench may be cut on line with the outside edge of either crawler just as efficiently as with the boom in center position.

It takes but a few minutes to shift the boom to any position across the width of chute. The shift is positive through its rack and pinion mechanism and the boom is held solidly with heavy bolts through boom and carriage frame.

This is only one of the superior Parsons features.

THE PARSONS CO • NEWTON, IOWA

TRENCHING EQUIPMENT PARSONS

28,000	cu. yd. imported borrow	2.00
49,000	sq. yds. preparing subgrade	.14
Lump sum	developing water supply and furn'g watering equip.	1,000
725	M gals. applying water	2.00
155	stas. finishing roadway	25.00
950	tons crusher run base	3.00
440	tons medium screenings (seal coat)	5.00
38	tons asphaltic emulsion (seal coat)	40.00
410	tons liq. asph., SC-3 (BST)	20.00
33,000	sq. yds. preparing, mixing and shaping surf. (BST)	.15
4	tons liq. asph., SC-2 (prime coat)	50.00
28	tons liq. asph., MC-4 or MC-5 (P.M.S.)	18.00
500	tons mineral aggregate (P.M.S.)	6.00
600	each raised bars	5.00
1	ton liq. asph., SC-6 (B.M.S.)	50.00
13	tons rock and screenings (B.M.S.)	10.00
10,400	cu. yd. Cl. B P.C.C. (pavement)	12.00
11	MFBM Douglas fir timber (salt treated)	250.00
11	MFBM Douglas fir timber (untreated)	200.00
3½	MFBM redwood timber, DSAH str. gr.	200.00
6	MFBM creosoted timber	250.00
1,500	lbs. placing structural metal	.30
.40	cu. yd. Cl. A P.C.C. (structures)	40.00
10	each monuments	4.00
3,100	lin. ft. timber barrier railing	.75
44	each culvert markers and guide posts	3.50
0.6	mi. moving and resetting property fence	500.00
303	lin. ft. 18-in. unreinf. conc. pipe (2,000-D)	3.00
144	lin. ft. 24-in. unreinf. conc. pipe (2,000-D)	5.00
3	each timber covers for drop inlets	10.00
Lump sum	removing existing railing and wheel guard	80.00

Wyoming—Sheridan County—State—Surf.

Etlin E. Peterson, Casper, submitted the low bid at $38,506, to the Wyoming State Highway Commission, Cheyenne, for the construction of a treated timber bridge and 0.6 mi. of grading, drainage, base course, and oil treatment on the Clearmont-Ucross road, and was awarded the contract. The bids submitted were as follows:

(1) Etlin E. Peterson.....$38,506 (2) Charles M. Smith.....$39,796

		(1)	(2)
13,500	cu. yd. excavation	.45	.50
9,000	cu. yd. overhaul	.015	.015
100	M gal. watering	4.00	4.00
90	hours. sheepsfoot roller	4.00	4.00
25	cu. yd. culvert excavation	1.00	1.00
100	hrs. mechanical tamper	4.00	4.00
2,900	lin. ft. remove and reset fence	.10	.10
75	ea. fence posts	.30	.30
8	ea. end panels	8.00	8.00
6	ea. brace panels	8.00	8.00
2	ea. timber project markers	10.00	5.00
59,904	MFBM treated timber	190.00	200.00
3,906	MFBM untreated timber	200.00	200.00
1,832	lin. ft. treated timber piling	1.90	2.00
245	cu. yd. class I riprap	5.00	5.00
50	cu. yd. class II riprap	5.00	5.00
90	cu. yd. structural excavation	2.00	1.50
10	cu. yd. grouted riprap	15.00	15.00
2,500	ton 1-in. crushed gravel base	1.50	1.50
1,000	ton ¾-in. crushed gravel surface	1.50	1.50
100	ton stone chips	6.00	6.00
18	ton MC-0 base treatment	40.00	40.00
18	ton RC-4 seal coat	40.00	40.00
45	ton MC-3 liquid asphalt	40.00	40.00
10,100	sq. yd. processed road work	.12	.15
40	M gal. watering base	5.00	5.00
30	hrs. roller operation	5.00	5.00
Lump sum	removing structures	400.00	150.00
Lump sum	installing flume	400.00	300.00
13	ea. pole bents	20.00	15.00
250	cu. yd. binder	1.00	1.00
1,100	cu. yd. salvage and stockpile gravel	1.00	1.00

Miscellaneous . . .

California—Imperial County—Bureau of Reclam.—Culverts, etc.

Norman I. Fadel, North Hollywood, bidding $67,251, was low to the Bureau of Reclamation, Yuma, Ariz., for construction of highway and railroad culverts and a pumping plant on the All-American canal system about 5 mi. west of Yuma. The following bids were received:

(1) Norman I. Fadel.....$67,251 (2) Robert M. Travers.....$69,123

SCHEDULE NO. 1		(1)	(2)
1,700	cu. yd. excavation for structures	3.00	4.50
65	cu. yd. gravel sub-base	10.00	4.00
18	cu. yd. constructing reverse filters	10.00	6.00
1,800	cu. yd. backfill	.50	1.00
710	cu. yd. compacting backfill	2.00	1.40
50	cu. yd. riprap	6.00	7.00
315	cu. yd. concrete in structures	40.00	39.00
49,200	lbs. placing reinforcement bars	.05	.04
104	lin. ft. furnishing and jacking into place 72-in. concrete pipe	150.00	140.00
420	lin. ft. driving timber piles	3.00	5.00
3,600	lbs. installing miscellaneous metalwork	.20	.10
103	lin. ft. placing rubber water stops	1.00	1.25
43	sq. ft. placing elastic joint-filler material	1.00	1.00
SCHEDULE NO. 2			
1,200	cu. yd. excavation for structures	3.00	4.50
12	cu. yd. gravel sub-base	10.00	4.00
550	cu. yd. backfill	.50	1.00
120	cu. yd. compacting backfill	2.00	1.40
40	cu. yd. riprap	6.00	7.00
74	cu. yd. concrete in structures	40.00	39.00
9,600	lbs. placing reinforcement bars	.05	.04
120	lin. ft. furnishing and jacking into place 72-in. concrete pipe	150.00	140.00

"VIC" THE WELDER SAYS -

STOP! DON'T THROW THAT AWAY!

That's an old cutting tip. Don't throw it away. It's made of copper. The chances are that we can fix it up like new for you. New tips are going to be hard to get—old ones are worth every repair effort.

And that goes for every kind of welding or cutting apparatus or part. REPAIR it or SCRAP it through an authorized dealer.

Everything made out of copper or brass is priceless to our War effort. It is our patriotic duty to conserve it as long as it may serve us safely and efficiently—to return it to the brass mills when it becomes useless.

HERE ARE SOME WASTEFUL PRACTICES WE MUST NOW STOP.

DON'T use your good cutting torch head as a hammer to remove slag. Get a slag hammer.

DON'T bury a welding or cutting torch tip into molten metal. That will ruin it.

DON'T scar threads of coupling nuts by careless handling or too much pressure. Clean first to assure proper fit.

DON'T permit rubber hose or cable lengths to be burned by flying sparks or damaged by truck wheels, oil or moisture.

DON'T throw away oversize stub ends. Use every possible inch of every electrode or filler rod.

DON'T neglect your welding equipment. Check periodically and repair promptly.

DON'T store equipment not presently needed. Sell it to those who have urgent use for it in War Production.

It may sound like old stuff, but no group of men or women can help so much to preserve vital metals than you . . . no one can contribute so much to better and faster War Production . . . none, on the home front, can help so much to speed us on to VICTORY. Are you doing your part?

VICTOR

VICTOR EQUIPMENT COMPANY

844 Folsom Street
SAN FRANCISCO

3821 Santa Fe Avenue
LOS ANGELES

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.

Large Western Projects...

CONTRACTS AWARDED

J. H. & N. M. Monaghan Co., Denver Colo., was awarded contract at $229,750 for 1.6 mi. of gravel surf. on 6th Ave., west from Denver, by Colorado State Highway Department.

Sharp & Fellows Contracting Co., Los Angeles, Calif., received a contract from the A. T. & S. F. Ry. Co. for constructing 5 mi. of line change betw. Topock, Ariz., and Beal, Calif.

Kansas City Bridge Co., Kansas City, Mo., secured the contract to construct piers and abutments for a new double-track bridge over the Colorado River at Topock, Ariz., for the A. T. & S. F. Ry. Co.

Rhoades Bros. & Shofner, Los Angeles, Calif., at more than $500,000 for landing field and road system at an air support base in Riverside Co., Calif., by U. S. Engineer Office.

Allison, Armstrong & Thygessen, Roswell, N. Mex., betw. $500,000 and $1,000,000 for airfield facilities, roads and utilities at an airforce school in De Baca Co., N. Mex.

Morrison-Knudsen Co., Inc., Boise, Idaho, and **Ford J. Twaits Co.,** Los Angeles, Calif., awarded a joint contract at $1,221,494 for grading and paving runways, taxiways and aprons at an airbase in Jerfferson Co., Oregon, by the U. S. Engineer Office.

Holland Page, Austin, Tex., received contract at over $500,000 for flying field facilities in Presidio Co., Tex., by the U. S. Engineer Office.

Ed. H. Honnen Construction Co., Colorado Springs, Colo., over $2,000,000 for an airforce installation at Grand Island, Nebr., by the U. S. Engineer Office.

W. J. Tobin, Oakland, Calif., $183,145 for construction of interceptor sewers in the city of Richmond, Calif., by Regional office of the W. P. A.

A. S. Horner Construction Co., Denver, Colo., was awarded contract by Colorado Fuel & Iron Co., Pueblo, Colo., to build a conc. and steel dam at Florence, which will be the major unit of a $2,500,000 water supply project.

Bressi & Bevanda Constructors Inc., Los Angeles, Calif., secured contract at $752,205 to construct a tunnel and earthwork canals on the Conchas canal of the Tucumcari project in New Mexico, by the Bureau of Reclamation.

J. T. McDowell & Sons, Denver, Colo., more than $500,000 for 123 bldgs. in Pinal Co., Ariz., by U. S. Engineer Office.

Barrett & Hilp, San Francisco, Calif., received contract at $2,875,000 from the Maritime Commission for 1500 dormitory units for single men and 600 war apartments at Oakland, Calif.

McNeil Construction Co., Los Angeles, Calif., $4,000,000 for a replacement center near Livermore, Calif., by Bureau of Yards & Docks.

E. S. McKittrick Co., Inc., Huntington Park, Calif., $2,500,000 for 4 additional factory bldgs. in Hawthorne, Calif., by Northrop Aircraft, Inc.

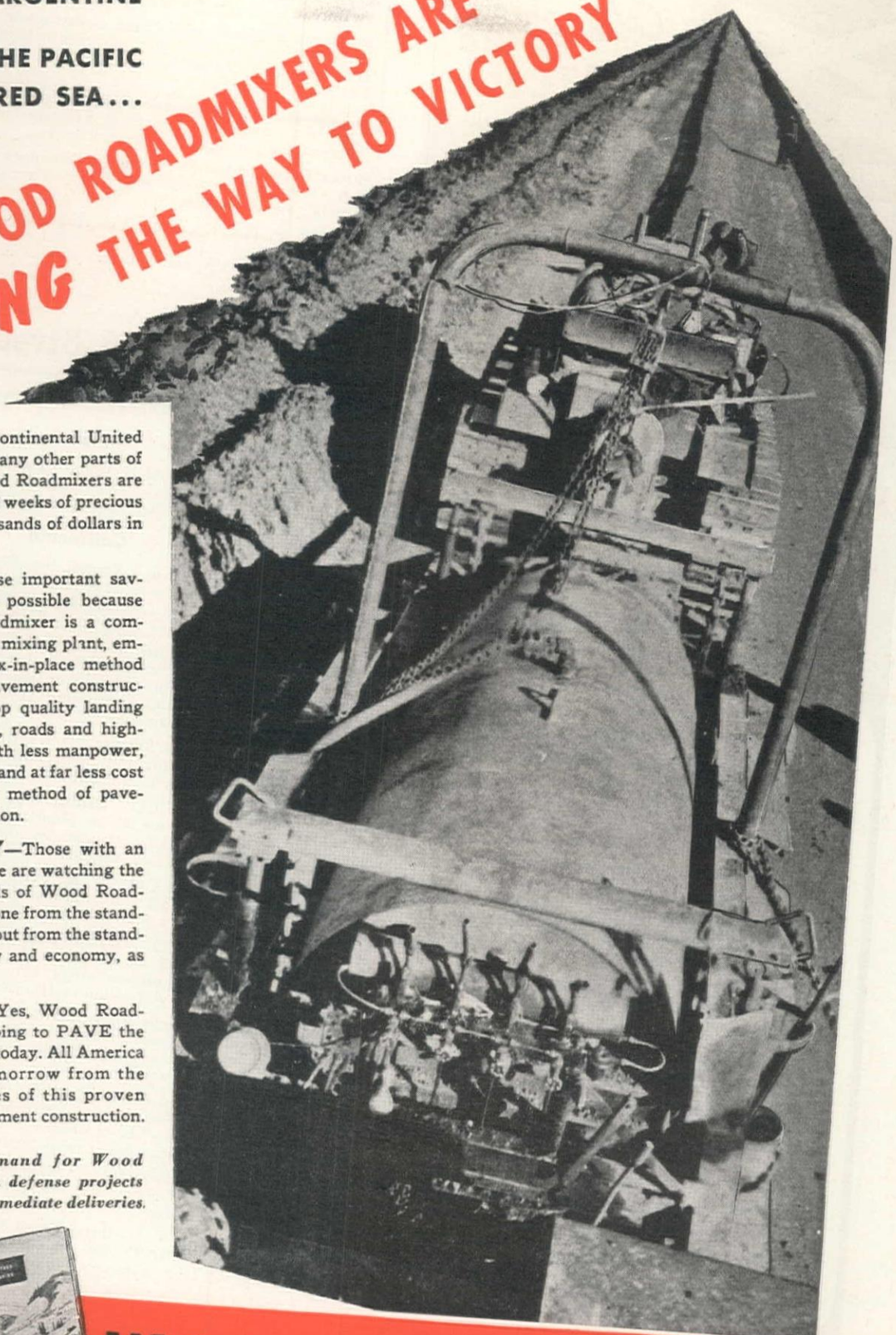
Engineers, Ltd., San Francisco, and **J. E. Haddock Co., Ltd.,** Pasadena, Calif., awarded $9,681,940 contract by Bureau of Yards and Docks for additional construction at Marine Corps training area at Santa Margarita Ranch, near Oceanside, Calif.

I. C. Curry and **S. E. Young,** San Diego, Calif., $2,856,000, and **Los Angeles Contracting Co.** and **O. W. Karn,** Los Angeles, Calif., $2,193,500, contracts for temporary housing and other

...FROM ALASKA
TO THE ARGENTINE

—FROM THE PACIFIC
TO THE RED SEA...

...WOOD ROADMIXERS ARE PAVING THE WAY TO VICTORY



Today, in the continental United States and in many other parts of the world, Wood Roadmixers are saving days and weeks of precious time—and thousands of dollars in costs.

SPEED—These important savings are made possible because the Wood Roadmixer is a complete travelling mixing plant, employing the mix-in-place method of asphaltic pavement construction. It lays top quality landing fields, runways, roads and highways faster, with less manpower, less equipment and at far less cost than any other method of pavement construction.

ECONOMY—Those with an eye to the future are watching the amazing records of Wood Roadmixers—not alone from the standpoint of speed, but from the standpoint of quality and economy, as well.

QUALITY—Yes, Wood Roadmixers are helping to PAVE the way to victory today. All America will profit tomorrow from the peacetime uses of this proven method of pavement construction.

Increased demand for Wood Roadmixers on defense projects may prevent immediate deliveries.

Write for detailed and illustrated Wood Roadmixer bulletin, "The Fastest Method of Low-Cost Paving."

WOOD ROADMIXER

Wood Manufacturing Co. • 208 West 8th St., Los Angeles, California

bldgs. at the naval operating base in San Diego, by Bureau of Yards and Docks.

Morrison-Knudsen Co., Inc., Boise, Idaho, awarded contract at $9,017,000 to construct a naval ordnance plant at Pocatello, Idaho, by Bureau of Yards & Docks.

MacIsaac & Menke and **Pozzo Construction Co.,** both of Los Angeles, Calif., awarded joint contract at $1,000,000 to build 250 housing units at Sunnyside, Utah, by H. J. Kaiser Co., and Utah Fuel Co.

J. C. Boespflug Construction Co., Seattle, Wash., $6,239,000 for 1,600 demountable residences at Salishan housing project near Tacoma, by Tacoma Housing Authority.

Fluor Corp., Ltd., Los Angeles, Calif., more than $1,000,000 for 1,400-bbl. per day 100-octane refinery plant at Cheyenne, Wyo., by Defense Plant Corp.

William P. Neil Co., Ltd., Los Angeles, Calif., two contracts, $5,966,000 and $1,032,000, for additional ammunition storage and other facilities at Naval depot in Hawthorne, Nev., by Bureau of Yards & Docks.

Highway and Street . . .

CONTRACTS AWARDED

Arizona

MARICOPA CO.—**Del E. Webb Construction Co.,** 302 S. 23rd Ave., Phoenix—over $100,000, for streets and util. at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 10-16

California

ALAMEDA CO.—**Lee J. Immel,** Box 65, Station A, Berkeley—$154,883, for 0.8 mi. portland cement conc. and asph. conc. paving betw. San Francisco-Oakland Bay Bridge and Toll Plaza—by California Division of Highways, Sacramento. 10-1

ALAMEDA CO.—**Lee J. Immel,** Box 65, Sta. A, Berkeley—$277,035, for 2.5 mi. widen with portland cement conc. and surf. exist. pave with asph. conc. on Eastshore Highway btw. distribution structures and University Ave., Berkeley—by Division of Highways, Sacramento. 10-16

KERN CO.—**W. R. Shriver,** 911 Westminster Ave., Alhambra—less than $50,000, for addtl. streets at a mobile air depot at a bombing range—by U. S. Engineer Office, San Bernardino. 10-14

LOS ANGELES CO.—**Griffith Co.,** 1060 S. Broadway, Los Angeles—$46,345, for 0.9 mi. plantmix surf. on Stewart St., Exposition Blvd., and Dorchester Ave., in Santa Monica—by Division of Highways, Los Angeles. 10-15

LOS ANGELES CO.—**R. M. Price,** 2764 Saturn Ave., Huntington Park—$185,277, for improving Alameda St., from Lomita to "N" Street.—by Board of Public Works, Los Angeles. 10-20

MONTEREY CO.—**Granite Construction Co.,** Box 900, Watsonville—$261,212, for 2.9 mi. grade and portland cement conc. pave. and widen timber bridge, betw. Salinas and ¼ mi. north of Santa Rita—by Division of Highways, Sacramento. 10-26

NAPA CO.—**Louis Biasotti & Son,** 40 W. Clay St., Stockton—$134,742, for 0.5 mi. grading, portland cement and asph. conc. surf. and timber bridge at Rindler Creek—by California Division of Highways, Sacramento. 10-1

ORANGE CO.—**Griffith Co.,** 1060 S. Broadway, Los Angeles—$69,401, for 1.3 mi. grade and plantmix surf. on Katella Ave. and Denni St., betw. Los Alamitos Blvd. and Farquhar Ave.—by Division of Highways, Los Angeles. 10-15

SAN BERNARDINO CO.—**Johnson, Inc.,** Box 387, Alhambra—over $500,000, for paving streets and misc. work at an air depot—by U. S. Engineer Office, San Bernardino. 10-23

SAN DIEGO CO.—**Daley Corp.,** Box 67, North Park Sta., San Diego—less than $50,000, for streets and walks at a hospital in a camp—by U. S. Engineer Office, Los Angeles. 10-13

SOLANO CO.—**E. A. Forde,** 640 Sir Francis Drake Blvd., San Anselmo—$41,128, for 0.9 mi. grade and plantmix surf. on Sacramento St., betw. Rt. 208 and Frisbie Street, near Vallejo—by Division of Highways, Sacramento. 10-29

SOLANO CO. —**Chas. L. Harney,** 543 Call Bldg., San Francisco—$65,132, for 1.3 mi. grade and plantmix surf. on Solano Ave., betw. 4th St. in Vallejo and Rt. 7—by Division of Highways, Sacramento. 10-29

SOLANO CO.—**A. G. Raisch,** 2048 Market St., San Francisco—

$12,157, for grading and paving portion of Alabama St., Colusa St., and Quincy Alley in Vallejo—by City Council, Vallejo. 10-6

SOLANO CO.—**A. G. Raisch,** 2048 Market St., San Francisco—$68,415, for 1.1 mi. grade and surf. with plantmix surf. on Tennessee and Georgia Sts., betw. Vallejo and Rt. 7—by Division of Highways, Sacramento. 10-19

UNANNOUNCED CO.—**Case Construction Co.,** Box 7, San Pedro—less than $50,000, for 1½ mi. road and grading 9 mi. of existing road on an island off Southern California—by U. S. Engineer Office, Los Angeles. 10-26

UNANNOUNCED CO.—**C. M. Syar,** 710 Franklin Ave., Yuba City—for addtl. access road to an arsenal in San Francisco Bay area—by U. S. Engineer Office, San Francisco. 10-26

Colorado

JEFFERSON CO.—**J. H. & N. M. Monaghan Co.,** 332 S. Race St., Denver—$229,750, for 1.6 mi. gravel surf. on W. 6th Ave., west from Denver—by State Highway Department, Denver. 10-9

MONTROSE CO.—**J. B. Claybaugh** and **C. C. Reiff,** Whitewater—$21,667, for 7.5 mi. gravel surf. on State Hwy. No. 90, betw. Utah state line and Paradox—by State Highway Dept., Denver. 10-28

OTERO CO.—**The Driscoll Construction Co.,** 220 S. Main St., Pueblo—$34,526, for an oil process surf. on 1.1 mi. of State Hwy. 109, betw. La Junta and Cheraw—by State Highway Department, Denver. 10-16

Idaho

ADA CO.—**Jacobsen-Jensen Co.,** 517 NE Stanton St., Portland, Oregon, and **Dan J. Cavanagh,** Box 1083, Twin Falls—over $400,000, for grading and paving—by U. S. Engineer Office, Portland, Oregon. 10-12

JEFFERSON CO.—**Nick Burggraf, Inc.,** Idaho Falls—$52,713, for roadbed, drainage struc. and crushed gravel surf. on 2.8 mi. of the Menan-Lorenzo road from Menan-easterly—by Department of Public Works, Boise. 10-16

Montana

FLATHEAD CO.—**Kirkpatrick Bros.,** Kalispell,—$32,554, for grading and surf. 2.1 mi. of the Kalispell-Half Moon road with roadmix—by State Highway Commission, Helena. 10-20

Nevada

CLARK CO.—**Silver State Construction Co., Inc.,** Fallon—$110,336 for 5.6 mi. of grade and surf. from Three Kids mine to Rt. 93—by Dept. of Highways, Carson City. 10-29

Oregon

JACKSON CO.—**Russell Olson & Harry I. Hamilton,** Rt. 4, Box 181, Eugene—$100,000 (approx.) for grading, paving and drainage system—by U. S. Engineer Office, Portland.

KLAMATH AND LANE COS.—**Eugene Sand & Gravel Co.,** 843 Franklin Blvd., Eugene—$44,304, for Salt Creek Falls-Odell Butte rock production project on the Willamette Highway—by Oregon State Highway Commission, Portland. 10-5

LINN CO.—**Salem Supply Co.,** Box 41, Salem—$31,563, for grading and 2.1 mi. surf. on Crabtree Creek-Jordan sec. of the Albany-Lyons secondary hwy.—by Oregon State Highway Commission, Portland. 10-5

TILLAMOOK CO.—**F. C. Feldschau & Son,** 403 W. 3rd St., Tillamook—$70,344, for Mills Bridge-McNamers Camp rock production project on the Wilson River highway—by Oregon State Highway Commission, Portland. 10-5

Washington

CLARK CO.—**United Contracting Co.,** 311 Stock Exchange Bldg., Portland, Oregon—$31,531, for clearing, grading, paving 0.3 mi. of Lena Ave. in Vancouver—by Director of Highways, Olympia. 10-14

CLARK CO.—**Porter W. Yett,** 6500 N. E. Ainsworth St., Portland, Oregon—$101,702, for 1.1 mi. paving on alternate route of Primary State Highway No. 8, access road to Kaiser shipyards at Vancouver—by Director of Highways, Olympia. 10-8

KING CO.—**A. F. Mowat Construction Co.,** 708-1331 Third Ave., Bldg., Seattle—less than $50,000 for conc. paving—by U. S. Engineer Office, Seattle. 10-10

KITSAP CO.—**A. C. Goerig Construction Co.,** 4508 E. 38th St.,

Seattle—over $100,000, for paving—by U. S. Engineer Office, Seattle. 10-14

MASON CO.—**Washington Asphalt Co.,** 309 W. 39th St., Seattle over $100,000, for surfacing—by U. S. Engineer Office, Seattle. 10-20

PIERCE CO.—**Washington Asphalt Co.,** 309 W. 39th St., Seattle—less than $50,000, for reconst. of a highway—by U. S. Engineer Office, Seattle. 10-14

PIERCE CO.—**Bob White Company,** Olympia—less than $50,000, for conc. paving—by U. S. Engineer Office, Seattle. 10-5

PIERCE CO.—**Woodworth & Co., Inc.,** 1200 E "D" St., Tacoma—$54,164, for 0.8 mi. clearing, draining, grading and paving with portland cement conc. and asph. conc. on Taylor Way, access road to Seattle-Tacoma Shipyards at Tacoma—by Director of Highways, Olympia. 10-8

SNOHOMISH CO.—**E. J. Templeton & Co.,** 2924 Lombard Ave., Everett—$73,631, for 1.2 mi. grading and widening existing pavement with portland cement conc. on Primary State Highway No. 1, Everett north—by Director of Highways, Olympia. 10-8

SNOHOMISH CO.—**E. J. Templeton & Co.,** 2924 Lombard Ave., Everett—over $50,000, for paving—by U. S. Engineer Office, Seattle. 10-20

SPOKANE CO.—**J. H. Collins & Co.,** Colville—over $50,000, for conc. paving—by U. S. Engineer Office, Seattle. 10-20

SPOKANE CO.—**E. L. McColl,** Opportunity—less than $50,000, for conc. paving—by U. S. Engineer Office, Seattle. 10-5

SPOKANE CO.—**Chas. A. Power,** E. 27 - 8th Ave., Spokane—$84,880, for clearing, grading and paving with asph. conc. about 6.4 mi. of Secondary Hwy. 2-H betw. Spokane and Trentwood—by Director of Highways, Olympia. 10-26

THURSTON CO.—**Washington Asphalt Co.,** 309 W. 39th St., Seattle—over $100,000, for paving—by U. S. Engineer Office, Seattle. 10-29

Wyoming

SHERIDAN CO.—**Etlin E. Peterson,** Casper—$38,506, for one treated timber bridge, 0.6 mi. grade, drain, base course surf. and oil treatment on Clearmont-Ucross Road—by State Highway Commission, Cheyenne. 10-19

PROPOSED PROJECTS

California

MARIN CO.—California Division of Highways, Sacramento, has rejected only bid received for 0.6 mi. grade and conc. surf., asph. conc. pavement and plantmix surf., at entrance to Hamilton Field. 10-13

MONTEREY CO.—California Division of Highways, Sacramento, rejected only bid received for 1.9 mi. grade and asph. conc. pave. on cement treated base, betw. Salinas and 2 miles south. 10-5

Idaho

LINCOLN CO.—Commissioner of Public Works, Boise, has rejected only bid for 2.4 mi. roadbed and drain. struc. on the Richfield Branch of the Sawtooth Park Highway. 10-19

Oregon

BAKER CO.—The Oregon State Highway Commission, Portland, received no bids for Richland-Halfway rock production project on Baker-Homestead and Halfway Hwys. 10-5

HARNEY CO.—No bids were received by Oregon State Highway Commission, Portland, for Buchanan rock production project on Central Oregon Hwy. 10-5

KLAMATH CO.—The Oregon State Highway Commission, Portland, received no bids for Walker Mountain rock production project on The Dalles-California and Willamette Hwys. 10-5

UMATILLA CO.—Oregon State Highway Commission, Portland, received no bids for Nye Junction-Grant County Line rock production project on the Pendleton-John Day Hwy. 10-5

WALLOWA CO.—No bids were received by Oregon State Highway Commission, Portland, for Rock Creek-Joseph Rock production project on the Wallowa Lake highway. 10-5

Washington

YAKIMA CO.—No bids were received by Director of Highways, Olympia, for 7.7 mi. ballasting, surf. and stockpiling on Secondary Highway No. 3-A. 10-8

Mexico

LOWER CALIFORNIA—The president of Mexico announces that a road will be constructed from Ensenada to the southern tip of Lower California, financed with money from the United States. 9-30

Bridge & Grade Separation...

CONTRACTS AWARDED

California

SAN BERNARDINO CO.—**Kansas City Bridge Co.,** 215 Pershing Rd., Kansas City, Mo.—for substructure of 1,500-ft. double-track bridge across the Colorado River, betw. Topock, Ariz. and Beal, Calif.—by A. T. & S. F. Railway Co., Los Angeles. 10-29

Colorado

MONTROSE CO.—**A. T. Erickton Co.,** Naturita—$12,279, for a 75-ft. steel truss bridge over the Dolores River and a 21-ft. approach span, northwest of Gypsum Gap—by State Highway Department, Denver. 10-16

MONTROSE CO.—**J. P. Sodorstrum,** Grand Junction—$7,600, for steel truss bridge over San Miguel River at Uravan, and graded approaches on State Hwy. No. 141—by State Highway Dept., Denver. 10-30

Utah

TOOELE CO.—**Clifford Prince,** 4413 S. 7th E., Salt Lake City—$24,510, for timber culvert and bridge extensions on 19.4 mi. betw. Knolls and Wendover—by State Road Commission, Salt Lake City. 10-28

Washington

COWLITZ CO.—**Hart Construction Co., Inc.,** 711 Middle Water, Tacoma—$73,341, for painting and redecking steel on Cowlitz River and Pioneer bridges, betw. Longview and Longview Wye—by Director of Highways, Olympia. 10-27

Wyoming

FREMONT CO.—**Chas. M. Smith,** Thermopolis—$7,424, for treated timber bridge, 3 19-ft. spans over Dry Twin Creek, on Lander-Muddy Gap road—by State Highway Commission, Cheyenne. 10-19

Airport . . .

CONTRACTS AWARDED

Arizona

MARICOPA CO.—**Arizona Sand & Rock Co., United Concrete Pipe Corp.,** and **A. S. Vinnell,** Box 1536, Phoenix—over $100,000, for auxiliary landing field at an airport—by U. S. Engineer Office, Los Angeles, Calif. 10-16

MARICOPA CO.—**Arizona Sand & Rock Co., A. S. Vinnell,** and **United Concrete Pipe Corp.,** Box 1536, Phoenix — less than $50,000, for taxiway at an airfield—by U. S. Engineer Office, Phoenix. 10-6

YUMA CO.—**Kolob Construction Co.,** Phoenix—over $100,000, for auxiliary landing fields at an air force flying school—by U. S. Engineer Office, Los Angeles, Calif. 10-13

California

INYO CO.—**Basich Bros.,** 20530 S. Normandie Ave., Torrance—over $100,000, for runway extensions, taxiways and hardstandings—by U. S. Engineer Office, Los Angeles. 10-16

RIVERSIDE CO.—**Rhoades Bros. and Shofner,** 3869 Medford St., Los Angeles—over $500,000, for landing field and road system at a ground air support base—by U. S. Engineer Office, Los Angeles. 10-2

SAN BERNARDINO CO.—**Johnson Inc.,** Box 387, Alhambra; **Minnis & Moody,** 1116 N. Mansfield Ave., Los Angeles; and **Vista Construction Co.**—over $50,000, for plane anchorage and appurt. facil. at an airport—by U. S. Engineer Office, Los Angeles. 10-1

SAN BERNARDINO CO.—**Osborn Co.,** Rt. 1, Box 624, Pasadena—over $100,000, for resurf. runways and taxiways at Victorville army flying school—by U. S. Engineer Office, San Bernardino. 10-26

UNANNOUNCED CO.—**Fredericksen & Westbrook** and **D. McDonald,** 212 - 13th St., Sacramento—for runways, aprons and taxiways at an airport in central California—by U. S. Engineer Office, San Francisco. 10-6

UNANNOUNCED CO.—**Fredrickson & Watson Construction Co.,** 873 - 81st Ave., Oakland, and **Fredrickson Bros.,** 1259 - 65th St., Emeryville—for improvements and adds. to taxiways at an airport in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 10-1

UNANNOUNCED CO.—**Macco Construction Co.,** Freight and Ferry Sts., Oakland—for taxiways and hardstandings at an airport in central California—by U. S. Engineer Office, San Francisco. 10-6

Idaho

ADA CO.—**Hoops Construction Co.,** Twin Falls—$125,000 (approx.) for grade and pave. at a military site—by U. S. Engineer Office, Portland. 10-30

Montana

BEAVERHEAD CO.—**Barnard-Curtiss Co.,** 808 Phoenix Bldg., Minneapolis, Minn.—$155,057, for a flight strip at Dell—by State Highway Commission, Helena. 10-20

Nebraska

BUFFALO CO.—**Peter Kiewit Sons,** and **Condon, Cunningham Co.,** 1024 Omaha National Bank Bldg., Omaha—less than $5,000,000, for an airfield—by U. S. Engineer Office, Omaha. 10-14

HALL CO.—**Ed. H. Honnen Construction Co.,** Box 92, Colorado Springs, Colo.—over $2,000,000, for an airforce installation at Grand Island—by U. S. Engineer Office, Omaha. 10-6

New Mexico

CHAVES CO.—**Ned B. Hoffman,** Fort Worth, Texas—less than $50,000, for application of road oil for dust palliative—by U. S. Engineer Office, Albuquerque. 10-1

DE BACA CO.—**Allison, Armstrong and Thygessen,** Roswell—over $500,000, for airfield facil., roads and drainage at an air force school—by U. S. Engineer Office, Albuquerque. 10-23

EDDY CO.—**Ned B. Hoffman,** Fort Worth, Tex.—over $50,000, for airfield facilities at an airport—by U. S. Engineer Office, Albuquerque. 10-28

OTERO CO.—**Skousen Bros.,** Albuquerque—less than $200,000, for extensions to runways at a bombing range—by U. S. Engineer Office, Albuquerque. 10-14

Oregon

JEFFERSON CO.—**Morrison-Knudsen Co., Inc.,** Boise Idaho, and **Ford J. Twaits Co.,** 451 Boylston St., Los Angeles—$1,221,494, for grading and paving runways, taxiways and aprons at an airbase—by U. S. Engineer Office, Portland. 10-8

Texas

BEXAR CO.—**R. W. Briggs & Co.,** and **M. B. Killian,** Box 1981, San Antonio—over $500,000, for apron extension and conc. and steel const.—by U. S. Engineer Office, San Antonio. 9-5

EL PASO CO.—**Rock Road Construction Co.,** 5915 N. Rogers St., Chicago, Ill.—over $500,000, for runways at an airfield—by U. S. Engineer Office, Albuquerque, N. Mex. 10-27

PALO PINTO CO.—**Louis P. Reed,** Meridian—over $100,000, for a municipal airport—by U. S. Engineer Office, Denison. 10-26

PRESIDIO CO.—**Holland Page,** Box 971, Austin—less than $1,000,000, for flying field facil. at an airfield—by U. S. Engineer Office, Albuquerque, N. Mex. 10-6

Washington

PIERCE CO.—**Washington Asphalt Co.,** 309 W. 39th St.,

Seattle—over $50,000, for grading and paving—by U. S. Engineer Office, Seattle. 10-10

SKAGIT CO.—**Parker-Schram,** Couch Bldg., Portland, Ore., and **Erickson & Goulter,** 212 W. Hudson St., Seattle—over $500,000, for runways, taxiways and hardstandings—by U. S. Engineer Office, Seattle. 10-13

SPOKANE CO.—**J. H. Collins & Co.,** Colville—over $50,000, for conc. paving—by U. S. Engineer Office, Seattle. 10-10

THURSTON CO.—**George M. Grisdale Construction Co.,** Shelton—over $100,000, for grading and paving—by U. S. Engineer Office, Seattle. 10-10

PROPOSED PROJECTS

Oregon

JEFFERSON CO.—Authorization has been given by the War Dept., Washington, D. C., for construction of an air force installation at Madras. Estimated cost is over $2,000,000. 10-28

Water Supply . . .

CONTRACTS AWARDED

Arizona

MARICOPA CO.—**Fritz Ziebarth,** 820 W. Esther St., Long Beach, Calif.—less than $50,000, for add. to water supply system at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 10-19

MOHAVE CO.—**Oilfield Construction Co.,** 2650 Cherry Ave., Long Beach, Calif.—less than $50,000, for water supply system at a reception center—by U. S. Engineer Office, Los Angeles, Calif. 10-20

California

RIVERSIDE CO.—**Oilfield Construction Co.,** 2650 Cherry Ave., Long Beach, Calif.—over $100,000, for water supply and sewage disposal systems at a ground support air base—by U. S. Engineer Office, Los Angeles. 10-20

SAN BERNARDINO CO.—**Roscoe Moss Co.,** 4360 Worth St., Los Angeles—less than $50,000, for drilling a water well—by U. S. Engineer Office, Los Angeles. 10-6

UNANNOUNCED CO.—**Henry Ernst & Sons,** 551 Hayes St., San Francisco—for fire and transport water distribution system at an arsenal in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 10-6

Colorado

LAS ANIMAS CO.—**P. & E. Construction Co.,** Houston, Tex.—less than $300,000, for a water system and sanitary sewers for 3,000-man camp—by U. S. Engineer Office, Albuquerque, N. M.

Utah

DAVIS CO.—**H. Wesley Stoddard,** Ogden—for a 700-ft. water well, part of a $44,000 expansion of the water supply system at Clearfield—by City Council, Clearfield. 9-17

TOOELE CO.—**Harrison & Dorman, Inc.,** 13 South and 4 West, Salt Lake City—over $50,000, for water reservoir—by U. S. Engineer Office, Salt Lake City. 10-14

Washington

GRANT CO.—**A. A. Durand & Son,** Walla Walla—less than $50,000, for a water supply well—by U. S. Engineer Office, Seattle. 10-16

KITSAP CO.—**Spencer B. Lane Co.,** 845 Pine St., San Francisco, Calif.—over $100,000, for water distribution and sanitary sewer systems—by U. S. Engineer Office, Seattle. 10-14

SKAGIT CO.—**James J. Bell & Son,** Seattle—less than $50,000, for drilling and testing a well—by U. S. Engineer Office, Seattle. 10-10

SPOKANE CO.—**Roy L. Bair Co.,** W. 1220 Ide Ave., Spokane—one contract for less than $50,000 and one contract for over $100,000, for water distribution and sewage systems—by U. S. Engineer Office, Seattle. 10-10

SPOKANE CO.—**Walter A. Hale,** Cutbank, Mont.—for drilling of a test well—by U. S. Engineer Office, Seattle. 10-6

SPOKANE CO.—**Spencer B. Lane Co.,** 845 Pine St., San Francisco, Calif.—less than $50,000, for water distribution and sanitary sewer systems—by U. S. Engineer Office, Seattle. 10-14

UNANNOUNCED CO.—**Patterson Drilling Co.,** Olympia—less than $50,000, for drilling water wells at 6 sites—by U. S. Engineer Office, Seattle. 10-20

Sewerage . . .

CONTRACTS AWARDED

California

CONTRA COSTA CO.—**W. J. Tobin,** 5708 Glenbrook Drive, Oakland—$183,145, for interceptor sewers in city of Richmond—by Regional Engineer, WPA, San Francisco. 10-27

KERN CO.—**George Von Kleinsmid,** Rt. 3, Box 963, Bakersfield—$3,000, for a storm drain—by City Council, Bakersfield. 10-7

LOS ANGELES CO.—**Nick Bulaich,** 1011 S. Walnut St., Inglewood—$4,908, for sanitary sewers in 101st St., betw. Freeman Ave. and Hawthorne Ave.—by Board of Supervisors, Los Angeles. 10-21

LOS ANGELES CO.—**Culjak & Zelko,** 1354 S. Bonnie Beach Pl., Los Angeles—$21,290, for sanitary sewers in Olympic Blvd. —by Board of Supervisors, Los Angeles. 10-21

LOS ANGELES CO.—**Edward Green Co.,** 3001 Coolidge Ave., Los Angeles—for approx. 7,000 lin. ft. 12 and 15-in. vitrified clay sewer line at the Dow Chemical Co. plant in Gardena—by Stone & Webster, Los Angeles. 10-23

LOS ANGELES CO.—**M. N. Guho,** 3470 Olympiad Drive, Los Angeles—$14,967, for sewer in Waldorf Dr.—by Board of Supervisors, Los Angeles. 10-21

LOS ANGELES CO.—**M. N. Guho,** 3470 Olympiad Drive, Los Angeles—$7,872, for sanitary sewers in Alviso Ave.—by Board of Supervisors, Los Angeles. 10-21

LOS ANGELES CO.—**M. N. Guho,** 3470 Olympiad Drive, Los Angeles—$52,134, for sewer in Overhill Drive—by Board of Supervisors, Los Angeles. 10-7

LOS ANGELES CO.—**Ivan M. Metkovich,** 143 E. 81st St., Los Angeles—$59,440, for sewers in Mammoth Ave. and Davanna Terrace Sewer District—by Board of Public Works, Los Angeles. 10-6

LOS ANGELES CO.—**Max Milosevich,** 733 Bernard St., Los Angeles—$3,135, for sanitary sewers in Doty Ave. and El Segundo Blvd.—by Board of Supervisors, Los Angeles. 10-14

SAN FRANCISCO CO.—**Fay Improvement Co.,** 760 Market St., San Francisco—$3,641, for storm water overflow at Justin Dr. and College Ave.—by Department of Public Works, San Francisco. 10-2

Colorado

EL PASO CO.—**Dutton, Kendall & Hunt,** 3600 E. 46th Ave., Denver—$126,059, for filter plant—by City Council, Colorado Springs. 10-27

Oregon

UMATILLA CO.—**B. H. Sheldon Co.,** 219 S. 5th St., Corvallis —$35,000, for a Bio-filter or Aero-filter type sewage disposal plant and 3 sewage lift pumps in Hermiston—by City Council, Hermiston. 10-29

Washington

SPOKANE CO.—**Anderson Building Co.,** E. 4409 Sprague Ave., Spokane—over $100,000, for a sewage treatment plant—by U. S. Engineer Office, Seattle. 10-29

Waterway Improvement . . .

CONTRACTS AWARDED

California

ALAMEDA CO.—**Healy Tibbitts Construction Co.,** 1100 Evans Ave., San Francisco—for an outfitting wharf—by Bethlehem Alameda Shipyard Co., Alameda. 10-22

LOS ANGELES CO.—**Baruch Corp.,** 625 S. Olive St., Los An-

geles—$148,341, for Lockheed storm drain system, Beachwood Drive to Buena Vista St.—by Defense Public Works, Los Angeles. 10-1

LOS ANGELES CO.—**Fred Franks,** 260 California St., San Francisco—less than $50,000, for dredging a channel at a harbor—by U. S. Engineer Office, Los Angeles. 10-6

SAN DIEGO CO.—**Case Construction Co.,** Box 6, San Pedro—over $50,000, for timber wharf and appurt. at a fort—by U. S. Engineer Office, Los Angeles. 10-8

Oregon

CLATSOP CO.—**Gilpin Construction Co.,** 5500 NW Front St., Portland—less than $50,000, for a wharf at a military installation—by U. S. Engineer Office, Portland. 10-9

MULTNOMAH CO.—**Eldon & Dennis,** Box 5686, Kenton Sta., Portland—$42,064, for revetments on Sauvies Island in the Columbia River—by U. S. Engineer Office, Portland. 10-22

Canada

BRITISH COLUMBIA—**W. Greenlees,** 500 Beatty St., Vancouver—$47,612, for repairs to assembly wharf at Port Alberni—by District Engineer, New Westminster. 9-30

BRITISH COLUMBIA—**W. Greenlees,** 500 Beatty St., Vancouver—$15,497, for repairs to wharf at Westview and repairs to wharf and float and const. of shed at Powell River—by District Engineer, New Westminster. 9-30

BRITISH COLUMBIA—**McKenzie Barge & Derrick Co., Ltd.,** Victoria Drive, Vancouver—$45,680, for dredging at Esquimalt—by District Engineer, New Westminster. 9-30

Dam . . .

CONTRACTS AWARDED

Colorado

FREMONT CO.—**A. S. Horner Construction Co.,** 575 S. Downing St., Denver—for a conc. and steel dam at Florence, major unit of a $2,500,000 water supply project—by Colo. Fuel & Iron Co., Pueblo. 10-17

Idaho

POWER CO.—**Dur-Ite Co.,** Chicago, Ill.—$30,082, for alterations to spillway of American Falls Dam—by Bureau of Reclamation, Denver, Colo. 10-29

Irrigation . . .

CONTRACTS AWARDED

New Mexico

QUAY CO.—**Bressi & Bevanda Constructors Inc.,** 208 W. 8th St., Los Angeles—$752,205, for tunnel and earthwork, Station 1603+75 to Station 1684+68, Conchas Canal, Tucumcari project—by Bureau of Reclamation, Tucumcari. 10-6

Building . . .

CONTRACTS AWARDED

Arizona

COCHISE CO.—**Elder R. Morgan & Co.,** Copper Queen Hotel, Bisbee—over $100,000, for temporary frame bldgs. at a military site—by U. S. Engineer Office, Albuquerque, N. Mexico. 10-15

COCHISE CO.—**John W. Murphey-Leo B. Keith Building Co.,** Box 2267, Tucson—less than $300,000, for 55 bldgs. and facil. at a fc t—by U. S. Engineer Office, Albuquerque, N. Mex. 10-19

COCONINO CO.—**Jerome A. Utley,** 723 E. Ten Mile Road, Royal Oak, Mich.—less than $200,000, for addtl. bldgs. at a depot—by U. S. Engineer Office, Albuquerque, N. Mex. 10-2

MARICOPA CO.—**Scott King,** 2880 El Cajon Blvd., San Diego, Calif.—over $50,000, for airways detachment housing at an airport—by U. S. Engineer Office, Los Angeles, Calif. 10-1

MARICOPA CO.—**William Peper Construction Co.,** Box 1564, Phoenix—$173,000, for 53 conc. block housing units in Phoenix—by U. S. Housing Authority, Washington, D. C. 10-13

MARICOPA CO.—**Southwestern Sash & Door Co.,** 1655 W. Jackson St., Phoenix—for 110 demountable housing units at Higley—by Public Housing Authority, Washington, D. C. 10-28

MARICOPA CO.—**Tifal & King,** 1726 Grand Ave., Phoenix—over $50,000, for bldgs. and facil. at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 10-22

PIMA CO.—**J. S. Sundt,** Box 2592, Tucson—over $100,000, for bldgs., paving, etc. for addtl. hospital units at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 10-9

PIMA CO.—**M. M. Sundt Construction Co.,** Box 2592, Tucson—over $50,000, for squadron operations bldgs. at an airfield—by U. S. Engineer Office, Los Angeles Calif. 10-2

PINAL CO.—**Elmer W. Duhame,** 3719 N. Central Ave., Phoenix—over $100,000 for temporary frame bldgs.—by U. S. Engineer Office, Los Angeles, Calif. 10-26

PINAL CO.—**J. T. McDowell & Sons,** Denver, Colorado—over $500,000, for 123 bldgs.—by U. S. Engineer Office, Albuquerque, N. Mex. 10-12

California

ALAMEDA CO.—**Barrett & Hilp,** 918 Harrison St., San Francisco—$2,875,000, for 1,500 dormitory units for single men and 600 war apartments at Moore Dry Dock Co., Oakland—by U. S. Maritime Commission, Washington, D. C. 10-6

ALAMEDA CO.—**Fred J. Early, Jr.,** 369 Pine St., San Francisco — $1,070,000 (approx.) for a complete maritime training school at Neptune Beach, Alameda—by U. S. Maritime Commission, Washington, D. C. 10-29

ALAMEDA CO.—**Alfred J. Hopper,** 243 Langton St., San Francisco—$150,000, for 1-story, 70-bed addition to hospital—by Kaiser Co., Inc., Oakland. 10-30

ALAMEDA CO.—**McNeil Construction Co.,** 5860 Avalon Blvd., Los Angeles—$4,000,000, for a replacement center near Livermore—by Bureau of Yards & Docks, Washington, D. C. 10-21

CONTRA COSTA CO.—**J. H. Crawford,** 1344 Woodland Ave., San Carlos—$800,000, for 200 1-story frame residences at the Richmond - San Pablo boundary, to be called MacArthur Villa—by self. 10-2

KERN CO.—**Leroy E. Turner,** 30 S. Valencia St., Alhambra—over $50,000, for a theater at a bombing range—by U. S. Engineer Office, San Bernardino. 10-30

LOS ANGELES CO.—**Gail A. Bell,** Security Bank Bldg., San Diego — over $100,000, for personnel shelters at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 10-20

LOS ANGELES CO. — **Bennett & Stevens,** 35 N. Raymond Ave., Pasadena—over $100,000, for bldgs. and facil. for subdepot—by U. S. Engineer Office, Los Angeles. 10-27

LOS ANGELES CO.—**Noel M. Calhoun,** 845 N. Highland Ave., Los Angeles—$100,000, for a factory bldg. and adds. to the administration and personnel bldgs. in Burbank—by Menasco Manufacturing Co., Burbank. 10-23

LOS ANGELES CO.—**C. W. Driver,** 111 W. Seventh St., Los Angeles—$162,000, for

school bldgs. in the Bellflower school district—by Defense Public Works, Los Angeles. 10-7

LOS ANGELES CO.—**Halper Construction Co.,** 739 N. Highland Ave., Los Angeles—over $50,000, for school and hangar bldgs. and facil. at a factory training school—by U. S. Engineer Office, Los Angeles. 10-22

LOS ANGELES CO.—**H. M. Keller Co.,** 4604 Hollywood Blvd., Los Angeles—over $100,000, for personnel shelters at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 10-13

LOS ANGELES CO.—**M. W. Kellogg Co.,** c/o J. S. Reynolds, Supt., Box 359, Torrance—for a complete butadiene plant on S. Figueroa St., Los Angeles—by Shell Chemical Co., San Francisco. 10-29

LOS ANGELES CO.—**E. S. McKittrick Co., Inc.,** 7839 Santa Fe Ave., Huntington Park—$2,500,000 for 4 addtl. bldgs in Hawthorne—by Northrop Aircraft, Inc., Hawthorne. 10-30

LOS ANGELES CO.—**McNeil Construction Co.,** 5860 Avalon Blvd., Los Angeles—$1,000,000 (approx.) for group of factory bldgs. and water reservoir at Burbank—by Vega Aircraft Corp., Burbank. 10-21

LOS ANGELES CO.—**Ben F. Smith,** 333 S. Rosemead Blvd., Pasadena—over $50,000, for personnel shelters at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 10-6

LOS ANGELES CO.—**Paul B. Treat** and **John R. Waters,** 6314½ San Vicente Blvd., Los Angeles—over $50,000, for theater of operations bldgs.—by U. S. Engineer Office, Los Angeles. 10-26

MONTEREY CO.—**Coast Counties Construction Co.,** 150 Towt St., Salinas—$64,900, for chemical and engineering bldg. at the emergency rubber project—by U. S. Dept. of Agriculture, Washington, D. C. 10-27

MONTEREY CO. — **George Peterson,** Box 104, San Leandro—$81,800, for six repair shop bldgs. at Salinas for the guayule project—by U. S. Department of Agriculture, Salinas. 10-9

ORANGE CO.—**John C. Blystone,** Box 7, Garden Grove—over $50,000, for addtl. hospital bldgs. at a replacement center—by U. S. Engineer Office, Los Angeles. 10-2

ORANGE CO.—**J. M. Roth Construction Co.,** 6028 Whittier Blvd., Los Angeles—over $50,000, for W.A.A.C. Headquarters Co. bldgs. and util. at an army air base—by U. S. Engineer Office, Los Angeles. 10-28

ORANGE CO.—**J. P. Stein,** 1424 South Ogden Dr., Los Angeles—over $50,000, for 6 addtl. bldgs. and util. at an army air base—by U. S. Engineer Office, Los Angeles. 10-15

RIVERSIDE CO.—**J & B Construction Co.,** 5572 Valley Blvd., Los Angeles—over $100,000, for reception center bldgs. at a staging area—by U. S. Engineer Office, Los Angeles. 10-8

RIVERSIDE CO. — **Secrest & Leneve,** 1943 W. See Drive, Whittier—over $50,000, for two addtl. company areas at a camp—by U. S. Engineer Office, San Bernardino. 10-20

SACRAMENTO CO.—**Harris Construction Co.,** Box 109, Fresno—over $100,000, for hospital buildings at Camp Kohler—by U. S. Engineer Office, Sacramento. 10-13

SAN BERNARDINO CO. — **Calowell Construction Co.,** 1835 E. Wardlow Rd., Long Beach—over $100,000, for bldgs. and

util.—by U. S. Engineer Office, Los Angeles. 10-29

SAN BERNARDINO CO.—**Robert E. McKee,** 4700 San Fernando Rd. West, Los Angeles—over $500,000 for civilian war housing (dormitory type)—by U. S. Engineer Office, San Bernardino. 10-30

SAN BERNARDINO CO.—**J. O. Oltmans,** 810 E. 18th St., Los Angeles—over $100,000, for personnel shelters at an air depot—by U. S. Engineer Office, San Bernardino. 10-20

SAN BERNARDINO CO.—**LeRoy E. Turner,** 30 S. Valencia St., Alhambra—over $50,000, for hangar and supply bldgs. at an airdrome—by U. S. Engineer Office, San Bernardino. 10-28

SAN DIEGO CO.—**I. C. Curry** and **S. E. Young,** 1701 "B" St., San Diego—$2,856,000, for bldgs. at destroyer base, San Diego—by Bureau of Yards & Docks, Washington, D. C. 10-5

SAN DIEGO CO.—**Glenn A. Doughty Co.,** 8063 Beverly Blvd., Los Angeles—for 150 duplexes in Chula Vista and 150 duplexes in National City—by Federal Housing Authority, Washington, D. C. 10-16

SAN DIEGO CO.—**Engineers, Ltd.,** 225 Bush St., San Francisco, and **J. E. Haddock Co., Ltd.,** 3578 E. Foothill Blvd., Pasadena—$9,681,940, for addtl. const. at Marine Corps training area at Santa Margarita Ranch, Oceanside—by Bureau of Yards & Docks, Washington, D. C. 10-27

SAN DIEGO CO.—**Los Angeles Contracting Co.,** and **O. W. Karn,** 4816 W. Pico Blvd., Los Angeles—$2,193,500, for temporary housing at Marine Corps barracks, naval operating base, San Diego — by Bureau of Yards & Docks, Washington, D. C. 10-26

SAN DIEGO CO.—**Plywood Structures,** 6307 Wilshire Blvd., Los Angeles—for prefabrication and const. of 555 demountable housing units (two projects) at Pacific Beach—by U. S. Housing Authority, Washington, D. C. 10-13

SAN DIEGO CO.—**Ivan M. Wells Construction Co.,** 201 S. Linden Dr., Beverly Hills—over $50,000, for theater of operations bldgs.—by U. S. Engineer Office, Los Angeles. 10-13

SAN FRANCISCO CO.—**Carrico & Gautier,** 365 Ocean Ave., San Francisco—$150,000, for one-story reinf. conc. machine shop bldg., northwest corner of Battery and Union Sts., San Francisco—by General Engineering & Drydock Co., San Francisco. 10-15

SAN LUIS OBISPO CO.—**Bennett & Stevens,** 35 N. Raymond Ave., Pasadena—for ordnance repair shop and relocation of ordnance warehouse and util. at a camp—by U. S. Engineer Office, Los Angeles. 10-6

SANTA CLARA CO.—**Wells P. Goodenough,** 49 Wells Ave., Palo Alto—$220,000, for 2-story wood-frame and conc. bldg.—by National Advisory Committee for Aeronautics., Moffett Field. 10-5

SANTA CLARA CO.—**Earl W. Heple,** 494 Delmas Ave., San Jose—$2,000,000 for buildings at Moffett Field—by Bureau of Yards & Docks, Washington, D. C. 10-21

UNANNOUNCED CO.—**Case Construction Co.,** Box 6, San Pedro—over $50,000, for troop barracks on an island off southern California—by U. S. District Engineer, Los Angeles. 10-26

Colorado

EAGLE CO.—**Harold F. Higgins,** 1367

Jersey St., Denver—over $50,000, for bldgs. —by U. S. Engineer Office, Denver. 10-1

LAKE CO.—**Western Machinery Co.**, and **Western Knapp Engineering Co.**, 1655 Blake St., Denver—$500,000 (approx.) for a 1,000-ton mill for handling lead-zinc ores at Leadville—by Ore & Chemical Co., New York. 10-19

LAS ANIMAS CO.—**John W. Joynt Construction Co.**, 2533 E. Helen St., Tucson, Ariz.—over $500,000, for 231 bldgs. and utils. at a camp—by U. S. Engineer Office, Albuquerque, N. Mex. 10-16

Idaho

ADA CO.—**J. O. Jordan & Son**, 1840 N. 8th St., Boise—$135,000, for bldgs.—by U. S. Engineer Office, Portland, Ore. 10-27

BANNOCK CO.—**Morrison-Knudsen Co., Inc.**, Boise—$9,017,000, for a naval ordnance plant at Pocatello—by Bureau of Yards & Docks, Washington, D. C. 10-9

POWER CO.—**Vernon Bros. Co.**, Box 1787, Boise—over $200,000, for bldgs. at a military site—by U. S. Engineer Office, Portland, Ore. 10-29

Montana

CASCADE CO.—**Victory Construction Co.**, Great Falls—over $100,000 for temporary frame bldgs. at a military site—by U. S. Engineer Office, Ft. Peck. 10-5

Nevada

CLARK CO.—**O. J. Scherer**, 209 S. 3rd St., Las Vegas — over $100,000, for trainer school bldgs. at a gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 10-6

CLARK CO.—**Forest Schidler**, 324 Fremont St., Las Vegas—$300,000, for 72 5-room dwellings north of Fremont St., betw. 15th and 17th Sts., Las Vegas—by Ernest Allen, Las Vegas. 10-1

New Mexico

BERNALILLO CO.—**Leon Watson & Associates**, Albuquerque—over $50,000, for bldgs. and facil. at an airfield—by U. S. Engineer Office, Albuquerque. 10-19

CURRY CO.—**Lawless & Alford**, Paris, Texas—over $100,000, for bldgs. at an airfield—by U. S. Engineer Office Albuquerque. 10-20

CURRY, CHAVES and BERNALILLO COS.—**S. V. Patrick**, Albuquerque—less than $500,000, for housing and facil. at airfields—by U. S. Engineer Office, Albuquerque. 10-27

DE BACA CO.—**R. J. Minton Construction Co.**, 5th and Pacific St., Alameda, Calif.—over $500,000, for bldgs. and util. at an air force school—by U. S. Engineer Office, Albuquerque. 10-23

McKINLEY CO.—**E. S. McKittrick Co., Inc.**, 7839 Santa Fe Ave., Huntington Park, Calif.—over $100,000, for 28 dwellings and 6 ammunition magazines at a fort—by U. S. District Engineer Office, Albuquerque. 10-1

Oregon

BENTON CO.—**Halvorson Construction Co.**, Box 662, Billings, Mont.—$90,000 (approx.) for bldgs. at a military site—by U. S. Engineer Office, Portland. 10-30

JEFFERSON CO.—**W. C. Smith**, Board of Trade Bldg., Portland and **Kuckenberg Construction Co.**, 11104 NE Holman St., Portland—$690,790 for bldgs., roads and utils.—by U. S. Engineer Office, Portland. 10-15

MULTNOMAH CO.—**George H. Buckler Co.**, Lewis Bldg., Portland—$300,000, for five 1-story dormitories east of Swan Island in the area known as Mock Bottom, to house approx. 1,200 men recruited in the East—by Kaiser Companies, Portland. 10-1

MULTNOMAH CO. — **Tri-State Construction Co.**, 1812 NE 40th St., Portland—over $150,000, for bldgs., roads, water supply and misc. work at a military site—by U. S. Engineer Office, Portland. 10-30

Texas

WARD CO.—**E. S. McKittrick Co., Inc.**, 7839 Santa Fe Ave., Huntington Park, Calif.—over $500,000, for bldgs. at an airfield—by U. S. Engineer Office, Albuquerque, N. Mex. 10-21

WICHITA CO.—**John W. Taylor Construction Co.**, Dallas—over $50,000, for temporary frame bldgs.—by U. S. Engineer Office, Denison. 10-26

WICHITA CO.—**H. S. Moore**, Ada—over $500,000, for additional frame bldgs.—by U. S. Engineer Office, Denison. 10-26

Utah

CARBON CO.—**MacIsaac & Menke**, 3440 E. 22nd St., and **Pozzo Construction Co.**, 2403 Riverside Dr., Los Angeles, Calif.—$1,000,000, for 250 housing units at Sunnyside—by Utah Fuel Co. and Henry J. Kaiser Co. 10-19

SALT LAKE CO.—**Jacobsen Construction Co.**, 724 S. 3rd St. East, Salt Lake City —over $50,000, for medical facilities at a

fort—by U. S. Engineer Office, Salt Lake City. 10-6

SALT LAKE CO.—**Modern Builders Construction Co.,** 2812 American Ave., Long Beach, Calif.—less than $150,000, for addtl. housing at an army air base—by U. S. Engineer Office, Salt Lake City. 10-28

TOOELE CO.—**Intermountain Construction Co.,** 325 Atlas Bldg., Salt Lake City—less than $500,000, for a group of frame bldgs. for civilian housing at an ordnance depot—by U. S. Engineer Office, Salt Lake City. 10-19

TOOELE CO.—**R. D. Merrill,** Helena, Mont.—over $500,000, for additional housing and facil.—U. S. Engineer Office, Salt Lake City. 10-21

TOOELE CO.—**Ford J. Twaits,** Box 3159, Terminal Annex, Los Angeles, Calif.—approx. $500,000, for civilian housing by U. S. Engineer Office, Salt Lake City. 10-13

WEBER CO. — **Better Built Homes,** Ogden—for 2,000 demountable housing units in Ogden—by U. S. Housing Authority, Washington, D. C. 10-13

WEBER CO.—**James I. Barnes Construction Co.,** 1119 Montana Ave., Santa Monica, Calif.—over $100,000, for an internment camp at a quartermaster depot—by U. S. Engineer Office, Salt Lake City. 10-21

WEBER CO.—**Johnson & Leck Co.,** 227 Eccles Bldg., Ogden—over $100,000, for 2 hangars and a boilerhouse—by U. S. Engineer Office, Salt Lake City. 10-8

WEBER CO.—**Spencer B. Lane,** 845 Pine St., San Francisco, Calif.—less than $150,000, for a headquarters bldg.—by U. S. Engineer Office, Salt Lake City. 10-28

UNANNOUNCED CO.—**Jensen Bros.,** 313 Ness Bldg., Salt Lake City—less than $75,000, for bachelor officers' quarters at a quartermaster depot—by U. S. Engineer Office, Salt Lake City. 10-14

Washington

CLALLAM CO.—**Sullivan, Lynch, Olin & Hainsworth Construction Co.,** 1822 McGilvra Blvd., Seattle—over $50,000, for bldgs. and a road—by U. S. Engineer Office, Seattle. 10-6

KING CO.—**General Construction Co.,** 3840 Iowa St., Seattle—over $100,000, for a bldg.—by U. S. Engineer Office, Seattle. 10-6

KING CO.—**General Construction Co.,** 3840 Iowa St., Seattle—over $50,000, for a cafeteria — by U. S. Engineer Office, Seattle. 10-20

KING CO.—**Modern Home Builders,** Seattle—$168,000, for 24 duplex dwellings on 34th Ave. W. and W. Emerson St. in Seattle—by C. F. Bishop, Seattle. 10-14

KITSAP CO.—**O. F. Larson & Son,** Tacoma—$54,254, for a fire station at Manette—by Federal Works Agency, Seattle. 10-1

PIERCE CO.—**J. C. Boespflug Construction Co.,** Securities Bldg., Seattle—$6,239,000, for 1,600 demountable residences at Salishan housing project near Tacoma—by Tacoma Housing Authority, Tacoma. 10-9

PIERCE CO.—**Bonnell Construction Co.,** 760½ Commerce St., Tacoma—over $50,000, for housing—by U. S. Engineer Office, Seattle. 10-2

PIERCE CO.—**Roy E. Earley Co.,** Tacoma—$500,000, for a factory bldg. on Hylebos waterway near the Pennsylvania Salt Co. plant, for the Pacific Carbide Co. of Portland—by Defense Plant Corporation, Washington, D. C. 10-2

PIERCE CO.—**O. F. Larson & Son,** and **Standard Construction Co.,** Pacific Savings Bldg., Tacoma—over $150,000, for dormitory at Ruston smelter, near Tacoma—by Tacoma Housing Authority. 10-26

SPOKANE CO.—**Hawkins & Armstrong,** 5265 - 16th Ave. N.E., Seattle—over $100,000, for bldgs.—by U. S. Engineer Office, Seattle. 10-29

SPOKANE CO.—**Hazen & Clark,** Welsch Bldg., Spokane—over $50,000, for three bldgs.—by U. S. Engineer Office, Seattle.

Wyoming

LARAMIE CO.—**Fluor Corp., Ltd.,** Box 7030, Los Angeles, Calif.—over $1,000,000, for 1,400-bbl. per day 100-octane gasoline refinery at Cheyenne—by Defense Plant Corp., Washington, D. C. 10-22

Territories

ALASKA—**C. W. Hufeisen,** Anchorage—for 15 permanent housing units at Fairbanks and 40 similar units at Anchorage—by Federal Public Housing Authority, Washington, D. C. 10-13

ALASKA—**Nettleton Lumber Co.,** 26th St. SW and W. Florida St., Seattle, Wash.—for woods headquarters camp and supply center at Edna Bay on Kosciuko Island, for Alaska Spruce Log Program—by Commodity Credit Corp., Washington, D. C. 10-9

ALASKA—**J. B. Warrack Construction Co.**, Securities Bldg., Seattle, Wash.—$56,000, for a fire station at Ketchikan—by City Council, Ketchikan. 10-23

Canada

BRITISH COLUMBIA—**Fabro Building & Supply Co., Ltd.**, Kimberley—$80,000 (approx.) for 25 1½-story houses in Kimberley—by Consolidated Mining & Smelting Co. of Canada, Ltd., Trail. 9-30

BRITISH COLUMBIA—**Archie Sullivan**, 736 Granville St., Vancouver—$376,000 (approx.) for accommodations on a large scale at a West Coast Canadian centre—by Department of Munitions & Supply and the Department of Transport, Ottawa. 9-30

PROPOSED PROJECTS

Texas

POTTER CO.—The Federal Public Housing Authority has authorized construction of 745 units in a housing project at Amarillo. 10-22

Utah

BOX ELDER CO.—The War Department has authorized expansion of the Bushnell General Hospital at Brigham City, to cost approx. $1,500,000. 10-9

Washington

KING CO.—The Federal Works Agency announces approval for a hospital at Renton. Estimated cost is $501,000. 10-3

KITSAP CO.—Federal funds have been allocated for a 3,000-unit housing project at Port Orchard to cost about $8,000,000. 10-28

SNOHOMISH CO.—Authority has been granted to the Everett Housing Authority to construct 300 permanent housing units in Everett. 10-29

Miscellaneous . . .

CONTRACTS AWARDED

Arizona

MARICOPA CO.—**Vinson & Pringle**, Box 2592, Phoenix—less than $50,000, for sewer, water, roads and outfall sewer for airways detachment—by U. S. Engineer Office, Los Angeles, Calif. 10-20

PINAL CO.—**Insulated Homes, Inc.**, Albuquerque, N. Mex.—over $50,000, for util. systems—by U. S. Engineer Office, Albuquerque, N. Mex. 10-12

California

CONTRA COSTA CO.—**Duncanson Harrelson Co.**, 1404 DeYoung Bldg., San Francisco—$1,641,500, for addtl. facil. at Naval Magazine, Port Chicago—by Bureau of Yards & Docks, Washington, D. C. 10-5

LOS ANGELES CO.—**American Pipe & Construction Co.**, 4635 Firestone Blvd., South Gate—$97,000, for furnishing reinf. conc. pipe for Lockheed Storm Drain—by Defense Public Works, Los Angeles. 10-9

LOS ANGELES CO.—**Sharp & Fellows Contracting Co.**, Central Bldg., 6th and Main Sts., Los Angeles—for widening road bed betw. Hobart and Fullerton, to provide for a second mainline—by A. T. & S. F. Railway Co., Los Angeles. 10-8

RIVERSIDE CO.—**General Construction Co.** and **J. Walter Johnson**, 5205 Hollywood Blvd., Los Angeles—over $50,000, for electrical distribution system at a ground air support base—by U. S. Engineer Office, Los Angeles. 10-6

SACRAMENTO CO.—**D. W. Nicholson**, 1701 San Leandro Blvd., San Leandro—over $100,000 for utilities—by U. S. Engineer Office, Sacramento. 10-13

SAN BERNARDINO CO.—**H. O. Bauerle**, 8948 Ellis Ave., Los Angeles—over $50,000, for airport night lighting system at a flying school—by U. S. Engineer Office, Los Angeles. 10-28

SAN BERNARDINO CO.—**Drury Electric Co.**, 615 - 19th St., Bakersfield—over $100,000, for an electrical distribution system at an air depot—by U. S. Engineer Office, San Bernardino. 10-13

SAN BERNARDINO CO.—**Sharp & Fellows Contracting Co.**, Central Bldg., 6th and Main Sts., Los Angeles—for 5 mi. of railway line change and new const. betw.

Topock, Arizona and Beal, Calif.—by A. T. & S. F. Railway Co., Los Angeles. 10-8

SAN DIEGO CO.—**M. H. Golden** and **Walter Trepte,** 631 - 9th St., San Diego—$3,501,000, for increased facilities at Naval air station at San Diego—by Bureau of Yards & Docks, Washington, D. C. 10-27

SAN DIEGO CO.—**H. F. Hendrickson Co.,** 2811 Clearwater St., Los Angeles—over $50,000, for sewer, water and electrical distribution systems—by U. S. Engineer Office, Los Angeles. 10-15

SOLANO CO.—**Leonard Coates Nurseries, Inc.,** 2201 The Alameda, San Jose—$134,958 for landscaping at Carquinez Hts. housing project, Vallejo—by Vallejo Housing Authority, Vallejo. 10-5

UNANNOUNCED CO.—**Case Construction Co.,** Box 6, San Pedro—over $50,000, for underground shelters and tower foundations on an island off southern California—by U. S. Engineer Office, Los Angeles. 10-26

Colorado

LAS ANIMAS CO.—**P. & E Construction Co., Houston, Texas**—less than $300,000, for utility systems at a camp—by U. S. Engineer Office, Albuquerque, N. Mex. 10-19

Montana

CASCADE CO.—**Central California Construction Co.,** 230 California St., San Francisco, Calif.—over $100,000 for gasoline fueling and oil storage system—by U. S. Engineer Office, Ft. Peck. 10-13

Nevada

MINERAL CO.—**William P. Neil Co., Ltd.,** 4814 Loma Vista Ave., Los Angeles—$5,966,000 for increasing facilities at Naval Ammunition Depot, Hawthorne — by Bureau of Yards & Docks, Washington, D. C. 10-27

MINERAL CO.—**William P. Neil Co., Ltd.,** 4814 Loma Vista Ave., Los Angeles, Calif.—$1,032,000, for addtl. ammunition storage facil. for Naval air depot at Hawthorne—by Bureau of Yards & Docks, Washington, D. C. 10-19

New Mexico

VALENCIA CO. — **Morrison-Knudsen Co., Inc.,** Boise, Idaho—for grading for double track and extensions to culverts betw. Belen and Dallas, a distance of 10 mi. —by A. T. & S. F. Railway Co., Los Angeles, Calif. 10-8

CURRY CO. — **Morrison-Knudsen Co., Inc.,** Boise, Idaho—for grading for double track betw. Farwell, Texas, and Clovis, N. Mex., a distance of 10 mi.—by A. T. & S. F. Railway Co., Amarillo, Texas. 10-8

McKINLEY CO. — **Waco Construction Co.,** Waco, Texas—less than $200,000, for railroad const. at a depot—by U. S. Engineer Office, Albuquerque. 10-16

Oregon

MULTNOMAH CO.—**Gregoire & Van Horn,** 6735 Sacramento St., Portland—$60,000, for railway at military site—by U. S. Army Engineers, Portland. 10-2

Texas

GRAY CO.—**Parrott-Oldt Co.,** Dallas—over $50,000, for utilities—by U. S. Engineer Office, Denison. 10-30

TAYLOR CO.—**Armstrong & Webb,** Abilene—over $50,000, for addtl. const.—by U. S. Engineer Office, San Antonio. 10-31

Washington

PIERCE CO.—**Puget Sound Boatbuilding Co.,** Tacoma—$1,100,000 (approx.) for 4 ocean-going tugs—by U. S. Army Transport Service, Washington, D. C. 10-19

SNOHOMISH CO.—**Cotton Engineering & Shipbuilding Corp.,** Port Townsend—$288,000 for 24 freight barges—by U. S. Army Transport Service, Washington, D. C. 10-19

SNOHOMISH CO. — **A. G. Homann,** Olympia—less than $50,000, for conc. const. —by U. S. Engineer Office, Seattle. 10-5

SPOKANE CO.—**Electric Smith,** E. 121 Sprague Ave., Spokane—over $50,000, for an electrical distribution system—by U. S. Engineer Office, Seattle. 10-29

Canada

BRITISH COLUMBIA—**Dominion Construction Co., Ltd.,** 150 West 1st Ave., Vancouver—$198,000, for util. at a West Coast Canadian centre—by Department of Munitions and Supply and Department of Transport, Ottawa. 9-30

BRITISH COLUMBIA—**Fred Welsh & Son,** 733 Beatty St., Vancouver—$68,000 (approx.) for a central steam heating system at a West Coast centre—by Dept. of Munitions and Supply, Ottawa. 9-30

TRADE WINDS

News of Men Who Sell to the Construction West

CALIFORNIA

Tin plate production has been discontinued entirely at the Pittsburg, Calif., plant of *Columbia Steel Co.*, subsidiary of United States Steel Corp. This is part of a program to reduce Columbia's tin mill operation to 37½% of capacity, diverting the steel to more vital war uses.

* * * *

The *Irving Subway Grating Co.* has opened a branch plant at Judson and Pacific Sts., San Francisco, to specialize in the manufacture of airplane landing parts. At the close of the emergency, the plant will be converted to the manufacture of its regular gratings. **J. C. Lynn**, formerly with the Gilmore Steel Co., has been named manager of the new plant.

* * * *

Donald W. Fairbairn has been named district sales manager of the national sales and service division of the *B. F. Goodrich Co.* for the Pacific coast area excepting Seattle. His headquarters will be in Los Angeles. For 15 years he was sales engineer in the industrial products division of the company, and lately has been working on problems connected with rubber tracks for military vehicles.

RICHARD HEINEMANN receives gold wristwatch from L. W. Stettner, president of Victor Equipment Co., in honor of twenty-five years service in company.

Twenty-one old time employees of the *Victor Equipment Co.*, San Francisco, honored **Richard "Dick" Heinemann** recently, on the occasion of the completion of his twenty-fifth year with the firm. His record began in 1917 when he was employed as a machinist; today he is general superintendent of the plant. At the time he started with the firm, one of its two other employees was **L. W. Stettner**, now president and chairman of the Board of Directors.

* * * *

The *John W. Stang Corp.* of New York City has established an office and yard at 2322 Newton Avenue, San Diego. A large stock of well point is carried for sale or rental, together with trained services. **Ed Slosson** is in charge of the California office.

* * * *

Industrial Equipment Co., Oakland, who has for some time been northern California representative of Dempster Bros., Inc., Knoxville, Tenn., manufacturers of dumping equipment, has also been appointed southern California representative.

* * * *

PACIFIC NORTHWEST

W. B. Meredith, formerly in the industrial lubrication division of the *General Petroleum Corp.* in Los Angeles, has been transferred to the Seattle office of the company. He represents the same division in the Northwest in work with contractors. Prior to joining General Petroleum in Los Angeles last August, Meredith spent eight years in the Philippine Islands as representative of Allis-Chalmers.

* * * *

INTERMOUNTAIN

The Denver office of *E. D. Bullard Co.*, manufacturers and distributors of industrial safety equipment, has moved from 56 Wazee Market to 18 Wazee Market. **Howard Timms**, who has been in charge of the office since **Tom Hallinan** entered the armed forces, is district manager for the states of Colorado and Wyoming.

* * * *

R. M. Hardesty Co. has recently placed in operation at Salt Lake City, a plant for the manufacture of concrete pipe.

* * * *

AMONG THE MANUFACTURERS

The Army-Navy production award was conferred upon the *Independent Pneumatic Tool Co.* of Aurora, Illinois, on October 8, and individual "E" emblems were presented to each employee of the company. The awards were made by Maj. Gen. Samuel T. Lawton and Capt. Robert Henderson, and were accepted for the company by **Neil C. Hurley, Jr.**, vice-president.

* * * *

A. W. Thomas, sales manager of the construction machinery division of the *Chain Belt Co.*, Milwaukee, Wisconsin, has been called to Washington, D. C., where he will serve as a "dollar-a-year" consultant for the construction machinery division of WPB.

A. W. THOMAS

During the performance of these duties, his place will be filled by **D. A. Kalton.**

* * * *

Employees of *General Motors Truck and Coach Division* have organized a special Salvage and Conservation Committee to investigate all possible sources of scrap material about the plant. As a result of their efforts, more than 6,000,000 pounds of scrap metal were collected and shipped to steel mills during the past month.

* * * *

The annual report of the *Masonite Corp.*, Chicago, Ill., showed a net profit of $1,548,434, after allowances of nearly $5,000,000 for taxes, it was announced on October 8. In a profusely illustrated, two-color booklet, the company's products and market are described, and its post-war potentialities are discussed.

* * * *

Thirty per cent more lumber was treated by Wolmanizing and creosoting in the plants of the *American Lumber and Treating Co.* in the first three quarters of 1942 than during the same period in 1941, according to **Paul W. Wayman,** general operating superintendent. Ninety-four per cent of the company's output is going into war construction. Three of its plants are located on the Pacific coast.

* * * *

H. L. Watson, executive vice-president of the *De Laval Steam Turbine Co.,* Trenton, New Jersey, since 1934, has been elected president of the company, succeeding **Francis J. Arend,** who died in August of this year. Watson has been with the company since 1913.

* * * *

J. E. Schmeltzer, technical assistant in the Maritime Commission, made the presentation of a Maritime "M" pennant and the Victory Fleet Flag to the *Marion Steam Shovel Co.,* Marion, Ohio, on October 15, recognizing the company's outstanding production achievement in building portal cranes, used for building ships and loading ships' cargoes. **D. J. Shelton,** president, accepted the award and stated that the organization had produced 50% more tonnage this year than ever before manufactured in the same period of time. Employee insignias were also awarded to each worker who had had a part in the production schedule.

* * * *

A. W. Herrington, chairman of the board of *Marmon-Herrington Co., Inc.,* has been elected to the board of directors of *The Aviation Corp.* He replaces **Tom Girdler,** who will devote his time mainly to the operation of Consolidated and Vultee Aircraft Cos., both of which are Aviation affiliates.

* * * *

Autumnal automobile dealer meetings will be continued this year by the Dodge division of *Chrysler Corporation.* However, instead of new model demonstrations, the programs will be devoted to uniting and organizing the Dodge dealer body for the preservation of the nation's civilian transportation for the duration.

* * * *

The first Maritime "M" pennant awarded in New England was presented to the Palmer, Mass., plant of the *Wickwire Spencer Steel Co.* on October 14. The presentation was made by Commissioner Thomas M. Woodward of the Maritime Commission, and accepted by **Carl I. Collins,** executive vice-president of the company, and **Henrick W. Forsman,** an employee with 42 years' service.

NEW EQUIPMENT

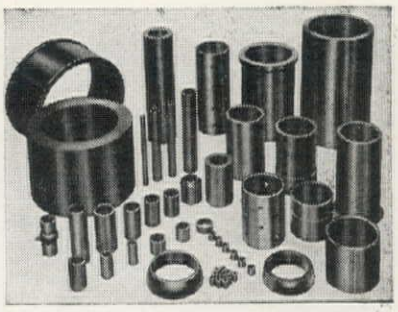
MORE COMPLETE information on any of the new products or equipment briefly described on these pages may be had by sending your request to the Advertising Manager, Western Construction News, 503 Market St., San Francisco, Calif.

Pre-fabricated Houses

Manufacturer: Douglas Fir Plywood Association, Tacoma, Wash.

Equipment: Pre-fabricated timber houses.

Features claimed: Three plywood and door manufacturers have changed tooling in their plants to assembly lines for house sections. One-family home, costing $2,200, can be erected by two carpenters and helper in a day and a half. A permanent locking device holds wall, roof, and floor sections together. Emphasis is placed on design to assure maximum livability and use of every square inch of floor area.



Non-Critical Bearings

Manufacturer: Gatke Corp., Chicago, Ill.

Equipment: Moulded fabric bearings.

Features claimed: Shortage of critical bearing metal is overcome and performance results are improved through use of oil-lubricated, non-metallic moulded bearings. They stand up under impact too great for metal bearings, have greater wear life and lower friction. They will not score journals, even if lubrication fails for limited periods. They are engineered for the application and moulded to finished dimensions.

High-Voltage Oil Switch

Manufacturer: General Electric Co., Schenectady, N. Y.

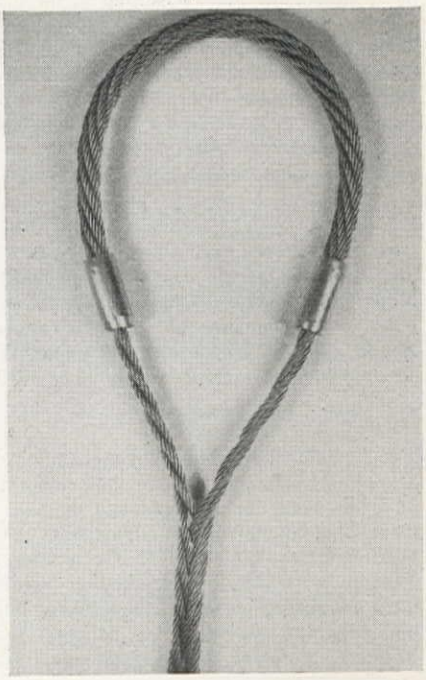
Equipment: Oil switch for high-voltage systems.

Features claimed: Solenoid-operated switch for use with constant current transformers has 15 kv. class insulation, is designed primarily for use on protective lighting circuits served from distribution systems operating at voltages up to 7620. The design is similar to other GE controllers except for larger bushings and more internal insulation.

Flat Cable Sling

Manufacturer: John A. Roebling's Sons Co., Trenton, N. J.

Equipment: Flatweave wire rope sling.



Features claimed: Light, flexible, non-kinking, non-spiralling sling for lifting light and medium loads where legs choke the load, or the sling comes in direct contact with the load. Flat bearing surface allows even pressure on each of the six ropes, which are specially laid so as to eliminate possibility of shearing action. Ends are permanently secured by compact steel sleeves.

Two-way Auto Radio

Manufacturer: Willys-Overland Motors, Inc., Toledo, Ohio.

Equipment: Two-way auto radio.

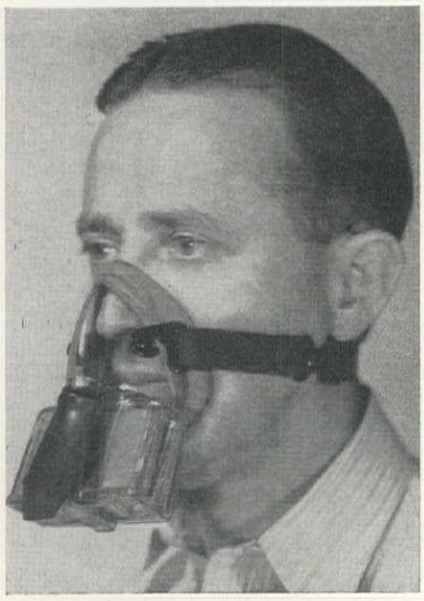
Features claimed: New development known as "radio spark suppression," makes two-way radio feasible for autos. Development has been in mass production for tanks, jeeps, and motorized weapons, and after the war will be available for passenger automobiles at low cost.

Transparent Respirator

Manufacturer: B. F. McDonald Co., Los Angeles, Calif.

Equipment: All-plastic respirator.

Features claimed: Uses no critical materials; both facepiece and filter housing are transparent, permitting visual check of filter



while in use. Light weight, is constructed so as to permit complete working freedom, and use of goggles or spectacles. Army gas mask exhalation valve gives low breathing resistance.

Motor Scooter

Manufacturer: Cushman Motor Works, New York, N. Y.

Equipment: Auto-glide motor carrier.

Features claimed: Motorized scooters save time and energy in plants which cover large areas in carrying foremen, maintenance men, and messengers in inter-departmental travel. Small delivery compartments can be mounted on auto-glide, for delivery of rivets or small parts. Servicing of machine has been simplified to the extreme. At present almost entire output is going into government service.

LITERATURE . . .

Copies of the bulletins and catalogs mentioned in this column may be had by addressing a request to the Advertising Manager, Western Construction News, 503 Market St., San Francisco, Calif.

Master Builders Co., Cleveland, Ohio—Booklet entitled "Pozzolith," tells the story of the development of cement dispersion, a newly developed method of gaining the full value of the cement in concrete. The method is described as giving a 50% increase in durability, higher early strength, increased water-tightness, reduced bleeding and segregation, and reduced heat with minimum cement content. Many illustrations of pozzolith installations and comparative qualities are given, and a table of large installations is shown.

General Electric Co., Schenectady, N. Y.—Bulletin GED-1017 discusses how to get the most service out of old and new motors, equipping old machines with new motors, and similar helpful information. Selection of motors, full load currents of motors, use of the hook-on voltmeter, and operating data are included subjects in the handy reference booklet.

Baker Manufacturing Co., Springfield, Ill.—A 24-page booklet entitled "Unsung Heroes of War," depicts bulldozers, scrapers, discs, snowplows, and other heavy equipment at work on the construction projects that must be completed before real fighting can begin. An interesting com-

ment on "The Miracle of War Construction" and a short history of the bulldozer and similar equipment is also given.

American Manganese Steel Divn. of American Brake Shoe & Foundry Co., Chicago Heights, Ill.—Bulletin 742W is a leaflet on welding rods and electrodes for salvaging dies and tools and producing composite dies. Methods of attaining different hardnesses are told, and suggestions for applying, pre-heating, and grinding weld deposits are given.

General Electric Co., Schenectady, N. Y. —Bulletin GEA-2704B on subject of arc-welding accessories profusely illustrates complete GE line designed to make arc-welding safer and easier. Goggles, shields, protective clothing, clamps, connectors, chippers, gages, and electrode holders are among the items listed. A price list and order blanks accompany the bulletin.

American Pulley Co., Philadelphia, Pa.—Catalog R-42 is a revised descriptive catalog of speed reduction units and reduction drives for all types of machinery in six sizes from ½ to 25 hp. Selection tables and guides are given, as are illustrations of numerous applications of reduction drives.

Cummins Engine Co., Columbus, Ind. —Revised copies of Form 5179, automotive catalog, and Model H operators' manual supersede earlier issues. The latter is a 104-page manual detailing operation and main-

(Continued on page 67, col. 3)

★

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, of Western Construction News, published monthly at San Francisco, California, for October 1, 1941.

State of California, County of San Francisco, ss.: Before me, a Notary Public in and for the state and county aforesaid, personally appeared Donald F. Forster who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Western Construction News and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Arthur F. King, 503 Market Street, San Francisco, Calif.

Editor—Dudley F. Stevens, 503 Market Street, San Francisco, Calif.

Managing Editor—Dudley F. Stevens, 503 Market Street, San Francisco, Calif.

Business Manager—Donald F. Forster, 503 Market Street, San Francisco, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

KING PUBLICATIONS, 503 MARKET STREET, SAN FRANCISCO, CALIFORNIA; Arthur F. King, 503 Market Street, San Francisco, California, Louise B. King, 503 Market Street, San Francisco, California.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is: (This information is required from daily publications only.)

Donald F. Forster, Business Manager.

Sworn to and subscribed before me this 18th day of September, 1942.

(SEAL) ELEANOR J. SMITH,

Notary Public in and for the City and County of San Francisco, State of California.

(My commission expires December 31, 1942.)

★

OPPORTUNITY SECTION . . .

This widely-read column can help you to sell your used machinery and other used equipment. For rates, write to the Opportunity Section, Western Construction News, 503 Market Street, San Francisco, Calif.

Used Surplus Equipment For Sale

DRAGLINE BUCKETS
1—3 c. y. Esco Heavy duty
1—3½ c. y. Page Automatic
1—1½ c. y. Page Class "S"

AIR TOOLS
2—Ingersoll-Rand rotary shimmy spades #315
1—Munsell concrete air vibrator
1—Ingersoll-Rand size 75 Pnu. digger
1—Ingersoll-Rand size 6A Rivet hammer
1—Gardner-Denver Model 415 Spader
1—C. P. Power Vane size 326 R 400

PUMP
1—Sterling Model S. J. V. P. High pressure jetting pump, mounted on steel skids and powered by Ford V8 motor

GENERATOR
1—14 K W Crocker & Wheeler with switch board and Instruments

SHEEPSFOOT ROLLER
1—Double drum

BARNARD-CURTISS COMPANY
CODY, WYOMING

WANTED

NEW OR USED HIGH LIFT CATERPILLAR SHOVEL

INTERSTATE BRICK COMPANY
3100 South 11 East, Salt Lake City, Utah
P. O. Box 144, Sugar Station

WANTED

NEW OR USED GAS OR ELECTRIC INDUSTRIAL AUTOMATIC LIFT TRUCK
The truck we are now using is manufactured by the Automatic Transportation Company, 2933 Main Street, Buffalo, New York.

INTERSTATE BRICK COMPANY
3100 South 11 East, Salt Lake City, Utah
P. O. Box 144, Sugar Station

LITERATURE . . .

(Continued from page 66)

tenance of Cummins diesel engines, having complete specifications of the engines and their accessories. Also illustrated are maintenance and repair operations, detailing methods of disassembling and reassembling. Where accessories such as fuel pumps, distributors, and superchargers are of several different types, each is illustrated and explained.

Ingersoll-Rand Co., New York, N. Y.—Form 2724-C is a pocket-size booklet of 42 pages on the subject of equipment for quarries and contractors. It contains 72 illustrations and numerous data on rock drills, detachable bits, hose lines, hoists, pumps, and compressors, together with hints on saving time and labor.

FOR RENT
WELDING MACHINE

300 AMP. LINCOLN ON TRUCK
3 MONTHS OR LONGER
L. C. GRAVES
Camp 2, Big Bend, Shasta County, Calif.

PUMPS

Two—United Iron Works Size 8 MSD—4 Stage 3000 Gpm—700 Ft. Head 10" Suction 8" Discharge—700 H.P. G.E. Motors—2300 Volt—3 Phase—60 Cycle—145 Amps.

Many Other Pumps Various Sizes and Capacities
IMMEDIATELY AVAILABLE

PLEASANTVILLE CONSTRUCTORS, INC.
CHELSEA **NEW YORK**

FOR SALE

90 TON STANDARD GAUGE SHAY LOCOMOTIVE
Steam-Driven . . . Oil Burning

Specifications:

Lima Shop No. 2655
Length Overall—56' 3½"
3 Cylinders 14½" Diam. x 15" Stroke—12 Drivers 36" Diam.
Rigid Wheelbase—44' 1"
Water Tank—3500 Gals.
Rated Tractive Effort—40,000 Lbs.

PRICE $3500.00

PACIFIC CONSTRUCTORS, INC.
SHASTA DAM, CALIF.
Phone Redding 512

TWO SHOTS OF A KIND
Aimed at the Same Foe!

Fast, accurate, high-powered weapons are vital necessities in winning this many-front war. GRACO Convoy Lubers are serving the field lubrication needs of our armed forces. Large war project contractors are using them all over the world, to speed up their on-the-job lubrication and at the same time protect their invaluable equipment against early wear-out.

Heavy duty pumps, dispense chassis, track, and gear lubricants at high speed through 30 foot hoses. Large irreplaceable tires are also quickly serviced through a convenient air line. Field servicing of construction machinery can be speeded up, with less men.

A letter or wire will bring a GRACO factory representative or a nearby distributor. Ask for bulletin #122.

GRACO

GRAY COMPANY, INC.
Minneapolis Minnesota

WESTERN DISTRIBUTORS OF GRACO EQUIPMENT

Boise, Olson Mfg. Co., 23rd and Fairview Sts.; **Los Angeles**, Huddleston Equipment Co., 1148 S. Los Angeles St.; **Phoenix**, Motor Supply Company, 315 N. Central Ave.; **Portland**, Industrial Equipment Co., 403 N.W. 9th Ave.; **San Diego**, L. C. Harrington Equipment Co., 3852 6th Ave.; **San Francisco**, Graco Sales & Service, 141 11th St., **Seattle**, Ellis Putnam, 5625 Admiral Way, L. A. Snow Co., 1228 Airport Way, Equipment Sales & Service, 2010 Westlake Ave.; **Spokane**, Equipment Sales & Service, 1222 First Ave.

INDEX TO ADVERTISERS IN THIS ISSUE