

# WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED

WESTERN HIGHWAYS BUILDER

PUBLISHED MONTHLY  
VOLUME XVII, No. 8

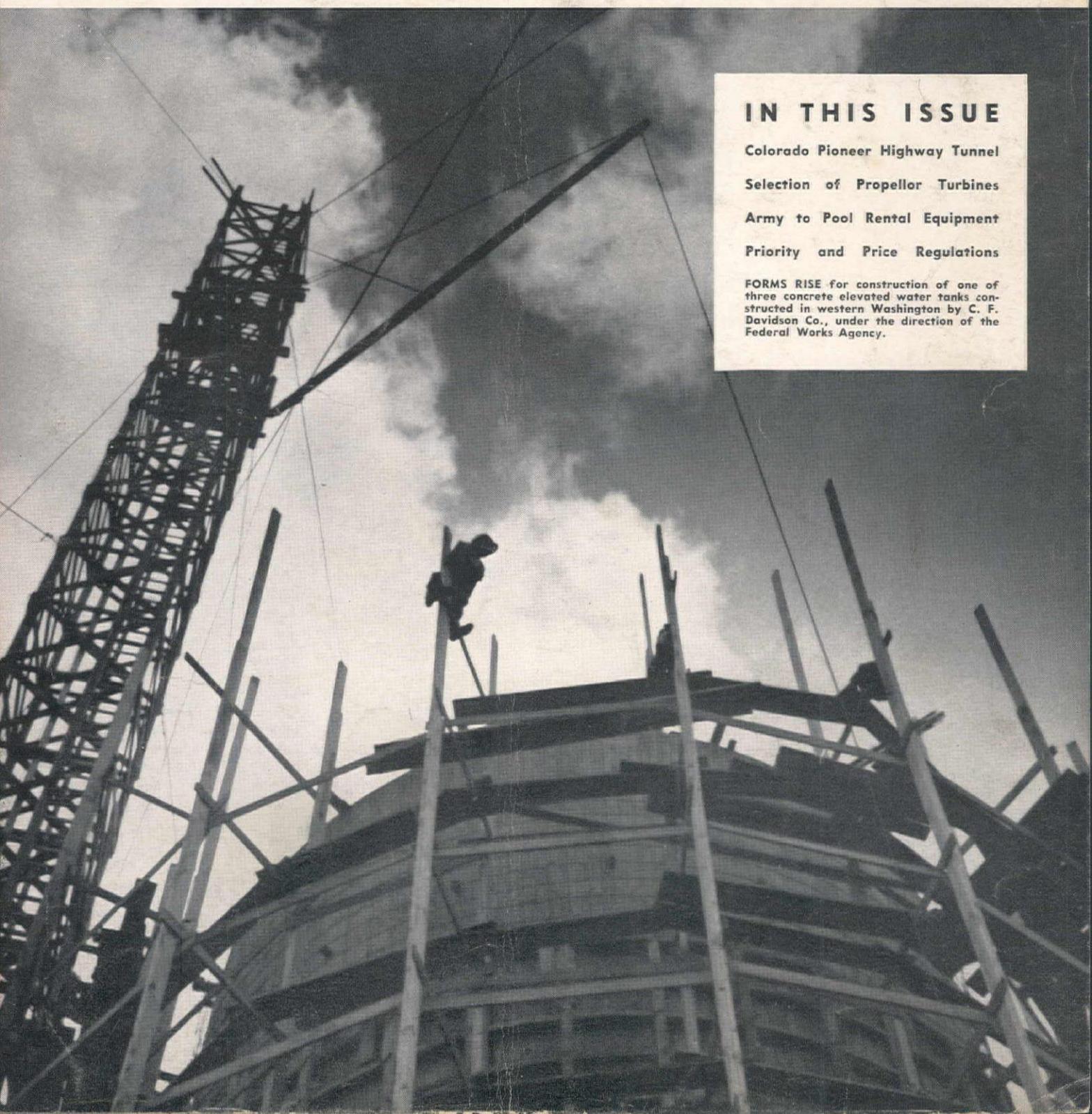
AUGUST • 1942

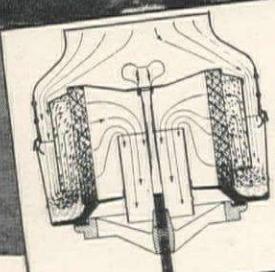
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\$3.00 PER YEAR

## IN THIS ISSUE

- Colorado Pioneer Highway Tunnel
- Selection of Propeller Turbines
- Army to Pool Rental Equipment
- Priority and Price Regulations

FORMS RISE for construction of one of three concrete elevated water tanks constructed in western Washington by C. F. Davidson Co., under the direction of the Federal Works Agency.





**CLEAN AIR**  
is vital to efficient valve action. Clean your air filters regularly . . . and often with a non-inflammable cleaning solution.



**CLEAN OIL**  
is equally important. Drain crankcases and refill to correct level at intervals directed by compressor manufacturer. Clean oil screens and crankcase breathers at drain periods.

FROM THE LARGEST stationary units to the smallest portables, thousands of compressors are operating with carbon-free valves, lubricated with *Texaco Alcaid, Algol or Ursa Oils*.

**Y**OU can keep your air compressors operating continuously at full rated capacity . . . with valves opening wide and shutting pressure-tight . . . when you use *Texaco Alcaid, Algol or Ursa Oils*.

These Texaco oils are highly resistant to gum, sludge and carbon formation. Their use assures free rings, active valves, open ports, and clean air lines.

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 also be yours. A Texaco Lubrication Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distributing points in the 48 States, or write to the home office of The Texas Company, 135 East 42nd Street, New York,

N. Y.

Care for your Car  
...for your Country



**TEXACO Lubricants and Fuels**  
**FOR ALL CONTRACTORS' EQUIPMENT**

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY



Tune in the **TEXACO STAR THEATRE**  
every Sunday night—CBS

#### THEY PREFER TEXACO

★ 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.

★ 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.

# ROCK! from Coast to Coast!



ROCK digging—that's the real test of shovel performance—and if you have a *real* Rock Shovel you don't have to worry about output in *any* digging!

The fact that no welded shovel boom of Northwest design and construction has ever failed, combined with the Northwest Dual Independent Crowd that utilizes force other shovels waste, means dependability and output—and you can't have too much dependability—or output today. Getting the job done is what counts. Plan for a proved rock shovel—a *Northwest Rock Shovel*.

NORTHWEST ENGINEERING CO.  
1736 Steger Building  
28 E. Jackson Boulevard  
Chicago

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

# NORTHWEST

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

# MAKE YOUR "EUCS" Last Longer!



● Owners of Rear-Dump and Bottom-Dump EUCLIDS are well aware of the long life and ability of Euclids to take the toughest jobs in stride, but in times like these it is mighty important to make them last even longer. Because of necessary production limitations and the increased demand for Euclids, it is necessary for you who own Euclids to help extend their normal long life and dependable performance.

One of the best ways to keep your "EUCS" at peak production longer is to have them serviced and inspected regularly. Proper maintenance and lubrication reduce time off the job, cut down repair costs, and help to prolong the useful life of each unit. An hour or two of preventative maintenance regularly can well result in hundreds of extra hours of efficient operation and the elimination of costly lay-ups.

Your nearest Euclid Distributor is ready and wants to help you make your "EUCS" last longer by supplying parts and service promptly, either from his own stock or direct from the factory.



THE EUCLID ROAD MACHINERY CO.  
CLEVELAND, OHIO

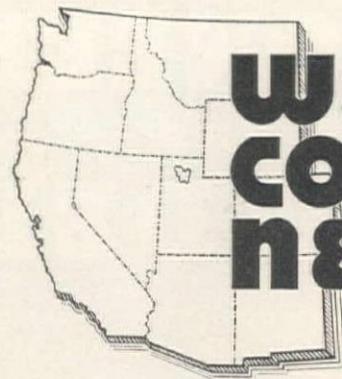
# EUCLID

SELF-POWERED  
HAULING EQUIPMENT  
For EARTH..ROCK..COAL..ORE

CRAWLER WAGONS • ROTARY SCRAPERS • TAMPING ROLLERS



CONTRACTORS' EQUIPMENT & SUPPLY CO., Albuquerque; INTERMOUNTAIN EQUIPMENT COMPANY, Boise; HALL-PERRY MACHINERY COMPANY, Butte; F. W. McCOY COMPANY, Denver; LOGGERS AND CONTRACTORS' MACHINERY CO., Portland; A. H. COX & CO., Seattle



# WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED  
WESTERN HIGHWAYS BUILDER

*The National Magazine of the Construction West*



## Contents for August, 1942

Editorial Comment . . . . .	343
Colorado Pioneers Highway Tunnel . . . . .	345
Army Forms Equipment Rental Pool . . . . .	348
Preliminary Selection of Propellor Type Turbines . .	350
By A. E. NIEDERHOFF and F. L. B. MILLER	
Review of Recent Priority and Price Regulations . .	353
How It Was Done . . . . .	357
News of Western Construction . . . . .	360
Unit Bid Summary . . . . .	376
Construction Contracts Awarded During July . . . .	46
New Equipment and News of Men Who Sell It . . . .	68

D. F. STEVENS, Editor

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# PIONEER and LEADER

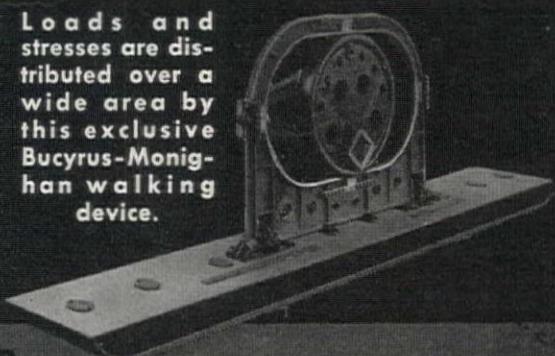
THE first Walking Dragline, a Monighan, was shipped in 1913. During the succeeding 29 years, hundreds of these machines have proved themselves along the muddy banks of the Mississippi, in the sands of the All-American Canal, the rocky terrain of the Pennsylvania Anthracite Region, the remote mines of Alaska, South America, Nigeria, and the Far East. Today, with all-out war putting a tremendous premium on speed and dependability, Bucyrus-Monighan field-proved performance is especially vital.

Originator of the Walking Dragline, Bucyrus-Monighan today offers you a machine which is the result of consistently progressive design based on an unbroken experience dating from the beginnings of draglines. The essential simplicity and strength that stand behind the big output of today's Bucyrus-Monighans can only be the heritage of a long and successful history.

Bucyrus-Erie offers you a complete line of walking draglines, with buckets up to 20 yards in capacity and booms up to 250 feet in length. Whatever your size requirements, you can get a field-proved machine from Bucyrus-Erie.

## SIMPLE • STRONG • PROVEN

Loads and stresses are distributed over a wide area by this exclusive Bucyrus-Monighan walking device.



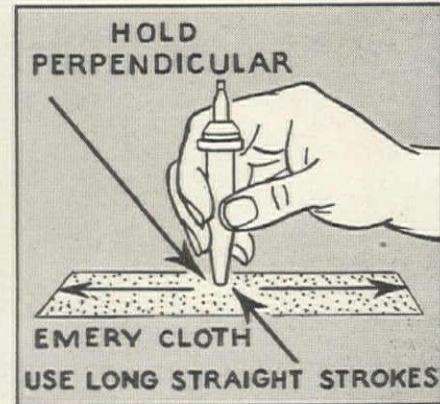
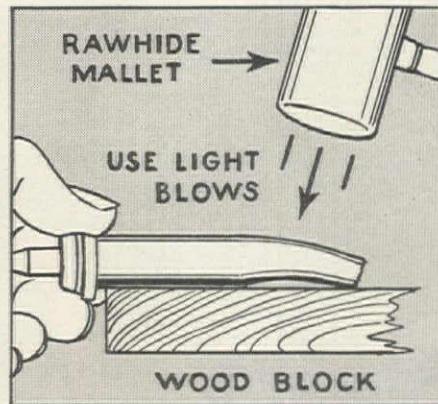
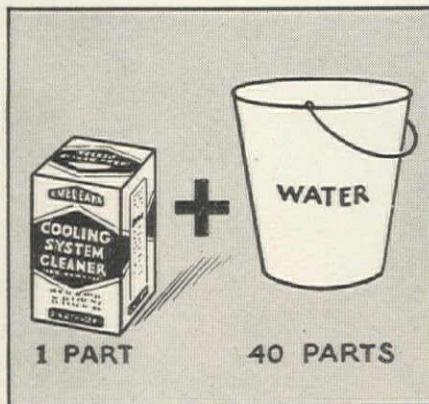
**BUCYRUS  
MONIGHAN**

SOUTH MILWAUKEE, WISCONSIN

SOLD BY

# Bucyrus • Erie Co.

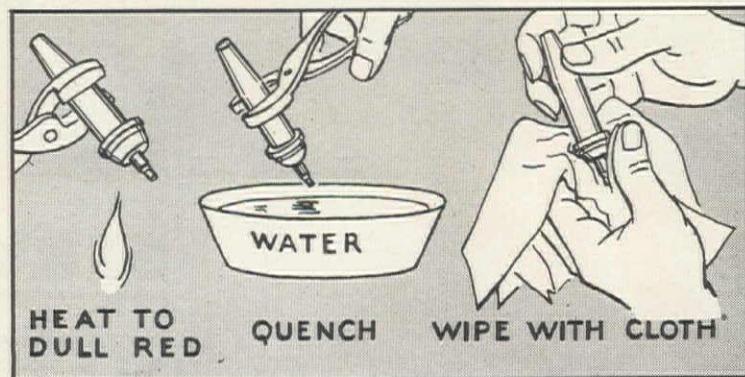
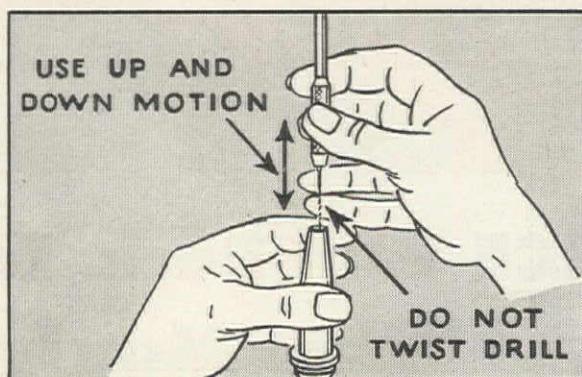
# How to Recondition Oxy-Acetylene Hand-Cutting Nozzles



1. *Immerse the nozzle overnight* in a solution of 1 part "Eveready" automobile cooling system cleaning compound and 40 parts of water. Do not use the conditioner packed with the compound.

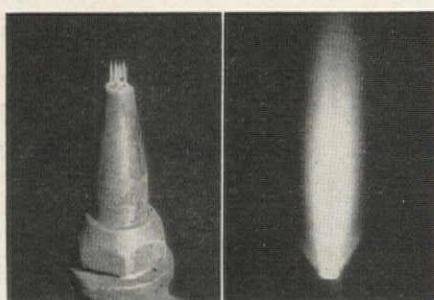
2. *If the nozzle is bent*, it usually can be straightened satisfactorily. To do this, place it on a wood block and straighten it by repeated light blows of a rawhide mallet. Do not use heavy blows.

3. *Square Up the flame end* of the nozzle by rubbing it on Aloxite or emery cloth. Orifices must be round with sharp edges and no burrs. As much as  $\frac{1}{4}$  in. can be removed from the nozzle end.



4. *To clear gas passages*, select the correct size drill—as specified in the blowpipe instruction book—and proceed as illustrated. Work the drill up and down carefully—do not twist it. If the drill does not enter the orifice easily, do not force it—start with smaller sizes. The last inch of the gas passages must be clean, to size, and not bell-mouthed.

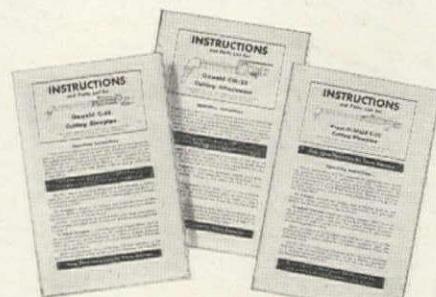
5. *To clean the nozzle seats*, heat up the seat end below the nozzle nut ring to a dull red heat—then quench in water. This loosens the scale so that it can be wiped off with a damp cloth. The heating softens the nozzle seats somewhat so that when connected to the blowpipe, they are burnished and dressed by the harder seating surfaces in the blowpipe head. If there are dents or nicks which are not eliminated by this procedure, the nozzle should be discarded.



6. *Test the flames*. Preheat flames should be uniform and the cutting oxygen jet symmetrical. Short preheat flames indicate restrictions in the gas passages. If the flames snap out when the valves are closed, the orifices are bell-mouthed.

## Send for Instructions

If duplicate copies of the instruction booklets furnished with your Oxfeld, Purox, or Prest-O-Weld apparatus will be helpful to you, we will send whatever copies you require. Be sure to specify the type of equipment you have. You may also obtain any required quantity of reprints of this advertisement.



## THE LINDE AIR PRODUCTS COMPANY

*Unit of Union Carbide and Carbon Corporation*

30 East 42nd St., New York, N. Y.  Offices in Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto



**LINDE OXYGEN . . . PREST-O-LITE ACETYLENE . . . UNION CARBIDE  
OXFELD, PUROX, PREST-O-WELD APPARATUS . . . OXFELD SUPPLIES**

The words "Linde," "Prest-O-Lite," "Union," "Oxfeld," "Purox," and "Prest-O-Weld" are trade-marks of Units of Union Carbide and Carbon Corporation.



# Slam it hard mister-

**SERVICE Will Back You**  
**... Come What May!**



Keep it well serviced and  
it will keep on serving you well

**CARE, OPERATION, ADJUSTMENT**  
Fuel, Oil—Store in clean, cov-  
ered containers.  
Air, Fuel Cleaners—Clean them  
regularly.  
Tracks—Adjust slack and ten-  
sion for best work.  
Nuts, Bolts—Go over them fre-  
quently; keep them tightened.

#### MAINTENANCE

Unit Replacement—Saves time.  
Sleeves, Pistons—Replace  
when needed—quickly, easily.  
Crankshaft Bearings—Replace  
when needed; no fitting or  
reaming necessary.  
Transmission—Inspect and ad-  
just regularly.  
Transmission Bearings—Re-  
place when wear occurs (this

THESE are days of *pressure* for men and machines. There's important work to do and it must be done fast! When the hours are long and the job is tough, the built-in quality of your equipment is bound to show up. Under such conditions International TracTracTor owners are getting daily proof of the fact that these big Diesel crawlers can take punishment and keep coming back for more. The man behind the controls of a TracTracTor knows he can count on his machine no matter what the job—if SERVICE, too, is on the job!

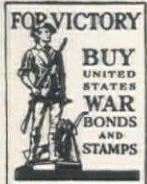
**It is SERVICE that is of paramount importance today!**

Up-to-date service departments, precision replacement parts, and skilled mechanics enable the International Industrial Power dealer—from coast to coast—to give you the kind of attention you need for best efficiency from your TracTracTor, Wheel Tractor, or Power Unit. Keep in touch with your International dealer. His shop is your "home base" for the best service you can possibly give to your equipment.

**INTERNATIONAL HARVESTER COMPANY**

180 North Michigan Avenue

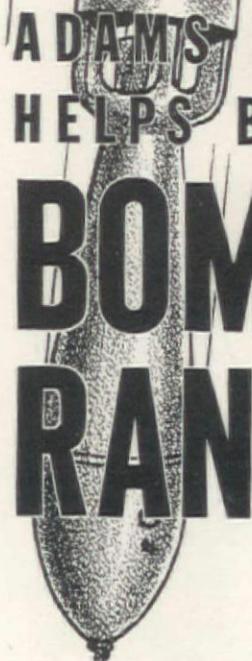
Chicago, Illinois



International Industrial Power Dealers: SMITH BOOTH USHER CO., Los Angeles; BUTTE TRACTOR & EQUIPMENT CO., Sacramento; VALLEY EQUIPMENT CO., San Francisco; O. S. STAPLEY CO., Phoenix; HOWARD-COOPER CORP., Portland, Seattle, Spokane; INTERMOUNTAIN EQUIPMENT CO., Boise; J. D. ADAMS CO., Billings; THE LANG CO., Salt Lake City; HARRY CORNELIUS CO., Albuquerque; CLARK COUNTY WHOLESALE MERCANTILE, INC., Las Vegas; H. W. MOORE EQUIPMENT CO., Denver; ALLIED EQUIP-  
MENT, INC., Reno; WILSON EQUIPMENT & SUPPLY CO., Cheyenne.

International Harvester Branches at San Francisco, Los Angeles, Portland, Seattle, Spokane, Salt Lake City, Cheyenne.

# INTERNATIONAL Industrial Power



# ADAMS EQUIPMENT HELPS BUILD BOMBING RANGES...



Army Air Corps fighter planes in advance of bombing squadrons locate an "enemy" camouflaged anti-aircraft battery during battle practice on a western bombing range.



The accuracy of American bombardiers and pilots in smashing axis targets is the result of intensive and painstaking training... To provide adequate instruction and practice facilities for bomber crews the Army Air Corps maintains tremendous acreages in isolated areas for use as bombing ranges... In the construction of these ranges Adams equipment plays an important part—motor graders do rough and fine grading on runways of adjoining airfields and build haul-roads to and through the ranges—maintainers keep roads smooth to allow high-speed operation of motorized equipment... The dependability and versatility of Adams machines is helping to speed the construction of urgently needed ground installations for allied flyers throughout the world!

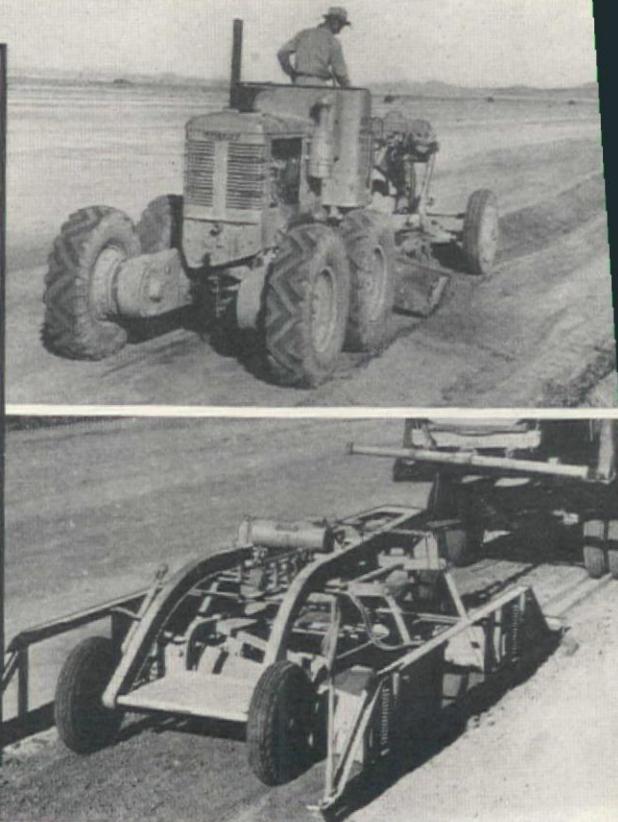
**J. D. ADAMS COMPANY**

SAN FRANCISCO • LOS ANGELES • BILLINGS

Adams heavy-duty motor grader shaping and grading runways in preparation for laying concrete on airfield adjoining new bombing range pictured above.



Adams Maintainer No. 8 pulled by water wagon keeps gravel haul-roads smooth and trouble-free for high-speed motor transport to and through the range.



**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.; McELVY MACHINERY COMPANY, Denver, Colo.; MCCHESNEY-RAND EQUIPMENT CO., Albuquerque, New Mexico; INTERMOUNTAIN EQUIPMENT CO., Boise, Idaho; 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

# 4 STAR PERFORMANCE



## IN THE FIELD OF EARTH MOVING OPERATIONS

Actual performance on the field of operations is the one thing that counts with armies as well as with heavy duty earthmoving equipment. Speed, stamina, maneuverability and efficiency are basic requirements for the successful completion of every project or battle. In your battle against time on earthmoving projects you can rely on Wooldridge Scrapers and equipment to handle more than their share of the load. Faster loading and dumping of larger heaping loads...short turning radius...less cable wear...less down-time for repair...all add up to peak 4 star performance in Wooldridge scrapers. When you figure on moving loads of dirt, figure on using Wooldridge Scrapers.

★ **SPEED**...Faster loading and dumping, larger heaping loads.

★ **STAMINA**...Less wear, less down time for repair.

★ **MANEUVERABILITY**...Short turning radius off the fill, into the cut.

★ **EFFICIENCY**...Positive digging...pivot ejection saves time, power.

# WOOLDRIDGE

MANUFACTURING COMPANY • SUNNYVALE, CALIFORNIA

SCRAPERS • POWER UNITS • BULL DOZERS • RIPPERS • TRAIL BUILDERS

CONSULT US IMMEDIATELY  
CONCERNING YOUR NEEDS

★ ★ ★

SCRAPERS NOW AVAILABLE  
Subject to prior or priority sale

# "MAN-HOURS"

## —the misleading measure of production



*It requires but one eye to see that man-hours alone are no measure of production. The thing that counts is how much that man can produce in one hour.*

**ALTER EGO:** Sure. By one method he may produce two or three times as much per hour as by another method.

*Take arc welding. This method results in far greater effectiveness. In joining steel, one welder does the work of two, three or four men using other methods. And he does a better job with 15% to 25% less steel.*

**ALTER EGO:** Then it would seem a better measure for a company's contribution to the war effort would be METHOD-HOURS.

*True as gospel. Our whole war production has been zoomed by those who grabbed arc welding as the only way to save our national neck.*

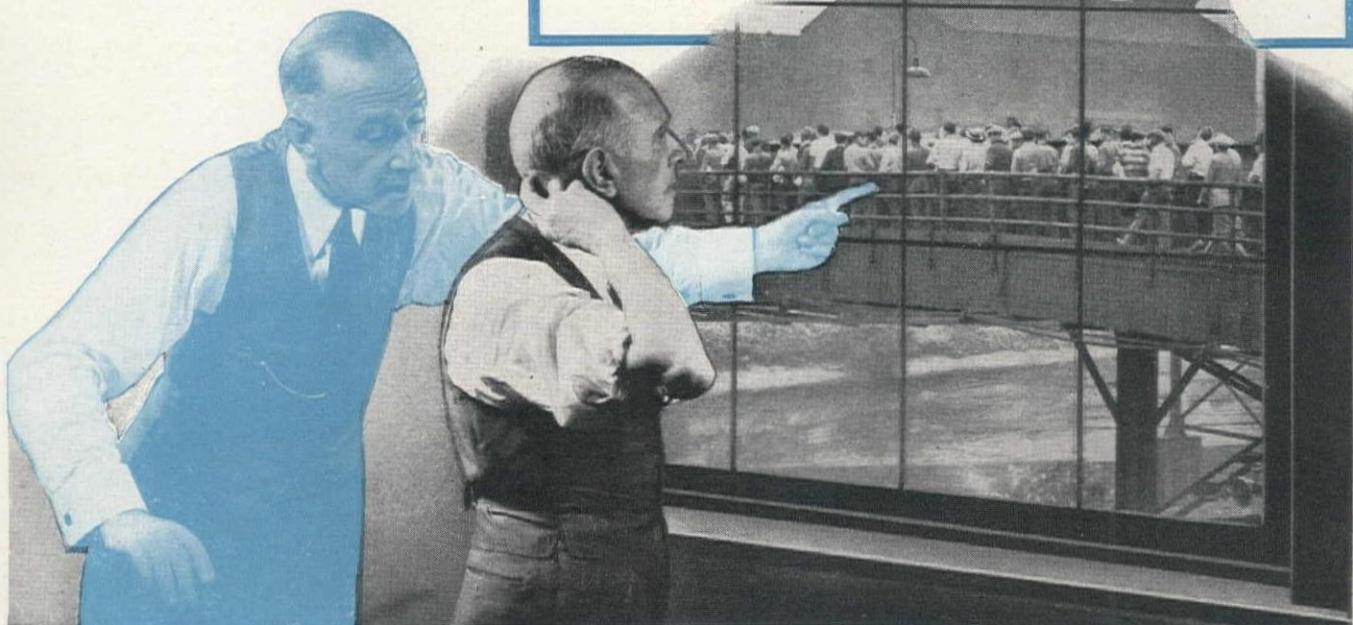
**ALTER EGO:** And later they'll be schooled in an art to save their individual necks when competitive production again seeks profitable markets.

**THE LINCOLN ELECTRIC COMPANY**  
CLEVELAND, OHIO

**ALTER EGO:** Literally, "one's other self"—the still, small voice that questions, inspires and corrects our conscious action.

*then I said to myself—*

IT'S METHOD-HOURS  
THAT COUNT!

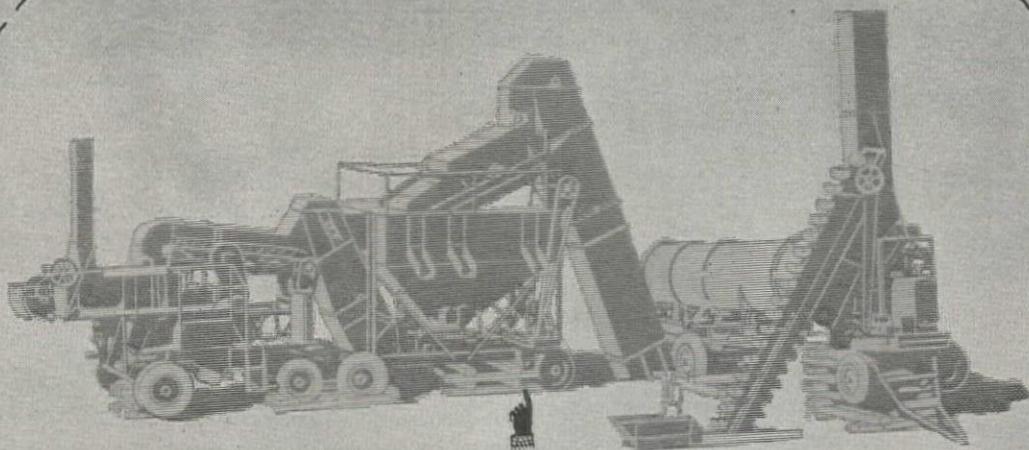




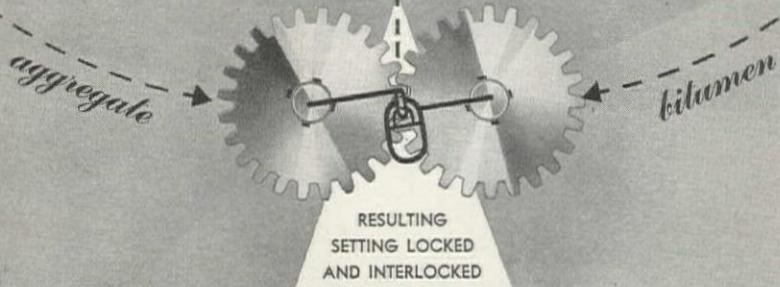
aggregate

bitumen

ACCURATE CALIBRATION BY WEIGHT



Only  
WITH A BARBER-GREENE  
*Continuous Mixer*



The simple procedure illustrated above accounts for the untiring accuracy of the Barber-Greene. The desired quantity of each size aggregate is weighed, and the feeder gates locked at this setting. The bitumen metering pump is set for the desired ratio, and mechanically interlocked with the aggregate feeder. The Barber-Greene achieves POSITIVE PROPORTIONING in bituminous mixing. Feed-

ing these accurately proportioned materials into the twin pugmill in a proportioned continuous stream, the Barber-Greene easily delivers a uniform mix, ton after ton—mile after mile. The Barber-Greene has set entirely new standards for short inexpensive moving and set-up time. Investigate this ingenious machine. Complete literature on request. Barber-Greene Company, Aurora, Illinois.

41-16



# BARBER GREENE

Brown-Bevis Equip. Co., Los Angeles, Phoenix; Columbia Equip. Co., Portland, Spokane, Seattle, Boise; Contractors Equip. & Supply Co., Albuquerque; Jenison Machinery Co., San Francisco; Lund Machinery Co., Salt Lake City; Western Construction Equip. Co., Billings; Ray Corson Machinery Co., Denver.

# THE RUBBER SHORTAGE IS MORE CRITICAL THAN YOU THINK

*Numerous industrial rubber products now irreplaceable—except on highest priority. Crisis leads many industries to adopt G.T.M. Conservation Plan for extending life of present equipment*

DURING the past few weeks thousands of plant engineers, production and maintenance experts from America's leading industries have enthusiastically approved a conservation program, to relieve the acute rubber shortage, presented at a series of nation-wide meetings held by the G.T.M.—Goodyear Technical Man.

To these key operating men the importance and necessity of an immediate, all out, rubber-conservation drive was emphasized by facts like these—

Many mechanical rubber items of wide use are no longer being made by any manufacturer.

Even goods sold on priority must now be built to wartime specifications that limit rubber content to less than standard prewar construction.

So critical is the shortage, reclaimed rubber is now on allocation. Practically all synthetic rubber is being used in military equipment.

Most serious of all, several million dollars worth of industrial rubber goods now in use will fail PREMATURELY this year through improper operation and care, judging by past experience. This will deprive plant operators of from 25% to 50% of the full performance built into these products—an irreplaceable loss to the nation.



*COMPLETE MANUAL ON THE PROPER USE AND MAINTENANCE OF INDUSTRIAL RUBBER PRODUCTS—furnished free to your designated operating men.*

#### THE G.T.M. INDUSTRIAL RUBBER CONSERVATION PLAN

The G.T.M. offers a complete, workable conservation program, based on long experience, for eliminating this unnecessary waste and insuring optimum performance from all industrial rubber products.

In factories large and small, operating men are now being taught how to prevent abuses, how to correct improper applications, how to make minor repairs that will prolong the life of industrial rubber products by means of—

“Goodyear Wages War On Waste”—the graphic educational slide film which presents, easily and clearly, recommended conservation practices.

Practical demonstrations on how to inspect, what to look for and what measures to take to correct,

how to salvage hose and belts and give them new and additional use.

“Goodyear Industrial Rubber Products Conservation” manual, the concise 40-page, profusely illustrated G.T.M. handbook with practical ideas and suggestions.

*Industry-wide adoption of this program would mean a minimum saving of many million pounds of rubber products this year—products that many plants will not be able to replace.*

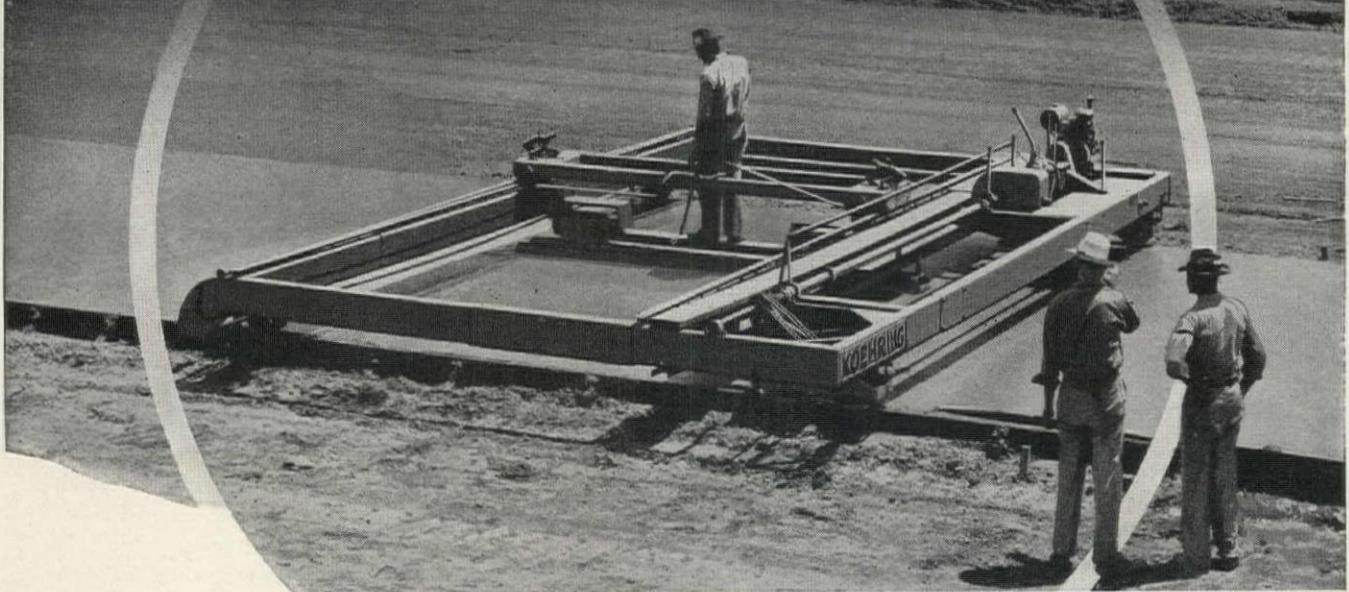
#### HOW TO GET YOUR PLANT STARTED

The G.T.M. will be glad to present the complete program—film, demonstrations and manual—to your plant group. If you will write us, we will set a definite date for the G.T.M. to hold a meeting at your plant. If not possible to hold a meeting, write for manual. The sooner you start the program, the more benefit you will derive from it. There is no charge for this service—it is part of Goodyear's cooperation in the nation's drive for victory. To arrange your meeting or get copy of manual, write Industrial Conservation Department C-14, Goodyear, Akron, Ohio.



*THE GREATEST NAME IN RUBBER*

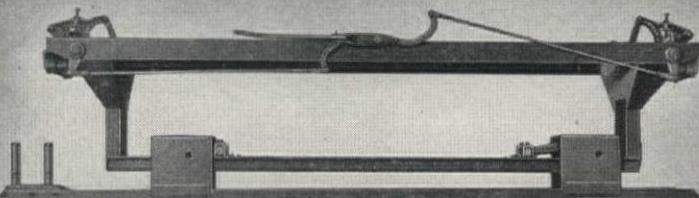
# ACCURATE SLAB FINISH CORRECTS SURFACE ERRORS.



## MECHANICAL FINISHING IS ACCURATE...

The Koehring Longitudinal Finisher finishes the slab surface in exact accordance with the crown specifications. Surface errors... excess or shortage of concrete affecting thickness of slab... are immediately detected because the Finisher screed accurately follows the crown of the slab. High spots are sheared and low spots filled. Correction of surface can be made with saving of concrete. Mechanical finishing with the Longitudinal Finisher is possible after initial set has occurred. Correct timing assures a smooth, accurate finish.

**KOEHRING COMPANY, Milwaukee, Wis.**



Carriage and screed travel along specified crown as controlled by carriage wheels on the template tracks. True contour of the slab is assured by this mechanical method. Slab thickness errors are quickly detected.



## 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

# 2-CYCLE / DIESEL

# it's Thrifty!

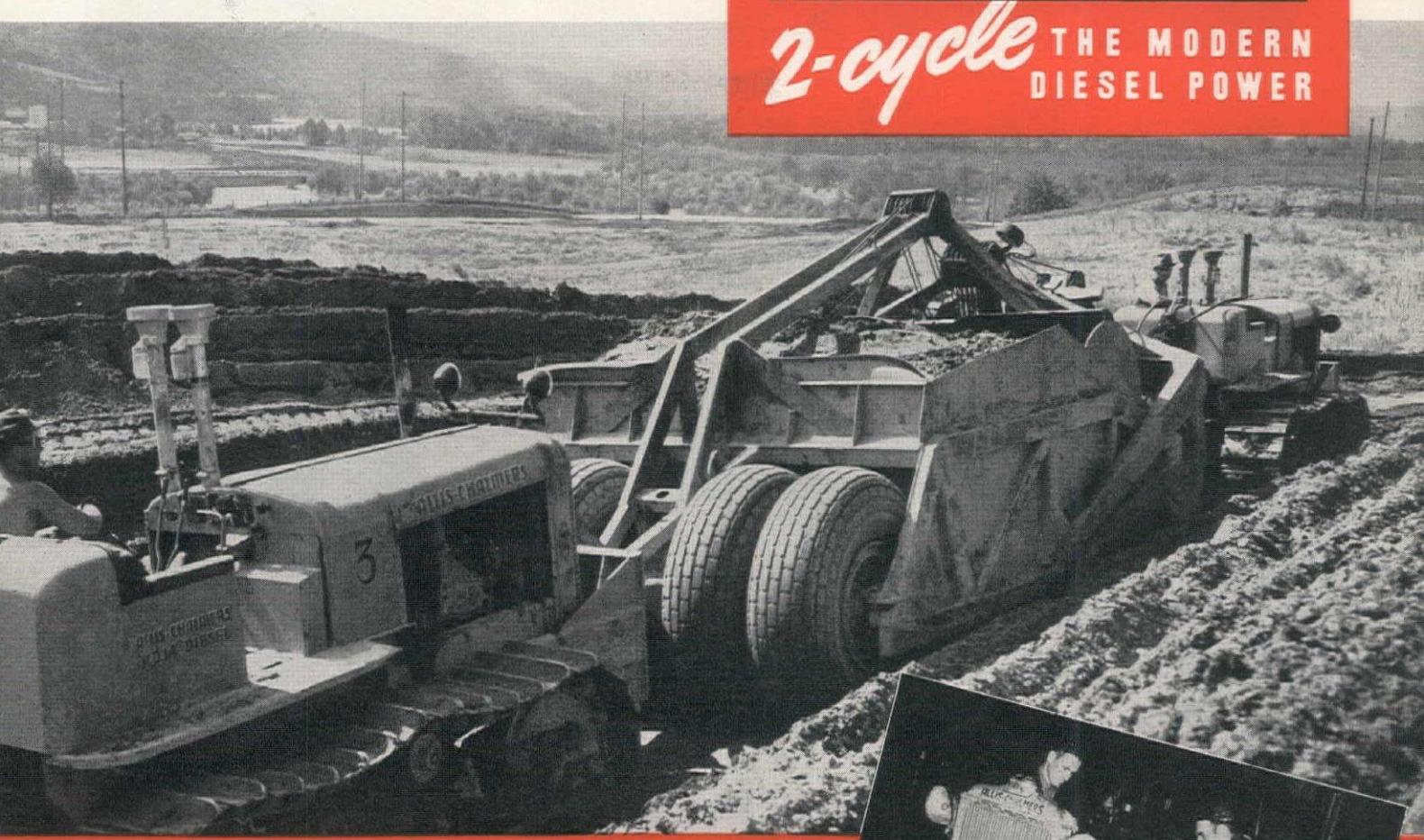
You went from gas to Diesel to save on fuel cost. Now you also get smooth operation, instant starting and low maintenance. You save in all ways with the 2-Cycle Diesel! Operating on ordinary Diesel fuels . . . this modern Diesel purrs along under full load as smoothly as your automobile. Because of the Unit Injection System, eliminating complicated fuel pumps and troublesome high pressure fuel lines, fuel is thoroughly atomized, burns completely and develops maximum power. 2-Cycle power means a more sim-

ple engine . . . fewer parts; lighter parts, because there's less vibration, less shock load, less wear and tear on engine and tractor. No need to let it idle either when there's a delay. Instant electric starting saves your fuel . . . adds extra life to your engine. No matter how you look at it—cost per yard . . . cost per mile . . . fuel cost . . . operating cost or maintenance cost . . . you save with the 2-Cycle Diesel. There's less maintenance, less down time, more working time, **MORE PROFITS!**

Today, the 2-Cycle Diesel is cutting war construction costs . . . hurrying the completion of vital contracts . . . serving on every front! Tomorrow, it will bring its thrifty advantages to every user. Get all the facts . . . Now . . . on this Diesel of the future! Write for our booklet, "Modern Tractor Power."

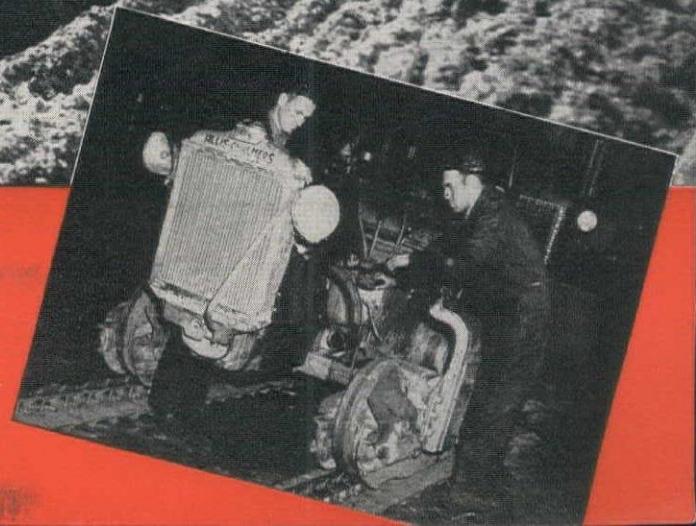
**ALLIS-CHALMERS**  
TRACTOR DIVISION - MILWAUKEE - U. S. A.

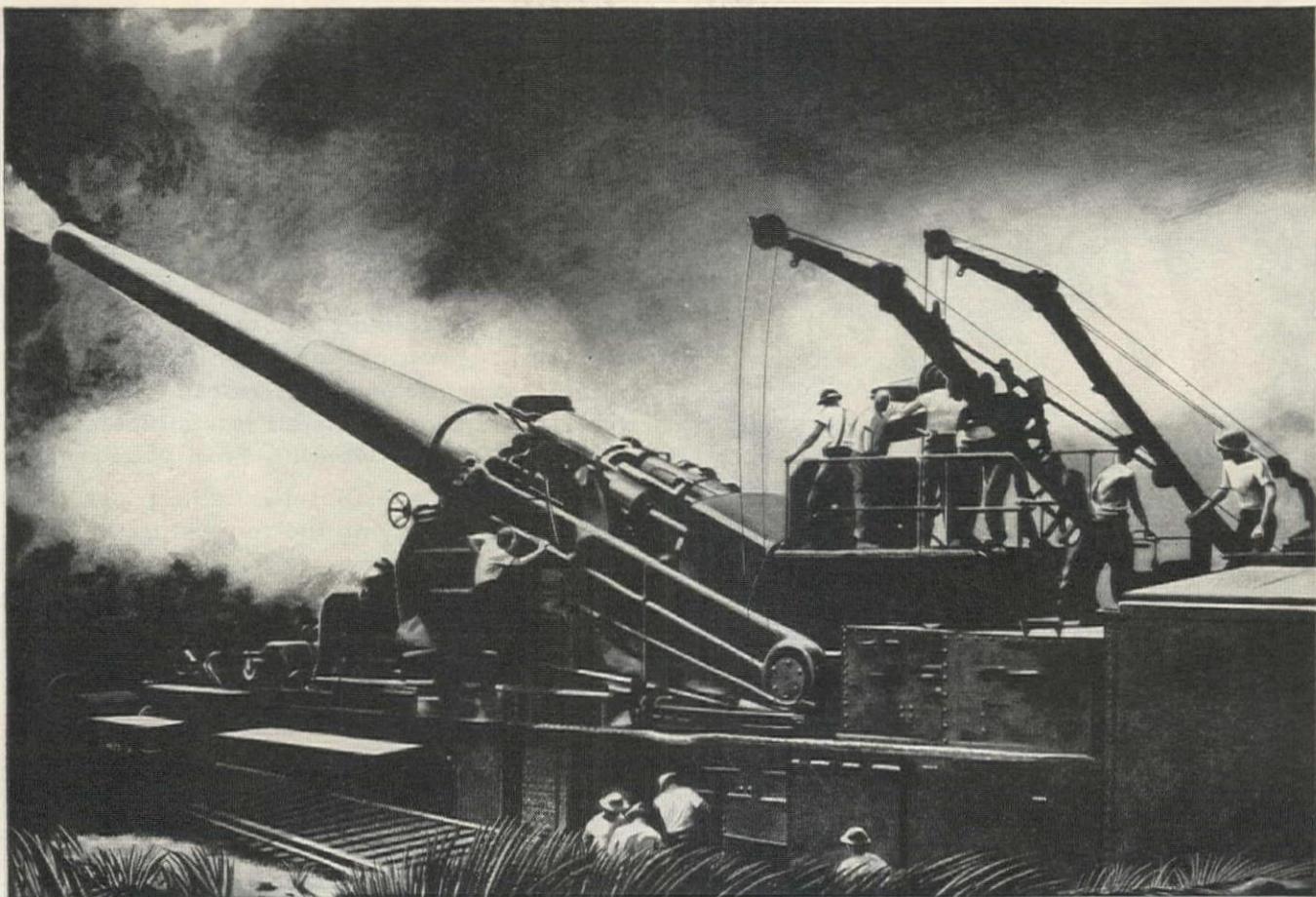
**2-cycle** THE MODERN  
DIESEL POWER



## CONSERVE YOUR TRACTORS

Take every precaution to keep your tractors in A-1 shape. If you lack priority, it may be sometime before you can get new outfits. Check the engine, tracks, rollers, pins, bushings, gears, sprockets, clutches, etc. on every unit. One worn part can cause a whole chain of trouble. Your Allis-Chalmers dealer is prepared to give you excellent service on any repair, replace or rebuild job. He may have good buys on used tractors, too! See him . . . Now!





## Feeding War Dogs

ANOTHER JOB FOR WICKWIRE ROPE

We'll be glad when it's over . . . when Wickwire rope can get back to the jobs of a world at peace.

The quickest way from here to there is for us, and for you, each day *now*, to put everything we have into winning.

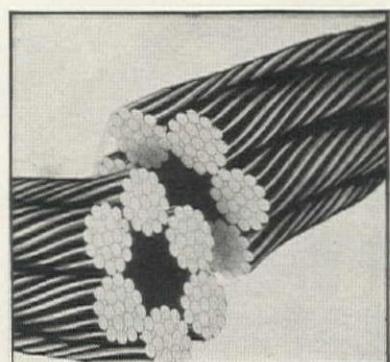
We are doing it by working day and night, seven days a week, on Wickwire Rope for our shipyards, our Liberty Fleet, the army, marine corps, coast guard and navy . . . and for industries whose production is so urgently needed.

You are contributing when you take care of your wire rope, making it last longer . . . so that there is more available for war needs.

But when you *must* have new wire rope,

for war production or for essential services, ask your distributor for long-life *Wickwire* Rope. Both Wickwire regular lay and pre-formed Wissco Lay have quality that has made them famous for *low cost per year of use*. We put that into Wickwire rope by controlling every step from ore pile, through blast furnaces, open hearths, precision wire drawing, and skillful laying of the rope.

A FREE BOOK, "Know Your Ropes," is waiting here for you. More than 25,000 wire rope users all over the world consider this a bible on the selection of wire rope—and *making it last longer*. Write Wickwire Spencer Steel Company, 500 Fifth Ave., New York, N. Y.



**REVERSE ROPE FOR LONGER LIFE**  
Frequently, most severe strain, due to close bending, occurs near one of the ends. Rope life is increased by exchanging the drum end with the load end. This and forty more rope life-savers are fully described in the free book, "Know Your Ropes."

SEND YOUR WIRE ROPE QUESTIONS TO WICKWIRE SPENCER

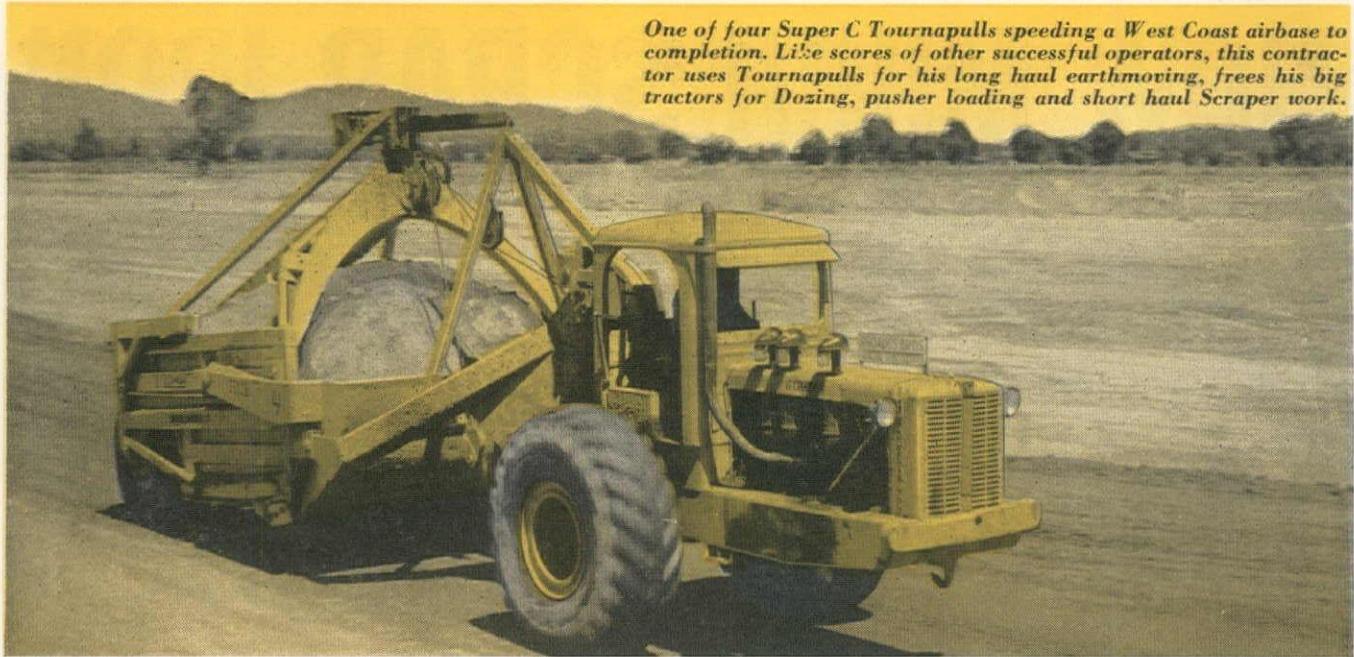


# WICKWIRE ROPE

Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City



*One of four Super C Tournapulls speeding a West Coast airbase to completion. Like scores of other successful operators, this contractor uses Tournapulls for his long haul earthmoving, frees his big tractors for Dozing, pusher loading and short haul Scraper work.*



# Tournapulls Move More Yardage at Less Cost

**Enable You to Get Your Jobs Done Quicker, Same Time Save Manpower and Steel for Victory**

We know the Axis will be no push-over. We need all the steel and manpower we can throw into battle—and quickly, too. We need war plants, airports and bases to make that steel and manpower effective. Tournapulls can help you construct the plants, airports and bases quicker; same time Tournapulls enable you to conserve manpower and steel.

## ***Fewer Units Required***

Tournapulls are quickly pusher

loaded, haul up to 14.3 m.p.h., and spread their own loads. You get tractor-scraper digging and spreading efficiency plus truck hauling speeds. You eliminate such one-purpose tools as shovels and elevating graders for loading, trucks for long hauls, and special spreading tools on the fill.

Result: you cut equipment investment almost in half, require fewer operators, move more yardage (see chart), move it faster, at less cost and with less steel.

Haul One Way	98 H.P. Model C (11 yards heaped)		150 H.P. Super C (15 yards heaped)	
	Trips	Pay Yards	Trips	Pay Yards
600	17.1	150	15.0	180
1200	14.0	119	12.0	144
1600	12.3	104	10.7	129
2000	10.9	93	9.7	116
3000	8.4	71	7.6	91
5000	5.8	50	5.4	65

These figures are based on a 60-minute hour, loading common earth on the level with a "Caterpillar" D8 pusher and hauling over good roads.

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 keep both old and new equipment operating profitably, use LeTourneau—"Caterpillar" service.*

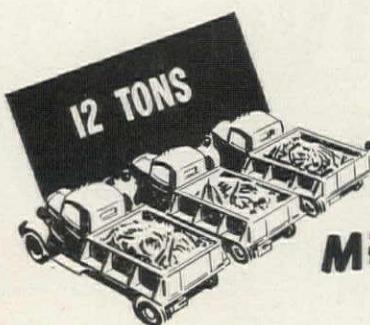


**LETOURNEAU**  
PEORIA, ILLINOIS - STOCKTON, CALIFORNIA

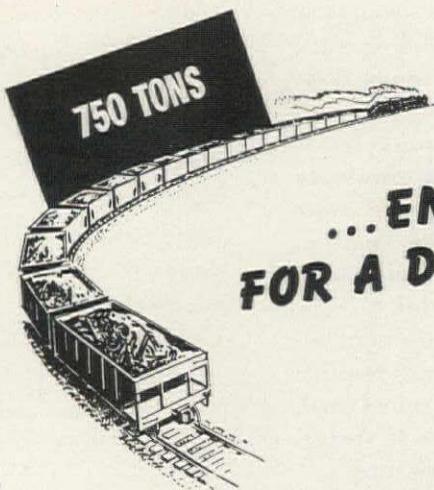
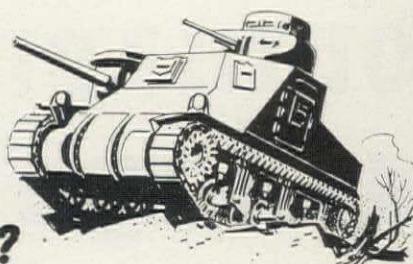
# HOW MUCH SCRAP IRON



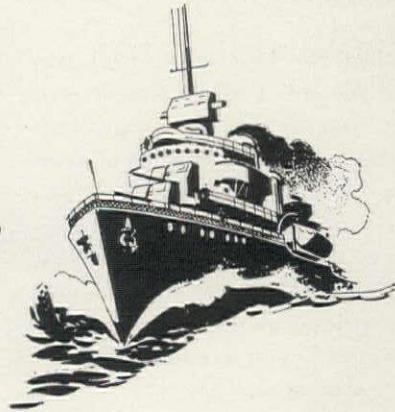
...ENOUGH  
FOR A .50-CAL.  
MACHINE GUN?



...ENOUGH  
FOR A  
MEDIUM TANK?



...ENOUGH  
FOR A DESTROYER?



**WAR PRODUCTION MUST HAVE  
140,000 TONS OF SCRAP A DAY!**

# CAN YOU MOBILIZE EVERY WEEK?

THE plain fact is—we can't win this war without plenty of steel. But if we are to have plenty, all factories, mills, shops, mines and other units of American industry must organize at once to turn in every available pound of scrap metal—and keep on turning it in regularly.

At least six million tons more scrap must be collected than last year!

## *Where is this "extra" scrap?*

Part of it may be on your premises! It is certain that a vast mountain of precious iron and steel lies idle in unsuspected hiding places throughout the country. The usual methods of collection will not release enough to meet present demands. It will take special diligence on the part of every executive in industry to put the 1942 Scrap Drive over the top. To get started with your part in this job, check these three kinds of scrap, and see if you are turning in all three:

**"BREAD-AND-BUTTER" SCRAP**—The kind most plants sell regularly — filings, shavings, stampings — metal

scrap created in the process of manufacture or construction.

**DORMANT SCRAP**—Unused or abandoned equipment, broken or worn-out machine parts, old boilers, moulds, dies, pipe, valves, electrical equipment, engines, trucks, etc.—the "junk" that accumulates but often misses routine scrap collection.

**"RAINY-DAY" SCRAP**—The hardest of all to part with. Includes obsolete machinery, unused metal buildings, stacks, outdated tools, fixtures, patterns, stocks, etc.—idle now because they're being saved for possible use in some indefinite future emergency. The emergency is here! This metal should be scrapped, unless it can be reconditioned and put to work now.

## *★ Your scrap is worth its weight in Victory! ★*

By organizing a thoroughgoing salvage program now, you'll not only serve your country, but you'll also bring additional income to your business and pave the way for more economical post-war operation through the elimination of waste.

### *SUGGESTION: Organize your own scrap drive!*

1. Put some one individual in charge of salvage in all departments of your business, and give him the authority to act.
2. Organize a forceful program, with the help of your local Industrial Salvage Committee.
3. Promote the drive to all your employees. Dramatize it with posters and incentive systems. Make every man and woman "scrap conscious."
4. Emphasize speed and continuous effort. The quicker scrap gets to steel mills, the faster tanks and ships get into action. And it must keep on coming, as long as the war lasts.
5. For help or information, contact your local W.P.B. office, or write to the Bureau of Industrial Conservation, War Production Board, Washington, D.C.

AMERICAN STEEL & WIRE COMPANY

*Cleveland, Chicago and New York*

CARNEGIE-ILLINOIS STEEL CORPORATION

*Pittsburgh and Chicago*

COLUMBIA STEEL COMPANY

*San Francisco*

NATIONAL TUBE COMPANY

*Pittsburgh*

TENNESSEE COAL, IRON & RAILROAD COMPANY

*Birmingham*



UNITED  
STATES  
STEEL

# WAR DOUBLES ITS VALUE

The War, with its drastic demand for every material, is adding further proof of the value of Cummins Customer Service Policy . . . a policy that has always given first consideration to the needs of the owner.

Parts stocks carried at major traffic centers eliminate the need for huge inventories and needless duplication . . . an economic waste at any time, a double liability in War time.

With so many nationally-known trucks using Cummins Diesels as standard equipment, this Cummins Customer Service Policy is proving a boon to the manufacturer, a signal help to the War effort, because it assures parts stocks where they are needed most . . . the maximum use of every available part.

If, at times, you are irritated at what seems an unnecessary delay in delivery, remember: The fighting forces have first call on everything—engines or parts. That's the way we both want it—isn't it? Cummins Engine Company, Columbus, Indiana.

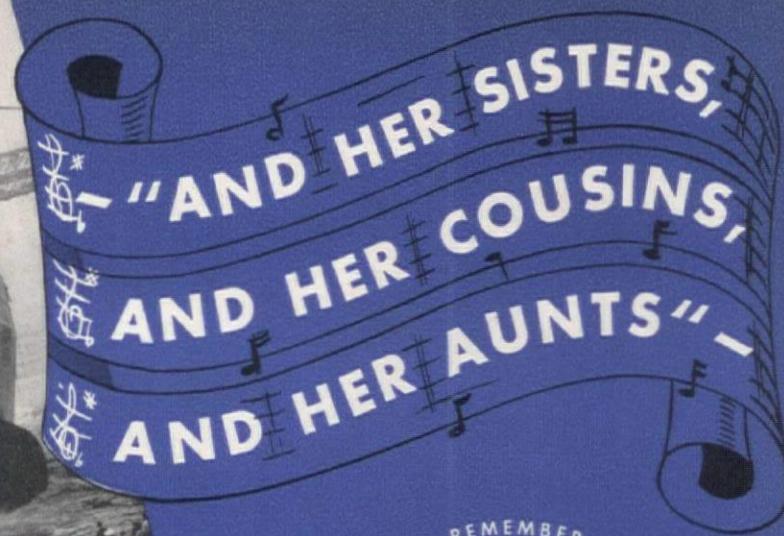
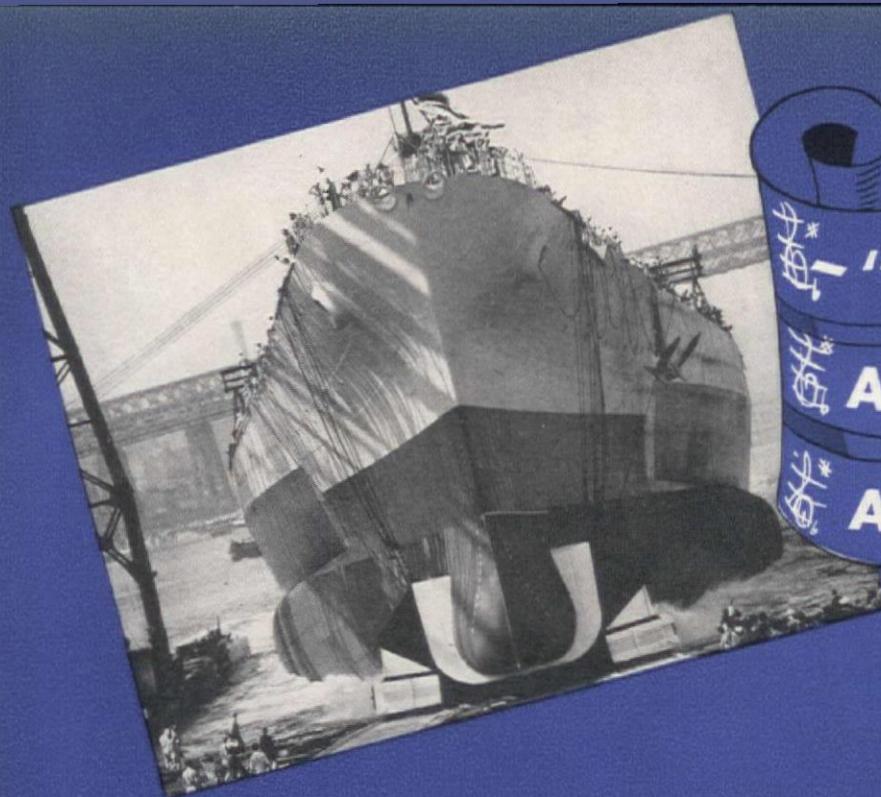


#### SALES AND SERVICE:

Fresno, Calif. . . . . Watson & Meehan  
Los Angeles, Calif. . . . Diesel Motor Sales & Serv. Corp.  
Nanaimo, B. C. . . . Cummins Diesel Sales of B. C., Ltd.  
Phoenix, Ariz. . . . . Watson & Meehan  
Portland, Ore. . . . Cummins Diesel Sales of Oregon, Inc.

Salt Lake City, Utah . . . . .  
Cummins Intermountain Diesel Sales Corporation  
San Francisco, Calif. . . . . Watson & Meehan  
Seattle, Wash. . . . Cummins Northwest Diesel Sales, Inc.  
Spokane, Wash. . . . Cummins Diesel Sales of Spokane  
Vancouver, B. C. . . . Cummins Diesel Sales of B. C., Ltd.





Yes, you can "count 'em by the dozens," these ships of every size and shape and class, being launched almost daily, to meet the needs of National Victory. But, you can also count, and by far more than dozens, too, the launching of many building projects where steel is being saved for ships, by builders and contractors who are eagerly adopting Richmond's Engineered form-tying methods, in preference to such "make-shift," "home-made", devices as wire, band or rod ties fabricated on the job. And, the quantities of steel thus saved are important. In fact, almost spectacular! For, get this—

#### RICHMOND MAKES 1 TON OF STEEL DO THE WORK OF 3 TONS

—besides which, the "Richmond Way" is the profit-making way in any sort of concrete form work. *Profit-making* because you do a better, faster, less costly job by using fewer ties; erecting and stripping forms in less time; less ruined lumber. *Again, profit-making* because our free technical and estimating service provides, for your men, working blueprints of your job sections scheduling the quantity, spacing and location of ties needed, thereby eliminating costly hours of work and

worry. *And again, profit-making* because you don't tie up your money in Tylags, Tycones, Flat Washers, Tywrenches, etc. Richmond loans you these working parts! Talk about a complete "package"! That's exactly what you get from Richmond—and only from Richmond. A complete package containing many an extra dollar of profit for you, plus a valuable recognition as aiding our National Victory. Prove all this? Yes, just ask us.

#### We Sell All Types...We Recommend Only Prefabricated Ties...They Cost Less!

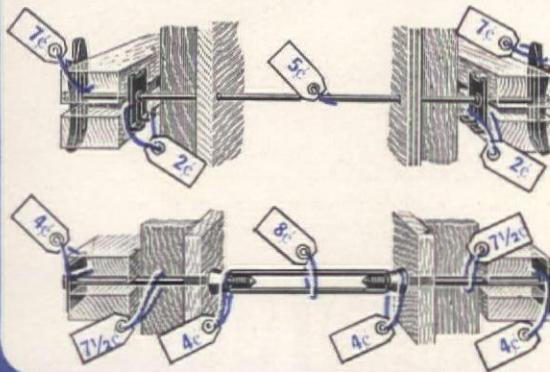
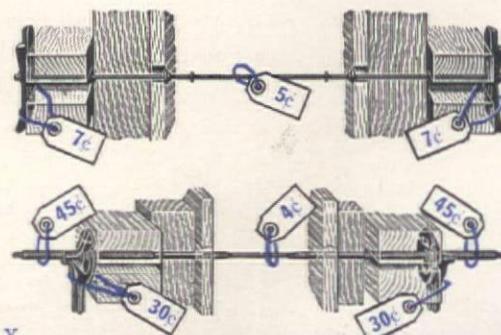


Figure it for yourself!  
HERE ARE THE PRICES\*



\*BASED ON A 12" CONCRETE WALL  
ALL PRICES F. O. B. BROOKLYN, N. Y.

# RICHMOND SCREW ANCHOR CO., INC.

816-838 LIBERTY AVENUE • BROOKLYN, N. Y.



**90% OF THE SAWING  
IN WAR CONSTRUCTION  
CAN BE MADE EASIER...QUICKER  
WITH THIS "825"  
SKILSAW!**

Save time with SKILSAW...cut openings for vents, ducts and stairs after sub-flooring is laid.



**\$119**

8 1/4 IN. BLADE  
BEVEL-CUTS 2 IN.  
ROUGH LUMBER  
AT 45°

Save time with SKILSAW...save material handling...saw faster, better and easier, in all lumber.

With Model "825" SKILSAW you can make almost every cut called for in War Construction... and make them easier, better, *faster*!

That's why Model "825" is such a favorite with War-Work Contractors everywhere.

Every feature you need today, is built right into this one lightweight, big-capacity, fast-cutting saw.

It has *extra* power for swiftest sawing in all materials... *extra* depth-of-cut in an 8 1/4 inch blade that actually bevel-cuts 2 inch rough lumber at 45°... *extra* stamina to stand up under constant, toughest use. And in Model

"825" SKILSAW you get all this for very little more than an ordinary 7 inch saw costs. If you're building for war, ask your distributor to demonstrate how much faster you can do it with Model "825" SKILSAW.



Save time with SKILSAW...trim decking after standard lengths are nailed on.



**SKILSAW, INC., CHICAGO**

2645 Santa Fe Avenue, Los Angeles • 2065 Webster Street, Oakland • Hendrie & Bolthoff Mfg. & Supply Co., Denver  
Industrial Supply Co., Salt Lake City • 2124 Main Street, Dallas • Mine & Smelter Supply Co., El Paso  
Smith Booth Usher Co., Phoenix

**SKILSAW** *PORTABLE ELECTRIC* **TOOLS**  
★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★

... - *IT'S EVERYBODY'S JOB!*



GOLDEN GATE  
and  
OLD MISSION  
PORTLAND CEMENTS

EMPIRE and  
STANDARD  
GYPSUM PLASTERS

EMPIRE GYPSUM  
BOARD and LATH

MILCOR  
STEEL PRODUCTS

EMPIRE STANDARD  
GOLDEN GATE  
OLD MISSION  
BRANDS

**PACIFIC**  
PORTLAND CEMENT COMPANY

SAN FRANCISCO • LOS ANGELES • PORTLAND • SEATTLE

BUY  
BONDS  
for VICTORY



# PROTECTING WIRE ROPE AGAINST CORROSION



This is Number 11 in a series of informative articles prepared by Macwhyte Wire Rope Company. The purpose of this series is to help wire rope users in these critical times to get the longest possible service from present ropes . . . through making useful facts on rope care more widely known.

The preceding article, No. 10 in this series, pointed out the causes of wire rope corrosion, where and when it was likely to strike. This article, No. 11, tells how to guard against corrosion. This and the previous ten articles in the series is available on request on your company letterhead.

## Lubrication...its importance

No way has yet been found to remove the "causes" of corrosion. However, there is a method of protecting wire rope against corrosive elements . . . against atmosphere, weathering, or special conditions which subject the rope to either acid or alkaline substances.

That method is . . . *thorough lubrication*.

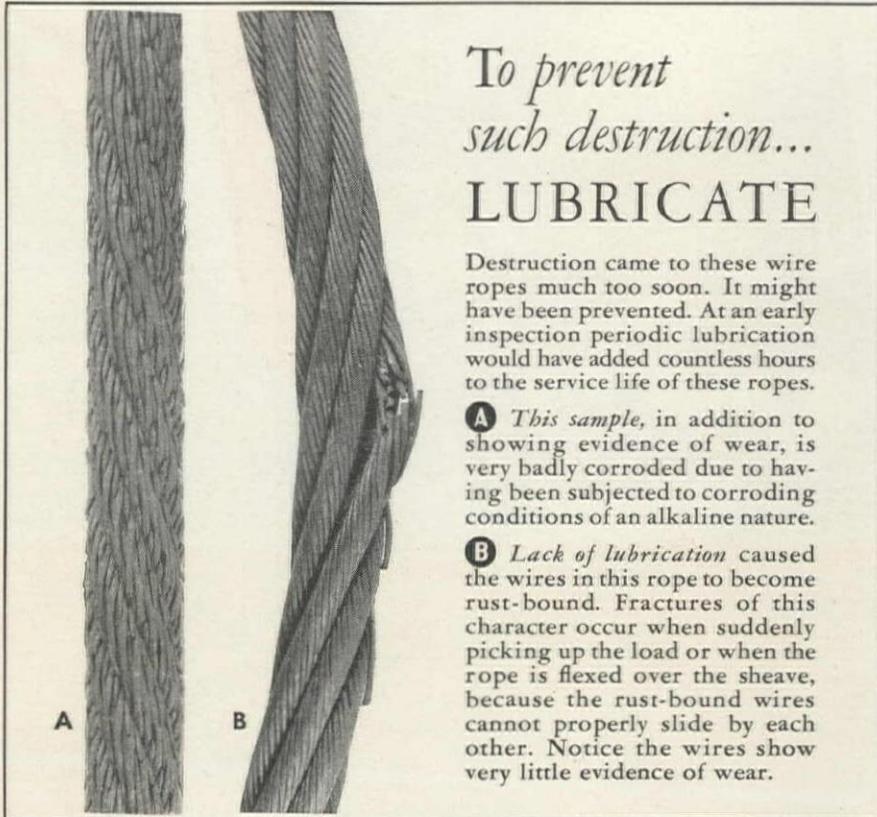
A recent and good illustration of such protective practice is found in the automotive industry. When car makers turned their plants into war production centers they ripped out massive automobile dies and machines worth millions, carted them to parking lots for the duration. When peace comes, back to work they will go.

Meanwhile these machines and dies are being protected against corrosion by a *thick coating of grease*.

Wire ropes, too, are machines. When in use (and more so when inactive) their parts need the protection good lubrication gives. Only when protected by lubrication (which retards corrosion) will they give the best possible service. Today, when we must all conserve what we have, such protection is doubly important.

Corrosion starts as soon as wires and strands are exposed to the elements and usually starts before one is aware of it.

In its early stages, corrosion is difficult to detect. The first signs are general discoloration of the wires of the rope. As corrosion progresses, the wires will become either pitted or covered with a reddish brown substance depending upon whether the corrosion is of an acid or alkaline type.



*To prevent  
such destruction...*

## LUBRICATE

Destruction came to these wire ropes much too soon. It might have been prevented. At an early inspection periodic lubrication would have added countless hours to the service life of these ropes.

**A** *This sample, in addition to showing evidence of wear, is very badly corroded due to having been subjected to corroding conditions of an alkaline nature.*

**B** *Lack of lubrication caused the wires in this rope to become rust-bound. Fractures of this character occur when suddenly picking up the load or when the rope is flexed over the sheave, because the rust-bound wires cannot properly slide by each other. Notice the wires show very little evidence of wear.*

## Curb Corrosion and Conserve Steel

Corrosion is like an incurable disease which creeps up on a person gradually. You may check the damage it is doing, but you can never repair the damage done. Eventually it leads to early death of a rope whose service life could have been so much longer . . . with ordinary care.

Today corrosion is a very real enemy, destroying vital material (steel) needed for victory. If you inspect your ropes regularly, and apply lubricants freely, frequently, you are doing your bit to defeat this wire rope saboteur and get maximum service from your wire rope.

If you have further questions on corrosion (or any wire rope problems) feel free to write us about them. Simply address Macwhyte Company, 2940 Fourteenth Avenue, Kenosha, Wisconsin. Please write on your company letterhead.

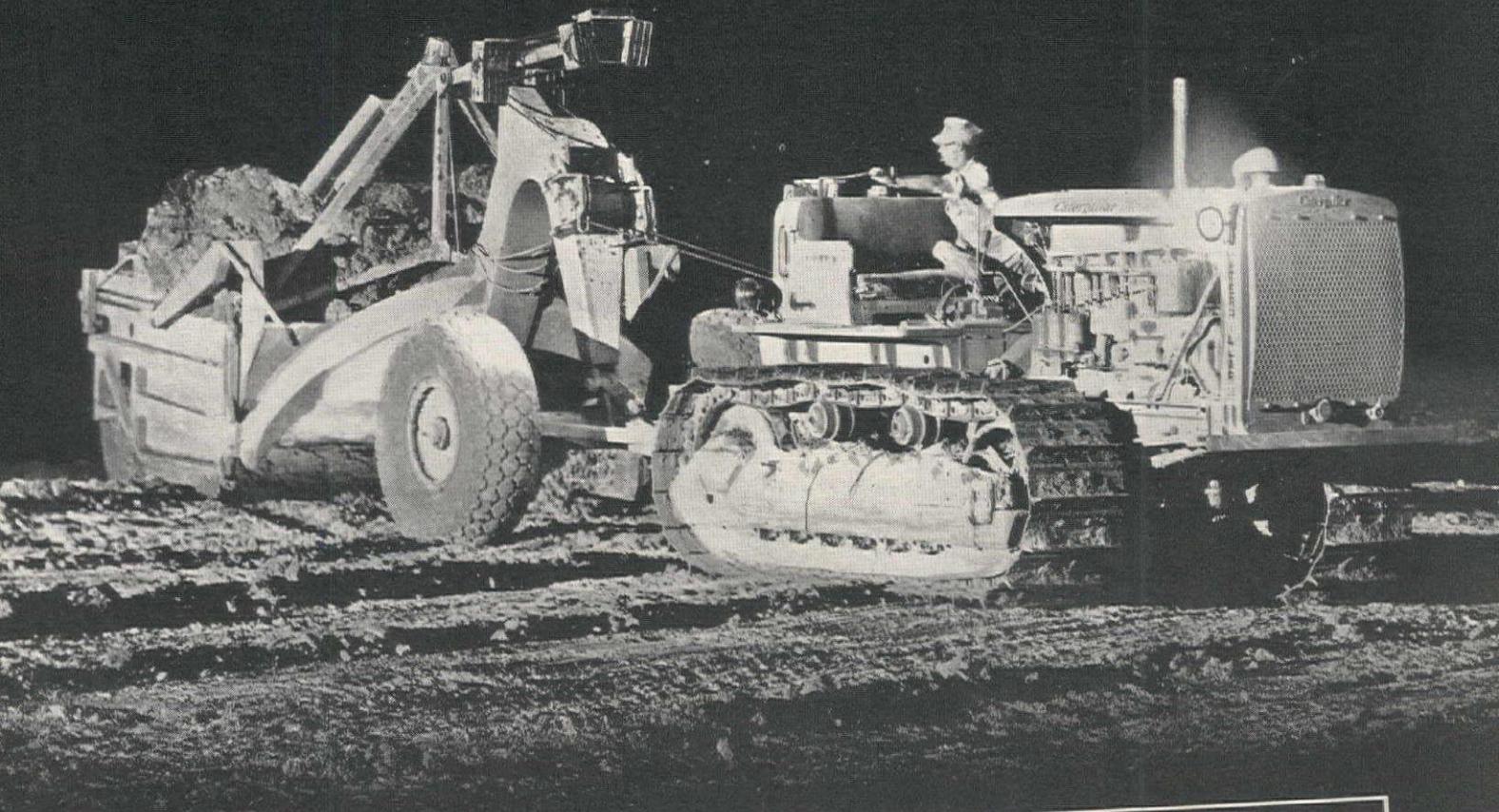


Macwhyte's premier wire rope, famous for its strength, toughness, and internal lubrication

Made by  
**MACWHYTE COMPANY**

2940 Fourteenth Avenue • Kenosha, Wisconsin  
New York • Pittsburgh • Chicago  
Ft. Worth • Portland • Seattle • San Francisco  
*Distributors throughout the U. S. A.*

Macwhyte Company Manufactures:  
MACWHYTE PREformed and Internally Lubri-  
cated Wire Rope  
MONARCH WHYTE STRAND Wire Rope  
MACWHYTE Special Traction Elevator Cable  
MACWHYTE Braided Wire Rope Slings  
MACWHYTE Cables, Tie Rods, Terminals, for  
Aircraft



## IDLE TRACTORS WIN NO WARS

ALL "Caterpillar" production is now being sent to the war fronts. But there are thousands of existing "Caterpillar" Diesel Tractors combining millions of unused working hours which are still available for war-winning aid on the home fronts: For raising food for our embattled selves and Allies. For construction projects to speed the flow of ships, tanks, planes, guns and supplies. For maintaining essential highway and transportation systems. For necessary municipal street maintenance and sanitary requirements.

### Keep 'em fighting!

Keep your "Caterpillar" Diesel Tractors doing useful work. These mobile power-plants have fundamental soundness and long-time productive capacity built into them. And even though many of them may have already delivered thousands of hours

of work, a little mechanical service or a few parts replacements will usually refit the most savagely used machine to deliver still more.

"Caterpillar" dealers are helping to get the utmost out of "Caterpillar" equipment. With parts-and-service facilities, your dealer is part of a worldwide system of "bases" for keeping the far-flung fleets of "Caterpillar" Diesels going. He is also headquarters for aid in other directions. His knowledge of earth-moving, site-clearing, soil-preparing, lumbering, quarrying, equipment-moving enables him to render helpful advice . . . on how to save operating costs — the best way to get the job done.



### GOOD CARE PAYS

*—Keep your  
"Caterpillar"*

#### **Diesel Tractor fit to fight:**

- 1 Keep air cleaner clean.
- 2 Keep the filters working.
- 3 Keep clutches in proper adjustment.
- 4 Watch the tracks—turn pins and bushings at intervals to lengthen their life.
- 5 Keep valve-clearance exactly right.
- 6 Use correct lubricants and change them regularly—when "worn" and to fit the climate.
- 7 Replace broken or worn-out parts—at once.
- 8 Make use of the service your "Caterpillar" dealer can render.

# CATERPILLAR DIESEL

REG. U. S. PAT. OFF. CATERPILLAR TRACTOR CO. • SAN LEANDRO, CALIF. • PEORIA, ILLINOIS

**TO WIN THE WAR: WORK—FIGHT—BUY WAR SAVINGS BONDS!**



“Why should I? I’m a truck with a Cummins Diesel — one of ten used by the Hinman Bros. Construction Company of Pittsburgh and Denver on the Letterkenny Ordnance Depot and Arlington Housing grading jobs. Altogether, we’ve gone 100,000 hours without an overhaul since we changed to a certain oil that eliminates sludge trouble. We keep going and feel fine because we lead *clean* lives!”

“Now — tough going’s easy for me. I’m a power shovel with a Waukesha-Hesselman Diesel. Hinman operates two of us on this same job, and we total 20,000 hours without an overhaul. Know why we don’t bog down? Because we use the same oil — and it stops *ring*-sticking cold. It keeps us going strong!”

“Rest? For what? This heat doesn’t bother me. I’m one of the 22 pieces of Hinman Bros. equipment with Caterpillar Diesels. All told we’ve gone 220,000 hours without an overhaul. Sure it’s hot, but we use that oil too — and it sure sticks to the hot spots, so we get along swell!”

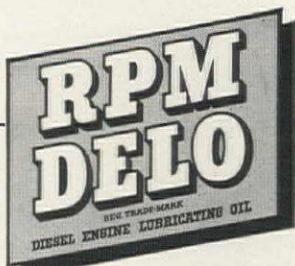
STANDARD OIL COMPANY OF CALIFORNIA



And if *YOU* want to keep going,  
old fellow, do as we do....  
use **RPM DELO!** ♫

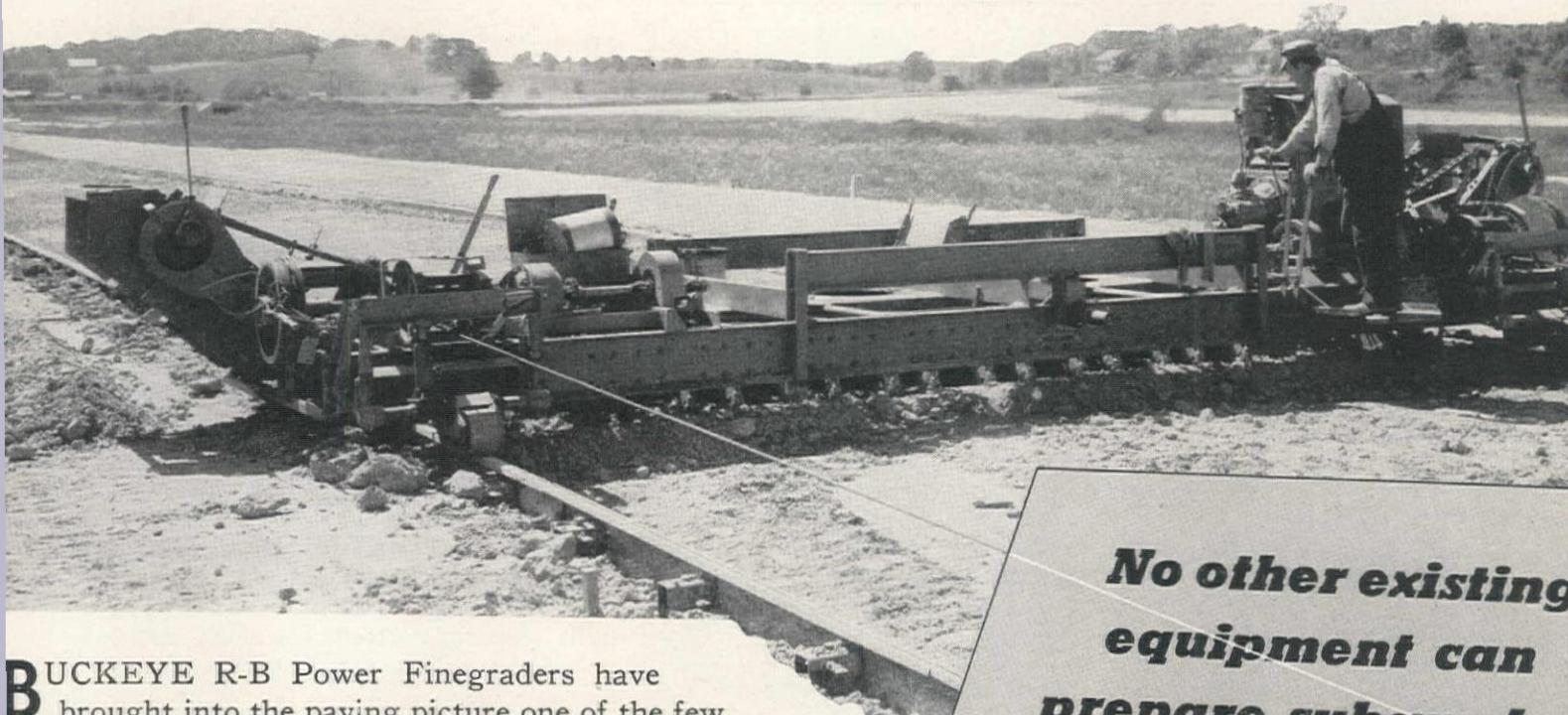
#### Get extra performance with STANDARD DIESEL FUEL

100% distilled! Power-packed Standard Diesel Fuel is “vapor-cleaned” for long injector and fuel pump life. Carefully controlled ignition qualities and other characteristics provide more complete combustion. Use it — get extra performance for your money.



# An Indisputable

# CLAIM



BUCKEYE R-B Power Finegraders have brought into the paving picture one of the few major advances in methods that have been introduced since the first pavers were built. These one-man operated machines, riding on the forms, slice the grade to exact cross section eliminating nearly all hand labor, reducing the loss of yield to a negligible percentage, ending penalties for thin slabs and ending the problem of keeping the grade well ahead of the paver. There are no delays with an R-B Finegrader — they move fast even in rocky soil. Many are working ahead of two 34-E pavers. They'll leave any desired amount of fines for compacting by the roller. Depth of cut is adjustable by hydraulic lifts. Two models provide cutting widths from 10' to 5'. If you have a road or airport paving contract, R-B Finegraders will speed up the job and lower your costs plenty. One good job and the machine pays for itself. Full details in new Bulletin. Send for it and ask for name of nearest dealer.

***No other existing equipment can prepare subgrade as quickly, cheaply and accurately as***

## **BUCKEYE R-B POWER FINEGRADER**

BUCKEYE TRACTION DITCHER CO., Findlay, Ohio

**Built by Buckeye ✓**

Convertible Shovels



Trenchers



Tractor Equipment



R-B Finegraders



Road Wideners



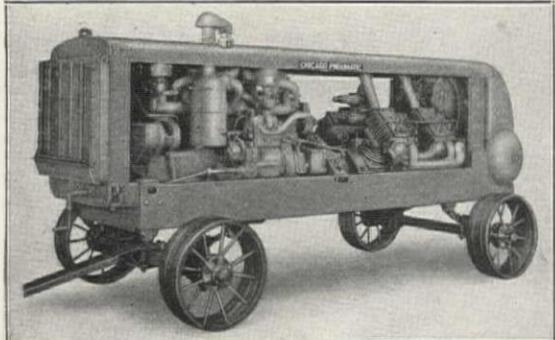
Spreaders



# DRIVES SHEETING 4 FEET PER MINUTE IN GRAVEL



↑ DRIVING 4 FEET per minute in gravel is an easy performance with a CP 116 Sheet-  
ing Driver; does the work of ten men with mauls. Enables you to use sheeting over  
and over because there is none of the "brooming" that comes with hand driving.



↑ 500 CUBIC FEET OF AIR ON WHEELS ... Chicago Pneumatic Diesel-driven portable air compressor. The new CP Gradual Speed Regulator automatically, gradually—not by steps—synchronizes engine speed to rise and fall of air demand. No sudden acceleration or deceleration to cause fuel losses and wear and tear. Gasoline-driven and Diesel-driven models from 60 to 900 c.f.m. actual capacity.



## CP SHEETING DRIVER DOES WORK OF TEN MEN WITH MAULS

One of Many Time-Savers for Contractors

NEW YORK (CP)—A sheeting driver that puts down sheeting in gravel at the rate of four feet per minute...portable air compressors that deliver 15% to 35% more air per gallon of fuel...concrete vibrators that will top eight cubic yards of concrete in two minutes—these are just a few of the many time-saving items of CP equipment for contractors.

Write for data on the complete line of CP Contractors' Equipment—portable and stationary compressors, rock drills, wagon drills, demolition tools, diamond drills, pneumatic tools, concrete vibrators, electric tools, etc.

CHICAGO PNEUMATIC  
TOOL COMPANY

General Offices: 8 E. 44th St., New York, N. Y.



↑ NO PRIMING NECESSARY. Simply turn on the air, lower the unit into the water and the CP Portable Sump Pump goes to work immediately. Water-tight casing; muck cannot get into the motor.

← 8 CUBIC YARDS OF CONCRETE topped in two minutes by four men with two CP 518 Pneumatic Vibrators. There are seven models of Chicago Pneumatic Concrete Vibrators, pneumatic and electric.

CHICAGO



PNEUMATIC

## CONTRACTORS' EQUIPMENT

Air Compressors, Rock Drills, Pneumatic Tools,  
Vibrators, Pumps, Electric Tools, Diesel Engines

San Francisco: 855 Bryant St. Los Angeles: 655 Santa Fe Ave. Seattle: 1928 First Ave., South. Spokane: E. 217 Montgomery.

# "KINKS in wire rope help no one but Schicklgruber . . .



*Avoid them and you save both Time and Steel*

To the experienced wire rope user it may sound trite to say wire rope is a costly machine and must be treated as such. But there may be young fellows under you handling Roebling rope today who haven't learned by experience, and it's up to you to see that nothing they do will waste the valuable time and rope steel so vitally needed. Unloading the reel is just one way that a beginner may damage a rope. So tell him first that a reel of rope, like a motor or other piece of valuable equipment, should be handled carefully and not dropped from a truck or platform. Nor should it ever be moved by *prying against* the coiled rope.

But it's in kinking that the most serious damage is likely to occur. A kink starts as a loop like this!

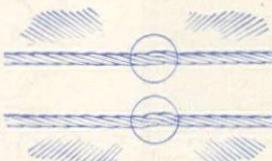


If it gets pulled tight, the damage has been done. The uniform relative position of the strands and wires has been disturbed—causing unequal stress distribution and abrasive wear that brings early failure at this point when the rope is put to work.



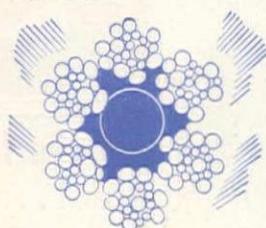
Even though you think you've straightened out a kink, looseness and high strands will appear. Because as the rope straightens

after kinking, an extra twist is thrown into the strands that can never be removed. Here's a kinked rope under 10,000 pounds tension, and below it the same rope after the tension had been relieved . . .



But notice that the kink remains. That means very severe abrasive wear on the high strands and abusive strain on the drawn strands since they carry more than their share of the load. To show you what happens to the drawn strands inside the rope, here is one cut through at the kinked section.

Notice how the hemp center is compressed; some strands are drawn in and others forced out.



All right, kinks are wasteful...but it's just as easy to avoid them as it is to put them in. Remember, kinks start as loops—caused in

most cases by taking rope from a stationary reel or coil. The remedy is simple—always unwind wire rope straight ahead by rotating the reel or coil. Don't let the reel get going faster than your rope is coming off. Always keep some tension on the rope if at all possible. Most people put a shaft through the center of the reel and jack it up—as shown in the big illustration at top. If it's in a coil, simply roll it along the floor like this . . .



It's as easy as that to avoid kinking during installation (where most kinks occur). Have these rules followed by every man who handles it, and you'll be on the way to getting all the *extra service* that's built into every inch of wire rope that bears the Roebling trademark."



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

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



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

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do the  
work of 4"**



Don't bend Electrodes  
unless necessary...



Dont leave more  
than 2" Stub...



Use largest effective  
diameter electrode



Make face of fillet welds  
flat...the legs equal



A booklet of shop bulletins illustrating  
"do's" and "don'ts" has been prepared.  
We'll gladly send you as many  
copies as you can use.

We can all prevent waste of valuable welding electrodes by following these and other simple, common sense suggestions. 25% to 30% more welding can, and must, be obtained from available electrodes.

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**REDUCTION**

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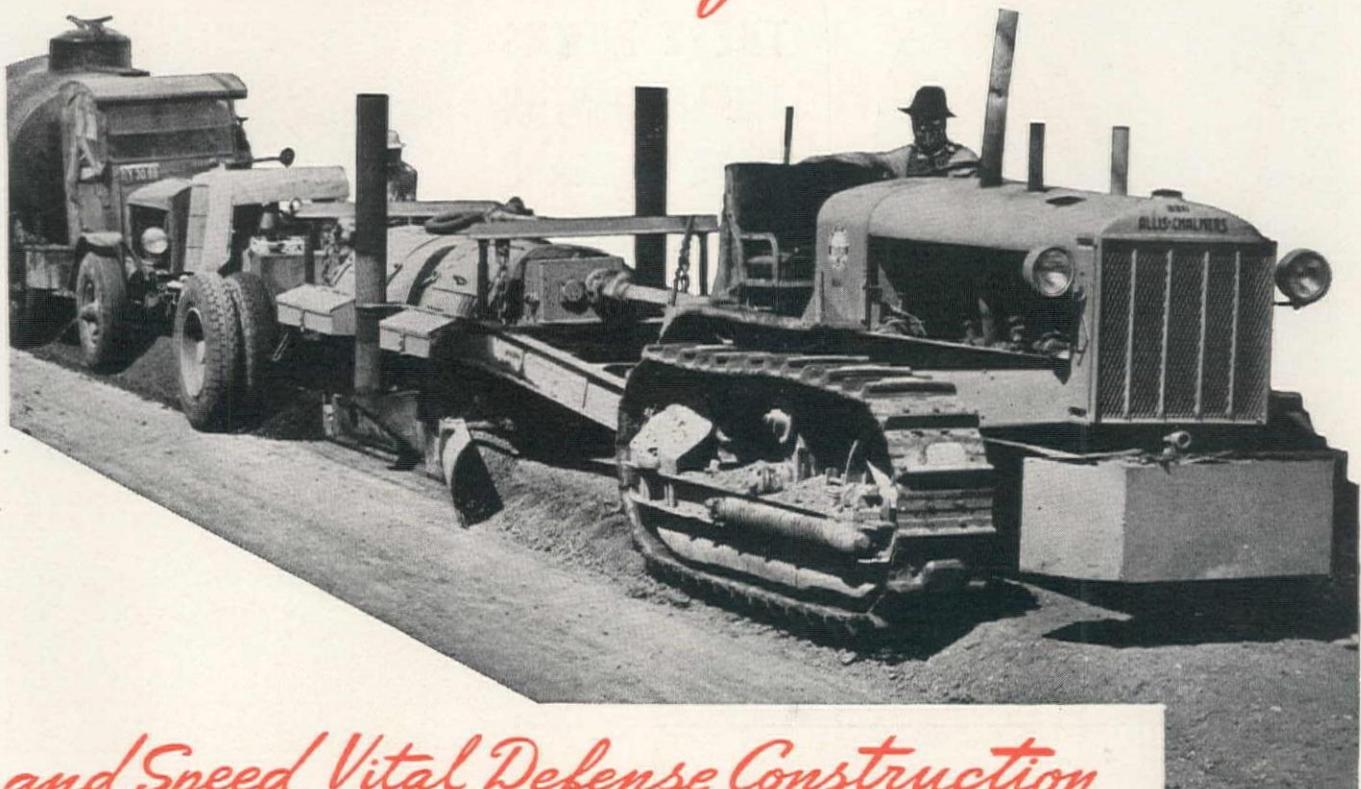
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**IDLE CYLINDERS ARE PRODUCTION SLACKERS: KEEP 'EM ROLLING FOR VICTORY!**

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# With A Record of 7000 Tons Per Day—WOOD ROADMIXERS

## Take the "T" out of CAN'T



### and Speed Vital Defense Construction

On a recent airport construction job 2 Wood Roadmixers, working 15 hours a day, produced more than 7,000 tons of asphaltic pavement. This is only an ordinary and usual production record for Wood Roadmixers.

Wood Roadmixer is the original and leading traveling plant method of rapid, low cost construction of all types of asphaltic mats and stabilized bases.

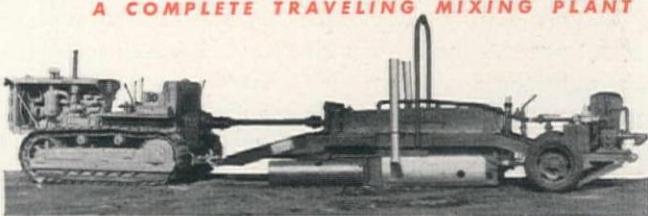
Pulled and powered by a standard track-type tractor, the Wood Roadmixer, moving at a uniform speed, picks up the soil or aggregate, and in a "one-pass" operation mixes it with the binder and deposits it in equalized windrows for spreading. Under normal conditions two men can handle the entire operation. There are no cumbersome bucket or belt elevators to get out of order—no complicated mixing operations. The Wood Roadmixer is as easy to operate as a scraper, and it hugs the sub-grade, cutting a true grade.

Records of jobs in more than 31 states and 7 foreign countries prove conclusively that Wood Roadmixer will

handle any paving job, under any condition, faster, better and more economically.

There is probably a Wood Roadmixer operating in your vicinity. Watch it work, and you will get a brand new conception of efficient, economical pavement construction. In the meantime, write for the complete story of Wood Roadmixer.

#### A COMPLETE TRAVELING MIXING PLANT



Wood Roadmixer utilizes the fully developed power of a standard crawler tractor for driving the mixing mechanism and pulling the Roadmixer. Tractor can be detached for other work when the Roadmixer is not in operation. The Wood Roadmixer can easily be moved from one job to another without dismantling or re-assembling.

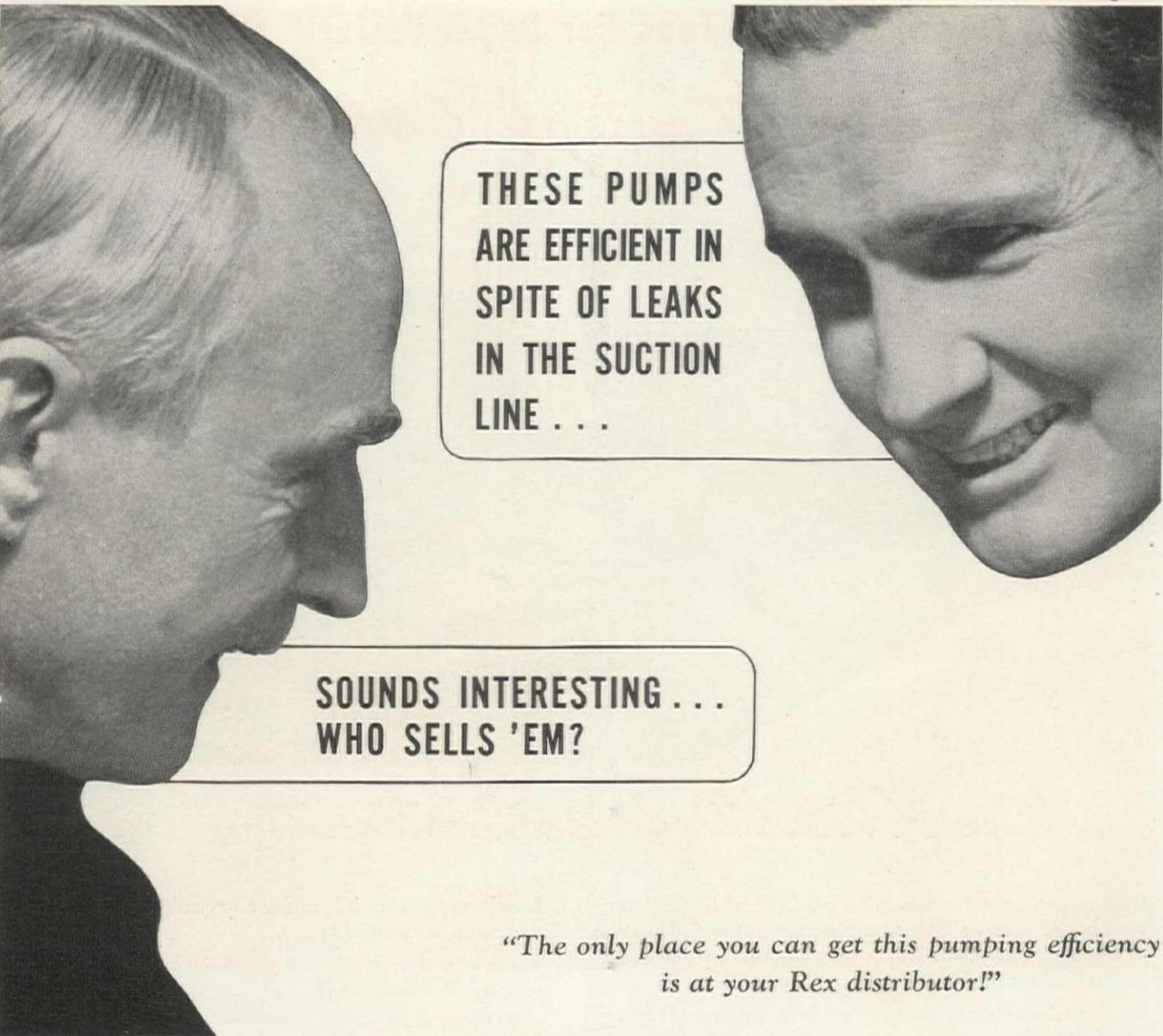
*Wood Roadmixers are in constantly increasing demand for national defense projects. For that reason we may not always be able to promise you immediate delivery.*

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



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ARE EFFICIENT IN  
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IN THE SUCTION  
LINE . . .

SOUNDS INTERESTING . . .  
WHO SELLS 'EM?

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ALONE, among all pumps, Rex Speed Prime Pumps give you the patented Rex "air peeler" that means faster priming, and steady, maximum volume because it "peels" air when the pump is priming or pumping. To you, this ability means maximum dollar value — the kind of value you can always

expect from your Rex distributor. See him soon, if you want a pump you can rely on. And use him as a good source of information on construction work in your area, as well as what's new in Rex construction equipment. You'll find that he's a good man to know and to keep in close touch with these days.

*"Start the motor and forget your pump!  
You can if it is a Rex Speed Prime Pump  
—we've built them to do just that!"*

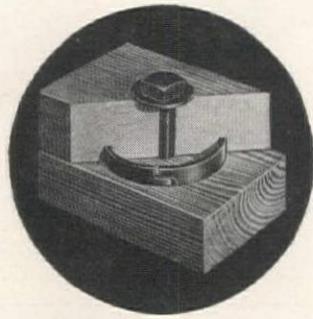
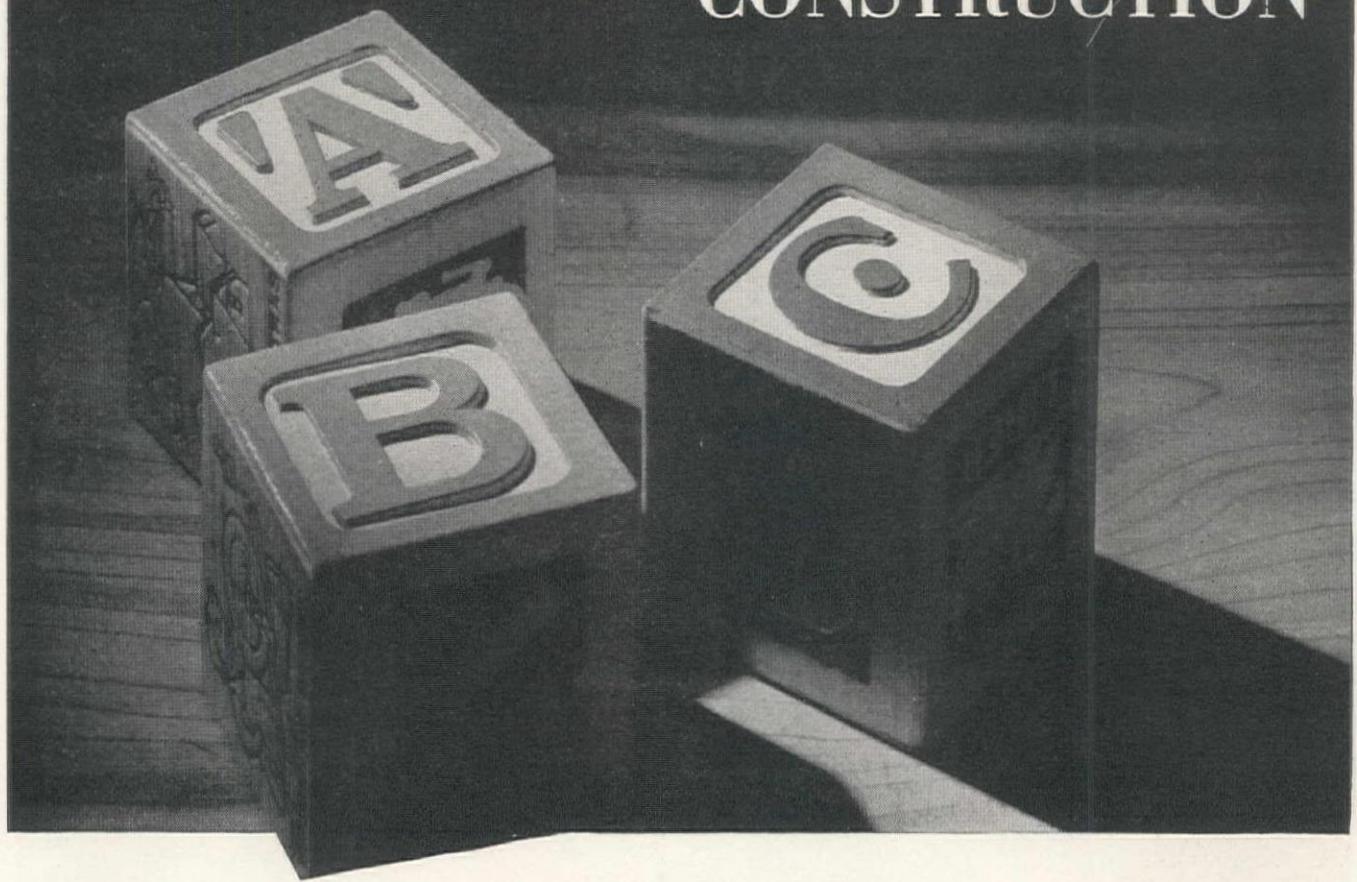


CHAIN BELT COMPANY OF MILWAUKEE  
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# ABC'S OF THE TECO SYSTEM OF CONSTRUCTION



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spread the load on a timber joint more equally over the cross-section of the wood.

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## Timber Engineering Company

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. . . a new method of structural engineering in timber that strengthens joints and permits lighter members to do work that formerly required heavier timber.

### The TECO CONNECTOR SYSTEM HAS . . . . .

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### The TECO CONNECTOR SYSTEM OFFERS . . . . .

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## *Knee-deep in trouble...with pleasure!*

IT IS A COMMON SIGHT to see Mack trucks do things that, for most trucks, would be near-miracles. Why does this happen so often? The reason is simple. *A Mack is more truck to begin with.* We do not build Macks just to stay even with somebody else, but to be beyond all doubt or question the *best* trucks in the world. *And an unequalled record stretching back over forty years says that's exactly what Mack trucks are!*

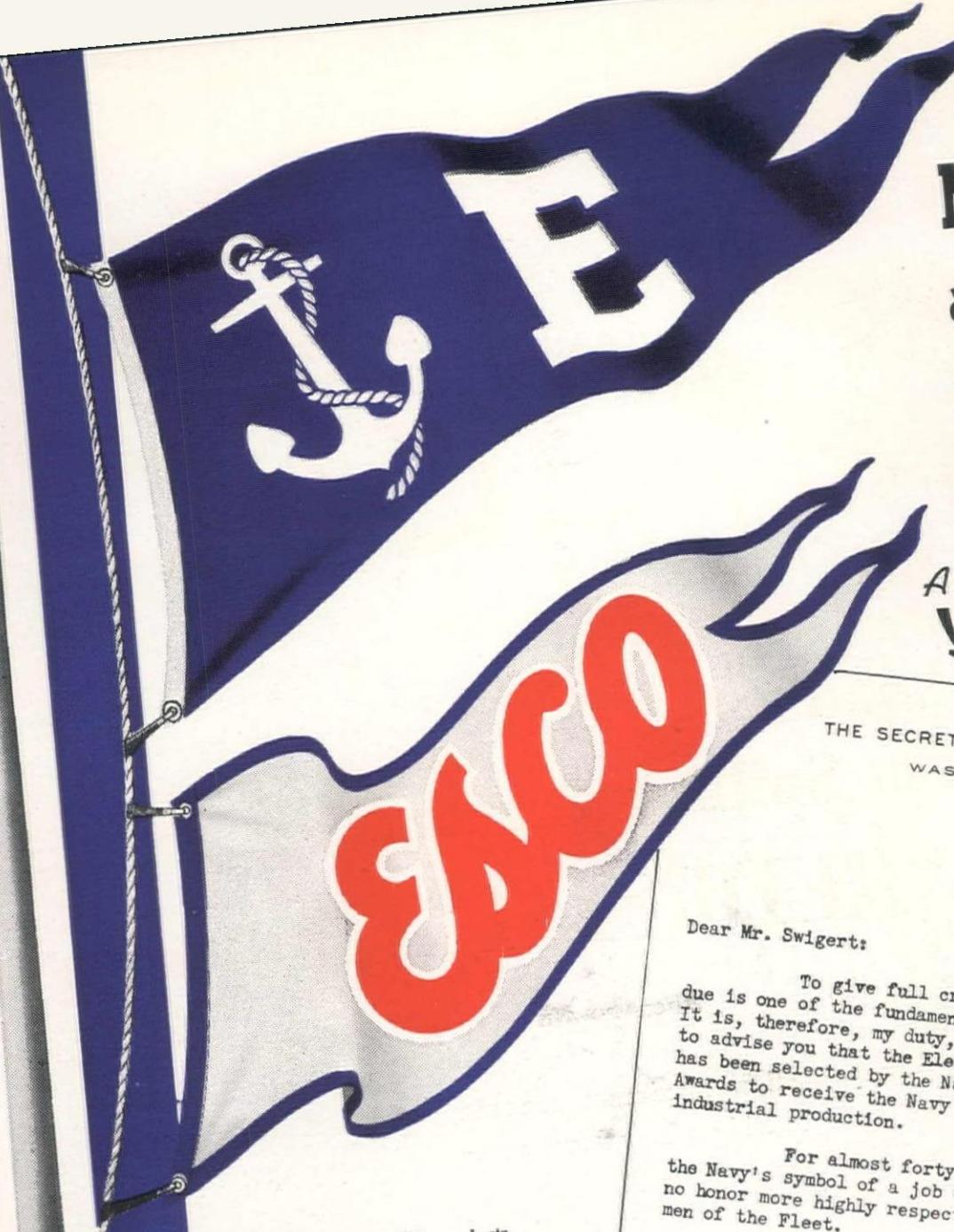
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FOR EVERY PURPOSE  
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The  
Navy "E"  
awarded  
to our  
employees

*A letter we were very  
happy to receive*

THE SECRETARY OF THE NAVY  
WASHINGTON

May 20, 1942

Dear Mr. Swigert:

To give full credit where it is justly due is one of the fundamentals of the Naval Service. It is, therefore, my duty, as well as my great pleasure, to advise you that the Electric Steel Foundry Company has been selected by the Navy Board for Production Awards to receive the Navy "E" for excellence in industrial production.

For almost forty years the "E" has been the Navy's symbol of a job well done. I can think of no honor more highly respected among the officers and men of the Fleet.

In token of the service your company has rendered the nation, you now have the right to fly the Navy "E" pennant over your plant. Your fellow-workers in the offices and at the machines are privileged to wear the Navy "E" lapel insignia.

Our battle-fronts are not only on foreign soil. We have a battle-front right here -- the battle for production of war materials. Congratulations to you and your soldiers of production for your significant contribution toward winning this increasingly important home battle. Keep up the good fight! For in this most critical war in our nation's history, the first great victory must be won on the line of supply.

Yours sincerely,

*Frank Knox*

Mr. C. F. Swigert, Jr., President  
Electric Steel Foundry Company  
2141 North West 25th Avenue  
Portland, Oregon

We recognize the Navy "E"  
award as a challenge to even  
greater efforts.

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Branches at Seattle, Eugene, San Francisco, Los Angeles, Honolulu

*Haste  
-without Waste*

**Speed Loading...  
Prevent Spilling...**

## Atlas "REDI-SLIT" Cartridges

"Haste makes Waste" when new men, green on the job, rush the slitting of cartridges. Powder may spill. Slits may be too long or too short to allow maximum concentration of the charge. Improperly slit cartridges may leave voids and empty spaces in the bore hole.

Atlas "REDI-SLIT" cartridges tell a different story. Because they are slit in the factory, they can be loaded intact—just as they come from the case. Tamped in the usual way, they stay put—packed neatly and firmly in the back of the bore hole.

Results: faster loading and improved performance. Atlas "REDI-SLIT" cartridges are really helping to keep things moving on jobs where solid column loading is required.

Offices in Principal Cities



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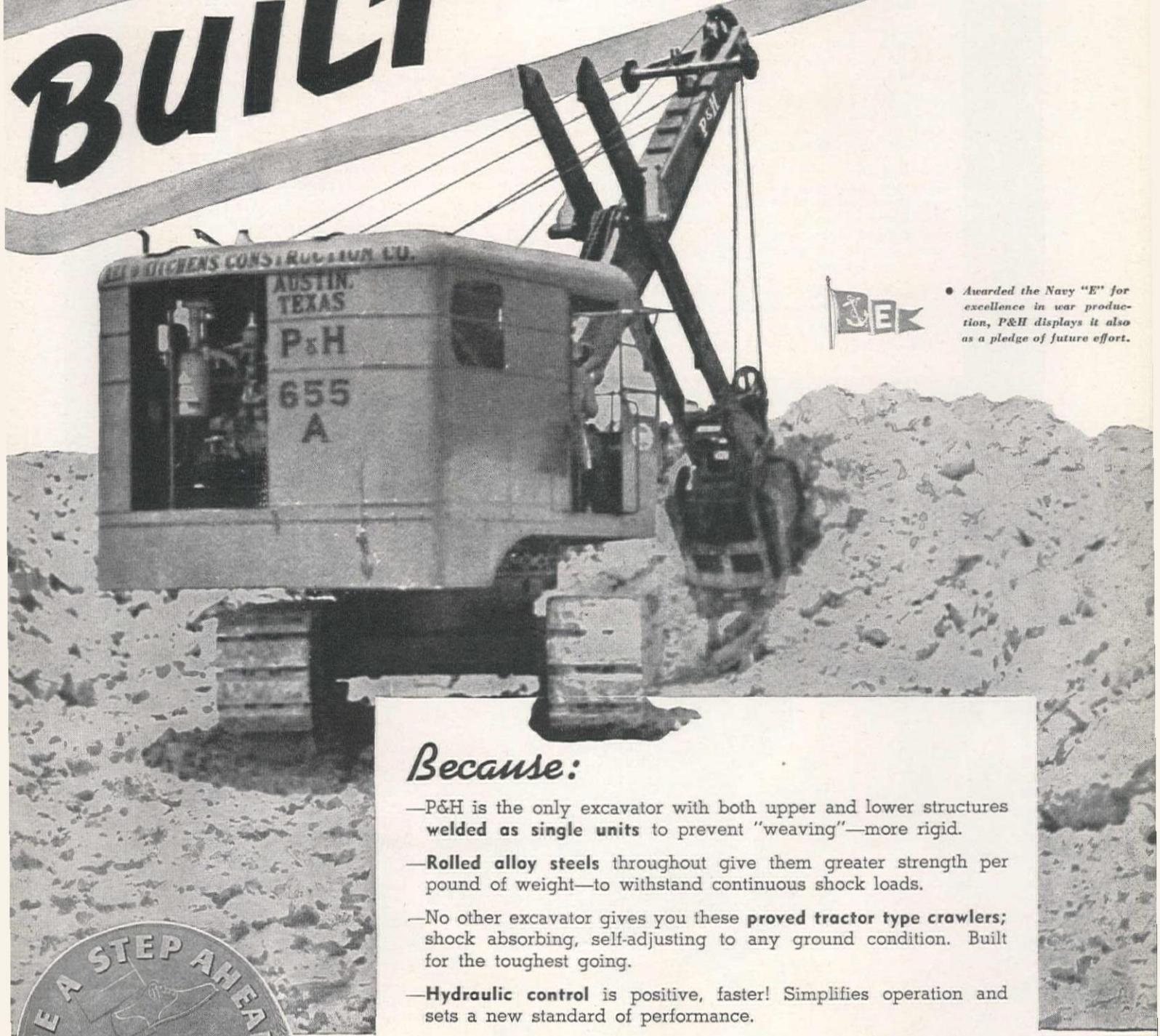
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SEATTLE, WASH.

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# BUILT

for tough War-  
time tasks!



• Awarded the Navy "E" for  
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tion, P&H displays it also  
as a pledge of future effort.

### Because:

- P&H is the only excavator with both upper and lower structures **welded as single units** to prevent "weaving"—more rigid.
- Rolled alloy steels** throughout give them greater strength per pound of weight—to withstand continuous shock loads.
- No other excavator gives you these **proved tractor type crawlers**; shock absorbing, self-adjusting to any ground condition. Built for the toughest going.
- Hydraulic control** is positive, faster! Simplifies operation and sets a new standard of performance.

It costs you less to have these—and other P&H advantages—than to be without them.

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# Take GOOD CARE of Your Crusher

## New Machines are Hard to Get

War needs in fabricated steel naturally have precedence. As a result, new crushers and repair parts are becoming scarce. Few if any will be available shortly except on high priorities for rated phases of the War Effort.

Consequently, many mill operators will find it necessary to get along with their present equipment meanwhile utilizing every practical expedient for lengthening its life.

Fortunately, your PACIFIC crusher is a sturdy mechanism built to do a tough job and last a long time if kept out in the open where you can easily get to it for inspection and maintenance.

For best results mount the PACIFIC crusher in an accessible location where (1) Feed can be watched and the material distributed properly in the jaw cavity; (2) Discharge can be readily adjusted; (3) Jaws can be changed as required and parts repaired before becoming too badly worn; (4) Lubrication can be cared for adequately.

Grizzly out all material already to size. This saves wear on jaws and increases capacity.

Place vanes or baffle blocks at suitable points in the feed chute to distribute material to the jaws evenly.

Provide suitable means for feeding material no faster than it can be taken away. Choke feeding causes slowdowns and undue wear on crusher and parts.

Mount the feed chute with a protective boot so that material does not strike pitman unduly.

Install a rock box to catch the feed instead of letting material fall directly on bottom of metal lined chute.

Avoid crushing material under the minimum recommended for the size of crusher being used. Otherwise, there is likely to be excess wear on jaws and other parts besides extra power consumption.

Guard the crusher belt drives and make sure there is no rubbing on belt. Protect against falling rocks striking the belt and being carried around.

Be sure that your crusher is always properly lubricated. Lack of oil on the bearings causes excessive wear. Vital parts like these are scarce and replacement is practically impossible at the present time.

For other information towards obtaining full efficiency and long life from PACIFIC crushers ask for Form 98 Directions for Installing and Operating PACIFIC Crushers or let us make suggestions for your specific problem.

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Single 34-E Drum  
MULTIFOOTE

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GRECCO

INTRODUCTION of the Single Drum 34-E MultiFoote Paver two years ago marked a big step forward in the paving picture—here was the machine the contractors had been waiting for — a compact, economical paver capable of producing 25% more output than a 27-E with no extra equipment or labor. And once again, Foote was first! The MultiFoote 34-E was on the job while other machines of its type were still on the drawing boards. When Foote said, "It's Here", in the first announcement advertising, the 34-E had already completed a season's outstanding performance in the field!

Today the MultiFoote 34-E is standard equipment for dozens of the nation's leading contractors and is piling up impressive records for speed and low cost on roads and runways everywhere. The reasons for its success are sound ones: Big capacity in a paver that's not too big to be used profitably on the smaller jobs or in cramped quarters; an initial investment that is economically sound; simple, easy operation and maintenance; speed and dependability second to none; superior design proved again and again by MultiFoote in years of operation.

Plan now to buy the paver that's at the head of the paver parade. Write for details and MultiFoote 34-E Catalog.

THE FOOTE COMPANY, INC., Nunda, New York

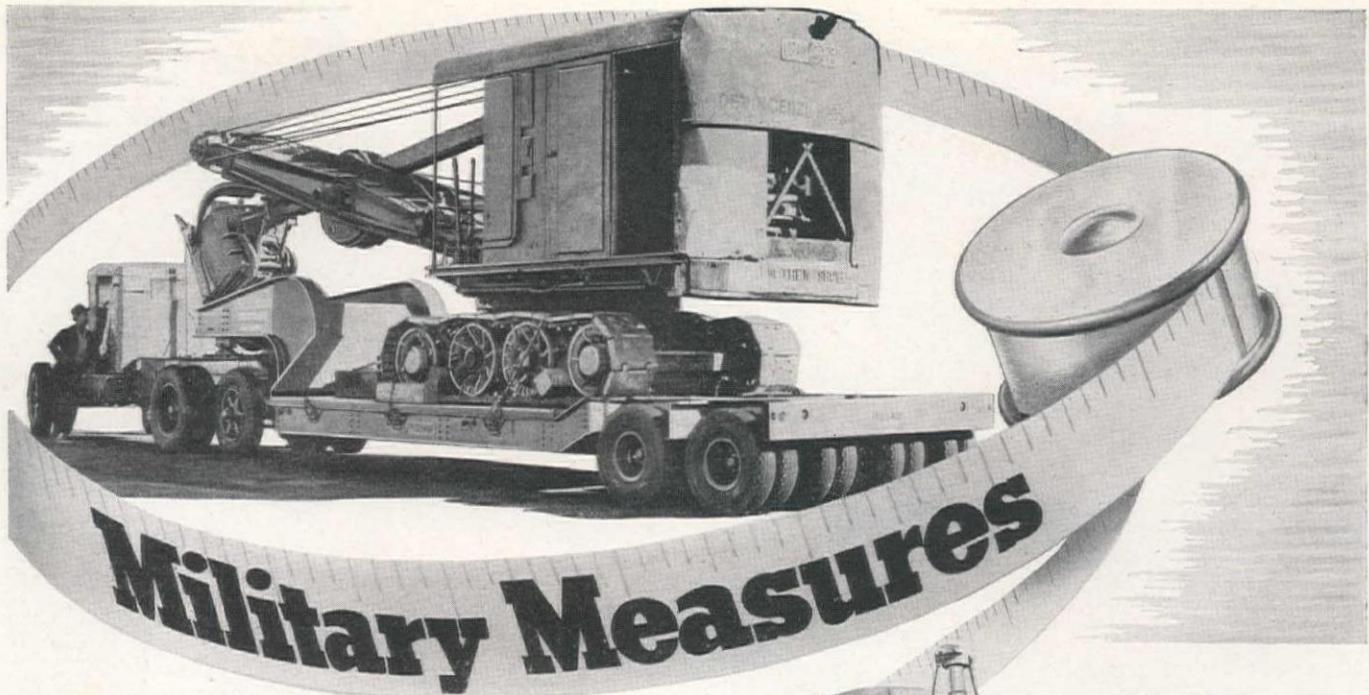
R. McCALMAN, INCORPORATED, DANVILLE, ILLINOIS

ADNUN

BLACK TOP  
PAVERS

MULTIFOOTE

CONCRETE  
PAVERS



Your Fruehauf equipment will operate more efficiently and last longer—under the demands of present emergency conditions—because each Trailer was exactly fitted to its job. In the complete line of Fruehauf Trailers the construction industry has always found the right equipment for any Motor Transport need—Trailers to their Measure. Now that new Trailers can no longer be manufactured for civilian operators, more and more Fruehauf Trailers are going into government service—building airports, military highways, Army camps and Naval bases. These Trailers are proving all over again that they are exactly suited to these emergency jobs, just as they served the normal operations of the construction industry. Enlisted for military duty are Carryalls for the quick, efficient movement of heavy equipment and machinery—Dump Trailers, including side-dump models up to 40-ton capacity, roll-in type dump Trailers that dump with the same hoist as the truck body, and standard models for highway operations—six-wheel and semi-Trailers for efficient movement of aggregates and materials. All have the Fruehauf features that insure long, trouble-free service.

**World's Largest Builders of Truck-Trailers**  
**FRUEHAUF TRAILER COMPANY**  
 WESTERN MANUFACTURING PLANT - LOS ANGELES

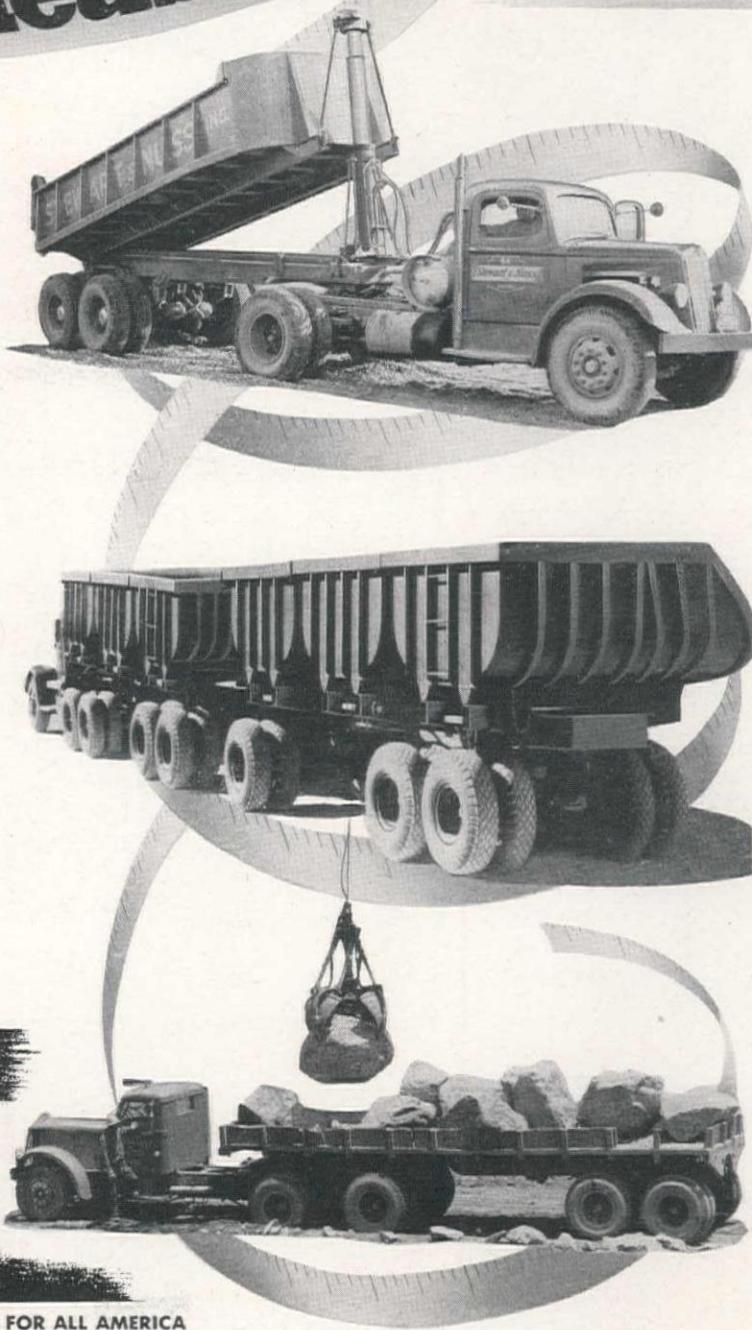
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**FRUEHAUF**  
**TRAILERS**  
*"Engineered Transportation"*

Reg. U. S. Pat. Off.

TRUCK-TRAILER TRANSPORT IS DOING AN ESSENTIAL JOB FOR ALL AMERICA



RODS COSTING \$3<sup>50</sup>  
RECLAIM \$30 TRACK ROLLER  
and *Double*  
Its Original Life!

If you operate any type of crawler tractor, here is a hard-facing application that will help solve your replacement problems and pay you big dividends as well.

Get a worn roller from the scrap pile, and rebuild it to size with one or two passes of 3/16" Coated Stooey Self-Hardening. You won't need more than \$3.50 worth of rods and your welder should be able to finish the job in an hour and a half. Properly reclaimed, the roller will last twice as long as a new, unprotected roller!

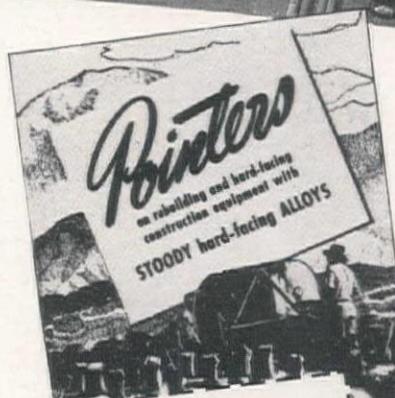
Here is more good news: When the Stooey Self-Hardening deposit finally wears away, the hard-facing operation can be repeated a second and even a third time with the same results. Coated Stooey Self-Hardening is the easiest of all hard-facing rods to apply and is economically priced at only 50c per pound, f.o.b. Whittier, California. It is also available through all Stooey Distributors.

**STOOY COMPANY**  
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WHITTIER, CALIFORNIA



*Free!*

Send for this booklet describing the accepted method of rebuilding and hard-facing track rollers, track rails, sprockets, cleats, and other construction equipment parts.



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Gentlemen: Please send me a copy of your booklet entitled, "Pointers on rebuilding and hard-facing construction equipment with Stooey Hard-Facing Alloys."

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Address \_\_\_\_\_  
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Position \_\_\_\_\_

**STOOY COMPANY**  
*Hard Facing Alloys*



*This is no time to ride the*  
**RUTS**



Picturesque are the winding roads that follow the old cow paths, but today the good old accepted ways are just not good enough.

You're looking for short cuts not detours, new ideas not backslaps . . . ways to step up production, train green men, make machines produce. These are the

very problems Shell men have already licked for many manufacturers. For example: *In one plant Shell's improved methods of balanced lubrication practically doubled the life of their gear hobs.*

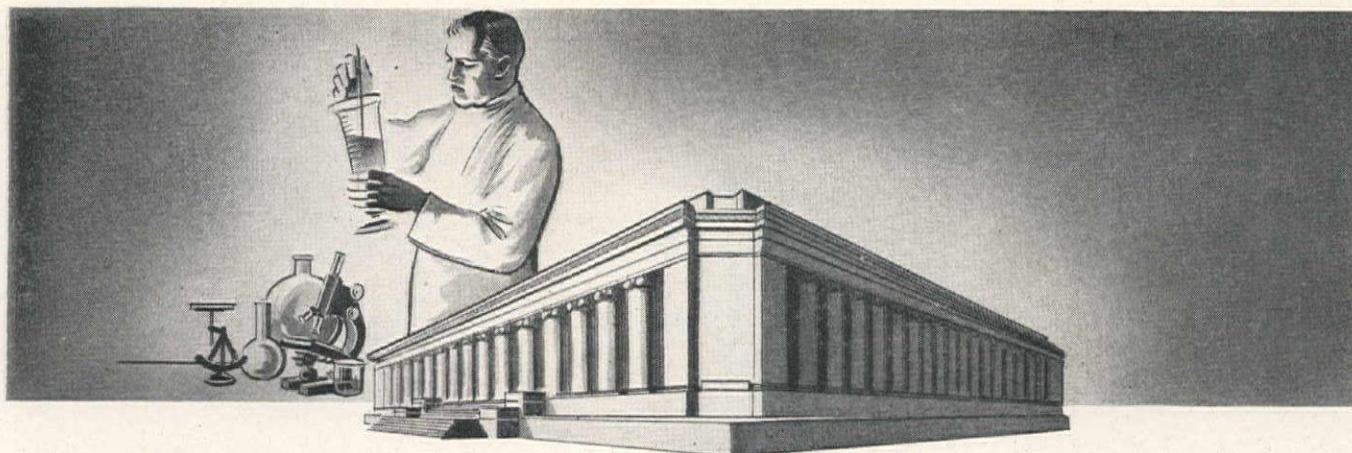
That's the kind of new ideas you're looking for these days! Let's talk it over. Call in the Shell man now!

# SHELL

## INDUSTRIAL LUBRICANTS

\* \* \* \* \*





# Research....

KEYSTONE OF

## PITTSBURGH-DES MOINES' PROGRESS

The program of engineering research maintained by the Pittsburgh-Des Moines Steel Company over the years, now culminates in the establishment of a Multiple Fellowship on Chemical Containers and Storage at the Mellon Institute of Industrial Research.

Utilizing the unlimited scientific resources of the Institute, the Fellowship will conduct research on the problems connected with bulk storage of chemical substances, including water, oils, and gases.

At the present time, the Fellowship is working on vital problems connected with the storage of chemicals in the synthetic rubber industry, including butadiene, styrene, acrylonitrile, and isobutylene.

The general research conducted by the Pittsburgh-Des Moines Chemical Storage Fellowship will develop much new chemical and physical data available to our clients, in the form of reports and recommendations as to the most suitable types of containers, construction, temperatures, pressures, linings and coatings for the protection of the container and the substances for which bulk storage facilities are desired.



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SEATTLE, 1128 EIGHTH AVENUE, SOUTH

for BARTLETT DAM — ARIZONA

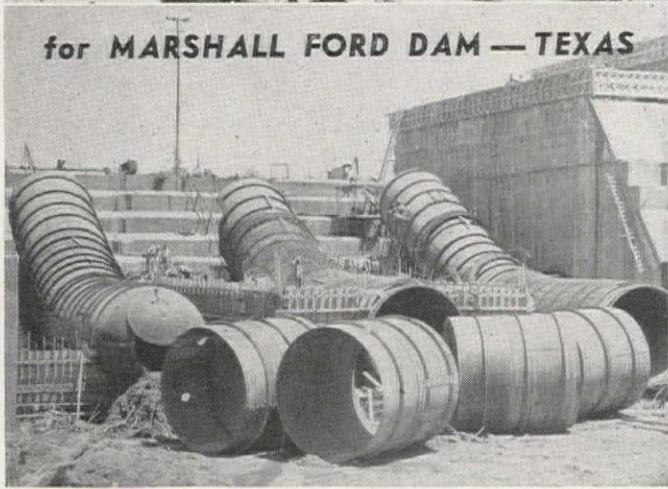


*Fabricated **STEEL PIPE***  
*Widely Used for Water Transmission*  
*at Western **DAM PROJECTS***

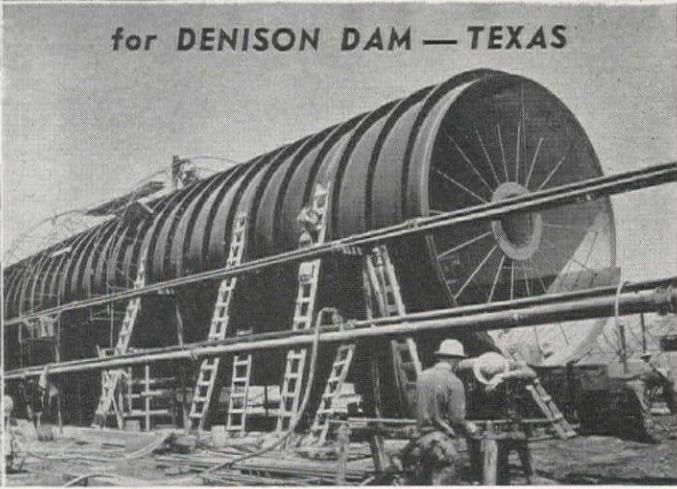
for GRAND COULEE DAM — WASHINGTON



for MARSHALL FORD DAM — TEXAS



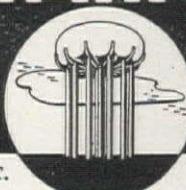
for DENISON DAM — TEXAS



## 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.
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# WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED  
WESTERN HIGHWAYS BUILDER

August, 1942

Vol. 17, No. 8

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## Keep 'em Building

THE VARIOUS and many divisions of the construction industry of late years have shown a pronounced trend toward consolidation of effort under single direction. The development of the project manager, the general superintendent who directs the work for the entire group of joint venture contractors, is a major advance in the field of general construction.

During the last war inferior camps were hastily "thrown up," yet these World War I projects did not approach the speed with which cantonments and military establishments are being built today. Where formerly it was largely a case of every contractor for himself, with a harried and harassed army engineer unhappily in the middle of chaos, today's cantonment building presents a vastly different picture.

This desired development is not, strictly speaking, a war development, although methods of management and operation have been quickly refined under the emergency deadlines most cantonment projects must meet.

The individual identity of each participating contracting firm is held intact. Their resources, both financial and managerial, equipment and material, remain decentralized in control except as the individual companies enter into specific and definitely limited joint ventures.

There is a deep and economic sociological significance in this method. Progress is speeded; methods and procedures are interchanged freely. Firms which today may tightly bid against each other on certain jobs may become partners on others. This procedure has been a great boon to thousands of small contractors who have experience and ability but perhaps lack ample financial resources.

Labor is benefited, as it can and does make one contract for an entire project instead of many and varying contracts with the individual contractors working separately on a project. Safety work and accident prevention can operate effectively on joint venture projects, as one safety engineer is employed and one insurance carrier contracts the entire project.

Joint venture projects typify the emergence of the construction industry from its swaddling clothes. It might be called the industrialization of the construction industry. No part of our national industry is more individualistic, decentralized, and belligerently competitive than the construction industry. This, then, was the ideal group to prove that decentralized, individual firms could effect methods of cooperation and joint venture operation without relinquishing their personal identities, and without allowing financial control to concentrate in the hands of the few, and at the same time turn in production records unparalleled in American history.

In the joint venture contracts of the construction industry can be found a strong and powerful answer to those who would extend the function of governmental bureaus to include complete control of business.

Labor, working under either bureaucratic or socialistic control, would lose its bargaining power, and its hard-won prerogatives. Our conviction is deep that joint venture projects honorably and forthrightly entered into by firms still retaining their individual identities and controls is both wholesome and traditionally American in concept and performance.

—From *The Em Kayan*, published by Morrison-Knudsen Co., Inc., Boise, Idaho. M-K was a member of Six Companies, formed to build Boulder Dam in 1931 as one of the earliest joint ventures.

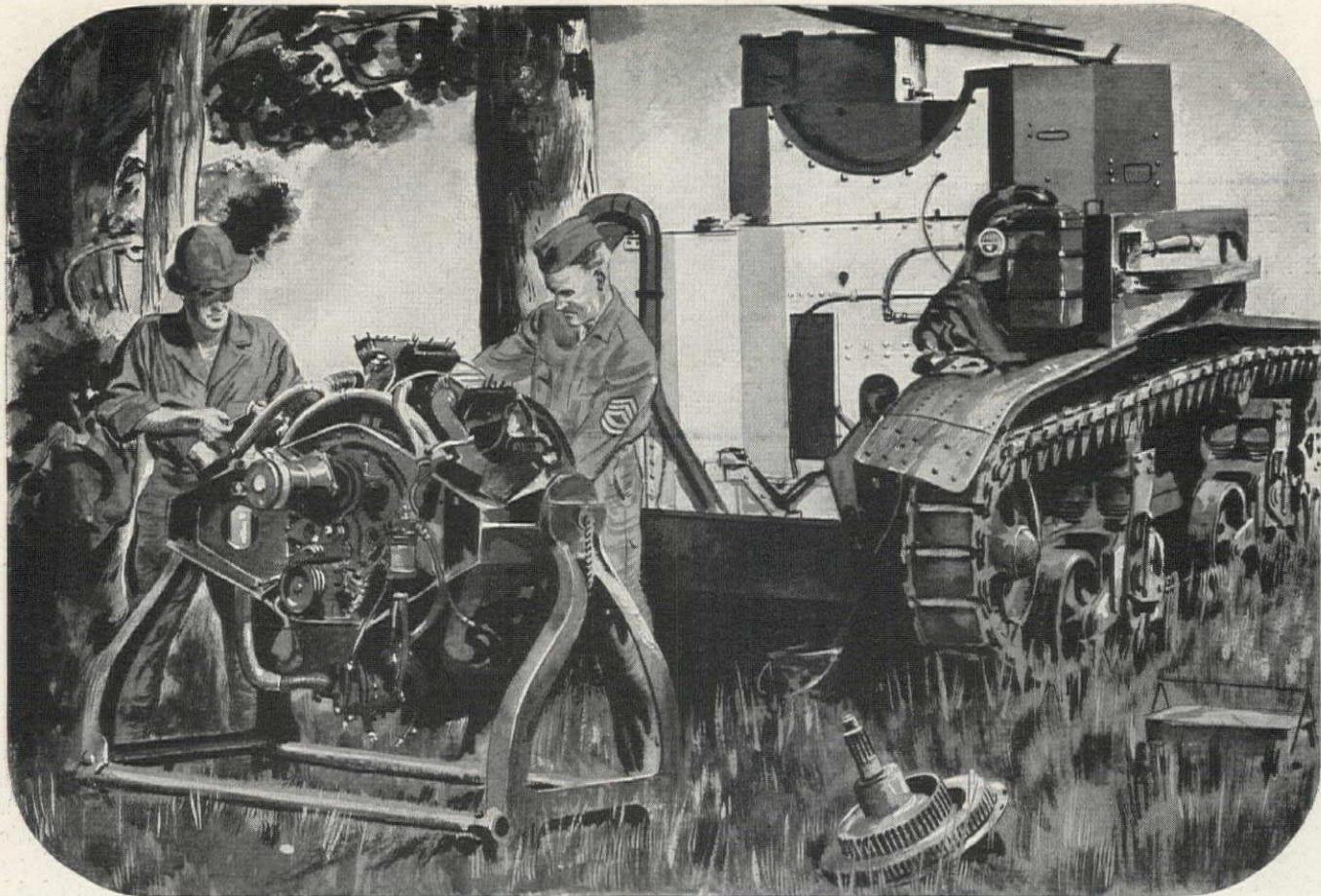
## Triple Threat

CONSTRUCTION CONTRACTORS of the West, who have demonstrated their ability to solve problems of unprecedented magnitude and complexity while engaged in building world-famed structures in the West, and who more recently have added their talents for organization and accomplishment to the production of ships, last month offered to extend their multitudinous activities to a third sphere—production of 70-ton flying boats—as a means of reducing the mounting loss of boats and cargos from submarine activity.

When Henry J. Kaiser, one of the leaders of the shipbuilding group, proposed that the nine yards controlled and operated by members of the contracting group be given contracts for the production of 70-ton flying boats, he demonstrated most graphically the confidence and imagination these contractors have gained over a long period of years during which they successfully overcame construction problems never before encountered. In the general hullabaloo resulting from Kaiser's proposal, made in a talk at the fifty-fifth launching from the Oregon Shipbuilding Corp. yard, the general public lost sight of the fact (or possibly was never correctly informed) that the shipyards represent the interests of a large and resourceful group of contractors including many capable engineers and executives, rather than an organization headed by one individual.

Whether or not the proposal is feasible cannot be judged by those unfamiliar with the technicalities involved in the construction of flying boats or with the detailed accomplishments of the group from which the proposal springs. Jumping to conclusions, the magazine *Business Week* stated flatly, "Shipyard facilities are practically useless for building airplanes". The fact that hulls, wings, and tail assemblies of flying boats are specialized structural sections similar in many respects to the hulls and rudders of ships was apparently overlooked. Any proposal from as responsible a group with as many accomplishments already credited as that represented by Henry Kaiser cannot be dismissed so summarily.

The West, already known to have vast possibilities for industrial development, may again demonstrate its value to the Nation as a proving ground for ingenuity and resourcefulness, a proving ground where such abilities must be exhibited to gain success.



## *His old job* IS YOUR JOB NOW

● That boy who had the knack of keeping even your most overworked machine "ticking" is probably now using that knack in the interest of Uncle Sam. Yet never before has it been so important to keep your equipment working at top efficiency.

You who own Austin-Western equipment have the advantage of the extra durability that's built into it. You don't have to baby A-W machines. But you can't hope to get the most out of even the most rugged machines unless you have them serviced promptly and regularly... by men who know exactly what to do... when and where to do it.

Your nearby A-W dealer has this know-how... and the equipment to do a thorough job with a minimum of lay-up time for the machines. Consult him for helpful, constructive suggestions on simple service steps that will prevent many breakdowns, and help keep old machinery performing with new machine efficiency. THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois.

HIGHWAY EQUIPMENT CO., San Francisco, Calif.; COLUMBIA EQUIPMENT CO., Portland, Ore.; 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, Wyo.; WESTERN CONSTRUCTION EQUIPMENT CO., Billings, Mont.

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AUGUST • 1942

## Driving Small Pioneer Tunnel

**Ed H. Honnen develops specialized tunnel equipment for driving 7 x 7-ft. pioneer drift on the Loveland Pass highway being reconstructed by the Colorado Highway Department 682 ft. below the present summit of El. 11,992**

**D**RIVING an average of 17 ft. per day through moving ground which has required heavy timbering along much of the footage, the Ed H. Honnen Construction Co., under the direction of the Colorado Highway Department is advancing a 7 x 7-ft. pioneer tunnel under Loveland Pass for U. S. Highway 6 about 55 mi. west of Denver. The pioneer tunnel is intended to serve as the final investigative step before construction of a full-section highway tunnel at this location, and will extend the entire length of the final project. The contractor has developed several specialized items of equipment, including a two-drill track carriage and an excavating machine with unusual features fitted for the relatively small cross-section of the tunnel.

### Preliminary considerations

Loveland Pass, at El. 11,992, is the

Continental Divide crossing of U. S. Highway 6 in the Williams Fork Mountains. Development of a new direct route from Denver into the Colorado River Basin in the western part of the state has been in progress for a number of years. In the vicinity of Loveland Pass the present highway is expected to require an extensive program of improvements in the near future and construction of the tunnel is proposed as an alternative to reconstruction of the surface highway route.

The reconstructed surface route would reach an elevation of 11,992 ft. at the summit of Loveland Pass with approaches which would require 4,112 deg.

**EAST PORTAL** of the Loveland Pass tunnel was still surrounded by snow late in May when this picture was taken, indicating that completion of the tunnel should simplify some of the maintenance problems.

of curvature, sixteen curves of more than 16 deg., 2,560 ft. of rise and fall, and 8.18 mi. of grades in excess of 4.5 per cent. On the other hand, the tunnel route will have a total curvature of only 858 deg., only two curves of more than 16 deg., 1,216 ft. of grades in excess of 4.5 per cent, a maximum elevation of 11,310 ft., and will be 3.9 mi. shorter in total distance. Since the tunnel will be nearly a mile in length, the selection of this route will eliminate the winter maintenance over some 5 mi.

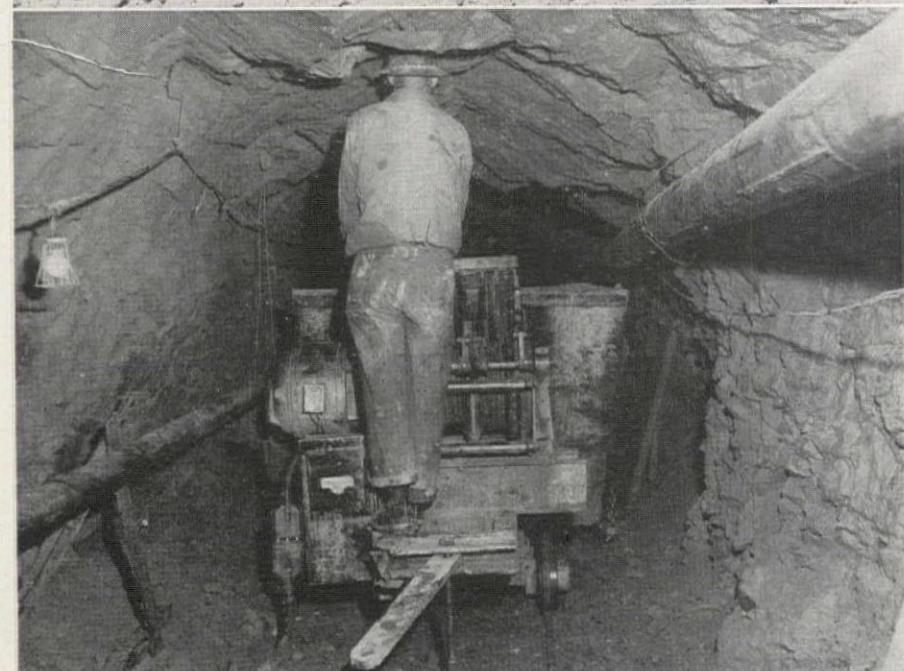
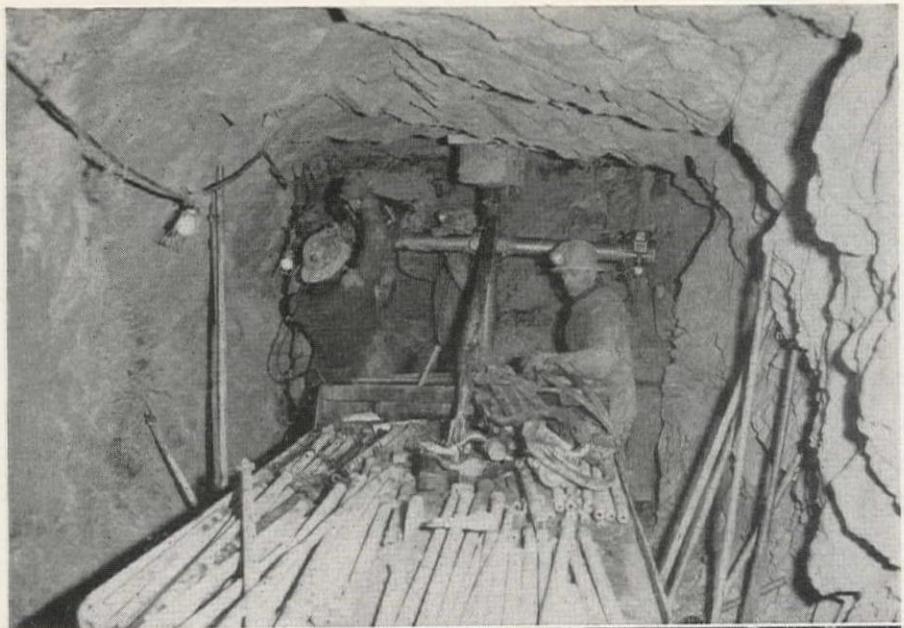
In analyzing the economic factors involved in the two routes, engineers of the state highway department estimated that the total annual cost of the tunnel route would be \$57,815 less than the surface route in spite of the fact that the construction cost was nearly three times as great (1939 estimate). The principal savings would be realized in vehicle operation costs because of the shorter distance and decreased grades including the elimination of nine switchbacks and grades over 7 per cent.

### Pioneer drift

Ultimate plans for the Loveland Pass tunnel contemplate an arch cross-section with a 32-ft. roadway and a height of 21 ft. from pavement to crown. The completed tunnel will be 5,418 ft. long

*Photographs by Thos. J. Babre*





and is estimated to cost \$1,156,050, although this may be increased because of rising construction costs in the past two years. In order to determine the ground conditions along the tunnel route more exactly before undertaking excavation of the full cross-section, the Colorado Highway Department awarded a \$198,449 contract for the driving of a 7 x 7-ft. pioneer drift to the Ed H. Honnen Construction Co. during the fall of 1941. The pioneer drift will extend the full length of the tunnel line along the crown of the arch.

The contractor set up his camp near the east portal of the pioneer drift late last fall and began driving on Dec. 24. The camp buildings include a compressor house, blacksmith shop, battery charging station, office and bunkhouses. The blacksmith shop equipment includes a bit grinder which is used to sharpen the 300 detachable rock bits required by the drilling crews each day.

Drilling and excavating equipment on the job represents principally special developments of the contractor, built especially for the small bore tunnel. Operating on the 36-in. ga. track is a two-drill track carriage designed particularly to provide stability in spite of the small dimensions of the machine. Two drifter drills are mounted at either end of an adjustable horizontal cross-bar. The carriage is 12 ft. long, mounted on conventional trucks, and carries drill steel and bits in the rear section. Stability of the unit is assured by an adjustable vertical column at the front of the carriage. Blocked against the roof of the tunnel and tightened by the screw jack, the column holds the carriage firmly in place at the heading. The horizontal cross-bar, mounted on the vertical column, is lowered as lifter positions are reached in drilling successive holes in the face.

Two drills mounted on the horizontal bar complete the 24 to 26 holes required in each face in an average of about one hour. Holes are 4 ft. deep, drilled with 2½ and 4½-ft. steel. They are started with 2¼-in. detachable bits and finished with 1¾ to 2-in. bits, as they come from the bit grinder. Holes are spotted on a conventional pattern, and loaded with a semi-gelatin, 45 per cent dynamite using about 50 lb. per round with electric blasting caps from 1 to 8 delay. The powder factor on the job has averaged about 3½ lb. per cu. yd. of excavation. Loading of each round requires about 20 min.

#### Excavation

Mucking after each shot is accomplished effectively with a slusher type machine designed by Ed Honnen and constructed in the contractor's shop. Consisting of three 12-cu. yd. cars with

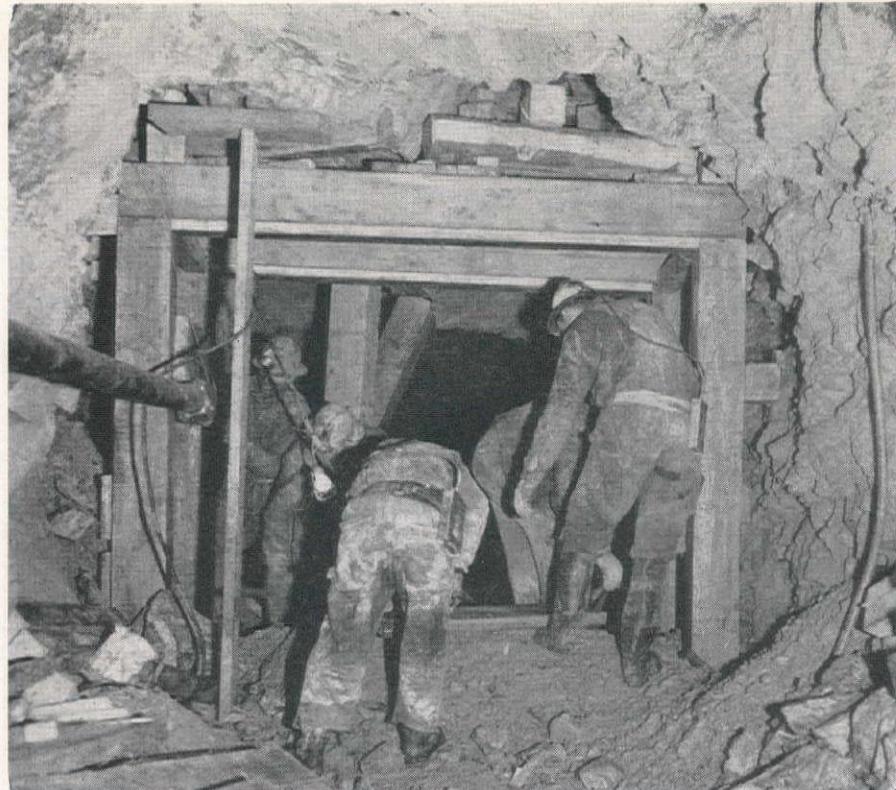
**DRILLING AND EXCAVATING** in the small bore is carried on with specialized equipment developed for the dimensions of the job. From top to bottom: 1—A two-drill track carriage provides unusual stability by bracing the vertical column against the arch; 2—The three-car train takes all rock from one round in a single trip and is dumped by chain hoists at the waste; 3—An electric hoist at the rear of the train operates a slush bucket which loads all three 12-cu. yd. cars without switching.

a slush bucket mounted on the forward end and a winch in the rear, the unit eliminates the necessity for switching cars during the excavation of a round and consequently does away with any sort of cherry picker installation and the accompanying additional excavation. The three side dump cars are operated as a unit with the ends of the cars lowered to permit operation of the slusher over the full length of the train. The front end of the first car has an apron and gate which can be lowered when the train gets into operating position. Anchor cables of the slusher are fastened to pins anchored in the heading face.

After the drilling has been completed, the drill carriage is pulled out of the tunnel by a small battery locomotive, holes are loaded, the blast set off, the face ventilated and the combination excavating and hauling unit brought in by the locomotive. The slusher, operated by an electric motor and cable drums at the rear end of the unit, loads each car successively by dragging the rock filled bucket through the cars. Once in operating position at the face the electric hoist is hooked up by a three-connector plug to the power cable in the tunnel. An average of about one hour is required for excavating after each round.

Following the mucking, all material is hauled out in a single train load and dumped in the waste pile. The contractor has erected three steel standards along the track on the waste pile and the entire train is dumped by lifting one side of each car by means of chain hoists mounted on each standard. (See accompanying photograph.) Ventilation at the heading is accomplished with a series of 8-in. blowers installed at intervals along the 8-in. ventilation line extending from the portal to the heading. One blower is mounted at the portal and additional units every 1,000 ft. The blowers are set up to exhaust the air at the face and are in continuous operation, not being reversed to blow fresh air into the heading following the blast. About 20 min. are required to exhaust fumes and smoke from the face after each blast.

**TUNNEL LINE** is run alternately by two members of the resident engineer's staff. Timber lining consists of 7x7-ft. square sets of 8x8 sills and 8x10 caps.



**HEAVY GROUND** in several sections resulted in caveins of 5 to 8 ft. The worst, of 10 ft., occurred at this location. In some cases 8x10-in. caps were shattered by the pressure. In better rock 8x8-in. caps were used with 4x8-in. sills, and in 700 of the first 2,000 ft. of tunnel no timbering was required. Spacing of sets is 2 and 4 ft.

#### Tunnel support

More than 1,300 ft. of the tunnel (which had been driven in 2,000 ft. from the portal by the end of May) has required timbering, some of the ground being exceptionally heavy. Normal supports consist of 7 x 7-ft. square sets of 8 x 8-in. and 8 x 10-in. timbers on 2 and 4-ft. centers. The 8 x 10-in. caps and 8 x 8-in. sills are used in the heavier ground. Where only light supports are required the contractor has used 8 x 8-in. caps and 4 x 8-in. sills.

In several sections of the tunnel caving occurred, opening up as much as 5 to 8 ft. At the worst location (see ac-

companying photograph) the back caved to a height of 10 ft. At these locations heavy timber lagging was braced against the sets to prevent further caving. During the last two months the contractor has encountered better rock and progress has been considerably more rapid, but until the end of May the best day's progress (on a three-shift basis) had been 29 ft. and averaged 17 ft. Late in July the contractor passed the 50 per cent mark on the progress schedule. Relatively little water has been encountered. The contract is expected to be completed early in 1943.

#### Organization

The pioneer highway tunnel is being driven under the direction of the Colorado State Highway Department by Ed H. Honnen of Colorado Springs, Colo., with Tom Taylor as superintendent for the contractor. W. A. Gray is resident engineer in charge of the project for the highway department. The tunnel is located on a highway designated as a part of the strategic highway net by the War Department, and the project is proceeding with military approval.

#### MAJOR ITEMS OF EQUIPMENT

Drills—Cochise Model 82  
Steel—Crucible  
Jackbits—Ingersoll-Rand  
Blowers—Champion Forge  
Powder—Gelex No. 2, du Pont  
Bit Grinder—Massco, Mine & Smelter Supply Co.  
Locomotive—General Electric Co.

## Aggregate Screen Revision Issued

A REVISION of Simplified Practice Recommendation R147-33, Wire Diameters for Mineral Aggregate Production Screens, has been approved by the industry, according to an announcement of the Division of Simplified Practice.

This recommendation lists the wire sizes recommended for the construction

of mineral aggregate production screens in sizes of clear square opening ranging from  $\frac{1}{8}$  to 4 in.

The revision will be identified as Simplified Practice Recommendation R147-42, Wire Diameters for Mineral Aggregate Production Screens, and will be effective from June 30, 1942.

# Army Equipment Rental Pool

**T**o CONSERVE the nation's resources of construction machinery and to expedite completion of army construction projects, the Corps of Engineers is establishing a nation-wide pool of construction machinery. Since contractors are now able to purchase few items of heavy construction equipment, and will find market restrictions greatly increasing during coming months, it is essential that they familiarize themselves with the administration of the army equipment pool which will form the major source of supply available to contractors engaged upon army construction projects. Details of the pool, its administration and operation are set forth in the following series of questions and answers, much in the same manner that the information was presented to a group of nearly two hundred California contractors at a recent meeting of the Northern California Chapter of the Associated General Contractors of America.

**Question:**—What is the army equipment pool?

**Answer:**—It consists of all construction machinery owned, controlled or rented by the Corps of Engineers. It includes rented equipment with or without an applicable recapture clause.

**Q.—Who operates the army equipment pool?**

**A.**—It is administered by the Construction Equipment Branch of the Operations Division, Corps of Engineers, under the direction of Major Robert L. Richardson. Administration of the pool is delegated to newly formed mechanical equipment sections within the Operations Division of each of the U. S. Engineer Department Divisions. Three of these are located within the eleven western states, with headquarters at San Francisco, Calif., (South Pacific Division); Portland, Ore., (North Pacific Division); and Salt Lake City, Utah, (Mountain Division). Actual custody of the equipment is delegated to the District Engineers within each Division.

**Q.—What is the purpose of the army equipment pool?**

**A.**—There are four reasons for the formation of the pool: (1) to expedite and provide for completion of future projects by conserving and controlling use of mechanical equipment; (2) to eliminate the present bottleneck of time buying—contractors cannot afford a long lapse of time between the order and delivery of construction equipment, while the Government, with a large pool of equipment under its control, will be in a position to accept future deliveries; (3) to insure the availability of an adequate supply of repair parts for overhauling and maintenance equipment on essential projects; (4) to regulate the use of construction equipment—both

**Corps of Engineers establishing a huge pool of heavy construction equipment for rental to contractors building army projects—Designed to permit most efficient use of machines and conserve equipment by controlling maintenance and repair**

Government owned and contractor owned—to prevent abuse of equipment and to best conserve present equipment resources. Establishment of a pool is expected to provide the maximum use of construction equipment with a minimum of time lost in transportation between projects, and mechanical breakdowns.

**Q.—Is it likely that contractors can buy and secure delivery of new construction equipment in the near future?**

**A.**—Only with the approval of the District Engineer. The first call for nearly all new construction equipment now coming from manufacturers has been allotted to the combat services, who are expected to require a large proportion of the output. The remainder will probably be purchased directly by the Corps of Engineers or other Governmental agencies. In most cases, the demand for construction equipment considerably exceeds the production ca-

pacity, and in one classification of equipment, the demand is nearly two and one half times the production capacity.

**Q.—What are the sources of equipment in the pool?**

**A.**—They include equipment previously purchased by the Corps of Engineers, future purchases of new and used equipment, machines secured through exercise of the recapture clause on army construction projects, idle equipment requisitions by the Corps of Engineers, and privately owned equipment rented to the Corps of Engineers, either with or without a recapture clause.

**Q.—What general types of equipment are included in the pool?**

**A.**—All types of heavy construction equipment, including tractors and allied tractor equipment, power shovels, cranes and draglines, trenchers and similar equipment, trucks, crushing, screening, batching and mixing equipment, compressors, graders, rollers, and pavement finishers. Some smaller tools which form a part of the existing equipment owned by the Army are included, but it will be the general practice not to purchase additional equipment which has a value of less than \$300.

**Q.—How large is the entire pool?**

**A.**—At present, in all parts of the United States, equipment with a total value of \$27,000,000 is being rented to contractors by the Corps of Engineers.

**Q.—Who may secure equipment?**

**A.**—Contractors who have been awarded construction contracts by the Corps of Engineers. If equipment is available, and is requested by another governmental agency, it may be allotted to other war projects which are considered to be essential by the district engineer having jurisdiction over the equipment requested. If the particular type of equipment needed for an Army project is not available in the District, the request will be forwarded to the Division, and if it is not available there, it may be secured by transfer from another Division. Prior to bidding on a project, contractors should confer with the District Engineer to determine what equipment will be necessary in addition to that owned by the contractors, themselves. Equipment will be released to the contractor as soon as it is needed,

**T**o ENLARGE the resources of the army equipment rental pool without drawing too heavily on the manufacturers' limited capacity, the Corps of Engineers is requesting all counties and other public and private agencies owning construction equipment to offer heavy machines to the Army for rental. Many public agencies, and counties in particular, will find their construction operations greatly reduced as a result of the Construction Limitation Order (L-41), and equipment forced into idleness by this order can be placed to very good use as a part of the equipment pool. To make equipment available to the Corps of Engineers, write to the Chief of the Mechanical Equipment Section in the office of the nearest Division (listed in the tabulation on the opposite page), or write directly to J. M. Fettler, Equipment Consultant, Office of Chief of Engineers, 231 Sansome St., San Francisco, Calif.

if it is available, and availability can be ascertained by consulting with the District Engineer before bidding.

**Q.**—May a contractor without any equipment bid on an army project with the supposition that all equipment necessary for completion of the work may be rented from the equipment pool?

**A.**—No. A contractor should own, or otherwise directly control, at least 40 to 50 per cent of the equipment which will be required for completion of the work within the time allotted.

**Q.**—In what condition of repair is the equipment in the pool?

**A.**—Equipment is maintained in first class operating condition by a program of inspection and overhaul. During operation of pool equipment on a project, it is subject to regular inspection by a member of the district mechanical equipment section, who also assists in making job repairs. At the conclusion of a project, pool equipment certified to be in good operating condition by the District maintenance inspector, is transferred to another project. Equipment requiring repairs is sent to the nearest authorized distributor or other repair shop for overhaul. Insofar as possible the services of existing manufacturers' distributors will be utilized to maintain pool equipment in good condition at all times. No equipment will be released for rental unless it is in good operating condition.

**Q.**—What rental rates will be used for pool equipment?

**A.**—The rental rates established by OPA in Maximum Price Regulation No. 134 will apply to equipment controlled by the Army. The complete rental schedule was published in the May, 1942, issue of *Western Construction News*. Where the Army re-rents, fees will be returned to the equipment owner. For the rental of equipment to the pool, Maximum Price Regulation No. 134 also applies.

**Q.**—What do these rental rates include?

**A.**—They include only the bare machine, with standard factory equipment. Rental rates do not include operators, fuel, lubrication, transportation to and from the job, or running repairs. Contractors are expected to maintain the equipment during the rental period if minor repairs may be necessary, in the same manner as has been customary with privately rented equipment. Assistance in securing repair parts, welding rod, and other materials may be secured from the Mechanical Equipment Branch.

**Q.**—Does the equipment pool have available repair parts and materials?

**A.**—Stocks of repair parts and materials will be carried by the authorized equipment manufacturers' distributors. These may be obtained by securing from the District Engineer a letter of approval which will authorize a dealer to release the needed parts or materials.

Mechanical Equipment Sections are being established under the Operations Divisions of each of the following Divisions of the U. S. Engineer Department in the eleven western states, to supervise administration of the equipment rental pool. Actual custody of the equipment has been delegated to the District Engineers within the Division organizations.

South Pacific Division—San Francisco, Calif.

San Francisco District  
Los Angeles District  
Sacramento District

North Pacific Division—Portland, Ore.

Portland District  
Seattle District (Includes Alaska)

Mountain Division

Utah District (Salt Lake City)  
Denver District

Missouri River Division—Omaha, Nebr.

Fort Peck District (Montana)

Southwest Division—Dallas, Texas

Albuquerque District (N. Mex.)  
Denison District (Texas)  
San Antonio District (Texas)  
Galveston District (Texas)

project has reached about 70 per cent of completion. Upon completion of the project, parts will be ready at a distributor's shop when the equipment is presented for repair.

**Q.**—Are rubber tires available within the pool?

**A.**—At the present time, the equipment pool does not include tires. Contractors should secure tires required for privately owned equipment from the Local Rationing Board. When tires cannot be secured through this board because of an exhausted local quota or state reserve, an appeal may be made to the District Engineer, who may request an increase in the state tire allotment from the national reserve.

**Q.**—May contractors rent their own equipment to the Army with reasonable assurance that the equipment will be returned if the contractor is awarded another project for which the equipment is required?

**A.**—The return of equipment rented to the pool will be determined by the relative importance of the projects. Equipment which is standing idle may be requisitioned by the Corps of Engineers if rental cannot be arranged upon a reasonable basis. The policy of the Construction Equipment Branch will be to avoid requisitioning wherever possible.

**Q.**—Will recapture clauses applying to equipment purchased under PD-3A be exercised?

**A.**—Recapture will not be taken unless equipment remains idle for an unreasonable length of time or unless the owner refuses to rent or to use equipment on a government project. Equipment in this status can be transferred from one job to another by applying for a certificate of transfer, but will not be released from the recapture clause. Recapture will not be exercised without a fair appraisal of the equipment.

**Q.**—Are parts available to contractors for equipment owned by themselves, and being used on army contracts?

**A.**—Repair parts for privately owned equipment may be secured in the same manner as repair parts for rented equipment. If an overhaul is expected to be required for any machine upon the completion of a project, the equipment will be inspected upon request when the

## Complete Survey of State, County, and City-Owned Construction Equipment

A SURVEY of all construction equipment owned by highway departments of the various states and other local government units has been completed by the Bureau of Governmental Requirements, and is now available for use by all Government agencies, Maury Maverick, chief of the bureau, reported late in June.

The survey, the first of its kind, has been completed under the direction of Louis Levenson, chief of the Construction Equipment Section of the Bureau. Answers to questionnaires have been received from all states having highway departments. Responses were also received from virtually all of more than 3,000 counties sent questionnaires, 1,100

cities of 10,000 population and over, and 3,500 cities and towns under 10,000 population.

The survey as completed lists 34 types of equipment, with details as to age and condition. Governmental agencies have already found the survey helpful in locating equipment which can be leased or rented by one highway department to another for important war work.

Construction of a major airport to serve both Seattle and Tacoma, Wash., is expected to begin in the near future, following completion of a survey by engineers of the Civil Aeronautics Administration begun last month.

# Preliminary Design Chart—III

## Selection of Propellor Turbines

TURBINES AT BONNEVILLE dam are of the Kaplan, adjustable blade type rated at 74,000 hp. under a 60-ft. head. The speed of these propeller type units, which are the largest installed within the United States for that particular head, is 75 r.p.m. and the specific speed is 122 r.p.m. The ten units that will soon make up the ultimate installation at Bonneville formed the basis for the interesting study that follows.

Several requests have been made for a chart similar to the one published in the April, 1942, issue of *Western Construction News* except that it be made for a propeller instead of a Francis type runner. Development of this chart was made easy by an intimate knowledge of the characteristics of the Bonneville tur-

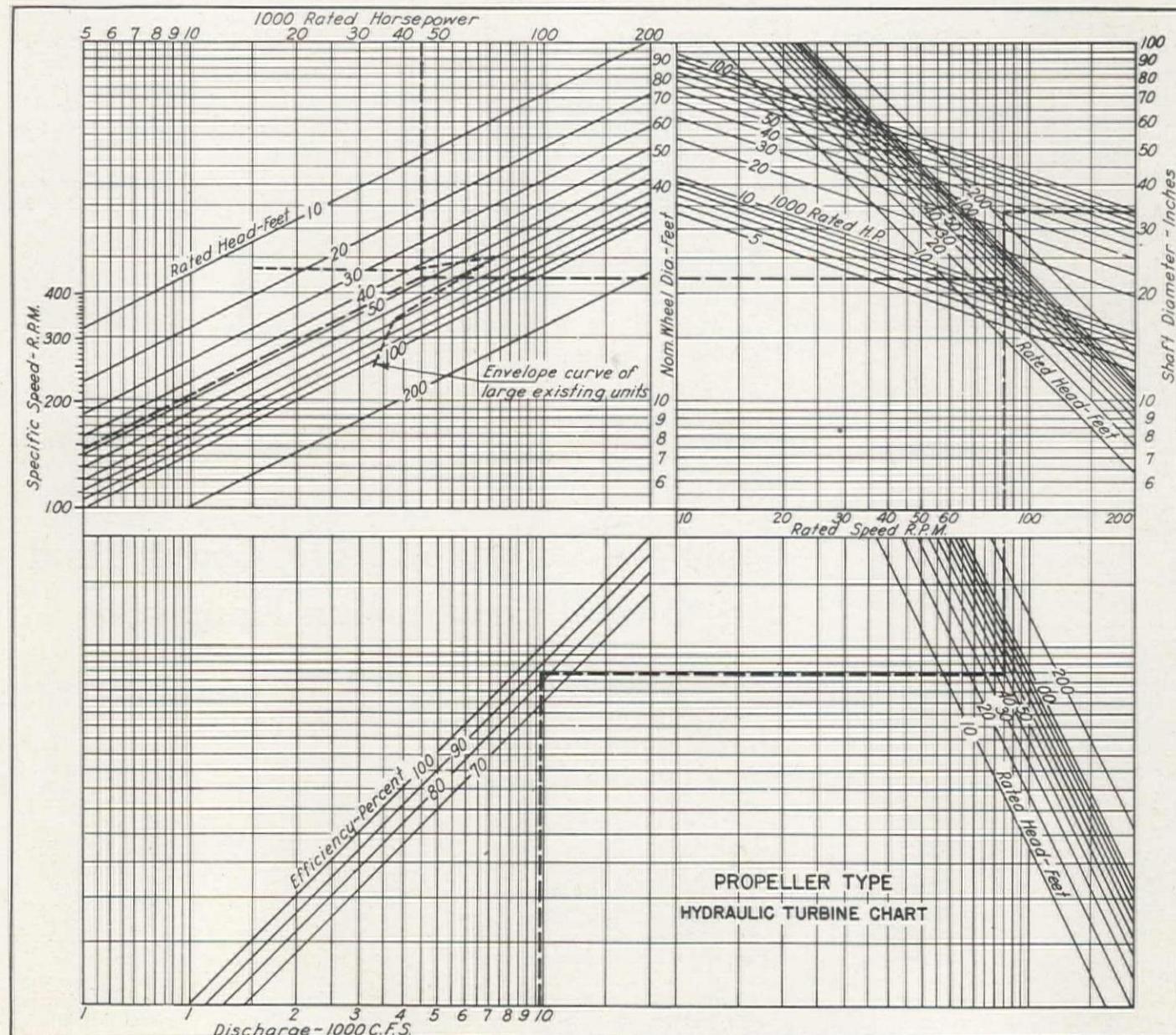
**Seven vital elements of propellor turbines may be determined approximately for preliminary estimating purposes by referring known factors to the chart based on existing installations**

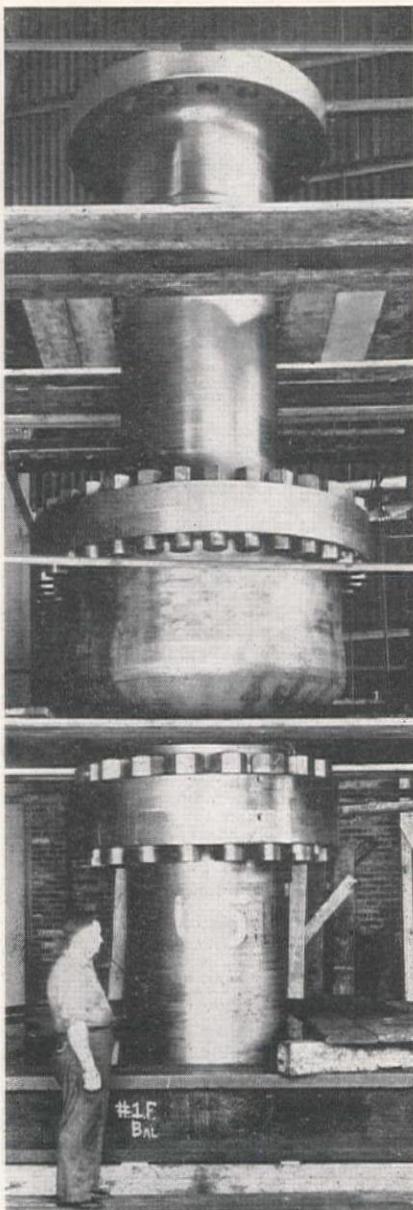
By A. E. NIEDERHOFF  
Structural Engineer  
and  
F. L. B. MILLER  
Mechanical Engineer, Portland, Ore.

**USE OF THE CHART** is illustrated by an example at the end of the article which follows the dash line through the chart. Existing units are shown by the envelope curve in the upper left quarter of the chart.

bines, the mechanical features and dimensions of which were definitely in the pioneering stage. Bonneville turbines stand at the head of the list of large units as shown by the envelope curve on the attached chart for a 74,000-hp. unit at a 60-ft. head.

The diagram allows the preliminary selection and determination of the main characteristics of a propeller or Kaplan type runner within the restrictions and





**BONNEVILLE'S 74,000-hp. turbines, the largest Kaplan adjustable blade units installed within the United States, have 42-in. shafts. One is shown above in the shop assembly prior to installation.**

limitations previously mentioned for the Francis wheels. These limitations are that general characteristics are covered within present day practice of several leading turbine manufacturers and do not represent proposed developments or specific shop practice. Furthermore, performance is for a full gate at rated head unmodified by the necessary synchronous speed with a generator. For final design the recommendations of the turbine manufacturer should be followed.

The planning engineer usually knows the maximum head and the rated head on his proposed turbines. The problem is to pick the correct size for either an economical or an available unit. The chart facilitates this selection and in addition gives the specific speed, turbine shaft diameter, nominal wheel diameter, rated speed and discharge for any assumed efficiency. All of these factors are interlocked and are interdependent

and are shown in their proper relationship on the chart.

#### **Limiting heads**

Because of a high specific speed the propeller type runner with either fixed or adjustable blades can operate under heads as low as 7 ft. For the same reason, and to prevent cavitation, the highest head installation is 106 ft. in Ireland on the River Shannon. Between these two boundaries there are many economical and feasible units installed in the United States with the greatest improvement shown in units operating under heads ranging from 35 to 60 ft.

The envelope curve shown in the upper left corner of the chart connects several points that are believed to be the largest capacity turbines for the several heads. Thus, at a 14.1-ft. rated head the turbines at Vargon, Sweden develop 15,200 hp. and at 37.7-ft. head the Ryberg, Switzerland units generate 38,700 hp. Bonneville represents the next point on the envelope curve followed by 37,500-hp. turbines under a 66-ft. head at Seven Sisters, Canada. The termination of the envelope curve is at the 33,000-hp. units on the Shannon, Ireland. By selecting units to the left of this curve for a particular head, the engineer can be certain that his selection is within bounds of existing plants.

#### **Wheels characteristics**

Shaft diameters at the present time are generally limited to 24 in. because of the priority of war work for the produc-

The article on these pages is third in a series intended to simplify the work of preparing preliminary studies at a time when skilled and experienced engineers are not available and much estimating must be done with less skilled technicians. The next article in the series will appear in the October issue and will be devoted to the volume of concrete in dams.—Editor.

tion from large lathes. If this is the controlling factor instead of an economical size (which allows shafts as large at 42-in. diameter) then the designer can start on the vertical scale in the upper right border of the chart. Working backwards to the left until the horizontal line intersects the diagonal line for rated head he can then pass vertically upward and get the horsepower of an available turbine with a 24-in. shaft.

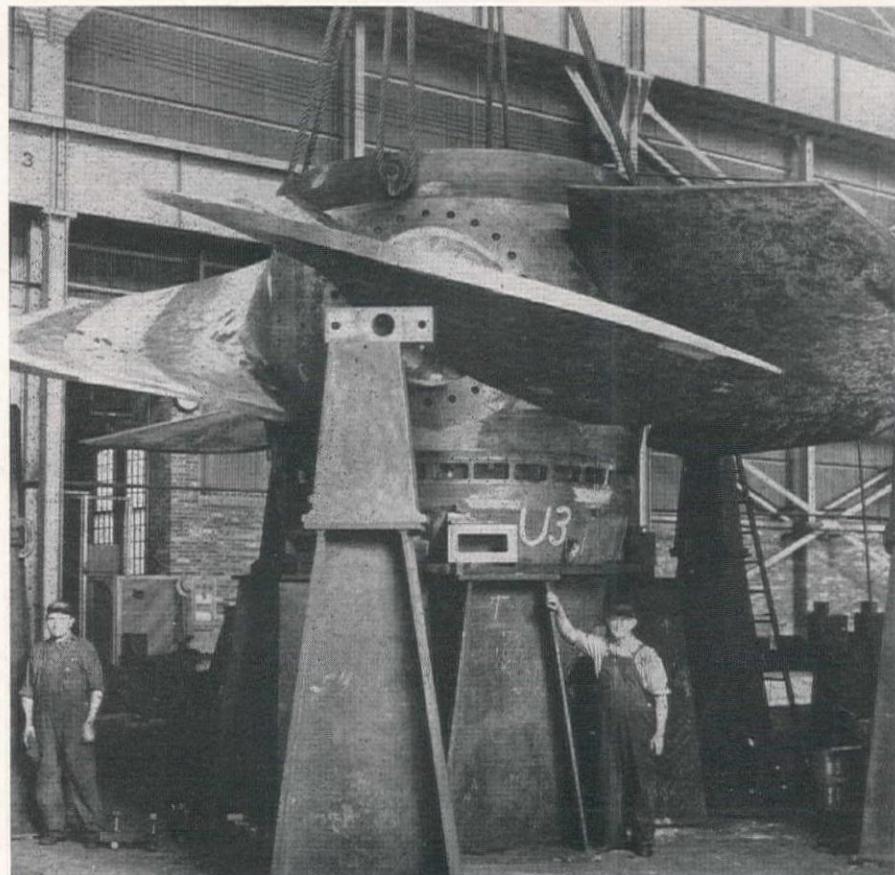
Speed is governed by the head and a specific speed that will not result in a vacuum with its consequent cavitation. To keep the chart up to date the limit of conservative practice was followed as given by the formula:

$$Ns = \frac{1000}{H^{1/2}}$$

where  $Ns$  is the specific speed in r.p.m.

$H$  is the rated head.

**WHEEL AND HUB ASSEMBLY** for one of the Kaplan adjustable blade hydraulic turbines at Bonneville Dam on the Columbia River is shown in shop assembly. These units operate at 75 r.p.m. under a 60-ft. head, and form the basis for the accompanying chart.



Discharge for a full gate opening is determined by the overall efficiency of the unit. For good efficiency of 95 per cent the water coming through the machine would be less than under a poor efficiency of 80 per cent. Bonneville turbines have an efficiency of better than 90 per cent and it is not beyond reason to expect efficiencies as high as 93 per cent. This is the outstanding value of a propeller wheel over the Francis type runner where 80 per cent efficiency is a normal expectation.

#### Illustrated example

To show the proper application of the chart the installation at Wheeler on the Tennessee River will be checked. These turbines are rated at 45,000 hp. under a head of 48-ft. Enter the top of the chart at 45,000 hp. and pass vertically down to 48-ft. head on a diagonal line. Observe that it falls within the envelope curve. Proceeding diagonally to the left and parallel to the head curves, at the left border of the chart is shown a specific speed of 145. Actually, the specific speed is 144.

From the point within the envelope curve pass horizontally to the right obtaining a nominal wheel diameter of 22 ft. Prototype wheel diameter is exactly 22 ft. Continuing on this horizontal line to the point of intersection with the di-

agonal line representing head, pass vertically downward and read a speed of 85 r.p.m. which checks the actual 85.7 r.p.m. within close limits. Returning to the point of intersection between the horizontal and diagonal lines just mentioned in the upper right of the chart, pass upward to the intersection with the diagonal horsepower line of 45,000. Going horizontally to the right read the shaft diameter of 34 in. on the vertical scale on the right border of the diagram. Actually the shaft of the Wheeler turbines is 33½ in.

Referring to the speed of 85 r.p.m. pass vertically downward to the lower right quarter of the chart to an intersection with a diagonal head line. From this point go horizontally to the left to an efficiency of 85 per cent and then vertically downward to a discharge of 9,800 c.f.s. Wheeler turbines-discharge 10,400 c.f.s. under rated head for full gate opening.

Other installations can be similarly checked to establish validity of the chart. Not only has this method proved sufficiently accurate but it is a time-saver where answers must be given for new, controlling factors brought on by the war. The limiting shaft diameter above quoted is only one classic example of a condition not formerly circumscribing the engineer in his selections.

this trapezoidal area no obstacle should be permitted of sufficient height so as to obstruct an angle of glide of 40 ft. horizontal to 1 ft. vertical. In some locations it will be necessary to accept an approach area with a glide angle of 30 to 1.

Load per square inch of tire surface in contact with the runway, a question often asked, is answered thus: new heavy bombardment planes, up to and including the spring of 1944, will call for gross loads of 120,000 lb., static wheel loads of 60,000 lb., tire inflations of 70 lb., impact factors 25 per cent, with a design stress requirement of 100 lb. per sq. in., and a minimum safety factor of 1.20. These design factors will allow from one to three landings per day of Air Corps new standard heavy bombardment air-planes.

Col. Hanks emphasizes that interceptor facilities must be provided along the Coast. The actual building of flight strips is directed by Public Roads Administration. Harold E. Hilts, Chief, Division of Highway Transport, Public Roads Administration, is in direct charge of activities, including formulation of plans and co-ordination with the Army. It is not exactly clear how much money is now available to build flight strips. Another \$5,000,000 was provided in a recent appropriation act. It is reasonable to assume, however, that more funds are available from other appropriations, although they are not specifically designated for flight strips.

For a description of an early western flight strip, see *Western Construction News*, February, 1942.

## Auxiliary Flight Strips to Be Constructed for Army Use

PRESENT INDICATIONS are that 80 flight strips will be constructed in the United States. Where they will be located obviously is a military secret. But it is proper to assume that the San Francisco Bay region, and other areas along the Pacific Coast, and on the Pacific slope, will have their generous share of the flight strips. It is possible to judge roughly where they may go by a hint provided by Col. Stedman Shumway Hanks, in the Flight Strip Unit of the U. S. Army Air Forces, Director of Base Services, who says: "In general terms it will be advisable to have one flight strip for each squadron. A squadron consists of from 12 to 25 airplanes, depending on the type of squadron. It will, however, be advisable to have one extra flight strip for every three squadrons; in other words, using technical terms, for every fighter, interceptor, or bombardment group, in the Army Air Forces, four flight strips will be advisable."

Col. Hanks also is responsible for the following definition of a flight strip. It is a landing area not less than 200 ft. wide, 1,800 ft. long, with clear approaches near public highway, on public land, developed with public funds. The desirable size over all for land of a flight strip for military purposes is 8,000 ft. long, with 500-ft. safety clearance on each side of the center line of the runway. The runway, on a flight strip area is not less than 150 ft. wide and not less

than 4,000 ft. long when paved, with 1,000-ft. extension at each end with stabilized material. Two runways are not developed on flight strip areas.

Runways should not be less than 3,000 ft. long for use of pursuit ships, and not less than 4,000 ft. long for all other military craft. These lengths are at sea level and subject to corrections for elevations. Surrounding terrain may be uneven but the runway must be smooth, with a grade not over 1 per cent. Surface of runway, paved or sod, should have adequate bearing characteristics. Soil may be treated by some form of stabilization, such as heavy grass turf, with or without soil stabilization. Runways should be laid out in the direction of prevailing winds, determined by official wind roses, wind rose summaries based on minimum periods of five years, 24 observations a day, usually being available in the area of the site. Communication lines or public utility poles on the near side of the highway or at the end of the runway should be placed underground or moved.

The safe glide path outside the flight strip area on the prolongation of the runway should be, within a trapezoidal area two miles long extending beyond the boundary of the flight strip area, and in the direction of the center line of the runway prolonged. This trapezoidal area should be not less than 300 ft. wide at the boundary of the flight strip area, and 4,000 ft. wide at the far limit. Within

## Tacoma Steel May Be Used in New Seattle Viaduct

THE ONLY BID submitted to the Washington Department of Highways for removal and salvage of the cables and towers of the Tacoma Narrows Bridge has been rejected. J. Philip Murphy, steel contractor of San Francisco, and Woodworth & Co., contractors of Tacoma, Wash., asked \$450,000 plus the salvaged material for the work. The plans under which the bids were asked called for complete removal of the two main cables, the two main towers with the concrete sidewalks, and minor structural steel parts of the approach spans and anchorages. Steel from the Tacoma Narrows Bridge may be used to complete the \$1,000,000 Spokane Street viaduct in Seattle, if plans being developed by the City of Seattle and the State Department of Highways prove feasible. The Spokane Street viaduct, which is being constructed to relieve heavy industrial traffic from the city's south side, has been seriously delayed by inability to secure reinforcing and structural steel. A quantity of steel which has already been salvaged from the Tacoma Narrows Bridge is available, and may be refabricated to provide the structural steel members needed for the viaduct.

# Priority and Price Rulings

**New orders, amendments to old orders, and interpretations of recent orders cover tires, lumber, repair parts, hand tools, expendable materials, night illumination, birth certificates and cement**

## Advice on Tire Problems

FIELD REPRESENTATIVES to advise truck operators and other tire users, tire dealers, and recappers have been appointed in all of the eleven western states by the Office of Price Administration. OPA has suggested that all technical inquiries be presented to the nearest member of the field organization, where problems can frequently be solved without referring to the headquarters in Washington. Field organization members of the Tire Rationing Branch of OPA in the eleven western states are as follows:

Temple F. Penrod, State Tire Rationing Representative, Phoenix, Ariz.; Fred H. Chestnut, Regional Tire Rationing Representative, San Francisco, Calif.; Richard Link, Regional Tire Quota Specialist, San Francisco, Calif.; Grant McConnell, Regional Planning and Research Specialist, San Francisco, Calif.; Kenneth Lowell, State Tire Rationing Representative, San Francisco, Calif.; Paul E. Tibbitts, State Tire Rationing Representative, Los Angeles, Calif.; Edward Dagner, State Tire Rationing Representative, Portland, Ore.; C. Walter Sandack, State Tire Rationing Representative, Salt Lake City, Utah; Ned Nelson, State Tire Eligibility Specialist, Salt Lake City, Utah; Arthur H. Jacobsen, State Tire Rationing Representative, Seattle, Wash.

## Lumber Freeze Extended

SHORTAGES of many types of construction lumber since the original issuance of Limitation Order No. L-121 resulted in an extension of the freeze order to August 13—a month after its first expiration date. A revision of the order, announced at the same time as the extension, released additional grades and species of softwood lumber not being purchased by military agencies of the Government in sufficient quantities to warrant continued restriction. Construction lumber is considered a scarce commodity because of the increasing demands of the armed forces, and the substitution of lumber in many structures formerly using metal or other materials. The amended order will continue to direct the flow of types and qualities of lumber essential for war purposes until a permanent system of distribution is worked out. It is expected that there will remain available adequate amounts of lumber of the types and

quantities needed for war housing, general maintenance and repair.

## Repair Parts Priorities

AT THE REQUEST of the Associated Equipment Distributors, the Maintenance and Repair Branch of the Construction Machinery Branch of the War Production Board has issued an interpretation of Preference Order P-100, indicating that this order is intended to provide for the repair of existing construction equipment, although it may not be used to replace complete units. The use of this order should be restricted to the repair of existing equipment as necessity arises, and is not intended to permit distributors to stock repair parts in quantities. Where parts are taken from the distributor's stock to make repairs to existing equipment, the order may be used to replace the dealer's stock. This interpretation removes the former restrictions which held that Order P-100 could be used only to obtain parts for equipment in rental service, and not to repair construction equipment which was held for sale.

## Hand Shovel Styles Cut

SIMPLIFICATION of sizes and standards for all hand tools has been ordered by the War Production Board in the issuance of Limitation Order L-157. Schedule I, accompanying the order, covers hand shovels, spades, scoops, and telegraph spoons. After Aug. 9, no material for manufacture of these products may be supplied to any producer unless it conforms to the standards of Schedule I. Additional schedules covering other hand tools will be issued from time to time. The use of alloy steel in any shovels, except those used in mining operations, is prohibited under the provisions of Schedule I.

## Priorities for Expendables

CONTRACTORS on war construction projects which have ratings under Preferred Rating Order P-19 with a serial number above 81 are now limited in the application of the project rating to materials which are to be physically incorporated in the project and to certain expendable material. The new ruling appears as "Amendment I" to Preference Rating Order No. P-19. The amendment provides that P-19 orders numbered

above 81 are identical with those issued under P-19-a and P-19-h. The serial numbers of P-19 orders below 81 were issued for military construction outside the United States, and are not included in the amendment. According to the terms of the amendment, preference ratings may be assigned to expendable material which will be wholly consumed by the contractor at the project location, and during the construction of a war project. Expendable materials are taken to include explosives, abrasives, forms and scaffolding, but not fuel, construction machinery or repair parts. The priority ratings are applicable to material which would be physically incorporated into war projects.

## Motor Carrier Operation

REVISIONS of conservation standards for trucks in local and over-the-road service recently issued by the Office of Defense Transportation include specific exemptions for vehicles operated in connection with construction and maintenance of public utilities. At the same time the revised order was issued, ODT announced that it was considering the issuance of general permits exempting contract or private carriers engaged in the transportation of construction material from certain provisions of the order. The exemptions in ODT No. 17 include any motor truck transporting high explosives, trucks operated exclusively for collecting and disposing of sewage or garbage, trucks operated exclusively in connection with the construction and maintenance of essential telephone, telegraph and radio communications, electric light and power, gas and water supply, pipe lines, street railways, and public highways.

## Pacific Coast Dim-Out

OUTDOOR ILLUMINATION has been drastically restricted along the entire West Coast, covering an area from the Straits of Juan de Fuca to the Mexican border, and extending as far inland as the foothills of the Sierra Nevada in California, and as the Cascade range in Oregon and Washington. In Public Proclamation No. 10, Lieut. Gen. J. L. DeWitt, commander of the Western Defense Command, has ordered that illumination within the zone of restricted lighting be extinguished or controlled to prevent aiding operations of the enemy. Construction projects located within the area defined in the proclamation will, presumably, be governed by the regulations for industrial illumination, which provide that all light sources for industrial purposes shall be shielded or revised to as great an extent as may be practicable in order to eliminate or reduce to a minimum the amount of light which is emitted upward.

## Release Frozen Materials

TO FACILITATE the release of idle and frozen materials now in the hands of persons not regularly engaged in the sale of such materials, the War Production Board has established a western regional office of the Inventory and Requisition Branch of the Division of Industry Operations, with headquarters in San Francisco, Calif., and branches in Seattle, Wash., and Los Angeles, Calif. The Inventory and Requisition Branch will list the available strategic materials, and will requisition these materials upon request, provided adequate priority ratings have been established and that other sources cannot supply the needed material. The western regional office will be under the direction of W. R. Kluse, with headquarters at 1231 Market Street, San Francisco, Calif.

## Will Build Heavy Trucks

MANUFACTURE of 500 large-capacity, heavy-duty, "off-the-highway" trucks has been authorized by the War Production Board for use in the mining, construction, logging, and petroleum industries. Production of these large units was stopped on May 31, but now may be started by the thirty-five manufacturers normally engaged in such work upon specific authorization for quantities and types from the Director General for Operations. Because these units are specially produced to specifications for a particular project, there is no existing stockpile which may be drawn upon at the present time.

## Industrial Power Equipment

CONTRACTORS ENGAGED in the construction of industrial plants may obtain direct delivery of heavy power and steam equipment to be installed in the plants by extending preference rating certificates based on orders issued to the persons for whom the plants are being constructed. This is a modification of Limitation Order No. L-117 which formerly permitted heavy power and steam equipment to be delivered only to the person to whom a preference rating certificate or order was originally issued. Modifications, as contained in Amendment 3 to Limitation Order No. L-117, are issued by WPB.

## Birth Certificate Substitute

BIRTH CERTIFICATES formerly required of applicants for work on restricted Government projects have been eliminated, under a new procedure developed jointly by the Army, Navy, the War Manpower Commission, and the U. S. Employment Service. Birth certificates have been difficult to secure in many cases, and in order to speed hiring on important projects, the requirement that a certificate be supplied has been eliminated. Instead, contractors and subcontractors will require workers to be employed on restricted contracts to sign a statement to the effect that they are

citizens of the United States, and that they have read and understand the penalties for misrepresenting their status, the penalty being \$10,000 fine, or 5 years in prison, or both. Such a declaration, signed in the presence of an Army or Navy representative, will meet the requirements of the War and Navy Departments, but does not relieve the employer from the duty of making further investigation when there is any reason to doubt the truth of the applicant's declaration.

## Used Typewriters Wanted

ABOUT 600,000 used typewriters must be purchased by the Federal Government this year to meet the requirements of the Army, Navy and other Governmental branches allied with the war effort. The War Production Board has requested that the construction industry release as many typewriters as can be spared for purchase by the Government. Used typewriters will be bought by dealers' and manufacturers' representatives who will act as purchasing agents for the Government. Only standard typewriters, manufactured after July 1, 1935, are wanted. The factory trade-in allowance as of Feb. 1, 1941, will be paid for all machines turned over in this manner. Typewriters purchased by dealers under this plan will be labeled as Government property immediately, and will not be returned to trade channels.

## Credit Assured by Army

PAYMENT for construction materials ordered by Army contractors was assured by the U. S. Engineer Department even though performance bonds guaranteeing payment are no longer a part of the formal contract. Dealers in construction materials will receive payment for all allocated materials ordered in the name of the contractor by the Government for contractors are required to show proof of payment of all bills on allocated materials before final settlement.

To forestall any possible delay in the delivery of Government allocated materials when the credit standing of a contractor is in doubt, the Army Engineers urged dealers to expedite deliveries by offering assurance that bills would be paid. Even in cases where there remains excess materials upon completion of the project, the material dealer is protected for those materials become the property of the Government and the contract will be adjusted according to the value of the property left.

## Equipment Inventory

INVENTORY of used construction machinery throughout the nation will be begun this month by the Used Construction Machinery Section of the Construction Machinery Branch, War Production Board. WPB estimates that there are more than 500,000 pieces of vitally needed construction equipment throughout the country, many of them not now in use, or used very little. Many

of the tools are in the hands of townships, counties and municipalities and are used for only a few days each year whereas they could be kept busy all the time for war construction.

A complete inventory of available equipment will be kept up-to-date at each regional office of WPB for the information of Army, Navy, Governmental agencies, and private contractors engaged in war work. A construction machinery specialist will be appointed for each regional office to take charge of the inventory for that region. Information cards will be mailed to each owner of equipment for a complete listing of kind, type, size, condition, manufacturer, serial number, model number, year manufactured, year purchased, type of power, attachments, estimated cost of repairs, sale price as is, and other pertinent data. Change of status cards will be provided for owners so that they may report movements and uses of equipment.

The branch has recently completed a survey of repair and service facilities throughout the country, covering 400 shops with two million square feet of floor space, 3,000 skilled repairmen and \$13,000,000 worth of repair parts in inventory. Each regional WPB office has a breakdown of this survey to assist in expediting repair.

## Clear Lumber Not Frozen

RESTRICTIONS on the sale of construction lumber were not intended to apply to "Clears," "Thick Finish" and "Select" grades of high quality stocks, WPB announced in Interpretation No. 1 issued to Limitation Order L-121 (see *Western Construction News*, June, 1942, page 265). The higher quality stocks are not normally considered as structural material and consequently are not affected by the order, even in thicknesses of 3 in. or more. Boards and Dimensions of the common grades, specified in the order, which may also qualify as close grain or dense material, are frozen by the order however.

## Cement Types Are Reduced

MANUFACTURE of only three types of portland cement will be permitted after August 23 under the terms of General Limitation Order L-179 just announced by the War Production Board as a means of increasing the cement production by an estimated 20 per cent. Requirements of the military construction program have increased the demand for portland cement to a point where it was believed necessary to limit the manufacture in order to increase overall plant capacity.

The order also prohibits the ear-marking of any bins for particular customers, thus making storage capacity available to all purchasers, and required portland cement to be tested according to Federal or ASTM specifications. The applicable ASTM specifications are: Emergency Alternate Specification for Portland Cement ASTM Designation EA-C 150-Type I; Type II; and Type III, dated June 6, 1942. Federal specifications are

designated as: Emergency Alternate Federal Specification for cement; Portland-E-SS-C-19lb; 206a; and 201a, dated June 5, 1942.

Specifically exempted from the manufacturing and storing provisions of the order are four Bureau of Reclamation projects—Anderson Ranch Dam; Central Valley project, Kennett and Friant divisions; and Davis Dam—one U. S. Engineer Department project—Norfolk Dam in Arkansas—six Tennessee Valley Authority projects, and oil well cement commonly used under high temperature conditions.

In addition to increasing the producers' capacity by 20 per cent, the order is expected to accomplish a saving of 20 per cent in power consumption and a considerable tonnage of alloy steels normally consumed by the cement manufacturing industry.

### Truck Repair Parts Ordered

TRUCK OWNERS may secure repair and replacement parts from producers or distributors without returning a used part in exchange according to the terms of Amendment No. 1 to Limitation Order L-158 issued by WPB. Owners and operators who do not wish to have their machines repaired at a commercial shop may secure parts from dealers by supplying the distributor with a certificate which states that the owner will dispose of the used part through regular scrap channels within thirty days after purchase of the new part. Certificates are not required for parts which are consumed in operation or lost or stolen. Federal, state and local governments which are forbidden by law from disposing of used equipment are exempted from disposal of parts.

Indication that replacement parts may be available in sufficient quantity in the future was included in the amendment under a provision authorizing producers to schedule production of replacement parts without regard to prior purchase orders for other material on priority ratings lower than A-1-a. The amendment covers material entering into the production of replacement parts for passenger automobiles, light, medium and heavy motor trucks, truck trailers, passenger carriers and off-the-highway motor vehicles.

### Housing Utility Extensions

UTILITY EXTENSIONS for electric, gas, sewer, and water services to war housing projects, either publicly or privately financed are assigned the same preference rating as the housing projects themselves. Until July 1, utility extensions to housing projects were specifically excluded from the automatic rating assigned by P-46. Under the new procedure, builders will secure approval of private projects from the local Federal Housing Authority office which will then provide the builder with a letter requesting the local utility organizations to prepare an application for the extensions. Applications for the housing project and the utilities will be handled together

until finally approved, or disapproved, by WPB. Materials for the extensions will be made available from utility company stocks as far as possible, a list of which has been prepared by WPB Power Branch. Public war housing projects constructed by the Government will be handled in much the same manner.

Several other revisions of the utility extension order were contained in Extension No. 1 and Amendment No. 1 to Preference Rating Order P-46. Since July 1, a preference rating of A-1-c has been assigned to deliveries of all materials required for repair of an actual breakdown, or to make reasonable advance provision for repair to prevent breakdowns. Automatic approval of 250-ft. extensions has been eliminated and will apply only if the building was wired and piped and ready for service before July 1. After that time no extensions may be made without WPB approval. An A-5 rating has been assigned to materials required for protection against air raids, provided the protection is authorized by a Federal or state agency. Utilities in Canada have been brought under the terms of P-46 by arrangement with the Department of Munitions and Supply of the Canadian Government. The original P-46 order, which would have expired on June 30, has been extended to Sept. 30, 1942.

### Free Materials Restriction

NON-CRITICAL, SLOW-MOVING building materials have been removed from the restrictions of the Suppliers' Inventory Limitation Order L-63, which should make them more readily available to builders. Exemption No. 5 to the order permits dealers holding stocks of the specified materials to drop them from the records and reports required under the original order. The materials still remain subject to the inventory restriction of Priorities Regulation No. 1. Those materials released from the restrictions include: portland and natural cement, lime, gypsum, gypsum products, bituminous roofing materials, concrete pipe, cut stone, sand, gravel, crushed stone, clay products, insulation board, acoustical materials, mineral wool, paving materials, concrete products, glass, lumber, and wooden mill work.

### Copper in Water Systems

NO COPPER or copper alloys may be used in the manufacture of pipes and fittings for use in water supply and distribution systems with the exception of corporation cocks and curb stops, according to an interpretation of the Copper Conservation Order M-9-c issued by WPB. Iron and steel have been held to be satisfactory as substitutes for copper and pipes and fittings and consequently copper cannot be used for these purposes. The interpretation does not apply to pipes and fittings manufactured for plumbing systems for buildings since this use has already been specifically prohibited, nor does the interpretation apply to water meters, whose manufac-

ture has been ordered discontinued in September.

### Limitation of Construction

EXCAVATION or other movement of earth where no material except earth or other unprocessed material is to be incorporated should not be included in the cost of a project when applying to the War Production Board for permission to construct a project under the terms of the Construction Limitation Order L-41. The estimated cost need not include the cost of material, including equipment, which has been taken from another structure provided there is no change in the ownership of the material, nor is it necessary to include the labor cost involved in installing such material taken from another structure.

It has been ruled that the estimated cost of a project shall include articles and fixtures that are to be physically incorporated in the structure, or so substantially affixed to the construction that it may not be detached without serious injury to the fixture or the structure. The term "without change in design" appearing in the original order (see *Western Construction News*, May, 1942) is interpreted to permit changes in material or equipment when making necessary repairs as long as the architectural or structural plan is not substantially altered. In computing costs of construction over a 12-months period, the cost of work authorized by WPB need not be included and is eliminated from the restriction of the order which holds construction to a maximum of \$5,000 per year.

### Semi-Finished Timber Price

POLES, POSTS, PILING, split stock, mine timbers, and similar semi-finished timber products are subject to the General Maximum Price Regulation according to a ruling of the Office of Price Administration. The maximum prices for these products may not be higher than each individual seller charged for delivery of the product during March, 1942. Although logs are excepted from the regulation as raw material, posts, piling and mine timbers are commercial products used in the form in which they are sold and thus are held to be subject to the regulation.

### Highway Signals Exempted

MECHANICAL HIGHWAY SIGNALS, railroad and grade crossing signals are exempt from the restrictions of Limitation Order L-29 which restricts the use of iron and steel in electrical signs, billboards, outdoor and highway signs. Applying to all signs of 36 sq. in. and greater, the order prohibits manufacturers from using more than 50 per cent of the metal used during the 12 months period ending June 30, 1941. Amendment No. 1 states that "signs (as defined in the order) shall not include mechanically or electrically operated traffic lights and signals, including but not limited to, warning devices for use on railroads, grade crossings, highways."

## NEW BOOKS...

**STRUCTURAL THEORY**—By Hale Sutherland, Professor of Civil Engineering, Lehigh University, and Harry Lake Bowman, Professor of Civil Engineering, Drexel Institute of Technology. Published by John Wiley & Sons, Inc., New York, New York. 368 pages, 6x9. Price \$3.75.

Introducing basic conceptions and principles of structural theory relating to trusses, rigid frames, and space frameworks, this third revision of a standard structural text places considerable emphasis on graphic aids to problem solutions. The principles of static mechanics and strength of materials are thoroughly reviewed in the first chapter as a means of improving the student's mastery of the basic material. The first chapter also introduces the rigid frame as a means of removing some of the emphasis from the truss. Graphic statics are covered sufficiently completely in the second chapter to provide material for the usual course in the subject. The authors have provided an extended treatment of slope and deflection in order to present the elastic weights method completely, and to bring out the attention now paid to elastic deformation of structures. Rigid frames and indeterminate trusses are introduced with a comprehensive treatment of principles. Chapters are also included on roof trusses, tall buildings under wind load, and space frameworks. Material relating to slope and deflection, and to Hardy Cross methods of moment distribution and column analogy has been extensively revised and increased in line with the present importance of rigid frame construction. Influence lines are introduced early in the treatment of trusses as a means of simplifying many of the problems.

**THE CHICKAMAUGA PROJECT**—By Tennessee Valley Authority, Knoxville, Tenn. Published by the same organization, and cloth bound copies may be procured from Tennessee Valley Authority, Treasurer's Office, Knoxville, Tenn., at \$1.00 each. 450 pages, 6x9.

Sixth in a series of technical reports devoted to various projects of the Tennessee Valley Authority, this volume covers principally the Chickamauga Dam, and as has been the case with the four previously issued reports, covers all phases of the subject in a thorough and comprehensive manner. Publication of the fifth report, which will be devoted to the Hiwassee Projects, has been postponed pending completion of recently authorized additional projects in the watershed. Chickamauga Dam is the sixth of nine main river projects on the Tennessee, and is situated 7 mi. above Chattanooga, 471 mi. above the mouth of the river, and between the Hales Bar and Watts Bar dams. The completed structure consists of a navigation lock, concrete gravity spillway section, and power house, flanked on both banks by rolled earthfill embankments. The overall

length of the dam is 5,794 ft., and its maximum height is 129 ft. from foundation to deck of the intake section. The navigation lock, which comprised the first stage of the construction program is 60 ft. wide and 360 ft. long with lock miter gates. The concrete spillway section, 864 ft. long, comprises 18 bays with fixed roller spillway gates 40x40 ft. The initial installation in the 320-ft. power house consists of three 30,000-kva. generator units driven by propeller-type turbines with a rating of 36,000 hp. at a 36-ft. head. Contemplated future installation of a fourth unit will require extension of the power house building. The earth embankments at either end of the structure are 2999 ft. long and 1,385 ft. long respectively.

Following an introduction which ties Chickamauga Dam into the Tennessee Valley project as a whole, the report discusses in detail the preliminary investigations, design, access routes and construction plant, construction, reservoir preparation, initial operations and related development activities, and costs. A comprehensive series of appendices includes a statistical summary of the project, reports of consulting engineers and geologists, special studies of hydraulic models, panel forms, rock drilling, concrete placement, and personnel. Construction drawings have been issued separately as "Technical Monograph No. 50," and are available from the Treasurer's Office of the Tennessee Valley Authority, Knoxville, Tenn., at \$2.50.

The construction program involved three stages, the first being the navigation lock, the second, fourteen and one-half spillway bays adjacent to the lock, and the third, the power house and remaining three and one-half spillway bays.

**PLANE TRIGONOMETRY MADE PLAIN**—By Albert B. Carson, Ph.D., Instructor of Mathematics, Louisiana State University. Published by American Technical Society, 58th at Drexel Ave., Chicago, Ill. 389 pages, 5½x8¼. Price \$2.75.

Emphasizing the practical applications of plane trigonometry, the essentials of this mathematical subject are discussed in considerably more detail than is customary in many of the standard texts. The arrangement of the subject matter and the frequent use of illustrations of the practical applications are intended to make the book most effective for students who are particularly interested in the practical application of the subject rather than abstract consideration of a branch of mathematics. Tables included as a part of the book consist of 5-place logarithms of numbers, natural trigonometric functions, and 5-place logarithms of all six trigonometrical functions.

**REPORT WRITING**—By Carl G. Gau, Professor in University Extension, Rutgers University, Harold F. Graves, Professor of English Composition, The Pennsylvania State College, and Lyne S. S. Hoffman, Instruc-

tor in English Composition, The Pennsylvania State College. Published by Prentice-Hall, Inc., 70 Fifth Avenue, New York, N. Y. 266 pages, 6x9. Price \$2.75.

First printed in 1929 to apply the principles of composition and rhetoric to the specialized field of technical reporting, this first revision brings illustrative material to date, and includes the American Standards Association's officially approved list of scientific and technical abbreviations. Beginning with the business letter as an introduction, the subject matter is arranged so that the student may advance progressively from simple problems to the more complex. Following consideration of composition, style and preparation, the authors consider successively periodic reports, progress reports, examination reports, and recommendation reports. Information which will be of assistance to the technical writer is contained in the appendix, including specimen forms for reports, a bibliography of books and periodicals, permissible abbreviations and spelling forms.

**CONCRETE PIPE LINES**—By M. W. Loving, and published by American Concrete Pipe Association, 33 West Grand Avenue, Chicago, Ill. 300 pages, 6x9. Distributed by members of the American Concrete Pipe Association.

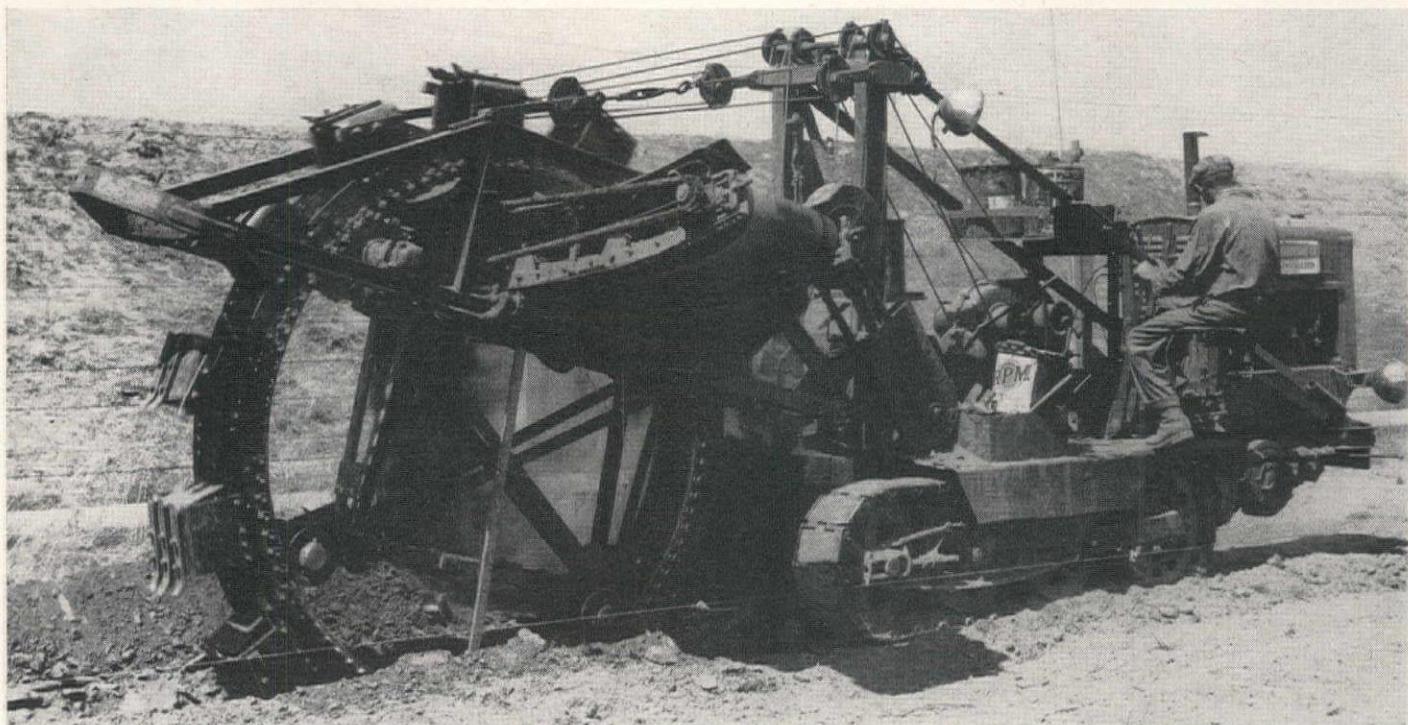
Consisting principally of a compilation of information on concrete pipe lines heretofore published in widely scattered sources, this publication brings into one volume a large amount of engineering data based on practical experience. The author makes extensive use of photographs and drawings to simplify the explanations of the text. Following a general discussion of the flow of water in pipe lines, the book presents a series of construction methods, including pipe lines in open cut, in tunnel, jacking, and underwater. The use of concrete pipe in American sewerage practice is discussed at some length, first generally, and later in respect to actual installations. A similar method of presentation is undertaken for the use of concrete pipe in highway and railroad drainage structures, and for the use of concrete pipe in airport drainage. Bound into the volume are standard specifications for concrete sewer pipe, reinforced concrete and reinforced concrete culvert pipe.

**SHIPBUILDING TERMS**—Developed for Defense Training Classes in shipbuilding occupations under the supervision of Fred C. Williamson, assistant state supervisor, Trade and Industrial Education, Alabama State Department of Education. Published by American Technical Society, 58th at Drexel Ave., Chicago, Ill. 64 pages, 5x7. Price 50 cents.

This volume was reviewed in the June issue of *Western Construction News*, but the name of the publisher—the American Technical Society, Chicago, Ill.—was omitted.

# HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD EDITOR'S NOTEBOOK



## Ditcher Tooth Maintenance Cost Reduced by Hard Facing

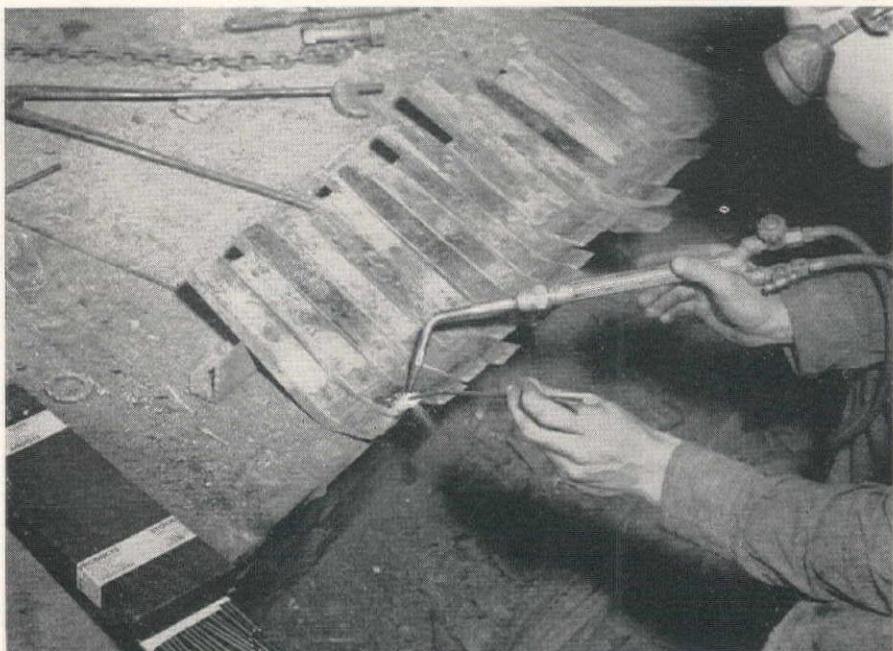
**S**HARPENING DITCHER teeth every three or four days was the experience of Macco-Robertson Co., Clearwater, Calif., in hard digging. The cost of removing, sharpening, and replacing was such that maintenance of one tooth for thirty days averaged about 58 cents. The organization had nine ditchers, each with 60 high carbon steel teeth. The high maintenance cost and the long periods of inactivity while teeth were being changed led to an investigation of hard facing material for the cutting edges. The application of acetylene tube borium, a material frequently used to tip oil well drilling tools, was found to produce a tooth that would remain in service for 40 days, and the maintenance cost for a thirty day period has been reduced to 19 cents.

The method of application of the hard-facing material is illustrated at the right. The teeth are first sharpened and drawn out in the forge, then the ends are blocked up on a piece of channel iron so as to place the tips in a horizontal position. The tube borium is applied with the oxy-acetylene torch. One pound of the material will face an average of 60 teeth. Similar wear-resistant facing could be applied to all types of ditchers,

diggers, and scarifiers whose cutting edges are constantly exposed to ce-

mented or compacted soil and gravel.

Not only was the speed of wear reduced by the facing, but total length of tooth lost through abrasion was much less. After 40 days use, there was an average of only  $\frac{5}{8}$ -in. wear. Drawing this out in the forge is simple, and each tooth may be hard-surfaced several times before becoming too short for further use.





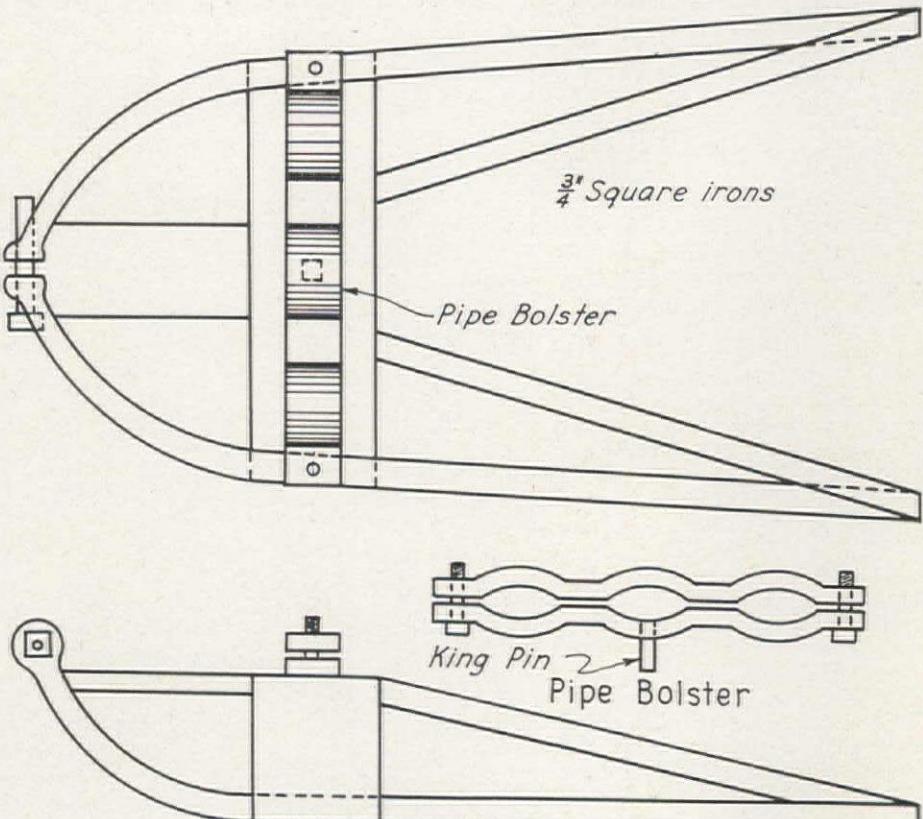
## Screening Plant Is Made Portable

**R**EDUCED HAUL is made possible by the handy portable gravel screening plant developed by Chas. Harbey, maintenance superintendent of the California Division of Highways at San Diego. The plant is simple, having a 3 x 6-ft. screen of 1-in. mesh set at 45 deg. over a depressed truck driveway. Ungraded material is pushed onto the screen by a bulldozer and falls directly into the truck. The equipment was used in segregating materials for 44 mi. of berm between Imperial Valley and San Diego, being moved frequently so that no more than a very short haul was required at any time between the plant and the point where the berm was being built.

## Pipe Sled Used for Hauling in Mountainous Areas

**T**O DRAG PIPE for considerable distances into inaccessible areas, a horse-drawn sled was devised by A. L. Ferguson, superintendent of the Region 4 CCC camp in Nevada. It is easily constructed by the camp blacksmith, and has been found to be a valuable transport aid. The sled is made of  $\frac{3}{4}$ -in. iron bent to form runners as illustrated at the right. On these, an elevated bolster is fastened, to which a king pin attaches a three-slot clamp, suitable for grasping pipe up to 4 in. in diameter. The clamp is bolted down tight to prevent slipping, and to protect the threaded ends of the pipe. Scarring of the rear end of the pipe is prevented by screwing protection caps onto the threads. For pipe of larger diameter, a heavier clamp would be required.

Using the equipment shown, it was found that one horse could handle three 20-ft. lengths of 2-in. pipe over fairly steep terrain. The drawing and description were furnished by C. J. Olsen, assistant Regional U. S. Forester at Ogden, Utah.



# Cement Carrier Boxes Welded To Gates of Batch Truck

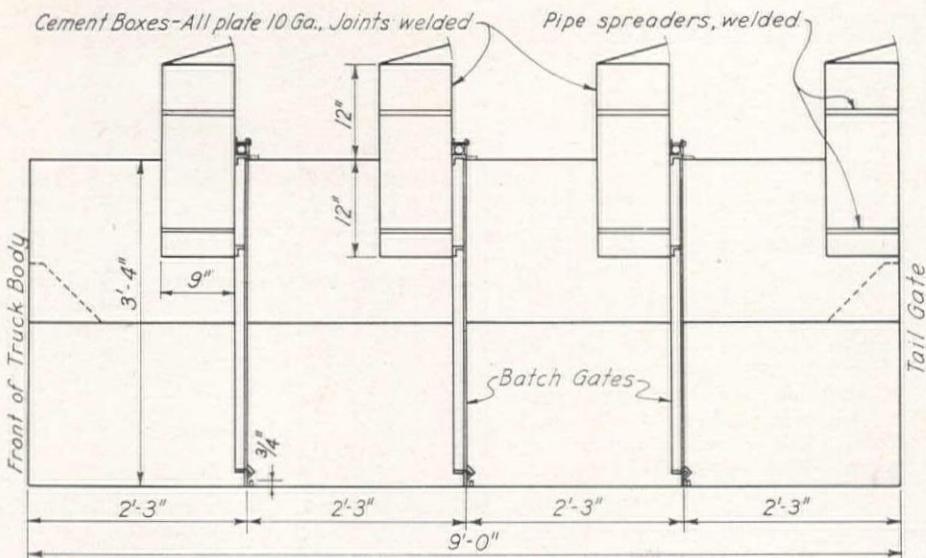
**T**o transport cement and aggregate simultaneously from batching plant to mixer, an interesting truck development was designed by C. S. Bradley, engineer for Morrison-Knudsen Co., Inc., of Boise, Idaho, and M. H. Hasler, of Los Angeles, Calif., on their joint contract to construct a sec-

open. The box extended across the entire width of the truck body. Its corners were reinforced with  $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$ -in. angle iron, and pipe spreaders were welded inside it to prevent crushing as sand and rock were loaded in the aggregate section. The original design called for a lower truck body, having a capac-

ity of three 1-yd. batches, but the 4-batch loading illustrated here was the one actually put into service.

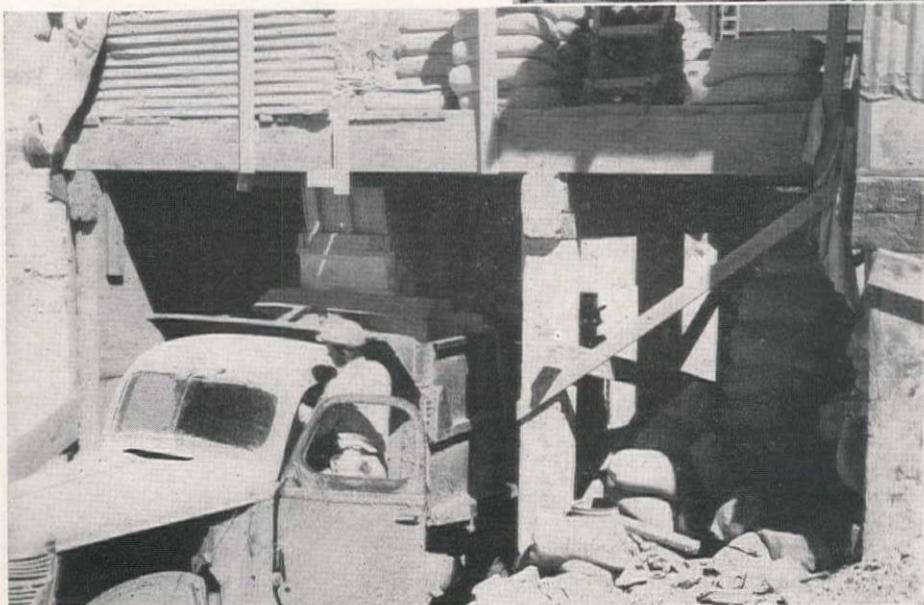
After a measured load of aggregate had been loaded into each section of the truck at the bin, the lids of the cement boxes were opened, and the proper amount of cement was dropped into each one. The lids were then closed, which prevented loss of cement during transport to the mixer. The aggregate itself formed an adequate seal at the bottom of the box, and there was very little settling of the cement, even on comparatively long hauls. When the truck body was tipped at the mixer, and the batch gates released, the cement flowed out of the box as the aggregate was slipping from the truck body, spreading over the entire batch, thus achieving a fairly uniform dry mix.

The Coachella canal is one of the main laterals of the All-American canal system being developed by the Bureau of Reclamation to irrigate the Imperial and Coachella Valleys from the Colorado River. The portion built by Morrison-Knudsen Co., Inc., and M. H. Hasler under this contract was the second section, about 43.5 mi. in length, in the vicinity of Frink, on the north shore of Salton Sea. L. J. Foster was construction engineer in charge of the job for the Bureau of Reclamation, and F. W. Riddle was superintendent for the contractors.

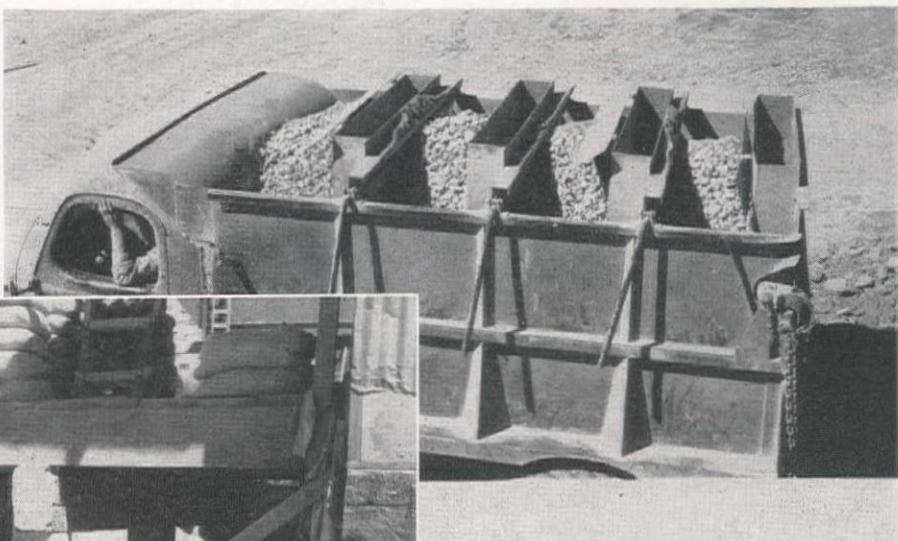


tion of the Coachella canal in southern California.

To the forward side of each of the dividing gates in a batch truck designed to hold four 1-cu. yd. batches, a 9-in. cement box of 10-gauge plate steel was welded by  $2 \times 2 \times \frac{1}{4}$ -in. angle irons, in such a position that about half of the box protruded above the truck body. On the top of the box a swinging lid was attached, but the bottom was left



**LOADED TRUCK** shown below is ready for trip to mixer. Gates are released manually after truck body has been tipped to dump into mixer hopper. Four-section trucks proved most satisfactory for batch transportation.



**LOADING CEMENT** into box for forward batch in truck is illustrated at left. Correct quantity of cement is added after measured aggregate has been put in truck body sections. No bottom is required to cement box because gravel acts as seal. Cement spreads evenly when truck is tipped to dump.

# NEWS OF WESTERN CONSTRUCTION



AUGUST, 1942

## Shipbuilding Contractors to Build Flying Cargo Boats

PROPOSING that the nine West Coast shipyards operated by the Six Companies group of contractors to be turned over to the production of 70-ton seaplanes, Henry J. Kaiser, last month, drew the attention of the entire nation. On the occasion of the fifty-fifth launching from the yard of the Oregon Shipbuilding Corporation at Portland, Ore., Kaiser said: "Our engineers have plans on their drafting boards for gigantic flying ships of 200 tons, and after that, plans for ships of 500 tons, but that is in the future. We cannot wait now for the engineering work necessary. We must get into production at once. . . . There is already a flying ship which is very large, compared with anything known to be in mass production. . . . When these nine yards were in full production, they would be turning out these giants at the rate of 5,000 a year. . . . We can have the assembly line functioning in six months or less. We can be at maximum production in 10 months or less. . . . The plane manufacturer is not in a position to go into assembly line production of this new type without extensive construction. . . . The shipyards have the plate shops, the machine shops, the sheet metal shops, the pipe shops, the warehouses, the mold lofts. . . . We wouldn't need steel. We have an assembly line already built by nature—the water along our present outfitting docks."

Taken up immediately by the newspapers of the nation, the proposal at once received the attention of Congress, the War Production Board, the Army, the Navy, and the Maritime Commission. At month's end, the fate of the proposal appeared to rest as much upon the capacity of sub-assembly manufacturer as upon the decisions of the Government officials who would eventually have to say "yes" or "no".

The nine shipyards mentioned in the proposal were placed under construction little more than 15 months ago for the purpose of building ocean-going freighters, and since that time have established world-wide records for speed in ship production. The yards were constructed, and are operated by a group

On August 7, the Richmond Shipbuilding Corp., Richmond, Calif., was granted a contract by Donald M. Nelson, WPB chairman, to build one hundred 70-ton cargo-carrying flying boats. A supplemental contract for 400 more of the giant craft was promised to the corporation, contingent upon successful completion of the first order, and demonstration that there will be no interference with the production of combat planes.

of western contractors which include Henry J. Kaiser Company, Morrison-Knudsen Co., Inc., W. A. Bechtel Co., General Construction Co., MacDonald & Kahn, Ltd., Bechtel-McCone-Parsons Corp., Utah Construction Co., and Pacific Bridge Co.

## Alaska Highway Managers Seeking Contractor Groups

PRINCIPAL CONTRACTORS holding engineer-manager contracts with the Public Roads Administration for construction of the Alaska Highway project are receiving bids from contractor groups for subcontracts of this work. In order to handle subcontracts on the Alaska Highway project, an individual contractor, or group of contractors, should have 20 to 30 tractors with scrapers and dozers, several  $\frac{3}{4}$ -yard shovels, 20 to 30 trucks, 3 or more motor graders, 3 or more pick-up trucks, in addition to small equipment and tools. This would be sufficient to handle a \$1,000,000 subcontract, on which the fixed fee would be \$47,500. No money is required to be invested in operation as the Public Roads Administration meets all payrolls, pays all bills, and pays freight on the equipment to and from the job.

Equipment rental rates are about as

follows: on tractors, 25 per cent of the new cost per year, plus 50 per cent additional for overtime; on  $\frac{3}{4}$ -yd. shovels and  $1\frac{1}{2}$ -ton trucks, the rate is also 25 per cent; and on scrapers  $27\frac{1}{2}$  per cent. Management contractors expect that the work will proceed on two 11-hr. shifts per day—equivalent to three shifts for the equipment—which would place rental rated at about  $37\frac{1}{2}$  per cent of the new cost.

Management contractors will build and operate camps, maintain parts and supply warehouses, and will attempt to supply additional equipment when necessary. Subcontracts will be divided into \$1,000,000 lots which will be awarded successively to the subcontractors as the work goes along.

Contracts on the highway are under supervision of the U. S. Public Roads Administration, with Alaska district offices in the Hoge Bldg., Seattle, Wash. J. S. Bright, district engineer, is in charge of construction. The Public Roads Administration also has offices in the Qu'Appelle Bldg., Edmonton, Alta., and in Whitehorse, B. C.

The following firms hold management contracts on the highway: Lytle-Green Construction Co., 505 Smith Tower, Seattle—section from Gulkana, Alaska, to Alaska-Canadian boundary; L. J. Dowell Construction Co., 1437 Elliott Ave., W., Seattle—sections from Alaska-Canadian border to Kluane Lake, and from Kluane Lake to Lower Post, near Watson Lake; Elliott & Co., Dexter Horton Bldg., Seattle—Kluane Lake section, and contract for "Service-and-Supply" for entire highway; R. Melville Smith Co., Ltd., Toronto, Canada—sections from Lower Post to Fort Nelson, and from Fort St. John to Dawson Creek; Day-Okes Construction Co., St. Paul, Minn.—sections from Fort Nelson to Fort St. John; and Morrison-Knudsen Co., Boise, Ida.—Peace River bridge.

## 1942 Auto Revenue in Idaho Shows Small Drop

A STARTLINGLY LOW rate of decline in automobile registrations and gasoline taxes in Idaho for the first half of 1942 is reported by the state department of law enforcement, in charge of collection of both fees. J. L. Balderston, commissioner of law enforcement, estimated after Pearl Harbor, and particularly after the rubber shortage became

acute, that gasoline taxes would fall off 20% and registrations at least 10%.

The exact extent of the curtailment of gasoline consumption for the first war year won't be known, of course, until the last half figures are received, but on the basis of the first half of this year, compared with the first half of 1941, there has been a decrease of only 6.78% in total gasoline sales. In other words, Idaho collected \$2,239,232.12 in gasoline tax in the first six months of 1942, compared with \$2,402,259.06 for the corresponding period of 1941. Collections for the second half of 1941 were \$3,320,033.71. (July and August are by far the heaviest months for gasoline taxes.)

Except for administrative costs and refunds for non-highway use this money all goes to the state highway fund. Refunds are limited to 10 per cent of collections. Thus it will be noted that roughly five million dollars is available for the highway fund. Of this at least one and a half million must be earmarked for maintenance costs.

In automobile registrations there was a decrease of 4.193 per cent in the number of total units registered, and a decrease of only 2.448 per cent in total revenue, according to Cecil Ennis, auditor of the department of law enforcement. The difference in percentages is due to the fact that the decline in units came in passenger cars, which pay a flat fee of \$5 per year, while increases in other classes were marked.

It will be likely that most of the available construction revenue for 1942 will be spent on state aid and farm to market feeder roads, because of the restrictions placed on federal aid highways for the duration.

## Engineers Given Steel Mill Sanitary Design Contracts

WATER SUPPLY and sanitary facility plans and specifications for the steel plant being constructed in San Bernardino County, near Fontana, Calif., are being prepared by Arthur Taylor and Nelson Taylor, consulting civil engineers of Los Angeles. Detail designing on specialized structures in connection with the general work has been distributed by Taylor and Taylor among several other engineering organizations, including J. M. Montgomery Co., water treatment, sewage treatment and reclamation plant; Donald R. Warren Company, elevated concrete water tanks; and the Kaiser Co., all pipelines, circulating and cooling details, under the direction of Nelson Taylor. The \$70,000,000 steel plant is being constructed for the Kaiser Company, Oakland, Calif.

## Move Reclamation Convention

THE NATIONAL Reclamation Association plans to hold its 1942 convention at Denver, Colo., on Oct. 14-16. The original selection for this year's convention had been Bakersfield, Calif., but tire and gas shortages indicated the advisability of a convention city more nearly in the center of the 17 western irrigation states.

# University of California Training Workers in War Industry Classes

MORE THAN 20,000 trained workers for war industries is the record of the University of California War Training program. Reports from Washington, D. C. disclose that the University's total enrollment in these specially designed courses in Engineering, Science, and Management, since the beginning of the program in August, 1941, has been greater than that of any other university in the nation.

Eighty per cent of the trainees in these courses are in-service personnel, that is, directly from war industries, and are taking courses for a more accurate or more specialized knowledge of their own field. Starting this month, courses for these people will cover a shorter period and will be more concentrated—men and women being selected from war industries and assigned to the courses, probably through an arrangement whereby their salaries will continue during the instruction period.

Of extreme importance also are the pre-employment courses, to prepare both men and women for the increasing number of jobs in production for war. Although emphasis has been placed on the training of shipyard and aircraft personnel, allied war industries have been definitely included in the over-all program.

"We are doing all we can to co-operate with industry in aiding their war production efforts and in training men and women for industry's expanding needs. Hundreds of men already have advanced to more responsible and higher paid positions as a result of the War Training courses," declared Professor M. P. O'Brien, chairman of the Mechanical Engineering Department and State Director for the War Training program.

"Many of the industries base individual promotion on the type of work done in our Training courses."

Classes have been established in thirty California cities, so distributed throughout the state as to make instruction readily available for workers in the major industries—oil, shipbuilding, and aircraft production. Wherever possible, training centers have been established in buildings accessible to large concentration of war industry personnel, thus reducing travel to and from classes.

The greatest demand is for training in tool engineering, shipbuilding, aircraft drafting, and safety engineering. Prof. O'Brien pointed out that "Safety Engineering will be a vital factor in continuing mass production with a minimum of accidents and the resultant loss of time and man-power. Employment of thousands of men, inexperienced in factory and assembly-line work, has multiplied accident hazards; the need for intelligent and efficient safety procedure is of prime importance."

Tool engineering, bottleneck of aircraft production, is receiving much emphasis. To illustrate the need, O'Brien indicated that one major plane company has asked that 3,000 men be trained during the next few months for their plants alone.

Draftsmen for shipyards and aircraft companies are another urgent personnel need. More than 1,500 will be required in the aircraft industry before fall. With this need in mind ESMWT is conducting a number of classes throughout the state; for War Training courses are tuned to the immediate needs of war industry, determined through contact and co-operation of the program with representatives of industries themselves.

## FRIANT DAM COMPLETE EXCEPT FOR VALVES, SPILLWAY GATES

With concrete work completed on Friant Dam, the Bureau of Reclamation structure across the San Joaquin River in California, construction of related structures commences. Spillway gates and outlet works valves for the Madera and Friant-Kern canals are being installed, excavation begun on canals. Foreground of photo shows outlet valve house and stilling basin for Madera canal.



# "A Guide to Administrative Work" Advised for Novices

The accompanying set of instructions for new administrative officers, complete with definitions of technical administrative terms, arrived in the offices of *Western Construction News* direct from a well-known government engineer whose name and position must obviously remain confidential. While it would certainly not be proper to say that the remarks contained therein are typical of present day engineering office procedure, the routine has a strangely familiar ring.—Editor.

**T**O DO administrative work for the Government, all you need is an office, a desk with two oak boxes and three buzzer buttons on it, and a secretary in the next room.

As soon as you are seated at your desk in the office, three huge porters appear to move two strangers in with you and you sit around awhile and silently hate each other. Finally they get your telephone connected. By that time, you have learned your secretary's name. They then change the number on your office door. As a result of this and because all the secretaries look exactly alike, you get into another office by mistake when you come back from lunch and you work there several days before you discover it isn't yours.

Eventually you get back into your own office. By that time, you have a new secretary with a name that sounds like Zrrshvt, and you are now ready to go to work, which leads you to glance at the two oak boxes on your desk. People come into the office periodically and put papers into one of the boxes. It is your job to get them out of that box and into the other one, whence they will go to someone else.

Put the junk in two piles on top of your desk; try each day to get most of it changed over from one pile to the other; then you can go home. Next day get most of the stuff back into the other pile, dripping a little into the waste basket, and dribbling some into the outgoing box. Be sure to check your name off the list or they will bring it back to you. By this time, a new accumulation will be found in the incoming box.

In time, the piles get so high you decide to report sick and stay home a few days, hoping a lot of the junk will somehow vanish during your absence. It won't. When you come back, the pile is two feet high and you have a new secretary, the position of your buzzer buttons is different, and your telephone number has been changed, three more desks have been moved into your office, and your name is no longer on the door.

There is a note on your desk addressed

to Joe. It reads: "It's on my desk, but I haven't had a chance to read it yet. I'm swamped." You open a lower desk drawer and a squirrel hops out. The place where your building is was a park six weeks ago.

## Common Definitions

**Under consideration:** Never heard of it.

**Under active consideration:** Will have a shot at finding the file.

**Have you any remarks?**: Give me some idea of what it's all about.

**That project is in the air:** Am completely ignorant of the subject.

**You will remember:** You have forgotten, or never knew, because I don't.

**Transmitted to you:** You hold the bag awhile—I'm tired of it.

**Concur generally:** Haven't read the document and don't want to be bound by anything I say.

**In conference:** Gone out—Don't know where he is.

**Kindly expedite reply:** For God's sake try and find the papers.

**Passed to higher authority:** Pigeon-holed in more sumptuous office.

**In abeyance:** A state of grace for a disgraceful state.

**Appropriate action:** Do you know what to do with it? We don't.

**Giving him the picture:** Long, confusing and inaccurate statement to a newcomer.

## Hydro-Power Potential High in Western Canada

FRASER RIVER may some day be harnessed, for electro-metallurgical and electro-chemical industrial purposes, Ernest Davis, provincial controller of water rights, declared in his contribution to the "Conservation" lecture series at University of British Columbia recently. The resources of the province with respect to undeveloped waterpower have been estimated by the Dominion Government at 1,930,000 hp. minimum, and 5,100,000 hp. for six months, according to Davis. But these figures did not indicate the full possibilities, and the Provincial Government estimated the resources at between six to eight million horsepower. Present installations accounted for only 788,763 hp. of which over 600,000 was utilized in central stations for re-sale of electrical energy; about 100,000 was used for pulp and paper production, and the balance in mining and other industries.

"The Provincial Government has made reconnaissance and preliminary investigation for several years past of the power reaches of a number of streams," said Davis, "and it is intended to extend

this line of work as funds accrue from the rentals which are charged for use of the water powers." The larger potential power sites Davis gave as follows: Lillooet (Fraser), 370,000 hp.; Moran (Fraser), 1,325,000 hp.; Soda Creek (Fraser), 310,000 hp.; Chilko-Taseko rivers to Bute Inlet, 1,000,000 hp.; Eutsuk Lake to Kimsquit River, Dean Channel, 910,000 hp. Tahtsa Lake to Keman River, Gardner Canal, 845,000 hp.; Bridge River, 600,000 hp.; Quesnel River, 100,000 hp. The Skeene, Naas and other larger streams, with their tributaries, also present a number of possible power sites.

## New Mexico Road Spending To be Reduced Nearly Half

MAINTENANCE operations of the New Mexico State Highway Department may be reduced nearly 50 per cent next year. The department originally estimated that the income available for use on highways would drop 25 per cent during the coming fiscal year, but has now revised this estimate downward and prepared a budget on the basis of a 35 per cent reduction. Under the reduced budget, maintenance mileage would have to be reduced from 8,000 to 4,500 miles, according to Burton G. Dwyre, state highway engineer.

## Deerfield Dam Project Is Approved by Bureau

CONSTRUCTION of Deerfield Dam on the Rapid Valley project in South Dakota—a Great Plains water conservation and utilization project by the Bureau of Reclamation—has been approved, it was announced last month. The multi-purpose irrigation project includes among other benefits a needed water supply for Rapid City whose population is mushrooming because of a nearby bombardment airport.

Construction on the dam will be rushed in order to catch, if possible, the spring runoff of Castle Creek for the dry July and August months of next year. Preliminary construction work was begun on the Rapid Valley project by the Bureau of Reclamation in the fall of 1940. Main purpose of the project was a supplementary supply of irrigation water for agricultural stabilization of the area. Flood control was an additional benefit.

Original project plans called for construction of a dam at the Pactola site on Rapid Creek. The necessity of relocating a railway line running through Pactola reservoir site made the construction of the project infeasible, however; project farmers would have been unable to bear the repayment charges. Engineering plans were, therefore, changed to substitute Deerfield Dam and one or more smaller additional dams in place of Pactola Dam. Deerfield Dam, as designed by the engineers, will be about 100 ft. high and 880 ft. long, create a storage reservoir of 15,000 acre-ft., and cost about \$500,000.

# WASHINGTON NEWS

## ... for the Construction West

By ARNOLD KRUCKMAN

**Washington, D. C.**—Even before this fiscal year's appropriations for the Bureau of Reclamation were validated, Commissioner Page was out in the field gathering data to set up the background for the appropriations to be requested for 1944. He went with definite suggestions from Secretary Ickes that there must be an expansion of the irrigation program in the Pacific West, a very decided expansion, because the United Nations' world, covering more than half the area of the planet, needs more and more food. And obviously we must furnish the food. You also may assume from this urgency that the War looks long and arduous from Washington at this time. And you also will note that Brer Ickes does not emphasize power.

Power has hitherto been his reason for water developments in the Pacific West. But Congress has rather smartly rapped him over the knuckles the past month, told him to behave, and to get together with the P. G. & E. in California, and to stop making faces and picking quarrels. Congress definitely makes clear that it wishes the pugnacious little Ickes to stop bickering for the duration, and to produce power by co-operation with the utilities. Meanwhile, the Interior appropriation went through practically as outlined here last month. More as a token than as a serious effort to produce, the Antioch steam plant project was given \$200,000 for exploration, and the \$25,000,000 Central Valley transmission lines project was allocated \$3,737,000 for further preliminary work.

### More naval bases

It is difficult to keep pace with the appropriation bills validated by the President. At latest totaling, the July crop aggregated \$44,867,764,981. This included the Army's noble \$42,820,003,068; and the Interior, State, Justice, Commerce, FWA, War Housing appropriations, and the special appropriation for access roads.

A new Navy bill pending calls for \$974,634,000 to be expended upon fleet facilities, aviation facilities, storage, Marine Corps training facilities, ordnance storage, personnel housing, hospitals and dispensaries, shore radio stations, Naval Research Laboratory, passive defense, and miscellaneous structures and advance bases. Again, much, if not most of this money, is destined for the West slope. Late in July HR 7398 was introduced to provide \$2,600,000 to be spent by FWA to build a fireproof Marine hospital with 300 beds at Los Angeles.

HR 7405, slipping swiftly through Congress, authorizes an undefined appropriation for rehabilitation and reconstruction of highways in Hawaii, damaged by Army, Navy, or their contractors. Note, also, before any road

building may be undertaken, anywhere, the project must have the approval of WPB, Army and Navy, even if it is Public Roads Administration project. WPB made a survey of Highway Departments of all States, of 3,000 counties, and 4,600 cities and towns, and listed 34 types of equipment used for construction, recording details about age and condition. The information is available to all Governmental agencies by applying to WPB.

### Railway to Alaska

After Congress had under consideration a bill for construction of a railway, Lt.-Gen. Breton B. Somervell (who lately was advanced to the permanent rank of Colonel) told a House Committee that the Army has been surveying a coastal railroad to Alaska since early spring. Roughly, the proposed railroad follows the "B" route proposed by the Alaskan Highway Commission, going almost in a straight line up the Rocky Mountain trench. Gen. Somervell was all for further appropriations to continue the rail survey. Somervell suggested rail service would save an enormous quantity of gasoline now used on trucks with small pay-loads. He says Army hopes to have the use of seaway, highway, airway and railway.

Legislation of interest to you has been rather numerously introduced the past month. HR 7304 prohibits payment of contingent fees in payment for services connected with securing contracts for Government work. Violation of law will be punished by \$5,000 fine and 6 months in jail. The Act has passed the Senate and is pending in the House, where it will be enacted when a quorum returns from the present unofficial adjournment.

By a gentlemen's agreement the members are able to go home and electioneer. No controversial matters will be brought up until fall. When you stop to think about what is happening in Russia, and elsewhere, this agreement makes you recall the ancient habits of Chinese armies which put up their umbrellas and broke off the battle when it rained. Many members of Congress feel somebody must pull some more rabbits out of the hat to win good will to enable them to justify their claims for elections.

### Irrigation in Hawaii

HR 7319, supplemental defense appropriations, totaling \$1,858,000,000 adopted by Congress late in July, provides \$1,100,000,000 more for shipping, \$70,000,000 for War relocation projects, and another \$5,000,000 for flight strips. HR 7274 provides that land needed by Government for War may be condemned by ten days published notice, when the Court may adjudicate, and money be paid into Court for those who have not been reached.

HR 6670 provides the Government, under direction of Secretary of Interior, may build an irrigation project in Hawaii on the Island of Molokai to increase production of food. The development is to be restricted to production of food-stuffs actually needed for the sustenance of people living on the Island. The area consists of 12,000 acres located in the vicinity of the Hawaiian Homes Commission project, which consist of 40-acre farms owned by native Hawaiians. The proposed project is located on a plateau in the middle of Molokai. The preliminary estimate of cost is \$5,000,000. The Territory of Hawaii already has passed legislation authorizing reimbursement to the Federal Government of \$2,500,000. The balance is to be paid to the Federal Government by the water users over a period of 40 years, the assessment to be made at the rate of \$200 per acre. The bill was enacted by the House and is going through the Senate.

Public Law 670, validated late in July, enables one department of Government by contract to use the services or facilities or materials of another department. Public Law 643, validated early in July, gives the President further authority to requisition tools, materials, machinery or supplies for War needs.

Wage Board, consisting of Interior Department officials, Duncan Campbell, Charles A. Bissell, and S. A. McWilliams, have fixed new wage scales for workers in the Central Valley project, Boulder Canyon project, and Parker Dam project.

### Construction price ceiling

OPA is in process of establishing a price ceiling over construction. The Order may be promulgated by the time this is published. The basis has been changed and rearranged at least four times. The latest ceiling was based on cost of the materials, cost of the labor, and a profit rate determined arbitrarily by OPA. It is anticipated the labor cost will consist of the rates that are paid on July 1.

There is at this writing very little that is constant about the wages, and the oft-mouthed stabilization program. As we see it here, this so-called "stabilization" idea is mainly a political makeshift that sounds as if something were to be set, but in reality means any of several things the momentary need may require in a discussion. It is sensible to bear in mind that changes in wage scales might be readily welcomed by officialdom, but that the employer would be expected to take the increases out of his own profits.

WPB Power Administrator J. A. Krug reports despite pending rationing in the East, the West has abundant power, owing to the rainfall the past year. If rationing comes, air-conditioning and advertising signs will be the first to feel restrictions. Household uses are scheduled to be cut 10%. Federal Power Commission has ordered every private and public utility to file a copy of every contract for the sale of a 1,000 kw. or more of contractual or actual demand

or of 2,000,000 kilowatt-hours or more of electric energy per year to any agency of the U. S., also contributions to the cost of improvements, or contracts to install or operate any such facility.

#### Contract readjustment

Harry W. Loving, known to contractors everywhere as the head of the original board which negotiated the earliest cantonment contracts on cost-plus-a-fixed-fee basis for the War Department Quartermaster Corps, has been made head of the special price adjustment section for the Corps of Engineers to renegotiate construction contracts. Local and regional price adjustment boards will be set up wherever the Corps of Engineers has headquarters. Clarification of the details will be announced late in August or early in September.

The law does not define on what basis excessive profits are to be determined. The percentage is still nebulous, although 4 and 5 per cent are regarded as the limit on many analogous contracts now negotiated by Navy on similar undertakings. It remains to learn whether the yardstick is gross business or invested capital. Generally, it appears, whatever the basis, the profit must be moderate, and moderate under present construction of the term means literally MODERATE.

Also policies must be determined in regard only to contracts that appear excessive, or if the policy should cover all contracts. It remains to be learned whether the examination applies to a specific contractor or a specific contract. It is not known, yet, what policy will apply to cost-plus-a-fixed-fee contracts.

#### Miscellaneous

Milton H. Luce of Washington, D. C., has been named acting deputy WPB administrator for Region 10, with headquarters in Seattle. Local ODT Appeal Board for Montana, Idaho, Utah, has headquarters at Salt Lake City. WPB Advisory Board for Pacific Coast Lum-

ber Industry has been appointed to aid Frederick H. Brundage, Western Log and Lumber Administrator. The Board consists of Col. W. B. Greeley, Seattle; Edward P. Stamm, Portland; Truman Collins, Pocatello, Oregon; Edmund Hayes, Portland; Carl Winn, Portland; Harold Evans, Portland; Bert Seaman, Portland; Kenneth Davis, Portland; Lyle F. Watts, Portland. Frank C. Lathrop, San Francisco, was appointed member of the Solid Fuels Advisory War Council; Alexander MacDonald, Los Angeles, has been named deputy WPB regional director for Los Angeles; Stuart R. Zimmerley has been named regional engineer, Bureau of Mines, Salt Lake City; Stanley A. Easton, San Francisco; Cecil Fitch, Eureka, Calif.; Oscar Friendly, Salt Lake City; R. M. Hardy, Yakima; Rufus Ireland, Jr., Idaho Springs, Colorado; E. M. Moores, Crown King, Ariz., have all been appointed to the WPB Silver Producers Advisory Committee; S. H. Headland, San Francisco, member of the WPB Silver Distributors Advisory Committee; C. R. Elander, Seattle, has been named ODT Supervisor of Port Conditions at Seattle; J. V. Nardini, San Francisco, has been made ODT Supervisor of Rail Terminals at San Francisco; H. T. Jarvis, Los Angeles, has been appointed to the WPB Fin Coil and Cooler Industry Advisory Committee; C. H. Latrial, Los Angeles, member of the WPB Heat Exchanger Industry Advisory Committee; N. H. Orr, Denver, member of the General Steel Products Advisory Committee of OPA; N. K. Anderson, Los Angeles, member of OPA Steel Castings Advisory Committee; Joseph H. Smart, Ogden, Utah, director of the Rocky Mountains and Great Plains War Relocation Area; Capt. Branch Walker has been placed in charge of BEW Office of Censorship at Los Angeles; George W. Coplen has been appointed northwest director for National Housing Administration with headquarters at Seattle.

## Half of California Bonded Debt Incurred in Highway Construction

HIGHWAY CONSTRUCTION bonds account for one-half of the \$81,786,500 outstanding General Fund Obligation Bonds of the State of California, according to the *Tax Digest*, organ of the California Taxpayers' Association. In July of this year, \$7,600,000 was outstanding on the \$18,000,000 highway bond issue of 1909; \$7,500,000 was outstanding of the \$15,000,000 highway issue of 1915; and \$23,000,000 was outstanding of the \$40,000,000 highway bond issue of 1919. The three highway bond issues total \$73,000,000, and carry various rates of interest from 4 per cent to 5 1/4 per cent. When the final bond is redeemed in 1965, \$77,651,991 will have been paid in interest charges for the three issues, and the total cost will amount to \$2,064 for

each dollar borrowed. Two bond issues have been made to finance construction of state buildings. The first made in 1915, amounted to \$3,000,000, and is of the sinking fund type, with \$1,723,000 estimated balance remaining in the sinking fund. The 1925 issue of \$8,500,000 has still outstanding \$5,750,000. Self liquidating bonds still outstanding last month amounted to \$65,299,000, divided between the San Francisco Harbor improvement and the veterans' farm and home building funds. A total of \$30,000,000 of San Francisco Harbor Improvement Bonds has been authorized, although to date, \$10,697,000 remains unissued. All charges for interest and redemption have been met from harbor revenues, and the bonds are considered self liquidating.

## District to Sell Water Outside Legal Boundary

EXTENSION OF WATER SALES by the Metropolitan Water District of Southern California will be granted in areas outside the District for the protection of certain war industries and defense home areas as a means of protecting the production program in southern California, according to a recent announcement of the MWD board of directors. During the period of emergency, the Colorado River Aqueduct water supply will be available to such areas as are specifically designated by military and naval authorities. Water released to outside areas will be sold at rates fixed by the board of directors at wholesale rates to incorporated cities or to public corporations. In addition to the water delivery charge, areas served under the emergency provisions will be required to make a standby payment equivalent, on an assessed valuation basis, to those paid by the cities which form the District.

## Changes in War Public Works Setup Outlined

PROPOSED PROJECTS for the war public works program may be submitted to Work Projects Administration field offices in the various states as a result of a reorganization in the Federal Works Agency. With WPA field offices receiving applications, local public officials will no longer have to submit their applications for projects to the regional offices of the Federal Works Agency. Other changes in the war public works organization include abolition of the regional engineering offices and the transfer of personnel, records and property to the offices of the seven regional directors. Regional Program Review Boards have been established in each region which are composed of representatives of each constituent unit of the Federal Works Agency, with the Regional Director as chairman. In Washington, a Program and Project Review Board has been appointed to advise the administrator with respect to all programs and projects. The national board is headed by Col. Wm. M. Carey, chief engineer of the Federal Works Agency, who has been appointed special assistant to the administrator. Other members of the board include Baird Snyder, assistant administrator, Thomas H. MacDonald, commissioner, Public Roads Administration, the commissioner of the Public Buildings Administration, the deputy commissioner of the Work Projects Administration, the assistant commissioner of the Work Projects Administration in charge of community services, the commissioner of the Public Works Administration, the general counsel and the executive officer of the Federal Works Agency. Brig. Gen. Philip B. Fleming is federal works administrator.

# Announce Appropriations to Western Reclamation Projects for 1943 Work

APPROPRIATIONS totaling \$88,106,425 for Bureau of Reclamation projects during the fiscal year 1943 have been approved by both Houses of the Congress. The largest single appropriation is \$39,019,000 for the Central Valley Project in California, and includes \$3,723,000 for the construction of transmission lines from Shasta Dam to a point near San Francisco Bay; \$200,000 for engineering work preliminary to the construction of a steam plant in the vicinity of Antioch; and \$250,000 for the Friant-Kern and Madera canals in the southern portion of the valley.

The second largest appropriation of \$19,175,000 was allotted to Grand Coulee Dam, and the appropriation bill provides that not more than \$2,000,000 may be used for the construction of the pumping plant and equalization reservoir at Grand Coulee. The whole appropriation includes \$1,000,000 for general investigations of future projects. The greater part of the appropriation will be devoted to the completion of power producing features, most of which are now under construction. Details of the various appropriations for the Pacific projects are given in the accompanying table.

Project	Appropriation
Gila	\$ 1,249,750
Big Thompson	6,249,070
Anderson Ranch	2,250,000
Sun River	50,000
Tucumcari	750,000
Lugert-Altus	400,000
Owyhee	25,015
Deschutes	100,000
Provo River	2,000,000
Hyrum	6,000
Roza	800,000
Kendrick	20,000
Riverton	724,840
General Investigations	375,000
Administration expense	175,000
Davis Dam	4,000,000
Parker Dam	1,940,000
Central Valley	39,019,000
Grand Coulee	19,175,000
General Investigations	625,000
Administration Expense	525,000
Boulder Canyon	5,000,000
All-American Canal	1,000,000
Colorado River Front Work	48,000
Colorado River Development	399,750
Fort Peck	500,000
Protection of Project Works	700,000
Total	\$88,106,425

## Alaska Railway Survey Announced Officially

SURVEYS for a proposed railroad from the United States to Alaska through British Columbia were revealed in a report made last month to Congress by Lieut. Gen. Brehon B. Somervell, chief of Service of Supply. Under the direction of Col. Richard Park, North Pacific division engineer, and Col. Peter P. Goerz, Seattle district engineer, survey crews of the Engineer Department have already completed more than 400 mi. of a proposed 1,300-mi. route connecting Prince George, B. C., with the Alaska railroad near Fairbanks. The survey is following, in general, the "B" route proposed by the Alaskan International Highway Commission in the Rocky Mountain trench. Although it has been rumored for several months that such surveys were being made, this announcement by Gen. Somervell constitutes the first official word that the work is in progress.

## Coulee Dam Reservoir Overflows Spillway

GRAND COULEE DAM reservoir reached its maximum level for the first time July 12. The lake is 151 mi. long, averages 4,000 ft. in width, and has a maximum depth of 375 ft. It contains 10,000,000 acre-ft. of water—equivalent to two and a half railroad tank cars full for every inhabitant of the United States, nearly a ten-year supply for all purposes

for the city of New York. The water surface covers 82,000 acres or 128 sq. mi., an area about twice the size of the District of Columbia.

Overflow water from the reservoir is plunging over the dam, forming a waterfall, 1650 ft. wide and 330 ft. high, twice that of Niagara. The fall was created early in June by allowing the water to plunge over partially-closed drum gates in the crest of the spillway. These gates were further raised to bring the reservoir to its present level.

## Quick Engineer Course At California School

CIVIL SERVICE jobs as junior engineers, at \$2000 a year, are in prospect for those students successfully completing the University of California's new War Training course in Junior Engineer Training. The nation's needs for trained assistance on construction projects, carried on by the U. S. Engineer office and by other war-time agencies, run into the thousands, according to the latest civil service commission bulletins.

The full-time, 10-weeks course begins in Berkeley on August 3 and is primarily for college graduates who have majored in either mathematics, physics, chemistry, geology or astronomy. However, applicants lacking a college degree may take the course and can qualify for engineering aid positions at a salary based on their experience and ability. Men in 1-A classification will not be encouraged to enroll.

Training in lectures, laboratory and office practice includes engineering fundamental; drawing, lettering, computations, notemaking, elements of electrical engineering and thermodynamics, and the application of these fundamentals in solving practical engineering problems.

## Tacoma May Approve Use of Substitute Building Material

SUBSTITUTE MATERIALS would be authorized in structures approved by the building department at Tacoma, Wash., by a proposed ordinance introduced before the Tacoma city council. The ordinance would provide for the use of substitute materials to meet city building, electrical or plumbing requirements in the event that normal materials are unobtainable. Because of the war emergency, substitute materials could be used provided they did not materially increase fire, health or safety hazards, or lessen structural stability.

## Deny County Flood Funds

CONSTRUCTION of the Sawtelle-Westwood storm drain in the southwest section of Los Angeles County has been rejected by the Federal Works Agency on the grounds that the flood hazard was not sufficiently serious to warrant immediate federal assistance for the project. The Los Angeles County Flood Control District has accumulated funds nearly sufficient to cover construction costs, and may undertake the construction without assistance, if priority ratings can be secured.

## Canadian Highway Shows Fast Construction Rate

CONSTRUCTION of the Prince Rupert-Terrace-Cedarvale highway in British Columbia is now well under way under the supervision of the surveys and engineering branch of the Department of Mines and Resources. The total distance between Prince Rupert and Cedarvale is 136.3 mi., of which 97 miles are to be completed under the existing contracts. The work has been divided into eight sections, ranging from 11 to 18 mi. each, and these have all been awarded to contractors, as follows:

- 1 & 8—E. J. Ryan Construction Co., Ltd., 445 Granville St., Vancouver.
- 2—Rayner Construction, Ltd., Leaside, Toronto.
- 3—Tomlinson Construction Co., Ltd., Toronto.
- 4—Standard Paving, Ltd., Toronto.
- 5—McNamara Construction Co., Ltd., Leaside, Toronto.
- 6—Dufferin Paving Co., Ltd., Toronto.
- 7—General Construction Co., Ltd., Granville Island, Vancouver.

Work has begun on all sections and has been under way for about eight weeks. Contractors are bringing in heavy

equipment as construction ranks among the most difficult in British Columbia. Between Hazelton and Cedarvale, particularly in the Cedarvale end, the existing road, while passable, has not been graded to standard and Dominion engineers are making inspections to see just what work should be done on this section. Approximate estimates of cost for a 20-ft. highway run from \$5,500,000 to \$6,000,000.

## Half Million Kilowatts Added by Bureau in Year

A 50 PER CENT gain in hydropower installed on Bureau of Reclamation projects was reported on the occasion of the completion of another electric generating unit in the Boulder Dam power plant. The eleventh Boulder addition with 82,500 kw. of capacity brought total new installations of generating units on Reclamation projects in the West since June 30 last year to 494,000 kilowatts—a 50 per cent increase.

The following installations were made during the preceding fiscal year:

Grand Coulee Dam, Wash.....324,000 kw.  
Boulder Dam, Ariz.-Nev.....165,000 kw.  
Minidoka project, Idaho..... 5,000 kw.

Scheduled installations during the next six months are:

Grand Coulee	150,000 kw.
Parker Dam, Ariz.-Calif.	90,000 kw.
Boulder	82,500 kw.
Total	322,500 kw.

## Aircraft Drafting Courses To be Given by University

UNIVERSITY of California and Consolidated Aircraft Corp. have announced an earn-while-you-learn program for northern California. Almost fifty students have begun a twelve-weeks' course in aircraft drafting at Berkeley and Fresno. Most of the group are on the San Diego company's payroll, a new step in the University's War Training program. The classes are open to any qualified student and are to be conducted by Consolidated engineers, on loan to the University for that purpose.

A new class is scheduled to start August 17. Applicants will be interviewed during the week of August 10. In the meantime, those who are interested in taking this course in aircraft drafting should file application without delay in order that a review of qualifications can be made to determine those who will be eligible for interviews.

HIGHWAY Construction Co., Ltd. has been incorporated under the British Columbia Companies' Act with registered offices at 1508 Standard Bank Building, 510 West Hastings St., Vancouver. The capital structure of the company is shown as 10,000 shares without nominal or par value.

## The Employment Information Corner

**C**ITICAL LABOR SHORTAGES exist in 138 occupations essential to war production, according to a recent announcement of the War Manpower Commission. In some industries, particularly shipbuilding and aircraft production, the ratio of demand to supply is as high as 62 to 1. Included in the list of occupations where critical shortages exist are acetylene-burner operators, boilermakers, boring-mill operators, ship carpenters, crane riggers in ship and boatbuilding, form builders, planer operators—metal, riveters—pneumatic, skilled, heater riveters, helpers for sheet-metal workers, structural steel lay-out men, and arc welders.

### Valuation engineer

The California State Personnel Board will accept applications until September 16 for the position of junior valuation engineer, paying \$170 a month to start. A college degree in engineering is required, but experience in valuation in utility engineering may be substituted for college training on a year-for-year basis. One year's residence in California is also required. The duties include technical valuation work involved in appraising public utility properties, and openings are with the California Railroad Commission.

### Engineering aid

The California State Personnel Board will accept applications until September 2 for the positions of senior and junior engineering aid in the Division of Highways. The positions pay \$140 and \$120 a month, respectively, and require education equivalent to 3½ years of college engineering, or equivalent experience.

### Marine engineers

The United States Civil Service Commission is accepting applications on an unassembled examination basis for marine engineers in the grades of principal, senior, engineer, associate and assistant, paying from \$5,600 to \$2,600. The majority of appointments are to be made on the grades of assistant and associate. Education requirements include completion of a 4-yr. college course leading to a bachelor's degree in engineering or naval architecture, and varying amounts of professional experience, depending on the grade. Duties of the position include preparation of designs, installation plans and specifications for marine machinery.

### Naval architects

The United States Civil Service Commission is accepting applications on an unassembled examination basis for positions of principal, senior, architect, associate, and assistant naval architects, paying from \$5,600 to \$2,600. Educational requirements include completion of a 4-yr. college course in engineering or naval architecture, and experience requirements vary, depending upon the position. Most appointments are to be made in the grades of assistant and asso-

ciate. Duties of the position are to prepare designs, contract plans, or hull construction plans for new vessel designs, and to conduct theoretical investigations in connection with hull designing.

### Water Works adviser

The California State Personnel Board will accept applications until Aug. 31 for the position of regional water works adviser with the State Department of Public Health, at a salary of \$300 a month. Entrance requirements include graduation from college with a major in engineering and 4 years' experience in water works or engineering, or completion of the twelfth grade and five years' experience as superintendent or assistant superintendent of a domestic water supply system.

### Physical testing engineer

Examinations previously announced by the California State Personnel Board for assistant and associate physical testing engineers with the Division of Highways have been postponed until the latter part of September, and the filing date extended correspondingly. These positions pay \$215 and \$260 per month, respectively, and require a college education, together with certain engineering experience.

### Safety engineer

Applications for the position of senior safety engineer in the California Department of Insurance will be accepted until Sept. 9 by the California State Personnel Board. The entrance salary is \$260 a month, and requirements include graduation from college with a degree in engineering and three years' experience in safety engineering, or an equivalent combination of education and experience. One year's residence in California is required.

### Naval officers

Offices of Naval Officer Procurement are seeking civil engineers for commissioning as officers for duty in connection with the construction of shore establishments and advanced bases. Men under 50, with engineering degrees, should apply to the office of Naval Officer Procurement, 703 Market Street, San Francisco, Calif.

### Bulldozer operators

Atkinson-Kier Company, who is engaged in construction of a defense plant in northern Arizona, is in need of 50 bulldozer operators. Write directly to the Personnel Manager, Atkinson-Kier Company, Bellemont, Ariz.

### Field engineers

The Missouri Valley Bridge & Iron Co., Shipbuilding Division, at Evansville, Ind., is seeking field engineers, instrument men and rodmen. Letters including complete details as to amount and type of experience should be sent to the Employment Department of the company.

## OBITUARIES . . .

**John Coffee Hays**, vice-president of Stone & Webster Engineering Corp. in New York, since 1917, died there July 21. He was educated in California, and had served at various times as president and consulting engineer for Yosemite Power Co., Mt. Shasta Power Co., and La Grange Water and Power Co., all California corporations. He was 59 years old.

**Charles E. Richards**, 83, retired building contractor of Los Angeles, Calif., died July 11 at his home. He was the founder of the Richards-Neustadt Construction Co., and did much early reinforced concrete construction. The Huntington Hotel, Pacific Mutual Building, and Orthopaedic Hospital are Los Angeles buildings erected by his firm. During the World War, he supervised construction of Camp Kearney, near San Diego.

**John J. Leonard**, San Francisco contractor, died July 1 at the age of 55. He was a charter member of the Builders' Exchange.

**John J. Kavanagh**, at the time of his retirement two years ago called the oldest employee of the San Francisco City Engineer's office in point of service, died July 15, in that city.

**John H. Wylie**, retired civil engineer, died July 18 in Los Angeles, Calif., at the age of 78.

**William Braden**, 71, founder of the Braden Copper Co., operating in Chile, and other mining interests, died July 18 at Reno, Nev. He was a graduate of Massachusetts Institute of Technology, and was interested in mining activities all over the West, as well as South America.

**Guy W. Mendenhall**, veteran road-builder of Springville, Utah, died July 17 at his home. With his sons as partners, he had built up one of the largest construction firms in the West. He had been too ill to take active part in the business for the past two years.

**Ralph W. Bolton**, electrical engineer, former faculty member at Carnegie Institute of Technology, and builder, died July 19 at Glendale, Calif., where he had been living for some years in retirement. He was 68 years of age.

**Henry M. Van Arsdale**, 73, retired, died July 21 in Los Angeles. He was formerly an engineer in the employ of the Southern California Gas Co.

Lake City building contractor died at the Utah capital July 26. As contractor, he had built the Continental Bank Building, Wasatch School, McCune School of Music and other major structures in Salt Lake City, retiring from active business several years ago.

**Samuel Murchison**, pioneer construction superintendent of the northwest, died suddenly on July 22 at his home near Vancouver, B. C. He was superintendent for the contractor during construction of Copper River railway in Alaska, and was also superintendent of the bridge department of the Great Northern Railway. He also did much of the early building and street work in Washington and British Columbia.

**Sheldon K. Baker**, Arizona civil engineer died July 12 at La Jolla, Calif., at the age of 62. In his 37 years in Arizona, he had charge of construction on the canal system of the Salt Lake River project, water and sewage systems at Phoenix and other cities, and as consulting engineer of the state Planning Board and the National Resources Board, made a study of the resources of Arizona which is considered outstanding.

**John F. Meagher**, civil engineer for the PWA at Portland, Ore., died July 9. He was 66 years of age, and had been a railroad engineer for many years.

### Payments Completed on Interstate Bridge Bonds

THE INTERSTATE BRIDGE, spanning the Columbia River between Portland, Ore., and Vancouver, Wash., is entirely debt free following redemption of the final block of \$50,000 in outstanding bonds by Multnomah County, Ore. Construction of the bridge was begun in 1914 by the two adjacent counties in Washington and Oregon, and financed by \$1,750,000 in bonds. Tolls were collected from the time the bridge was completed until Dec., 1928, when the bridge and approaches were made a part of the state highway system.

### Sewer Contractor Sues On Terminated Contract

HEARINGS were completed last month for a \$68,596 damage suit filed in the United States District Court by J. C. Hickey, contractor of Albuquerque, N. M., against the City of Carlsbad, N. M. The basis of the suit is a sewer contract awarded to Hickey and then terminated before the work was completed. In his complaint, the contractor stated that the city engineer refused to stake out locations for the line in one instance, causing the contractor a \$19,000 loss in idle equipment between Nov. 1938 and April 1939. In another instance, the claim stated that the engineer was asked to

### Seattle Opens One Bid For Ross Dam Raise

ONLY BID received by the Seattle City Light Department for construction of the first addition to Ross Dam was submitted by a joint venture group made up of General Construction Co., Seattle, Wash., Morrison-Knudsen Co., Inc., Boise, Idaho, and J. F. Shea Co., Los Angeles, Calif. The bid amounted to \$6,146,214. At the same opening the Superior Portland Cement Co. offered to supply cement for the project for \$977,676. S. Morgan Smith Co. submitted bids amounting to \$57,700 for supplying four valves, and no bids were received for furnishing sluice gates. A brief description of the work involved in the project appeared in the June, 1942, issue of *Western Construction News*.

modify contract specifications to permit the installation of a special foundation for the pipe line, but instead required the contractor to relay the line in a new location. When the contractor refused to relay the line a third time, the city terminated the contract, and proceeded to complete the work with the contractor's equipment and materials.

### Advance Payment Is Made for Handling Army Camp Sewage

ARMY ENGINEERS have turned over to officials of San Bernardino, Calif., the problem of handling sewage from an air depot in that vicinity by agreeing to pay the sum of \$225,000 for the disposal of sewage from the establishment for a 50-yr. period. Immediate payment of the lump sum service charge will permit the city to enlarge its present treatment plant to nearly double its capacity. Under the agreement, the Army engineers will install a \$50,000 line connecting the depot to the city's trunk sewer.

### Cost of Living Bonus Given

EMPLOYEES of S.S. Magoffin, working at the east portal of the Continental Divide tunnel near Estes Park, Colo., have been paid a 10 per cent bonus to cover increased cost of living, with payments being made in war bonds instead of cash. In addition, all of the workers subscribed for an additional 10 per cent deduction from their wages for the purchase of war bonds, and were cited by Gov. Carr of Colorado for their contributions to the war effort.

### First Northwest Flight Strips Being Surveyed

SURVEYS for the first flight strips planned for the Pacific Northwest are being made in Washington, Oregon and Montana, sub-Regional Director L. R. Durkee of the Federal Works Agency

announced early last month. W. H. Lynch district engineer of the Public Roads Administration, in Portland, has reported six projects actively under way. Three of these are in Oregon, two in Washington and one in Montana. For military reasons, exact locations will not be publicized.

All of the flight strips are intended for Army use either as emergency landing fields or in military operations in this area. They are to be built by the Public Roads Administration of the Federal Works Agency in consultation with the Army Air Forces.

### Deny Sewer Use to Oil Wells

TWO OIL COMPANIES in Los Angeles County, Calif., have been denied the use of the Los Angeles city outfall sewer for disposal of brine wastes from oil wells. Although the companies offered payment of \$35 per million gallons of waste, the city council held that the sewer was already being operated to capacity; that a certain amount of oil might be retained in the brine waste and contaminate the beaches; and that the payment was too small.

### Over Quarter of State Receipts from Autos

REVENUE from motor vehicle and fuel taxes provided 29 per cent of the income to the State of California for the fiscal year 1940-41, according to the *Tax Digest*, published by the California Taxpayers' Association. Second largest source of income, the motor vehicle and fuel revenues amounted to \$88,819,212 during the fiscal year. The only larger source of income was the retail sales and use taxes and permits, which returned 36 per cent of the state's revenues. The third largest income source, which was bank and corporation franchise taxes, provided only 8 per cent of the state's income, and the personal income tax provided only 7 per cent.

### Federal Use of City Engineers Protested

AFTER COMPLETING ARRANGEMENTS for the loan of more than 100 engineers from the Los Angeles City Engineer staff to the federal government, the Board of Public Works was presented with a protest by the Structural Engineers Association of Southern California. In an effort to prevent the layoff of 190 engineers and draftsmen if home work could not be found when construction was placed under restrictions by WPB, the board of public works had approved a plan of Lloyd Aldrich, city engineer, for the loan of staff members to governmental agencies. Representatives of the structural engineers protested that such action constituted unfair competition on the part of the city with private engineering firms who are better qualified to handle the government work.

## Drop 1/2-in. Square Bars From Reinforcing List

CROSS-SECTIONAL STEEL areas for reinforcing bars have been simplified by dropping for the duration of the war the 1/2-in. square bar. Revision of the simplified list became effective on June 15. The Division of Simplified Practice, National Bureau of Standards, secured approval of the industry for the first edition of the recommendation in 1924 as a result of simplification during World War I, reducing the prevailing variety of sizes from 32 to 11. A revision of this recommendation in 1930 left the listing undisturbed, but expressed the areas in hundredths instead of thousandths of a square inch as a means of further simplifying the work of engineering design of reinforced concrete. In May of this year the recommendation was again revised, dispensing with the use of the 1/2-in. square bar as a means of conserving materials, rolls and manpower.

Mimeographed copies of Simplified Practice Recommendation R26-42 may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C., without cost. In addition to the simplified schedule itself, the new publication includes a brief history of the development of the project.

### Davis Dam to Be Started

UTAH CONSTRUCTION CO. has been notified to begin construction of Davis Dam by Sept. 1, in accordance with the terms of the contract signed with the Bureau of Reclamation a few weeks ago. The structure will be built on the Colorado River west of Kingman, Ariz.

### Plywood Standards Issued For Producers' Acceptance

RECOMMENDED REVISION of the commercial standard for domestic grades of Douglas fir plywood have been issued by the National Bureau of Standards for acceptance by the manufacturers of the product. Copies of the recommended revision (Commercial Standard CS45-40) may be obtained from Washington, D. C., by producers, distributors, users and testing organizations who wish to indicate their acceptance of the standards. The rules cover six grades of moisture resistant type and seven grades of exterior type of Douglas fir plywood as well as a number of other types. They were prepared by the Douglas Fir Plywood Association and approved by the Standing Committee.

## Jobs—Coming and Going . . .

### Bridges

Seven bridges spanning the Willamette River in Portland, Ore., and owned by Multnomah County, have been insured for a total of \$17,500,000 against war damage.

The Los Angeles city council has appropriated \$11,450 to permit completion of the First Street and Glendale Boulevard grade separation by private contract. The \$728,000 structure was begun two years ago as a Works Progress Administration project.

The last covered bridge in Lewis County, Wash., disappeared last month when the cover was removed as a means of lightening the dead load on the structure.

Work on the Kamiah bridge, southeast of Lewiston, Ida., has been resumed by J. F. Konen, after a 6-weeks' suspension because of high water.

### Highways

John Carlin Construction Co., San Francisco, Calif., has begun the work of grading and surfacing 11 1/2 mi. of highway in the vicinity of Humboldt Bay, near Eureka, Calif.

O. C. Yocom, highway contractor of McMinnville, Ore., asked the Oregon State Highway Commission to relieve him of a \$40,000 grading and surfacing job in Union County because he was

unable to secure materials for completion of the project. Although the commission did not immediately cancel the contract, its attorney indicated that the legality of the contract might depend to some extent on the contractor's ability to secure supplies.

Pikes Peak Highway was opened to traffic by maintenance crews of the Colorado State Highway Department on July 18. The last snowdrift before the summit was reached was 18 ft. deep, and during one of the last days of the work, snow-plow crews worked through a storm which brought 3 in. of new snow.

Early in August, the Nevada Highway Department will open bids for construction of 5.6 mi. of highway between U. S. Highway 93 and Three Kids mine in Clark County. The project was advertised some time ago, but the only bid received arrived in Carson City a day after the bid opening.

Ramona Parkway, a divided 3-lane highway which forms a part of the projected Los Angeles parkway system, will be placed in operation during August, although the last contract will not be completed until October 1. Two other parkways already in operation are the Arroyo Seco and Cahuenga Pass.

Oakland, Calif., is purchasing right of way along Bancroft Ave. in the eastern

part of town as the first step in a major street development program.

At an estimated cost of more than \$2,000,000, Harbor Drive from Market Street in San Diego, Calif., to National City will be constructed as a 6-lane, 120-ft. high speed highway.

#### Dams

Consolidated Builders, Inc., is salvaging steel from the construction trestle and other equipment used at Grand Coulee Dam for use as structural steel in the east power house, which is now under construction.

Seattle's City Light Department has been granted an A-1-a priority for construction of the \$8,300,000 enlargement of the Ross Dam on the Skagit River. A new bid call for the work was issued with bids scheduled for opening on Aug. 6.

Dismantling of the aggregate plant at John Martin Dam, 18 mi. west of Lamar, Colo., last month, marked the completion of the aggregate processing for the project. Originally scheduled to be completed in 1943, Caddo Constructors plan to complete the structure in December of this year, with the exception of installation of mechanical equipment which has been postponed until after the war.

La Angostura Dam on the Bavispe River in northwestern Sonora, Mexico, was formally dedicated recently. One of four dams being built by the Mexican government, the structure will develop 16,300 hp. for generation of electricity, as well as provide water for irrigation.

#### Miscellaneous

Triumph Mining Co., near Hailey, Idaho, has started driving a 7,000-ft. haulage tunnel, which is reported to be the largest development of its kind in the state.

Reports from the Bureau of Reclamation indicate that a second attempt will be made to start work on the \$26,000,000 Friant-Kern Canal to extend southeast from Friant Dam in California's Central Valley Project. Bids were opened for the first section of the project last fall, but no contract was awarded because of the inability to secure reinforcing steel for the canal lining.

Federal housing authorities are studying the possibility of utilizing the \$2,500,000 Portland, Ore., public market building for housing facilities. It is believed that the 3-story structure might provide 4,000 to 5,000 housing units for war workers.

Barrett & Hilp, San Francisco building contractors, have been awarded a

contract for construction of 13 reinforced concrete cargo barges by the U. S. Maritime Commission. Designs of the barges are being prepared by Ellison & King, structural engineers of San Francisco.

The U. S. Bureau of Mines is planning establishment of a \$500,000 electro-development laboratory in the vicinity of Grand Coulee Dam within the near future. The laboratory will be devoted to research in metallic recovery and processing methods.

#### Sanitary works

National City, Calif., has been granted a right-of-way for a sewer line to connect with the San Diego sewage treatment plant as an alternative to construction of a separate plant.

City Commissioners of Bremerton, Wash., have established an emergency water works construction fund of \$417,000 to finance improvements and extensions in the system.

Property owners have approved preliminary plans for construction of a \$134,439 storm sewer in San Mateo, Calif.

City councilmen of Myrtle Point, Ore., have established a sinking fund which is expected eventually to finance construction of a \$60,000 sewage disposal system.

## PERSONALLY SPEAKING

Carl A. Anderson, assistant chief of the Construction Division, Seattle U.S. E.D. Office, Arthur C. Nauman, Adellon H. Hogan, and John S. Wilfley, all area engineers in the Seattle District, have been promoted to the rank of Major, from that of Captain, in a series of promotions and transfers announced recently by Col. Peter P. Goerz, district engineer. Major Anderson began active duty as Constructing Quartermaster at Geiger Field eighteen months ago, after having served as a civilian engineer at Bonneville dam since 1934. Major Hogan has been on active duty since January, 1941, and assigned to the Corps of Engineers as assistant and area engineer at Fort Lewis since December last year. Major Nauman, now area engineer at Spokane, was formerly a civilian engineer at the U. S. Waterways Experiment Station at Vicksburg, Miss., and has been at Spokane since April, 1941, when he was assigned to the Air Corps at Fort George Wright. Major Wilfley was CCC construction officer at Fort Douglas, Utah, and headquarters staff officer at Fort Missoula, Montana, before his assignment as civilian resident engineer at Paine Field near Everett, Wash. Since being assigned to active duty last April, he has been area engineer at Paine Field.

Three second lieutenants have been promoted to first lieutenants: Lt. Ed-

ward C. Mahlum, assistant to the area engineer at Fort Lawton; Lt. William B. Matlock, assistant to the chief of the construction division; and Lt. Ernest J. Simons, Jr., assistant to the Spokane area engineer.

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H. P. Bunger, chief construction engineer for the Bureau of Reclamation at Parker Dam and on other important jobs, is now a major in the U. S. Army, and is presently stationed at Indiantown Gap, Penn., on engineering and construction work.



Major Robert C. Moffitt, formerly assistant to the chief of the Construction Division, has been transferred to the Yakima Area and appointed area engineer. Major Sedric A. Payette, formerly assistant area engineer at Fort Lewis, has been appointed resident engineer at Prince Rupert, British Columbia. Captain George Hollister has been transferred from the Seattle District to the Mountain Division at Salt Lake City, Utah.

Clark H. Eldridge, former City of Seattle bridge engineer, and now a prisoner in Japan since the fall of Guam where he was in charge of construction of a naval base, was heard in a transcribed broadcast received in Seattle on the night of July 29. On Feb. 28 his voice also was heard via Tokyo Radio by Seattle friends.

In his latest message Eldridge reported that he was in Kobe where he was taken with 133 other American civilians at the time of the Japanese occupation of Guam. Included with this number were all 70 employees of Pacific Naval Bases Contractors who were on Guam. One member of the group, Jack Strugel of Honolulu, is missing, Eldridge said, and added, 'Fifty-six of us live in a very good house in the foreign section and we are all well and, though confined, are treated in a very excellent



Raymond J. Briggs, Boise consulting engineer, has been named Idaho district manager of the WPB. Briggs is president of the Idaho Society of Engineers, and secretary of the Idaho Board of Engineering Examiners.

and courteous manner by the Japanese authorities."

A recording of the broadcast was made by a Seattle listener who presented it to C. Wallace Eldridge, Eldridge's son, one of several persons to whom the message was directed. Eldridge was employed by the City of Seattle from 1920 to 1936, when he became state bridge engineer. He was chief construction engineer of the Tacoma Narrows Bridge, which collapsed during a high wind, November 7, 1940.

Southern California men recently qualified as registered civil engineers by the state board are: Chester H. Green and Frank S. Pearne, Alhambra; Robert H. Rollins, Arcadia; Richard O. Stevens, Chula Vista; Robert V. Phillips, Independence; William Grant, Ingleside; Harold Edelstein, Ellsworth J. Epperson, Nahum Goldman, Sam Helwer, Clarence F. Hesse, Nathan Hittelman, Clifford H. Hughes, William H. Krelle, Karl T. Mueller, Edward C. Reid, John Ritter, Lawrence Schneider, Donald Thompson, and Robert J. Williams, Jr., Los Angeles; W. Larabee Bangham and John A. Lambie, Pasadena; J. Frank Jorgensen, San Diego; Edwin J. Core, San Fernando; A. Leigh Porter, Santa Monica; Roland W. Sisler, South Pasadena; Charles E. Dresser, Tujunga; Gilbert B. Upham, West Los Angeles; Donald G. Weaver, Whittier. In addition, licenses as land surveyors were granted to: R. F. Flickwir, Los Angeles, and R. E. Culmer, San Diego.

Lt. Col. Rufus W. Putnam has succeeded Col. Edwin C. Kelton as district engineer for the Los Angeles, Calif., dis-

trict of the U. S. E. D. Lt. Col. Putnam was in the Corps of Engineers during the World War, but has engaged in civilian engineering activities as president of the Maritime Engineering Corp., Chicago, until recently. Staff officers appointed to assist him in his new assignment are Lt. Col. H. W. Thompson, chief of the military engineering division; Lt. Col. W. J. Leen, chief of the operations division; Milburne Webb, chief of the administrative division; and Guy B. Bebout, chief of the engineering division.

H. A. Maple, representing the Seattle, Wash. office of the U. S. E. D., has been transferred to Prince George, British Columbia, to open an office and prepare for the Trans-Canadian-Alaska Railway location survey. As soon as an office is established, it is expected that five to seven parties of surveyors will make it their headquarters. Information on the survey itself is of course not being divulged.

Linus C. Glotzbach of St. Paul, Minn., has been appointed Regional Director of the Federal Works Agency for nine states west of the Mississippi, including Colorado and Wyoming. His duties include supervision of the Public Roads Administration, the Public Buildings Administration, the Public Works Administration, and the war public works program, all constituent parts of the Federal Works Agency.

Maurice C. Tobin, storm drain design engineer, and Joseph W. Hall, reservoir maintenance man, of Los Angeles County Flood Control District, were both commissioned captains in the Engineer Corps of the army on August 1, and left for active duty. Both were non-commissioned veterans of the first World War. Tobin has had charge of storm drain design in the District ever since this function was taken over from the county government.

Col. Harry A. Skerry, formerly army engineering officer at Bonneville dam, and more recently engineer officer in the Philippine command of Lt. Gen. Wainwright on Bataan Peninsula, has been awarded a Distinguished Service Cross for distinguished bravery in that campaign. He is believed to be a prisoner of the Japanese at the present time.

Thomas M. Leps, whose article on earth canal linings appeared in the June issue of *Western Construction News*, resigned from the Bureau of Reclamation on June 15, to accept a position as soils engineer with Charles DeLeuw & Co., architect-engineer at the Sioux Ordnance Depot near Sidney, Nebr., studying highway fills and igloo and building foundations.

W. O. Hogue, construction engineer of Pocatello, Ida., left in July for Li-

beria, West Africa, to survey and map unexplored portions of the Liberian jungle, searching for new rubber producing areas for Firestone Plantations Co. He has had about five years experience in West Africa, building bridges, roads, and a hydro-electric plant, returning only last March.

Hugh D. Barnes, acting district engineer for the Portland Cement Association in the Los Angeles office since Sept. 1941, has been appointed regional highway engineer for the same group, supervising Southern California, Arizona, and southeastern Nevada. Before becoming affiliated with the Association, Barnes was state highway engineer for the state of Kansas.

E. H. Steele, engineer of line construction for Pacific Gas and Electric Co., retired on June 30 after 33 years service with the company. He is said to have built or rebuilt nearly all the company's transmission and distribution lines in that time, and it is calculated that he has supervised spending of \$50,000,000 in the work.

A. W. Blunt, construction engineer, has been commissioned Lieutenant, senior grade, in the U. S. Navy. He was formerly with Los Angeles County Flood Control District, and received his commission on Aug. 4.

Maj. William G. Swan, who had charge of design and construction of the Pattullo and First Narrows bridges at Vancouver, B. C., and more recently was director of construction in the War-time Supply Board at Ottawa, has been promoted to the rank of lieutenant colonel, and assigned to the position of district engineer officer at Victoria, B. C.

Harry S. Mason, Jr., construction engineer with Los Angeles County Flood Control District, has transferred to the U. S. Engineer Department, and is stationed at Phoenix, Ariz.

James G. North, Phoenix, was re-elected president of the Associated Construction Contractors of Arizona at a recent meeting. Other officers, also re-elected, were: first vice-president, B. L. Gustafson, Clifton; second vice-president, Ralph Watkins, Buckeye; secretary, J. D. Williams, Phoenix; and treasurer, Merrill Ribbins, Phoenix.

Basil A. Binckley, survey party chief for Los Angeles County Flood Control District, has left that position to become a metallurgist with the Kaiser Co., Inc., at Oakland, Calif.

Jay M. Fetter, formerly European

manager for Caterpillar Tractor Co., with headquarters in London, England, has been appointed equipment consultant to the three western divisions of the U. S. Engineer Department, and will represent the office of the Chief of Engineers in the west, maintaining his headquarters in San Francisco.

Rex A. Daddisman, district manager for the Edward R. Bacon Co., San Francisco, has been commissioned a major in the Corps of Engineers and appointed chief of the mechanical equipment section of the South Pacific Division. In this capacity he will have charge of the newly formed construction equipment pool.

E. W. Whistler, for the past four years field engineer for the Portland Cement Association at Denver, has resigned from that connection to accept a position in the engineering department of Whitman, Requardt & Smith of Baltimore, Md., architect-engineers on the construction of the Rocky Mt. Arsenal.

New officers of the Montana Society of Engineers are: president, W. A. O'Kelly, Butte; vice-president, C. A. Lemmon, Anaconda; second vice-president, A. I. Hoem, Butte; secretary-treasurer, F. D. Schwanz, Butte; trustees, A. E. Koenig and George Moser, both of Butte.

N. L. Hinkson, specialist in hydro and steam power plant design, formerly with TVA and on the Santee-Cooper hydroelectric projects near Pittsburgh, Penn., is now with the Austin Co., at Midland, Mich. employed on power house and chemical plant design.

A. L. Trowbridge, formerly chief engineer of the Kern River Water Storage District, and more recently comptroller of Stanford University, is now district manager for the California Water Service Co., located at Bakersfield, Calif.

A. G. Proctor, first vice-president of the Sacramento, Calif., section of the American Society of Civil Engineers, became president of the organization recently, when E. A. Fairbairn, president, resigned to enter the U. S. army air force.

Harold Martin, Denver engineer formerly with the Bureau of Reclamation has recently been appointed to the position of Area Engineer by the U. S. E. D. with the commission of Captain. He is stationed in the Denver vicinity.

A. J. Thomas, Bureau of Reclamation

resident engineer at Colville, Wash., for the past six years, has left that position to go to Whitehorse, Yukon Terr., British Columbia, for work on the Alaska highway.

R. L. Patterson, city engineer of Newport Beach, Calif., has been assigned the additional duties of harbormaster of Newport Harbor, as harbormaster T. E. Bouchey was given leave of absence to join the U. S. Coast Guard.

Lt. Charles Curtis has been appointed area engineer at Lamar, Colorado, for the U. S. Engineer Department and will operate under the Albuquerque, N. M. office. The area office will supervise construction of a Japanese camp and a pilot training school.

C. C. Coykendall has been granted leave of absence by the Iowa State Highway Department to take the position of field engineer with Lytle & Green Co., contractor for the northern section of the Alaska highway.

R. P. Cravens, structural engineer, who has been employed by the Los Angeles, Calif. building and safety commission for the past two years on code revision, has been appointed secretary of the commission.

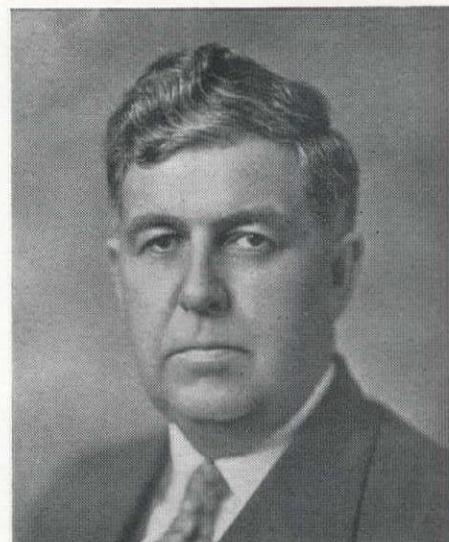
Gordon H. Pitner, Denver engineer with the Bureau of Reclamation for the past four years in the electrical-mechanical section, has resigned to accept a commission in the signal corps of the Army.

Ronald Burke, assistant engineer with the Bureau of Reclamation at Denver, has resigned to accept a position with Whitman, Requardt & Smith on construction of the Rocky Mountain Arsenal.

Roy (Zook) Purdy, chief dispatcher of the Los Angeles County Flood Control District, has been granted a leave of absence to work with the U. S. Public Roads Administration on construction of the Pan-American highway.

C. H. Wainwright, formerly with the public works division at Mare Island Navy Yard, Vallejo, Calif., has been commissioned a lieutenant in the Corps of Engineers and is stationed at Fort Worden, Wash.

Dr. A. Tilles of the electrical engineering department at the University of California, has joined the staff of South-



R. A. Klein, assistant district engineer of the Public Roads Administration located at Denver, has been transferred to a similar position at Fort Worth, Tex. He is a former president of the Colorado Section of the American Society of Civil Engineers.

western Engineering Co., Los Angeles, to serve as consultant for the company in its construction of the Manganese Ore Co. plant near Las Vegas, Nev.

Lyndell W. Lewis is an inspector for the Bureau of Reclamation at the west portal of the Continental Divide tunnel of the Colorado-Big Thompson project, for which Stiers Bros., of St. Louis, Mo., have the contract.

R. C. Tolson, construction engineer for the U. S. Indian Service, has been assigned to Parker, Ariz., where he will supervise construction of a new concentration camp for Japanese evacuees from the coastal areas.

W. O. Kively, office engineer at the Montana highway department, has resigned after 21 years' service with the department, and is now doing war work in the West Indies.

Melvin D. Williams, district engineer at Juneau, Alaska, for the Public Roads Administration since 1919, is now the representative of the Federal Works Agency on the Alaska War Council.

Oral G. Young has been made U. S. E. D. area engineer at Port Angeles, Wash., opening the office as a branch of the Seattle district engineer's office.

Chris J. Sherlock, president of the American Roadbuilders Association, and

until recently Alabama State Highway Director, was commissioned a major in the Corps of Engineers on July 6, and assigned to be operations officer at the District office of the Corps in Denver, Colo.

Robert Heron is now engineering designer with Fraser-Brace Engineering Co., Inc., working on water supply problems incident to the construction of the Keystone ordnance plant at Geneva, Penn.

Henry B. Campbell, assistant engineer in the U. S. Engineer Office, Seattle, has been assigned to duties on the Alaska Highway, and is stationed at Whitehorse, Yukon Territory, Canada.

A. C. Fulmor, county surveyor of Riverside County, California, was recently elected president of the Riverside-San Bernardino chapter of the American Association of Engineers.

Charles Dull is employed with the Missouri River Division of the U. S. E. D. on flood control, hydraulic designing and storm studies, and is stationed at the Omaha, Nebr. office.

Earle W. Devalon, Denver, Colo., is succeeding James B. Kenney as Managing Director of the Colorado Association of Highway Contractors. Kenney has gone into active contracting work.

Frederic F. Hall has been appointed Chief of Protective Construction, Division of Property Protection, under the U. S. office of Civilian Defense in the San Francisco area.

W. K. Stewart is representing the U. S. E. D. as resident engineer at Fallon, Nevada, on Dodge Construction Co.'s contract to grade and pave the airport at that city.

Frank A. Metcalf has resigned as city engineer of Juneau, Alaska, and is going into government service, to be stationed at Sitka.

J. W. Taylor, construction engineer on the north unit canal of the Deschutes project, Oregon, has entered active service in the Corps of Engineers.

H. R. Flint, formerly Idaho state highway director, is now resident engineer

at the Navy's \$20,000,000 gun relining plant near Pocatello, Ida.

Charles A. Chaney, senior structural engineer with the Montana state highway commission for the past 12 years, has joined the Corps of Engineers.

Capt. E. M. Hilton, for eleven years park engineer at Yosemite National Park, Calif., has rejoined the army and

is located at Camp Roberts, in the Utilities section.

Paul L. Nichols, bridge designer for the Nevada Highway Department, has been called to active duty as a captain in the Corps of Engineers.

Lt. Col. Donald J. Leehey, U. S. district engineer at Portland, Ore. for the past two years, has been promoted to the rank of colonel.

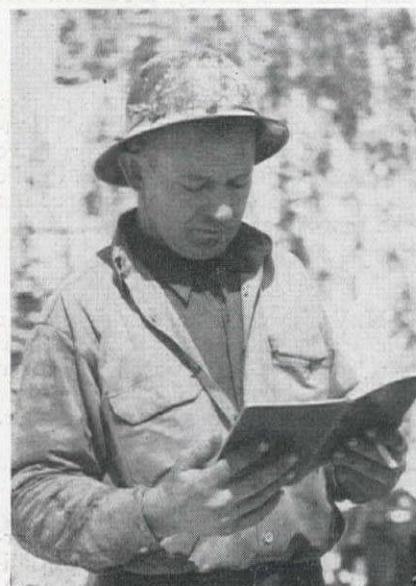
## SUPERVISING

## THE JOBS

Eric Barclay is project manager on the contract for over \$5,000,000 secured by Ford J. Twaits Co., and Griffith Co., both of Los Angeles; Morrison-Knudsen, Co., Inc., Boise, Ida.; and Peter Kiewit & Sons Co., Omaha, Nebr., on their joint contract to build an army ordnance plant costing over \$10,000,000 at Tooele, Utah, will be assisted by Ray O'Connor, superintendent of construction, H. D. Carlson, Salt Lake district manager for the contracting group, W. W. Price, Jr., chief engineer, J. D. Larock and G. W. Schloat, purchasing agents.

Clyde Jenkins, project manager for

Thomas H. Taylor is superintendent of the contract to drive the pioneer tunnel at Loveland Pass, Colo. Ed H. Honnen Construction Co. is the contractor. A description of the Loveland Pass tunnel appears on page 345 of this issue.



Ford J. Twaits Co., and Griffith Co., both of Los Angeles; Morrison-Knudsen, Co., Inc., Boise, Ida.; and Peter Kiewit & Sons Co., Omaha, Nebr., on their joint contract to build an army ordnance plant costing over \$10,000,000 at Tooele, Utah, will be assisted by Ray O'Connor, superintendent of construction, H. D. Carlson, Salt Lake district manager for the contracting group, W. W. Price, Jr., chief engineer, J. D. Larock and G. W. Schloat, purchasing agents.

Eddie Hamilton is supervising construction of additions valued at \$50,000 to Clearwater, Lynwood, and Compton High Schools, in Los Angeles County, Calif., for Hunt & Plumleigh, Compton, contractors. T. N. Plumleigh, one of the partners, is general superintendent, Howard A. Loucks is concrete and labor foreman, and Garfield Anloff is resident engineer for F. W. A. A simultaneous contract for \$65,000 is being carried out by the same men on additions to Roosevelt, Lindbergh, Abbott, and Keppel grade schools in Compton.

A. J. Wickstrom, superintendent for N. A. Degerstrom, Spokane, is in charge of the latter's \$194,699 contract to clear, grade, drain, surface, and pave with portland cement and asphalt concrete, 2.2 mi. of Primary State Highway No. 2 from Spokane west, in Washington. Assisting him are Steve A. Peters, grading foreman, Raymond Ward, superintendent of structures and equipment, M. Barnes, timekeeper, and Emil Johnson, who is operating the shovel.

Robert Hardie, who has acted as superintendent on numerous jobs for R. E. McKee, Los Angeles contractor, in



Frank R. Merrick (left) tunnel superintendent for S. S. Magoffin Co., contractor on the Continental Divide tunnel, near Estes Park, Colo., and F. K. Matejka, field engineer for the Bureau of Reclamation, on the job.

Hawaii and elsewhere, has been appointed to direct the work on McKee's contract for over \$1,000,000 to construct supply depot buildings at a southern California air depot. He will be assisted by Vern Skinner and Henry Harbordt, field engineers, and Ed Hussey, field office manager.

B. H. (Bob) Evans is superintendent of construction on Barker Dam, at Addicks, 20 mi. west of Houston Tex., for Macco Construction Co., Clearwater, Calif. He has been with the firm since 1932, when he worked at San Gabriel Dam No. 2, in Los Angeles County, Calif. Last previous assignment was at Bremerton, Wash., as assistant superintendent on drydock construction.

O.C. Marler is acting in two jobs simultaneously for J. A. Terteling & Sons, contractors. He is assistant general manager of the work at the Black Hills Ordnance Depot at Edgemont, S. Dak., and assistant to the project manager at the air support transport glider base being built at Alliance, Nebr.

R. F. Cuthbert is engineer for the contractor on the contract of Macco Construction Co., Clearwater, Calif. to build Barker Dam on Buffalo Bayou, a part of the Harris County Flood Control Project, for the protection of the City of Houston, Texas, and the Houston ship channel.

Edgar P. Smith is job superintendent for Viesko & Hanneman, Salem, Ore., on their \$1,756,000 contract for constructing 600 housing units between the Portland city boundary and Milwaukie, Ore. Assisting him are H. E. Pruitt,

R. A. Maude, and Hugh Range, carpenter foremen.

J. H. Copper is superintendent of construction for Parker-Schram Co., Portland, on its \$168,746 contract to grade and pave 2.6 mi. of access road to the North Portland shipyard, in Multnomah Co., Ore. Roy Clayton is asphalt plant superintendent on the same job.

James H. (Jim) Maloney, rigger, was in the office of *Western Construction News* recently, just having returned from many months work with Rohl-Connolly Co. on various South Pacific islands. Maloney plans to leave soon for Alaska.

John Keith is contractor on the \$185,473 contract to build Lugonia Homes



J. B. (Jack) Parson is superintendent of a half million dollar contract secured by Olof Nelson Construction Co., Logan, Utah, to clear, grade, and pave the municipal airport at Provo, Utah. It is a C. A. A. project.

housing project in Redlands, Calif. and is serving as superintendent on the job. J. H. Hay is general manager. The work includes houses, streets, sewers, and site development.

O. J. Harryman is superintending the temporary building expansion at an airport in southern California, for M. J. Brock & Sons and Davies & Keusder, contractors who hold the "less than \$1,000,000" contract. John Bunch is assistant superintendent, Clyde Savery is mill superintendent, and D. Armstrong is carpenter superintendent.

Ben H. Robertson is in charge for Woodward Construction Co., Rock Springs, Wyo., on its \$121,994 contract

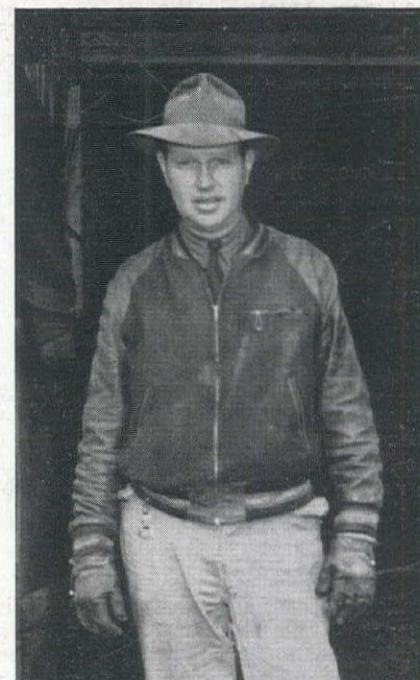


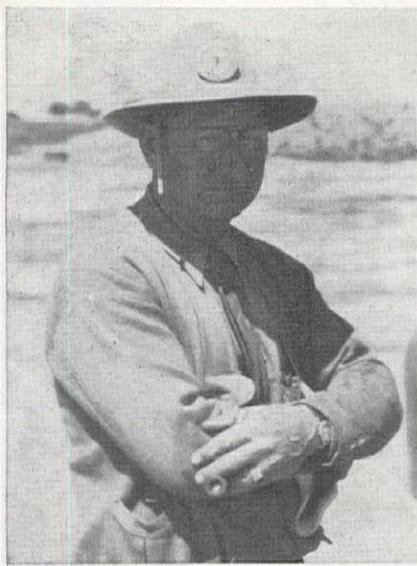
Domenic Leone, owner and superintendent of the Leone Construction Co., Trinidad, Colo., is working on a contract to widen eight bridges and culverts on Rt. No. 85 between Colorado Springs and Pueblo, Colo.

to lay a base course and apply roadmix surfacing and seal coat on 10 mi. of the Granger Jct.-Green River road in Sweetwater Co., Wyoming. Others on the job are George Kasper, plant and crusher foreman, and Hap Goodyear, road foreman.

Raye C. Lewis is general superintendent for Fife & Co., Nyssa, Ore. on their

John C. Young is superintendent for Pioneer Construction Co., Denver, on its contract to open the 870-ft. pioneer tunnel between Golden, Colo., and a point of intersection with Highway No. 40. Pioneer tunnel is 7x7 ft.





Charles H. Alber is superintendent for Driscoll Construction Co., Pueblo, Colo., on railroad ballast supply contract. He is a veteran of bridge construction in southern Colorado, and was called from retirement for this job.

contract to construct a permanent farm labor camp at Quinby Farm, near Nyssa. **Dean Fife** is concrete foreman on the job and the carpenter foremen are **James Huffman** and **Gordon Williams**. Value of the contract is \$99,500.

**J. W. Hess** is job superintendent on 5.6 mi. of grading and applying bituminous surfacing between Route 138 and Gardner Field in Kern Co., Calif., and **Paul Matus** is grade foreman. This contract was secured by Louis Biasotti & Son, Stockton, Calif., for \$157,920.

**C. J. Pankow** is local manager of the Clearfield, Utah, naval supply depot job being constructed by the Winston-Haglin, Missouri Valley-Sollitt Co. on a \$35,000,000 contract. **R. E. Carlson** is procurement manager.

**Howard Bong** and **Thomas Bong** are the superintendents on a contract secured from the Army by Clifford C. Bong, Temple City, Calif., to grade the site for building expansion at a Nevada gunnery school.

**A. L. Horstmeyer** has been appointed superintendent by M. J. King, San Francisco, contractor, on the \$80,937 job of constructing a shore base for the California Maritime Commission at Morrow Cove, Solano Co., California.

**Leon Adams**, superintendent of equipment for the Montana division of the Public Roads Administration, has been assigned to the Alaska Highway project,

where he will be in charge of all equipment on a 900-mi. section of construction.

**R. E. Batie** is superintendent on the \$181,415 contract held by Warren Northwest, Inc., Portland, for surfacing the Redmond, Ore., airport. **J. Q. Crone** is foreman of the paving plant, and **Dick Bartholomey** is runway foreman.

**Edward Wilmas** is now working at Baraboo, Wis., operating a shovel for Mason-Hanger Co. on construction at the Badger Ordnance Plant. He was formerly at Ft. Peck, Mont.

**A. J. Clausen**, contractor, will himself act as job superintendent on the \$67,462 contract to construct roads, sewers and a water supply system at Richmond, Calif. Foreman on the job is **Bill Jurkovich**.

**W. W. Price** has been made superintendent for Warren Northwest, Inc., on a \$145,830 job of paving runways at the Astoria, Ore., airport. **Seth Cook** will be in charge of the plant, and **C. A. Matkin** will be foreman on the runways.

**A. B. Harr** has been appointed job superintendent for construction of additional facilities at a naval hospital supply depot in California, a \$1,740,000 contract held by the Austin Co., of Cleveland, Ohio.

**Glenn Volgamore** is employed as a carpenter by Pando Constructors, building the Camp Hale Ski Cantonment near Pando, Colo.

**Harold E. Weaver** is general superintendent of construction of 200 tem-

#### HAROLD E. WEAVER



porary portable defense housing units at Benicia, Calif., together with all necessary utilities. **Claude T. Lindsay** and **Martel Wilson** are the contractors.

**R. A. Patton** is a carpenter on the big permanent marine base being erected near Oceanside, Calif., a job which it is expected will take over a year to complete.

**O. D. Williams, Jr.**, and **J. F. Hall** are superintendents on the job for **Guy E. Hall**, Bakersfield contractor, on construction of buildings at a central California airfield.

**R. L. Benelli** is now a member of the "Sea Bees," or construction battalion of the U. S. Navy, and will serve as a superintendent of construction work on foreign soil.

**Fred G. Redmon**, contractor of Yakima, Wash., has been sent by the government to supervise construction on the northerly end of the new Alaska highway.

**F. W. Hoffman** is acting as assistant superintendent with Dutton & Kendal, contractors, in defense building construction in the Denver area.

**A. E. (Chris) Christensen** is superintendent for **W. E. Ryberg Co.**, on construction of sewers in Redwood Rd., Salt Lake City, Utah.

**Robert G. Nicklas** is job engineer on construction of concrete buildings at the Spokane army air depot, in Spokane, Wash., a contract of the **Ford J. Twaits Co.**, Los Angeles, Calif.

**Martin Green, Jr.**, is superintendent for **A. Teichert & Son, Inc.**, Sacramento, on a confidential army project near Redding, Calif.

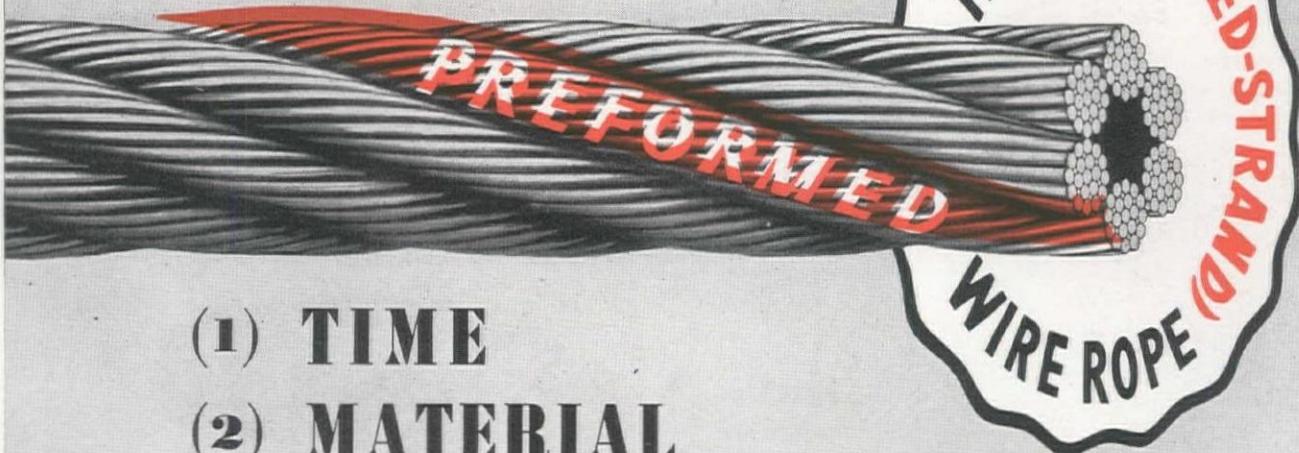
**Jack E. Douglass** is now master mechanic for the **W. A. Bechtel Co.**, Marinship Divn. at its Sausalito, Calif. shipyard.

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Write giving complete details as to amount and type of experience to Employment Dept.,

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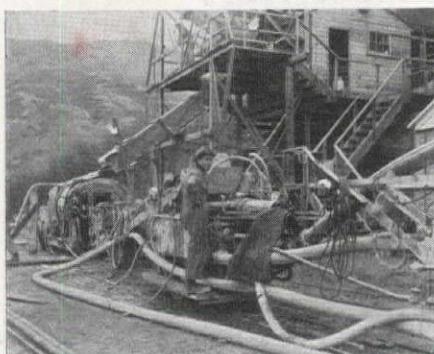
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Goodall "MINE-KING", a molded and braided air hose, was used for the drills, "MINE-KING" lived up to its name—in mines of all kinds, this hose reigns supreme!



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# UNIT BID SUMMARY

## Sewerage . . .

### Nevada—Clark Co.—Federal Works—Sewers

Bebek & Brklich and Sutalo & Ramljak, both of Los Angeles, Calif., bidding jointly, at \$738,946, were low to Defense Public Works, Federal Works Agency, Los Angeles, on Schedules 1 and 2 for extensions to the sewage system at Las Vegas, made necessary by the expansion brought to the city by the operations of Basic Magnesium, Inc. Bids were received from the following:

(1) Bebek & Brklich, Sutalo & Ramljak.	\$738,946
(2) R. A. Conyes, R. O. Dixson, Werner & Webb	746,310
(3) J. C. Hickey	844,802

	(1)	(2)	(3)
748 lin. ft. 36-in. VCP.	14.00	14.50	16.20
7,560 lin. ft. 30-in. VCP.	12.00	11.70	11.40
823 lin. ft. 24-in. VCP.	10.00	7.50	8.10
2,575 lin. ft. 21-in. VCP.	8.00	6.20	7.90
1,280 lin. ft. 18-in. VCP.	7.00	5.00	6.20
4,968 lin. ft. 15-in. VCP.	5.00	4.30	5.30
7,034 lin. ft. 12-in. VCP.	4.75	3.40	4.60
5,417 lin. ft. 10-in. VCP.	4.50	3.20	4.20
88 ea. manholes.	210.00	200.00	150.00
80 lin. ft. conc. encase.	9.00	5.00	5.00
2,200 lin. ft. conc. backfr.	8.00	7.00	4.00

### SCHEDULE II

410 lin. ft. 6-in. VCP.	2.50	2.60	3.80
129,418 lin. ft. 8-in. VCP.	2.85	3.10	4.00
2,094 lin. ft. 10-in. VCP.	4.00	3.20	4.20
12 6 x 6-in. VC wyes.	3.20	2.00	1.00
3,458 8 x 6-in. VC wyes.	3.50	3.20	1.00
35 10 x 6-in. VC wyes.	4.00	6.00	1.50
300 ft. backfill.	6.00	5.00	1.50
499 ea. manholes.	175.00	200.00	150.00

## Irrigation . . .

### New Mexico—Quay Co.—Bur. of Reclam.—Irrigation

Utah Construction Co. and Griffith Co., San Francisco, Calif., \$170,940, low to the Bureau of Reclamation, Tucumcari, on common and rock excavation between Station 2350 and 2408 on Conchas Canal of the Tucumcari Project. Bids were received from the following:

(1) Utah Construction Co. and Griffith Co.	\$170,940
(2) McNutt Bros.	216,350

	(1)	(2)
253,000 cu. yd. excavation, common, for canal.	.33	.30
265,000 cu. yd. excavation, rock, for canal.	.33	.53

### Wyoming—Park Co.—Bur. of Reclam.—Irrigation

Barnard-Curtiss Co., Minneapolis, Minn., bid low at \$15,961 to the Bureau of Reclamation at Cody, on earthwork and concrete lining on Heart Mountain Canal (Station 35+22 to Station 42+25) of the Heart Mountain Division of the Shoshone project. Bids submitted were:

(1) Barnard-Curtiss Co.	\$15,961	(2) Roy H. Archer.	\$28,049
7,600 cu. yd. compacted fills.	.75	1.75	
3,175 sq. yd. preparing foundations for concrete lining.	.95	1.25	
350 cu. yd. concrete in concrete lining.	17.50	26.00	
28,000 lb. placing reinforcement bars.	.04	.06	

## Bridge and Grade Separation . . .

### California—Shasta Co.—State—Bridges

Kiss Crane Service, Berkeley, \$72,796, was low bidder to California Division of Highways, Sacramento, on construction of 4 bridges and widening of two others, at points between 1 and 4 mi. south of Redding. Forty steel piles to be used are being furnished by the State, as are also railroad rails and mesh reinforcement. Priority rating for the job is A-2. Bids were received from the following:

(1) Kiss Crane Service.	\$72,796	(3) H. J. Oser and
(2) J. P. Brennan.	97,083	Peter Sorenson.

	(1)	(2)	(3)
45 cu. yd. removing concrete.	50.00	37.50	30.00
76 lin. ft. removing timber railing.	5.00	.20	4.00
L. S. clearing and grubbing.	\$2,500	150.00	\$3,000
870 cu. yd. struct. excav. (type "A").	7.00	4.00	20.00
400 cu. yd. struct. excav. (type "B").	3.00	5.50	5.00
750 cu. yd. ditch and chan. excav.	1.00	1.00	4.00
3.5 tons pav. asph. (P.M.S.).	20.00	7.00	20.00
65 tons mineral aggr. (P.M.S.).	10.00	5.00	10.00
9 tons mineral aggr. (P.M. non-skid surf.).	10.00	6.00	10.00
0.5 tons asph. emul. (paint bdr.).	200.00	47.00	30.00
6.8 M.F.B.M. Redwood timber, D.S.A.H. struct. gr.	300.00	300.00	200.00
364 cu. yd. class "A" P.C.C. (footing blks.).	16.00	30.00	25.00
1,255 cu. yd. class "A" P.C.C. (structs.).	27.00	48.00	40.00
40 each drive steel piles.	125.00	58.00	150.00
100 sq. yd. placing mesh reinf.	2.50	1.50	2.00

(Continued on next page)

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7,754 lin. ft. splitting railroad rails.....	1.00	.12	.20
331,000 lb. placing railroad rail reinf.....	.05	.03	.03
L. S. temp. railing.....	500.13	75.00	\$1,000
54 each anchors.....	2.00	1.25	10.00
480 sq. yd. wire and rock mattress.....	2.50	2.50	5.00
L. S. misc. items of work.....	500.00	500.00	\$4,340

## Oregon—Lane Co.—State—Bridge

Barham Bros., Salem, \$78,193, low to Oregon State Highway Commission, Portland, for construction of Judkins Point Overcrossing, near Eugene, on Pacific Highway, being an untreated frame trestle with 52-ft. roadway and two 5-ft. walks. It is being constructed in connection with the paving contract for the Judkins Point section of Pacific Highway. Bids were submitted by the following:

(1) Barham Bros.....	\$78,193	(2) McNutt Bros.....	\$84,080
All reqd. shoring, cribbing, etc.....		(1) (2)	
320 cu. yd. structural excavation.....	\$3,000	\$2,540	
25 cu. yd. struct. excav. below elev. shown.....	5.00	4.00	
125 cu. yd. class "A" concrete.....	7.50	4.00	
1,600 lb. transport and place metal reinf.....	35.00	30.00	
3,800 lin. ft. furnish untreated piles.....	.10	.10	
74 only drive untreated piles.....	.65	.35	
90.0 M.F.B.M. untreated lumber in substructure.....	50.00	30.00	
620 lin. ft. untreated trestle superstructure.....	100.00	110.00	
	85.00	100.00	

## California—San Diego Co.—State—Bridge

Bent Co., Los Angeles, was low bidder at \$44,921, to Division of Highways, Sacramento, on construction of 2 reinforced concrete bridges over Seventh Street Channel, in National City. Railroad rails are being furnished by the State for use as reinforcing; all other materials are furnished by contractor. A priority rating of A-1-e has been assigned to the project. Precast concrete piles support the structure. Bids were received from the following:

(1) Bent Co.....	\$44,921	(3) Oberg Bros.....	\$49,244	
(2) The Contracting Engineers Co.....	48,801	(4) R. L. Oakley.....	53,218	
		(1) (2) (3) (4)		
60 cu. yd. structure excavation.....	2.50	10.00	1.00	3.00
2 M.F.B.M. Redwood timber, DSAH struc. gr.....	200.00	300.00	300.00	210.00
435 cu. yd. class "A" P.C.C.....	42.00	32.00	35.00	38.00
2,430 lin. ft. furn. precast conc. piles, incl. test piles.....	2.50	3.00	2.00	3.00
48 ea. drvg. precast conc. piles, incl. test piles.....	65.00	60.00	80.00	80.00
6,700 lb. bar reinforcing steel.....	.08	.08	.10	.07
19,000 lin. ft. splitting railroad rails.....	.10	.06	.20	.20
130,000 lb. placing railroad rail reinf.....	.015	.01	.02	.02
5,166 lin. ft. furnishing conc. sheet piling.....	1.20	1.50	1.50	1.50
288 ea. driving conc. sheet piling.....	17.00	22.00	25.00	25.00
8,200 lb. deadmen rods.....	.125	.25	.20	.20
L. S. misc. items of work.....	400.00	\$4,400	\$1,000	\$1,500

## Montana—Stillwater Co.—State—Bridges

Walter Mackin, Billings, was low bidder at \$15,298 on construction of 3 new treated timber and pile trestles, alteration of a concrete and timber bridge and widening of a concrete and steel bridge on the access road to the Benbow mine from the town of Columbus, the work to be done simultaneously with the grading and surfacing contract let at the same time. Bids submitted were:

(1) Walter Mackin.....	\$15,298	(2) W. P. Roseco Co.....	\$17,605
		(1) (2)	
1,019 lb. reinforcing steel.....	.10	.10	.10
41.0 cu. yd. class "A" concrete.....	40.00	30.00	
77 cu. yd. structure excavation.....	7.00	6.00	
60.56 M.F.B.M. treated lumber.....	145.00	170.00	
42.21 M.F.B.M. untreated lumber.....	120.00	170.00	
16 piles treated timber piles, 20-ft.....	30.00	30.00	
7 piles treated timber piles, 25-ft.....	35.00	36.00	
41 piles treated timber piles, 30-ft.....	40.00	42.00	
2 piles treated timber piles, 40-ft.....	50.00	60.00	
22 cu. yd. gravel ballast.....	3.00	3.00	
L. S. remove existing structures, sta. 631+14.0.....	400.00	760.00	
L. S. revision of existing struct. and maintain traffic, sta. 254+40.8.....	400.00	\$1,000	
L. S. revision of existing struct. and maintain traffic, sta. 624+29.0.....	400.00	400.00	

## Highway and Street . . .

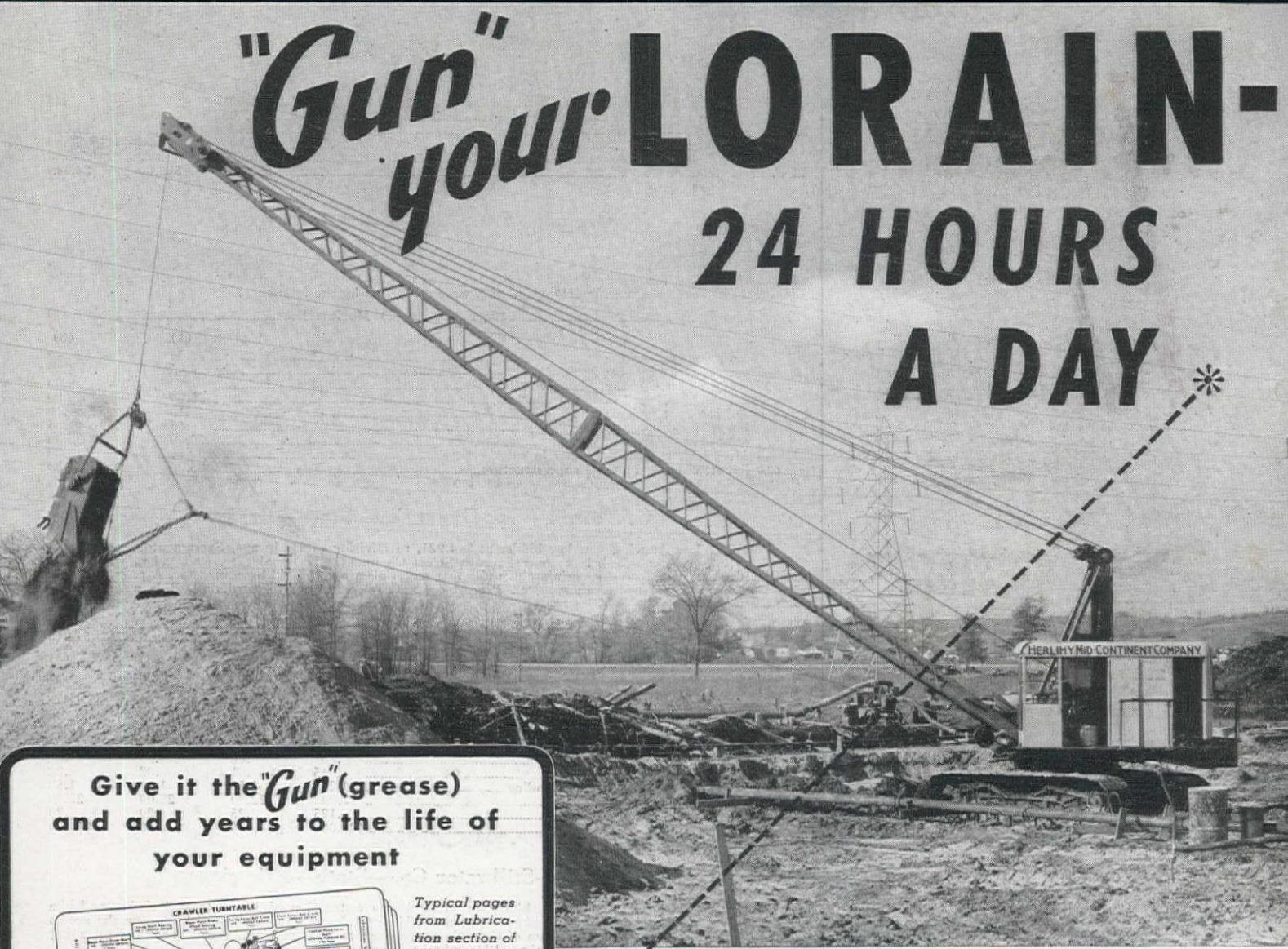
### California—Yuba County—State—Grade and Surf.

Hemstreet & Bell, Marysville, \$476,225, low to the California Division of Highways, Sacramento, on 7.9 mi. of grading and surfacing with crushed gravel base and plantmix surface, between Linda Corners and Camp Beale. All materials are to be furnished by the contractor. Priority rating for the job is A-1-j. Bids were received from the following:

(1) Hemstreet & Bell.....	\$476,225	(3) Fredericksen & Westbrook.....	\$615,454
(2) A. Teichert & Son, Inc.....	519,508		
		(1) (2) (3)	
15 cu. yd. removing concrete.....	10.00	5.00	12.50
Lump Sum clearing and grubbing.....	\$12,000	\$10,000	\$5,000
87,000 cu. yd. roadway excavation.....	.38	.47	.40
5,900 cu. yd. structural excavation.....	1.60	1.50	2.00
2,400 cu. yd. ditch and channel excavation.....	.80	.50	1.25
532,500 sta. yd. overhaul.....	.005	.005	.01
145,000 cu. yd. imported borrow (Type "A").....	.93	1.10	1.50
69,000 cu. yd. imported borrow (Type "B").....	.65	.62	1.00
Lump Sum deviate water supply and furnish water equipment.....	\$1,000	\$1,000	\$2,500
7,200 M. gal. applying water.....	2.00	1.50	1.50
Lump Sum finishing roadway.....	\$4,000	\$5,000	\$6,000
40,000 T. crushed gravel base.....	2.10	2.17	2.50
250 T. sand (pr. ct. and pen. trt.).....	3.50	3.50	5.00
125 T. liq. asph. SC-2 (pr. ct. and pen. trt.).....	20.00	20.00	20.00
18,500 T. mineral aggregate (P. M. S.).....	3.40	3.90	2.50
925 T. pav. asph. (P. M. S.).....	20.00	18.00	20.00
98 T. asph. emul. (sl. ct. and pt. bdr.).....	30.00	25.00	30.00

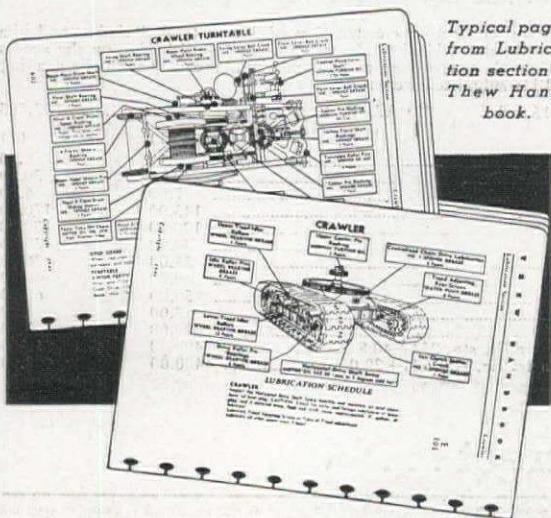
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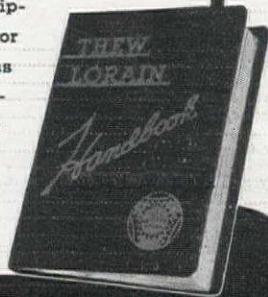


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All types of equipment need frequent and proper lubrication to prevent damage, delays and expense. One hour set aside in each day's schedule for this purpose will prolong the life and maintain the performance of your equipment. Lorain owners should write today for a copy of the Thew Handbook. It contains diagrams of lubrication points and recommended schedules for all parts of your Lorain as well as instructions on operation, adjustment and care. Give Lorain model and serial number when writing.



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There is a Lorain distributor near you who can help make your equipment last longer. Call on him often—for repair parts, for rebuilding work, for on-the-job service and for advice on rentable equipment. **THE THEW SHOVEL COMPANY, LORAIN, OHIO**

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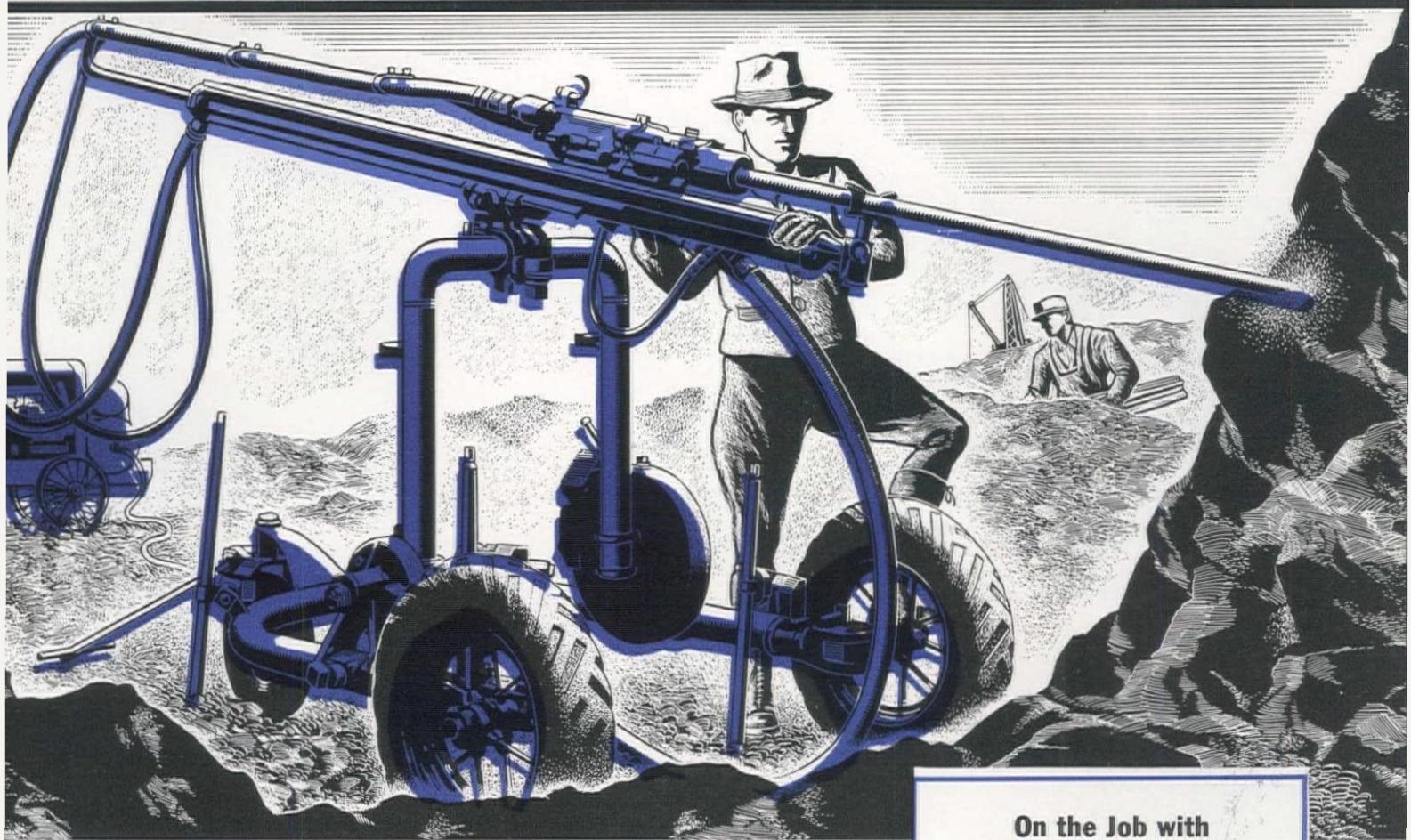
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The rugged "Rockmaster" Wagon Drill (type UPW-35 shown here) is typical of Worthington's complete range of hand-held rock drills, tampers and paving breakers. They're built to *use less air*, and stay on the job longer, at costs surprisingly low!

Smooth, easy-handling strength is characteristic of Worthington's Blue Brute compressors, too. All equipped with Worthington's famous cost-saver — the Feather\* Valve...they *deliver more air*,

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On the Job with

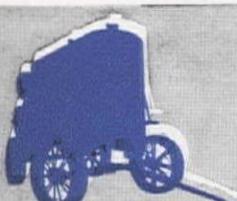
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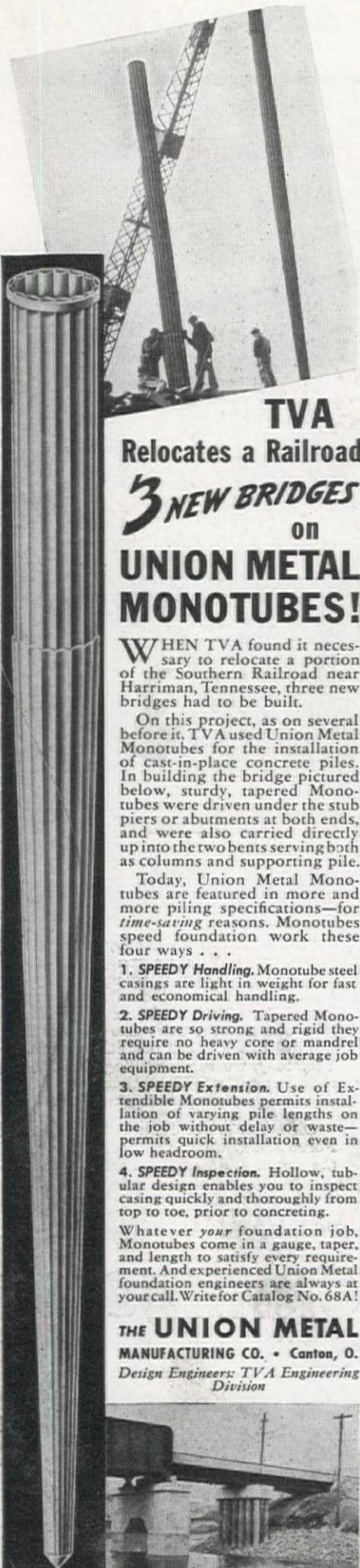


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Worthington Pump and Machinery Corporation, Harrison, N. J. Holyoke Compressor and Air Tool Department, Holyoke, Massachusetts



**TVA**  
**Relocates a Railroad**  
**3 NEW BRIDGES**  
**ON**  
**UNION METAL**  
**MONOTUBES!**

WHEN TVA found it necessary to relocate a portion of the Southern Railroad near Harriman, Tennessee, three new bridges had to be built.

On this project, as on several before it, TVA used Union Metal Monotubes for the installation of cast-in-place concrete piles. In building the bridge pictured below, sturdy, tapered Monotubes were driven under the stub piers or abutments at both ends, and were also carried directly up into the two bents serving both as columns and supporting piles.

Today, Union Metal Monotubes are featured in more and more piling specifications—for time-saving reasons. Monotubes speed foundation work these four ways . . .

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.

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

Whatever your foundation job, Monotubes come in a gauge, taper, and length to satisfy every requirement. And experienced Union Metal foundation engineers are always at your call. Write for Catalog No. 68A!

**THE UNION METAL**  
**MANUFACTURING CO. • Canton, O.**  
*Design Engineers: TVA Engineering Division*

1,430	T. screenings (sl. ct.)	3.30	4.00	5.00
49	MFBM timber structs.	125.00	120.00	200.00
560	cu. yd. class "A" P. C. C. (structs.)	26.50	35.00	50.00
110	each monuments	3.50	3.00	4.00
360	lin. ft. laminated guard railing	2.00	2.00	2.50
380	lin. ft. timber barrier railing	1.50	1.50	3.00
86	each culvert markers	3.00	3.00	3.50
160	each guide posts	3.00	3.00	3.50
2.7	mi. move and reset fences	500.00	550.00	\$1,250
1,272	lin. ft. 12-in. unreinforced conc. pipe (2000-D)	2.00	1.75	1.70
1,920	lin. ft. 18-in. unreinforced conc. pipe (2000-D)	2.25	2.75	3.00
387	lin. ft. 24-in. unreinforced conc. pipe (2000-D)	4.00	4.00	6.00
297	lin. ft. 30-in. unreinforced conc. pipe (2000-D)	5.00	5.00	7.50
399	lin. ft. 36-in. unreinforced conc. pipe (2000-D)	7.00	7.00	11.00
340	cu. yd. cement treated backfill	7.00	15.00	20.00
1,300	lin. ft. salvage pipe culverts	.80	.75	.125
500	lin. ft. rel. salv. pipe	.60	.75	.125
16	each timber spillways	15.00	25.00	25.00
100	lin. ft. timber down drains	.80	1.00	1.25

**Idaho—Elmore Co.—State—Grade and Surf.**

Dan J. Cavanagh, Twin Falls, submitted low bid of \$294,801 to Idaho Bureau of Highways for construction of roadbed, drainage structures, crushed gravel surfacing and plantmix bituminous surface on 7.118 mi. of the Old Oregon Trail. Bids were submitted by the following:

(1) Dan J. Cavanagh	\$294,801	(4) Hoops Construction Co.	\$318,160
(2) Quinn Robbins Co., Inc.	299,390	(5) Engineer's Estimate	231,769
(3) Tony Marrazzo	307,832		

	(1)	(2)	(3)	(4)	(5)
1 ea. removal of bridge	\$1,000	\$1,500	\$2,500	\$1,500	300.00
1 ea. remove concrete headwall	6.00	10.00	15.00	10.00	10.00
246,000 cu. yd. unclassified excavation	245	.54	.55	.60	.30
810 cu. yd. excavation for struct.	3.00	3.50	3.00	3.00	2.50
8,800 cu. yd. borrow	.22	.30	.40	.35	.20
107,400 sq. yd. haul	.02	.04	.02	.02	.03
51,000 mi. yd. haul	.18	.20	.15	.20	.20
1,200 lin. ft. small ditches	.10	.10	.15	.10	.10
26 stas. obliteration of old road	10.00	5.00	5.00	10.00	5.00
75 days rolling, power roller	24.00	30.00	26.00	30.00	25.00
77 days rolling, tamping roller	40.00	30.00	28.00	30.00	25.00
7,360 M. gal. watering embankments	1.50	1.50	.75	1.50	1.00
1,500 M. gal. watering base and surf. courses	1.50	1.50	1.00	1.50	1.00
52,900 tons cr. gravel base course, 2-in. max.	.85	.75	.80	.75	.65
1,190 cu. yd. binder	.25	.40	.35	.30	.20
35,900 tons cr. gravel surf. course, 3/4-in. max.	1.00	.75	.95	.89	.90
23,100 tons cr. gravel in stockpiles, 3/4-in. max.	.75	.75	.75	.70	.75
2,100 tons cover coat material in stockpile	2.50	2.00	2.50	2.50	1.45

*(Continued on next page)*



**IN YOUR RACE WITH TIME . . .**

Graco Convoy Lubers will help you reach the finish line "fastest" with the "mostest" equipment in "fighting trim." Guts, stamina, and military efficiency are built right into Graco Convoy Lubers to give you the finest available facilities for automatic, power lubrication of trucks, tractors, and construction equipment

on the job. Air compressor, grease pumps, hose reels, and all accessories are completely assembled at the factory and rigidly mounted on a structural steel frame. It takes only a few minutes to mount the complete unit on your truck and put it to work. Write today for details and specifications.

**GRACO**

**GRAY COMPANY, INC. MANUFACTURERS OF HIGH QUALITY LUBRICATING EQUIPMENT • Minneapolis, Minn.**

**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, 623 Larkin 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.



Sign the Pledge and qualify to display the Official Emblem of the U.S. Truck Conservation Corps on every one of your trucks. Get your emblem — a decalomania transfer — from your nearest FWD branch or dealer.



FWD dealers and branches have signed the Office of Defense Transportation Pledge and are qualified to display this official poster.

## The Entire National Organization of FWD Supports The U. S. Truck Conservation Corps Campaign with Full Cooperation and Participation

We are pledged to do our part . . . we are wholeheartedly supporting the Office of Defense Transportation in its job of enlisting the owners and drivers of the nation's 5,000,000 trucks in the U. S. Truck Conservation Corps. Our branches and dealers will cooperate and participate in fullest measure to prolong the life of every existing truck . . . their facilities for periodic servicing are at the command of the nation's truck operators to get the most out of their present equipment . . . to conserve tires — gas — oil — to avoid major replacements.

Motor transport is recognized as indispensable in helping "to speed the flow and movement of farm, military and industrial products so necessary to vic-

tory." Wartime conditions have emphasized the value of keeping good trucks in sound condition . . . making them last and getting the most wear out of tires.

Building trucks that will "haul longer" for "less" is a tradition with the FWD organization. Many FWD's, manufactured twenty-five years ago, are still providing dependable transportation. Thousands of FWD owners regard their FWD trucks as "priceless" today when soundly-built motor trucks are so vital.

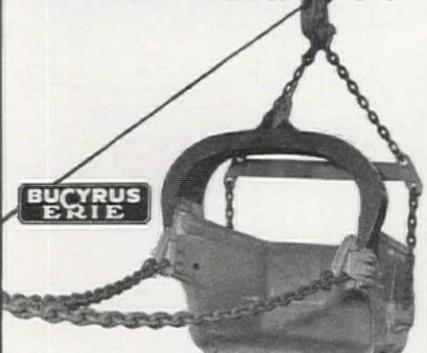
If you are not familiar with the plan of the U. S. Truck Conservation Corps — write us for full information.

THE FOUR WHEEL DRIVE AUTO COMPANY  
CLINTONVILLE, WISCONSIN • Canadian Factory: KITCHENER, ONTARIO

**FWD**  
TRUCKS

**H A U L   L O N G E R   F O R   L E S S**

# QUICK FILL . . . . . SMOOTH CARRY . . . CLEAN DUMP . . .



That's why RED ARCH Buckets will give you faster dragline operation, bigger output to meet wartime demands. These modern buckets add to your production because they are:

1. Scientifically designed on the basis of 62 years' experience. 2. Manufactured from tough, light special alloy-steels. 3. Fitted with famous Baco Tiger Teeth—easily replaceable, reversible and renewable. 4. Equipped with the new, strong, butt welded Red Arch chain.

Capacities from  $\frac{1}{8}$  to 14-yards; light, medium and heavy duty types. Step up your output with Red Arch Buckets!

**BUCYRUS-ERIE CO.**  
SOUTH MILWAUKEE, WIS., U. S. A.

## Here's What's New IN First Aid Kits



Shortages of essential materials started us looking for new First Aid Kit materials... and led us into one of the most practical lines we have ever produced; dustproof and moisture proof in natural finish wood... as handsome as any we've turned out in our many years of supplying safety to industry.

18-8

**E. D. BULLARD COMPANY**  
275 Eighth Street

San Francisco, California.

Send us your new free folder describing the new line of Bullard First Aid Kits that use less critical material and helps keep skilled men on the job.

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**NATIONWIDE SALES AND STOCKS**

**Everything  
BULLARD  
In Safety**

1,150 cu. yd. concrete, class "A"	30.00	26.00	30.00	25.00	28.00
16.0 cu. yd. concrete, class "B"	35.00	25.00	28.00	30.00	24.00
15.6 M.F.B.M. sel. struc. C.D. fir timber creo. treat.	200.00	135.00	175.00	200.00	150.00
72 lin. ft. 18-in. reinf. conc. pipe	3.50	3.00	3.20	3.50	2.50
94 lin. ft. 12-in. pipe	2.50	2.25	2.00	2.50	1.75
18 lin. ft. 15-in. pipe	4.00	3.00	2.70	4.00	2.00
1,080 lin. ft. 18-in. pipe	3.50	3.00	3.00	3.50	2.50
200 lin. ft. 24-in. pipe	4.50	4.50	4.65	5.00	4.25
74 lin. ft. 36-in. pipe	10.00	8.50	6.50	9.00	7.50
30 lin. ft. 18-in. relay C.M.P.	1.00	1.00	.50	1.00	.50
50 cu. yd. loose riprap	6.00	2.50	1.50	10.00	5.00
70 cu. yd. gravel backfill, class "A"	1.90	1.00	1.50	2.00	2.00
3 ea. project markers	14.00	10.00	15.00	15.00	15.00
82 ea. right of way markers	4.50	5.00	4.00	5.00	4.00
18 lin. ft. 4-in. cast iron pipe	2.95	2.00	1.50	3.00	2.00
1 ea. move metal headgate	27.50	10.00	25.00	25.00	15.00

## California—Monterey Co.—State—Grade and Pave

Walter J. Wilkinson and H. B. Scott, Watsonville, submitted the only bid at \$217,592 to the California Division of Highways, Sacramento, for 1.5 mi. of grading and paving with Class "B" portland cement concrete between Marina and Reservation boundary. A priority rating of A-1-j has been assigned, with the contractor furnishing all materials. Increased use of wood in highway work is shown by the timber down drains, spillways and covers for drop inlets.

80 cu. yd. removing concrete	4.00	80 tons liq. asph. ROMC-3, 4 or 5 (P.M.S.)	15.00
79 sta. clearing and grubbing	50.00	1,400 tons mineral aggregate (P.M.S.)	6.00
84,000 cu. yd. roadway excav	.35	32 ea. raised bars	8.00
400 cu. yd. struct. excav	2.50	7,600 cu. yd. class "B" P.C.C. (pav't)	11.00
7,000 cu. yd. imp. borrow	2.00	30 cu. yd. class "A" P.C.C. (structs)	37.00
4,500 cu. yd. top soil	1.50	580 cu. yd. class "A" P.C.C. (curbs and gutters)	29.00
1,700,000 sta. yd. overhaul	.006	30 each monuments	4.00
36,000 sq. yd. prep. subgrade	.12	10 each Redwood covers for D.1.	15.00
L. S. dev. w. s. and furn. wat. equip	\$3,000	55 each culv. markers and gd. posts	4.00
5,000 M. gal. applying water	2.00	180 lin. ft. 18-in. R.C.P. (stand. str.)	2.75
79 stas. finishing roadway	30.00	300 lin. ft. 24-in. R.C.P. (stand. str.)	4.00
3,000 cu. yd. salvaged surfacing	2.13	140 lin. ft. timb. down drains	1.40
2,350 tons crusher run base	2.60	12 each timb. spillways	20.00
360 tons med. screenings (sl. ct.)	5.00	15,000 sq. yd. slope erosion prot.	.10
20 tons fine screenings (sl. ct.)	6.00	51 each ruby reflectors	5.00
32 tons asph. emul. (sl. ct.)	35.00		
28 tons liq. asph. SC-2 (pr. ct.)	35.00		

## Washington—King Co.—State—Pave.

N. Fiorito Co., Seattle, at \$143,928, submitted the lone bid on 2.395 mi. of Primary State Highway No. 5 between Seattle and Renton (east side) to the Director of Highways, Olympia. The project includes paving with portland cement concrete and asphaltic concrete, with plantmix, light bituminous and nonskid seal treatments, and minor structures. It is a national defense project.

L. S. clearing and grubbing	\$3,500	NON-SKID SINGLE SEAL TREATMENT	
7,040 cu. yd. uncl. excav. incl. haul of 600 ft.	.60	30 ton bitum. cem. RC-4 in place	33.00
100 cu. yd. sta. overhaul on above material	.05	455 cu. yd. mineral aggr. in place	3.25
16.74 M. cu. yd. sta. overhaul on above material	.05	MISCELLANEOUS ITEMS	
450 cu. yd. struc. excavation	5.00	29,831 sq. yd. cem. conc. pavt. (std. 14 day mix) in place	2.62
126.4 stas. (100-ft.) fin. roadway	3.00	1,652 sq. yd. cem. conc. pavt. (high early str.) in place	3.07
870 cu. yd. sel. roadw. borrow in place	15.00	511 sq. yd. cem. driveways (high early str.) in place	2.52
10 cu. yd. gravel backf. in place	1.50	5,135 sq. yd. one course conc. sidew. (std. 14 day mix) in place	1.75
1,080 cu. yd. one course scr. gravel surf. in place	6.00	198 lin. ft. integral 6-in. conc. curb. (high early str.) in place	1.00
50 cu. yd. mat. for backf. between curbs	3.00	404 lin. ft. reflect. curb in place	2.25
330 cu. yd. sand filler in place incl. haul	1.50	11,503 lin. ft. spec. 6-in. conc. curb. and gutter in place	1.20
110 M. gal. water	3.00	440 lin. ft. beam guard rail compl. in place	1.60
30 ton. asph. mat. in place	10.00	7 cu. yd. hand placed riprap in place	15.00

### TYPE I-1 ASPHALTIC CONCRETE PAVEMENT

133 ton class "C" wearing course in place	7.25	43 only inlets (City of Seattle std.) in place	35.00
200 ton class "F" leveling course in place	7.25	66 only asph. conc. traffic buttons in place	2.00
223 ton class "E" base course in place	7.25	65 lin. ft. asph. conc. traffic bars in place	3.00
LIGHT BITUMINOUS SURFACE TREATMENT—METHOD "A"		1 only adjust. exist. manhole to grade	15.00
25,560 sq. yd. prep., constr., and finishing	.04	4 only remov. and reset. exist. manhole cases	15.00
68 ton bituminous cement MC-2 in place	33.00	195 lin. ft. remov. and replac. exist. guard rail	.75
690 cu. yd. furn. and plac. cr. cover stone	3.25	220 sq. yd. remov. exist. bitum. pavt	.35

### PLANTMIX

150 ton bit. surf. treat. plantmix class "F" in place	7.25
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L. S. remov. exist. timber bridge	200.00
1,191 lin. ft. plant conc. or V.C. sewer pipe 8-in. diam. in place	.75
42 lin. ft. std. reinf. conc. culv. pipe, 24-in. diam., in place	3.50

## California—Los Angeles County—State—Pave

Contract awarded to Piazza & Huntley, San Jose, at \$337,457 by the California Division of Highways, Sacramento, on 4.9 mi. of grading and asphaltic concrete paving in Potrero and Hermann Avenues between El Cerrito Hill Overhead in Albany and Richmond. Reinforcing steel and railroad rails are to be supplied by the State. Bids were submitted by the following:

(1) Piazza & Huntley	\$337,457	(4) Macco Construction Co.	\$376,557
(2) Union Paving Co.	351,745	(5) Charles L. Harney	436,393
(3) A. G. Raisch	357,659	(6) Marshall S. Hanrahan	476,061

(1) 18,000 cu. yd. roadway excavation	.50	(2) .40	.60	.40	.52	.78
1,000 cu. yd. channel excavation	1.25	.85	1.00	1.00	.75	2.85
1,750 cu. yd. struc. excavation	2.00	2.00	3.00	2.00	2.00	3.75
200,000 cu. yd. overhaul	.01	.005	.005	.01	.075	.02
38,700 T. imported borrow	1.10	.67	.85	1.00	1.05	1.20
370 cu. yd. removing conc.	3.00	4.00	5.00	5.00	3.75	7.50
1 lot develop water supply	500.00	500.00	100.00	\$1,000	300.00	\$5,000

(Continued on next page)

# FIGHTING FIRES before they start

Most fires are preventable. A smoldering cigarette, flipped carelessly into a dark corner . . . a welder's spark flying unnoticed into a pile of oily waste—these little things can, and do, start devastating fires.

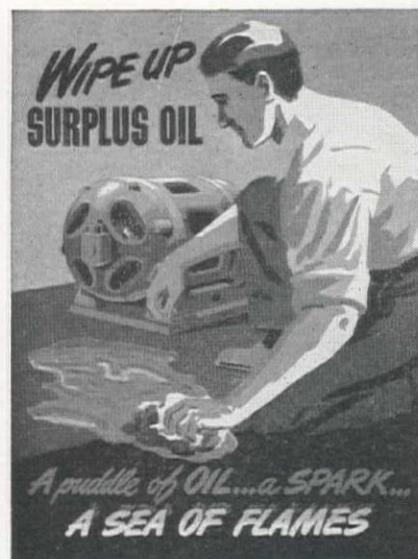
At the beginning of the war emergency, recognizing that fire is a treacherous and deadly saboteur of production, Bethlehem intensified its attack on the fire hazard. As always,

trained, fully-equipped fire-fighting forces supplied the backbone of the fire-control effort, maintaining day-and-night vigilance in every Bethlehem plant and shipyard.

But to bring home the vital importance of fire prevention and control to every Bethlehem employee, we've designed a series of posters in full color and are displaying them in key locations throughout all Bethlehem

shipyards and steel plants, which are now engaged in vital war work.

These posters are based on analysis of the most serious causes of fire and the all-important part of the human element in fire prevention. By pointing out to employees specific ways in which they can prevent or subdue fires, the posters are helping to minimize a potentially grave threat to the production of war materials.



Five of Bethlehem's series of fire-prevention posters. These posters are printed in full color. Each poster is designed to emphasize a specific problem in fire prevention or control.



War-production plant executives who are carrying on fire-prevention campaigns may find these posters of interest. A complimentary set will be supplied on request to Bethlehem Steel Company, Bethlehem, Pa.

# PIPE for Every PURPOSE

Whether it's a Giant Corrugated Culvert or the simplest of water systems—there's a Beall pipe to fit the job. You'll find that engineers and contractors specify Beall pipe because they have learned to depend on its uniform quality.

Beall industrial pipe ranges from 4" to 84" diameter and it includes pipe for every purpose.

MUNICIPAL WATER SYSTEMS  
DRAINAGE SYSTEMS  
ROAD CULVERTS  
PUMPING PLANTS  
WELL CASINGS  
INDUSTRIAL USES  
IRRIGATION SYSTEMS

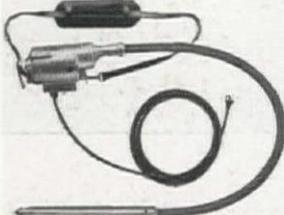
# BEALL

## PIPE & TANK CORP.

1945 NORTH COLUMBIA BOULEVARD  
PORTLAND, OREGON

Offices in: SEATTLE, SPOKANE, BOISE

**"BERG"**  
EQUIPMENT FOR MANY  
APPLICATIONS



Model V2-AS Vibrator

**Portable electric Surfacer**—for surfacing concrete and cleaning sandstone buildings. One-man machine suspended from operator's shoulder.

**Portable electric Water Feed Surfacer**—for wet grinding.

**Gasoline driven Surfacer**—for surfacing bridges, culverts, etc.

**Electric Vibrator**—for concrete vibrating.

**Right Angle Heads and Right Angle Cylinder Heads**—for curved construction.

Have attachments for use on all models.

**The Concrete Surfacing  
Machinery Co.**

Winton Place, Cincinnati, Ohio

595 M. gal. apply water.....	1.25	1.50	1.50	1.00	2.50	2.50
35,500 T. crusher run base.....	2.60	3.25	2.95	3.50	3.85	3.71
31,100 T. asphalt concrete.....	4.92	5.25	5.30	5.20	6.00	6.44
42 T. liq. asph., SC-1 (armor coat and pen.).....	13.00	18.00	14.00	13.00	21.75	18.00
14 T. liq. asph., SC-2 (pen. treatment).....	15.50	30.00	14.00	16.00	26.00	22.00
53 T. liq. asph., SC-6 (armor coat).....	16.00	15.00	15.00	16.00	29.00	24.00
920 T. screenings (armor coat).....	4.00	4.00	3.50	3.00	5.60	4.20
54 T. asphaltic emulsion (seal).....	21.00	25.00	20.00	20.00	30.00	35.00
300 T. Class "A" P.C.C. (structure).....	35.00	30.00	45.00	40.00	43.70	70.00
100 T. Class "B" P.C.C. (curb, gut., and sidewalk).....	20.00	20.00	25.00	38.00	27.00	68.00
300 lb. placing reinf. steel.....	.10	.10	.10	.10	.085	.30
69,000 lb. placing R.R. rail reinf.....	.025	.03	.05	.03	.035	.17
76 lin. ft. 12-in. R.C. pipe (standard).....	1.60	2.70	1.75	2.50	1.75	2.30
110 lin. ft. 18-in. R.C. pipe (standard).....	2.35	3.50	2.50	3.50	3.35	2.90
297 lin. ft. 18-in. R.C. pipe (extra str.).....	3.50	4.50	3.00	4.00	4.45	3.80
330 lin. ft. 24-in. R.C. pipe (standard).....	3.50	5.00	3.65	5.00	4.95	5.50
400 lin. ft. 36-in. R.C. pipe (standard).....	6.75	10.00	6.50	8.00	9.70	10.00
20 ea. adjust manholes to grade.....	20.00	10.00	15.00	100.00	25.00	45.00
6 ea. adjust lampholes to grade.....	15.00	5.00	10.00	60.00	13.00	30.00
65 ea. monuments.....	3.00	4.00	5.00	4.00	4.00	5.00
50 ea. rein. and salv. pipe culverts.....	1.00	1.00	3.00	1.00	3.25	2.00
285 sta. finishing roadway.....	15.00	10.00	10.00	5.00	13.50	12.00
169 ea. guide posts.....	3.00	4.00	1.00	4.00	4.00	5.00

## Montana—Stillwater Co.—State—Grade and Surf.

C. & F. Trucking and Contracting Co., Butte, bidding jointly with Albert Lalonde Co., Sidney, \$368,711, submitted the only bid to Montana State Highway Commission for grading in part, surfacing with crushed gravel, and roadmix oil treatment on the access road to the Benbow mine from the town of Columbus, a distance of 34.827 mi. Separate contracts were let for bridges on the road, with the exception of minor drainage structures included herein.

56,113 cu. yd. uncl. excavation.....	.20	188 lin. ft. 15-in. reinf. conc. pipe culv.	3.50
60,746 cu. yd. selected borrow, material.....	.55	236 lin. ft. 18-in. reinf. conc. pipe culv.	4.50
380 cu. yd. culvert excavation.....	1.50	136 lin. ft. 24-in. reinf. conc. pipe culv.	6.00
93,360 sta. yd. overhaul.....	.01	108 lin. ft. 36-in. reinf. conc. pipe culv.	9.00
15,016 ton base course cr. gravel.....	.70	464 lin. ft. 18-in. corr. metal siphon pipe	3.50
82,122 ton gr. "A" top course cr. gravel.....	1.50	108 lin. ft. 24-in. corr. metal siphon pipe	6.00
6,568 ton stone chips.....	3.75	6 lin. ft. 36-in. corr. metal pipe culv.	8.00
3,000 cu. yd. binder.....	.29	56 lin. ft. relay. corr. metal pipe culv.	1.00
6,000 mi. yd. overhaul on binder.....	.20	54 M.F.B.M. lumber in headgates.....	100.00
557,888 gal. application of SC-3 rd. oil.....	.10	375 cu. yd. hand laid riprap.....	8.00
14,876 gal. tack coat oil with SC-2.....	.10	850 cu. yd. random riprap.....	4.00
171,826 gal. seal coat oil 150-200.....	.20	48 lin. ft. spec. lam. wood gd. rail.....	3.00
8,000 1,000 gal. watering.....	1.00	2 ea. conc. project markers.....	15.00
3,000 hr. rolling.....	4.00	3,500 ton stockpile gravel.....	1.50
34.827 mi. processing.....	\$1,200	L. S. maintenance existing road.....	

## California—Ventura Co.—State—Grade and Surf.

Vido Kovacevich, South Gate, was low bidder at \$210,628, to the California Division of Highways, Sacramento, on grading and surfacing an area near Oxnard, which included a considerable amount of imported borrow, after compacting the original ground. Plantmix surfacing and liquid asphalt seal coat are to be applied. Bids were received from the following:

(1) Vido Kovacevich.....	\$210,628	(4) Bert Calvert and Edmondson & Sons.....	\$277,519
(2) Byerts & Dunn and N. Moore.....	236,485	(5) Oswald Bros.....	317,519
(3) A. S. Vinnell Co.....	249,718	(6) W. E. Hall Co.....	338,104

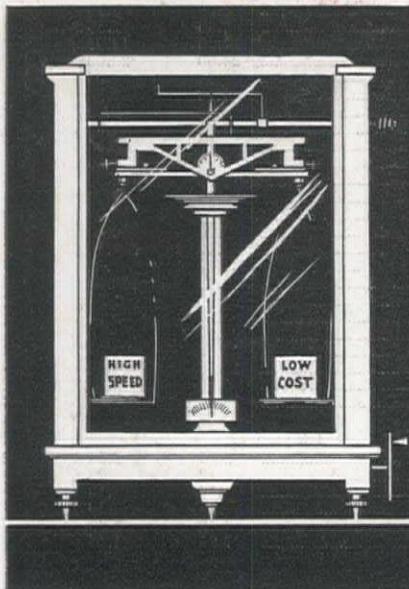
	(1)	(2)	(3)	(4)	(5)	(6)
64 acres clearing and grubbing.....	50.00	35.00	30.00	25.00	20.00	12.00
28,000 cu. yd. roadway excavation.....	.30	.35	.30	.40	.40	.30
120 cu. yd. structure excavation.....	1.50	2.00	1.30	1.00	2.00	1.75
4,500 cu. yd. ditch and channel excav.....	.75	1.00	.45	.30	.75	.65
1,000,000 sta. yd. overhaul.....	.003	.005	.005	.005	.007	.005
254,000 sq. yd. compacting original ground.....	.005	.04	.03	.03	.09	.07
187,000 cu. yd. imported borrow.....	.52	.54	.64	.70	.77	.85
L. S. devel. water supply and furn. watering equipment.....	\$1,000	\$5,000	\$2,000	\$3,500	\$5,000	\$1,800
6,100 M. gals. applying water.....	.85	1.00	1.30	1.50	1.50	1.80
L. S. finishing construction area.....	\$1,125	\$1,500	\$2,000	800.00	\$5,000	\$4,500
2,550 tons liq. asph. MC-4 (B.S.T.).....	11.00	11.50	11.20	14.35	12.50	16.25
206,000 sq. yd. preparing, mixing and shaping surface (B.S.T.).....	.065	.10	.07	.13	.12	.16
125 tons liq. asph. SC-6 (seal coat).....	12.00	11.00	12.00	11.35	12.50	20.00
1,500 tons screenings (seal coat).....	2.50	2.00	3.00	2.75	4.00	3.75
84 tons liq. asph. SC-2 (prime coat).....	11.00	10.00	10.50	9.85	9.00	15.00
10,500 tons plantmixed surfacing.....	3.25	3.10	3.80	3.11	3.80	3.70
35 tons asphaltic paint binder.....	75.00	25.00	20.00	10.00	30.00	25.00
30 cu. yd. class "A" P.C.C. (structures).....	30.00	30.00	40.00	40.00	30.00	45.00
32 cu. yd. class "C" P.C.C. (retaining walls).....	27.00	25.00	25.00	40.00	30.00	44.00
3.5 M.F.B.M. timber (structures).....	150.00	200.00	150.00	300.00	200.00	150.00

## Utah—Salt Lake Co.—State—Surf.

A. O. Thorn Construction Co., Springville, \$385,852 (alternate bid of \$386,387), low bid to Utah State Road Commission for 3/4-in. natural rock asphalt with 2-in. roadmix bituminous base surface on Redwood Road, between North Temple St. and 35th South St. An alternate proposal was for a 2 1/2-in. plantmix bituminous surface. Neither bidder submitted a bid on widening the Surplus Canal bridge, which the engineer has estimated to cost \$32,290. Total length of road in the project is 5.154 miles. Bids were submitted by the following:

(1) A. O. Thorn Construction Co.....	\$385,852	(3) Engineer's Estimate.....	\$267,531
(2) Olof Nelson Construction Co.....	408,950	(1)	(2)
4,425 ton natural rock asph.....	11.50	12.00	10.00
136,100 gal. bituminous material, type SC-3.....	.115	.09	.09
12,500 gal. bituminous material, type RC-4.....	.14	.10	.10
3,437 mi. scarifying and mixing (44 ft. to 48 ft. wide).....	\$1,800	\$1,200	\$1,500
1,695 mi. scarifying and mixing (24 ft. wide).....	950.00	700.00	650.00
56,200 ton crushed rock or crushed gravel surf. course.....	1.25	1.45	.75
66,900 ton gravel or crushed rock base course.....	1.25	1.35	.70
107,700 cu. yd. unclassified excavation.....	.35	.45	.25
687,000 sta. yd. overhaul, class "A".....	.02	.02	.015
86,400 yd. mi. overhaul, class "B".....	.20	.15	.15
3,360 cu. yd. channel excavation.....	.60	1.00	.35
2,760,000 gal. watering.....	1.50	1.50	1.25
2,030 hr. rolling.....	4.00	5.00	2.50
800 lin. ft. 12-in. sewer pipe.....	1.35	1.90	1.75
429 lin. ft. 15-in. sewer pipe.....	2.10	2.50	2.10

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# SEAMAN PULVI-MIXER

*Provides*

## PRECISION-PROCESSING

*In Highway and Airport*

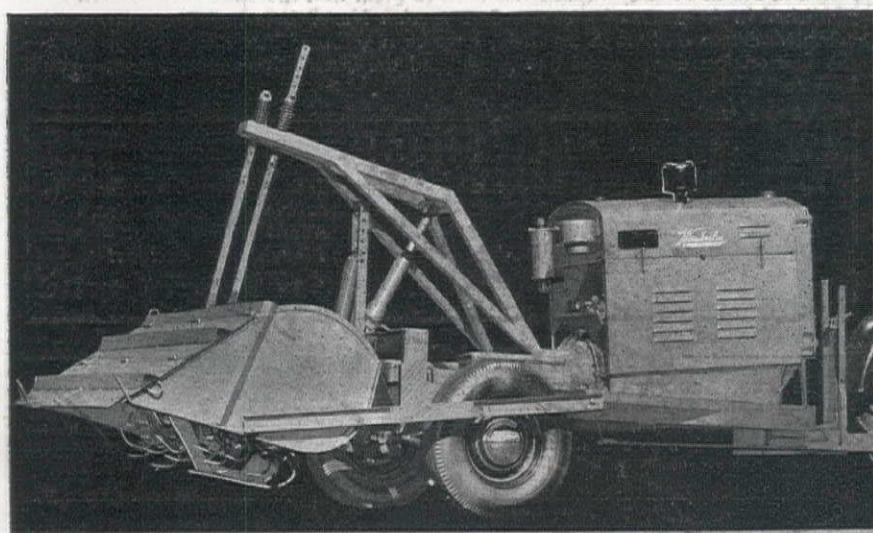
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*At Higher Production*

Where a stabilization process demands absolute precision in mixture of materials — it's the SEAMAN PULVI-MIXER that gets first call. In soil cement stabilization, for example — a process widely and successfully used in highways and airport runways — the SEAMAN PULVI-MIXER provides precision control of both dry and wet mixing operations. Moisture content, so important is this process is far better controlled by the SEAMAN PULVI-MIXER than by any other method. And the SEAMAN not only does the job better — it does it faster and at less cost.

The SEAMAN PULVI-MIXER pulverizes and mixes at accurately controlled treatment depths. It's the principle of rotary action that does the trick. Scientifically curved and staggered tines revolving at high speeds displace and mix road materials within the hood at speeds that cut costs sharply — and with a thoroughness that exceeds all previous standards for mixing operations.

The SEAMAN PULVI-MIXER is manufactured in two basic models, — the tractor operated in which power is furnished by the rear power take off of the tractor; and the motorized in which power is obtained from an engine connected to the rotor shaft. Investigate the SEAMAN PULVI-MIXER now. Your inquiry for Bulletin 227 will get prompt attention.



**SEAMAN MOTORS** MILWAUKEE WISCONSIN

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



# UNION PILE HAMMERS

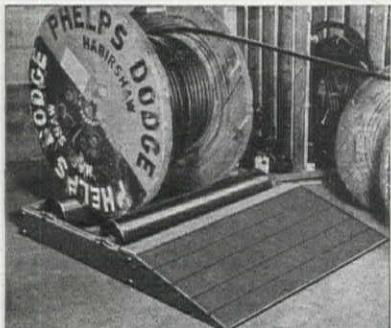
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Bulletin 184

Elizabeth, N. J.

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**PILE DRIVER LEADS**  
**GROUT MIXER AND EJECTOR**  
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**SKIPS AND BUCKETS**  
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With a METZGAR cable reel dolly on your job, you simply roll the cable reel up the apron until it drops between the two easy-turning rollers—and you're ready to reel out whatever lengths you need... no kinking, no heavy lifting, no shafts and stands to handle! Also handles leather belting, reels of rope, etc.

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MAKERS OF END-WOOD INDUSTRIAL WHEELS  
CASTERS • GRAVITY CONVEYORS

99 lin. ft. 18-in. sewer pipe	3.00	3.50	2.50
45 lin. ft. 12-in. culvert pipe	2.25	2.00	1.85
1,032 lin. ft. 18-in. culvert pipe	3.70	3.10	3.15
125 lin. ft. 36-in. culvert pipe	8.80	7.50	6.45
32 lin. ft. 48-in. culvert pipe	12.00	12.00	9.25
100 lin. ft. 72-in. culvert pipe	24.00	23.00	18.00
192 lin. ft. 8-in. underdrains	.90	1.00	.50
4,928 lin. ft. 12-in. underdrains	1.10	1.50	.85
152 lin. ft. 18-in. underdrains	2.10	2.00	1.85
372 lin. ft. relaying 15-in. C.G.M. pipe	1.00	1.00	.50
110 lin. ft. relaying 18-in. C.G.M. pipe	1.70	1.00	.50
56 lin. ft. relaying 24-in. concrete pipe	2.00	1.50	.75
1,700 cu. yd. gravel backfill	2.00	2.00	1.25
5,250 cu. yd. excavation for structures	2.00	2.00	1.50
123 cu. yd. concrete, class "A"	40.00	30.00	40.00
260 cu. yd. concrete, class "B"	35.00	30.00	25.00
16,400 lb. reinforcing steel	.10	.12	.08
300 lb. structural steel	.30	.30	.15
0.64 M.F.B.M. lumber	200.00	150.00	140.00
14,128 lin. ft. curb, type 1-C	1.50	1.50	1.00
8,000 lin. ft. fence, type "B"	.20	.20	.15
22,000 lin. ft. moving fence	.10	.10	.07
35 ea. 14-ft. gates	25.00	20.00	20.00
56 ea. removal of trees	10.00	15.00	10.00
2 ea. guide posts	5.00	5.00	2.50
2 ea. F.A.P. markers	10.00	15.00	10.00

### ALTERNATE BID OF ITEMS NOS. 1 TO 6 INCL.

17,500 ton plantmixed bituminous surface	2.75	2.50	2.00
158,800 gal. bituminous material, type SC-6	.12	.09	.10
62,000 gal. bituminous material, type MC-1	.14	.10	.11
31,000 gal. bituminous material, type RC-4	.14	.10	.10
1,580 ton cover material	4.00	3.00	2.50
45,400 ton crushed rock or crushed gravel surf. course	1.25	1.45	.75

### California—Yolo Co.—State—Grade and Surf.

Fredericksen & Westbrook, Sacramento, \$548,749, low to California Division of Highways, Sacramento, on grading and surfacing an area near Winters, also related approach roads to be surfaced with plant-mix on gravel base. An unusual amount of excavation and imported borrow is involved. Bids were submitted as follows:

(1) Fredericksen & Westbrook	\$548,749	(2) Fredrickson & Watson Construction Co., Fredrickson Bros.	\$573,367
L. S. clearing and grubbing		(1)	(2)
340,000 cu. yd. roadway excav	\$10,000	\$18,000	
4,700 cu. yd. struct. excav	.36	.25	
800 cu. yd. ditch and chan. excav	1.50	1.20	
275,000 tons imported borrow	1.00	.72	
8,300,000 sta. yd. overhaul	.88	.96	
L. S. dev. w. s. and furn. wat. equip.	.005	.006	
	\$2,000	\$2,400	

(Continued on next page)

# WANTED!

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**STOP!  
DON'T THROW  
THAT  
AWAY!**

It's only a small cutting tip and it doesn't seem to amount to much, particularly since it seems worn out, BUT—it's made of Copper and, Brother, Copper is one of the metals that's going to help you and me and all of us to win this War. Perhaps this tip of yours can be repaired—perhaps it should be scrapped . . . But don't throw it away!

Here's another way you can help to put scarce metals into War Production instead of WASTE. You are just finished with a certain welding operation but have a few electrodes left. Do you just stick them into an inaccessible hiding place? Or will you carry these few sticks with you to the next location? If every welder throws away most ten pounds of electrodes per week the sum total of loss to the War Production Program will amount to over one and one-half million pounds weekly. Same holds true when you throw away electrode stubs which are longer than you know they ought to be.

Every ounce of critical metal that is wasted robs our boys in Uncle Sam's uniforms of cartridges, of guns, of all of the things they need to fight and win this War of ours.

You—Mr. Welder—can save more precious, critical metals than all other craftsmen in War Production.

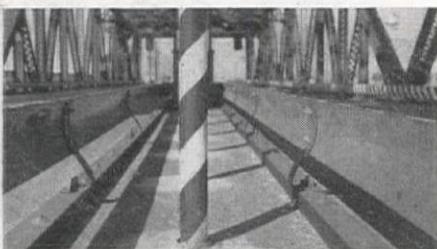
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**Beam type**  
**Highway Guard Rail**

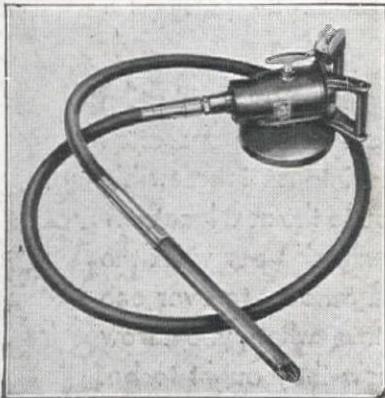


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7,100 M. gal. applying water.....	1.50	1.55
L. S. finishing const. area.....	\$1,500	\$12,360
35,000 ton gravel base.....	1.25	1.30
91 ton liq. asph. SC-2 (pr. ct.).....	18.50	20.00
11,000 ton mineral aggr. (P.M.S.).....	2.50	3.85
525 ton pav. asph. (P.M.S.).....	18.50	18.00
30 ton asph. emul. (sl. ct.).....	31.00	24.00
52 cu. yd. class "A" P.C.C. (structs.).....	37.50	36.00
1.5 mi. new prop. fence.....	\$1,650	\$1,200
1,659 lin. ft. 36-in. R.C.P.....	7.50	7.00
918 lin. ft. 42-in. R.C.P.....	10.00	8.88
66 lin. ft. 18-in. unreinf. conc. pave. (3000-D).....	2.50	2.25
132 lin. ft. 24-in. unreinf. conc. pave. (3000-D).....	5.00	4.25
20 cu. yd. cem. trtd. backfill.....	20.00	30.00

**Oregon—Lane Co.—State—Pave.**

McNutt Bros., Eugene, submitted the only bid, \$360,709, to the Oregon State Highway Commission, Portland, for 1.08 mi. grading and paving with portland cement concrete on the Judkins Point section of Pacific Highway. Feature of the job is the excessive amount of grading required, both common and solid rock. Construction of an overcrossing, being built simultaneously, was awarded by a separate contract. Numerous incidental items, such as driveways, traffic separators, guardrail, and drainage are included in this contract.

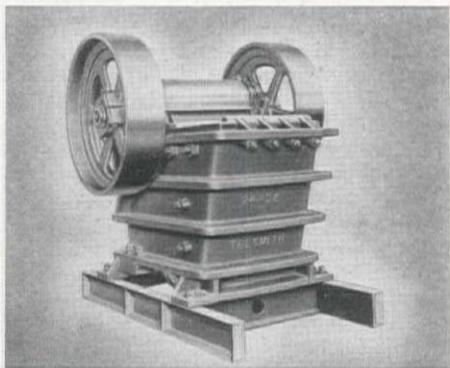
All spec. clearing and grubbing.....	\$10,500	230 sq. yd. concrete driveways.....	3.00
2,100 sq. yd. removal of pavement.....	.50	1,740 sq. yd. concrete walks.....	2.00
1 only removal of manholes.....	100.00	850 lin. ft. expansion joints in walks.....	.10
1,470 cu. yd. struct. excav., com.....	1.50	30 only wood sight posts.....	3.00
330 cu. yd. struct. excav., sol. rock.....	5.00	1,300 lin. ft. wood guard rail.....	1.50
130 cu. yd. trench excav., com.....	1.50	2,630 lin. ft. timber handrail.....	1.60
20 cu. yd. trench excav., sol. rock.....	.37	56 cu. yd. conc. traffic separators.....	70.00
51,300 cu. yd. gen. excav., com.....	.37	All spec. constr. recesses for	
115,000 cu. yd. gen. excav., sol. rock.....	.88	traffic control markers.....	100.00
610,000 sta. yd. short overhaul.....	.02	250 lin. ft. 3/4-in. electrical conduit.....	.30
3,000 sta. cu. yd. long overhaul.....	.40	12,700 cu. yd. 3 1/2-in. material in base.....	1.80
3,300 lin. ft. rounding cutbanks.....	.15	550 cu. yd. 1 1/4-3/4-in. material in lev.	
1.08 mi. fin. roadbed and slopes.....	600.00	course.....	3.00
900 sq. yd. hand-placed rock slopes.....	3.00	860 cu. yd. 3/4-in. material in level.	3.00
4,300 cu. yd. excav. and placing topsoil.....	1.00	course and shoulders.....	
900 lin. ft. 8-in. sewer pipe.....	.65	200 cu. yd. 3/4-in. material in	
170 lin. ft. 10-in. sewer pipe.....	.85	footpath found. course.....	3.00
900 lin. ft. 12-in. sewer pipe.....	1.15	1,010 cu. yd. 1/2-0-in. mat. in cush. crse.	3.00
1,000 lin. ft. 15-in. sewer pipe.....	1.50	740 cu. yd. filler.....	.50
550 lin. ft. 12-in. concrete pipe.....	1.15	740 yd. mi. hauling filler.....	.15
180 lin. ft. 18-in. concrete pipe.....	2.25	740 M. gal. sprinkling.....	2.00
290 lin. ft. 24-in. concrete pipe.....	3.25	35,500 sq. yd. portland cement	
250 lin. ft. 36-in. concrete pipe.....	6.60	concrete pavement.....	2.00
70 lin. ft. salv. culvert pipe.....	1.00	1,440 lin. ft. expan. jts. in pave.....	.30
2 only adjust. of manholes.....	100.00	23,000 lin. ft. contraction joints.....	.10
28 only concrete catch basins.....	50.00	670 only pipe dowels.....	.30
6 only concrete inlets.....	50.00	920 ton class "B" asphaltic conc.....	7.00
2 only type "A" manholes.....	50.00	230 ton class "C" asphaltic conc.....	9.00
8 only type "B" manholes.....	100.00	50 hr. roadside grading with bulldozer	10.00
100 lin. ft. 1 1/4-in. galv. water pipe.....	.40	4.6 acres seeding.....	40.00
90 lin. ft. 2-in. galv. water pipe.....	.60	5 ton commercial fertilizer.....	70.00
80 lin. ft. extra for installing		420 cu. yd. furn. and plac. 151-200 asph.....	5.00
pipe under pavement.....	1.50	40 ton furn. and plac. 151-200 asph.....	60.00
860 cu. yd. conc. curb and gutter.....	30.00	48 ton furn. and plac. RT-8 tar.....	50.00

**California—San Mateo Co.—State—Grade and Surf.**

Harms Bros., Sacramento, were low bidders at \$255,769 to California Division of Highways on grading and penetration treatment of 2.6 mi. of State highway between 2 mi. south of Tunitas and 1 mi. south of Lobitos. An Oregon fir timber bridge over Tunitas Creek is included. A priority rating of A-2 has been assigned to the bridge, and A-4 to the remainder of the work. Wire mesh reinforcement, railroad rails, corrugated metal pipe with band couplers and spillway assemblies are to be furnished by the State. Bids submitted were as follows:

(1) Harms Bros.....	\$255,769	(2) Chas. L. Harney.....	\$297,065
L. S. clearing and grubbing.....	\$3,000	(1) \$10,000	(2)
290,000 cu. yd. roadway excav.....	.35	.43	
2,200 cu. yd. struct. excav.....	2.00	3.85	
3,750 cu. yd. ditch excav.....	1.00	.90	
3,000,000 sta. yd. overhaul.....	.007	.005	
40,000 cu. yd. imp. borrow (type "A").....	1.40	2.10	
19,500 cu. yd. imp. borrow (type "B").....	.60	.90	
1,200 cu. yd. trench backfill.....	2.00	1.35	
L. S. dev. w. s. and furn. wat. equip.....	\$2,000	\$2,500	
5,300 M. gal. applying water.....	1.40	2.00	
137 sta. finishing roadway.....	8.00	12.00	
86 tons liq. asph. SC-1 (pen. trt.).....	20.00	18.00	
62 tons liq. asph. SC-2 (pen. trt.).....	20.00	23.50	
400 cu. yd. beach sand (pen. trt.).....	2.00	2.50	
100 tons rock and screenings (bit. mac.).....	5.00	6.30	
5 tons liq. asph. SC-6 (bit. mac.).....	40.00	33.00	
170 M. F. B. M. Douglas fir timber (bridge).....	150.00	135.00	
15 M. F. B. M. D. S. A. H. str. gr. Redwood timber.....	175.00	185.00	
2,720 lin. ft. Douglas fir round timber.....	1.50	1.50	
52 tons liq. asph. SC-3 or 4 (B. S. T.).....	20.00	58.00	
8,500 sq. yd. prep. mixing and shaping surf. (B. S. T.).....	.15	.22	
220 cu. yd. class "A" P.C.C. (structs.).....	40.00	36.00	
75 cu. yd. class "A" P.C.C. (footing blk.).....	30.00	30.00	
145 cu. yd. class "A" P.C.C. (slope pav.).....	30.00	27.00	
320 sq. yd. wire and rock mattress.....	10.00	4.40	
240 lin. ft. low guard rail.....	1.50	1.75	
85 each monuments.....	4.00	4.00	
220 each culv. markers and guide posts.....	3.00	3.00	
2.7 mi. mov. and resetting property fences.....	500.00	\$2,000	
1,400 each furn. timb. fence posts.....	.55	.60	
18 M. F. B. M. furn. Douglas fir timber (prop. fence).....	120.00	85.00	
250 lin. ft. 12-in. R.C.P. (std. str.).....	1.75	1.70	
360 lin. ft. 15-in. R.C.P. (std. str.).....	2.50	2.10	
1,300 lin. ft. 18-in. R.C.P. (std. str.).....	3.00	2.75	
630 lin. ft. 24-in. R.C.P. (std. str.).....	5.00	4.20	
268 lin. ft. 24-in. R.C.P. (ext. str.).....	7.00	6.50	
830 lin. ft. placing 8-in. C.M.P.....	.50	.50	
25 each placing spillway assembly.....	15.00	12.00	
124 lin. ft. salv. exist. pipe culv.....	1.00	1.25	
106 lin. ft. rel. salv. C.M.P. culvs.....	1.00	1.25	
21,000 lin. ft. placing R. R. reinf. in bridge struct.....	.03	.05	
15 each Redwood covers for D. I.....	15.00	12.50	
24,000 sq. yd. slope erosion prot.....	.30	.15	
L. S. miscellaneous items of work.....	\$1,000	\$1,500	

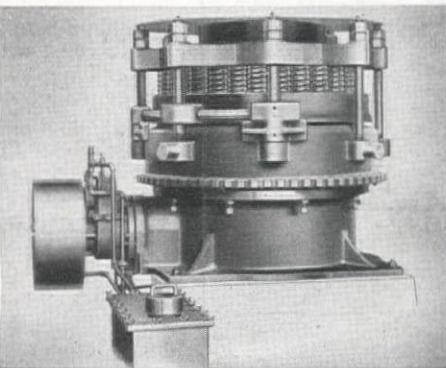
# Get TELSMITH Equipment for More PRODUCTION and PROFIT!



## TELSMITH JAW CRUSHER

### for Coarse and Intermediate Crushing

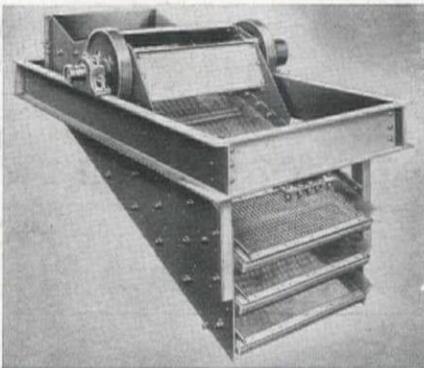
Compact, massive, steel structure! Force feed! Higher speed and cylindrical roller bearings almost double capacity; keep power costs low and upkeep down. Reduction is greater *in one process* than with any other type of breaker. Simple adjustment allows wide sizing range. 8 sizes: 25" x 36" to 9" x 16".



## TELSMITH GYRASPHERE

### for Intermediate and Fine Crushing

Takes the grief out of secondary crushing. Works at choke feed and turns out top tonnage. And does it at less cost—for power, oil and upkeep. Two multi-curved surfaces, the spherical head and its corresponding concave, give the perfect *cubing* action. 48", 36" and 24" sizes, with interchangeable concaves to meet varying size requirements.

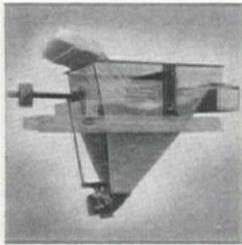


## TELSMITH PULSATOR

### Better Built for Longer Life

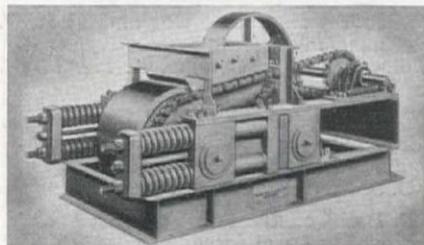
Screens crushed rock, sand, gravel, ore, or coal, *wet or dry*. Maximum screening action *uniform* on every inch of wire, on every deck, under any load. Toughest alloy steels, finest anti-friction bearings, special sealing devices to protect working parts, insure longer life and lower upkeep. 11 sizes, with 1, 2, 3, or 4 decks, from 2' x 6' to 5' x 12'.

## TELSMITH SAND TANK



A deep sand bed insures a dry product. The short, almost imperceptible but continuous valve action of this tank does this. Working automatically, requiring no power, free of chains, belts, gears, there is very little wear. Made in 5 sizes with capacities up to 160 cu. yds. per hour.

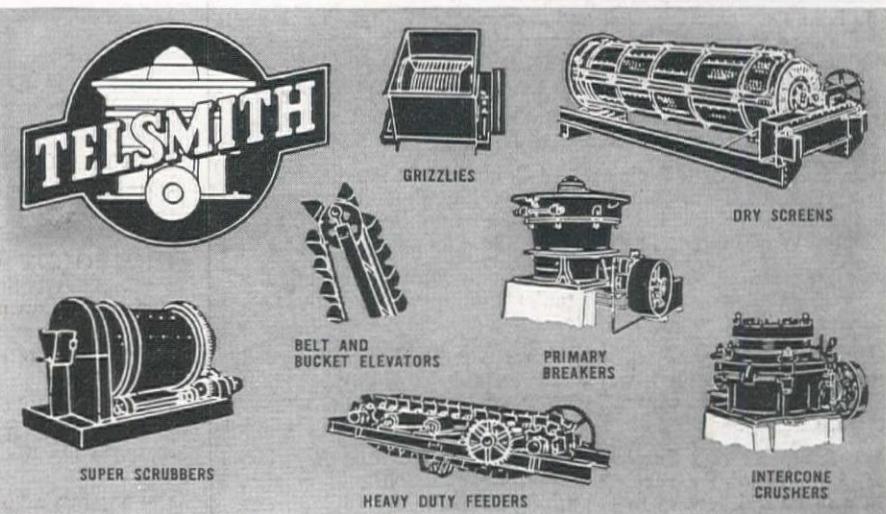
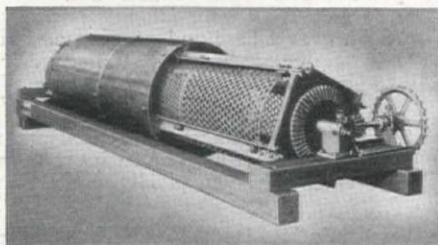
## TELSMITH ROLL CRUSHER



The Telsmith Roll Crusher... for large output of *fine aggregate* with less oversize than any other type of secondary crusher, works best with reduction ratio of 3:1 or less. Anti-friction bearings and spring release give high speed, continuous, trouble-free operation. 3 sizes (diam. x width rolls) 24" x 16", 30" x 18", 40" x 22".

## TELSMITH WASHERS

Telsmith Standard Washer, as shown, is recommended when investment in equipment must be held to a minimum. To meet demands for greater efficiency and lower upkeep Telsmith has two extra quality all-metal washers—*Ajax* with plain bearings; *Hercules* with anti-friction bearings throughout. Telsmith also builds these three types of Rotary Dry Screens.



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E-6

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Smith Booth Usher Co.  
Los Angeles, Calif.

Mines Eng. & Equip. Co.  
San Francisco, Calif.

Clyde Equipment Co.  
Seattle, Wash.

Clyde Equipment Co.  
Portland, Ore.

General Machinery Co.  
Spokane, Wash.

Arnold Machinery Co.  
Salt Lake City, Utah

Gordon Russell, Ltd.  
Vancouver, B.C.

# 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

**Hemstreet & Bell**, Sacramento, Calif., have been awarded the contract at \$476,245 to grade and surface 7.9 mi. between Linda Corners and Camp Beale, in Yuba Co., by the California Division of Highways.

**Olof Nelson Construction Co.**, Logan, Utah, at \$415,359, was awarded contract to pave 6.2 mi. between Layton and Roy, Utah, by Utah State Road Commission.

**J. B. Bertrand, Inc.**, Denver, and **Peter Kiewit Sons & Co.**, Omaha, Nebr., were awarded a contract for between \$500,000 and \$1,000,000 to extend runways, parking aprons and taxiways at an airport in Denver Co., Colorado, by the U. S. Engineer Office in Denver.

**Morrison-Knudsen Co., Inc.**, Boise, Ida., over \$3,000,000, for an airforce training center to be built near Pocatello, Ida., by War Dept., Washington, D. C.

**Lee Moor Contracting Co.**, and **Thos. W. Hassing**, El Paso, Tex., were awarded a contract at over \$3,000,000 for an airforce training school at Deming, N. Mex., by War Dept., Washington, D. C.

**E. C. Hall Co.**, Corvallis, and **J. C. Compton**, McMinnville, Ore., jointly, between \$500,000 and \$1,000,000 for taxiways, fueling pit, and hangar approaches at an air field in Benton Co., Ore., by U. S. Engineer Office, Portland.

**R. F. Ball Construction Co.**, Fort Worth, Tex., over \$5,000,000 to construct an airforce training school at Childress, Tex., by War Dept., Washington, D. C.

**A. J. Rife Construction Co., and Associates**, Dallas, Tex., received award at over \$3,000,000 for an airforce training school to be built at Dalhart, Tex., by War Dept., Washington, D. C.

**Shelton Construction Co.**, Houston, Tex., secured contract at more than \$3,000,000 for an airforce training school at Marfa, Tex., from War Dept., Washington, D. C.

**Brown & Root, W. S. Bellows, and Columbia Construction Co.**, Corpus Christi, Tex., \$6,722,215 for additional facilities at the outlying fields of a naval air station in Texas, by Bureau of Yards & Docks, Washington, D. C.

**Henry Hagman**, Spokane, Wash., received contract at over \$100,000 for elevated concrete water tanks near Spokane, from U. S. Engineer Office, Seattle, Wash.

**Carter-Halls-Aldinger Co., Ltd.**, Vancouver, B. C., was awarded contract at \$325,000 for a water supply and distribution system at a British Columbia center, by Dept. of Munitions and Supply, Ottawa, Canada.

**Bebek & Brkich and Sutalo & Ramljak**, both of Los Angeles, Calif., bidding jointly, received contract at \$738,946 to construct main and lateral sewers in the City of Las Vegas, Nev., from Defense Public Works, Los Angeles.

**N. M. Ball Sons**, Berkeley, and **H. Earl Parker**, Marysville, Calif., at \$814,780, received contract to build levees on south side of Tisdale Bypass and west side of Sutter Bypass, parts of the Sacramento River floor control system, from U. S. Engineer Office, Sacramento.

**Del E. Webb Construction Co.**, Phoenix, Ariz., over \$3,000,000 for an airforce flying school at Yuma, Ariz., by War Dept., Washington, D. C.

**Ford J. Twaits Co.**, Los Angeles, Calif., \$5,500,000 for fifteen buildings and appurtenances for a synthetic rubber plant, by Goodyear Tire & Rubber Co., Los Angeles.

**F. C. Stolte Co.**, Alameda, Calif., awarded contract at over \$3,000,000 for group of warehouses, buildings and utilities at Sierra Ordnance Depot, by U. S. Engineer Office, Sacramento.

**Atkinson & Pollock**, Norco, Calif., \$1,500,000 contract to build a group of reinforced concrete buildings at the Naval Hospital in Norco, by Bureau of Yards and Docks, Washington, D. C.

**Lambie, Moss, Little & James**, Amarillo, Tex., less than \$3,000,000 to construct buildings and utilities at a Japanese relocation center for 7,000 evacuees, near Granada, Colo., by U. S. Engineer Office, Albuquerque, N. Mex.

**Dinwiddie Construction Co.**, and **Monson Bros.**, both of San Francisco, Calif., received contract at \$3,000,000 for additional construction at the Hawthorne, Nev., naval depot, by Bureau of Yards and Docks, Washington, D. C.

**W. E. Callahan Construction Co.**, Los Angeles, Calif., secured contract of over \$3,000,000 to construct a chemical warfare plant in Utah, from U. S. Engineer Office, Salt Lake City.

**George Buckler Co.**, Portland, Ore., received two contracts, one for 6,000 housing units in Portland, another for 2,000 housing units in Vancouver, Wash., both from the Maritime Commission, Portland.

**Macco Construction Co.**, Oakland, Calif., at \$5,380,000 received award of contract to construct a naval fuel depot at Point Molate, near Richmond, Calif., from Bureau of Yards and Docks, Washington, D. C.

**Puget Sound Bridge & Dredging Co.**, Seattle, Wash., given contract estimated at \$3,000,000 for a wooden pontoon float at Portland, Ore., by Willamette Iron & Steel Corp., Portland.

## Highway and Street...

### CONTRACTS AWARDED

#### Arizona

**COCONINO CO.**—**Arizona Constructors**, Luhrs Bldg., Phoenix—less than \$3,000,000, for portland cement and asph. conc. roads—by U. S. Engineer Office, Albuquerque, N. M. 7-28

**MOHAVE CO.**—**Morrison-Knudsen Co., Inc.**, Boise, Idaho, and **M. H. Hasler**, Los Angeles, Calif.—over \$500,000, for clearing, grading and paving—by U. S. Engineer Office, Los Angeles, Calif. 7-30

**UNANNOUNCED CO.**—**Arizona Sand & Rock Co.**, A. S. Vinnell, and **United Concrete Pipe Corp.**, Box 1536, Phoenix—for access roads at airfields—by U. S. Engineer Office, Los Angeles, Calif. 7-7

#### California

**ALAMEDA CO.**—**Heafey-Moore Co.**, 344 High St., Oakland—\$23,650, for asph. conc. pave. on Encinal Ave., Alameda, betw. High St. and Fernside Blvd.—by City Council, Alameda. 7-23

**CONTRA COSTA CO.**—**Lee J. Immel**, Box 65, Sta. A., Berkeley—\$73,497 for 3.6 mi. repair road with crusher run base and plantmix surf. betw. Hercules and 1/4 mi. west of Christie Underpass—by Divn. of Highways, Sacramento. 7-9

**HUMBOLDT CO.**—**John Carlin Construction Co.**, 101 St. Francis Blvd., San Francisco—\$327,827, for 11.5 mi. grading and surf. with plantmix surf. on gravel base and grading and surf. portions with gravel base, applying bitum. seal coat, betw. Arcata and Eureka Section Base—by State Division of Highways, Sacramento. 7-29

**HUMBOLDT CO.**—**Scheumann & Johnson**, Box 822, Eureka—\$66,819 for 0.2 mi. roadbed and heavy riprap and wire rock mattress, 1/4 mi. north of Dyerville—by Divn. of Highways, Sacramento. 7-9

**KERN CO.**—**Louis Biasotti & Son**, P. O. Box 587, Stockton—\$157,920, for 5.6 mi. grade and apply bitu. surf. treat. betw. Route 138 and Gardner Field—by California Division of Highways, Sacramento. 7-2

**LASSEN CO.**—**Poulos & McEwen**, Box 107, Sacramento—\$39,848, for 4.3 mi. const. base of imported borrow and surf. with roadmix surf. betw. Rt. 29 and Reservation boundary, near Honey Lake—by California Division of Highways, Sacramento. 7-20

**LOS ANGELES CO.**—**Griffith Co.**, 1060 S. Broadway, Los Angeles—\$42,590, for 0.5 mi. conc. pave. betw. Centinella Ave.

and Slauson Ave.—by California Division of Highways, Los Angeles. 7-20

LOS ANGELES CO.—T. E. Sherlock, 1103 E. 40th Pl., Los Angeles—\$35,701 for grade and pave Wilson Ave., betw. Brand Blvd. and Glendale Ave.—by City Council, Glendale. 7-7

LOS ANGELES CO.—T. E. Sherlock, 1103 40th Pl., Los Angeles—\$30,796 for pave Wentworth and Arminta Sts., Los Angeles—by Board of Public Works, Los Angeles. 7-21

LOS ANGELES CO.—Andy Sordal, 722 Magnolia Ave., Long Beach—\$15,211 for grade and pave Normandie Ave., Los Angeles, betw. Pico Blvd. and Venice Blvd.—by Board of Public Works, Los Angeles. 7-21

LOS ANGELES CO.—Ansco Construction Co., 2725 Atlantic Blvd., Long Beach—\$12,133, for improving Daisy Ave. betw. 27th St. and Spring St.—by City Manager, Long Beach. 7-22

MERCED CO.—E. A. Forde, 640 Sir Francis Drake Blvd., San Anselmo—\$50,439 for 2 mi. grade and apply bitum. surf. to center of roadbed and penetration treatment on shoulders, betw. Buhach and Merced flying school—by Divn. of Highways, Sacramento. 7-13

MONTEREY CO.—N. M. Ball Sons, Box 404, Berkeley—\$282,230, for asph. surf. at Hunter Liggett military reservation—by Treasury Department, San Francisco. 7-1

MONTEREY CO.—Wilkinson & Scott, Box 900, Watsonville—\$217,592, for 1.5 mi. grade and pave with Class "B" portland cement conc., betw. Reservation boundary and 0.7 mi. north of Monterey Ave., in Marina—by California Division of Highways, Sacramento. 7-2

MONTEREY CO.—Wilkinson & Scott, Box 900, Watsonville—less than \$50,000, for roads in cantonment area at an air support command base—by U. S. Engineer Office, San Francisco. 7-22

MONTEREY CO.—N. M. Ball Sons, Box 404, Berkeley—\$33,500, for preparing subgrade at Hunter Liggett military reservation—by Treasury Department, San Francisco. 7-1

SACRAMENTO CO.—A. Teichert & Son, Inc., 1846 37th St., Sacramento—\$48,874, for 5 mi. shoulders and plantmix surf. over existing pave., betw. Sacramento city limits and Auburn Blvd.—by California Division of Highways, Sacramento. 7-2

SAN DIEGO CO.—R. E. Hazard & Sons, Box 1510, San Diego—\$126,760, for 1 mi. grade and pave with portland cement conc. and asphalt conc. on Barnett Ave. and Lytton St., betw. Rosecrans St., and Pacific Highway—by State Division of Highways, Sacramento. 7-29

SAN MATEO CO.—Macco Construction Co., 815 Paramount Blvd., Clearwater—\$394,878, for grading an area and surf. a portion with plantmix surf. near Half Moon Bay—by State Division of Highways, Sacramento. 7-29

SAN MATEO CO.—Harms Bros., Route 4, Box 2220, Sacramento—\$255,769, for grading and applying penetration treatment to 2.6 mi. betw. two mi. south of Tunitas and one mi. south of Lobitos—by State Division of Highways, Sacramento. 7-29

SANTA BARBARA CO.—L. A. Brisco, Box 656, Arroyo Grande—\$49,788, for 6 mi. plantmix surf. and seal coat repairs at various locations—by California Division of Highways, Sacramento. 7-2

SANTA CRUZ CO.—Granite Construction Co., Box 900, Watsonville—\$48,498, for bitum. surf. on San Andreas-Camp McQuaide access road, Watsonville—by Treasury Department, San Francisco. 7-1

SOLANO CO.—A. G. Raisch, 2048 Market St., San Francisco—\$20,584 for asph. conc. surf. on Amador St., Vallejo, betw. Florida St. and Indian Alley—by City Council, Vallejo. 7-8

SOLANO CO.—A. G. Raisch, 2048 Market St., San Francisco—\$19,439 for widening pavement on Santa Clara St., Vallejo, betw. York St. and Pennsylvania St. with asph. conc. base and top—by City Council, Vallejo. 7-8

YOLO CO.—Fredericksen & Westbrook, 212 13th St., Sacramento—\$433,903, for grading and surf. with plantmix surf. on gravel base, an area and approach roads near Winters—by California Division of Highways, Sacramento. 7-20

YUBA CO.—Hemstreet & Bell, P. O. Box 906, Marysville—\$476,245, for 7.9 mi. grade, crushed gravel and plantmix surf. betw. Linda Corners and Camp Beale—by California Division of Highways, Sacramento. 7-2

UNANNOUNCED CO.—MacDonald & Kahn, Financial Center Bldg., San Francisco—for roads, driveways, parking areas and grade for 15 ea. 120-man additions to a camp in southern California—by U. S. Engineer Office, Los Angeles. 7-1

UNANNOUNCED CO.—Clyde W. Wood, 208 W. 8th St., Los Angeles—for perimeter road at a southern California air base—by U. S. Engineer Office, Los Angeles. 7-13

250 LINEAR FT. per HOUR  
of 25 FT. SLAB (MINUS 1" SLUMP  
9'-6"-9" THICK)



with this JAEGER *Screw* SPREADER



and this JAEGER *Type H* FINISHER

Ferry & Pearson Laid Up to 135 Cu. Yds. an Hour,  
AVERAGED OVER 120 Cu. Yds. an Hour, Day  
after Day, on Muroc Bomber Range, California

### Record-Breaking Production of Denser, Smoother Slab—Fewer Men

On U. S. airport, near Ft. Wayne, James A. McKay & Sons report Jaeger Spreader-Finisher team was absolutely necessary to handle the very dry concrete in 25' width.

On 86 miles of 20'-24' slab, Koss Constr. Co. used 4 Screw Spreaders, report all engineers highly pleased.

On Ford's Willow Run Bomber Plant, 4 Jaeger Finishers placed 63 miles of 20' slab in 42 days.

On Higley Airport, Jaeger Team placed 362' per hour of 1 1/2" slump concrete 12'6" wide without labor in front of machines and no trace of segregation.

Saved 3 to 5 men behind 34E dual paver, reports C. H. Atkinson Paving Co., Missouri.

On Pennsylvania Turnpike Adam Eidemiller did 5160' in 14 hours, Tri-State Engr. averaged 4000 sq. yds. daily on 167,000 sq. yd. contract.

Spreader, equipped to both spread and finish, laid up to 150 tons hourly of bituminous resurfacing for Barber Construction Co., Chicago.

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### Colorado

MONTROSE CO.—L. H. Hall and J. B. Claybaugh, Grand Junction—\$58,846, for 26.9 mi. gravel surf. betw. Paradox & Naturita, on State Highway 90—by State Highway Department, Denver. 7-23

PROWERS CO.—List and Clark Construction Co., 414 Railway Exchange Bldg., Kansas City, Mo., and San-Ore Construction Co., McPherson, Kans.—over \$100,000, for roads and drainage—by U. S. Engineer Office, Albuquerque, N. M. 7-21

### Idaho

BANNOCK CO.—Morrison-Knudsen Co., Inc., and Triangle Construction Co., Boise—under \$50,000, for bitum. surf. of parking areas, aprons, shoulders, roads and driveways—by U. S. Engineer Office, Portland, Oregon. 7-30

CLARK CO.—Dan J. Cavanagh, Twin Falls—\$83,431 for 18 mi. crushed gravel surf. on Lemhi Hwy. from Reno Point to Lemhi Co. line—by Bureau of Highways, Boise. 8-1

ELMORE CO.—Tony Marrazzo, Box 876, Boise—\$261,756, for 7.1 mi. roadbed, drainage structures and cr. gravel surf. on Old Oregon Trail—by Commissioner of Public Works, Boise. 7-27

GOODING, TWIN FALLS & CASSIA COS.—Hoops Construction Co., Twin Falls—\$59,079 for 22 mi. seal coating on Old Oregon Trail betw. Bliss & Burley; 26.3 mi. seal coating on Raft River Hwy., betw. Declo and Strevell; and stockpiling surf. matl. betw. Burley and Idaho—by Commissioner of Public Works, Boise. 7-24

JEFFERSON CO.—Nick Burggraf, Inc., Idaho Falls—\$45,048 for 8.7 mi. roadmix bitum. surf. on Lewisville and connecting roads—by Bureau of Highways, Boise. 7-24

KOOTENAI CO.—Roy L. Bair, 1220 Ide Ave., Spokane, Wash.—\$99,435, for 4.5 mi. selected borrow sub-base, cr. grav. surf. and roadmix bitum. surf. on Bayview Spur from Athol to U. S. Naval reservation—by Commissioner of Public Works, Boise. 7-16

LATAH & NEZ PERCE COS.—F. H. DeAtley, 208 Salsberg Bldg., Lewiston—\$22,500, for furn. 10,000 cu. yd. crushed rock surf. in stockpiles, south of Genesee, adjacent to north and south Hwy.—by Commissioner of Public Works, Boise. 7-22

LEMHI CO.—Nick Burggraf, Inc., Idaho Falls—\$86,484 for 17.7 mi. of crushed gravel surf. on Lemhi Hwy. from Gilmore to Clark Co. line—by Bureau of Highways, Boise. 8-1

LEMHI CO.—Dan J. Cavanagh, Twin Falls—\$56,450 for 7.2 mi. roadmix bitum. surf. on Sawtooth Park Hwy. betw. McKim Creek and Iron Creek, and 9.4 mi. bitum. surf. treat. on Lemhi Hwy. betw. Salmon and Baker—by Bureau of Highways, Boise. 8-1

LEWIS CO.—Tony Marrazzo, Box 876, Boise—\$31,868, for 12.8 mi. crushed rock surf. on county roads, betw. Winchester and Forest—by Commissioner of Public Works, Boise. 7-16

### Montana

STILLWATER CO.—C & F Trucking & Contracting Co., and Albert Lalonde Co., Butte—\$368,710, for 34.8 mi. grade and surf. on Benbow Mine access road—by State Highway Commission, Helena. 7-2

### Nevada

LINCOLN CO.—Russell Olson, Medford, Ore.—\$19,703, for 6.3 mi. roadmix surf. on State Highway betw. Junction with State Rt. 7 and Prince Mine—by Department of Highways, Carson City. 7-16

WASHOE CO.—Union Paving Co., 310 California St., San Francisco—\$87,854, for 4.5 mi. surf. on State Highway betw. Verdi and Lawtons, Rt. 1, Secs. A2 & A3—by Department of Highways, Carson City. 7-16

### Oregon

DESCHUTES CO.—Babler Bros., 2617 S.E. Milwaukee St., Portland—\$13,856 for oiling 6.5 mi. of the lower bridge Terrebonne county road—by State Highway Commission, Portland. 7-25

LANE CO.—C. J. Eldon, 2525 N.E. 15th St., Portland—\$272,845 for 4 mi. grade, surf., and bitum. macadam; also 6,100 cu. yd. crushed gravel in stockpiles on Goshen-Pleasant Hill section of Willamette highway—by State Highway Commission, Portland. 7-6

MULTNOMAH CO.—Porter W. Yett, 6500 N.E. Ainsworth St., Portland—\$98,853, for 1.9 mi. grading and paving on Sunder-

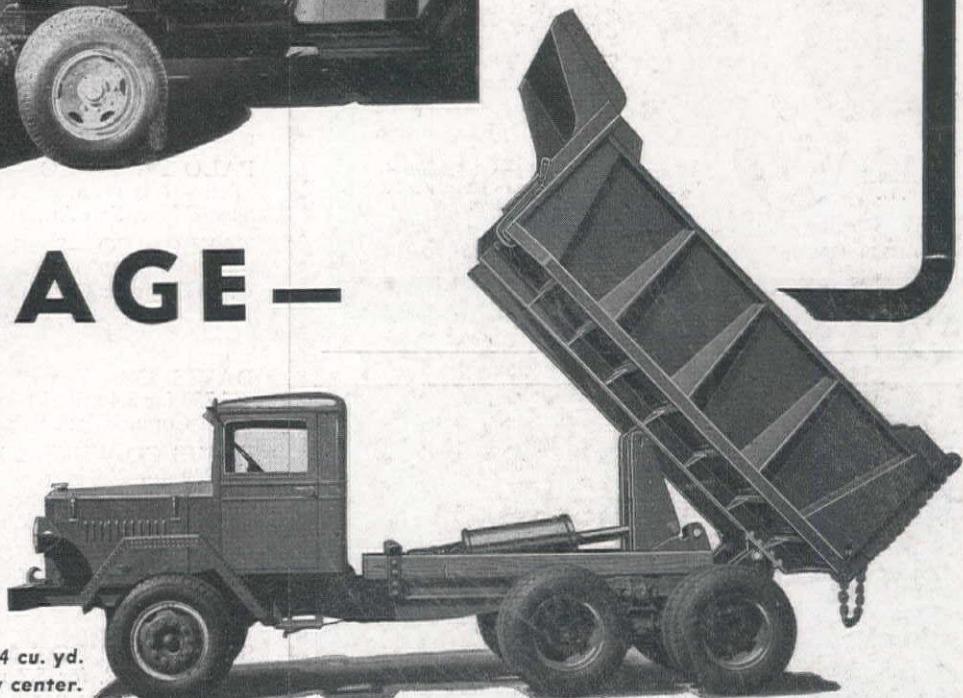
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8X SPEEDRAULIC Hoists and 6 cubic yard dump bodies used for heavy excavation work.

## YARDAGE— PLUS



10X SPEEDRAULIC Hoist and 14 cu. yd. body. Note lift applied at body center.

YARDAGE—PLUS the ability to dump the load speedily and easily! That's why operators specify Hercules SPEEDRAULIC Hoists and Dump Bodies for grueling, steady service. Yardage carried by dump trucks is a real contribution to the war effort only when it is dumped on time, every time.

SPEEDRAULIC Hoists (only Hercules Hoists are SPEEDRAULIC) are brutes in strength as well as appearance. By lifting ahead of load center, the bridge type lift arms apply power where it is most effective, with a minimum of lifting effort.

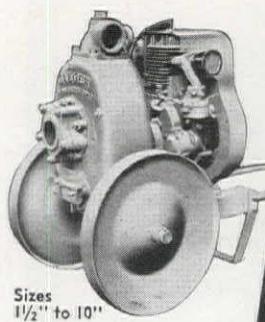
SPEEDRAULIC Hoist action is controlled by a Balanced Piston Valve, which cannot bind under any conditions, and operates entirely independent of oil pressures. There is no high pressure oil piping. Hoist and Power Take-off may be operated by either Hercules "Button Ease" dash controls or conventional floor-board levers.

Make sure your equipment will serve you both now and during the post-war period. There's a fast acting 6", 7", 8" or 10" SPEEDRAULIC Hoist for every load capacity.



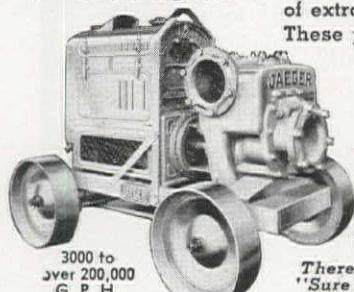
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### WAR LOAN DEPARTMENT

## SECURITY-FIRST NATIONAL BANK of Los Angeles

Member Federal Reserve System

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land Ave. access road proj., near Portland—by State Highway Commission, Portland. 7-29

POLK CO.—E. C. Hall, 1st National Bank Bldg., Eugene, and J. C. Compton, McMinnville—\$229,153, for 2.5 mi. grading and 4.9 mi. bitum. macadam surf. on Sec. B of Monmouth-Benton County Line Sec. of Pacific Highway West—by State Highway Commission, Portland. 7-30

POLK CO.—E. C. Hall, 1st National Bank Bldg., Eugene—\$172,647, for 4.1 mi. bitum. macadam surf. on Sec. A of Monmouth-Benton County line Sec. of Pacific Highway West—by State Highway Commission, Portland. 7-30

### Texas

BASTROP CO.—Holland Page, Box 971, Austin—less than \$50,000 for roads and walks—by U. S. Engineer Office, San Antonio. 7-29

BASTROP CO.—Southern Contracting Co., Austin—less than \$50,000 for roads and walks—by U. S. Engineer Office, San Antonio. 7-29

BELL CO.—M. E. Rudy and Wallace & Bowden, 5513 1/2 E. Grand Ave., Dallas—over \$100,000 for grading and paving roads—by U. S. Engineer Office, San Antonio. 7-22

BEXAR CO.—Aikin & Hinman, Box 1855, Corpus Christi—less than \$50,000 for roads, walks, and fencing—by U. S. Engineer Office, San Antonio. 7-24

CHILDRESS CO.—E. W. Hable, Corsicana—over \$100,000, for area grading, road and street grading and drainage—by U. S. Engineer Office, Denison. 7-30

HAYS CO.—Dean Word, 446 E. Rosewood St., San Antonio—over \$100,000 for additional roads and culverts—by U. S. Engineer Office, San Antonio. 7-28

PALO PINTO CO.—E. E. Elliston and A. L. Gary, Mineral Wells—less than \$50,000 for roads and walks—by U. S. Engineer Office, San Antonio. 7-29

TAYLOR CO.—Southern States Construction Co., Houston—less than \$50,000 for roads, hardstanding areas and walks—by U. S. Engineer Office, San Antonio. 7-22

### Utah

DAVIS CO.—Reynolds-Ely Construction Co., Springville—\$45,750 for 3.4 mi. of 1-in. natural rock asph. surf. road—by State Road Commission, Salt Lake City. 7-30

DAVIS CO.—Clifford Prince, 2265 Lake St., Salt Lake City—\$28,249, for 2 1/2-in. roadmix bitum. surf. road and a 36-ft. timber and conc. bridge, betw. Sunset and Ogden ordnance depot—by State Road Commission, Salt Lake City. 7-28

DAVIS & WEBER COS.—Olof Nelson Construction Co., Box 413, Logan—\$415,359 for 6.2 mi. pave with asph. and natural rock conc. betw. Layton and Roy—by State Road Commission, Salt Lake City. 7-13

SALT LAKE CO.—A. O. Thorne Construction Co., Springville—\$385,852, for 5.2 mi. 3/4-in. plantmix bitum. surf. on Redwood Road betw. north Temple St. and 35th South St.—by State Road Commission, Salt Lake City. 7-23

UTAH CO.—Olof Nelson Construction Co., Logan—\$148,494, for conc. pave. and natural rock asphalt surf. road betw. Provo and Orem, approx. 2.2 mi. long—by State Road Commission, Salt Lake City. 7-28

WEBER CO.—Gibbons & Reed, 259 W. 3rd South St., Salt Lake City—over \$100,000, for surf. roads—by U. S. Engineer Office, Salt Lake City. 7-30

WEBER CO.—J. M. Sumson, Springville—\$32,500 for 0.6 mi. improve highway to general army supply depot at Ogden—by State Road Commission, Salt Lake City. 7-21

### Washington

ADAMS & WHITMAN COS.—Standard Asphalt Paving Co., 603 Chronicle Bldg., Spokane—\$48,741 for 37.5 mi. nonskid seal treatment and mfg. mineral aggregates on Secondary State Hwy. No. 11-B, betw. Washtucna and Dusty—by Director of Highways, Olympia. 7-9

GRAYS HARBOR CO.—Grays Harbor Construction Co., 412 S. Park St., Aberdeen—\$98,105 for 14.8 mi. surf. and light bitum. and nonskid seal coat on Secondary Hwy. No. 9-C, Carlisle to Pacific Beach to Copalis—by Director of Highways, Olympia. 7-9

KING CO.—Northwest Construction Co., Inc., 3950 6th St., N.W., Seattle—\$163,945 for 0.9 mi. pave with portland cement and asph. conc. and building pile and timber bridge on access

**INSIDE**

**the Bore Hole...**

**That's where**

**TAMPTITE**  
**speeds up Production**

*Ever think about the inside of a bore hole?  
Of course, you have.*

First of all (you say to yourself), I've got to make the explosive charge fit snugly. I can't waste the space after all the trouble it took to drill the hole. Then (you're still talking to yourself), I've got to concentrate the charge so I'll get the best breakage of rock or ore. (Then you think about slitting the cartridges as you have always done before.)

**And right here is where  
TAMPTITE comes in**

You don't have to worry about slitting cartridges any more. Just put in your usual size of Hercules dynamite and

make sure it has the new Tamptite shell (no extra cost). Then tamp each cartridge in the usual way.

In a jiffy the cartridge is compacted *inside the shell*. The charge is concentrated where you want it. No mess. No spilled powder. No time lost slitting cartridges.

It's so simple it's almost unbelievable.

For all-out production, specify Tamptite cartridges on your next order of dynamite.



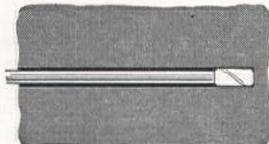
**HERCULES POWDER COMPANY**  
INCORPORATED  
994 KING STREET • WILMINGTON • DELAWARE

**A QUICK LOOK AT**

**TAMPTITE** IN ACTION!



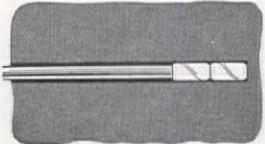
The regular-size cartridge goes in the bore hole. Note the space to be filled.



Pressure from the tamping rod compresses the powder to fill the space.



Another cartridge goes in—Compaction takes place inside the wrapper.



The charge is concentrated for better blasting results.

A-86

roads to Boeing assembly plant near Renton—by Director of Highways, Olympia. 7-3

KING CO.—Argentieri & Colarossi, Seattle—\$18,644 for concrete walks on Lakeside Ave. and other streets in Seattle—by Municipal Board of Public Works, Seattle. 7-17

SPOKANE CO.—N. A. Degerstrom, Peyton Bldg., Spokane—\$194,699 for 2.2 mi. clear, grade, drain, surf. and pave with portland cement conc. and asph. conc. on Primary State Highway No. 2, Spokane west—by Director of Highways, Olympia. 7-8

THURSTON CO.—Goetz & Brennan, 914 Seaboard Bldg., Seattle—\$220,068 for 5.6 mi. clear, grade, drain, surf. and mfg. mineral aggr. on Secondary State Hwy. No. 5-H betw. Tenino and Rainier—by Director of Highways, Olympia. 7-9

THURSTON CO.—Washington Asphalt Co., 309 W. 39th St., Seattle—\$43,509 for 1 mi. pave with asph. conc. on Primary State Hwy. No. 1, near Tenino—by Director of Highways, Olympia. 7-9

WHITMAN & SPOKANE COS.—D. A. Sullivan, Box 39, Parkwater—\$42,895 for mfg. crushed stone surf. and mineral aggr. on Primary State Hwy. No. 3, and Secondary State Hwy. No. 3-A betw. Rosalia and Garfield, and Fairfield south—by Director of Highways, Olympia. 7-9

### Wyoming

CARBON CO.—C. C. Warrington, Cheyenne—\$128,990 for 12.1 mi. crushed gravel base, roadmix surf. and seal coat on Hann-Rock River road—by State Highway Commission, Cheyenne. 7-6

CROOK CO.—Teton Construction Co., Cheyenne—\$96,875 for 3.5 mi. grade, drain, surf., and seal coat on Hulett-Aladdin Road—by State Highway Commission, Cheyenne. 7-6

SWEETWATER CO.—Woodward Construction Co., Rock Springs—\$121,993 for 10 mi. base course, roadmix surf., and seal coat on Granger Jct. - Green River Highway—by State Highway Commission, Cheyenne. 7-6

### Canada

BRITISH COLUMBIA—Hugh Govan, Box 308, Port Angeles,



You merely tilt the Smith drum thru a short 40° arc and let gravity pour out the entire batch . . . the quickest, most practical and most convenient method of discharge . . . like emptying a pail. Returning to charge position, the drum again moves through a short 40° arc. More time saved! Contrast this quick, short tilt with the long, time-consuming 180° tilt of all other tilting mixers. Seconds saved with every batch means a BIG saving over a period of years.

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Wash.—for a section of the Alaska Highway adjacent to Whitehorse, Yukon territory—by U. S. Public Roads Administration, Washington, D. C. 7-8

### PROPOSED PROJECTS

#### Arizona

COCONINO CO.—State Highway Commission, Phoenix, received no bids for grade, drain, aggregate base concrete and conc. pave. on 2.8 mi. of Flagstaff-Winslow Highway. 7-20

#### California

HUMBOLDT AND SISKIYOU COS.—All bids received for construction of 2 bridges and 2 culverts and 0.1 mi. grade and surf. betw. 32 and 36 mi. each of Arcata, and 9 mi. north of Somesbar, have been rejected by Division of Highways, Sacramento. 7-13

KINGS CO.—California Division of Highways, Sacramento, received no bids for 4.7 mi. grade and surf. with roadmix surf. betw. 5th Standard Parallel and Stratford. 7-1

LOS ANGELES CO.—No bids were received for improving Rosemont Ave., Washington St., Parkview Ave. and Raymond Ave. by City Directors, Pasadena. 7-14

NEVADA AND SIERRA COS.—No bids were received for 3 mi. grade, crusher run base, and plantmix surf. betw. Farand and Nevada State line by Divn. of highways, Sacramento. 7-15

PLACER AND NEVADA COS.—All bids received for 10.9 mi. plantmix surf. and repair shoulders with imported borrow, betw. 8 mi. north of Tahoe City and junction with Route 37, have been rejected by Division of Highways, Sacramento. 7-13

SAN MATEO CO.—Division of Highways, San Francisco, rejected all bids for a conc. arch culvert and 0.4 mi. grade and bitum. surf. treatment at Finney Creek. 7-22

YOLO CO.—All bids received for 5.7 mi. plantmix surf. and repair shoulders with imported borrow, betw. Winters Wye and Willow Slough, have been rejected by Division of Highways, Sacramento. 7-13

YUBA CO.—City Clerk, Marysville, received no bids for 1,520 ft. cement conc. gutters and plantmix surf. on "D" St. betw. 1st and 5th Sts., in Marysville. 7-2

#### Colorado

DENVER & ADAMS COS.—State Highway Department, Denver, rejected all bids received for 2.1 mi. gravel surf. betw. Denver and Adams City on State Highway 2 and 3. 7-23

#### Idaho

GOODING & CAMAS COS.—Commissioners of Public Works, Boise, received no bids for 9.2 mi. roadmix bitum. surf. betw. Gooding and Fairfield. 7-20

#### Nevada

CLARK CO.—No bids were received for 5.6 mi. grade and surf. State Hwy. betw. junction with U. S. Highway No. 95 southeast of Las Vegas and Three Kids mine by State Highway Dept., Carson City. 7-13

EUREKA CO.—Department of highways, Carson City, received no bids for 6 mi. gravel base and asph. surf. betw. 4 mi. and 10 mi. east of Dunphy, Rt. 1, Dec. 2-3. 7-23

UNANNOUNCED CO.—U. S. Engineer Office, Los Angeles, has cancelled bid call sched. for July 1, for addtl. street improvements for temporary bldg. expansion at an air force flexible gunnery school. 7-2

#### Washington

CLALLAM CO.—No bids were received for clear, grade, drain, surf. and construct pile and timber trestle on 10.6 mi. of Secondary State Highway No. 9-A betw. Clallam Bay Jct. and Sappho, by Director of Highways, Olympia. 7-9

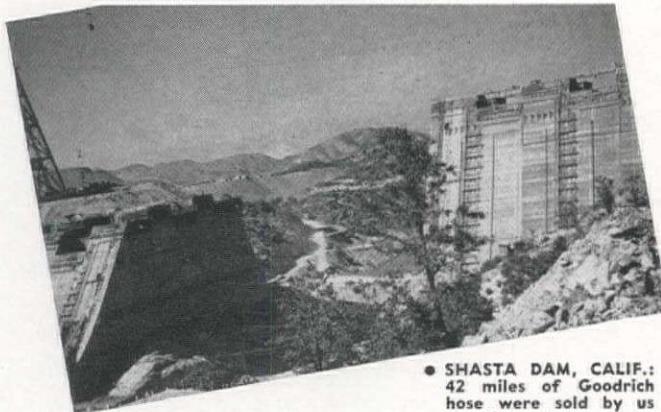
PACIFIC CO.—No bids were received for clear, grade, drain, surf. and mfg. mineral aggr. on 4.8 mi. of Primary State Hwy. No. 12 and Secondary State Hwy. No. 13-A betw. Skinville Cut-off and Chinook River, and Raymond west, by Director of Highways, Olympia. 7-9

WHITMAN CO.—No bids were received for nonskid seal treatment on 22.8 mi. of Primary State Hwy. No. 3 and Secondary State Hwy. No. 11-C betw. St. John and Steptoe, and betw. Colton and Idaho State line, by Director of Highways, Olympia. 7-9

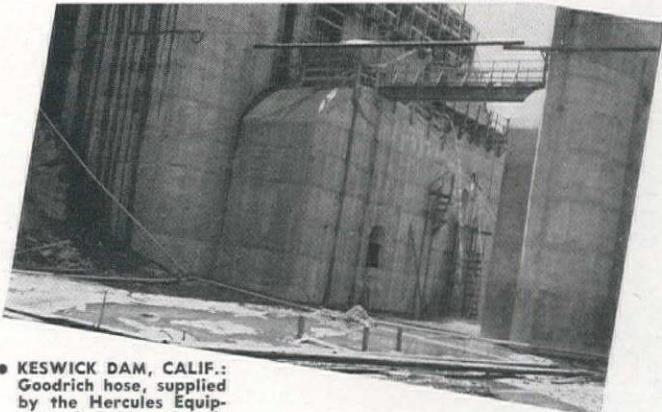
YAKIMA CO.—No bids were received for mfg. mineral aggr.

# SHASTA and KESWICK

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• SHASTA DAM, CALIF.: 42 miles of Goodrich hose were sold by us on this one job.



• KESWICK DAM, CALIF.: Goodrich hose, supplied by the Hercules Equipment & Rubber Co., is on the job here too.

HERCULES hose on these two great dams includes air, water, steam, suction, cement placement, oxy-acetylene and refrigeration hose.

We also manufacture molded rubber goods, rubber rollers and gaskets of every description.

## HERCULES EQUIPMENT & RUBBER COMPANY

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San Francisco, California

UNANNOUNCED CO.—Fredrickson & Watson Construction Co., 873 81st Ave., Oakland—for runways, taxiways, roadways and appurt. facil. at a northern California airfield—by U. S. Engineer Office, Sacramento.

7-2

UNANNOUNCED CO.—J. A. Haines, 1242 N. Jackson St., Glendale—for runways, markers, and electric system at a southern California airport—by U. S. Engineer Office, Los Angeles.

7-7

UNANNOUNCED CO.—Love & Haun, 4354 20th St., San Francisco—for warm-up aprons at a northern California airfield—by U. S. Engineer Office, San Francisco.

7-21

UNANNOUNCED CO.—R. J. Minton Construction Co., 155 Sansome St., San Francisco—for an air support command base in northern California—by U. S. Army Engineer Office, San Francisco.

7-28

UNANNOUNCED CO.—Wilkinson & Scott, Box 900, Watsonville—for pave runways at a central California air support command base—by U. S. Engineer Office, San Francisco.

7-15

### Colorado

DENVER CO.—J. B. Bertrand, Inc., 4295 York St., Denver, and Peter Kiewit Sons & Co., 1024 Omaha National Bank Bldg., Omaha, Nebraska—over \$500,000, for extension of runways, parking aprons and taxi ramp—by U. S. Engineer Office, Denver.

7-30

### Idaho

ADA CO.—Jacobsen-Jensen Co., 517 N.E. Stanton St., Portland, Ore.—over \$100,000 for grade, drain, and pave runways and parking areas—by War Dept., Washington, D. C.

7-22

ADA CO.—Morrison-Knudsen Co., Inc., Boise—over \$100,000 for bitum. surf. of taxiways, fillets, and runway extensions—by War Dept., Washington, D. C.

7-22

ADA CO.—Vernon Bros. Co., Boise—under \$50,000, for repairing runway—by U. S. Engineer Office, Portland, Ore.

7-22

BANNOCK CO.—Morrison-Knudsen Co., Inc., Boise—over \$3,000,000 for construction of an air force training center near Pocatello—by War Dept., Washington, D. C.

7-20

NEZ PERCE CO.—Plastino & Relyea Construction Co., Boise—\$179,932 for pave runways at Lewiston airport—by U. S. Treasury Dept., Boise.

7-3

### Nevada

CHURCHILL CO.—Dodge Construction Co., Fallon—over \$100,000 for apron, runways, taxiways, and appurtenances—by U. S. Engineer Office, Sacramento, Calif.

7-27

### New Mexico

LUNA CO.—Lee Moor Contracting Co., and Thos. W. Hassing, Bassett Tower, El Paso, Texas—\$3,000,000, for an air force training base at Deming—by War Department, Washington, D. C.

7-2

### Oregon

BENTON CO.—E. C. Hall Co., 1st National Bank Bldg., Corvallis, and J. C. Compton, McMinnville—less than \$1,000,000 for taxiways, fueling pit, and hangar approaches—by U. S. Engineer Office, Portland.

7-23

### Texas

CHILDRESS CO.—R. F. Ball Construction Co., Box 1118, Fort Worth—over \$5,000,000 for an air force training school at Childress—by War Dept., Washington, D. C.

7-22

DELLAM CO.—A. J. Rife Construction Co., & Associates, Dallas—\$3,000,000 (over), for an air force training school at Dalhart—by War Department, Washington, D. C.

7-7

HAYS CO.—Texas Bitulithic Co., Box 5297, Dallas—over \$1,000,000 for runways, aprons, drains and a conc. bldg.—by U. S. Engineer Office, San Antonio.

7-28

LUBBOCK CO.—McMillan, Glover & McCullough, Lubbock—over \$3,000,000, for const. and architectural-engineering services, at an air force installation at Lubbock—by War Department, Washington, D. C.

7-7

PALO PINTO CO.—J. R. Blackmore & Sons, Austin—less than \$50,000 for hardstanding area and gas station—by U. S. Engineer Office, San Antonio.

7-24

PRESIDIO CO.—McGough Bros., Bankers Mortgage Bldg., Houston—less than \$3,000,000, for a group of airfield bldgs. at

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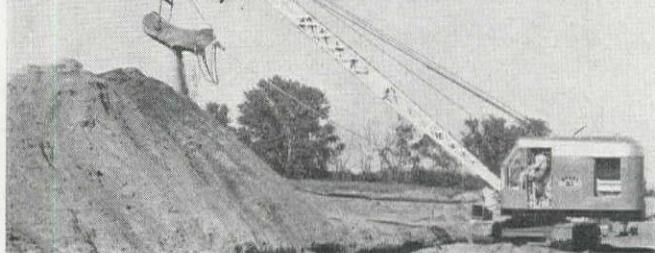
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Modern CRANES and SHOVELS

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RAVENNA, OHIO

Marfa—by U. S. Engineer Office, Albuquerque, New Mexico. 7-17

PRESIDIO CO.—Shelton Construction Co., Houston—over \$3,000,000, for an air force training school at Marfa—by War Department, Washington, D. C. 7-29

UNANNOUNCED CO.—Brown & Root, W. S. Bellows, and Columbia Construction Co., Box 866, Corpus Christi—\$6,722,215 (estimated), for addtl. facil. at a naval air station, main station outlying fields—by Bureau of Yards & Docks, Washington, D. C. 7-16

#### PROPOSED PROJECTS

##### Arizona

MOHAVE CO.—Authority has been granted by the War Dept., Washington, D. C., to construct an air training school at Kingman, to cost over \$3,000,000. 7-6

##### California

UNANNOUNCED CO.—No bids were received for construction of taxiways and bomb storage revetments at a central California airport by U. S. Engineer Office, Sacramento.

##### Colorado

PROWERS CO.—U. S. Engineer Office, Albuquerque, N. Mex., is preparing plans for an air force training school in the vicinity of Lamar, to cost in excess of \$5,000,000. 7-1

## Water Supply . . .

#### CONTRACTS AWARDED

##### Arizona

MOHAVE CO.—The Lang Company, 5501 Santa Fe Ave., Los Angeles—for water transmission line at a gunnery school—by U. S. Engineer Office, Los Angeles. 7-22

PIMA CO.—Roscoe Moss Co., 4360 Worth St., Los Angeles, Calif.—under \$50,000, for drilling water well—by U. S. Engineer Office, Los Angeles, Calif. 7-22

UNANNOUNCED CO.—Roscoe Moss Co., 4360 Worth St., Los Angeles, California—for drilling a water well at an advanced twin engine school—by U. S. Engineer Office, Los Angeles, Calif. 7-3

UNANNOUNCED CO.—Roscoe Moss Co., 4360 Worth Ave., Los Angeles—for drilling water well—by U. S. Engineer Office, Los Angeles. 7-31

UNANNOUNCED CO.—J. S. Sundt & L. M. White, Box 2592, Tucson—for water pumping and storage installations at a basic flying school—by U. S. Engineer Office, Los Angeles. 7-14

##### California

ALAMEDA & CONTRA COSTA COS.—Underground Construction Co., 354 Hobart St., Oakland—\$24,190 for approx. 19,860 lin. ft. of 2-in., 4-in., 6-in. and 8-in. cast iron water mains—by East Bay Municipal Utility District, Oakland. 7-29

SAN FRANCISCO CO.—San Francisco Water Dept., 425 Mason St., San Francisco—\$2,383 for laying 8-in. water main in Egbert St. betw. Phelps St. and Newhall St. in San Francisco—by Public Utilities Commission, San Francisco. 7-9

SANTA CRUZ CO.—Western Well Drilling Co., Ltd., 522 W. Santa Clara St., San Jose—for enlarging water supply system at an army camp in central California—by U. S. Engineer Office, San Francisco. 7-29

SOLANO CO.—Pacific Pipe Line Construction Co., 8732 Juniper St., Los Angeles—\$103,966 for water distribution system at Vallejo—by Defense Public Works, Los Angeles. 7-21

UNANNOUNCED CO.—Hood Construction Co., 3326 E. Florence Ave., Huntington Park—for sewer and water lines at an airport in southern California—by U. S. Engineer Office, Los Angeles. 7-20

UNANNOUNCED CO.—N. F. Keyt, Box 24, Cotati—for drilling a water well at a northern California airport—by U. S. Engineer Office, San Francisco. 7-9

UNANNOUNCED CO.—N. P. Van Valkenburg, 1156 Victoria Ave., Los Angeles—for water and sewer system extensions for fifteen 120-man additions at a southern California camp—by U. S. Engineer Office, Los Angeles. 7-14

UNANNOUNCED CO.—Fred W. Weber, 540 W. 3rd St., Downey—for water and gas systems at an air depot in southern California—by U. S. Engineer Office, Los Angeles. 7-1

### Nevada

CLARK CO.—E. W. Brockman, 918 W. 6th St., Corona, Calif.—under \$50,000, for drilling water well—by U. S. Engineer Office, Los Angeles, Calif. 7-22

UNANNOUNCED CO.—MacDonald & Kahn Co., Ltd., Financial Center Bldg., San Francisco, Calif.—for water supply system at a western Nevada airport—by U. S. Engineer Office, Sacramento, Calif. 7-9

### New Mexico

UNANNOUNCED CO.—Frank Shufflebarger, Albuquerque—for underground water storage tank at air field—by U. S. Engineer Office, Albuquerque. 7-8

### Texas

BEXAR CO.—Engineering Contractors, San Antonio—less than \$50,000 for water, sewage and electric systems—by U. S. Engineer Office, San Antonio. 7-24

BEXAR CO.—E. M. Null Pipe Line Contractor—Corpus Christi—less than \$50,000 for water, sewer, and electric systems—by U. S. Engineer Office, San Antonio. 7-24

BEXAR CO.—Trueheart, Caldwell & Lee, San Antonio—less than \$50,000 for water supply and sewage systems—by U. S. Engineer Office, San Antonio. 7-29

MATAGORDA CO.—Layne-Texas Co., Houston—less than \$50,000 for drilling water wells—by U. S. Engineer Office, Galveston. 7-25

### Utah

TOOELE CO.—Roscoe Moss Co., 4360 Worth St., Los Angeles, Calif.—under \$50,000, for drilling water well—by U. S. Engineer Office, Salt Lake City. 7-30

### Washington

KING CO.—Argentieri & Colarossi, Seattle—\$15,144 for water mains in 46th Ave., N.E.—by Board of Public Works, Seattle. 7-24

KING CO.—Valley Construction Co., 4354 Henderson St., Seattle—\$104,853 for water system—by County Water District No. 61. 7-1

PIERCE CO.—Paine Gallucci, Inc., 1521 S. Grant Ave., Tacoma—over \$50,000, for a water distribution system—by U. S. Engineer Office, Seattle. 8-1

SPOKANE CO.—Henry Hagman, Box 752, Spokane—over \$100,000 for elevated conc. water tanks—by U. S. Engineer Office, Seattle. 7-28

SPOKANE CO.—R. L. Moss & Co., Zenith—over \$50,000 for a water distribution system—by U. S. Engineer Office, Seattle. 7-27

UNANNOUNCED CO.—International Water Supply, Ltd., 601 Alaska Bldg., Seattle—\$12,490, for drilling a well at Annapolis—by Federal Works Agency, Seattle. 7-17

### Canada

BRITISH COLUMBIA—Carter-Halls-Aldinger Co., Ltd., 670 Taylor St., Vancouver, B. C.—\$325,000 for water supply and distribution system at an un-named center—by Dept. of Munitions and Supply, Ottawa. 7-14

## Sewerage . . .

### CONTRACTS AWARDED

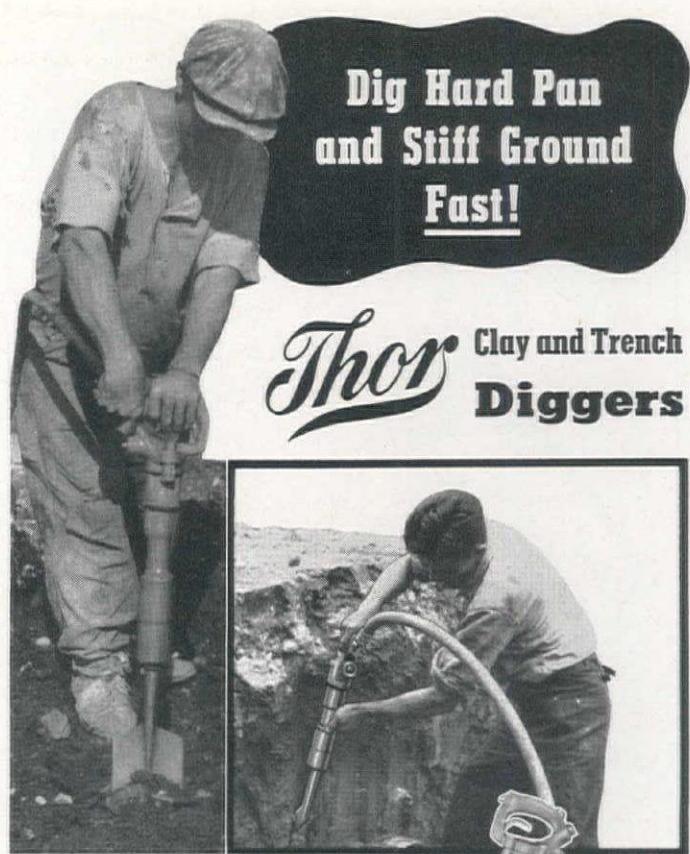
#### Arizona

PIMA CO.—L. M. White Contracting Co., Box 2350, Tucson—for 24,000-ft. sewer line to municipal airport—by City Council, Tucson. 7-3

#### California

CONTRA COSTA CO.—John F. White, 3214 E. 12th St., Oakland—\$4,710 for sewer connections in Richmond—by City Council, Richmond. 7-21

LOS ANGELES CO.—J. P. Immel, Box 43, Ventura—\$39,200,



## Thor Clay and Trench Diggers

Fast!

### 6 Sturdy Tools

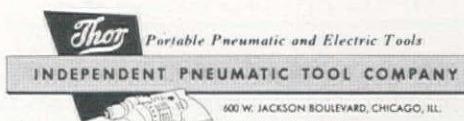
#### No. 18 Clay Digger

Thor Clay Diggers with closed handle and inside trigger are available in three models for light, medium and heavy duty.



#### No. 19 Trench Digger

Three Models of Thor Trench Diggers for light, medium and heavy duty service are equipped with extended "T" handle.



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Darwin, Imperial Smelting & Refining Co.	Boulder, Industrial Supply Co.	Albuquerque, Motor Equipment Co.
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Grass Valley, Clinch Mercantile Co.	IDAHO	Portland, Columbia Equipment Co.
Los Angeles, Lee & Thatro Equipment Co.	Boise, Olson Manufacturing Co.	TEXAS
Mine-Mill Machinery Co.	Boise, R. O. Nelson	El Paso, Mine & Smelter Supply Co.
Oakland, Edward R. Bacon Co.	Wallace, Bres Mining Equipment Co.	Houston, C. A. Koehring Co.
Rosamond, Burton Bros.	MONTANA	WASHINGTON
Sacramento, Edward R. Bacon Co.	Butte, Montana Iron Works	Seattle, Star Machinery Co.
San Diego, Hudson-Tucker, Inc.	NEVADA	Spokane, Columbia Equipment Co.
	Las Vegas, Standard Wholesale Supply Co.	

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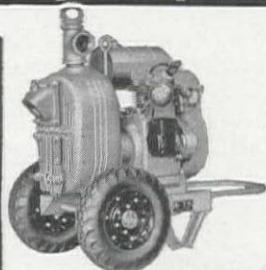
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for Los Cerritos Channel, betw. Anaheim St., and Pacific Coast Highway, near Long Beach—by County Board of Supervisors, Los Angeles.

7-29

SOLANO CO.—W. J. Tobin, 5708 Glenbrook Drive, Oakland—\$39,074, for sewer extensions at Vallejo—by Defense Public Works, Los Angeles.

7-13

SOLANO CO.—Oakland Sewer Construction Co., 9915 Walnut St., Oakland—\$23,190 for supplemental outfall sewer to serve defense housing project south of Vallejo—by Bd. of Supervisors, Fairfield.

7-3

### Colorado

EL PASO CO.—A. S. Horner Construction Co., 575 S. Downing St., Denver—for sewage disposal plant for an army air support command base near Colorado Springs—by U. S. Engineer Office, Denver.

7-1

### Montana

CASCADE CO.—Victory Construction Co., Great Falls—over \$100,000 for sewage treatment plant and elevated conc. water tank and pump house—by U. S. Engineer Office, Fort Peck.

7-30

### Nevada

CLARK CO.—Bebek & Brkich, 238 West Florence Ave., and Sutalo & Ramljak, 476 Camulos St., Los Angeles, Calif.—\$738,946 for main and lateral sewers in Las Vegas—by Defense Public Works, Los Angeles, Calif.

7-13

UNANNOUNCED CO.—F. D. Ryan, 6518 Beck Ave., North Hollywood—for sewage treatment plant at an air force flexible gunnery school—by U. S. Engineer Office, Los Angeles, Calif.

7-3

### Texas

TAYLOR CO.—R. H. Folmar, Austin—less than \$50,000 for improvements at a sewage treatment plant—by U. S. Engineer Office, San Antonio.

7-29

### Washington

PIERCE CO.—Valley Construction Co., 4354 Henderson St., Seattle—less than \$100,000, for sanitary sewer systems—by U. S. Engineer Office, Seattle.

7-27

SPOKANE CO.—K. L. Goulter & Co., Box 135, Spokane—less than \$100,000 for a sewage system—by U. S. Engineer Office, Seattle.

7-28

### PROPOSED PROJECTS

#### California

SAN BERNARDINO CO.—All bids have been rejected for additions and alterations to sewage treatment plant by Board of Water Commissioners, San Bernardino.

7-16

SOLANO CO.—Federal Works Agency, Los Angeles, announced approval of a federal allotment to expand the sewer system of Benicia, at the cost of \$174,000.

7-22

### Colorado

DENVER CO.—Manager of Improvements and Parks, Denver, has rejected only bid for constructing sewage treatment plant to serve portion of city of Denver and the Lowry Field air corps project.

7-6

### Dam . . .

#### CONTRACT AWARDED

#### New Mexico

SANTA FE CO.—Sanderson & Porter, 123 Water St., Santa Fe—\$300,000 for design and construction supervision of an earthfill dam 4 mi. east of Santa Fe—by New Mexico Power Co., Santa Fe.

7-21

### Waterway Improvement . . .

#### CONTRACTS AWARDED

#### California

ALAMEDA CO.—Healy-Tibbitts Construction Co., 1100 Evans Ave., San Francisco—for sheet piling and wharf at marine building, Alameda—by Bethlehem Shipbuilding Corp., Alameda.

7-13

SAN FRANCISCO CO.—Pacific Bridge Co., 333 Kearny St., San Francisco—\$425,000 for drydock and misc. facil. at Hunters Point—by Bureau of Yards and Docks, Washington, D. C. 7-6

SUTTER CO.—N. M. Ball Sons, Box 404, Berkeley, and H. Earl Parker, 1112 G St., Marysville—\$814,780 for levee on south side of Tisdale Bypass and west side of Sutter Bypass—by U. S. Engineer Office, Sacramento. 7-6

#### PROPOSED PROJECTS

##### California

ALAMEDA CO.—Port of Oakland, Oakland, received no bids for 24,000 cu. yd. dredging at 9th Avenue Pier. 7-14

YOLO CO.—No bids were received for 2.6 mi. of levee construction along Cache Slough, Haas Slough, Barker Slough, and Ulatis Creek by U. S. Engineer Office, Sacramento. 7-21

## Irrigation . . .

#### CONTRACTS AWARDED

##### California

SISKIYOU CO.—Bessonette Bros., Tulelake—\$23,000 for earthwork on Line "A" dike near Tulelake—by Bureau of Reclamation, Klamath Falls, Ore. 7-13

##### Wyoming

PARK CO.—Barnard-Curtis Co., 808 Phoenix Bldg., Minneapolis, Minn.—\$15,961 for earthwork and conc. lining 703 ft. of Heart Mountain canal, Shoshone project—by Bureau of Reclamation, Cody. 7-30

#### PROPOSED PROJECTS

##### Colorado

GRAND CO.—No bids were received for 4 dikes at Granby Dam of the Colorado-Big Thompson project, about 5 mi. northeast of Granby by the Bureau of Reclamation, Denver.

## Building . . .

#### CONTRACTS AWARDED

##### Arizona

COCHISE CO.—Elder R. Morgan & Co., 2300 Huntington Dr., San Marino, Calif.—less than \$1,000,000 for civilian housing—by U. S. Engineer Office, Albuquerque, New Mexico. 7-30

COCONINO CO.—J. A. Utley, 723 E. Ten Mile Road, Royal Oak, Michigan—over \$2,000,000, for approx. 25 storage bldgs. at an ordnance depot—by U. S. District Engineer Office, Albuquerque, N. M. 7-31

PINAL CO.—J. S. Sundt & L. M. White, Box 2592, Tucson—over \$1,000,000 for housing facil. at a reception center—by U. S. District Engineer, Los Angeles. 7-27

YUMA CO.—Del E. Webb Construction Co., 1633 W. Jefferson St., Phoenix—over \$3,000,000 for air force flying school at Yuma—by U. S. Engineer Office, Los Angeles. 7-20

UNANNOUNCED CO.—Avon G. Brown, 11 E. McDowell Rd., Phoenix—for a radio range bldg. at an airfield—by U. S. Engineer Office, Los Angeles. 7-15

UNANNOUNCED CO.—Daley Corp., 4430 Boundary St., San Diego—less than \$100,000, for dismantling, hauling and erecting temporary bldgs.—by U. S. Engineer Office, Los Angeles, Calif. 7-28

UNANNOUNCED CO.—Wm. Peper Construction Co., Box 1564, Phoenix—for bomb trainer bldg. at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 7-14

UNANNOUNCED CO.—M. M. Sundt Construction Co., and L. M. White Contracting Co., Box 2592, Tucson—over \$1,000,000 for housing at a reception center—by U. S. Engineer Office, Los Angeles. 7-23

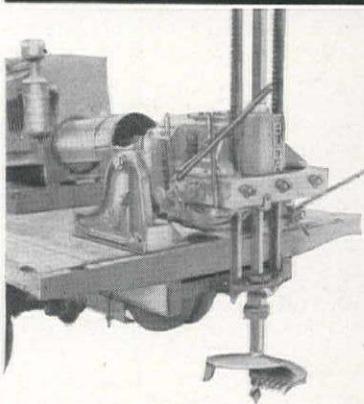
##### California

ALAMEDA CO.—W. P. Goodenough, 49 Wells Ave., Palo Alto—over \$100,000 for marine boiler house—by U. S. Engineer Office, San Francisco. 7-23

ALAMEDA CO.—F. J. Maurer & Son, 3031 E St., Eureka—

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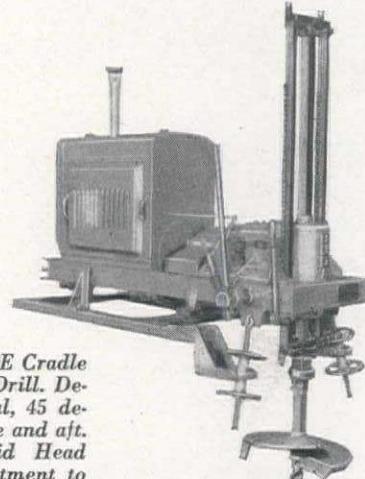
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over \$100,000 for frame storage bldg.—by U. S. Engineer Office, San Francisco. 7-29

ALAMEDA CO.—John E. Branagh, 105 Sheridan St., Piedmont—\$82,500, for laboratory and shop bldg. for the 184-in. cyclotron at University of California, Berkeley—by Regents of the University of California, Berkeley. 7-28

ALAMEDA CO.—Barrett & Hilp, 918 Harrison St., San Francisco—for factory bldg.—by Westinghouse Electric & Mfg. Co., San Francisco. 7-24

CONTRA COSTA CO.—Alfred P. Fisher, 300 Montgomery St., San Francisco—for reinf. conc. factory bldg. at Pittsburgh—by Arcrods, Inc., Pittsburgh. 7-11

KERN CO.—Vinson & Pringle, 2020 W. Grant St., Phoenix, Ariz., and Del E. Webb Construction Co., 1633 W. Jefferson St., Phoenix, Ariz.—over \$5,000,000,000 for Marine Corps base near Mojave—by Bureau of Yards and Docks, Washington, D. C. 7-21

LASSEN CO.—Summerbell Roof Structures Co., 1746 13th St., Oakland—over \$100,000 for fabrication and erection of timber for open sheds—by U. S. Engineer Office, Sacramento. 7-29

LASSEN CO.—Bressi & Bevanda Constructors, Inc., 208 W. 8th St., Los Angeles, and A. Teichert & Son, Inc., 1846 37th St., Sacramento—over \$100,000 for wooden storage bldgs.—by U. S. Engineer Office, Sacramento. 7-28

LOS ANGELES CO.—Ford J. Twaits Co., 451 S. Boylston Ave., Los Angeles—\$5,500,000 for 15 bldgs. and appurtenances for synthetic rubber plant—by Goodyear Tire & Rubber Co., Los Angeles. 7-22

LOS ANGELES CO.—Ben Harwood, 1739 Ocean Park Blvd., Santa Monica—\$250,000 for 61 5-room dwellings in Santa Monica—by Parkwood, Inc., Santa Monica. 7-27

LOS ANGELES CO.—O'Neal & Son and Robert B. Hedberg, 8881 W. Pico Blvd., Los Angeles—over \$100,000, for temporary bldgs.—by U. S. Engineer Office, Los Angeles. 7-22

LOS ANGELES CO.—Ed Krist, 900 S. Long Beach Blvd., Compton—\$81,600, for 32 5-rm. frame and stucco dwellings in the Compton and Willowbrook districts—by D. S. Green, Compton. 7-27

LOS ANGELES CO.—O'Neal & Sons and Robert B. Hedberg, 8881 W. Pico Blvd., Los Angeles—for bldgs. and electrical distribution system at an airport—by U. S. Engineer Office, Los Angeles. 7-28

LOS ANGELES CO.—Charles Buschlen, 7070 Franklin Ave., Los Angeles—over \$50,000, for frame and conc. bldgs.—by U. S. Engineer Office, Los Angeles. 7-27

LOS ANGELES CO.—Stone & Webster, 601 W. Fifth St., Los Angeles—for a plant to produce styrene, used in mfg. of synthetic rubber (Dow Chemical Co. will operate plant)—by Defense Plant Corp., Washington, D. C. 7-24

LOS ANGELES CO.—John W. Flanagan, 836 S. Ridgeley Dr., Los Angeles—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-29

MERCED CO.—Evans & Hayes, Box 1616, Fresno—for civilian employee housing at a flying school—by U. S. Engineer Office, Sacramento. 7-20

PLUMAS CO.—F. C. Stolte Co., 1405 San Antonio Ave., Alameda—over \$3,000,000, for a group of warehouses, bldgs. and

utilities at the Sierra Ordnance Depot—by U. S. Engineer Office, Sacramento. 7-23

RIVERSIDE CO.—Atkinson & Pollock, Box 10, Norco—\$1,500,000 for group of reinf. conc. bldgs. at Naval Hospital in Norco—by Bureau of Yards and Docks, Washington, D. C. 7-4

RIVERSIDE CO.—J. E. Burrell & Sons, 518 W. 17th St., Long Beach—over \$100,000 for housing at an air support command base—by U. S. Engineer Office, Los Angeles. 7-23

SACRAMENTO CO.—Frank Maloney, 1915 S St., Sacramento—over \$100,000 for construction and remodeling of temporary frame bldgs.—by U. S. Engineer Office, Sacramento. 7-29

SACRAMENTO CO.—Moore & Roberts, 693 Mission St., San Francisco—over \$100,000 for temporary frame bldgs., utilities, and appurtenances—by U. S. Engineer Office, Sacramento. 7-29

SACRAMENTO CO.—Campbell Construction Co., 800 "R" St., Sacramento—for civilian employee housing at an airfield—by U. S. Engineer Office, Sacramento. 7-20

SAN BERNARDINO CO.—MacIsaac & Menke, 3440 E. 22nd St., Los Angeles—\$260,000, for a 1-story and full basement administration bldg. on the site of the steel mill in Fontana—by Kaiser Co., Inc., Oakland. 7-28

SAN BERNARDINO CO.—Robt. E. McKee, 4700 San Fernando Rd., W., Los Angeles—over \$100,000 for temporary frame supply, repair, and armament bldg.—by U. S. Engineer Office, Los Angeles. 7-24

SAN BERNARDINO CO.—MacIsaac & Menke, 3440 E. 22nd St., Los Angeles—for a boiler, forge and pipe shop, 200x100 ft. in area, of reinf. conc. and steel const., at the steel mill site in Fontana—by Kaiser Co., Inc., Oakland. 7-7

SAN DIEGO CO.—Kemp Bros., 2900 Hyde Park Blvd., Los Angeles—\$23,800, for addition to elementary school in Coronado—by Federal Works Agency, Washington, D. C. 7-1

SAN FRANCISCO CO.—Swinerton & Walberg, 225 Bush St., San Francisco—\$150,000 for 2-story manufacturing plant—by Matson Navigation Co., San Francisco. 7-30

SAN JOAQUIN CO.—Standard Building Co., 1500 Judah St., San Francisco—over \$100,000 for temporary frame bldgs., utilities and appurtenances—by U. S. Engineer Office, Sacramento. 7-29

SAN JOAQUIN CO.—Thos. C. Buck, 250 E. Cleveland St., Stockton—for administration bldgs. at a quartermaster depot—by U. S. Engineer Office, Sacramento. 7-14

SAN LUIS OBISPO CO.—Allied Contractors, Inc., 6521 Wilshire Blvd., Los Angeles—over \$100,000 for frame bldgs.—by U. S. Engineer Office, Los Angeles. 7-29

SANTA BARBARA CO.—Andrew Nordin and Eric Flodine, 2021 Wellington Rd., Los Angeles—over \$500,000, for addts. to hospital, util. and paving—by U. S. Engineer Office, Los Angeles. 7-22

SIERRA CO.—Bressi & Bevanda Constructors, Inc., 208 W. 8th St., Los Angeles, and A. Teichert & Son, Inc., 1846 37th St., Sacramento—over \$500,000 for additional steel and conc. storage bldgs.—by U. S. Engineer Office, Sacramento. 7-27

SOLANO CO.—M. J. King, 231 Franklin St., San Francisco—\$80,937 for shore base for California Maritime Academy at Morrow Cove—by Divn. of Architecture, Sacramento. 7-13

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UNANNOUNCED CO.—Alco Construction Co., 5423 Flemish Lane, Los Angeles—for housing facil. at six locations in southern California—by U. S. Engineer Office, Los Angeles. 7-16

UNANNOUNCED CO.—Allied Contractors, Inc., 6521 Wilshire Blvd., Los Angeles—for five motor repair shops, 23 wash racks, and 23 grease racks at a southern California camp—by U. S. Engineer Office, Los Angeles. 7-28

UNANNOUNCED CO.—Allied Contractors, Inc., 6521 Wilshire Blvd., Los Angeles—for recreation bldgs. at a camp in southern California—by U. S. Engineer Office, Los Angeles. 7-17

UNANNOUNCED CO.—Allied Contractors, Inc., 6521 Wilshire Blvd., Los Angeles—for housing facilities in southern California—by U. S. Engineer Office, Los Angeles. 7-15

UNANNOUNCED CO.—Anchor Building Co., 211 S. La Brea Ave., Los Angeles—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-21

UNANNOUNCED CO.—Anchor Building Co., 211 S. La Brea Ave., Los Angeles—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-1

UNANNOUNCED CO.—Anderson & Daum, 3535 Herman Ave., San Diego, for theater of operations bldgs. and utilities in southern California—by U. S. Engineer Office, San Diego. 7-6

UNANNOUNCED CO.—Anderson & Johnson, 4745 Hawley Blvd., San Diego—for motor repair shop at a fort in southern California—by U. S. Engineer Office, Los Angeles. 7-1

UNANNOUNCED CO.—W. C. Beggs, 610 S. Broadway, Los Angeles—for bldgs. and utils. at a southern California camp—by U. S. Engineer Office, Los Angeles. 7-7

UNANNOUNCED CO.—M. J. Brock & Sons, and Davies & Keusder, 118½ North Larchmont Blvd., Los Angeles—for theater of operations bldgs. at a flying school in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—J. E. Burrel & Sons, 518 W. 17th St., Long Beach—for theater of operations bldgs. at a camp in southern California—by U. S. Engineer Office, Los Angeles. 7-31

UNANNOUNCED CO.—Cameron & Tarnutzer, 450 N. Camden Dr., Beverly Hills—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-24

UNANNOUNCED CO.—Cameron & Tarnutzer, 450 N. Camden Dr., Beverly Hills—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—O. L. Carpenter, 517 Broadway Bldg., San Diego—for 67 bldgs., at an army camp in southern California—by U. S. Regional District Engineer, Camp Callan. 7-8

UNANNOUNCED CO.—Central Building Co., 804 Loew's State Bldg., Los Angeles—for bldgs. at a southern California air support command base—by U. S. Engineer Office, Los Angeles. 7-2

UNANNOUNCED CO.—Contracting Engineers Co., 2310½ W. Vernon Ave., Los Angeles—for bldgs. for 500-bed add. to station hospital, at a camp in southern California—by U. S. Engineer Office, Los Angeles. 7-1

UNANNOUNCED CO.—Contracting Engineers Co., 2310½ W. Vernon Ave., Los Angeles—for post exchange and warehouse bldgs. at a camp in southern California—by U. S. Engineer Office, Los Angeles. 7-1

UNANNOUNCED CO.—Davies & Keusder, 118½ N. Larchmont Blvd., Los Angeles—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-7

UNANNOUNCED CO.—C. W. Driver, Inc., 111 West 7th St., Los Angeles—for fire stations at a fort in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—F. L. & George A. Froley, 152 S. La Peer Drive, Beverly Hills—for theater of operations bldgs., in southern California—by U. S. Engineer Office, Los Angeles. 7-24

UNANNOUNCED CO.—Furbass-Heinz Construction Co., 1342 E St., San Diego—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—General Construction Co. and J. Walter Johnson, 5205 Hollywood Blvd., Los Angeles—for bombsight storage bldg. at a flying school in southern California—by U. S. Engineer Office, Los Angeles. 7-1

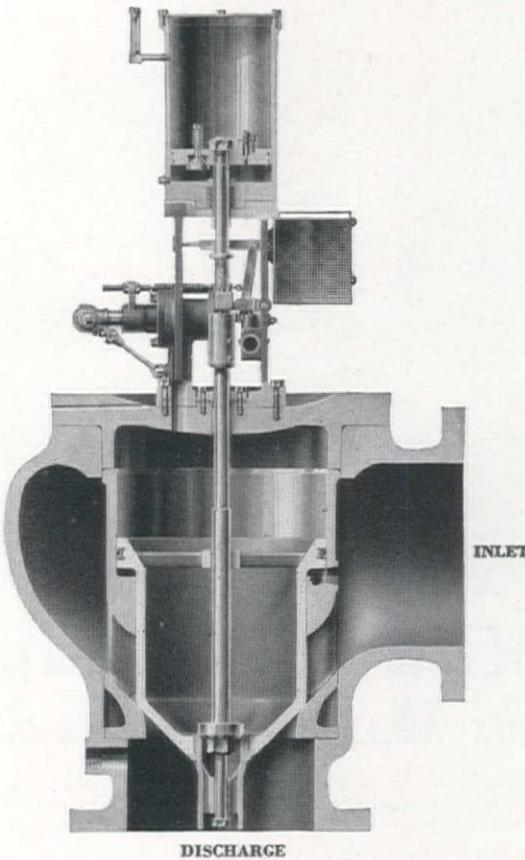
UNANNOUNCED CO.—Harold C. Geyer, 787 Munras Ave., Monterey—for theater of operations housing at a landing field in central California—by U. S. Engineer Office, San Francisco. 7-2

UNANNOUNCED CO.—Paul C. Gibson, 372 Velarde St., Mountain View—for theater of operations housing at a training

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station in central California—by U. S. Engineer Office, San Francisco. 7-1

UNANNOUNCED CO.—Paul C. Gibson, 372 Velarde St., Mountain View—for adds. and alterations to transp. bldg. in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 7-23

UNANNOUNCED CO.—Paul C. Gibson, 372 Velarde St., Mountain View—for theater of operations bldgs. at a northern California airport—by U. S. Engineer Office, San Francisco. 7-9

UNANNOUNCED CO.—Guy E. Hall, 1326 30th St., Bakersfield—for 20 addtl. bldgs. at an air field in southern California—by U. S. Engineer Office, Sacramento. 7-8

UNANNOUNCED CO.—Floyd V. Hampshire, 246 Hawthorne St., Salinas—for theater of operations bldgs. in central California—by U. S. Engineer Office, San Francisco. 7-15

UNANNOUNCED CO.—Harris Construction Co., Box 109, Fresno—for theater of operations bldgs. at an airport in central California—by U. S. Engineer Office, Fresno. 7-2



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UNANNOUNCED CO.—W. D. Haxton, 4271 Landis St., San Diego—for 4 barracks bldgs. and a laboratory in southern California—by U. S. Engineer Office, Camp Callan. 7-30

UNANNOUNCED CO.—W. D. Haxton, 4271 Landis St., San Diego—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—William J. Hunter, 660 Heliotrope Dr., Los Angeles—for paint, oil, and dope storage bldg. at a southern California air depot—by U. S. Engineer Office, Los Angeles. 7-21

UNANNOUNCED CO.—M. A. Imhoff & Associates, 1748 New Ave., San Gabriel—for bldgs. at an airport in southern California—by U. S. Engineer Office, Los Angeles. 7-1

UNANNOUNCED CO.—Jacks & Irvine, 620 Market St., San Francisco—for marine repair shop in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 7-23

UNANNOUNCED CO.—H. M. Keller Co., 4604 Hollywood Blvd., Los Angeles—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-7

UNANNOUNCED CO.—M. J. King, 231 Franklin St., San Francisco—for theater of operations bldg. and apert. facil. at an airdrome in northern California—by U. S. Engineer Office, Sacramento. 7-2

UNANNOUNCED CO.—Ben Liebman, 3319 Fillmore St., San Francisco—for theater of operations bldgs. in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 7-6

UNANNOUNCED CO.—A. R. Liner, Box 43, Merced—for theater of operations bldg. at an airport in central California—by U. S. Engineer Office, Fresno. 7-2

UNANNOUNCED CO.—Mathew A. Little, 107 24th St., San Francisco—for brigade and headquarters housing in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 7-6

UNANNOUNCED CO.—R. V. Mead, 633 S. La Brea Ave., Los Angeles—for 4 armament bldgs. at an airfield in southern California—by U. S. Engineer Office, Los Angeles. 7-24

UNANNOUNCED CO.—Means & Honer, 103 E. 3rd St., Santa Ana—for bldgs. at a southern California camp hospital expansion—by U. S. Engineer Office, Los Angeles. 7-14

UNANNOUNCED CO.—J. S. Metzger & Sons, 3045 Gilroy St., Los Angeles—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—R. J. Minton Construction Co., 155 Sansome St., San Francisco—over \$500,000 for temporary frame bldgs.—by U. S. Engineer Office, San Francisco. 7-31

UNANNOUNCED CO.—R. J. Minton Construction Co., 155 Sansome St., and Howell Engineering Co., 823 Kohl Bldg., both San Francisco—for two warehouses at an arsenal in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 7-16

UNANNOUNCED CO.—D. W. Nicholson Corp., and J. J. Moore Co., 1701 San Leandro Blvd., San Leandro—for a ward bldg. at a port in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 7-1

UNANNOUNCED CO.—Niner & Boomer, Box 192, Palo Alto—for theater of operations bldgs. at an airport in northern California—by U. S. Engineer Office, Marysville. 7-2

UNANNOUNCED CO.—O'Neal & Sons and Robert B. Hedberg, 8881 W. Pico Blvd., Los Angeles—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-13

UNANNOUNCED CO.—Pacific Builders, Salinas—for housing facil. at a central California air base—by U. S. Engineer Office, San Francisco. 7-1

UNANNOUNCED CO.—Pacific Builders, Salinas—for an air corps base engineering shop bldg. at an airfield in central California—by U. S. Engineer Office, San Francisco. 7-2

UNANNOUNCED CO.—C. J. Paradis, 320 Idell St., Los Angeles—for bldgs. at a bombing range in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—Frank Pinkerton, 108 Southwest Blvd., Corona—for group of hospital bldgs. at a southern California staging area—by U. S. Engineer Office, Los Angeles. 7-9

UNANNOUNCED CO.—H. W. Raun and J. F. Cummins, 1026 Grinnell Dr., Burbank—for air corps ferrying command bldgs. and facilities at a southern California airport—by U. S. Engineer Office, Los Angeles. 7-14

UNANNOUNCED CO.—George C. Renz and Howson Bros.,

555 5th St., Gilroy—for theater of operations housing in central California—by U. S. Engineer Office, San Francisco. 7-1

UNANNOUNCED CO.—H. W. Robertson, 3004 F St., Sacramento—for theater of operations bldgs. for 4th Air Force air-drome—by U. S. Engineer Office, Sacramento. 7-9

UNANNOUNCED CO.—John H. Simpson, 516 S. Raymond St., Pasadena—for open storage sheds and other bldgs. at a southern California quartermaster branch depot (contract formerly held by Halper Construction Co., Los Angeles)—by U. S. Engineer Office, Los Angeles. 7-25

UNANNOUNCED CO.—Edward R. Siple Co., 2545 San Fernando Rd., Los Angeles—for theater of operations bldgs. at a southern California bombing range—by U. S. Engineer Office, Los Angeles. 7-9

UNANNOUNCED CO.—F. C. Stolte Co., 203 Pine St., Pacific Grove—for theater of operations bldgs. at an airport in northern California—by U. S. Engineer Office, Marysville. 7-2

UNANNOUNCED CO.—A. Teichert & Son, P. O. Box 1113, Sacramento—for misc. bldgs., ammunition bldg., etc., in Northern California—by U. S. Engineer Office, Sacramento. 7-28

UNANNOUNCED CO.—Tifal & King, 2880 El Cajon Blvd., San Diego—for theater of operations bldg. in southern California—by U. S. Engineer Office, Los Angeles. 7-3

UNANNOUNCED CO.—Tifal & King, 2880 El Cajon Blvd., San Diego—for theater of operations bldgs. in southern California—by U. S. Engineer Office, Los Angeles. 7-14

UNANNOUNCED CO.—G. W. Williams Co., 10 California Drive, Burlingame—for dental clinic bldg. sentry house, provost marshal bldg. and guard house, at an air base in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 7-1

#### Colorado

EAGLE CO.—Brown, Schrepferman & Co., 240 Washington St., Denver—for the first group of cantonment bldgs. in the hospital section of a 20,000-man army cantonment planned for Pando—by U. S. District Engineer, Denver. 7-16

POWERS CO.—Lambie, Moss, Little & James, Box 2008, Amarillo, Texas—less than \$3,000,000 for bldgs. and utilities at

a Japanese relocation center for approx. 7,000 evacuees, near Granada—by U. S. Engineer Office, Albuquerque, New Mexico. 7-8

#### Idaho

ADA CO.—J. O. Jordan & Son, Boise—over \$100,000, for engineering shop and dental clinic—by U. S. Engineer Office, Portland, Ore. 7-28

#### Montana

CASCADE CO.—Victory Construction Co., Great Falls—over \$100,000 for temporary frame bldgs. and incinerator—by U. S. Engineer Office, Fort Peck. 7-30

CLARK CO.—H. D. Merrill Construction Co., Helena—over \$500,000 for temporary frame bldgs. and extension of utilities—by War Dept., Washington, D. C. 7-22

#### Nevada

CLARK CO.—Thomas E. Buck, 250 E. Cleveland St., Stockton, Calif.—\$124,000 for 100 wood-frame portable houses on conc. floors 16 ft. x 24 ft., at Boulder City—by Bureau of Reclamation, Boulder City. 7-17

CLARK CO.—C. E. Polikowsky, 851 S. Oakland Ave., Pasadena, Calif.—\$68,644, for 12 cottages, 3 garage bldgs., yard work, paving, etc., at Boulder City—by Department of Water & Power, Los Angeles, Calif. 7-23

HUMBOLDT CO.—Hayward Construction Co., Hayward, Calif.—\$53,095, for 25 demountable defense houses, at Golconda—by Federal Public Housing Authority, San Francisco, Calif. 7-7

MINERAL CO.—Dinwiddie Construction Co., and Monson Bros., 210 Crocker Bldg., San Francisco, Calif.—\$3,000,000 (approx.), for addtl. work at the Hawthorne naval depot—by Bureau of Yards & Docks, Washington, D. C. 7-30

PERSHING CO.—Hayward Construction Co., Hayward, Calif.—\$336,382, for 85 demountable defense houses, at Mills City—by Federal Public Housing Authority, San Francisco, Calif. 7-7

UNANNOUNCED CO.—C. B. Bagnall, Box 176, Palos Verdes Estates, Calif.—for ordnance storage facil. at a bombing range—by U. S. Engineer Office, Los Angeles, Calif. 7-9

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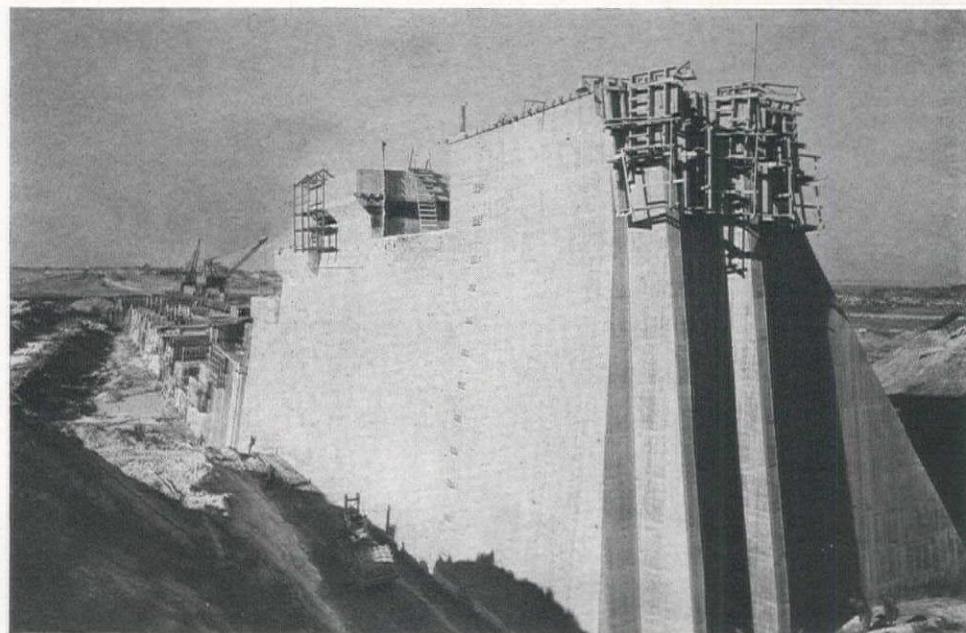
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## Absorptive Form Liner



Caddoa Dam Project, Caddoa, Colorado. Upstream face, looking north.



See section 3

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### New Mexico

BERNALILLO CO.—Bradbury & Marchant, Albuquerque—over \$50,000, for frame bldgs. and brick and conc. bldg.—by U. S. Engineer Office, Albuquerque. 7-27

EDDY CO.—E. S. McKittrick Co., 7839 Santa Fe Ave., Huntington Park, Calif.—over \$100,000 for storage bldgs.—by War Dept., Washington, D. C. 7-21

GRANT CO.—Neill Singleton, 512 N. Fillmore St., Amarillo, Tex.—over \$100,000 for temporary frame bldgs. and electric, water and sewage facil.—by U. S. Engineer Office, Albuquerque. 7-25

LEA CO.—Marshall & McCleskey Construction Co., 4707 Elsby St., Dallas, Texas—less than \$5,000,000, for a group of temporary bldgs. in connection with an air base at Hobbs—by U. S. District Engineer Office, Albuquerque. 7-27

OTERO CO.—H. T. Ponsford & Sons, 914 E. Mission St., El Paso, Texas—over \$50,000, for inspection and adjustment bldg.—by U. S. Engineer Office, Albuquerque. 7-22

### Oregon

COLUMBIA CO.—Borchert Construction Co., 2201 S.E. Powell St., Portland—\$150,000 for 4 ways and bldgs. at Columbia City—by Columbia Shipbuilding Co., Columbia City. 7-21

MALHEUR CO.—Fife & Co., Nyssa—\$99,500 for bldgs., roads, water, sewage, and electric systems, etc., at permanent farm labor camp on Quinby Farm, Nyssa—by Farm Security Administration, Portland. 7-9

MULTNOMAH CO.—Arthur Hansen, 305 S.E. 45th St., Portland—\$154,954 for 64 dwelling units in Portland—by Portland Housing Authority. 7-13

MULTNOMAH CO.—John B. Larson, Fenton Bldg., Portland—\$137,720 for 58 dwelling units in Portland—by Portland Housing Authority. 7-2

MULTNOMAH CO.—Carl O. Johnson, 1800 N.E. 63rd Ave., Portland—\$127,382 for 54 dwelling units in Portland—by Portland Housing Authority. 7-2

MULTNOMAH CO.—Charles C. Friedman, 9555 S.W. Lancaster Ave., Portland—\$87,920 for 37 dwelling units in Portland—by Portland Housing Authority. 7-2

MULTNOMAH CO.—John B. Larson, Fenton Bldg., Portland—\$79,000 for 33 dwelling units in Portland—by Portland Housing Authority. 7-13

MULTNOMAH CO.—Charles Schmeideskamp, Oswego—\$78,528 for 32 dwelling units in Portland—by Portland Housing Authority. 7-13

MULTNOMAH CO.—A. Palumbo, 3950 S.E. Woodward Ave., Portland—\$67,460 for 29 dwelling units in Portland—by Portland Housing Authority. 7-2

MULTNOMAH CO.—Nelson & Son, Rt. 4, Box 452, Portland—\$57,850 for 23 dwelling units in Portland—by Portland Housing Authority. 7-7

MULTNOMAH CO.—A. D. Ford & Son, 4429 S.E. 45th St., Portland—\$54,739 for 23 dwelling units in Portland—by Portland Housing Authority. 7-7

MULTNOMAH CO.—C. E. Lester Asbahr, 4933 N.E. 25th St., Portland—\$53,820 for 23 dwelling units in Portland—by Portland Housing Authority. 7-7

MULTNOMAH CO.—George Buckler Co., 317 Lewis Bldg., Portland—for 6,000 housing units in Portland—by Maritime Commission, Portland. 7-24

MULTNOMAH CO.—Wegman & Son, 1123 Board of Trade Bldg., Portland—for eight bldgs. at Swan Island shipyard in Portland—by Henry J. Kaiser Shipbuilding Co., Portland. 7-21

MULTNOMAH CO.—Drake, Wyman & Voss, 904 Lewis Bldg., Portland—for a plate shop bldg. at the Swan Island shipyard—by Kaiser Co., Portland. 7-16

### Texas

BASTROP CO.—Holland Page, Box 971, Austin—over \$100,000 for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 7-31

BELL CO.—Geo. P. O'Rourke Construction Co., Dallas—over \$100,000 for frame housing—by U. S. Engineer Office, San Antonio. 7-22

BEXAR CO.—Lee Christy, 503 Builders Exchange Bldg., San Antonio—over \$50,000, for temporary frame housing—by U. S. Engineer Office, San Antonio. 7-27

EL PASO CO.—Robert E. McKee, Box 217, El Paso—over \$100,000 for temporary frame bldgs.—by U. S. Engineer Office, Albuquerque, New Mexico. 7-27

GRAY CO.—Erbelding Construction Co., Tulsa, Okla.—over \$100,000, for temporary frame bldg.—by U. S. Engineer Office, Tulsa, Okla. 7-30

HAYS CO.—Walsh and Burney, 928 N. Flores St., San Antonio—over \$1,000,000, for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 7-30

HAYS CO.—J. E. Dickey, Box 296, San Antonio—over \$500,000, for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 7-30

TARRANT CO.—Star Manufacturing Co., Oklahoma City, Okla.—over \$100,000, for frame bldgs.—by U. S. Engineer Office, Denison. 7-30

TAYLOR CO.—Templeton-Cannon & Broome, Box 548, San Angelo—over \$100,000 for temporary frame bldgs. and electrical, water, and sewer systems—by U. S. Engineer Office, San Antonio. 7-24

VAL VERDE CO.—J. W. Bateson Co., Paris—over \$1,000,000 for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 7-30

WICHITA CO.—Star Manufacturing Co., Oklahoma City, Okla.—over \$100,000, for frame bldgs.—by U. S. Engineer Office, Denison. 7-30

### Utah

SALT LAKE CO.—R. H. Parr, 206 W. 112th St., Los Angeles, Calif.—over \$100,000 for frame hospital bldgs.—by U. S. Engineer Office, Salt Lake City. 7-25

SALT LAKE CO.—Vernon C. Tolboe, 472 E. 6th St., N., Provo—over \$50,000, for temporary frame post office and commissary, and refrigeration unit—by U. S. Engineer Office, Salt Lake City. 7-21

UTAH CO.—W. E. Ryberg Co., 207 Interurban Bldg., Salt Lake City—\$220,000 for silica brick plant north of Lehi—by Defense Plant Corp., Los Angeles, Calif. 7-23

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UTAH CO.—George A. Fuller Co., P. O. Box 480, Provo—for bldgs. at Geneva Works of the Columbia Steel Co. in Provo—by Defense Plant Corporation, Washington, D. C. 7-2

WEBER CO.—Better Built Homes & Associates, Ogden—general contract for construction of housing units at Ogden—by Federal Works Administration, Washington, D. C. 7-8

WEBER CO.—Fors & Johnson, 1639 E. 56th St., So., Murray—over \$50,000 for temporary frame bldgs.—by U. S. Engineer Office, Salt Lake City. 7-24

UNANNOUNCED CO.—W. E. Callahan Construction Co., and Associates, 714 W. Olympic Blvd., Los Angeles, Calif.—over \$3,000,000 for a chemical warfare plant—by U. S. Engineer Office, Salt Lake City. 7-16

#### Washington

CLARK CO.—George Buckler Co., 317 Lewis Bldg., Portland, Ore.—for 2,000 housing units in Vancouver—by Maritime Commission, Portland, Ore. 7-24

CLARK CO.—Waale-Camplan-Austin McCoy, Seattle—\$168,484 for bldgs. at McLoughlin Heights commercial center, Vancouver—by Vancouver Housing Authority, Vancouver. 7-20

KING CO.—Sound Construction & Engineering Co., 1017 Northern Life Tower, Seattle—over \$1,000,000, for conc., steel and frame structures—by U. S. Engineer Office, Seattle. 7-27

KING CO.—A. W. Johnson Co., Inc., and Goetz & Brennan, 914 Seaboard Bldg., Seattle—less than \$500,000, for housing and util. in the vicinity of Seattle—by War Department, Washington, D. C. 7-28

KING CO.—Central Construction Co., Seattle—over \$100,000 for administrative and utility bldgs.—by War Dept., Washington, D. C. 7-22

KING CO.—General Construction Co., 3840 Iowa St., Seattle—over \$100,000, for administrative and utility bldgs.—by U. S. Engineer Office, Seattle. 7-21

KING CO.—A. F. Mowat Construction Co., 708 1331 Third Ave. Bldg., Seattle—over \$100,000 for frame bldgs.—by U. S. Engineer Office, Seattle. 7-29

KITSAP CO.—W. G. Clark, 408 Aurora Ave., Seattle—less than \$5,000,000 for temporary frame housing—by War Dept., Washington, D. C. 7-24

KITSAP CO.—W. G. Clark, 408 Aurora Ave., Seattle—less than \$1,000,000, for temporary housing facil. at a military post—by U. S. Engineer Office, Seattle. 7-22

PIERCE CO.—Sam Bergesen, Wick & Dahlgren, Box 428, Tacoma—over \$100,000 for theater of operations bldgs.—by U. S. Engineer Office, Seattle. 7-27

PIERCE CO.—MacDonald Building Co., 1517 S. Tacoma Way, Tacoma—over \$50,000 for warehouses—by U. S. Engineer Office, Seattle. 7-27

PIERCE CO.—A. G. Homann, 112 N. Franklin St., Olympia—over \$50,000 for housing facilities—by U. S. Engineer Office, Seattle. 7-27

PIERCE CO.—Steiro & Hansen, 920 North "L" St., Tacoma—\$182,966 for an add. to Clover Park High School—by Clover Park High School District, Tacoma. 7-16

SPOKANE CO.—Moore & Roberts, 693 Mission St., San Francisco—\$3,000,000, for a general hospital at Spokane—by U. S. Engineer Office, Washington, D. C. 7-2

WALLA WALLA CO.—H. D. Merrill Construction Co., Helena, Mont.—over \$100,000, for brick and conc. engineering shop and temporary frame officers' mess bldg.—U. S. Engineer Office, Portland, Oregon. 7-27

UNANNOUNCED CO.—W. G. Clark, 408 Aurora Ave., Seattle—less than \$1,000,000 for housing facilities in the Pacific Northwest—by U. S. Engineer Office, Seattle. 7-3

UNANNOUNCED CO.—Nelse Mortenson & Co., 1021 Westlake Ave., Seattle—for housing facilities in the Pacific Northwest—by U. S. Engineer Office, Seattle. 7-15

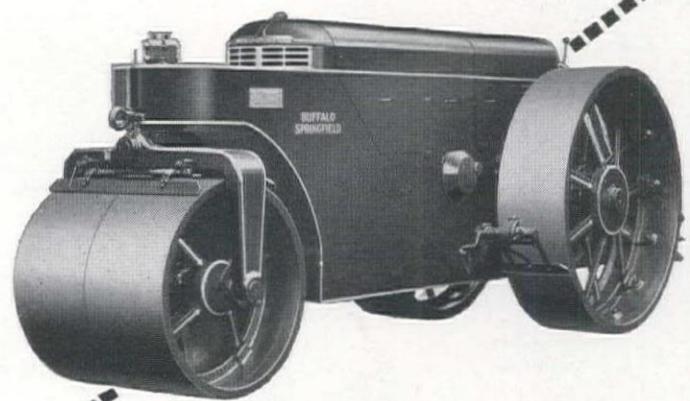
UNANNOUNCED CO.—Norge Construction Co., 5008 Admiral Way, Seattle—over \$100,000, for a radio receiver bldg.—by U. S. Engineer Office, Seattle. 7-29

#### Canada

ALBERTA—Buchan Construction Co., Ltd., 1306 Eleventh Ave. West, Calgary—approx. \$75,000 for addtl. accommodations at Currie Barracks, Calgary—by Department of Munitions & Supply, Ottawa. 7-30

BRITISH COLUMBIA—Marwell Construction Co., Ltd., 540

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Tri-State Equipment Co.,  
El Paso

Cramer Machinery Co., Portland  
Construction Equipment Co.,  
Spokane

Wortham Machinery Co.,  
Cheyenne

Howe St., Vancouver—\$1,000,000 (approx.) for accommodations at a west coast Canadian center—by Department of Munitions & Supply, Ottawa. 7-30

BRITISH COLUMBIA—Northern Construction Co., and J. W. Stewart, Ltd., 736 Granville St., Vancouver, B. C.—\$782,000 for temporary accommodations at a Canadian west coast center—by Dept. of Munitions and Supply, Ottawa. 7-14

BRITISH COLUMBIA—Smith Bros. & Wilson, Ltd., 1267 Richards St., Vancouver, B. C.—\$537,000 for erection of temporary accommodations at an undisclosed point—by Dept. of Munitions and Supply, Ottawa. 7-14

BRITISH COLUMBIA—Dominion Construction Co., Ltd., 150 W. First Ave., Vancouver—\$120,000 (approx.), for a bldg. proj. at an interior B. C. point—by Federal Government, Ottawa. 7-30

BRITISH COLUMBIA—Williams, Trerise & Williams, 653 Cormorant St., Victoria—\$89,000, for erection of temporary bar-

racks at H. M. C. dockyard at Esquimalt—by Federal Government, Ottawa. 7-30

BRITISH COLUMBIA—Carter-Halls-Aldinger Co., Ltd., Royal Bank Bldg., Winnipeg, Manitoba—\$88,599 (approx.), for addtl. development work at an undisclosed location—by Department of Transport & Munitions & Supply, Ottawa. 7-30

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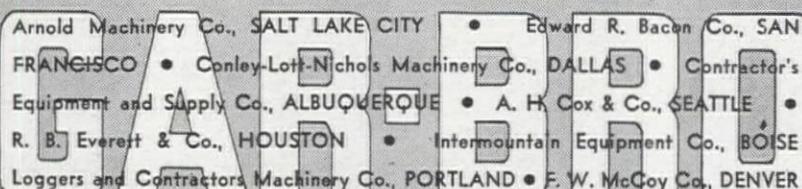
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## Miscellaneous . . .

### CONTRACTS AWARDED

#### Arizona

COCONINO CO.—Arizona Constructors, Box 1464, Phoenix—less than \$1,000,000 for constructing a railroad—by U. S. Engineer Office, Albuquerque, N. M. 7-28

UNANNOUNCED CO.—J. S. Sundt and L. M. White, Box 2592, Tucson—for electric distribution system at a basic flying school—by U. S. Engineer Office, Los Angeles, Calif. 7-15

UNANNOUNCED CO.—M. M. Sundt Construction Co., and L. M. White Contracting Co., Box 2592, Tucson—for sewer, water, and street improv. at a flexible gunnery school—by U. S. Engineer Office, Los Angeles. 7-23

#### California

CONTRA COSTA CO.—Macco Construction Co., Freight and Ferry Sts., Oakland—\$5,380,000 for Naval fuel depot at Point Molate in Richmond—by Bureau of Yards and Docks, Washington, D. C. 7-13

KERN CO.—Edward R. Siple Co., 2545 San Fernando Rd., Los Angeles—for util., sewer and water distribution system extensions at a bombing range in southern California—by U. S. Engineer Office, Los Angeles. 7-31

KERN CO.—Edward R. Siple Co., 2545 San Fernando Rd., Los Angeles—for two 12,000-gal. fuel storage tanks at a southern California bombing range—by U. S. Engineer Office, Los Angeles. 7-28

LOS ANGELES CO.—C. E. Osborn, 1570 San Pasqual Ave., Pasadena—over \$50,000, for clearing, grading, paving, fencing and appur. facil.—by U. S. Engineer Office, Los Angeles. 7-22

LOS ANGELES CO.—Associated Piping & Engineering Co., 2332 E. 38th St., Los Angeles—\$23,518 for mfg. and installation of high and low pressure piping in steam power plant at Burbank—by City Council, Burbank. 7-9

LOS ANGELES CO.—Griffith Co., 1060 South Broadway, Los Angeles—\$27,515, for asph. pave., roadways, shed floors, and wharf decks at Los Angeles Harbor—by Los Angeles Harbor Department, San Pedro. 7-23

LOS ANGELES CO.—Tirrell & Tirrell, 214 S. Lake Ave., Pasadena—\$22,681 for water cooling tower foundation and 10,000-bbl. oil storage tank, both reinf. conc.—by Municipal Light & Power Dept., Pasadena. 7-2

LOS ANGELES CO.—Gail A. Bell, 3554 Meade Ave., San Diego—over \$100,000 for miscellaneous construction—by U. S. Engineer Office, Los Angeles. 7-29

LOS ANGELES CO.—Bohannon Paving Co., 13236 Victory Blvd., Van Nuys—less than \$50,000 for sewer and water systems, and street improv. at an airport—by U. S. Engineer Office, Los Angeles. 7-29

RIVERSIDE CO.—H. B. Nicholson, 572 Chamber of Commerce Bldg., Los Angeles

—over \$100,000 for railroad trackage—by U. S. Engineer Office, Los Angeles. 7-22  
RIVERSIDE CO.—C. D. Draucker, Inc., 4031 Goodwin Ave., Los Angeles—over \$50,000 for electrical distribution system—by U. S. Engineer Office, Los Angeles. 7-30  
SAN MATEO CO.—Barrett & Hilp, 918 Harrison St., San Francisco—for const. 13 conc. barges—by U. S. Maritime Commission, Washington, D. C. 7-27

SHASTA CO.—A. D. Schader, 144 Spear St., San Francisco—for removal of approx. 30 mi. of old Southern Pacific main line tracks and sidings, from Shasta Dam to the vicinity of Delta—by U. S. Engineer Office, Sacramento. 7-8

SHASTA CO.—Andrew A. Pollia, 105 18th Ave., San Francisco—for water, gas-line waste and water disposal and elec. distribution systems, and appurt. facil. at 4th Air Force airdrome in northern California—by U. S. Engineer Office, Sacramento. 7-28

UNANNOUNCED CO.—Charles U. Heuser, 816 Allen Ave., Glendale—for grade, surf., and util. for hospital expansion at a southern California camp—by U. S. Engineer Office, Los Angeles. 7-9

UNANNOUNCED CO.—W. J. Hunter, 660 Heliotrope Dr., Los Angeles—for lubrication oil storage at an air depot in southern California—by U. S. Engineer Office, Los Angeles. 7-20

UNANNOUNCED CO.—Newberry Electric Corp., 1038 Venice Blvd., Los Angeles—for electric distribution system at a southern California modification center—by U. S. Engineer Office, Los Angeles. 7-7

UNANNOUNCED CO.—Oberg Bros., Oscar Oberg, and Nathan A. Moore, 3914 W. Slauson Ave., Los Angeles—for levees and bridges in a southern California fire protection district—by U. S. Engineer Office, Los Angeles. 7-13

UNANNOUNCED CO.—Pacific Pipe Line Construction Co., 8732 Juniper St., Los Angeles—for sewer, water, streets and sewage disposal systems at a staging area in southern California—by U. S. Engineer Office, Los Angeles. 7-31

UNANNOUNCED CO.—F. C. Stolte Co., 203 Pine St., Pacific Grove—for bldgs., water system, sewer, storm drains, elec. power and lighting systems, streets, sidewalks, paving areas, and appurt. facil. at an ordnance depot in northern California—by U. S. Engineer Office, Sacramento. 7-20

#### Colorado

DENVER CO.—N. G. Petry Co., 214 Denham Bldg., Denver—for 34 housing bldgs., sewer, water, and electric facilities at a hospital near Denver—by U. S. Engineer Office, Denver. 7-14

#### Idaho

BANNOCK CO.—City Electric Co., Pendleton, Ore.—over \$100,000 for street lighting system—by War Dept., Washington, D. C. 7-28

#### Nevada

WASHOE CO.—MacDonald & Kahn, Inc., Financial Center Bldg., San Francisco, Calif.—over \$100,000 for temporary frame bldgs., water, sewer, storm drain and electric systems, also streets—by U. S. Engineer Office, Sacramento, Calif. 7-25

#### Oregon

MULTNOMAH CO.—Puget Sound Bridge & Dredging Co., Harbor Island, Seattle—\$3,000,000 (est.) for wood pon-

toon float at Portland—by Willamette Iron & Steel Corp., Portland. 7-2

MULTNOMAH CO.—Gilpin Construction Co., 3850 N.W. Front St., Portland—\$284,000 for wood pontoon drydock at Portland—by Willamette Iron & Steel Corp., Portland. 7-2

#### Texas

HAYS CO.—Panhandle-Sira-Dalton Co., 3901 Elm St., Dallas—over \$100,000 for water, sewage, and elec. facilities—by U. S. Engineer Office, San Antonio. 7-28

TARRANT CO.—Austin Bridge Co., Dallas—over \$50,000 for railroad spur—by U. S. Engineer Office, San Antonio. 7-23

VAL VERDE CO.—Osage Construction Co., Dallas—over \$100,000, for electric,

water and sewage facil.—by U. S. Engineer Office, San Antonio. 7-30

#### Washington

KING CO.—Foster & Kleiser Co., 1675 Eddy St., San Francisco—more than \$500,000 for military installations—by U. S. Engineer Office, Seattle. 7-28

PIERCE CO.—Roy L. Bair, 1220 Ide Ave., Spokane—less than \$500,000 for roads, walks, water, sanitary, and drainage facilities—by U. S. Engineer Office, Seattle. 7-28

#### Wyoming

NATRONA CO.—Slack Plumbing and Electric Co., Casper—over \$100,000, for gasoline distribution and oil lubrication systems—by U. S. Engineer Office, Omaha, Nebraska. 7-30

FIELD NOTES

**CHECK YOUR COMPRESSORS**  
to help keep air hose healthy

Most air hose is built with oil and a heat resisting tube. Yet, with today's rubber curtailment program, don't ask air hose to take too much punishment. It must last longer.

Keep your compressors in good operating condition - particularly the aftercoolers - to keep oil and heat out of the lines. These are natural enemies of rubber, and increase the rate of deterioration and failure.

Make sure that air temperature is as low as is consistent with your operation.

Never use air hose as a compressor tow rope; keep the cover clean; carry it, don't drag it over jagged or sharp objects.

**VICTORY before "VICTOR"**

"Victor" has long been Pioneer's top brand...the finest in conveyor belts and hose. The fine grades of crude rubber used in its manufacture, however, now must serve ships, planes and tanks almost exclusively. Meantime, skillful blending of age-resisting chemicals with allowable rubber enables Pioneer to continue producing high grade mechanical rubber goods to emergency specifications.

PIONEER RUBBER MILLS, 353 Sacramento St., San Francisco, Calif.

**PIONEER**  
*Job Tailored* CONVEYOR BELTS

# TRADE WINDS

News of Men Who Sell to the Construction West

## CALIFORNIA

R. R. Richey, sales engineer for *Westinghouse Electric & Manufacturing Co.*, in the Fresno area for the past thirteen years, has been transferred to San Diego by the company.

\* \* \* \*

Eight men have gone from the Los Angeles, Calif. branches of *International Harvester Co.* to join the 12th Ordnance Maintenance Battalion, Armored Division, U. S. A., known as the "Harvester Battalion," being composed entirely of maintenance employees of International Harvester Co. Basic training is being received by the battalion at Camp Perry, Ohio.

\* \* \* \*

Leslie K. Andrews has been transferred from the New York to the San Francisco office of the *American Lumber and Treating Co.* His research work to set up new wood fireproofing standards was presented at the 1942 convention of the American Wood-Preservers' Association. It received wide recognition there, and played an important part in bringing fireproofing of lumber into general commercial practice.

Get this  
**EXTRA  
VALUE**  
*in  
SHOVELS!*

Ask  
for  
the only  
Shovels  
with  
**BLADE EDGES**  
**GUARANTEED SPLIT-PROOF**

**INGERSOLL SHOVELS**  
*"The Borg-Warner Line"*

SMITH BOOTH USHER COMPANY, Distributor  
Los Angeles, Calif.  
Factory Representative:  
John F. Kegley & Son, Los Angeles, Calif.

A new equipment firm has opened its doors in San Leandro, Calif., to be known as *General Equipment Co.* Charles F. Mullins is the manager and Scott Davison is his associate. They will handle a complete line of new and used engineering construction equipment, and Goodrich tires.

\* \* \* \*

Edward F. Hale has recently formed the *Edward F. Hale Co.* in San Francisco, to represent Link-Belt Speeder Corp., Standard Steel Corp., Cleaver-Brooks Co., and Columbia Steel Co. Associated with Hale are Harry Givens, Fleet Irvine, and G. A. Pickel.

\* \* \* \*

*Waugh Laboratories* have moved their western offices to larger quarters at 180 E. California St., Pasadena. E. M. Irwin is in charge of operations in the west.

\* \* \* \*

Charles E. Moore, president of the *Joshua Hendy Iron Works* in Sunnyvale, Calif., officially accepted the Maritime "M" Victory flag recently awarded to the company by Rear Admiral H. L. Vickery of the U. S. Maritime Commission. This organization was the first California firm to receive the award, and the eighth in the nation. In addition, individual merit badges were presented to each employee. An outstanding production schedule was the basis of the presentation.

June production of steel ingots broke 25 plant production records at the two *Columbia Steel Co.* plants in California. The Pittsburg plant showed an over-all increase of 10.9% and the Torrance plant an increase of 17.7% in output of steel castings. At Pittsburg, the wire rope mill showed a production increase of 38.9% and the electric furnace foundry steel for ship castings was up 15.3%.

\* \* \* \*

Robert C. Wilkin, formerly with the Habirshaw cable and wire division, has recently been appointed Pacific Coast manager for *Phelps Dodge Copper Products Corp.*, with headquarters in Los Angeles, Calif.

\* \* \* \*

James H. Hoghland has been appointed Pacific Coast sales engineer for the *American Screw Co.*, to assist K. T. Jackson, formerly sole representative of the company in this area. Hoghland's headquarters will be at 1724 N. Vista St., Hollywood.

\* \* \* \*

## PACIFIC NORTHWEST

*Electric Steel Foundry Co.*, Portland, Ore., was presented with a Navy "E" burgee on July 9 by Rear Admiral C. W. Fisher, at ceremonies held on the grounds of the plant, in recognition of the meritorious production rate of the company, now engaged almost wholly in manufacturing steel for Navy use. President C. F. Swigert, Jr. accepted the pennant on behalf of the company, and "E" pins were also distributed to the workers whose efforts had made the presentation possible. In Rear Admiral Fisher's presentation address, he expressed the appreciation of Navy officials for the excellent record of the company, but indicated that still greater and better effort will

REAR ADMIRAL C. W. FISHER presents Navy "E" for excellence burgee to C. F. Swigert, Jr., president of *Electric Steel Foundry Co.*, Portland, Ore., at special ceremonies held on the grounds of the plant. Practically the entire resources of the plant are now devoted to production for Navy use.





LESLIE K. ANDREWS, fireproofing specialist of American Lumber and Treating Co., is now in San Francisco.

be required from workers everywhere before the war can be won.

\* \* \* \*

Lomen Commercial Co., Seattle, has been appointed distributor for the products of Buckeye Traction Ditcher Co. in Alaska and the Yukon territory of Canada. Products to be handled will include trenchers, backfillers, spreaders, trailers, power shovels, cranes, draglines, and other Buckeye equipment.

\* \* \* \*

#### INTERMOUNTAIN

R. W. Winters, for the past seven years district engineer at the Oklahoma City office of the Portland Cement Association, has been appointed district manager for the Association in Kansas, Oklahoma, and western Missouri, with headquarters in Kansas City, Mo.

\* \* \* \*

Union Wire Rope Corp., Kansas City, Mo., has been awarded the naval "E" for excellence in recognition of outstanding service to the war effort. The official presentation was made in a ceremony at the plant on July 8 by Rear Admiral W. C. Watts. M. G. Ensinger, president of the corporation, accepted the burgee, and John Haglein, oldest employee of the company, accepted "E" buttons for the employees.

\* \* \* \*

#### AMONG THE MANUFACTURERS

John Hulst, vice-president of United States Steel Corp., and one of the best known engineers in the steel industry, retired on July 2 with a record of more than 40 years association with the company, starting as a draftsman at Youngstown, Ohio. He has held the position of vice-president since 1926.

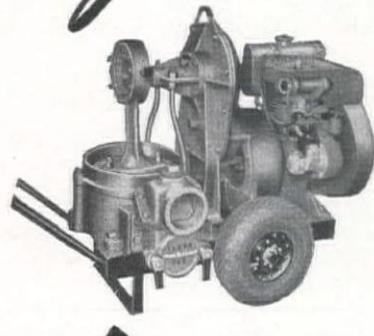
\* \* \* \*

Murray M. Baker, Peoria, Ill., has been appointed executive vice-president of R. G. LeTourneau, Inc., and will act to relieve

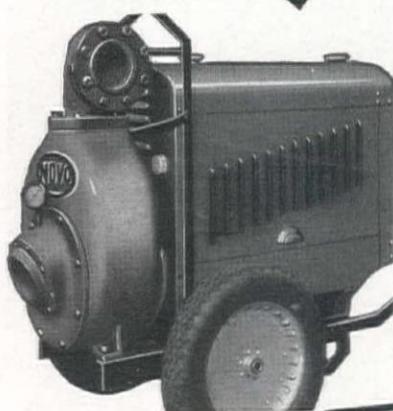
We Contractors have found out that there is a right pump for every job. On one you use a diaphragm, on another a self-primer.



## NOVO Job Designed PUMPS



THE  
RIGHT  
PUMP  
FOR THE JOB



● Use the pump designed for your job.

Here is the way to save yourself a lot of grief and time on de-watering jobs and what is more important than Time right now?

**DIAPHRAGM PUMPS** are designed for pumping jobs where sand, silt, mud and trash are to be handled and where the volume may vary from 15,000 gallons per hour to 0. It is the best seepage pump available. Why a diaphragm pump for these jobs? Because in this pump there are no close clearances. Anything that can go through the suction can go through the pump, and pump can operate on only air without damage from heating or loss of prime.

**SELF-PRIMING CENTRIFUGAL PUMPS** are the pumps for your job when you have a large volume of water to remove rapidly. Self-Priming Centrifugal Pumps can also work against a much higher discharge head than diaphragm pumps. These pumps in sizes of (15M) 15,000 gallons per hour and up can handle their share of dirty water. High heads of course result in loss of volume.

Novo Distributors are well versed on pump applications. Get in touch with them or send the coupon to the plant. We want to assist you in every way possible with your present equipment or recommending new for a particular job.

Send for FREE installation data.

**NOVO  
ENGINE  
COMPANY  
LANSING,  
MICHIGAN**

#### DISTRIBUTORS

COLUMBIA EQUIPMENT CO., Portland, Seattle, Spokane  
GARLINGHOUSE BROTHERS, Los Angeles  
HENDRIE & BOLTHOFF MFG. & SUPPLY CO., Denver  
LUND MACHINERY CO., Salt Lake City  
MINE & SMELTER EQUIPMENT CO., Phoenix  
NEVADA TRUCK SALES, Reno



MURRAY M. BAKER, recently appointed executive vice-president of L. G. LeTourneau, Inc., with offices at Peoria, Ill.

R. G. LeTourneau of part of his administrative duties, and enable him to devote a greater share of his time to the increased engineering activities made necessary by the company's war work. Baker has been a director of the company for four years, and

has been associated with the earthmoving and heavy construction equipment industry since 1909. LeTourneau is now producing material for heavy war work and armor piercing shot under Ordnance specifications.

\* \* \* \*

A series of six educational films, collectively known as "The Inside of Arc Welding," have been issued by *General Electric Co.* for use in training young welders in the fundamentals of the science in order to secure better and faster welds and to conserve welding rods. The pictures are in color, and show many previously unphotographed views of the arc, the molten pool, and the depth of effective weld, and are for use on 16-mm. sound projectors.

\* \* \* \*

A. W. Herrington, president of *Marmon-Herrington Co.*, Indianapolis, Ind., has been

elected to serve a three-year term as director of the American Society of Military Engineers. The appointment came while Herrington was in India as technical advisor to Col. Louis A. Johnson on the American Economic Mission to that country. He is also president of the Society of Automotive Engineers, and has been a leader in the development of all wheel drive vehicles.

\* \* \* \*

*General Electric Co.*'s Schenectady, N. Y. works has received the important Navy "E," symbol of excellence in furnishing material for the Navy. The presentation was made by Rear Admiral W. T. Cluverius (ret.), who called the plants thus honored "champions ashore." The blue pennant was accepted on behalf of the company by president **Charles E. Wilson**. The Schenectady works was the fifth GE plant to receive the award.

## NEW EQUIPMENT

### Non-critical Anti-freeze

*Manufacturer:* Great Northern Chemical Co., Inc., Oak Park, Ill.

*Equipment:* Anti-freeze radiator compound.

*Features claimed:* Product is permanent, making frequent strength test unnecessary;

does not freeze down to 35 deg. below zero, prevents rust, contains no acid, salt, or calcium chloride. Contains no critical chemicals, so that unlimited quantities are available.

### Concrete Protective Wall

*Manufacturer:* The Celotex Corp., Chicago, Ill.

*Equipment:* Cellular concrete wall blocks, sand-filled.

*Features claimed:* One-half to two-thirds as expensive as sandbag barricade, much longer life, and easily available; cellular concrete blocks filled with sand in 12-in. wall

... If you want to make speed profitably... GET DEPENDABLE EQUIPMENT ... Buy the Fast ...

### JACKSON Hydraulic Concrete Vibrator

DESIGNED TO "TAKE IT" 3 SHIFTS A DAY—EVERY DAY



USED EXCLUSIVELY BY  
MANY LARGE DEFENSE  
CONTRACTORS

**ELECTRIC TAMPER & EQUIPMENT CO.**  
LUDINGTON, MICHIGAN



stop .30 caliber military rifle and machine gun fire at distances as short as 10 ft. Blocks are lightweight, made with blast furnace slag. Especially useful in protecting transformers, utility stations, and vulnerable industrial equipment.



### Off-the-Highway Mixer Unit

*Manufacturer:* Euclid Road Machinery Co., Cleveland, Ohio.

*Equipment:* Truck-mounted mixers in use by U. S. Engineer Dept.

*Features claimed:* Twenty 5-cu. yd. Jaeger high-dump cement mixers mounted on Euclid 14FD chassis and powered by 150 hp. Cummins diesel engines have been completed for the U. S. Engineers, to be used in building military roads, airports, and other construction requiring off-the-highway transportation of materials. By removing mixer unit, the chassis can be converted into a standard rear-dump Euclid truck, to be used in hauling earth, rock, etc.



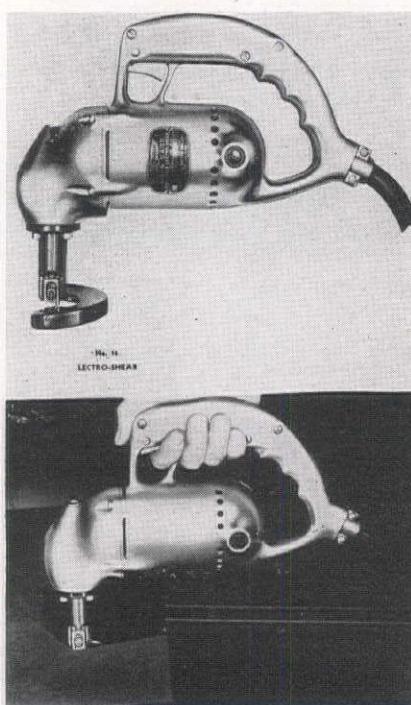
### Sheet Steel Shears

*Manufacturer:* Black & Decker Manufacturing Co., Towson, Md.

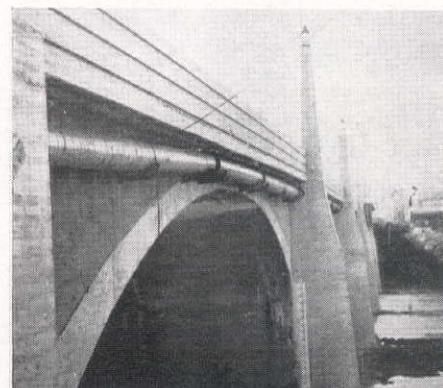
*Equipment:* Improved Lectro-Shears.

*Features claimed:* Good balance and easy control on curved and irregular lines of cut; has instant release trigger switch, and locking pin for continuous operation. The handle is shaped so that it can be used over the tool or at the rear end. Cuts up to 16-gauge sheet steel.

Convenient grasp features the Black & Decker Improved Lectro-Shears.



## It Serves! And in so many ways



Here's a pipe which will endure through the years . . . a pipe which promises a long life of trouble-free service. And yet it's mighty convenient and economical when it comes to temporary installations for emergency service needed in a hurry.

Whether it's for water, gas, air, oil, or any other fluid . . . whether it's to serve in city or country, above or below surface, on level or mountainous terrain . . . you can depend upon

## Calco Spiral Welded Pipe

**CALIFORNIA CORRUGATED CULVERT COMPANY** Berkeley, Los Angeles

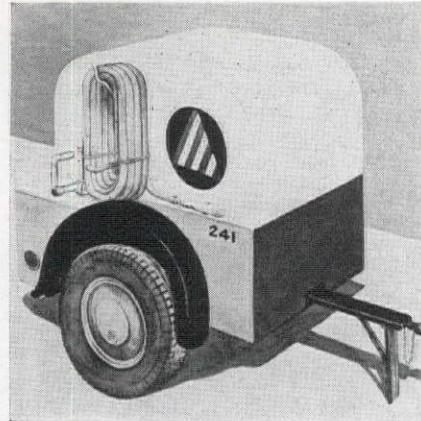
**THE R. HARDESTY MANUFACTURING CO.** Denver, Colo., Salt Lake City, Utah, El Paso, Texas, Pueblo, Colo., Boise, Idaho

**WESTERN METAL MFG. CO.** Box 1585, Phoenix, Arizona

**WASHINGTON CORRUGATED CULVERT COMPANY** Seattle Plant, 3441 Iowa Avenue Spokane Plant, N. 726 Ruby St.

**OREGON CULVERT & PIPE CO.** 2321 S. E. Gladstone St., Portland

Send for 32-page illustrated book giving all the data you want. Write nearest address.



## Fire Fighter

*Manufacturer:* Technicraft Engineering Co., Los Angeles, Calif.

*Equipment:* Water purifier and fire fighting apparatus.

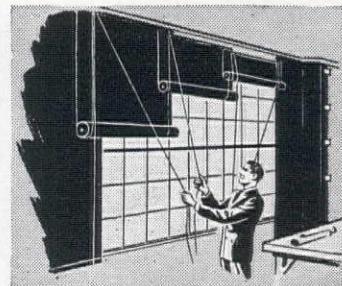
*Features claimed:* Uses ozone to burn bacteria from contaminated water and delivers clear, pure water for drinking or domestic use; by clutch to cut out purifier unit, machine can be turned into fire fighting unit delivering water at 200-lb. pressure thru 2½-in. hose. Equipped with 50 ft. of intake hose and 400 ft. of fire hose, unit may be operated over 500-ft. range from water storage to fire. Purification rate is 20 gal. per min. and fire hose delivery is 200 gal. per min.

## Reduction Chart

*Manufacturer:* Industrial Art & Drafting Co., New York, N. Y.

*Equipment:* Graphic Reduction Guide.

*Features claimed:* Chart shows 11 commonly used elements of drawing work as they appear in both positive and negative reproductions, and at different reduced scales, enabling draftsmen to draw original in such size that reduced reproductions will not fill up, fade, or be illegible.



This sign stands for  
**HEIL Service**  
to keep your dump  
bodies operating  
for the duration

It pays you to keep in touch with your Heil distributor on dump-body repairs. • With new trucks scarce and subject to ODT release, you are naturally interested in keeping your present trucks oper-

ating, and in the best possible condition. • On specialized dump-body work, your Heil distributor can help you. He has most standard parts in stock, or knows how to get them quickly. Call on him — he will give you real service on repair jobs — and vindicate your good judgment in picking Heil bodies and hoists backed up with nation-wide service facilities. *The Heil Co., General Offices, Milwaukee, Wisconsin.*

B-64A



### Authorized Bodies & Hoists Distributors

**The Heil Company, San Francisco, California; Anchor Body & Steel Works, Phoenix, Arizona; Heil Sales & Service, Los Angeles, California; Harris Highway Equipment Co., Pueblo, Colorado; The Lang Company, Salt Lake City, Utah;**

**Graehl Motor Service, Missoula, Montana; Motor Equipment Company, Albuquerque, Gallup & Santa Fe, New Mex.; Beall Pipe & Tank Corp., Portland, Oregon & Seattle, Washington; American Machine Works, Spokane, Washington.**

## Blackout Curtains

*Manufacturer:* Clopay, Cincinnati, Ohio.

*Equipment:* Blackout blinds of heavy crepe fibre.

*Features claimed:* Completely light-proof; quickly raised and lowered; one-seventh the cost of opaque cloth. Is not made of any critical material, does not crack or pinhole, has been flame-proofed. Will fit any size of window, and special designs available for corners, posts, skylights, etc.; installation cost about equal to paint, value of which is lost if glass becomes broken.

## Tire Theft-lock

*Manufacturer:* Streeter-Amet Co., Chicago, Ill.

*Equipment:* Lock-on nut to prevent tire thefts.

*Features claimed:* easy to install, but impossible to remove except with the cap part of the lock. Has no keys, tumblers, pins, or fragile parts; is not unsightly or heavy enough to throw wheel out of balance.

## 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.

**E. D. Bullard Co., San Francisco, Calif.** —Civilian defense index, showing blackout instructions, how to combat gas and bomb attacks, and first aid instruction. Includes a two-color chart of pressure points to stop bleeding.

**Buckeye Traction Ditcher Co., Findlay, Ohio** —Bulletin No. 7426-M, giving specifications and action pictures of Buckeye Model 12 in operation; also gives descriptions of digger wheel, conveyor, transmission and other parts.

**Trackson Company, Milwaukee, Wis.** —Bulletin describing three models of Traxcavators, excavation machinery mounted on Caterpillar tractors, which can be used

as shovel, bulldozer, backfiller, snowplow, or in numerous other ways. Specifications are given, and numerous action pictures in different types of work.

**Wallace & Tiernan Co., Inc.**, Newark, N. J.—Booklet on Sterilization of Water Mains, following installation or repair, giving requirements of the problem, methods of chlorination, suggestions for field tests and sampling, and description of equipment available for emergency main sterilization.

**South Bend Lathe Works**, South Bend, Ind.—Catalog No. 16, illustrating 16-in. precision lathes, describing underneath belt motor drive, superfinished spindle for headstock and multiple disc clutch. Specifications for the lathes are given.

**Clinton Carpet Co.**, Chicago, Ill.—Booklet entitled "Blackout, Air Raid Damage and Glass Splinter Protection for Industrial Plants" illustrates and describes damage from air-raids in England, and explains construction and value of Ozite curtains and safety blankets for windows where bomb attack might cause splintering of the glass.

**Austin-Western Road Machinery Co.**, Aurora, Ill.—Form AD-1955 describes roller and bulldozer attachments to 99-M power grader, emphasizing advantage that the weight, power, and maneuverability of the all-wheel drive and steer grader give to these attachments.

**B. F. Goodrich Co.**, Akron, Ohio—Catalog section 2158 on portable electric belt vulcanizers, gives pertinent details on construction of vulcanizers, dimensions, capacity, and type of current used in tabular form, and illustrates tools and equipment necessary for repairing rubber belting. Pictures show various belt vulcanizers in operation.

**National Door Manufacturers Association, Inc.**, Chicago, Ill.—Manual A, devoted to projected wood sash units, shows sketches of 18 standard basic units, which may be combined to meet any installation requirement for all types of buildings. Detail sketches are given to show details of installation in any type of building, and for both in-projecting and out-projecting sash. Toxic treatment, hardware attachments,

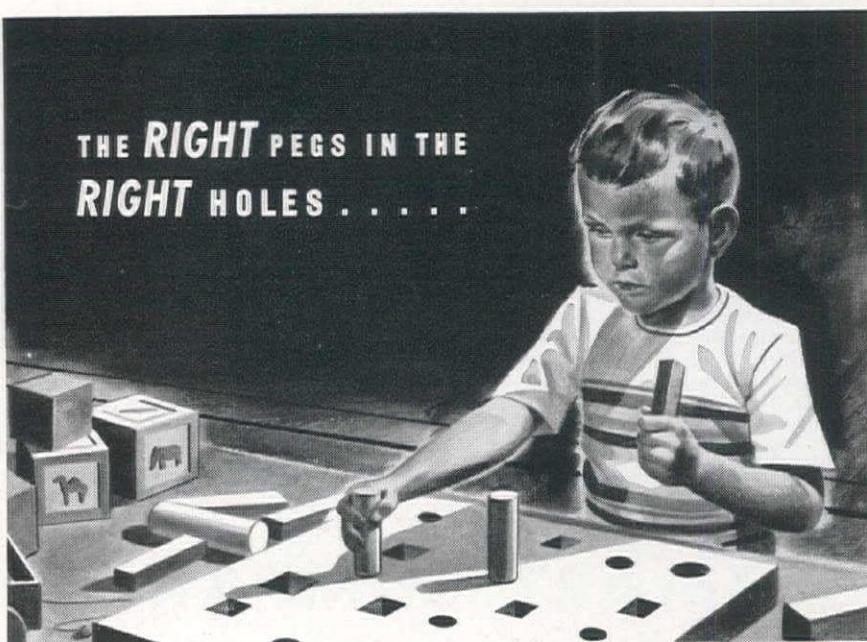
and glass panes are included in the specifications given. Usefulness of wood sash during war emergency material shortage is brought out.

**Lukens Steel Co.**, Coatesville, Pa.—Brochure entitled "Salvage" describes salvage campaign instituted by the company in Coatesville, because shortages of scrap had enforced several shutdowns. Sources of scrap, plan of collection campaign and finance, are described in the hope that the experience at Coatesville may be useful in other American communities. Illustrations and chart of the campaign will aid in this purpose.

**Pelton Water Wheel Co.**, San Francisco,

Calif.—Bulletins Nos. 31 and 32 on surge suppressors and water motors and impulse turbines, respectively, giving thorough descriptions, operating characteristics, cross-section drawings, and illustrations of each. Operating cycle of surge suppressor is shown in cross-section.

**Solvay Sales Corp.**, New York, N. Y.—Book on design and construction of bases for highways and airport runways, entitled "Better Bases for Better Surfaces," contains latest information on the subject. It condenses data on density and compaction, water content, and treatment for frost prevention. Specifications for construction of bases with various types of materials are also given.



## TODAY'S No. 1 Problem IN WAR PRODUCTION

During their first days in school, our little boys and girls are earnestly fitting pegs and blocks into the holes where they belong.

Today, in Washington, the nation's key production men are engaged in a grim version of this same basic problem—that of fitting the complicated pegs of America's industrial and material resources into the largest war production program the world has ever known.

Into this complex problem, the SISALKRAFT Co., for over twenty years the pioneers and leaders in producing reenforced, waterproof papers, has found the places where its products fit.

Tough, waterproof SISALKRAFT papers are being used to cure concrete floors in new arms plants and industrial factories—curing and protecting concrete runways on gigantic new flying fields and bases—helping build military and access roads. They are covering and protecting materials, supplies and machinery.

Other SISALKRAFT papers are being used to wrap and protect huge quantities of war materials of all kinds—guarding

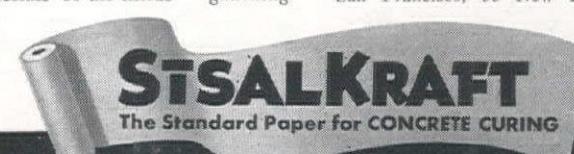
them against damage from rain, dust, sea air and salt water during long exposure to all kinds of weather—keeping them in condition for use and action at destination.

SISALKRAFT papers fit because they save time, man-hours and money when used for concrete curing and for protection on the job...the curing is automatic and sure. SISALKRAFT helps work move smoothly and quickly—replaces fabrics and materials now costly and hard to get. Fits, too, because it is produced many times faster than woven fabrics, with only a small portion of the labor, and thus releasing these materials for other important war needs.

SISALKRAFT is absolutely waterproof—and is so strong and tough it can be and is used over and over again.

SISALKRAFT is available only for essential war uses. Write for sample and data.

THE SISALKRAFT CO.  
205 W. WACKER DRIVE, CHICAGO, ILL.  
New York, 101 Park Ave.  
San Francisco, 55 New Montgomery St.



## Opportunity Section

### FOR SALE

#### Skid-Mounted Pumping Unit

(1)—D-4400 Cat. Motor Direct-connected to (1)—4" Krogh Grity Water Pump Cap. 500 G.P.M. at 160 Head.

W. K. POTTS, BOX 645, AUBURN, CALIF.

#### TRUCK: 1½ Ton Panel.

Long wheel base. Big Body. Can be used for hauling men. Priced to sell \$275.

FRANK SKINNER

701 Valencia St., San Francisco  
UNDERHILL 5574

# INDEX TO ADVERTISERS IN THIS ISSUE

Adams, J. D., Company	9	Gorman-Rupp Company	56	Porter, S. J., Company	53
Air Reduction Sales Company	30	Gray Company, Inc.	380	Potts, W. K.	73
Allis-Chalmers Manufacturing Co.	15	Gruendler Crusher & Pulverizer Co.	58	Raymond Concrete Pile Company	4th Cover
Alloy Steel & Metals Company, Inc.	38	Harnischfeger Corporation	37	Richmond Screw Anchor Company, Inc.	21
Atlas Powder Company	36	Heil Company, The	72	Roebling's, John A., Sons Co.	29
Austin-Western Road Machinery Co.	344	Hercules Equipment & Rubber Co.	55	Seaman Motors Company	385
Barber-Greene Company	12	Hercules Powder Company	51	Security-First National Bank	50
Beall Pipe & Tank Corp.	384	Hercules Steel Products Company	49	Servicised Products Corporation	62
Bethlehem Steel Company	383	Independent Pneumatic Tool Co.	57	Shell Oil Company	42
Betts Spring Company	62	Ingersoll Steel & Disc Division, Borg-Warner Corporation	68	Sisalkraft Company, The	73
Buckeye Traction Ditcher Co.	27	International Harvester Co., Inc.	7	Skilsaw, Inc.	22
Bucyrus-Erie Company	6, 382	Jaeger Machine Company	47, 50, 54	Skinner, Frank	73
Buda Company	59	Johnson Gear & Mfg. Co., Ltd.	48	Smith, T. L., Company	52
Buffalo-Springfield Roller Co.	65	Kiesler, Jos. F., Company	58	Smith Engineering Works	45
Bullard, E. D., Company	382	Koehring Company	14	Standard Oil Company of California	26
Byers Machine Company	56	Leschen, A., & Sons Rope Company	375	Sterling Machinery Corporation	58
California Corrugated Culvert Co.	71	LeTourneau, R. G., Inc.	17	Stoody Company, The	41
Caterpillar Tractor Company	25	Lincoln Electric Company, The	11	Texas Company	2nd Cover
Chain Belt Company	32	Linde Air Products Company	8	The Shovel Company, The	377
Chicago Bridge & Iron Company	44	Mack Manufacturing Corporation	34	Timber Engineering Company	33
Chicago Pneumatic Tool Company	28	Macwhyte Company	24	Union Carbide and Carbon Corporation	8
Columbia Steel Company	18-19	Mall Tool Company	54	Union Iron Works, Inc.	386
Concrete Surfacing Machinery Co.	384	Master Vibrator Company	388	Union Metal Company, Inc.	380
Cummins Engine Company	20	Metzgar Company	386	U. S. Spring & Bumper Co.	388
Electric Steel Foundry Company	35	Michigan Power Shovel Company	48	United States Steel Corporation	18-19
Electric Tamper & Equipment Co.	70	Missouri Valley Bridge & Iron Shipbuilding Corp.	374	Victor Equipment Company	387
Euclid Road Machinery Company	4	Northwest Engineering Company	3	Wickwire Spencer Steel Company	21
Fir-Tex Insulating Board Company	63	Novo Engine Company	69	Willamette Hyster Company	64
Freuhauf Trailer Company	40	Owen Bucket Company	60	Wood Manufacturing Company	31
Foot Company, Inc., The	39	Pacific Portland Cement Company	23	Wooldridge Company	10
Four Wheel Drive Auto Co., The	381	Pelton Water Wheel Company	61	Worthington Pump & Machinery Corp.	378, 379
Galion Iron Works & Mfg. Co.	3rd Cover	Pioneer Rubber Company	67		
Garlinghouse Bros.	66	Pittsburgh-Des Moines Steel Co.	43		
Goodall Rubber Co.	376				
Goodyear Tire & Rubber Company	13				

## 97 SMART COMPANIES KNOW WHERE TO TELL THEIR ADVERTISING STORY

- Sure, the majority of the advertisers listed above have a business story that reads: "We're oversold . . . can't fill present orders . . . priorities have cut manufacturing, etc., etc." But they still have the foresight and good business sense to tell a *sound advertising story*!
- What is a *sound advertising story*? Just read through the ads of the leaders in the construction business—they'll tell you: "How to get the most out of present equipment . . . how to protect it and operate it with maximum efficiency . . . how to save time and speed production . . . job short-cuts . . . safety hints . . . replacements, etc."
- All this constitutes a *sound advertising story*—the kind of advertising that will continue to build identity for your company among the thousands of new buying influences coming into the market today! Rush war construction needs this information. The 97 smart companies above are giving it—and they're the ones who will have the big jump on the market when the war boom is over!
- Tell your story in the magazine where it will receive the most attention. Tell it in **WESTERN CONSTRUCTION NEWS**—it covers all the West!

## WESTERN CONSTRUCTION NEWS

503 Market Street

San Francisco, California