WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

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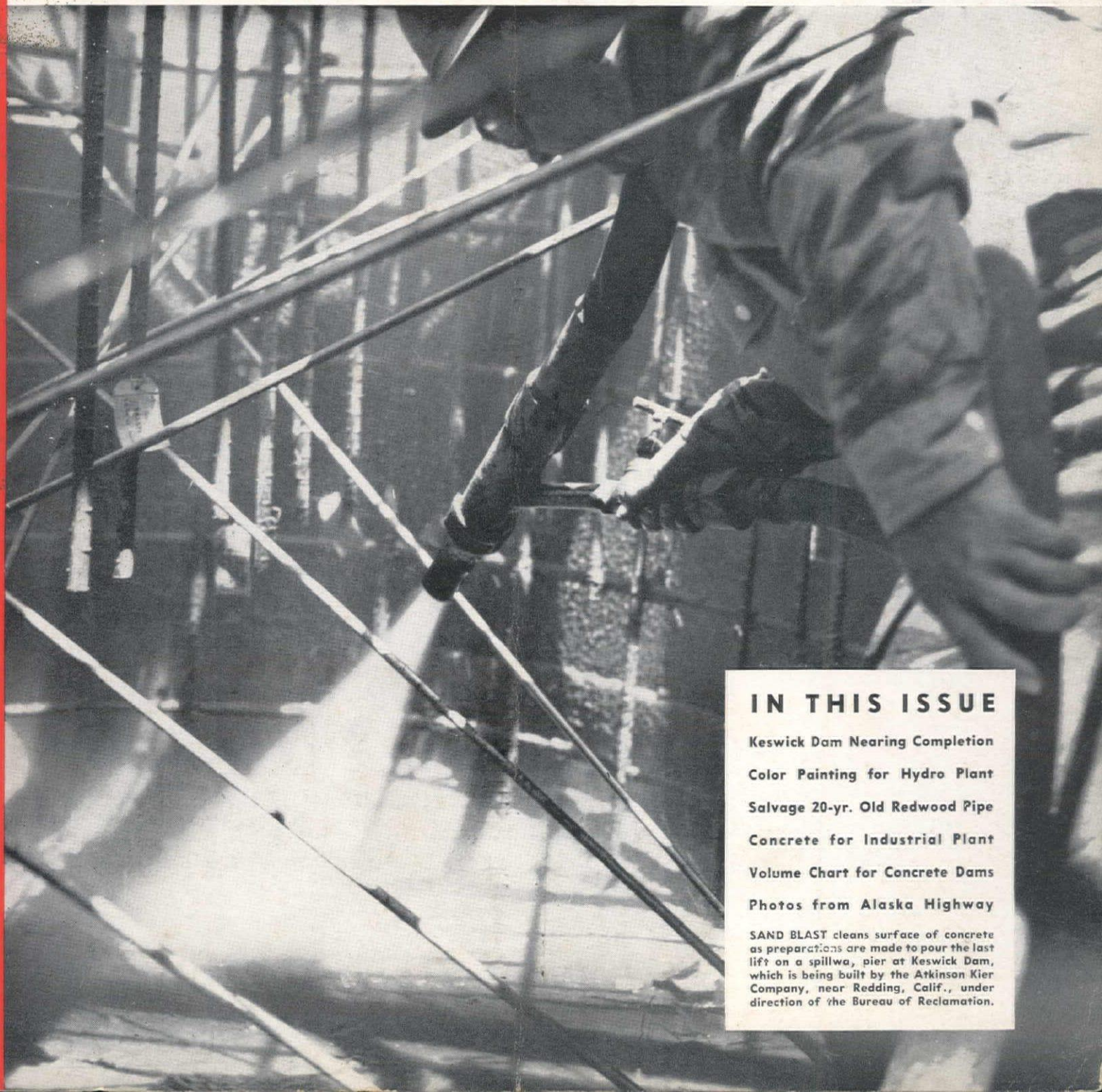
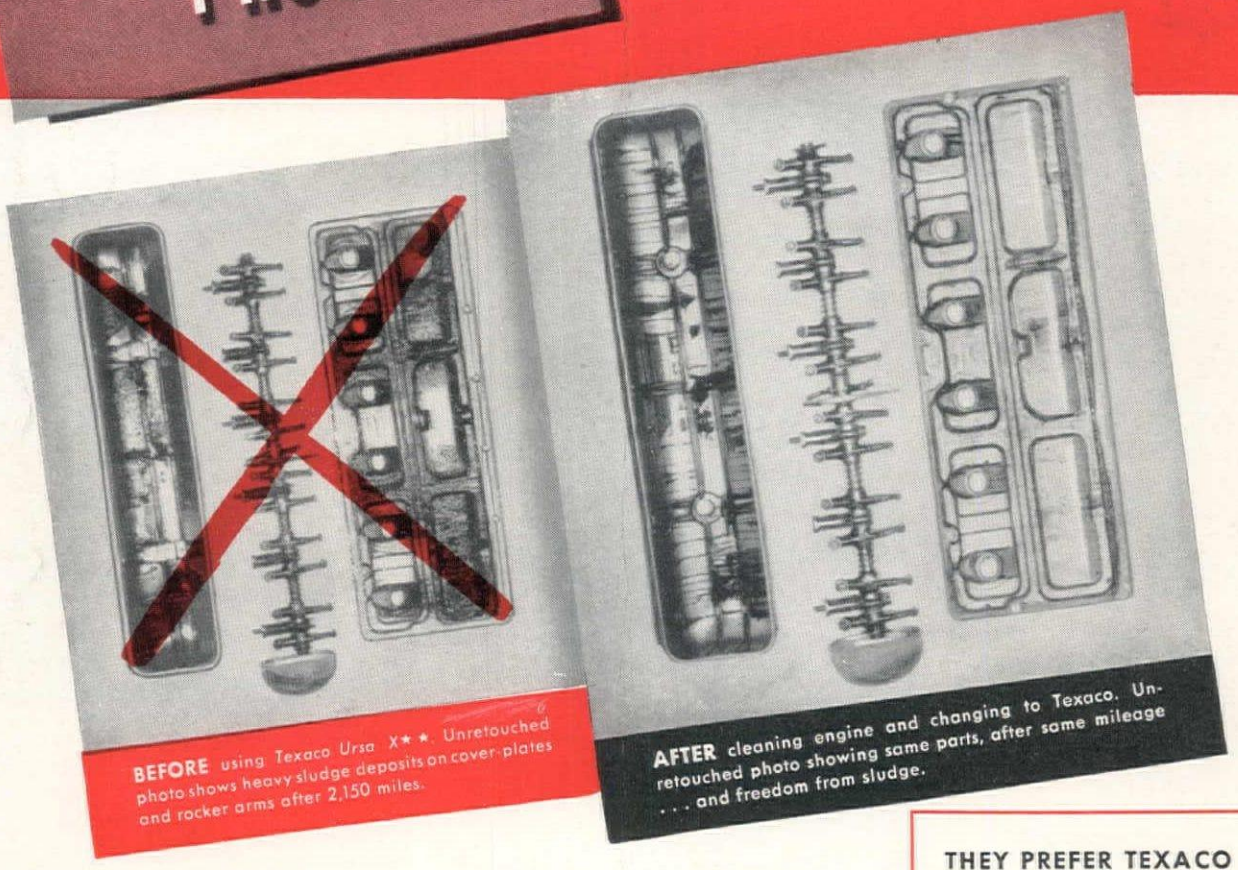


IN THIS ISSUE

SAND BLAST cleans surface of concrete as preparations are made to pour the last lift on a spillwa, pier at Keswick Dam, which is being built by the Atkinson Kier Company, near Redding, Calif., under direction of the Bureau of Reclamation.

PHOTOGRAPHIC PROOF THAT ENGINES STAY 3 TIMES CLEANER



BEFORE using Texaco *Ursa* X★★. Unretouched photo shows heavy sludge deposits on cover-plates and rocker arms after 2,150 miles.

AFTER cleaning engine and changing to Texaco. Unretouched photo showing same parts, after same mileage . . . and freedom from sludge.

AS THE larger unretouched photo shows, engines can be kept clean . . . assuring full power and maximum fuel economy . . . when lubricated with *Texaco Ursa X* ★ ★.

The exclusive use of *Ursa X* ★ ★ keeps both Diesel and gasoline engine pistons, rings, valves and other parts 3 TIMES CLEANER than ordinary lubricating oils . . . by holding fuel soot and other deposit-forming materials in suspension so that they are drained away at regular oil-change periods.

Using *Ursa X* ★ ★, oil lines and filters also stay clean; modern bearings are protected in the heaviest service.

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 Automotive Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distributing points in the 48 States, or write:

☆ ☆ ☆

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

THEY PREFER TEXACO

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

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

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

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

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

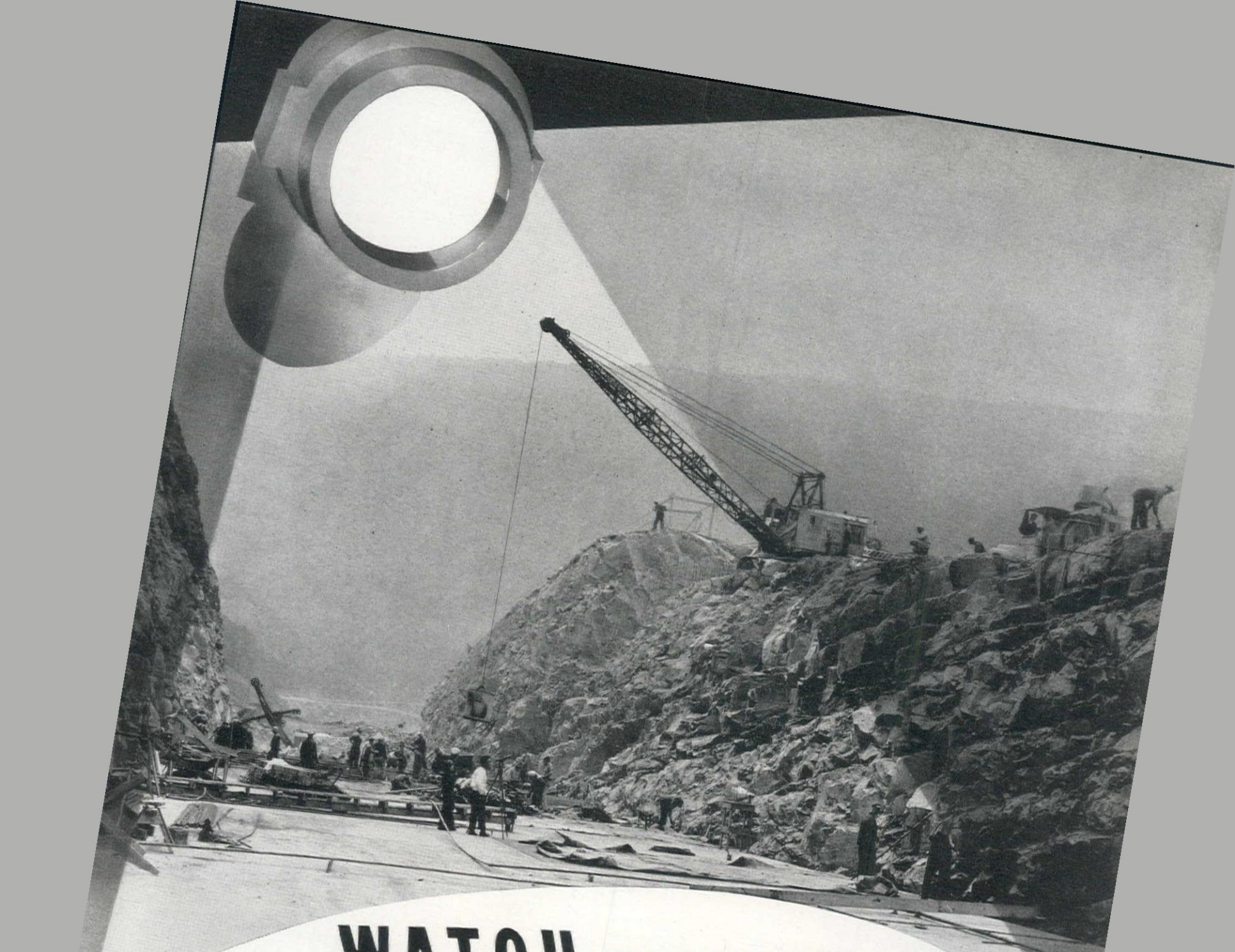
TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY



WATCH THE CRANE PERFORMANCE THAT NORTHWESTS ARE GIVING ON EMERGENCY JOBS TODAY AND YOU'LL BE CONVINCED THAT NORTHWEST IS THE MACHINE FOR SUCCESSFUL CONTRACTS TOMORROW!

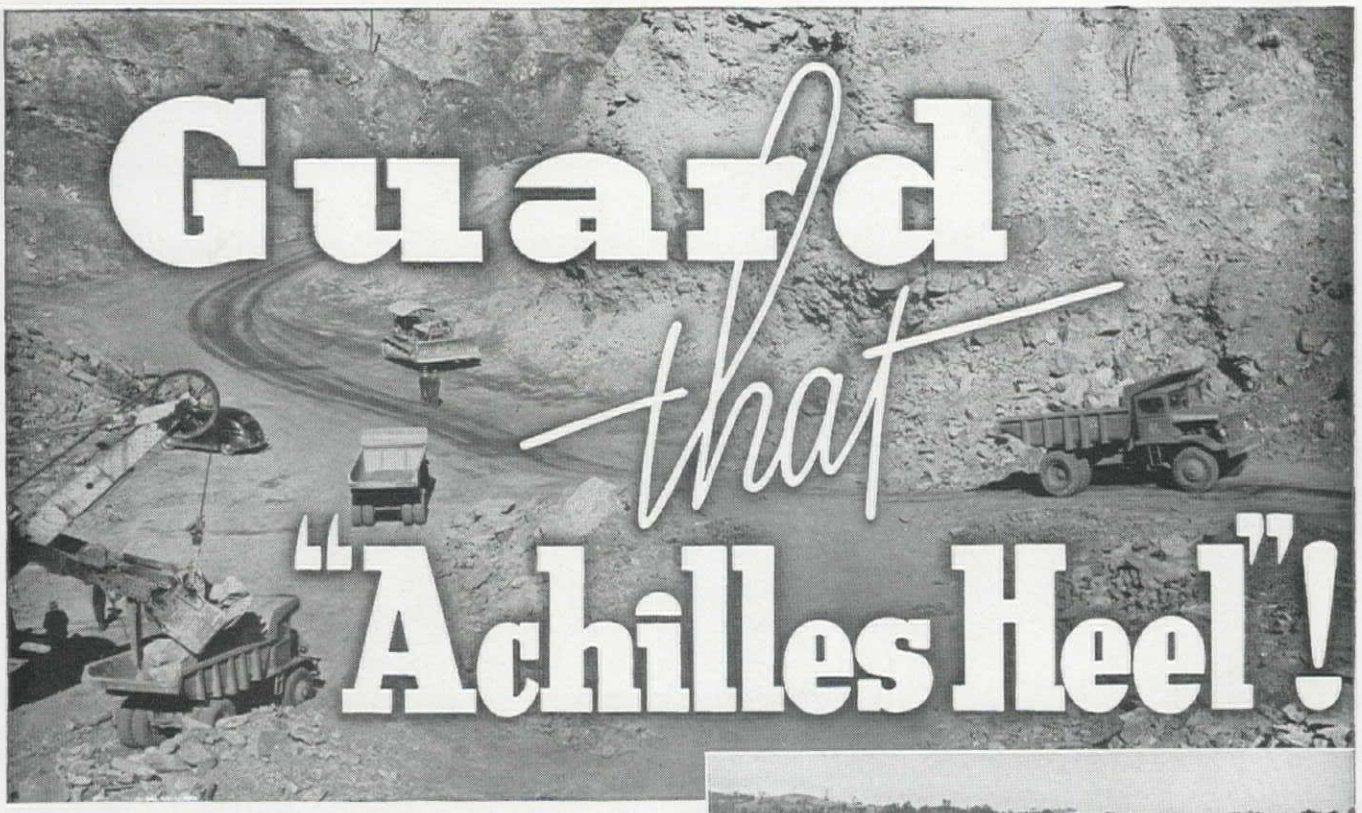
NORTHWEST ENGINEERING COMPANY
1736 Steger Bldg. • 28 E. Jackson Blvd. • Chicago, Illinois

NORTHWEST

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

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

Buy for the tough jobs and the easy jobs will take care of themselves!



Guard that "Achilles Heel"!

● Every tire on your Bottom-Dump or Rear-Dump EUCLIDS, and other equipment you own or operate, is virtually an "Achilles Heel" — a vital point that must be given every possible protection. Here are four suggestions that will help you get the maximum service from your tires and thus keep your equipment in production longer:

Load Down Grade

Starting up steep grades from the loading area increases wear on drive wheel tires due to the tendency of the wheels to spin or slide on loose stone.

Keep Loading Area Clean

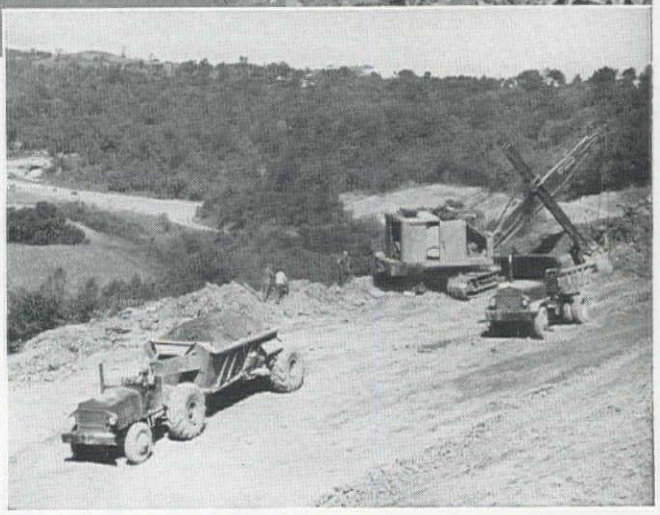
Loading, starting and stopping on loose rock or sharp stone causes unnecessary cuts and bruises — decreases the serviceable life of tires.

Fill Holes Promptly

Holes in the haul road or loading area are especially hard on dual tires because the load is supported by only one tire when the other passes over a hole.

Remove Loose Stone From Haul Road

On a hard surfaced haul road, stones press into tires instead of being compacted into the road — cuts, breaks in casings, and scuffing of traction surface result.



By giving your equipment tires more consideration and protecting them from unnecessary wear, you'll be getting the most out of an investment that may be mighty hard to replace. And even more important you'll be keeping your equipment in production for jobs that can't wait.

★ ★ ★

The EUCLID ROAD MACHINERY Co.
CLEVELAND OHIO

EUCLID

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

CRAWLER WAGONS • ROTARY SCRAPERS • TAMPING ROLLERS

EUCLID THE PIONEER

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 October, 1942

D. F. STEVENS, Editor

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A. G. LOMAX, District Manager

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

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

LICK WINCH TROUBLE

and KEEP YOUR TRACTORS PRODUCING with

BUCYRUS ERIE
PLANETARY
POWER CONTROL UNITS

- RUGGED STRENGTH IN EVERY PART
- QUICK, EASY ADJUSTMENTS
- CUSHIONED, SHOCKLESS STARTS AND STOPS
- COOL RUNNING . . . NO "HOT SPOTS"

EVERY minute robbed for winch adjustments and repairs ties up valuable equipment — piles up lost time. Bucyrus-Erie Power Control Units lick winch trouble before it starts!

Planetary drive is the secret . . . because this system of transmission produces a cushioned, shockless brake and clutch action. The terrific strains and shocks of starting and stopping heavily-loaded cables by direct friction clutch engagement are reduced; cables and equipment last longer. Operator fatigue is reduced because the single lever clutch and brake control is so easy to handle.

These winches are really cool-running. Separate, large area drums for each clutch and brake are mounted externally for natural ventilation. Adjusting brake or clutch bands is a matter of minutes because there's only a single adjustment point for each — accessible and in full view. Linings last a season or more on many jobs. When it does become necessary to change them, the job can be done quickly without removing winch from tractor or disturbing a single oil seal. All clutch and brake bands are interchangeable. Bucyrus-Erie Company, South Milwaukee, Wis.

P132

BUCYRUS ERIE TRACTOR EQUIPMENT

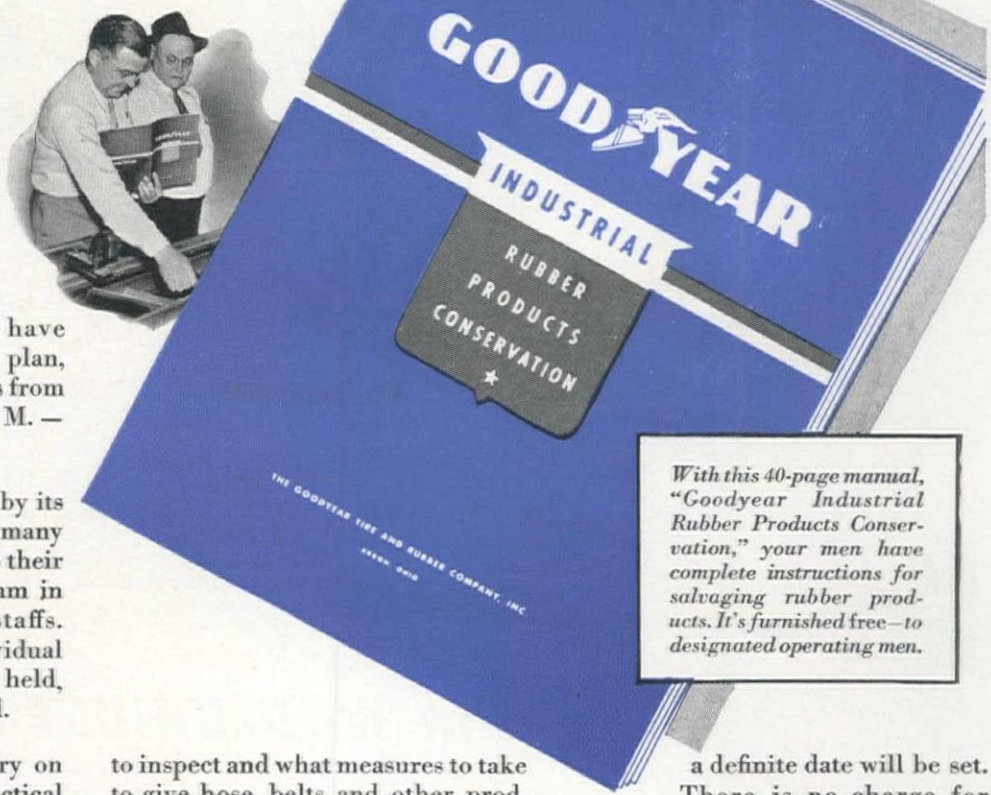
SEE YOUR INTERNATIONAL TRACTRACTOR DISTRIBUTOR

By the Hundreds

AMERICA'S LARGEST PLANTS

ADOPT G.T.M. INDUSTRIAL RUBBER CONSERVATION PLAN

Key executives acclaim Goodyear-developed procedure that can prolong life of rubber products as much as 50%. Get your plant started now. No charge.



With this 40-page manual, "Goodyear Industrial Rubber Products Conservation," your men have complete instructions for salvaging rubber products. It's furnished free—to designated operating men.

IN a few short weeks the Goodyear Rubber Products Conservation Plan has become American industry's first line of defense against the rubber shortage.

More than a thousand top operating men from major manufacturing companies have enthusiastically endorsed the plan, at meetings held, in fifty cities from coast to coast, by the G. T. M.—Goodyear Technical Man.

So impressed have they been by its rubber-saving possibilities, many asked the G.T.M. to come into their plants and explain the program in detail to the mechanical staffs. Upwards of 200 of these individual plant meetings have now been held, and many more are scheduled.

That is the verdict of industry on the Goodyear plan — a practical program for conserving your now almost irreplaceable rubber products and prolonging their life many extra months.

AVAILABLE TO ALL

The Goodyear conservation program consists of three simple, easy-to-follow steps:

"Goodyear Wages War on Waste"—a graphic, educational slide film which illustrates to your men, plainly and clearly, recommended conservation practices.

Practical plant demonstrations by the G.T.M.—what to look for, how to inspect and what measures to take to give hose, belts and other products longer life.

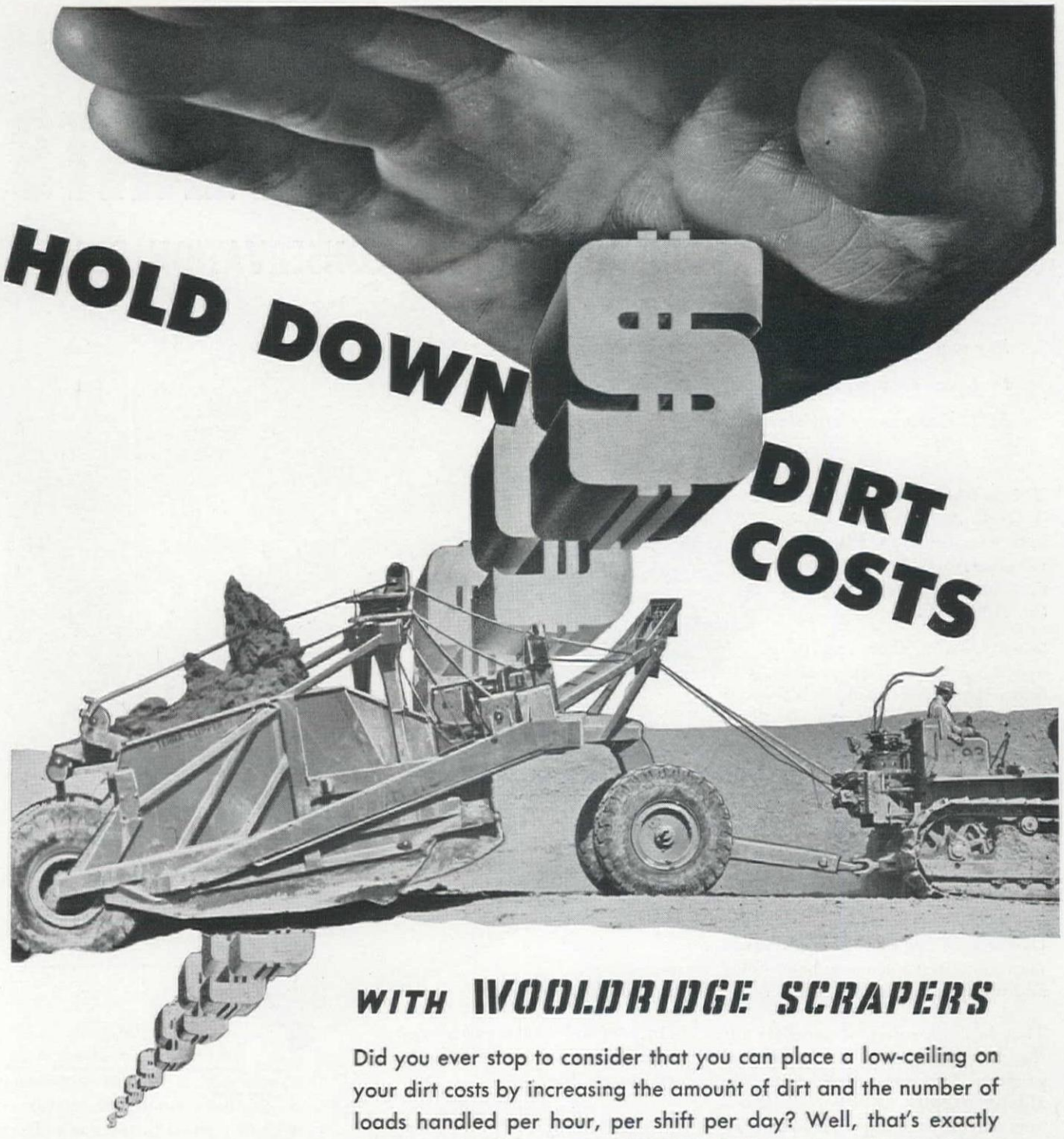
"Goodyear Industrial Rubber Products Conservation" manual—a fully illustrated 40-page book, telling exactly how to make repairs, and filled with suggestions for saving rubber — left with your operating men for their guidance.

HOW TO GET THE PROGRAM

To have the G.T.M. hold a rubber conservation meeting at your plant, simply write us today, and a definite date will be set. There is no charge for this service; it is not necessary that you be a Goodyear customer—it is all part of Goodyear's effort to help the nation save rubber. To arrange for your meeting, or obtain copy of the manual, write: Goodyear, Industrial Conservation Dept. E-14, Akron, Ohio.

THE GREATEST NAME IN RUBBER

GOODYEAR
MECHANICAL GOODS



WITH WOOLDRIDGE SCRAPERS

Did you ever stop to consider that you can place a low-ceiling on your dirt costs by increasing the amount of dirt and the number of loads handled per hour, per shift per day? Well, that's exactly what you do when you use WOOLDRIDGE Scrapers. They're faster loading—faster dumping—handle larger heaping loads in less distance—in less time. In addition, there's much less cable-wear—less breakage—less time out for repair. When every minute counts in your race against time, you can fully depend upon WOOLDRIDGE Scrapers to keep loads rolling faster.

GET THERE AND BACK FASTER... WITH *Extra* YARDAGE LOADS

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

NOW— without priority

Repairing the latch on a shovel dipper by welding.

The battered side of this "cat wagon" is put back in shape with P&H electrodes.

Worn out gears can be rebuilt to last longer than originally with P&H "Harcote" electrodes.

ALLOY ELECTRODES
FOR MAINTENANCE AND REPAIR

Of course, war production comes first! But America's construction and mining equipment must be kept on the job. Arc welding is the answer. That's why the U. S. Government (through Limitations Order No. 146) makes it possible for you to secure, *without priority*, the welding electrodes necessary for maintenance and repair work.

Our fullest cooperation makes available a limited percentage of our production of P&H Alloy Electrodes for this purpose. These include such indispensable electrodes as P&H "Harcote" for hard-surfacing to resist wear and give new life to many parts. Other electrodes are available to answer every need for resisting wear, abrasion, and impact; for welding stainless steels, 4-6% chrome steel, etc. The only restriction is that they must be used for maintenance and repair.

P&H FOR ALLOY ELECTRODES

How To Order

Write us; we will send you information on how to obtain P&H Alloy Electrodes, also data sheets on how to select and use them.

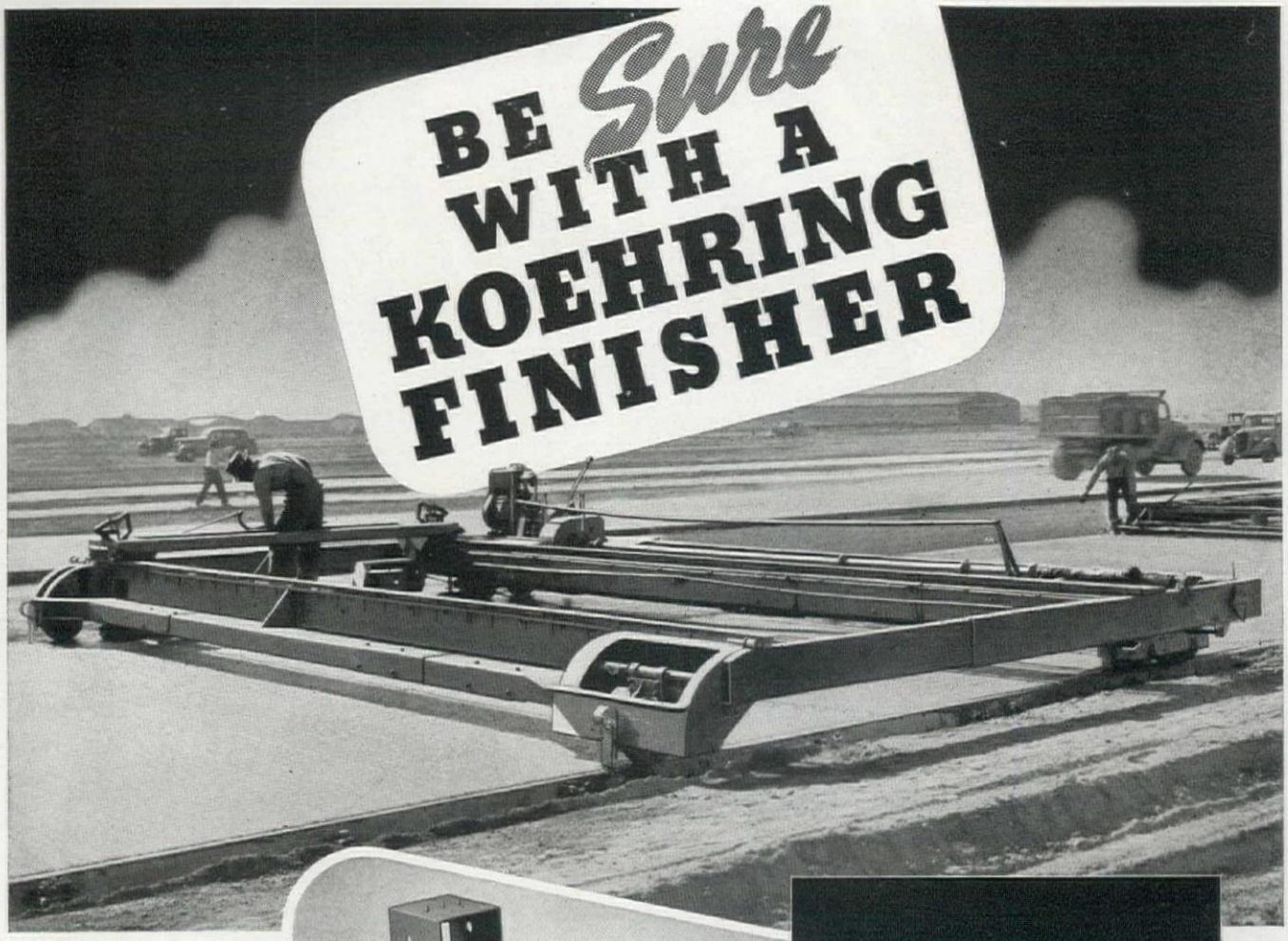
General Offices: 4490 West National Avenue, Milwaukee, Wisconsin

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

HARNISCHFEGER CORPORATION

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

Canadian Distribution: The Canadian Fairbanks-Morse Company, Ltd.



Finish Slab Accurately to Specifications

Initial accuracy of the slab finish saves time and expense of later correction. With the use of the Koehring Longitudinal Finisher comes the assurance to contractor and engineer alike, that the finished surface is as specified. Its operation is automatic and mechanical. Errors in slab thickness are immediately detected . . . form settlement at the joints is equalized . . . finishing operation is performed at the proper time . . . density of concrete is maintained . . . paver production is matched. Be sure you are meeting the specifications . . . have the Koehring Finisher on your job.

Koehring Finisher screed has an adjustable and renewable bottom plate to maintain an accurate contact with the surface in accordance with the surface specifications.

KOEHRING COMPANY • *Milwaukee, Wis.*

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

HARRON, KICKARD & 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

It's "OVER THE TOP" ...OR ELSE!

They don't waste time in the Army

UNCLE SAM can't fool around! There isn't time. Our armed forces have a job to do —*the biggest job in history*—and they're sailing into it with typical American speed and efficiency.

There are no weaklings in the striking power our nation is assembling. The men are tough—*and so are the machines.* The International TracTracTor shown here is one of thousands now slugging their way along the hard road to Victory. These big crawlers are subjected to extreme punishment every day, but every last one of them is more than capable of going "over the top" whatever the task.

Expert service by skilled army men maintains the equipment of mechanized war. On the home front your International Industrial Power dealer is ready with the experience and facilities to give your TracTracTor the best possible service. It will pay you to keep in touch with him.

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 Equipment, 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

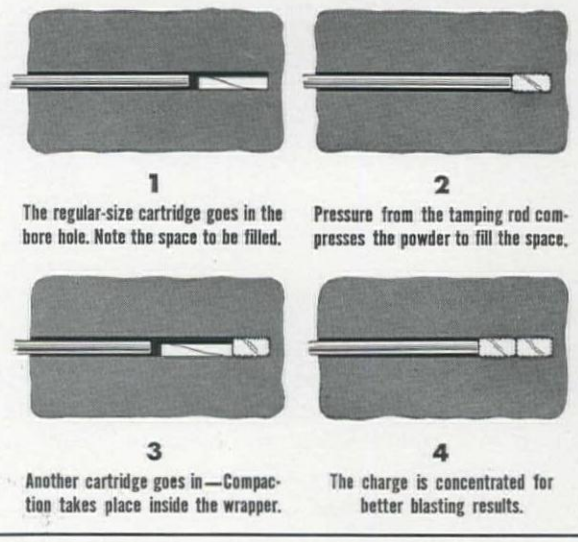
Push the tamping rod against the end of a Tamptite cartridge. The dynamite expands inside the shell, filling the bore hole snugly, concentrating the charge—leaving no air-space.

You get better breakage, faster handling of material, without wasting man-hours in slitting cartridges, and without having loose powder spilled in or around the bore hole.

Tamptite cartridges will give you more output with less man-power. They take the grief out of loading uppers. They are a short cut to better broken material. Put them to work for you.

Specify Tamptite cartridges on your next order for Hercules Dynamite.

Here's how TAMPTITE makes efficient Loading easy



1
The regular-size cartridge goes in the bore hole. Note the space to be filled.

2
Pressure from the tamping rod compresses the powder to fill the space.

3
Another cartridge goes in—Compaction takes place inside the wrapper.

4
The charge is concentrated for better blasting results.

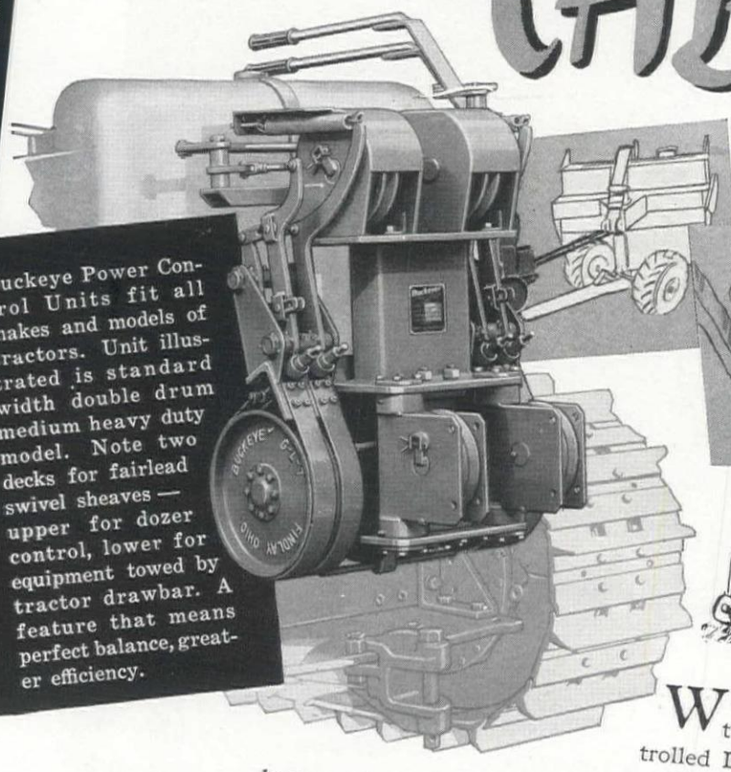
HERCULES POWDER COMPANY

INCORPORATED

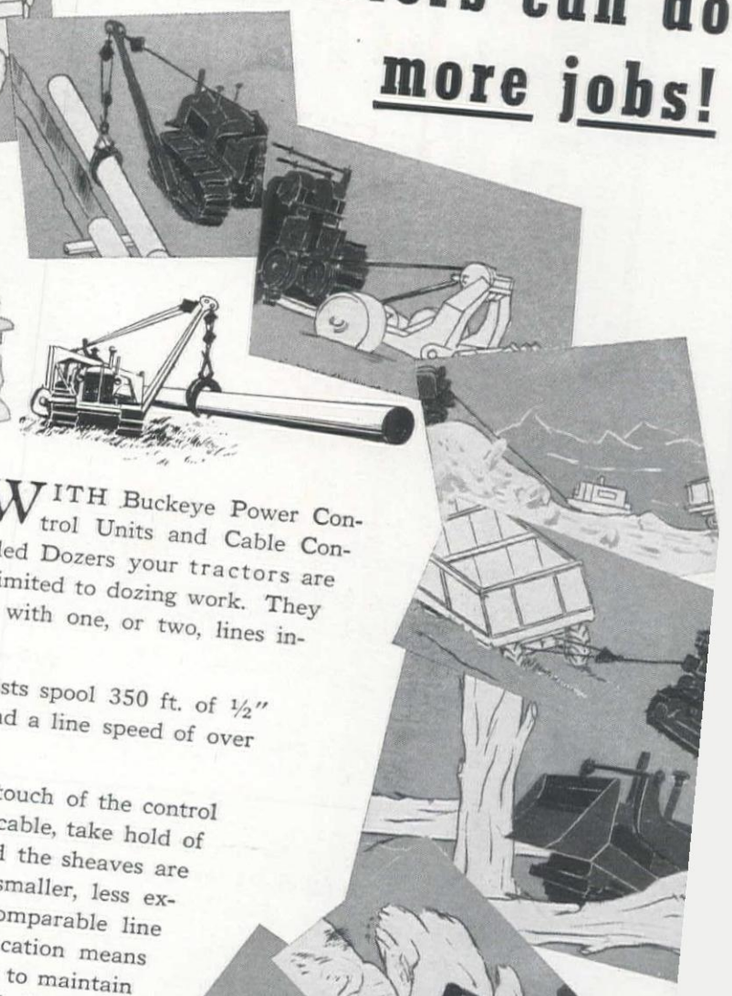
994 KING STREET • WILMINGTON • DELAWARE

A-87

With Buckeye CABLE control your tractors can do more jobs!



Buckeye Power Control Units fit all makes and models of tractors. Unit illustrated is standard width double drum medium heavy duty model. Note two decks for fairlead swivel sheaves — upper for dozer control, lower for equipment towed by tractor drawbar. A feature that means perfect balance, greater efficiency.



WITH Buckeye Power Control Units and Cable Controlled Dozers your tractors are not limited to dozing work. They become the handy men of the outfit with one, or two, lines instantly available for 101 other jobs.

The big, wide drum, Heavy Duty Hoists spool 350 ft. of ½" cable, give you over 8000 lbs. line pull and a line speed of over 300 ft. per minute.

Buckeye Power Control Units are fast—a touch of the control and the line sings into action. They conserve cable, take hold of the load smoothly and evenly with no jerks, and the sheaves are designed to minimize cable wear—you can use smaller, less expensive cable than with other winches having comparable line pulls. Big clutch and braking area plus external location means cool operation and long life. Center of line pull is low to maintain tractor balance and better traction. Controls are high leverage, within easy reach. You have your choice of Heavy or Medium Heavy Duty, single or double, wide or standard drum, models.

To speed up War jobs, unshackle your tractors with Buckeye Power Control Units. Write today and ask for specification data and prices on the models to fit your tractors.

BUCKEYE TRACTION DITCHER CO.
Findlay • Ohio

Built by Buckeye


Convertible Shovels


Trenchers

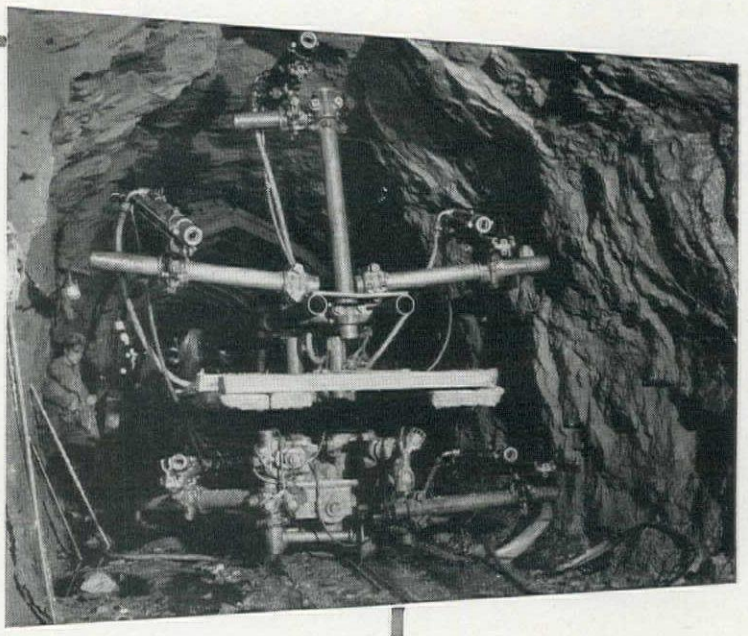

Tractor Equipment


R-B Finegraders


Road Wideners


Spreaders

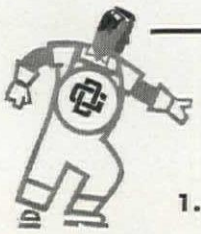
Proved in the Tests of Peace To Keep War's Quicker Tempo !



More large tunnels were completed during the years of peace from 1936 to 1941, than in any corresponding period in our history. And on practically all of these major projects, Gardner-Denver Drifting Drills played an important role—helping to drill out the rounds in the shortest possible time.

This outstanding performance in the tests of peace proves Gardner-Denver drifters equal to the quicker tempo of wartime construction.

Gardner-Denver Company has spared neither effort nor expense in keeping its line of drifting drills at the highest possible stage of development. Today, the famous Gardner-Denver Continuous Feed Principle is helping Gardner-Denver drifters speed today's vital tunnel jobs.



You'll like these advantages of Gardner-Denver Continuous Feed Drifters:

1. Higher drilling efficiency—"CF" Feed always holds drill in proper relation to shank.
2. Less vibration—weight of built-in feed motor aids in absorbing recoil.
3. Far less wear—slow motion piston of feed motor makes only 2½ strokes per inch drilled.
4. Low maintenance—due to absence of vibration and slow moving piston-type feed motor.
5. Convenient controls—always within easy reach of drill runner.

CF 89 H

CF89H—the 3½" Gardner-Denver Continuous Feed Drifter.

CF 79

CF 79—the 3" Gardner-Denver Continuous Feed Drifter.

For complete data on Gardner-Denver Continuous Feed Drifters write Gardner-Denver Company, Quincy, Illinois.

Western Branch Offices: Butte, Mont.; Denver, Colo.; Los Angeles, Calif.; Salt Lake City, Utah; San Francisco, Calif.; Seattle, Wash.; Wallace, Idaho

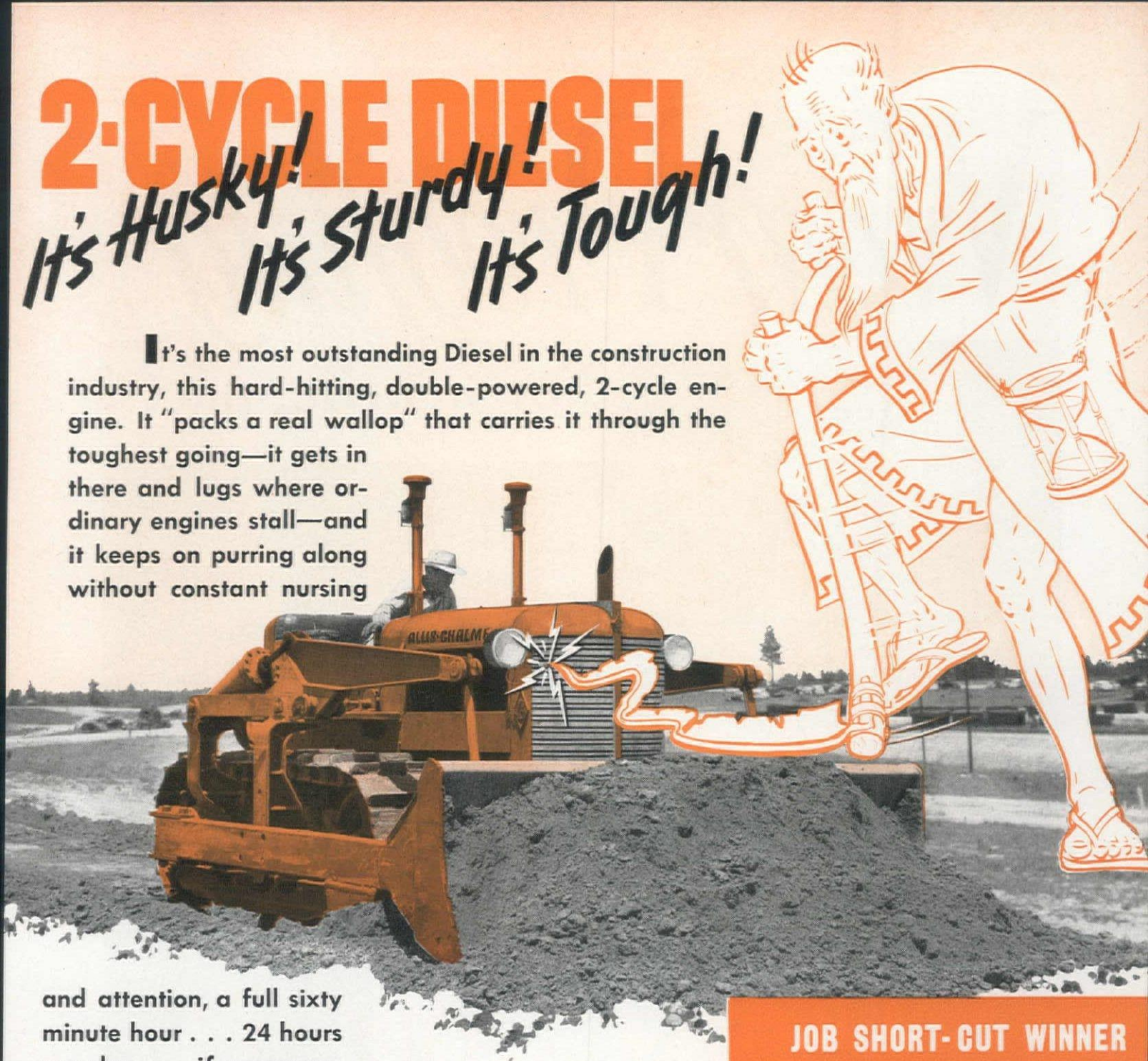
GARDNER-DENVER PRODUCTS HELP SPEED VICTORY

GARDNER-DENVER *Since 1859*

2-CYCLE DIESEL

It's Husky! It's Sturdy! It's Tough!

It's the most outstanding Diesel in the construction industry, this hard-hitting, double-powered, 2-cycle engine. It "packs a real wallop" that carries it through the toughest going—it gets in there and lugs where ordinary engines stall—and it keeps on purring along without constant nursing and attention, a full sixty minute hour . . . 24 hours per day . . . if necessary.



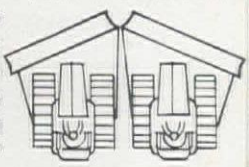
Service records indicate thousands of hours of operation without overhauls or major repairs on tough, three shift jobs. That's the kind of service Allis-Chalmers tractor owners are getting from their 2-Cycle Diesels. It's the kind of performance that gets jobs finished on time and at less cost — the kind of performance you've always wanted in a tractor engine — the kind of performance only a 2-Cycle Diesel can give you.

If you are not already a 2-Cycle Diesel owner, it will pay you to check up on this modern power. Be prepared for the future. Write for complete information.

JOB SHORT-CUT WINNER

$5 to Fred Goett, 841 E. 67th St., Seattle, Washington, for the Following Short-cut Method:

"One winter we had a pile of muck to get off the grade. It was too deep to get a tractor through it. All we could do was push it up a little and that made it worse. So we took two A-C's, one HD-10 and an LO, both with angle dozers. We angled the blades and worked the machines side by side. The blades were angled so they formed a point (illustration). The two angle dozers went through the muck pile and worked it down to solid footing so the other dozers could get rid of it. It worked good."



• • •

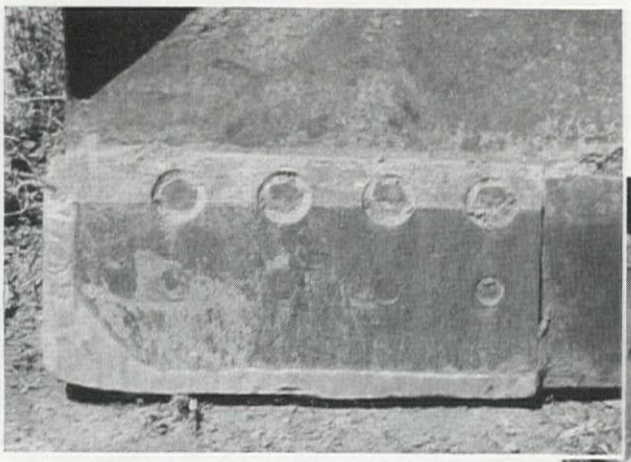
You, too, can win $5 and at the same time help the war effort! Send in your Job Short-Cut suggestions and ideas on How To Make Tractors and Graders Last Longer. Allis-Chalmers will pay $5 for each suggestion accepted for publication in future advertisements.

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

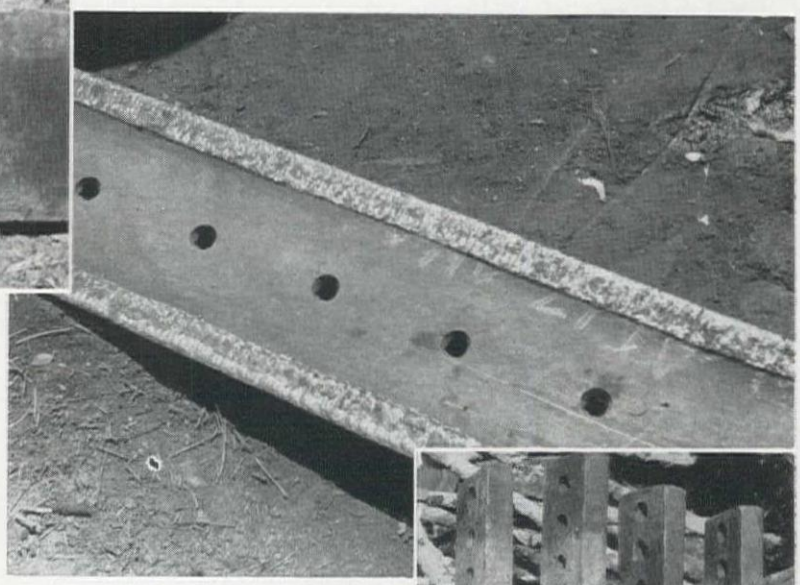
2-Cycle
THE MODERN
DIESEL POWER

Wear Proofing

For wearing parts!



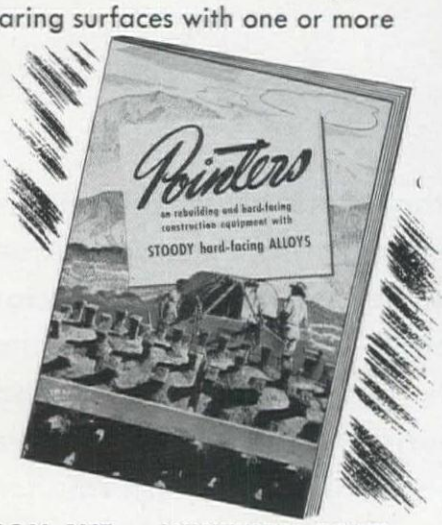
This hard-faced BULL DOZER TIP has already lasted as long as two ordinary unprotected tips. Present indications are that it will last again as long before it needs to be replaced. Contractors prefer 3/16" 20-30 Tube Borium for this application because it is harder and more wear resistant than any other type of metal.



Here is a section of a CARRY-ALL BLADE, wearing edges of which have been hard-faced with 3/16" Coated Stoody Self-Hardening. Seven pounds of this rod applied to an eight foot blade will extend its life approximately 200 percent.

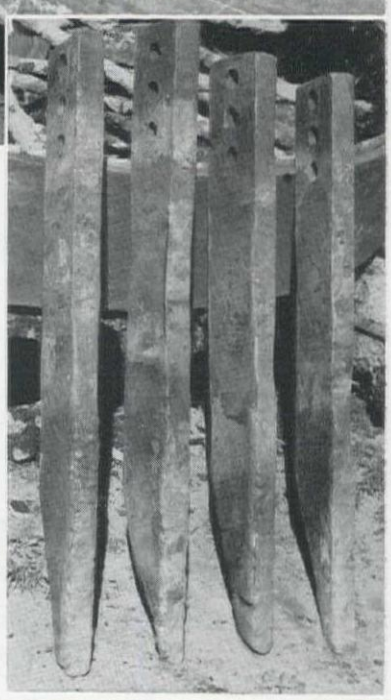
Stoody Hard-Facing Alloys Stop Wear — Eliminate Repair

When parts of your equipment are subject to abrasion, the best thing you can do is to have your welder protect wearing surfaces with one or more of the fourteen Stoody Alloys. These metals, because of their hardness, wear resistance, and other properties, reduce wear to a minimum, thereby eliminating frequent replacements and repair jobs. Here are a few typical examples where Stoody Alloys are being used in the Construction Industry.



Ask for free copy of our brand new booklet —"Pointers on Rebuilding and Hard-Facing Construction Equipment." It may save you lots of money every year.

STOODY COMPANY • 1134 W. SLAUSON AVE. • WHITTIER, CALIF.



The tips of these SCARIFIER TEETH were hard-faced with 3/16" 20-30 Acetylene Tube Borium. Results show that hard-faced teeth stay sharp an average of 15 to 20 times longer than unprotected teeth.

STOODY COMPANY Hard Facing Alloys

Increase Yardage and Profits with This Job-Proved Cut-and-Fill Method

You'll Make Fewer Turns, Yet Move More Loads in Less Time with Your Present Equipment . . *Try it!*

Big-capacity LeTourneau Carryall Scrapers make big yardage gains out of the turning time saved on this series of cuts and fills on a West Coast access road. What's more, turn elimination reduces wear on tracks and steering clutches.

Here's a cut-and-fill method applicable to almost every earth-moving job in rolling country. You will find it eliminates extra turns, reduces round-trip time, and thus increases the number of big loads you can move with your present Tournapulls and tractor-drawn Carryall Scrapers.

Using individual balances, 10 turns are required to deliver 5 pay loads. By balancing the series of cuts and fills, so you can haul in both directions, you deliver 5 pay loads with only 2 turns. Each turn eliminated gains an average of 0.25 min. or 2 full minutes on this cycle.

Gain $31.50 per Day

Assume a 10 pay yard load and 5.0 min. per load, then on the basis of individual balances you could deliver 120 cu. yds. hourly. With the above turn-eliminating cycle, you save 2.0 min. each 5 loads and increase your hourly yardage to 130 cu. yds. That's a gain of 210 extra yards per Carryall Scraper each 21-hour day. At 15¢ a cu. yd., this elimination of turns amounts to $31.50 per day or $15,000 on a 10,000 hour operating life!

Figure the increase in yards and profits for your job and Carryall Scraper fleet. The gains will vary with the Scraper size and haul distances, but you'll find the method always increases the number of loads and yardage—without an increase in equipment. Put this Victory-speeding method to work TODAY.

LeTourneau-"Caterpillar" Dealers Well Equipped to Serve

No matter where today's wartime jobs take your equipment, you will find a LeTourneau-"Caterpillar" dealer service base near you. A recent survey of all LeTourneau-"Caterpillar" dealers in the U.S. and Canada (102 reporting) showed an average stock of LeTourneau parts of $10,509.* That means in most cases your local dealer can furnish parts direct from stock.

101 of the dealers employ skilled welders. All but two have shop welding units. In addition, 80% have portable welding outfits, capable of getting to your job quickly to make in-the-field repairs. There's an average of 12 servicemen per dealer, many of them factory-trained.

Take advantage NOW of this time-saving parts and maintenance service—make your LeTourneau-"Caterpillar" dealer your Victory Construction Headquarters.

*This includes many small semi-agricultural dealers, who nevertheless stock parts and have excellent service facilities. Larger dealers carry up to $65,000 in parts.

LETOURNEAU

PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

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

(All weighed-in on the platform scale, another Mack-load of coal gets the go-ahead and rolls away. Sketched from life, near Scranton, by Peter Helck.)

Well-known American, at work!

THE SAYING "Built like a Mack Truck" is something more than a slang phrase. It is an acute observation on the difference between a Mack . . . and just a truck! It worked into the language because of the way a Mack works into a job. The first Mack, built in 1900, served 17 years. No one knows . . . *yet* . . . what records today's Macks will make. But you can put it down as sure that the first Mack, today's Mack, tomorrow's Mack . . . all set out to be the *best* trucks in the world when made!

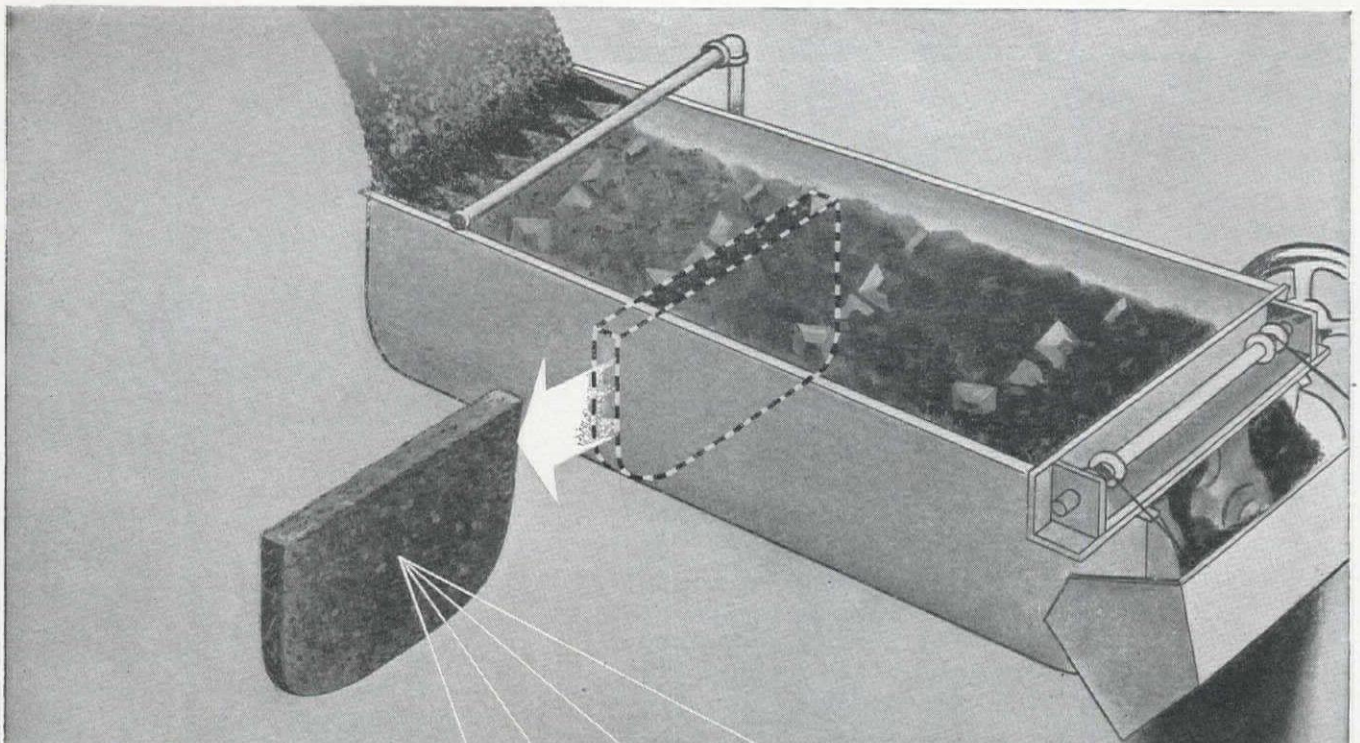
Mack International Motor Truck Corporation
Los Angeles . . Sacramento . . Fresno . . San Francisco . . Seattle . . Portland

Factories at Allentown, Pa.; New Brunswick, N. J.; Plainfield, N. J.
Factory branches and dealers in all principal cities for service and parts.

Mack

TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS
BUY U S. WAR BONDS

IF YOU'VE GOT A MACK, YOU'RE LUCKY . . . IF YOU PLAN TO GET ONE, YOU'RE WISE!



Continuous Mixing

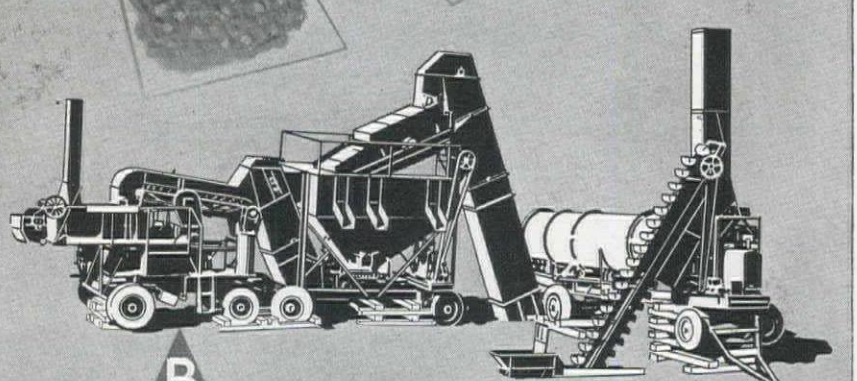
Why did Barber-Greene build a continuous mixer instead of the conventional intermittent batch type? The answer is in the diagram of the Barber-Greene shown above. At the upper left, the graded, and accurately measured aggregate continuously enters the pugmill in a small stream. In entering, it falls through the spray chamber where it is continuously sprayed with a small stream of metered bitumen. The combining process has started, even before the materials enter the pugmill. The need for preliminary dry mixing is completely eliminated. The Barber-Greene does not have to undo the segregation caused by dumping batches into the mill. In fact a cross section of the mix extracted just a few inches beyond the charging end of the pugmill contains the correct amount of each size of aggregate with the correct ratio of bitumen.

Here the propelling and retarding paddles work the material through the pugmill under pressure, using friction to take the excess from the fines and evenly coat the coarse material.

As the mix is constantly worked through (from left to right in diagram) there can be no dead material, even at the very bottom.

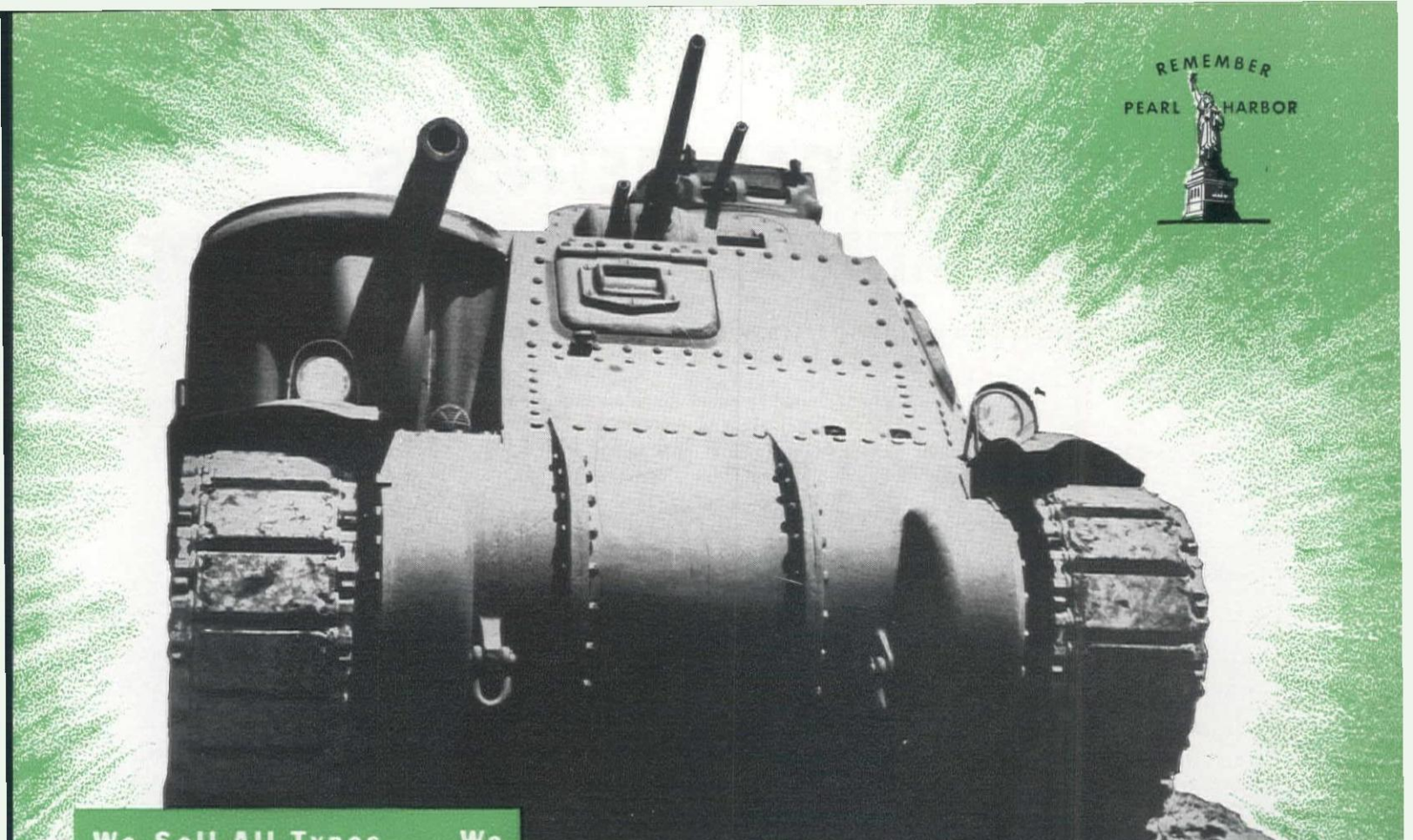
The Barber-Greene uses more horse-sense, and less horse-power. It attains complete homogeneity the easiest, most logical way. It has not only established new standards for accuracy and uniformity, — but has changed moving and erection from a major project to a simple low-cost maneuver. Barber-Greene Company, Aurora, Illinois.

42-1



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.



Ewing Galloway

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

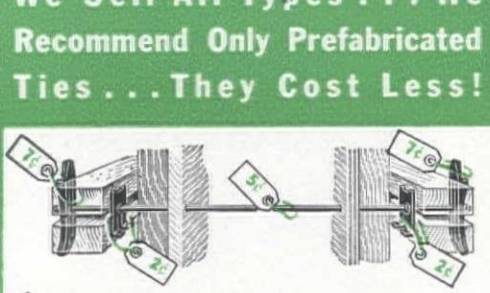
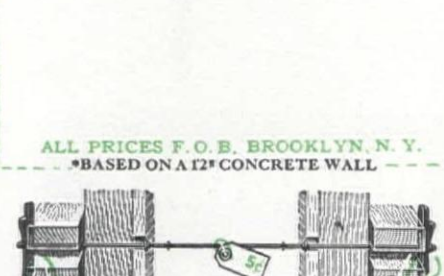


Figure it for yourself!
HERE ARE THE PRICES*

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



CLANK! CLANK! CLANK!

THE TANKS ARE MARCHING!

Way back where glowing steel billets bloom, is the starting place for that "Big Parade" of tanks, so essential to our National Victory. Could be, that monster you see in the picture is made of steel saved by some builder or contractor, who abandoned, the wasteful practice of using "make-shift", "home-made" wire, band or rod ties, and turned to Richmond's complete line of more than 85 different prefabricated devices specifically engineered to meet every concrete form-tying need. For, you see—

Richmond Makes 1 Ton of Steel Do the Work of 3 Tons

—and that's not all! The "Richmond Way" is the profit making way on any sort of concrete job, because it gives you advantages available nowhere else. Advantages that mean a better, faster job at less cost and with greater profit. *For instance*, Richmond form-tys help you erect and strip your forms in less time. *For instance*, from our technical and estimating service you get, without cost, a job plan showing the number and location markings of the ties needed for each section. *For instance*, you do not tie up your funds in working parts such as Tylags, Tycones, Flat Washers, Tywrenches, etc. Richmond loans them to you! We're not just selling products or devices. From Richmond you get a service, a method, a way by which you can make many an unexpected dollar—and gain a name for contributing vitally to the "stock-piles" of steel for armaments. Specific figures to back-up all these statements are yours for the asking.

RICHMOND SCREW ANCHOR CO., INC.

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

TIME AND LABOR SAVING CONSTRUCTION DEVICES FOR CONCRETE CONSTRUCTION

PRACTICAL METHODS OF LUBRICATING YOUR WIRE ROPE

...to help you get longer service...to help you conserve steel

The benefit derived from systematic lubrication of wire rope is one of those apparently intangible things that are difficult for the average user to find among his many operating problems. However, laboratory and scientifically controlled field tests have proved that wire rope, like any machine part, lasts longer if it is kept well lubricated.

What are some simple ways to lubricate wire rope on your job?

Preparation

It is very desirable that the rope be clean and dry. A jet of air, steam, or wire brushing, followed by a period in which the rope is allowed to dry, are some of the methods used preparatory to applying the lubricant.

First, you can brush the lubricant on to the rope

FIG. 1

Illustrated, in Figure 1, is one easy and effective method of applying lubrication. Dip the brush into the lubricant and apply. In some cases a rag or piece of sheepskin is dipped in the lubricant and used to swab the lubricant on to the rope.

Applying by hand with leather gloves

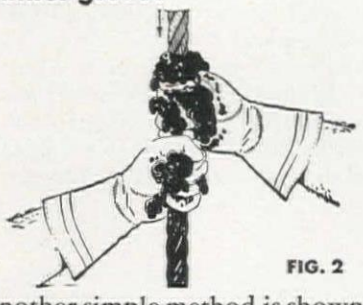


FIG. 2

Another simple method is shown in Figure 2. Leather is preferred to canvas, because of its greater protection and less penetration of the grease.

This method is especially good where a heavy, non-flowing lubricant is applied. It is often desirable to heat lubricant slightly to get a smoother, better application.

You can make a simple lubricating device

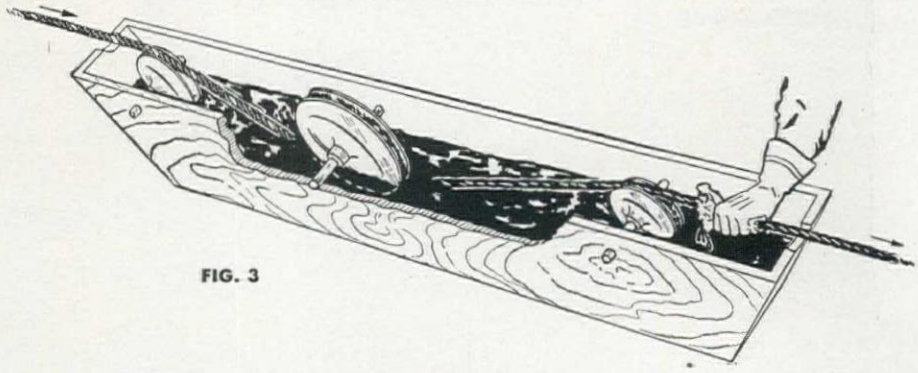


FIG. 3

A wooden trough with a sheave mounted on a shaft does a good job.

Such a trough, or slush box, is illustrated in Figure 3. The rope is run over the end of the trough, under the sheave, and out the other end so that the rope runs through the lubricant. A rag or swab held in place at the outgoing end wipes off excess lubricant. A slush box for vertical ropes is shown in figure 4.

Proper lubrication helps to seal in the Macwhyte internal lubrication that covers each wire during the manufacture of the rope. It helps to keep out water and dirt, and guards against corrosion.

Regular inspection of the rope with frequent applications of lubricant produces better results than heavy coatings less frequently applied.

The methods illustrated are those in most common use and cover most wire rope applications. Various methods used in service often depend upon the particular type of lubricant and whether it is applied hot or cold.

The use of wire rope varies so greatly that it is not possible to set forth here any particular types of lubricant to use. Macwhyte engineers are always glad to give you the benefit of their experience in special cases.

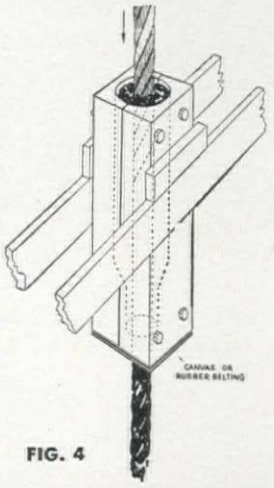
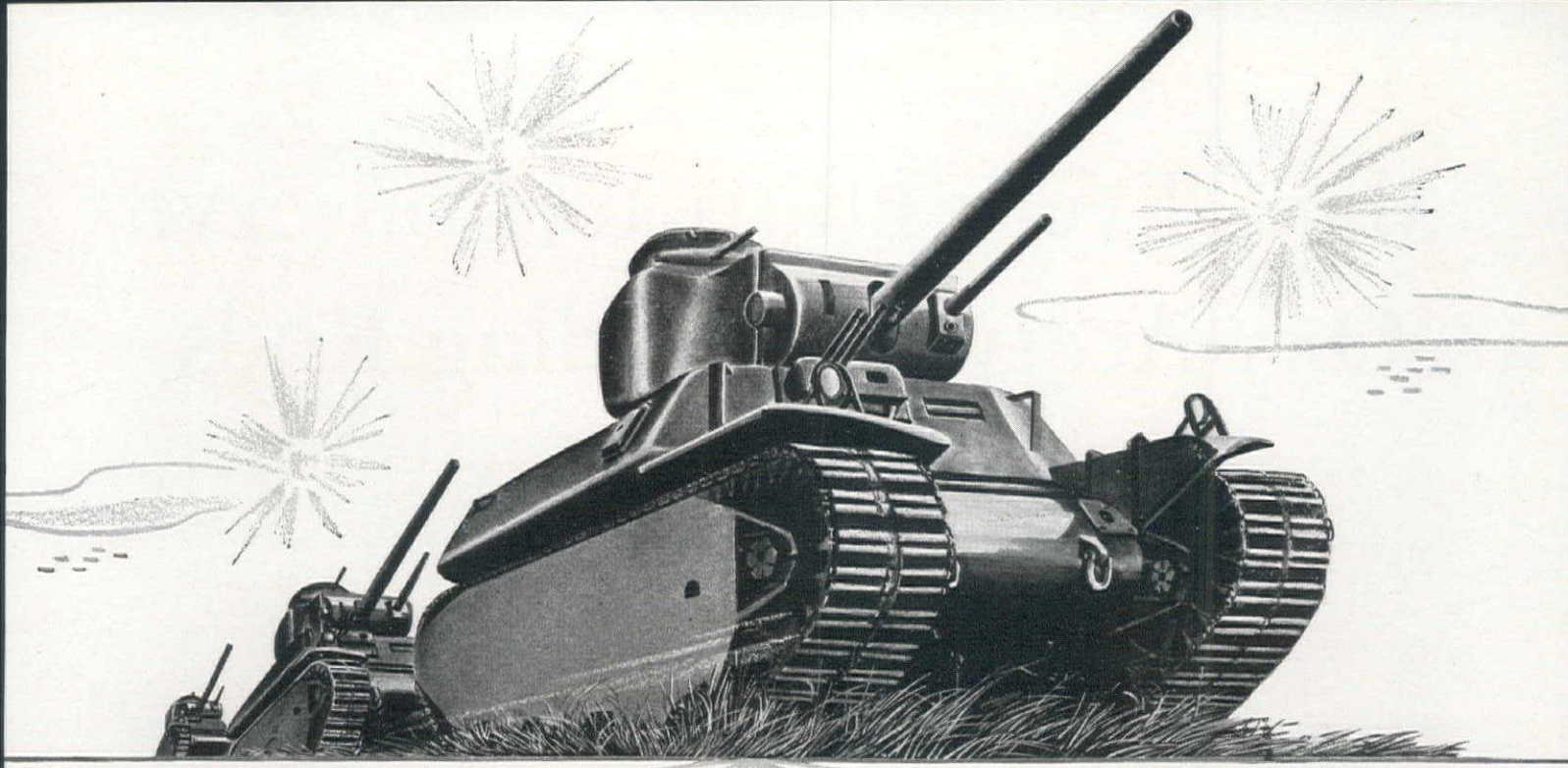


FIG. 4

This is number 12 in a series of informative articles prepared by the Macwhyte Wire Rope Company. All articles in this series are available on request.

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

Macwhyte Company Manufactures:
MACWHYTE PREformed and Internally Lubricated Wire Rope
MONARCH WHYTE STRAND Wire Rope
MACWHYTE Special Traction Elevator Cable
MACWHYTE Braided Wire Rope Slings
MACWHYTE Aircraft Cables and Tie Rods



The Tanks Are Coming!

Thanks to a continuous supply of vital raw materials and the tireless effort of the construction industry, tanks are rolling off the Nation's assembly lines in staggering numbers. Marion shovels, working without let-up, are doing a real job in keeping tank production ahead of schedule by digging the essential raw materials and clearing the way for new plants. Here is the supreme test of Marion's dependability.

THE MARION STEAM SHOVEL CO.

Marion, Ohio, U.S.A. *Offices in all principal cities*

Serving industry since 1884

MARION

SHOVELS • DRAGLINES • CLAMSHELLS
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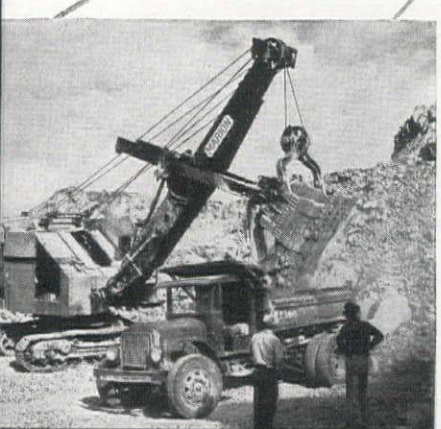
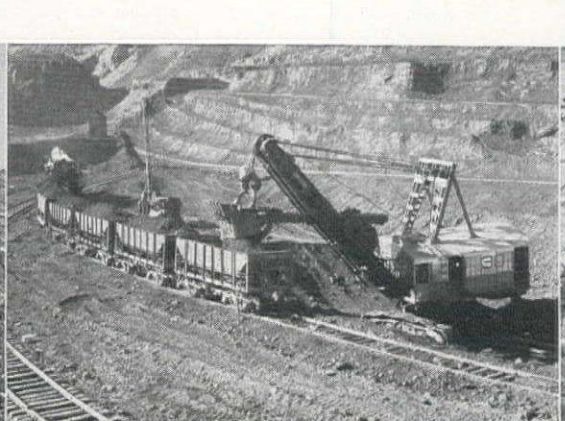
Gasoline — Diesel — Electric — ¾ cubic yard to 35 cubic yards



MANGANESE

NICKEL

COAL



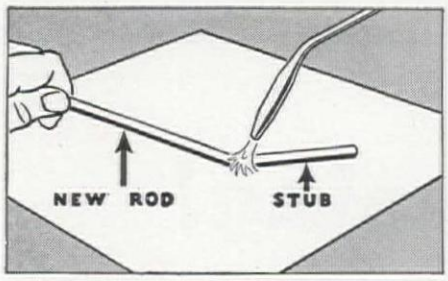
IRON

COPPER

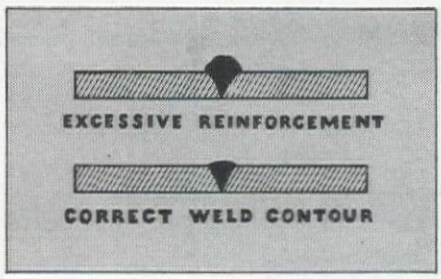
DISTRIBUTED BY: Brown-Bevis Equipment Co., 4900 Santa Fe Ave., Los Angeles, Calif.; The Marion Steam Shovel Co., 571 Howard St., San Francisco, Calif.; Edward R. Bacon Co., Folsom at 17th St., San Francisco, Calif.; Joseph O. Reed, Parklawn Apts., 2504 N. E. Hoyt St., Portland, Ore.; Walling Tractor & Equipment Corporation, 1033 S. E. Main St., Portland, Ore.

Make Every Effort to Conserve Oxy-Acetylene Welding Rods

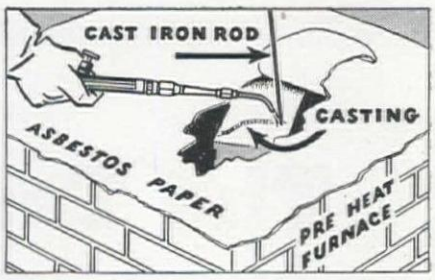
Welding rods, like all products made of materials that are strictly rationed, are subject to certain limitations of manufacture and sale. This is particularly true of rods that are made of bronze, copper, or alloy steels. In order to assure continued adequate amounts of these rods for war production, it is necessary for everyone to make every effort to conserve welding rods to as great an extent as is possible. Outlined here are some suggestions to help you to do this.



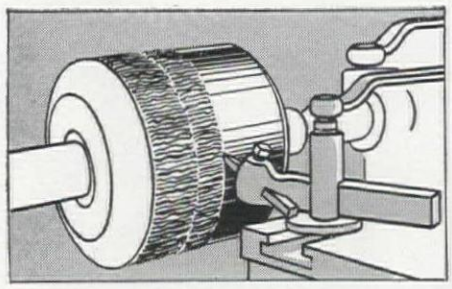
1. *Use up Stub Ends* of welding rods. This can be done by tacking them to the ends of new rods as work progresses, or by providing a container into which they can be placed for subsequent joining.



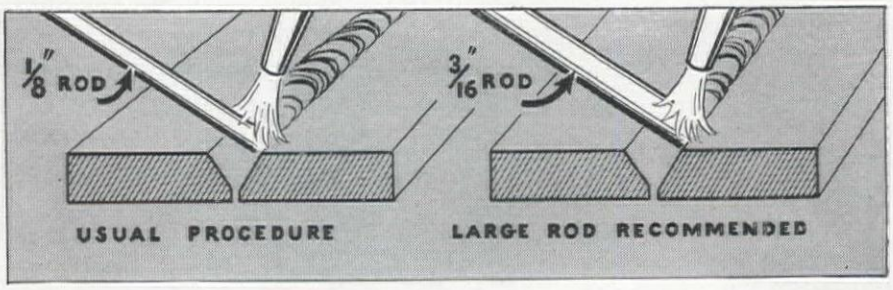
2. *Avoid Excessive Reinforcement* of the weld. Excessive reinforcement not only wastes welding rod, but also tends to set up strains and stresses in and around the weld which actually will weaken the joint.



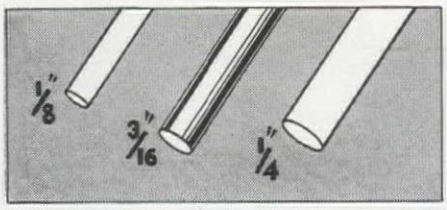
3. *Don't Use Bronze Rod* for work on which steel or cast iron rods will do the job. Of all the many types of welding rod, the bronze rods are most important to conserve. A cast iron repair job is shown above.



4. *When Depositing Bronze Rod* for resurfacing worn areas which are subsequently to be machined, hold the bronze deposit to minimum tolerances. This will prevent waste of both bronze and machining time.



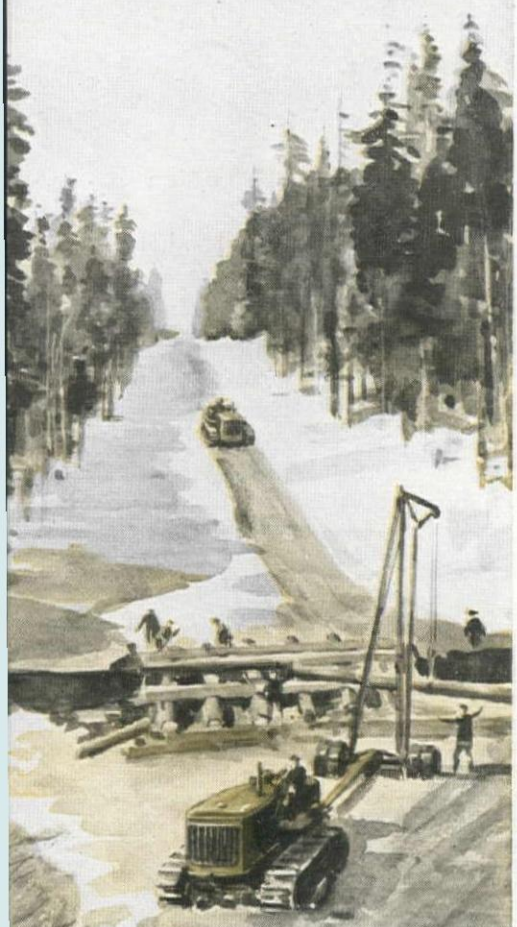
5. *Use Larger Rod Sizes* whenever possible. Large rods are more readily available than the smaller sizes, because there is less call for them and because they tax the production facilities of rod mills less than does an equal tonnage of rods of smaller diameter. By working a little faster and with a slightly larger flame, a rod of larger diameter can be used with equally as good results as though a rod of the customary size were used.



6. *Reduce the Number of Rod Sizes* when ordering rod. If, for example, you normally order rod in sizes 1/8 in., 3/16 in., and 1/4 in., perhaps you can operate equally well by eliminating the 1/8 in., and 1/4 in. sizes. When the rod sizes you normally require are not readily available, use what you have or can get. This avoids delays and reduces the amount of rod tied up in inventory.

7. *Send for Reprints of This Page* for distribution in your shop. Your operators and supervisors can use them as "check lists" to make sure everything possible is being done to avoid waste of materials. We also will be glad to supply colored posters for posting on your bulletin boards to remind employees of the vital need for prompt return of empty oxygen and acetylene cylinders.

ROAD TO TOKYO



UP IN the heart of the Northwest wilderness Army Engineers and contractors are making history. Through vast reaches of desolate bush, towering mountains and frozen muskeg, they're pushing an overland road, 1450 miles long. And they're doing it faster than any engineering feat of such size was ever done before.

This is a job for tough men and tough machines, and the Army has them both. Smashing steadily northward, powerful "Caterpillar" Diesel Tractors plow through logs and brush with their bulldozers. Behind them come huge scrapers, pulled by "Caterpillar" Diesel Tractors; and they in their turn are followed by "Caterpillar" Diesel Motor Graders. A great majority of the track-type tractors used by Army Engineers on this project are "Caterpillar" Diesels.

America's purpose is to have not only a great military road for the defense of our northern outposts, but a supply route for bases of *attack*.

"Caterpillar" Diesel Tractors, Graders, Engines and Electric Sets are furnishing rugged, dependable power to the fighting forces of all the United Nations. They're hauling guns, building airports, clearing jungle trails, powering naval craft, generating current for lights and communication on land and sea.

Here at home, "Caterpillar" dealers have shouldered the responsibility of keeping civilian equipment doing its sturdy share of the war production job. They're supplying parts and service, 24 hours a day, for all the machines that must now carry the load in industry and agriculture. They'll "keep 'em rolling!"

CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

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

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

May the wreath we have won never wither

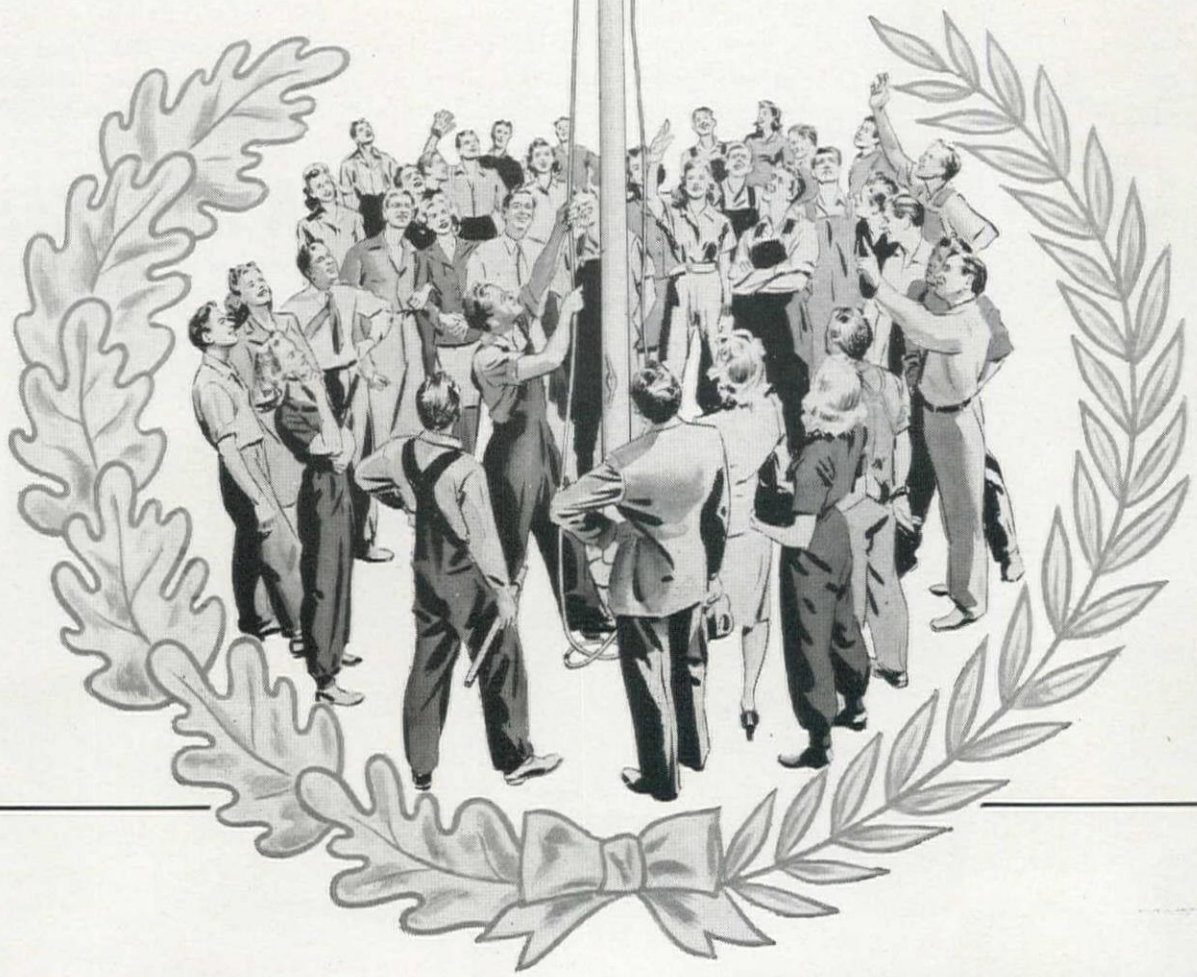
THE War Department and the Navy Department of the United States have conferred upon the men and women of Chain Belt Company the highest honor that can be paid to civilians engaged in war work . . . the Army-Navy "E" for outstanding achievement in production.

Because of our knowledge of the intense determination for Victory which has inspired Chain Belt workers in their willingness to serve and sacrifice, we were not surprised that the award was made. We knew it had been earned and we are gratified that this just recognition has been given.

The Army-Navy "E" pennant will fly proudly from the Chain Belt flagstaffs; and from the lapel of every worker will gleam the shining badge of honor which the Government has cast to signify individual and collective effort beyond the normal conception of duty.

Chain Belt will endeavor to maintain the pace which it has established—to produce more and more for the triumph of our arms.

May the wreath we have won never wither!



THE LAUREL *of this wreath is a symbol of the Victory which Chain Belt workers are determined to win.*

THE OAK *of the wreath symbolizes the strength of the nation—on the battle lines and on the production front.*

CHAIN BELT CO.
OF MILWAUKEE

POSTER REPRODUCTIONS AVAILABLE ON REQUEST. SEE COUPON.

YOU CAN HELP DO THIS JOB

Your country needs all possible steel for guns, tanks, ships and shells. All the *wire rope* that can be produced is needed for military and naval uses—and to speed war production in scores of industries. You can serve your country by taking care of *your* wire rope, so that replacement is postponed as long as possible.

FREE BOOK TELLS HOW

It illustrates and describes more than forty ways to *save money* on wire rope. The big pictures of right and wrong ways make it easy to spot sources of too rapid wear—and *correct* them.

Many thousands of wire rope users throughout the world use this handy book as their guide to longer wire rope life. Now, with urgent war needs for steel and wire rope, it is doubly important that every wire rope user have a copy.

If you *must* have new wire rope to maintain uninterrupted war production, help us to help you by anticipating your needs as far in advance as possible, within priority regulations.

WICKWIRE WISSCO PRODUCTS

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.

MAIL THIS COUPON

Wickwire Spencer Steel Company
500 Fifth Avenue, New York, N. Y.

☐ Send free copy of the book, "Know Your Ropes."

☐ Send.....free posters, 21" wide, of illustration at top of this page. No advertising appears, merely prize-winning title, "I Pull with Uncle Sam."

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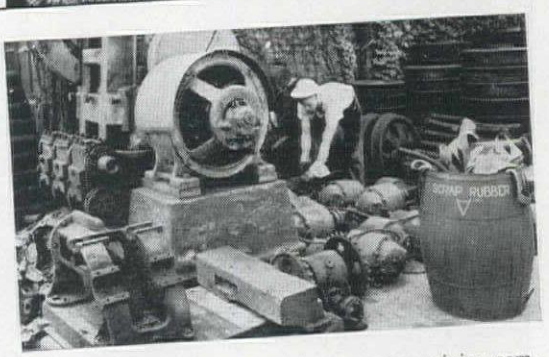
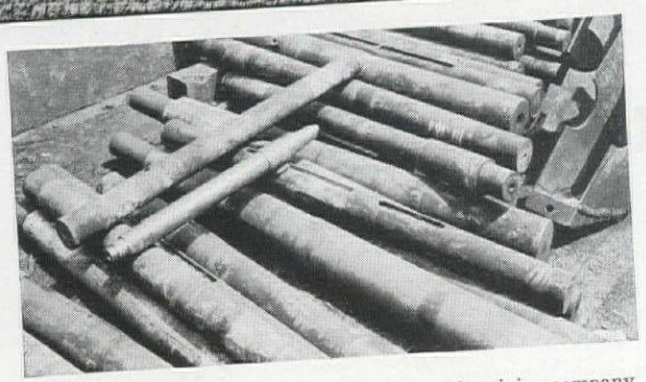
NEWS from the scrap front

TIPS FROM OTHER "WASTE WARDENS" THAT MAY HELP YOU DO A BETTER JOB OF "GETTING IN THE SCRAP"

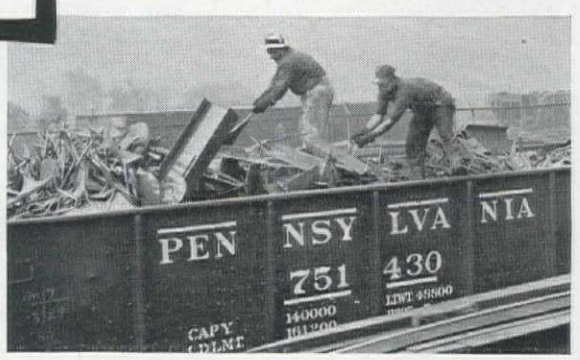
★ ★ ★



RECLAIM! RE-USE! SCRAP!—A large eastern mining company salvages old equipment three ways. If it can be modernized, it is rebuilt, and wornout parts are scrapped. If it is no longer needed "at home" but can be used elsewhere in war work, it is sold. If it can't be rebuilt or re-used, it is scrapped at once. . . . *Does your salvage system include all three?*



OLD AXLES MAKE NEW SHAFTS—A Pennsylvania mining company gets top salvage value out of its broken locomotive axles by machining them down to make replacement shafts for motors and generators. The turnings make excellent scrap. . . . *Are you using salvaged material to help you solve your parts replacement problems?*



SHIPBUILDER KEEPS SCRAP ON THE MOVE—Every week about 100 tons of steel scrap are returned to mills by an inland shipyard that builds patrol boats for the Navy. No dump is allowed to accumulate. About 75% of the salvaged material is heavy structural steel and plate cuttings, 15% is miscellaneous, and 10% is machinings. . . . *Are you shipping your scrap promptly and continuously?*

THE SCRAP IS COMING IN...*but not fast enough!*

We have the proof that industry is cooperating in the drive for scrap metals . . . proof measured in thousands of tons. But mills must get *more* iron and steel scrap if they are to meet the gigantic needs of war industry.

Don't forget . . . steel gets to work on the battlefront more quickly when plenty of scrap is available. Scrap is already metallic. Therefore, less ore needs to be converted into pig iron per ton of steel produced. By remelting scrap to make new steel, more tons of high-quality products can be turned out in a hurry for war purposes.

So make it your personal war assignment to see that your organization does a thorough, continuous job of "getting in the scrap." Cooperate closely with your local Salvage Committee. This is one drive that must not fail!

UNITED STATES

NEBRASKA HITS THE JACKPOT—To stimulate scrap collection throughout Nebraska an Omaha newspaper sponsored a $2000 contest. Results were amazing. 135 million pounds of scrap was turned in—about 103 pounds per capita—setting a new pace for the nation. . . . *Have you tried an incentive system to step up scrap collection in your company? In your community?*

"PAINLESS EXTRACTION" OF CAR RAILS—This new rail remover can pull up 4000 lineal feet of rail a day, its designers say. Besides speeding the salvage job, it reduces damage to pavement and simplifies repaving. 60,000 tons of rail in New Jersey alone will soon be removed with this type of machine. . . . *Is your community equipped to salvage rails economically?*

VETERAN WEAPONS DRAFTED AGAIN—This old Gatling gun and German "dud" torpedo from World War I turned up in a mid-western scrap drive. When they were cut up in the scrap yard, the torpedo yielded over 1000 pounds of steel and the gun about 500 pounds of brass and steel. . . . *Do you know of any war relics, of little historic value, which should be scrapped?*

WE "PRACTICE WHAT WE PREACH"—In one of many salvage operations, a U. S. Steel subsidiary recently dismantled for scrap several of its own mill buildings no longer suited to present practices. The yield was 3500 tons of steel scrap. . . . *Do you have any steel structures, idle now and of doubtful future value, which should be scrapped?*

SEGREGATION
is increasingly important!

Wherever possible, sell your scrap in lots that have been carefully segregated, classified and labeled according to their type and metallic make-up. By making it easy for steel mills to identify accurately the alloy content of your machinings and other scrap, you help to speed production of NE Steels and make possible full utilization of critical alloys your scrap contains. Segregated scrap will bring you a better price, too.

COLUMBIA STEEL COMPANY, *San Francisco* · AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York* · CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago* · NATIONAL TUBE COMPANY, *Pittsburgh* · TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

USS

STEEL

CP VIBRATORS ON 32 BIG DAM PROJECTS

↑ **KNOCKING DOWN A BATCH** at Cottage Grove Dam with CP Model 417 one-man type Pneumatic Vibrators. Note harsh, stiff mix, with 6-inch cobbles — convincing proof of the power and ruggedness of CP Concrete Vibrators, Pneumatic and Hicycle Electric.

USED AT GRAND COULEE, SHASTA, FRIANT AND MANY OTHER DAMS

Figure in Many Concreting Records

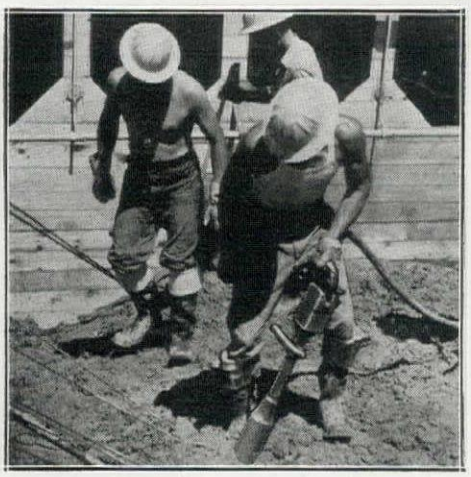
NEW YORK (CP) — At Grand Coulee, Shasta, Friant, Caddoa, Dennison, Ruby, Cottage Grove, Marshall Ford — on practically every large dam project started within the last four years — CP Concrete Vibrators, Electric and Pneumatic, have made outstanding records for performance and low maintenance costs.

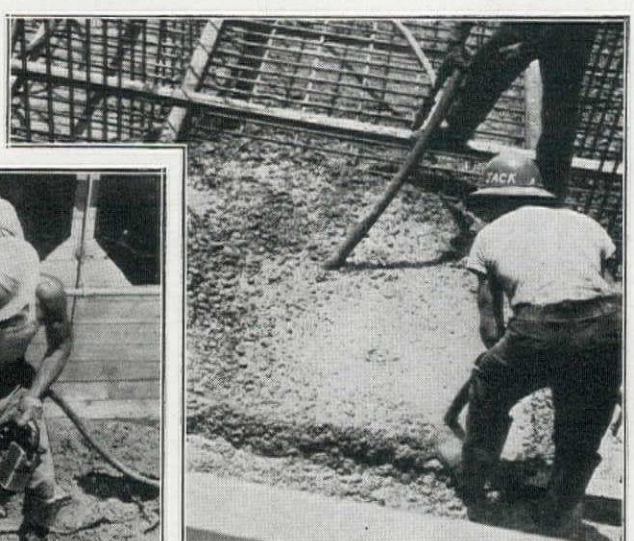
On 32 dams, the total maintenance cost of CP Vibrators — parts and labor — averaged approximately 1¢ per cubic yard. On many of these 32 dams, CP Vibrators were used exclusively for both mass and reinforced concrete. Write for complete data.

CHICAGO PNEUMATIC TOOL COMPANY

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

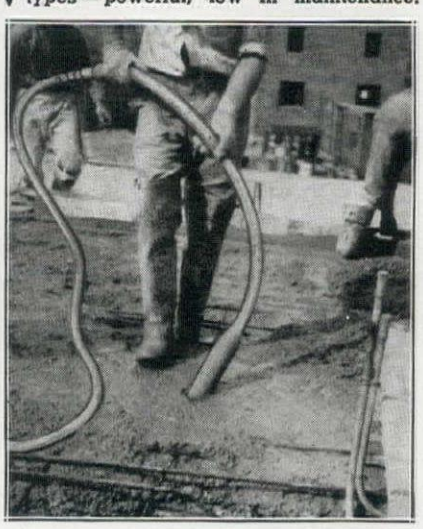
SANTA FE DAM... CP 325 → Pneumatic Vibrators. Note coarse aggregate on top of mix — and smooth appearance of the vibrated section.





← **FIRST BUCKET** of concrete at Shasta Dam, July 8, 1940. The vibrators are CP 417, Pneumatic, ideal for batches up to 2 cubic yards.

THERE ARE 7 MODELS of CP Concrete Vibrators, Pneumatic and Electric, for mass and reinforced concrete; one-man, two-man types — powerful, low in maintenance. ↓



CHICAGO PNEUMATIC

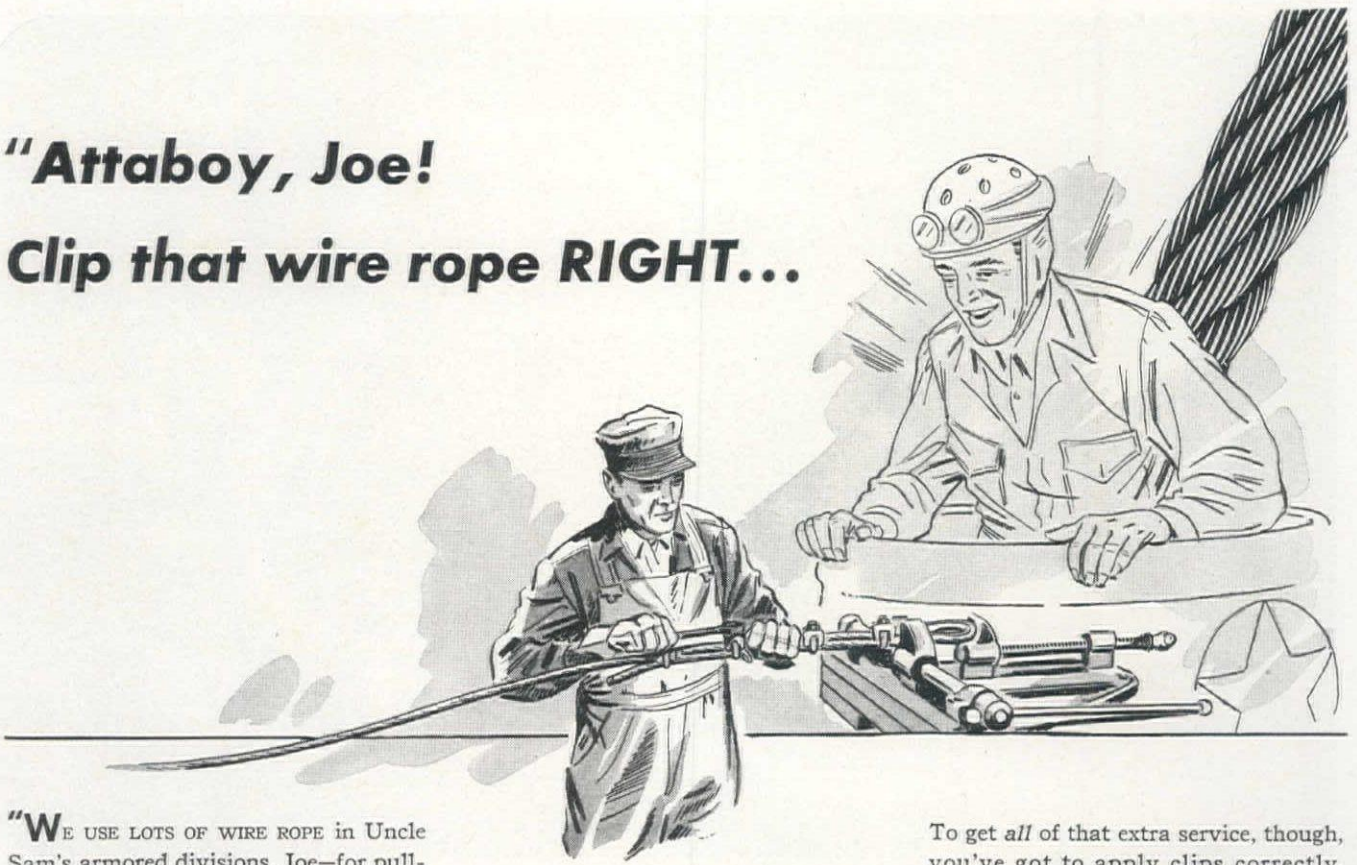
CONTRACTORS' EQUIPMENT

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.

"Attaboy, Joe!

Clip that wire rope RIGHT...



"WE USE LOTS OF WIRE ROPE in Uncle Sam's armored divisions, Joe—for pulling out of tight spots, for towing disabled tanks and trucks, for handling heavy replacement parts . . . And we use it right and *fasten* it right, because we know men's lives in battle may depend on its being just as strong as it's supposed to be!"

Keeping wire rope "just as strong as it's supposed to be" is important *wherever* wire rope is used—on fighting front or production front! One factor in rope strength is correct fastening. *Properly used,* clips make a convenient and satisfactory fastening, developing 75 to 90 per cent of the rope strength.

When we build "Blue Center" Steel Wire Rope here at Roebling, we put in all the *extra* value of 100 years of wire-rope engineering. But even "Blue Center" Steel Wire Rope can't give extra service unless *enough* clips are used in fastening. The table below gives data for clipping "Blue Center" Wire Rope.

NUMBER OF CLIPS REQUIRED FOR "BLUE CENTER" STEEL WIRE ROPES

Rope Diameter	Number of Clips	Spacing of Clips	Length of Wrench
1/2" to 5/8"	4	3 1/2" to 4 1/4"	12"
3/4" to 7/8"	5	5" to 5 3/4"	18"
1" to 1 1/8"	6	6 1/2" to 7 1/4"	24"
1 1/4" to 1 3/8"	7	8" to 8 3/4"	24"
1 1/2"	8	9 1/2"	24"

To get *all* of that extra service, though, you've got to apply clips correctly. Always use a standard wire-rope thimble. Put the clip U bolts on the dead end of the rope. Tighten bolts securely, but *do not crush rope!* Retighten all clips after an hour's full

running time and also at all regular inspections. By following these rules for proper clipping, you'll be helping to keep rope on the job for Victory.

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA

San Francisco • Los Angeles • Seattle • Portland
Branches and Warehouses in Principal Cities

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

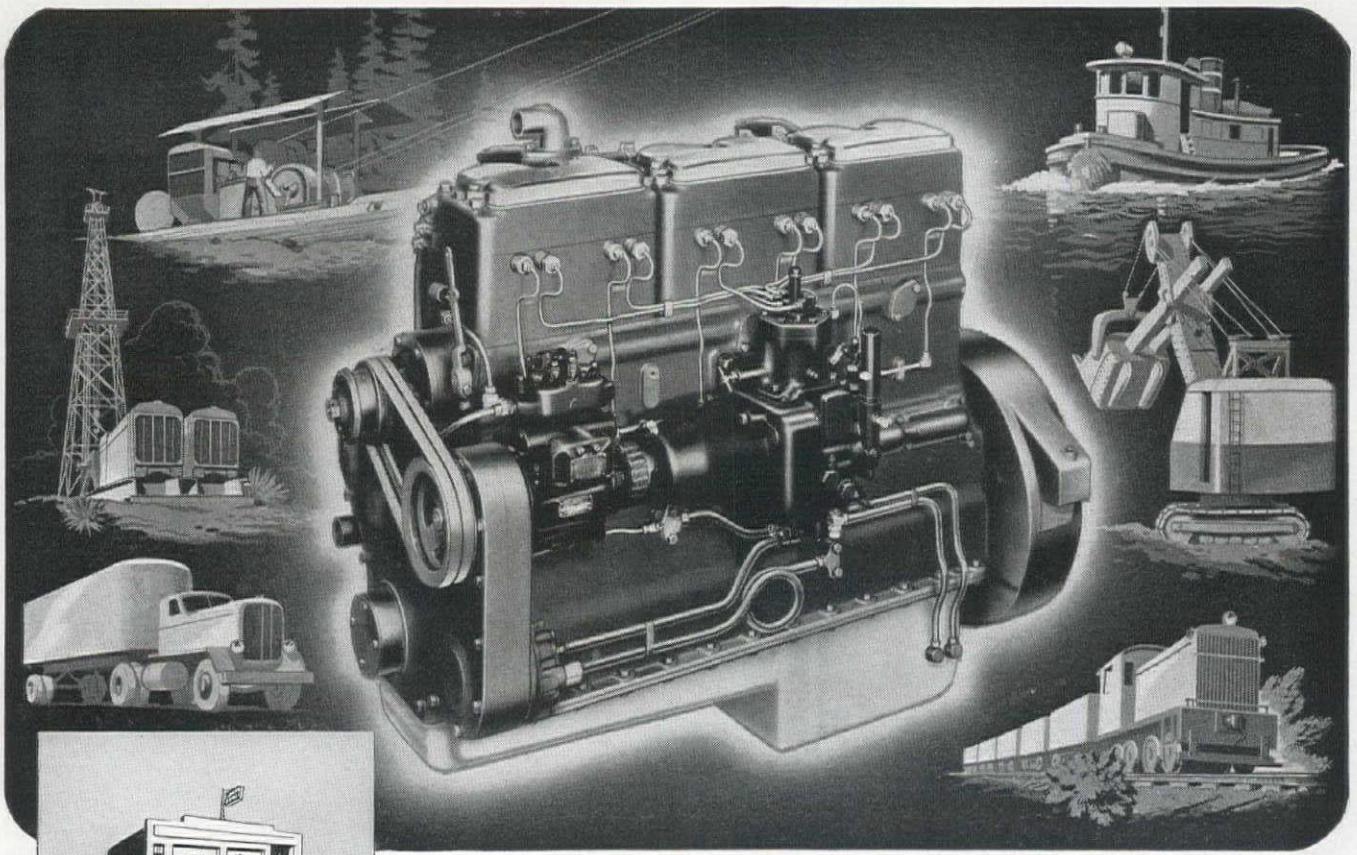
ROEBLING

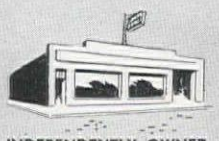
"Blue Center"

STEEL WIRE ROPE

PREFORMED OR NON-PREFORMED

IRON AND STEEL ARE DESPERATELY NEEDED! Throw Your Scrap into the FIGHT!





INDEPENDENTLY OWNED DEALERSHIPS

COMPLETE PARTS STOCKS

FACTORY TRAINED MEN

OWNERS MANUALS AND SERVICE BULLETINS

TO NEW MEN AND OLD TIMERS

Since 1932, when the first high-speed Cummins Diesel was offered to the public, the Cummins Customer Service Plan has been in active operation.

This plan consists of five major features:

1. Independently owned dealerships whose very existence depends upon their ability and willingness to serve any purchaser of a Cummins Diesel to his complete satisfaction.
2. Complete parts stocks available at centrally located points, eliminating duplication and consequent incomplete stocks.
3. Competent, factory-trained men who are ready and willing to advise and instruct mechanics, or handle any service problem which may arise.
4. Easily understood Operator's Manuals which give complete instructions for a preventive maintenance program with detailed answers to every emergency question. (To non-owners, the price of this book is one dollar.)
5. Service Bulletins covering day-to-day developments and improved practices recommended through the continuous personal contact of direct factory representatives with owners and mechanics throughout the country.

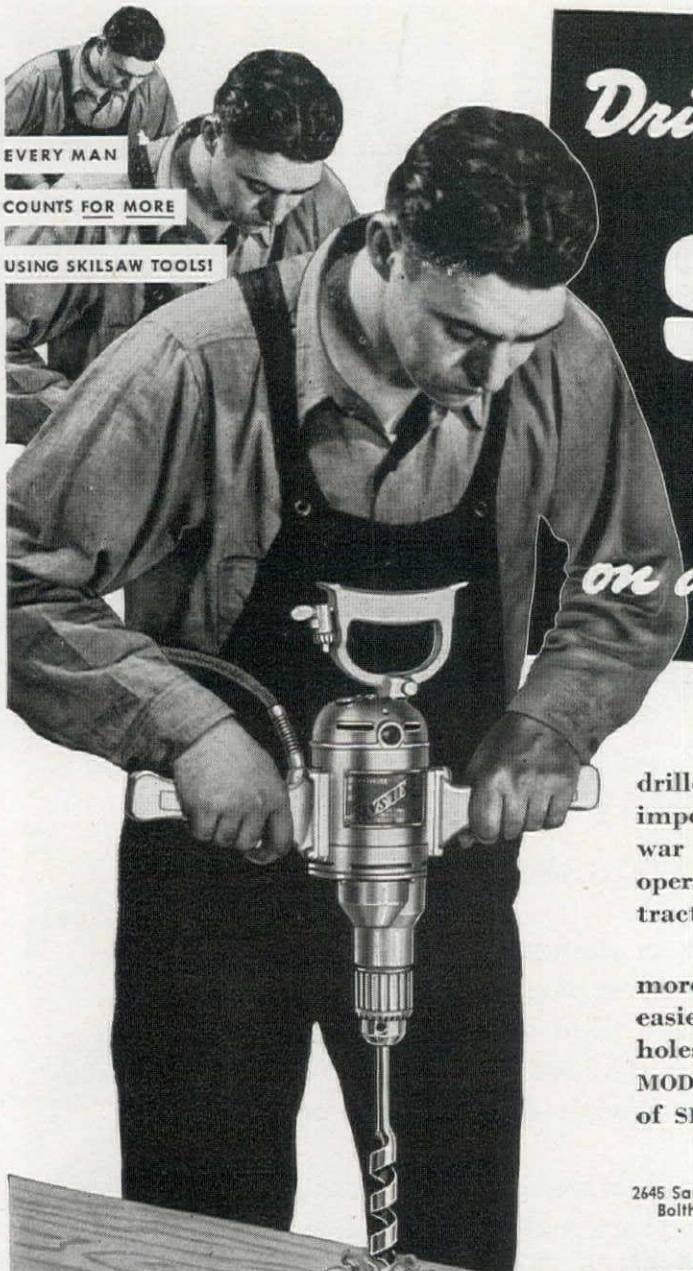
If you are not taking full advantage of this 5-point Cummins Customer Service Plan, to make your Cummins Diesel work better . . . longer . . . for less money . . . why not get in touch with your Cummins Dealer today?

SALES AND SERVICE:

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

CUMMINS Dependable DIESEL

CUMMINS ENGINE COMPANY · COLUMBUS, INDIANA



Drill and Build Faster

WITH

SKILSAW DRILLS

on all War Construction!

When you think how many holes must be drilled on a single big project, you'll realize how important SKILSAW DRILLS can be to you in rushing war construction. The seconds they save on each operation mount up to days saved on whole contracts . . . days that will help bring Victory *sooner!*

SKILSAW DRILLS are faster because they are more powerful. They're lighter, more compact and easier to handle on all drilling from lightest lead holes for screws to heaviest reaming. 23 POWERFUL MODELS. Ask your distributor for a demonstration of SKILSAW DRILLS on your own work.

SKILSAW, INC., CHICAGO

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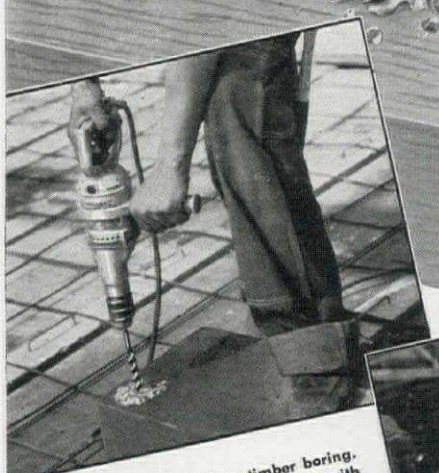
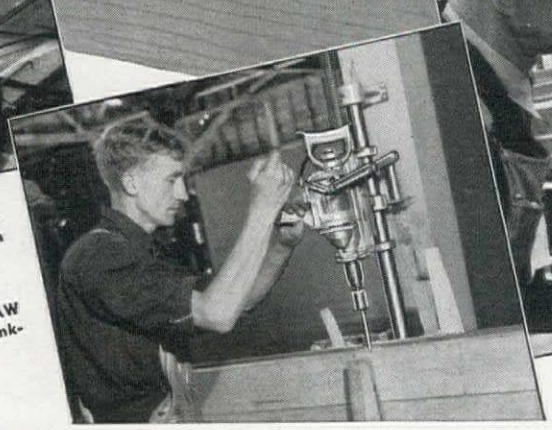
2124 Main Street, Dallas • Mine & Smelter Supply Co., El Paso
Smith Booth Usher Co., Phoenix

SKILSAW PORTABLE ELECTRIC **TOOLS**

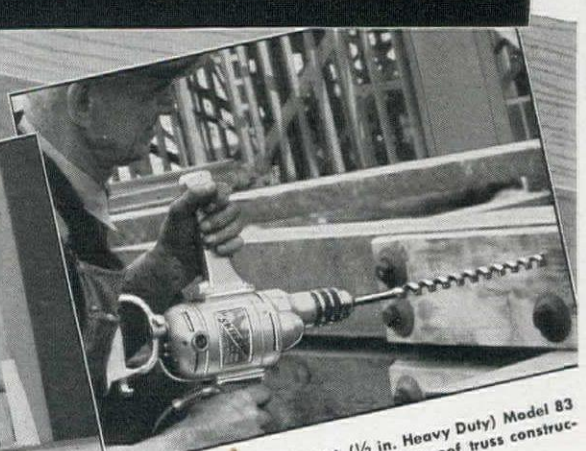
★ *MAKE AMERICA'S HANDS MORE PRODUCTIVE* ★



SKILSAW DRILLS speed up timber boring. Light, compact, powerful. May be used with or without auxiliary side handle.



Mounted in a Bench Drill Stand, SKILSAW DRILLS do lead-hole drilling, counter sinking and thru-drilling faster, better.



SKILSAW DRILL (½ in. Heavy Duty) Model 83 speeds all heavy boring in roof truss construction up to 1¼ in. in hard wood.

"ASSURES OUR EQUIPMENT BEING IN TOP OPERATING CONDITION AT ALL TIMES"

Says W. J. Sheppard Co.
Paving, Grading, Excavating
Chicago

Pumps Lubricant Direct from Original Drums — Saves Production Time!

WRITES R. A. Sheppard of the W. J. Sheppard Co., Chicago: "We are writing to advise you of our complete satisfaction with our new Alemite Portable Service Station, which is in constant use at a large defense plant project.

"The fact that the pumps deliver lubricant directly from the original drums assures our lubricant being kept clean at all times. Our men have already noticed a big saving in the time required for lubrication.

"Using these power-operated pumps assures clean, fresh lubricant reaching even the tightest bearings—and flushes out the old, dirty grease, thus assuring longer life for our machinery. In addition to this, our cost records show that we have made a real reduction in lubricant consumption since this station has been in the field.

"In these days when we are all so busy and when it is of utmost importance to 'Keep 'Em Rolling,' we know that our use of this unit will assure our equipment being in top operating condition at all times!"

Alemite Portable Service Stations are available for use with 400-lb. or 100-lb. drums, in standard models, or custom-built to your own specific needs. Write for FREE booklet giving complete details!

Another Product of STEWART WARNER

ALEMITE
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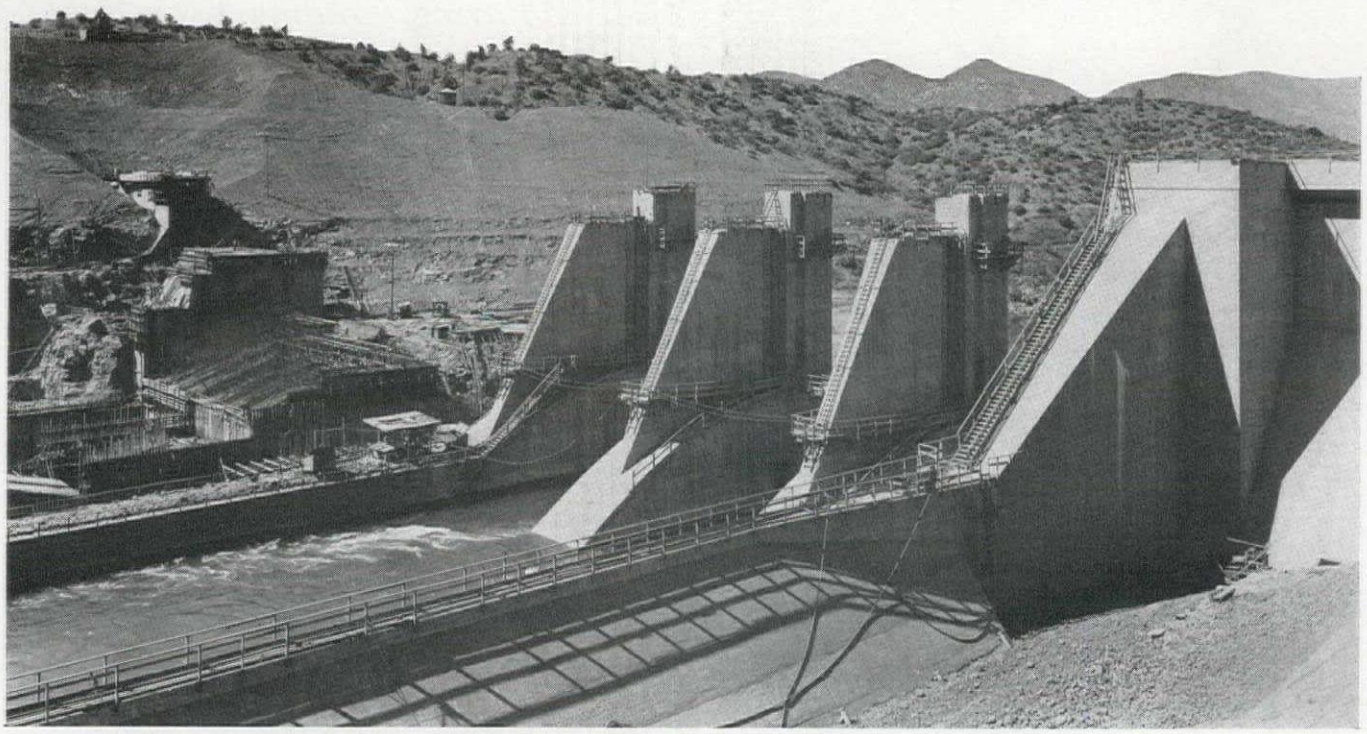
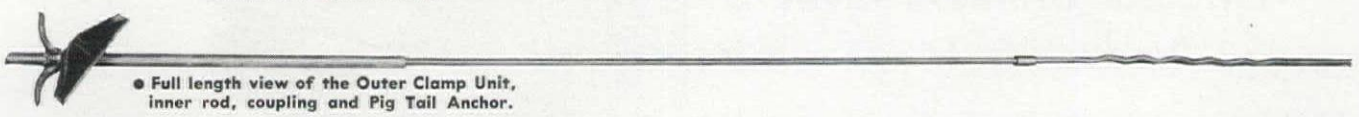
ALEMITE HELPS THE WORLD GO 'ROUND
Ask Anyone in Industry!

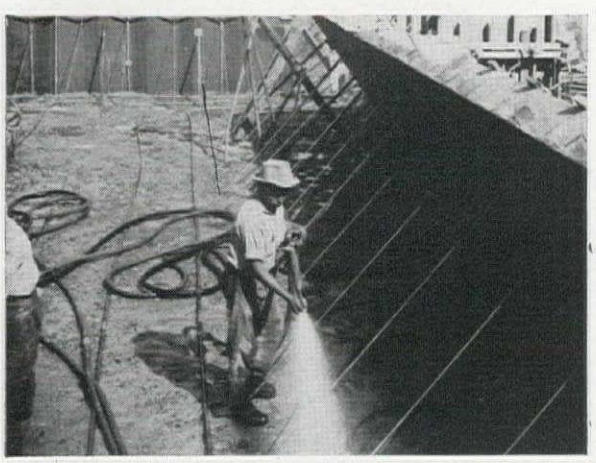
CONSTRUCTING with WILLIAMS



● Present progress at Keswick Dam, showing river being diverted through spillway section during construction of fish trap, to the left of the spillway, and the powerhouse foundation, the large block in left center. Abutment at right is completed to final height. The gap in the abutment at the left will not be filled in until Shasta Dam, 10 miles upstream, is completed and the railroad material track is no longer needed. Contractor—Atkinson-Kier.

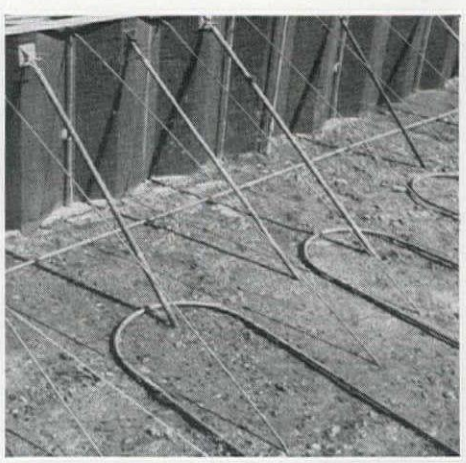


● Full length view of the Outer Clamp Unit, inner rod, coupling and Pig Tail Anchor.



● Williams Form Tie Rods and Pipe Spreaders in place, supporting forms for concrete pour in one of the blocks forming the substructure of Keswick Dam Power House.

● A workman sandblasts the top of a preceding pour in preparing for the top section of one of the Keswick Dam spillway piers. Williams Form Ties and water pipe for cooling joints are shown in place ready to receive the concrete.



WILLIAMS FORM

BOX 925, MADISON SQUARE STATION

KESWICK DAM

"Super-Hi" Tensile Tie Rods!

HOW THE WILLIAMS FORM ENGINEERING CORPORATION EFFECTED A 75% SAVINGS IN STEEL ON THE JOB

The Williams Form Ties in use by Atkinson-Kier Construction Co. at Keswick Dam, are of special pitch diameter "Super-Hi" high-tensile steel, too tough for cut threading. They are cut in Williams own completely equipped fabricating plant *on the job*, where the roll threader expands the threads to ½ inch. Pigtail anchor rods of the same "Super-Hi" Tensile material conserve steel and will not creep under maximum load. They are set in the concrete of the preceding pour, the threaded end protruding 3 to 6 inches.

When that pour is hard, a threaded high tensile coupling attaches the next tie rod to these anchors, and the rod is then bent so that it may be fastened into a she-bolt clamp which comes through the form lumber. This clamp is adjusted to align form while a pipe spreader with an inverted clamp unit spaces form during pouring and while the concrete is setting. When set, the clamp and pipe spreader can be removed and used again, but the rod remains in the concrete block. The "Super-Hi" tensile bars, using undersize pitch diameter and high carbon steel, effect a *75% saving* in weight over the ⅞ inch rods originally proposed, without lowering the efficiency of the job.

Patent Rights	
Date	Number
6- 1-27	1,586,991
4-24-28	1,667,253
3-29-32	1,851,339
4-24-28	1,667,252
10- 7-29	Re. 17,452
7-21-36	2,048,151
8-14-28	1,680,923
6-11-29	1,716,872
2-11-30	1,746,570
4- 7-31	1,799,269
11-10-31	1,831,153
2-20-40	2,190,748

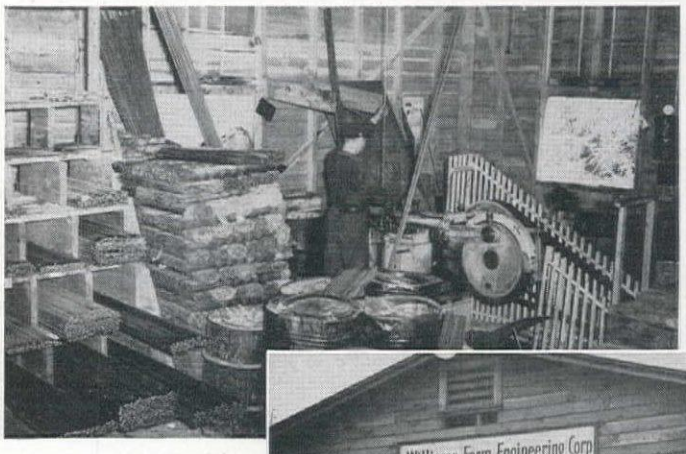
Other Patents Pending

Also Foreign Patents

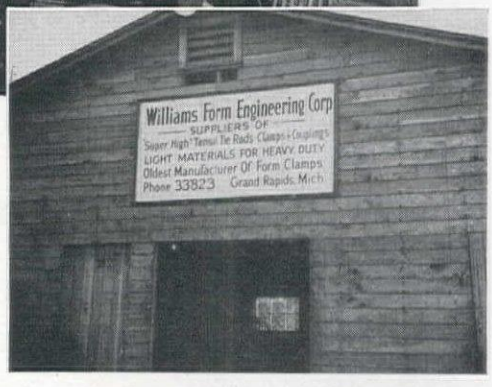
Consider these 10 Important Advantages of WILLIAMS Tie Rods!

1. Light weight, super-strength steel.
2. She-bolt clamps may be used over and over for both spacing and tieing.
3. Easily installed and removed, light to handle.
4. Will not slip, stretch or creep.
5. Leave no exposed ties nor rust streaks on finished surface.
6. Angularly adjustable for alignment.
7. Forms are held rigidly with a known *factor of safety.*
8. Time and material saved handling less steel.
9. The pigtail anchor rod saves steel and positively will not creep.
10. Pigtail anchors can be placed into concrete *after* pouring, within an hour's time, eliminating elaborate line-up and tieing before pouring. This also makes it much easier to gauge centers.

A Good Clamp Is a Good Insurance Policy!



• Interior view of the Williams Form Tie Corporation fabricating shop at Keswick Dam. Rods come from the factory in standard lengths and are cut, threaded and bent on the job.



• Exterior view of shop showing company sign.

ENGINEERING CORP.

GRAND RAPIDS, MICHIGAN

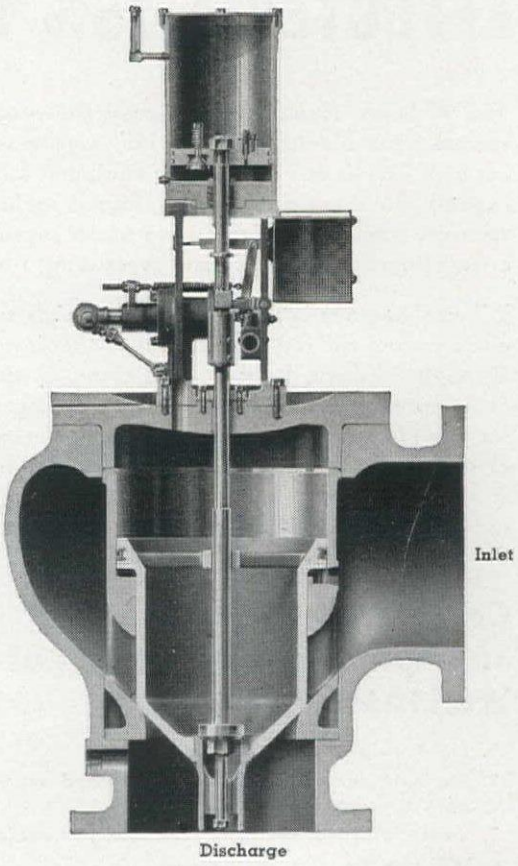
Water-Pumping Lines are Subject to Surges, then BREAKS

Insure

Uninterrupted Service, Save on Repairs

with

The PELTON SURGE SUPPRESSOR



Do you pump water to a higher elevation? If so, watch out for line ruptures which do occur when the pump suddenly stops or surges occur from any other cause.

You can insure full line protection, save costly repairs, by using the Pelton Surge Suppressor. Before the dangerous back surge arrives, the Pelton Surge Suppressor releases the water automatically.

Ordinary relief valves do not offer full protection. Nothing less than a Pelton Surge Suppressor can be set for any surge period and provide full protection against line ruptures. Ask for free Bulletin No. 31.

SEE OUR EXHIBIT AT THE 23rd ANNUAL CONVENTION, AMERICAN WATER WORKS ASSOCIATION, Calif., Section, HOTEL OAKLAND, OAKLAND, CALIF. OCTOBER 28-30 INC.

THE PELTON WATER WHEEL COMPANY

Hydraulic Engineers

2929 NINETEENTH ST., SAN FRANCISCO

EXCLUSIVE REPRESENTATIVES for Baldwin-Southwark Division of Baldwin Locomotive Works, Baldwin-De La Vergne Sales Corp., Woodward Governor Co. and Cone Valve Division, Chapman Valve Mfg. Co.

120 BROADWAY
NEW YORK

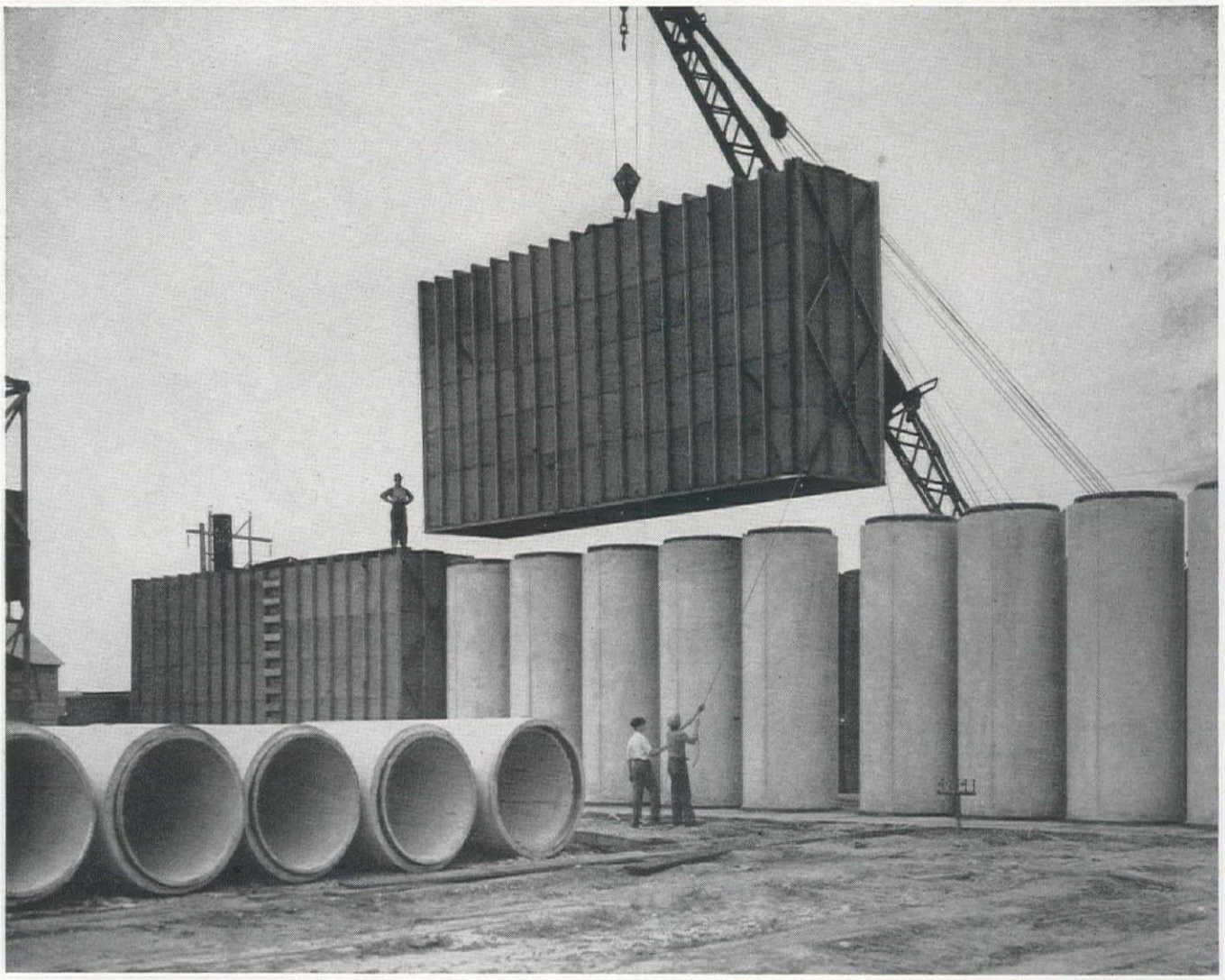
PASCHALL STATION
PHILADELPHIA

BLW THE BALDWIN GROUP

PELTON

Subsidiary of THE BALDWIN LOCOMOTIVE WORKS

Reinforced Concrete Cylinder Pipe For Water Supply Lines in the Nation's Growing War Arsenal



Several miles of 58" diameter Lock Joint Reinforced Concrete Cylinder Pipe manufactured by the American Pipe and Construction Co. for installation in main water supply line of one of the nation's new war plants in Mississippi Valley.

PERMANENCE HIGH CARRYING CAPACITY TRUE ECONOMY

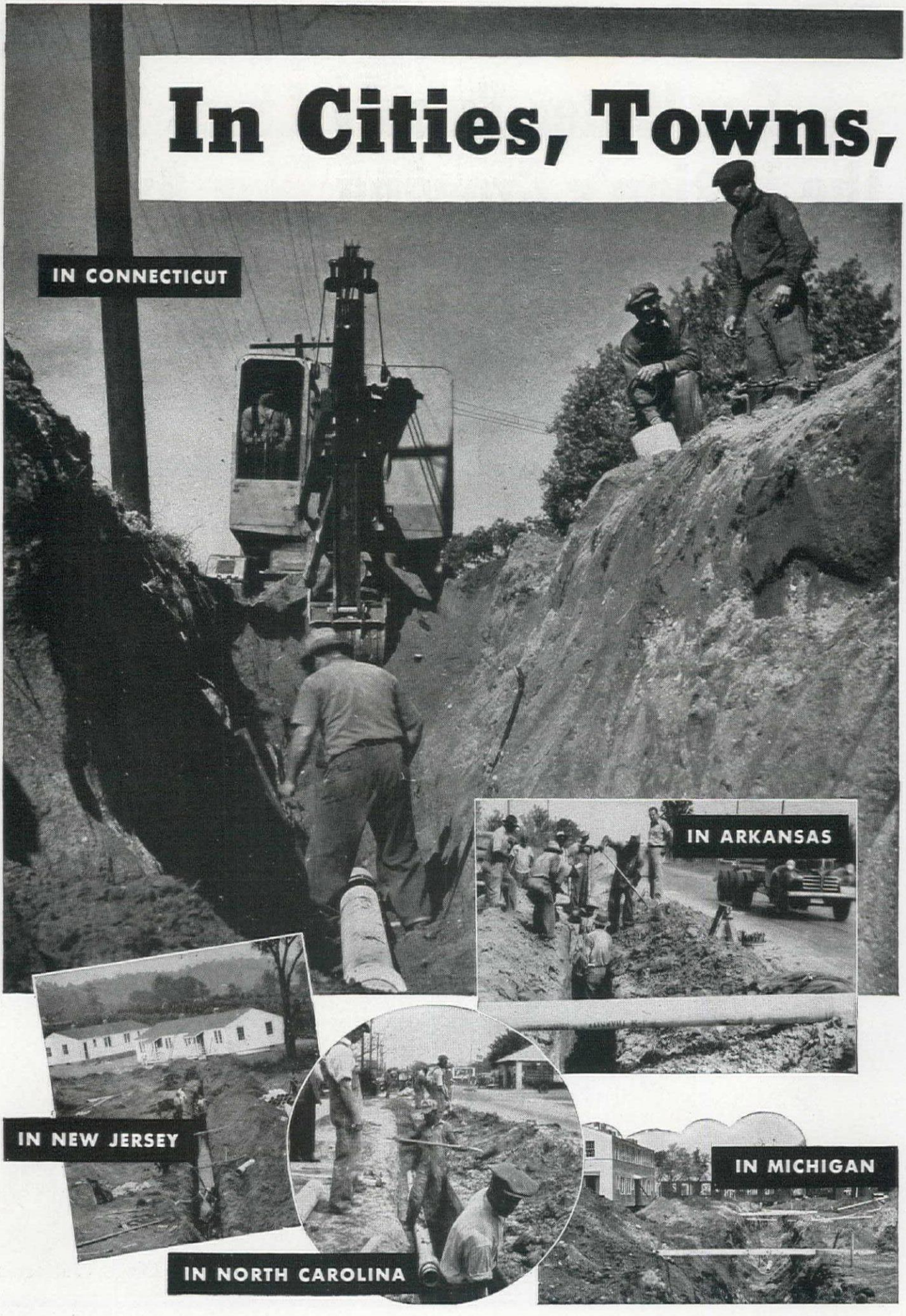
AMERICAN PIPE AND CONSTRUCTION CO.

P. O. Box 3428 Terminal Annex, Los Angeles, California

787 - 85th Avenue, Oakland, California

Kurtz & Rosecrans, San Diego, California

In Cities, Towns,



Villages . . .

For Water Lines . . . *more and more communities of all sizes are adopting J-M Transite Pipe for efficient, economical water transportation. Check these advantages:*

Easy Handling . . . Transite Pipe is light in weight . . . handling requires fewer men. Mechanical equipment is needed only for the larger sizes.

Rapid Assembly . . . Transite Pipe is assembled with the Simplex Coupling, consisting of a Transite sleeve and two rubber rings. No heating or pouring operations are necessary. And even unskilled crews can form tight joints quickly and easily.

Tight, Flexible Joints . . . Simplex Couplings provide tight, flexible joints. Finished joints are checked by gauging the position of the rubber rings. Deflections up to 5° are possible at each joint . . . permitting wide sweeps to be made with straight lengths of Transite.

High Corrosion-Resistance . . . This feature of Transite's asbestos-cement composition means long service with minimum upkeep.

Tuberculation Impossible . . . Possessing an unusually smooth bore, Transite has a flow co-efficient of C=140. Being non-metallic, Transite maintains its high delivery capacity because it can't tuberculate.

For complete details, write for Transite Pressure Pipe brochure TR-11A. And for information on the many ways Transite Sewer Pipe reduces sewage disposal costs, send for brochure TR-21A. Address Johns-Manville, at Los Angeles, San Francisco or Seattle.

Johns-Manville

JOHNS MANVILLE JM PRODUCTS

Transite Pipe

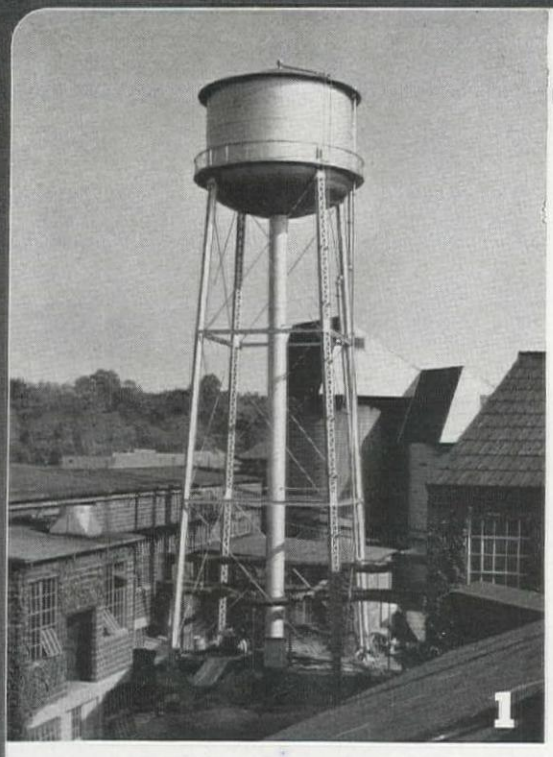
AN ASBESTOS PRODUCT

For efficient, economical water and sewer lines

FABRICATED STEEL TANKS

and PLATEWORK

help make Paper . . . Iron . . . Oil . . . Power

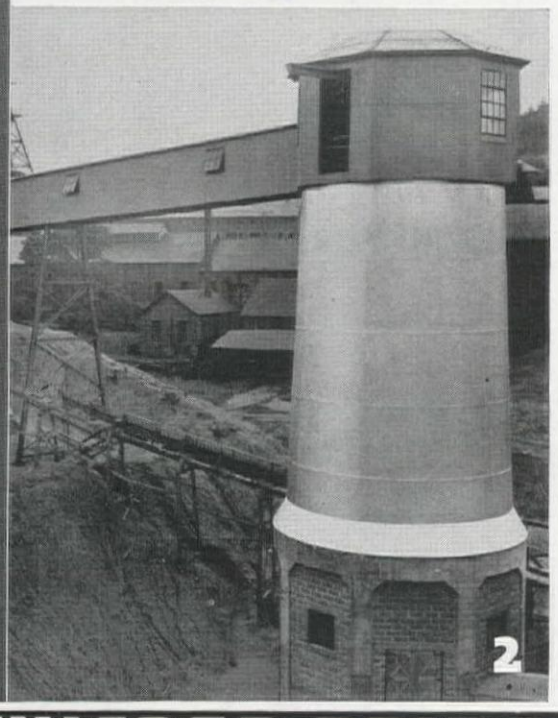


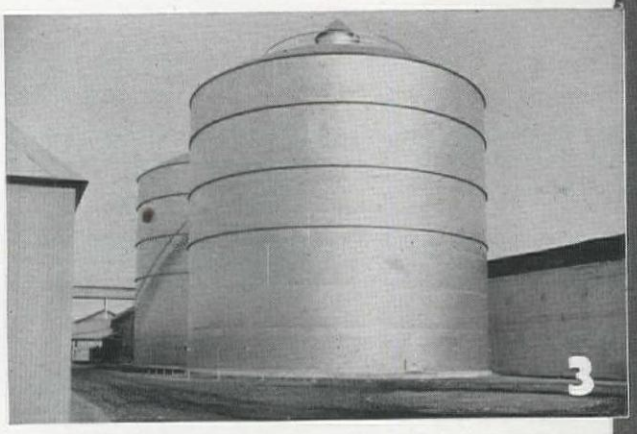
1 ELEVATED WATER STORAGE—This 60,000-gal. elevated tank is piped for dual service. It provides gravity water pressure for an automatic sprinkler system in addition to acting as a mill-use surge tank.

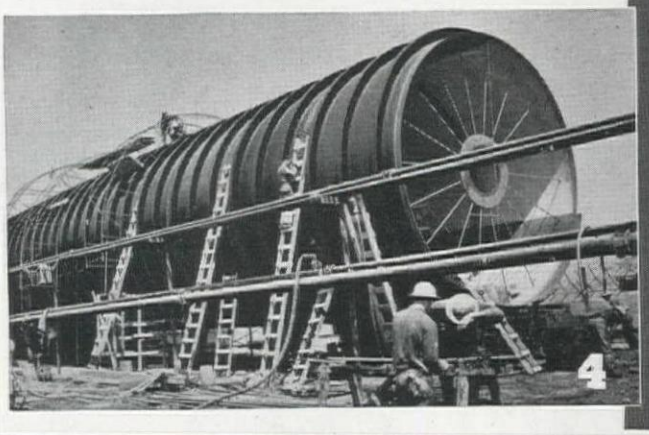
2 IRON ORE BIN—27 ft. diam. by 40 ft. high conical-bottom steel bin used to handle iron ore at a steel mill.

3 FLAT-BOTTOM STORAGE TANKS—These two welded steel tanks are used to store cottonseed. They measure 70 ft. in diam. by 60 ft. high.

4 STEEL PIPE—Sections of large-diameter fabricated steel pipe are shown being field-erected at one of the new dams now under construction.







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WESTERN CONSTRUCTION NEWS
WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

October, 1942 Vol. 17, No. 10

Utilizing Engineering Resources

ENGINEERING LABORATORIES of the Bureau of Reclamation have been made available to all Governmental agencies for assistance in solving technical problems of the war production program, an action which should ultimately result to the considerable benefit of the war program, if full advantage of the laboratory facilities is taken by such agencies as the Army, Navy, War Production Board, and Maritime Commission. Probably no other private or public organization is as well equipped to deal with so many of the problems of engineering technology.

There can be no question but that full advantage must be taken of every resource at the Nation's command, if the war is to be prosecuted to a successful conclusion, and it may be considered fortunate that engineering construction problems in the West have necessitated the development of a well staffed and well equipped laboratory which has both proven and potential value in the present emergency.

Unfortunately, in some instances during the past few months, the problem of utilizing our available engineering resources to their utmost capabilities has become somewhat confused with a desire to retain, intact, organizations which have been built up carefully and at considerable expense over a period of years; with possibly a feeling upon the part of the heads of some public organizations that their departments must be busily occupied to justify their continued existence; and with undoubtedly a certain amount of common politics. Excuses cannot be made for any of these attitudes.

Many private businesses are disappearing because they could not be readily converted to war production, and it should not be expected that some public engineering organizations will at least become relatively insignificant for the duration, if they do not disappear altogether. The question of time and expense in building a prewar staff and equipment facilities should have no more consideration than has any other economic problem in time of war. The War Manpower Commission last month directed the U. S. Civil Service Commission to transfer employees from one Federal department to another where efficiency of the war effort could be improved thereby, and authorized the release of Federal employees to private enterprise under the same consideration, thus recognizing the fact that some agencies must suffer to benefit those that are of greater importance under the changing conditions.

Furthermore, public engineering organizations should not be permitted to compete with private engineering organizations under any circumstances. There may be occasions when public engineering organizations can handle specialized problems more capably than existing private organizations, but such occasions are exceptional. Wherever the advantage of employing a public organization on a consulting basis appears to be primarily a financial one, the circumstances should be most carefully examined to avoid any tendency toward parasitic development of public engineering organizations.

Contract Renegotiation

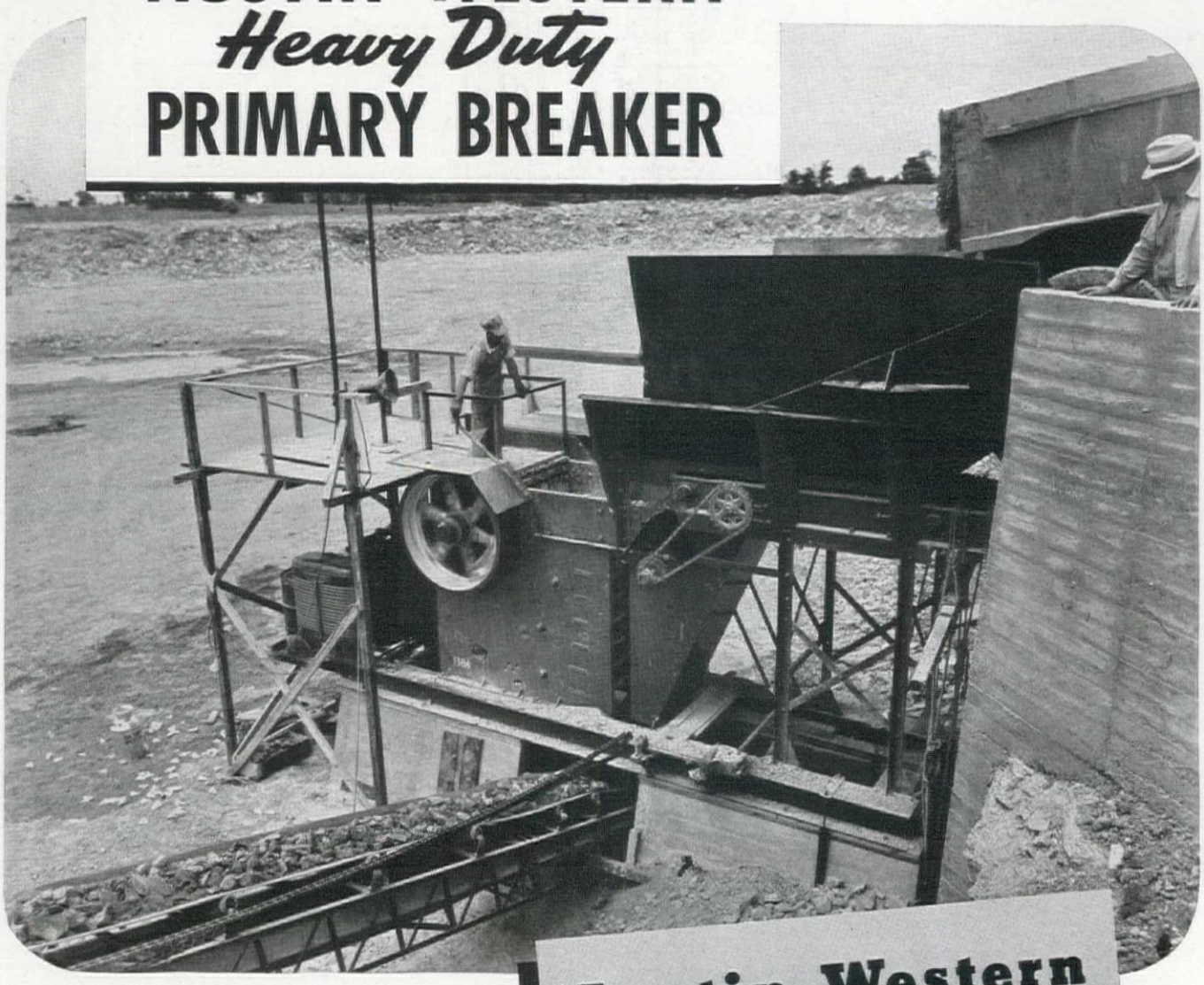
IN SPITE of the fact that there seems to be considerable sentiment toward repeal of the present contract renegotiation law among members of the Congress there appears to be little likelihood of repeal or relief much before the end of the year, and in the meantime price adjustment boards are being established and are beginning to function actively. Some opposition to renegotiation of construction contracts has developed among contractors, rather unfortunately. If organized opposition to renegotiation is permitted to develop, the construction industry may find itself tagged with the "war profiiteer" stamp sometime in the future.

There is much more at stake in these times than the making of profits, more than the suffering of inconveniences and expense involved in contract renegotiation and auditing of accounts. First of all and most important is the war itself. To the present time there has been no indication that United Nations are making definite progress toward winning the war. Bickering over profits and how they will be returned to the Government is not only out of place, but is completely beside the point when the question of survival is at stake. American industry generally appears to have accepted the attitude that normal profits will be foregone, and the construction industry least of all can afford to distinguish itself by insisting upon repeal of the contract renegotiation law.

Secondly, there is the question of post-war developments and the part in them which the construction industry will be called upon to take; in other words, the entire future of the construction industry. Do not think for a minute that today's proceedings will be forgotten when the war is over. Remember the verbal whipping handed to munition makers ten and fifteen years ago over their activities in World War I, ten years after the war was over. The construction industry has an opportunity to perform a masterpiece of public relations work, the results of which may ultimately be infinitely more important to the industry than is any question of profits or convenience today.

The principal criticism of the contract renegotiation law seems to be aimed at the indefinite provisions of the act which might prove to be particularly inequitable when applied to construction contracts. There is no question but what the present law should be amended to include more definite and equitable provisions for application to construction contracts, but any action by contractors to secure repeal of the act appears to be unwise. Instead, full compliance with provisions of the act and the price adjustment boards carrying out the provisions of the act should be urged. It does not seem likely that price adjustment boards will be unreasonable in spite of the act's indefinite provisions. True, there will probably be instances of too drastic action on the part of the adjustment boards, but it will indeed be unusual if these occurrences are not balanced by a small minority of contractors who, in spite of everything, will make every attempt to retain a profit larger than necessary under the circumstances.

AUSTIN-WESTERN
Heavy Duty
PRIMARY BREAKER



Austin-Western

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● This 2540 Primary Breaker is in operation at a Mid-West quarry, crushing rock for a U. S. Ordnance Plant. Set to produce 4" material, and handling rock up to 24", this unit is delivering 150 to 175 tons of stone per hour on a 3-shift basis.

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Typical A-W heavy duty construction features give assurance of continued high efficiency, low maintenance cost, and extra years of trouble-free service. Jaws are exceptionally deep to provide faster crushing. Shafts are very large, and are equipped with self-aligning roller bearings which require lubrication only after ten hours of operation.

The crusher is equally suitable for use in a stationary set-up or in a portable unit. The breaker weighs 34,000 pounds, and is driven by a 100 H. P. motor. Wheels can be with steel or pneumatic tires. Write for full details.

THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois

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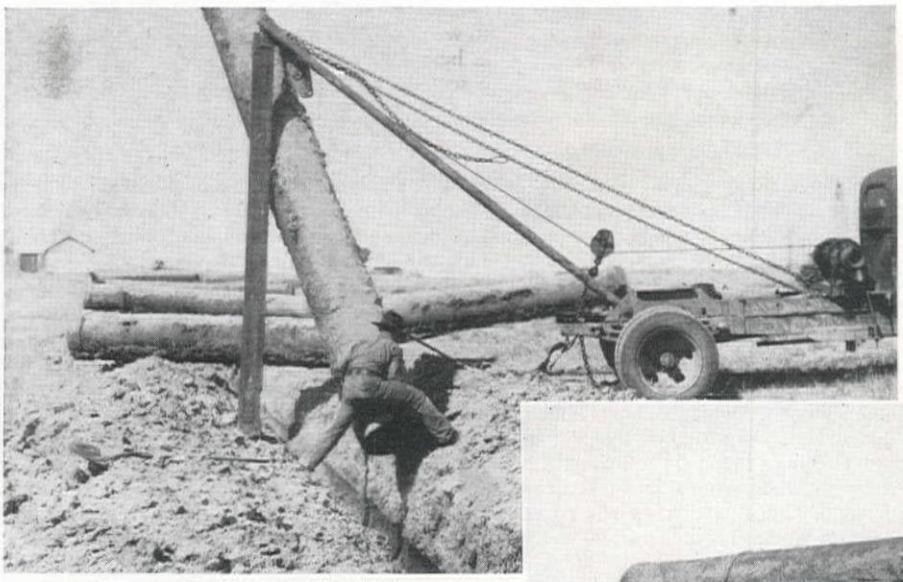
WESTERN CONSTRUCTION NEWS
OCTOBER • 1942

Salvaging Wood Stave Pipe

Thirty-mile line of 16 and 20-inch cedar and redwood stave pipe, wrapped with steel wire, removed after 20 years of service carrying heated mineral water to drillers in Wyoming oilfields, for use in supplying water to big new housing project for shipyard workers



TWENTY-INCH REDWOOD stave pipe was removed after 20 years of service. Above, a section of pipe being pulled out of 4-ft. trench by gin pole mounted on 1½-ton truck with a power winch; right, the sections of pipe were trucked 60 miles to the nearest railroad at Casper, Wyo., for transshipment to Vancouver, Wash.

By ZELLE GOSNE
Kaycee, Wyo.

TWELVE MILES of California redwood and cedar wood stave pipe laid twenty years ago to supply water to a booming oil field in central Wyoming has just been dug up, cleaned, and shipped to the Pacific Northwest where it is being relaid to form part of the water distribution system for a large housing project in Vancouver, Wash. Salvage of the 20-yr. old wood pipe, which has not been in service for some 10 years, is being accomplished with a minimum of equipment and inexperienced hand labor including a number of girls who volunteered their services.

Twenty years ago when the Salt Creek oilfield was being developed and there were 2,100 wells to be drilled in, the major problem of the drillers was an adequate supply of water to feed the steam boilers of the drilling rigs and to be used in the drilling. Wells in the vicinity of the oil field did not develop water in sufficient quantity to meet the drillers' needs, and there appeared to be no natural sources of water within a radius of many miles.

Wood stave pipe installed

About 20 mi. away, however, a wildcat oil driller had put down a well which had developed an abundant flow of hot mineral water but no oil. After making the decision that this would serve as a water supply source, the oil companies ordered and installed 30 mi. of 16 and 20-in. wood stave pipe of California redwood and cedar, wrapped with ⅜-in. steel wire, tar-coated, and weighing 70 lb. per ft. The wood pipe, it was believed, would suffer less damage from the corrosive effect of the hot mineral water than steel pipe, although there is no report of the effect of the water on the boilers of the drill rigs.

Because the water was hot, it was not considered necessary to lay the pipe below the frost line. The trench was dug by hand to a depth of about 4 ft., leaving a little more than 2 ft. of cover over the line. For the past ten years the line had not been in use, since the conclusion of drilling operations had reduced the requirements for water, and a more palatable supply had been developed and electric power was available for pumping. Several years ago the old wood stave line was purchased from the oil companies in the hope that another use might develop and the pipe could be sold at a profit.

A few months ago the Vancouver Housing Authority, building homes for thousands of shipyard workers on the Washington shore of the Columbia River, specified cast iron pipe for the water distribution systems of its housing projects, only to find that cast iron pipe could not be purchased. A change in the specifications to cement-asbestos pipe proved to be of little value since higher army and navy priorities were acquiring practically all of the output of that product. The housing authority then instituted a hunt for second-hand pipe and shortly discovered the abandoned wood stave pipe line at Kaycee,

A V-DITCHER with extra wings added to the moldboard and towed by a tractor, was used to uncover the pipe, which had been laid in a 4-ft. trench, with 2-ft. cover.

Wyo., about 60 mi. northwest of Casper, the nearest railroad point.

Salvage operations

After a contract had been awarded for the salvage of the pipe considerable difficulty was experienced in securing sufficient equipment and labor to complete the excavation and cleaning in the short time allotted for the work. Two tractors with allied equipment were used for opening the trench. One was a 53-hp. gasoline tractor towing a leaning wheel grader with a 10-ft. blade. By making two trips along each side of the line the grader made a V-shaped ditch from 18 to 24 in. deep, exposing the top of the pipe in some places.

The other was a 60-hp. gasoline tractor towing a V-ditcher with extra wings attached to the moldboard. In two trips along the pipe this machine uncovered the line to the same depth as the grader, but had a tendency to bog down in pot holes made some years before by leaks in the line. Occasionally, on encountering hard gumbo soil, it was necessary to use a frost buster before the V-ditcher would be successfully operated.

Although these two machines performed much of the preliminary excavation, there remained a great deal of hand work in excavating from the top of the pipe to the bottom and removing the loose soil about the pipe in preparation for the winch truck which actually removed the pipe. The labor crew was made up of a few experienced hands, although labor was quite scarce; several men from offices, who worked after hours and on Sundays; and a number of girls who armed themselves with shovels and went to work, more in the spirit of helping a good cause than for the wages they were able to earn since payment was made on a linear foot basis.

Removing the pipe

Actual removal of the pipe from the excavation was accomplished with a gin pole mounted on the rear of the chassis of a 1½-ton truck equipped with a power winch. While in operation the gin pole was supported by a timber propped against it from the opposite side of the ditch. To keep from damaging the ends of the pipe during the removal process, a special pipe puller was devised from a short length of steel pipe and an old automobile fly wheel gear. A section of 2½-in. steel pipe about 8 ft. long was welded to the starter ring with the ring about 2 ft. from one end of the pipe.

The ring and pipe were inserted in the wood stave pipe section to be removed and the winch line attached to the long end of the pipe puller. When power was applied the teeth in the starter ring embedded themselves in the wooden pipe providing an effective grip for the winch without damaging the pipe. When a section had been raised about 3 ft. in this manner it usually pulled loose from the collar holding it to the next section. When it was in this position the joint was wedged open with a plank, the pipe section dropped back into the excavation, and the puller removed. The winch cable was then slung around the section and the pipe raised onto the ditch bank where it could later be loaded with the aid of the winch truck onto a freight truck for hauling to Casper and rail shipment to the Northwest.

Condition of the pipe

When the pipe was inspected by a representative of the Vancouver Housing Authority it was found to be in excellent condition, particularly the redwood sections. A few of the cedar sections were slightly rotted and would not meet specifications, but it is believed that the majority of the pipe sections have a useful life of about 20 yr.

Upon arriving in Casper the pipe was thoroughly cleaned of all remaining dirt and washed down to maintain it in damp condition during the 5-day rail trip to Vancouver. There it is being cleaned again and sterilized before being relaid.

Wyoming state law requires that all pipe line ditches be backfilled as soon as possible, and to meet this requirement the salvage contractor rented a tractor equipped with a home-made bulldozer, specially devised for backfilling pipe line ditches. The dozer's A-frame is constructed to permit a much greater angle with the axis of the machine than is the standard bulldozer. The bowl is made up of two old grader moldboards welded together, thus having less dirt carrying capacity which is not needed on a short haul backfill. Two trips of the dozer on each side of the line proved to be sufficient to fill the excavation.

Costs of salvage

Fifty cents per linear foot was paid for delivery of the pipe to the railroad at Casper. Of this amount ten cents covered the trucking from the line to Casper and forty cents covered the excavation and preliminary cleaning. Excavating machines were hired at three cents per linear foot of pipe uncovered, and the hand labor was paid at the rate of eleven cents per linear foot where the ditch had been opened by machine. Some excavation was completely performed by hand labor at fourteen cents per linear foot.

A HOMEMADE BULLDOZER made of two grader moldboards welded together, and set at a sharp angle with the tractor, was used to backfill after the pipe was removed.

Color Paint at Power Plants

Bureau of Reclamation adopts standardized system for painting valves at hydro-electric power plants for functional identification, and to simplify cleaning and maintenance problems

By ALLEN TUPPER TRUE
Color Consultant
U. S. Bureau of Reclamation
Denver, Colo.

Color, carefully planned and properly used in hydroelectric plants, can not only provide protection to metal surfaces and simplify the cleaning and maintenance problems, but can serve as a guide to the functions of painted parts and beyond that can effectively convey the impression of engineering efficiency. In this article the author discusses the standardized color painting procedures which have been developed for the Bureau of Reclamation hydroelectric generating plants and which are now being established uniformly in all Bureau power plants.—Editor.

DURING the last 50 years more and more mechanical implements have come into men's lives and there has been built into them a beauty of design and efficiency. Through science and the machine much of the toil has been lifted from the shoulders of mankind, his factories have become more efficient and cleanly, and there is more dignity about his working days. His dominating interest has been in the machine and he takes pride in his achievement. He accepts a great industrial plant as the most characteristic expression of the age and senses a satisfying fulfillment in a great hydroelectric plant such as that at Boulder Dam or Grand Coulee.

In building these hydroelectric plants the primary consideration of the Bureau of Reclamation has been their efficiency and economic usefulness. In addition it has sought to make them as expressive of that efficiency as was possible. The architecture of the power plants and structures was given exhaustive study as were the approaches and surroundings. Government towns which grew up by the projects were designed and landscaped to make them models of modern excellence.

Constructive color use

In the power plants and control bays where generators, turbines, cranes, and banks of control boards were assembled there was opportunity for enhancing the appearance of the interiors by a carefully planned use of the color in the paints which were used for protective covering of metal surfaces of machinery. This color was considered as related to the other factors such as structural glass, aluminum, terrazzo floors, bakelite, polished steel, and all the materials which contribute to the appearance of a modern industrial building. At the Boulder power plant a color scheme was planned and set up to co-ordinate and tie together all these factors and to make color contribute all it could to the appearance of the plant. About 7,000 gal. of paint were used and that is enough to cover 70 ac. of surface, so it is obvious that careful consideration of its use was needed and that a great opportunity was at hand.

More than three and one-half million people have visited Boulder Dam since it was built and have gained a fine impression of a dignified appearance which is in keeping with its engineering efficiency. Some part of that impression was due to the use that was made of color even though the result may have been no more than acceptable and unobtrusive. So the care that was taken to secure the workmanlike finish and appearance of the great plant seems justified both from the standpoint of the public and the Bureau. The war has made necessary the elmination of all spending which is not vitally essential for power production, yet the necessity for protective painting on power machinery continues and as long as this painting must be done it would seem that from the standpoint of long-range economy it should be done under a predetermined plan. This is being done for the later power plants and it may be useful to consider the governing principles involved, the methods and practices which are developing from experience gained, and the trends in treatment which are in evidence.

The projects of the Bureau of Reclamation are inherently different from the ordinary industrial factory, they are invariably producers of hydroelectric power instead of users of power as is the case with a factory. In the factory, color is used to lighten up the working space and make the surroundings more cheerful for the psychological effect on the worker and increasing his efficiency. It has also been successfully used on machines, particularly the working parts, to greatly increase the safety of the worker.

Color clarifies function

In a hydroelectric plant these factors are not the dominant ones and color can be more frankly used for beauty—and by this is not meant that the plant is made "artistic and pretty" but simply that color is applied to the great generators, cranes, and turbines with the object of making them appear for what they are—to clarify the location and function of each element and reveal its orderly relation to the whole. This after all is the basic principle governing the use of color for architectural building and industrial plant alike and color is not used for its own beauty but to enhance and dignify its surroundings.

As the interior treatment for the Bureau's power plants has developed it has become apparent that great expanses of gray concrete wall must form one of the largest factors in any color scheme. And both because of its inherent beauty and to avoid the expense of paint and upkeep on these tremendous areas the gray concrete has been accepted and the color scheme attuned to it. Improved architectural design has flooded more sunlight onto the walls and the greatly improved concrete surface that has been obtained by absorptive form lining cries out to be let alone. Great pride is felt in the more recent concrete placed by the Bureau and the colors used have been chosen to enhance it.

Most of the colors used at Boulder Dam fulfilled the purpose for which they were chosen, and use of them was extended to Grand Coulee where two more colors were added to make up a set which would prove adequate for all needs. The set was rigidly held to a minimum and built up with the idea of developing standard colors which would serve for all Bureau projects. During the past year a set of 12 colors which had stood the test of trial was adopted by the Denver office for this specific purpose and a color card of sample "chips" distributed to all projects.

This step should have far-reaching effect and go a long way toward improving, simplifying, and expediting painting practice. It is obvious that with this limited set of colors in use and its application spreading, the vexatious matter of paint purchase will be greatly simplified, specifications and correspondence will be clarified, and the way cleared for the maintenance of high technical standards.

Standard Colors
Glyceryl Phthalate Paint

White	Blue
Gray	Vermilion
Green	Maroon
Black	Congray
Tan	Brown
Yellow	Dark Blue

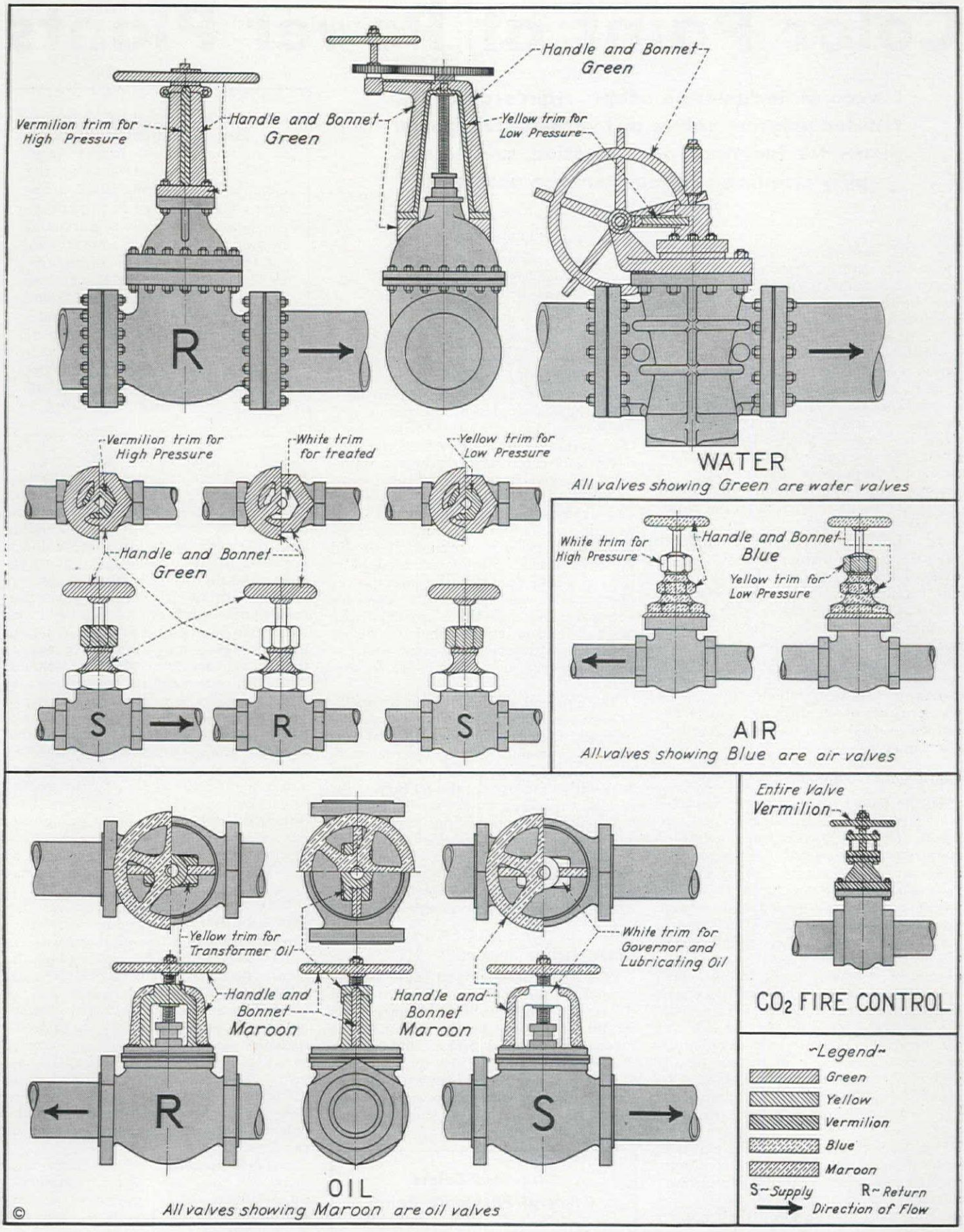


Chart of standard color painting for valves, as developed by the Bureau of Reclamation, for use in powerhouses. Arrows and letters indicating direction of flow are painted in black, valves in colors.

It is expected that these standard colors will serve for renewals and maintenance in older plants. At the Minidoka plant, where a new unit has been added and housed alongside the old powerhouse, a test of this expectation is being made and it appears that there will be no difficulty in unifying the whole with a color scheme using only the standard colors. If standard colors can be gradually utilized for maintenance, there will in time be no need for the varied paint

requirements of 50 or more projects each with its own set of colors purchased in small lots of unknown quality.

Valve and pipe painting

The colors themselves compose a harmonious group any of which can be satisfactorily used together. They are chosen to "read" with concrete so as to freshen and enhance it—to conform in hue, chroma, and tone to established practice for industrial painting and vary in quality enough so that they will function in a corridor or office and also be adequate for use in a generator room 600 ft. long. In combinations they will produce an unlimited number of color schemes which should satisfy all needs. By varying the larger areas of color, as on generators and control boards, and using different colored terrazzo floors, power plants can each be given individuality and varied appearance.

Another step toward standardization has been the adoption of a system of pipe and valve painting for use on all projects. With miles of pipe and thousands of valves in use it seemed imperative that a uniform treatment of them be established. This treatment must be simple, easily comprehended, and adapted to the special needs of the Bureau. To have painted various pipes in different colors to designate services would have resulted in confusion twice confounded so they were all painted gray to match the surrounding concrete and the necessary identification established on the valve.

The colors of identification are applied to the handle and bonnet of the valve, the colors used being only those adapted for general use. The only access to a pipe is at the valve and the only other need for identifying it is at a point where it passes through or emerges from a wall or floor.

Briefly the system used is that any valve showing green is a water valve, any showing maroon an oil valve, any showing blue an air valve and for CO_2 or fire control the entire valve is painted vermilion. Where there is need to indicate varied types of a service an additional color is added to the bonnet as for instance green with white is treated water, green with yellow low pressure, and green with vermilion high pressure water. A black arrow painted on the pipe indicates the direction of flow and the letter S is used for supply and the letter R for return. (See the accompanying drawing.) The system is made clear by a colored drawing (40-D-3314) which has been distributed to all projects.

Inspection and field painting

With a standardized set of colors in use attention has been given to developing practices which would utilize them to the best advantage. One such practice is the use that is made of two grays called Gray and Congray which are to be applied in the field whenever immediate protective coverage is needed. This enables the contractor or Government forces to proceed without delay. The two grays are enough different in tone so that by alternating them inspectors can easily check for complete coverage of successive coats. By finishing with one or the other, some choice is allowed for matching surrounding concrete when this is desirable. When used in the field for immediate needs they form a satisfactory base over which another color may be used when it is finally determined by the paint schedule.

And in connection with this matter of field painting it is becoming apparent that it is good practice to postpone the final or finish coat as long as possible and thus avoid the marring and patching that are sure to result from handling and installation of heavy machinery. Because of this continual risk of surface damage it is increasingly doubtful that factory finishing such as baked enamel is desirable except for switchboards or other electrical equipment where an assemblage of delicate instruments make field painting impracticable. The high quality of finish now obtainable with the glyceryl phthalate paints is wholly adequate.

For switchboards, elevator interiors, or other places where factory finish is desirable the practice is being developed of sending to the factory a sample or color chip of one of the standard colors for exact matching. Then when maintenance painting is required the pot of standard color on the job will match and there is no need for the correspondence and delay entailed by securing a few gallons of some special color. It has been found that by anticipating the need and supplying one of the given standard colors to the manufacturer he is quite willing to finish switchboards or housings in that color.

In line with the plan to have the standard colors cover all needs, except for painting submerged surfaces and other special cases, attention has been directed to office equipment and an effort made to have desks, files, lockers, etc., finished in the standard gray color. If this can be done a big improvement will be made in the heterogeneous accumulations of furniture which characterize offices.

Use of painting schedule

The use of a painting schedule such as was used for the Boulder Canyon Project has been continued and provides a good method for governing painting and maintenance. The schedule lists each item or unit under general divisions of the project, together with specification number or reference, surface area, material and exposure, the color by name and key number; and gallons required. In this way it provides all necessary data, a complete guide for the field forces, and a basis for correspondence and purchases.

The painting of walls and ceilings is being avoided as much as possible for both the sake of economy and because the practice of painting concrete is never wholly satisfactory. Where in offices, hallways, or other places painting does seem desirable consideration has been given to some standardization of colors but as yet this has not been deemed advisable. At Grand Coulee some trial in this direction will be made and a further simplification may develop.

In addition to using color for decorative purposes, it is also being used as an incentive to cleanly upkeep and to stir the pride of the operator in his work. The principle that a color which shows up dirt and calls for cleaning is better than a color which hides dirt, has governed throughout and in time it will contribute to a realization that the Bureau of Reclamation hydroelectric plants are perhaps the cleanest industrial plants of the age.

Technical paint studies

The technical aspect of paints and painting practice is not here considered but its basic importance is recognized. Much of what has been outlined above is significant in that it greatly contributes to a simplification of the technical problem by limiting the number of paints in use.

In addition to this technical study of pigments, vehicles, coal-tar products, plastic coatings, etc., considerable attention has been given to developing in the field forces a competence and understanding which will obtain the best possible results. To this end there is now in preparation a Paint Manual for control of painting on Bureau projects. A tentative issue has been circulated to all projects for soliciting field comments and constructive criticisms and when the final edition is published there will be available a fine handbook for field forces, inspectors, and office forces. It will provide a much needed guide.

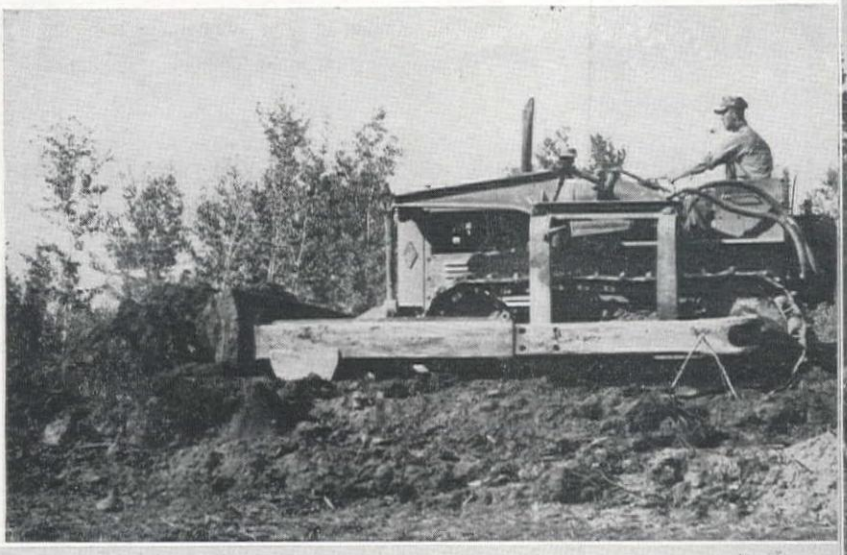
There are some phases of painting which, while not in the realm of the technical laboratory nor properly the concern of the color consultant, nevertheless constitute a field where improvement is possible. For example take the matter of shop coat or prime coat—is it practical to choose and fix one red lead primer for all such use to the end that subsequent painting may be done with the assurance that it will rest on a firm base? Is it practical to ship metal to the field wholly unprimed and there, after mill scale has ripened, grease softened up, and perhaps some rust accumulated, give the metal a thorough sandblast or flame cleaning and then go ahead with the painting, fully confident that good paints are being properly applied over a known foundation? Is it practical to have all painting, or perhaps just final finishing done by Government forces rather than piecemeal and at inopportune times by the contractor? These matters are being studied and tested and a trend toward standardization is indicated.

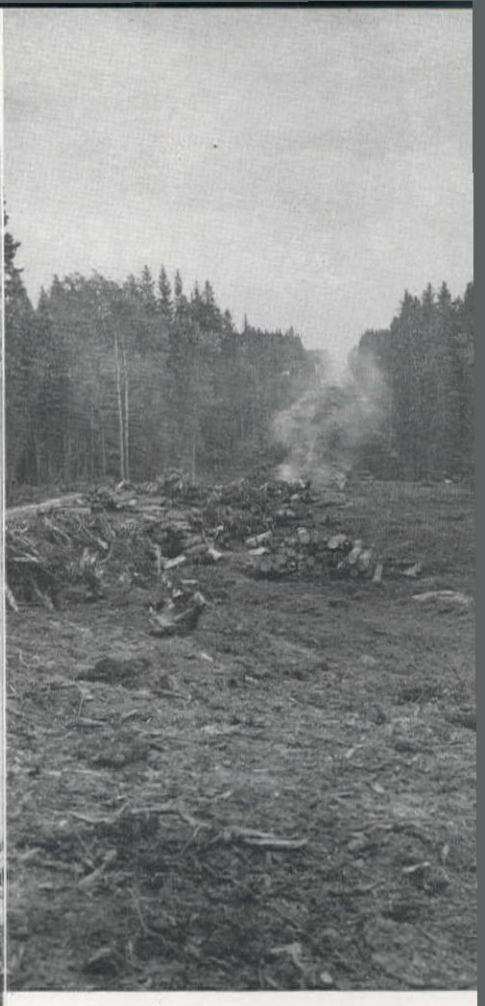
Specifications are being scrutinized with the object of making painting requirements reasonably consistent and dependable. Consideration is being given to the training and employment of inspectors and foremen who know thoroughly the practice of painting. Good painting is after all the result of close attention to a lot of small details each of which in itself may seem unimportant but the sum of which will make or break a fine job.

Alaska Highway Progressing

HEAVY FOREST stand along the route of the Alaska Highway near Ft. St. John, British Columbia. Above, timber cut and stacked for burning; left, improvised method of handling stumps; below, grubbing with bulldozer.

RAPID PROGRESS is possible on construction of the Alaska Highway, and a pioneer road is scheduled for completion by Dec. 1, 1942. Much of the terrain is flat but densely forested. Construction is by private contractors under direction of the Public Roads Administration. Equipment of every make, type, and age is in use.





CONSTRUCTION ACTIVITIES proceed at a rapid pace on the Alaska Highway, because of the emergency nature of the job. These pictures of work on the pioneer trail, taken in vicinity of Ft. St. John, British Columbia, show some of the variety of activity being carried out by contractors. Above, logs and brush being burned in the center of the cleared strip; upper left, stripping duff and light brush with a bulldozer; left, a 12-yd. scraper and tractor used in preliminary grading; below, an elevating grader loading a truck from near final grade. All pictures on these pages are from the Public Roads Administration, Federal Works Agency.

Three-Purpose Auxiliary Dam

Keswick Dam, being built on the Sacramento River by the Bureau of Reclamation as a part of the Central Valley project of California, will serve for secondary flood regulation, salmon protection, and supplementary power generation

KESWICK DAM is being erected by Atkinson Kier Company as a triple-purpose auxiliary to Shasta Dam of California's Central Valley Project. Located about 10 mi. downstream on the Sacramento River from Shasta Dam, and about 4 mi. northwest of Redding, the axis of the dam is on a due east-west line, at a point where a straight stretch of the channel passes between two prominent hills. Both excavation and concrete can be held to a minimum at this point, for bedrock is covered by little sand in the streambed, and by a very thin layer of rocky soil on the canyon side. Sound rock is found after removal of but a few feet of disintegrated material beneath the soil cover.

Keswick Dam will play three major roles in the functioning of the Central Valley Project:

1—Its 23,000-ac. ft. reservoir will serve as a regulating basin for the discharge from Shasta reservoir. It was feared that heavy demand for power from Shasta, and the corresponding release of water from its basin, might come during a severe storm, at a period when such release would seriously hamper flood control in the lower sections of the valley—one of the dam's main objectives. Therefore, some means of secondary regulation was considered necessary, and Keswick Dam was designed to supply that need.

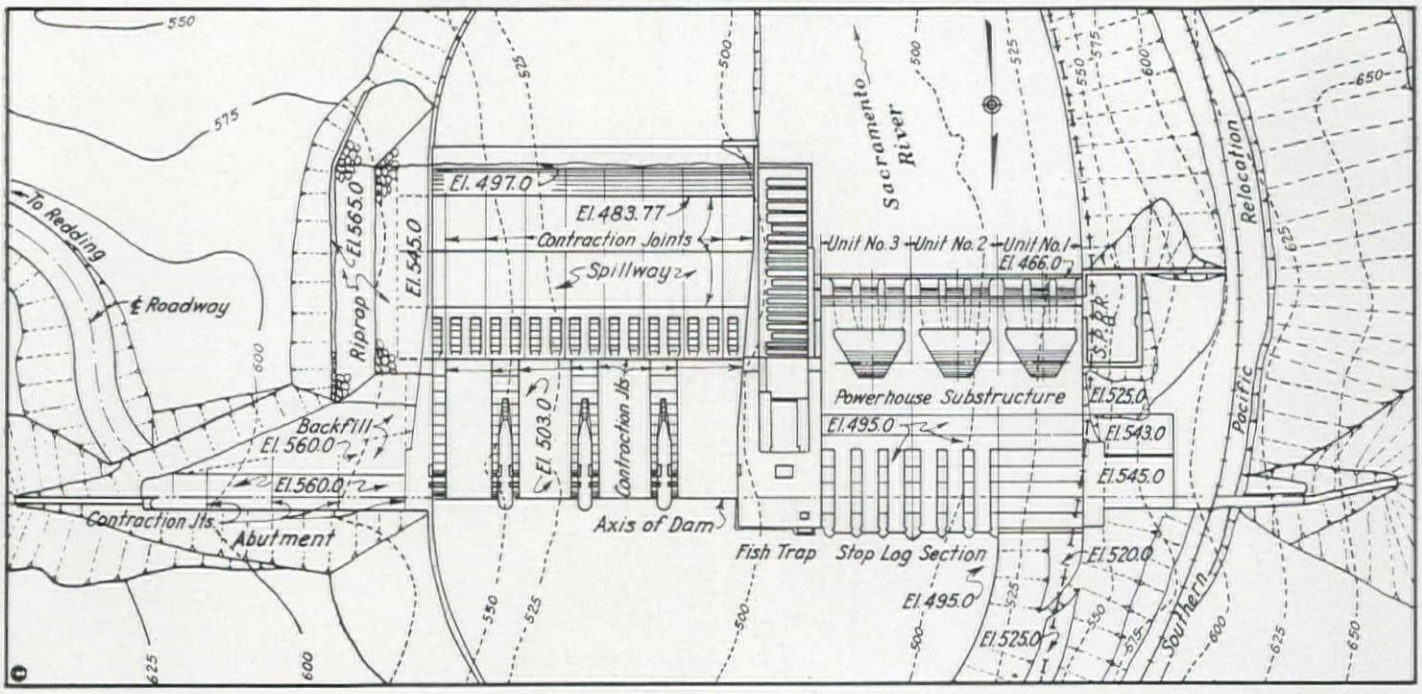
2—It will protect and perpetuate the heavy fish run in the Sacramento River. It is a well-known characteristic of the salmon and some other fish that the eggs are spawned in the upper reaches of the identical mountain stream in which the parent began life, from which birthplace the young fish descend to live their adult lives in the ocean, returning again at their spawning time to the same stream. Because of the tremendous monetary and sporting value of this annual fish run, a considerable expense for protecting it is deemed justifiable whenever any salmon stream is to be dammed. In some instances, elaborate fish ladders, through which the fish jump over a series of steps to reach the reservoir level, have been devised. In the case of the 602-ft. Shasta Dam, however, this was considered impracticable, and as a substitute measure, the central section of Keswick Dam was designed as a fish trap, from which the salmon will be removed and hauled approximately 40 mi. in tank trucks to a hatchery on Battle Creek—a tributary of the Sacramento which enters the river near the town of Cottonwood about 18 mi. below Keswick Dam. Here the eggs will be removed, fertilized and hatched, and the fry released. In subsequent years, when they return to spawn, it is anticipated that they will return to Battle Creek.

3—It will add a sizeable power output to that from the Shasta generators. The final purpose of Keswick Dam—power generation—is to be carried out in a power house which will be, in itself, the west part of the dam structure, and will house three 25,000-kva. generators, driven by 34,600-hp. hydraulic turbines. Their output will augment that developed at Shasta Dam, and will feed directly into the service lines from Shasta's power house.

Unconventional design.

The design of this auxiliary structure is most unusual, and upon completion it will look very unlike the conventional dam. Three distinct sections—the power house on the west, the fish trap in the center, and the spillway on the east—form the complete dam, except for gravity wall abutments and minor wing walls on the extreme ends.

The spillway will be an ogee section following the parabolic equation $x^2 = -196\,y$. Its crest will be at El. 540, which is 45 ft. above streambed. After installation of 50x50-ft. regulating gates, maximum high water surface of the reservoir may be raised 47 ft. above spillway



Sketch of the work involved in the contract for the first stage of construction at Keswick Dam. Second stage will complete the structure except for one block in the right abutment, left open to permit railroad service to Shasta Dam.

crest. The elevation of the roadway atop the spillway piers will be 595. The spillway apron is to be 230 ft. wide, and its lower lip will be at El. 497.

Adjacent westerly to the spillway is the fish trap section, which measures 64 ft. axially and 274 ft. along the direction of flow. It will contain four holding pools, each 20 ft. x 30 ft. 6 in., from which mechanical sweeps will direct the fish into a brail pool. The brail will then be hoisted about 12 ft., and the fish permitted to slide through a hopper into special 1,000-gal. tank trucks, designed for the purpose by the Federal Fish and Wild Life Service, to begin their journey to the Battle Creek hatchery. Three hundred to 340 cu. ft. per sec. of water will be supplied to the fish trap operations from a 5-ft. pipe through the dam, protected by a trash rack at its intake.

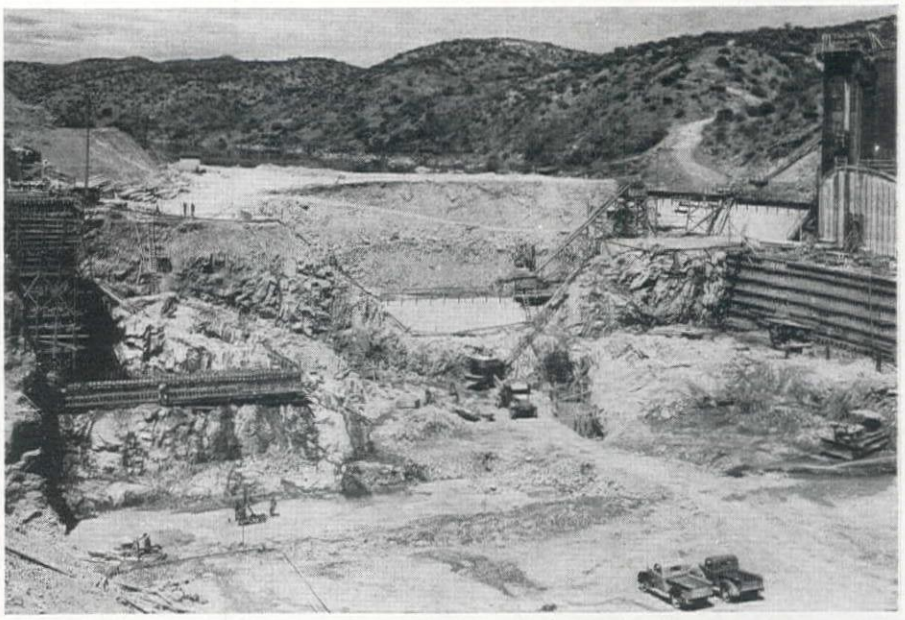
Adjoining the fish trap on the west will be the power house structure, measuring 270 ft. along the axis of the dam. Water will be admitted to each of the three turbines in this structure through three formed penstock passages, each 12 ft. 6 in. wide, leading to a scroll case formed in the power house substructure. The floor of the openings will be at El. 525, and the discharge lip at the lower end of the draft tubes will be at El. 466.

The abutment blocks at either end of the dam will be of simple gravity construction with vertical faces upstream, a slope of 0.70:1 downstream, and a minimum 5-ft. cutoff wall. Through the west abutment, however, a gap is being left to accommodate the relocated tracks of the former main line of the Southern Pacific Railroad. This line is now dead-ended at Shasta Dam, and is used only as a material track for the two structures. It was necessary to move it approximately 100 ft. westerly in order to clear the Keswick power house foundations. This remaining gap will be filled in when Shasta Dam is completed, and there is no more use for the railroad.

The contract for the first stage of construction was awarded to Atkinson Kier Company in August, 1941, at $2,736,629. Under this contract, the gravity wall abutments were carried to El. 560, portions of the spillway crest at the piers to their final elevation of 540, and openings were left through the remainder of the spillway section, paved at El 503. The fish trap was completed to El. 543, and all equipment necessary for its operation was installed. The foundation of the power house was constructed to El. 490, with openings left for turbine pits and draft tubes. A stop-log section consisting of concrete foundation blocks was constructed to El. 495, with piers to El. 520, to form six passageways for diversion and control of the river flow during filling in of the uncompleted spillway sections.

In August 1942, a continuation order valued at $1,492,946 was awarded to the same country to bring the structure nearly to completion. With the awarding of this extension, it has been possible to erect the second stage of the dam coincidental with the remainder of the first.

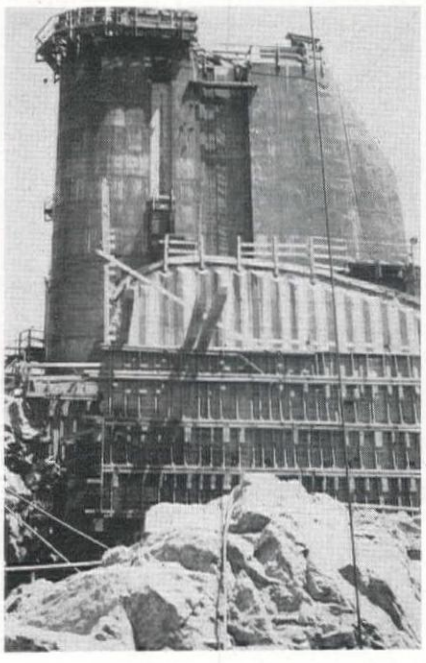
Total excavation amounted to 887,500 cu. yd.—mostly rock—from three principal sources: the dam itself, the railroad relocation, and the fault and seam cutoffs. No unusual excavation problems were encountered, and standard types of drilling machinery, shovels, trucks, and other equipment were employed.



EXCAVATION COMPLETED for foundations of powerhouse and fish trap, west spillway pier at far right. Upstream cofferdam, which was extremely difficult to erect, is in upper center, and immediately below it is shaft excavation for concrete filling in an important fault zone. Forms for first powerhouse foundation blocks at left.

A fault of considerable magnitude was uncovered running normal to the axis of the dam, approximately in midstream. Typical Bureau of Reclamation treatment was applied to it by removing all soft and crushed rock from the faulted zone in cutoff shafts dug to about 50 ft. below the dam foundation level, the excavation being backfilled with concrete to sound rock in the walls and to foundation level.

WEST SPILLWAY PIER constructed to final height, except for roadway. Keyed section shows the ogee shape of the spillway itself, above which 50-ft. gates will be installed. Form lumber in foreground is foundation of fish trap, central structure in the dam.

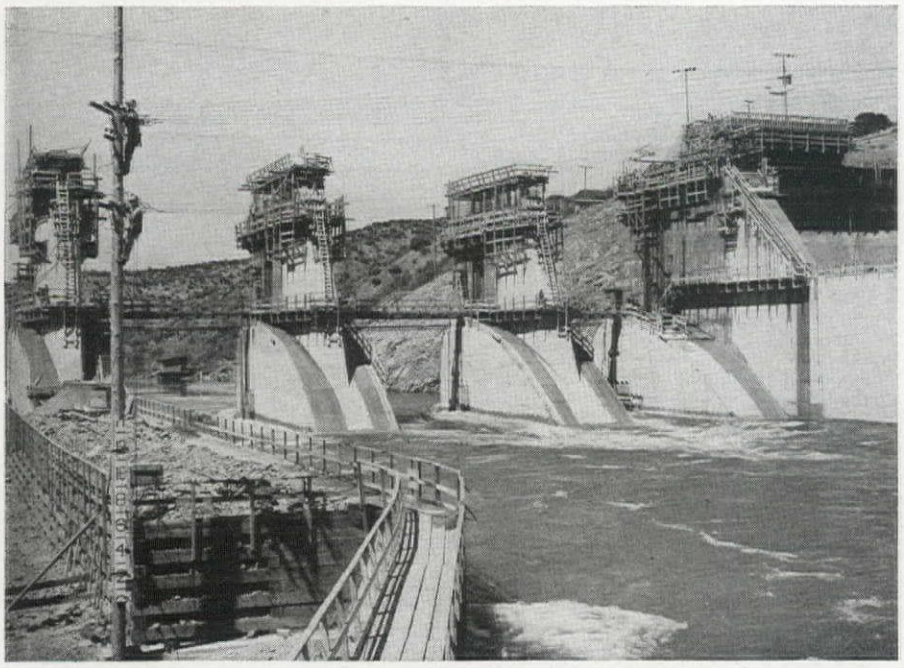


Cofferdam problem

The most important obstacle that has so far been encountered was construction of the upstream cofferdam. In order to permit excavation for the fish trap and power house substructures, the river flow was diverted through the openings in the spillway which had been paved to El. 503 for the purpose. It had been planned to divert the water in the early spring of 1942, following the winter floods, when a normal flow of 6,000 to 7,000 sec. ft. was expected. After several weeks of delay, however, during which the stream flow remained at 10,000 to 12,000 sec. ft.—and showed no promise of declining—it was decided to erect the cofferdam in spite of the heavier flow.

Gravel and even heavy rocks were swept away almost as soon as they were dumped into the stream, and it was necessary to use a large number of rock-filled timber cribs for anchorage before it was possible to achieve stability. Placing these cribs was a difficult operation, requiring all the cranes and equipment which the contractor had available on the job. While engaged in this work, one long-boom crane was carried into the stream, but was subsequently extricated and salvaged. Trucks and bulldozers filled earth behind the cribs as rapidly as possible. At a considerable expense of time and effort, the dam was finally closed and excavation began in the main channel.

It was feared that a drop of about 15 ft. from the lower lip of the spillway apron to the streambed level would prove a handicap to fish running upstream during construction, and a timber



OPENINGS were left in the spillway structure to permit diversion of the river water during excavation and substructure work in the main channel. Adjacent to the piers the spillway blocks were finished to final shape, and keyed faces were left for later filling in of the openings. Roadway on abutment at right is at final elevation.

fish ladder was erected to accommodate them.

Contractor's plant

Pouring of the power house and fish trap foundations is now under way, and is progressing at a rapid rate. The mixing plant is located above the east abutment, at the termination of the road from Redding, construction of which was also a part of the first contract. Mixing is done in a standard Johnson plant, with 2 Koehring 2-yd. mixers, served by Kron-Johnson weigh batchers. Application of water to the mix is also under automatic control, using a weighing device built by M. Mulcahey, plant foreman, in which water flows freely into a container set on scales. When a sufficient quantity is obtained to tip the balance at a previously determined setting, an attachment closes the valve. Theoretical output of the plant is 120 cu. yd. per hr., which, of course, is impossible of achievement due to transportation delays. However, in pouring some of the nearby wing wall blocks, a rate of 116 cu. yd. per hr. was maintained for a 49-min. period.

Aggregates are hauled by truck from the gravel pit of the Columbia Construction Co., northeast of Redding, which is also the source of the aggregate used in Shasta Dam. The material is segregated at the gravel plant and deposited by the trucks directly into timber bunkers from an elevated driveway. Cement is hauled by tank truck from Redding, and is stored in a metal silo from which it feeds by gravity into the mixing plant.

Concrete is transported from the mixing plant to point of placement in 4-yd. Garbro buckets by a cableway having a total length of 1400 ft. The head tower of the cableway is located immediately adjacent to the mixing plant, and power for the cables is supplied by Pacific Gas & Electric Co. The tail tower with a swing of 400 ft. is located above the railroad cut on the west bank.

Concrete is placed in 5-ft. lifts, each surface being thoroughly cleaned by sand-blasting before new concrete is applied. Plywood facing is used inside the form lumber when exterior surfaces are being poured but surfaced lumber is used on all joint surfaces. Forms are supported by tie rods manufactured by Williams Form Engineering Corp., Grand Rapids, Mich. They are of super high tensile steel, .444 in. in diameter, the threads being expanded to ½-in. diameter. Originally ⅞-in. rods of mild steel had been proposed, but on the suggestion of the Williams Company, the smaller, higher tensile strength rods were adopted, and have been found entirely satisfactory, a 75 per cent saving in weight being effected.

Keswick Dam is the first installation of Williams rods in the United States to use the pig-tail anchor. This slightly deformed rod—steel-saving because no hooks or anchor washers are required—is embedded in the top of the previous lift of concrete while still moist, leaving the threaded upper end protruding 3 or 4 in. above the surface. After hardening, a threaded collar fastens the new tie rod to this anchor, and the other end is bent so that it may be fastened into a she-bolt clamp in the form wall. When the new lift of concrete is set, these she-bolts are removed, but the rod itself remains in the block.

The excessive heat of the Sacramento Valley summer, which has sometimes reached 120 deg., has brought some problems, since specifications state that concrete shall be deposited at a temperature not exceeding 85 deg. Spray nozzles discharging river water have been used in the aggregate bunkers to precool the materials, and placed concrete is sheltered from direct rays of the sun for 3 days, and is kept moist for 14 days while curing. Water from the river, without artificial cooling, is used for this purpose, and also for circulation through the cooling pipes imbedded in the concrete.

Progress

At the present date, all excavation has been completed, and part of the concrete work included in the original contract finished. Concrete placement is proceeding rapidly, and on the basis of present progress, it is anticipated that the structure will reach completion by April 1943, about a year ahead of schedule. Contracts are currently being negotiated for turbines, generators, gates, and other incidentals.

Organization

Construction of Keswick Dam is under the supervision of the Bureau of Reclamation, John C. Page, commissioner, and S. O. Harper, chief engineer. Ralph Lowry, construction engineer, Kennett Division of the Central Valley Project, is in direct charge.

For Atkinson Kier Company E. M. Jennett is project manager, R. J. Jenks is job engineer, and Ed Bell is office manager. Other key men on the job for the contractor are Fred Bales, chief timekeeper; A. Y. McClure, purchasing agent; Dennie Greenwood, concrete superintendent; W. D. Rives, carpenter superintendent; Leo Stewart, master mechanic; Merle Terry, chief electrician; Cecil McAnnally, head rigger; and M. Mulcahey, plant superintendent.

Subcontractors include Williams Form Engineering Corp., Grand Rapids, Mich.; J. Philip Murphy, San Francisco, for bending and placing reinforcing steel, the work being done in his shop at Shasta; and Daniel J. Longtin, San Francisco, for diamond drilling.

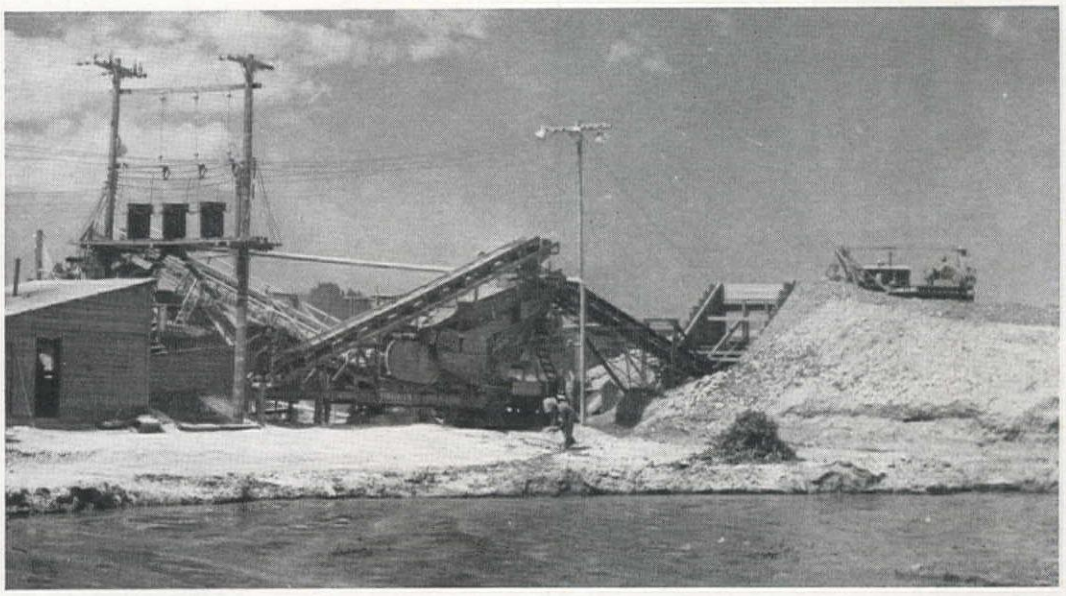
A. G. C. Boards to Meet in Chicago October 19-20

The fall meeting of the Governing and Advisory Boards of The Associated General Contractors of America will be held October 19 and 20 in Chicago, Illinois, according to President Dan W. Kimball. The A.G.C. Secretaries Council will meet on October 18.

Purpose of the meeting will be to plan how general contractors can continue to execute war projects at top speed, and can do everything possible to help in the war effort.

Subjects for discussion will include: renegotiation of contracts; proposed OPA price regulation for construction and other OPA regulations affecting construction; the revenue act; policies and procedures affecting war-time construction; equipment situation; labor matters; transportation regulations; priorities and WPB regulations; public relations; future problems of the industry.

Concrete for Big Utah Plant



Portable unit crushes, screens and washes 6000 tons of aggregate daily for batching and mixing in dual automatic plant at the site of the West's largest industrial installation

PROCESSING an ideal quality of sand and rock from a pit at the foot of the Wasatch Mountains at the rate of over 6,000 tons per day, W. E. Ryberg Co. and Strong & Grant, Utah contractors, are producing concrete aggregates, track ballast and concrete with a plant set-up that includes a portable crushing plant with supplementary screens and washers in the gravel pit, and a dual set-up of automatic batchers and mixers at the concrete plant. Aggregate for more than 400,000 cu. yd. of concrete and 200,000 cu. yd. of rock ballast for railroad facilities will be produced for use in the construction of the West's largest industrial plant.

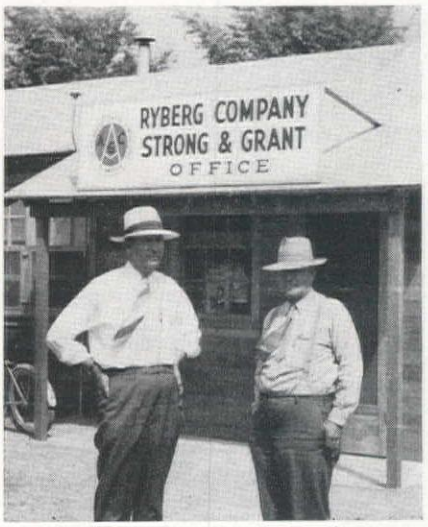
At the foot of Mt. Timpanogos, near American Fork, Utah, the contractors for concrete and ballast materials have developed an excellent gravel deposit lying some 45 ft. deep with substantial quantities of water for cleaning the aggregate available at the plant which is located in the pit. The haul of processed materials from the pit to the site of the industrial plant construction is about 5½ mi., principally over state highways.

Grading and washing

The gravel deposit which is of excellent quality for concrete aggregate is stripped to a depth of 6 to 12 in. by tractor and scraper. Raw material from the pit is loaded into 4-yd. trucks by a 1½-yd. dragline, making an average of six passes per minute, and hauled to the plant where it is dumped near the hopper feeding the crusher. Gravel is fed to the delivery conveyor through a hopper by a tractor and bulldozer.

The delivery conveyor discharges material onto the double-deck vibrating screen of the portable crusher where water from the system of 6-in. lines is first introduced through nozzles over the screens. All of the ¼-in. minus material is washed directly into the 48-in. sand washer, and after passing through is conveyed to the sand bunker. Remaining material is processed wet to 3-in. minus, and conveyed directly to a 4 by 24-ft. tandem, double-deck, vibrating screen, mounted above the aggregate bunkers, by the standard delivery conveyor of the portable crusher.

W. E. RYBERG, left, and E. A. Strong, of the firm of Strong and Grant, at their office near the aggregate production plant at American Fork, Utah. Both are long-time Utah contractors.

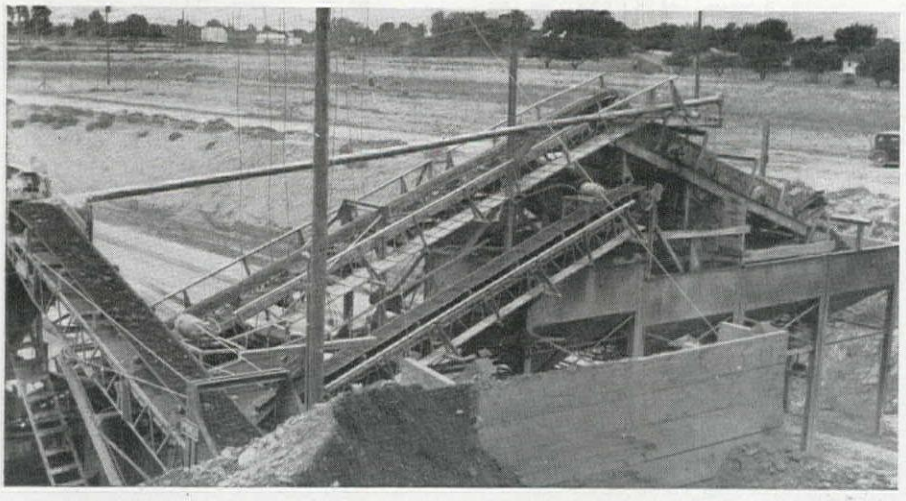


Additional water is introduced over this supplementary screen which, in combination with the screen action, thoroughly scrubs the entire mass of material and simultaneously grades the material into six sizes in one forward movement without the necessity of recirculation. Minus ¼-in. material developed during the processing, and not removed in the first screening operation, drops into a 32-in. sand washer mounted over the material bunkers and underneath the tandem screen for washing before being dropped into the sand bunker below.

Production

The average daily production of the plant has been about 6,000 tons with operations organized on a 24-hr. basis. Nineteen hours of each day are devoted to production which permits two 7½-hr. shifts and one 4-hr. shift with an additional 4 hr. of the last shift devoted to servicing, maintenance and repair of the plant and equipment.

This material is delivered to four steel aggregate bins with a capacity of 35 cu. yd. each, from which it is loaded into trucks and hauled to the construction site.



CONVEYOR BELT carries coarse material left after first screening to the crusher. The conveyor pointing toward the right carries sand from the sand washer to the tandem screen mounted above the aggregate bins. Delivery trap is in the foreground.

Transportation

All material produced by the crushing, screening and washing plant is delivered to the batching plant at the construction site except the pea gravel and the railroad ballast used as subgrade materials for the railroad facilities in the vicinity of the plant. Six diesel trucks equipped with 20-yd. dump bodies on semi-trailers do all of the hauling between the rock plant and the batching plant.

Operating over state highways, the trucks are required to move with the traffic at an average speed of 40 m.p.h., averaging two round trips per hour, and running about 5 mi. apart. The units are designed to, and do carry a payload of 60,000 lb. without overloads. The tractor has four dual wheels mounted under the fifth wheel, and the semi-trailer is equipped with four dual wheels, all wheels being mounted with 11.0 by 22-in. tires.

The contractors estimate that by the use of these six large transportation units, they have been able to operate with half of the normal capital investment which would have been required if ordinary dump trucks were used. At the same time, it has been possible to reduce the normal operating personnel from 75 to 80 per cent of the normal requirements.

Rock Plant Equipment

1 Model 48-V Pioneer crushing plant.
2 Pioneer sand washers—32- and 48-in.
1 4x24-ft. double deck tandem vibrating screen.
4 35-cu. yd. aggregate bins.
1 Model 37-B Bucyrus-Erie combination shovel and dragline.
1 Model D-8 Caterpillar and dozer
1 Model D-8 Caterpillar and LeTourneau scraper.
1 Model 12 Caterpillar Patrol.
7 Model KS-8 International trucks with Lang 4-yd. dump bodies.
6 Kenworth trucks equipped with 20-yd. dump bodies mounted on Lang utility semi-trailers.

DIESEL TRACTOR and semi-trailer equipped with 20-yd. dump body leaving sand bunker with 60,000-lb. pay load. Trucks are designed for this loading without overload on axles or tires. Capital investment is half that required for standard dump trucks.

Batching and mixing

Processed material, upon reaching the mixing plant, is dumped by the 20-yd. trucks into large stockpiles, from which it is fed to delivery conveyors by tractor and bulldozer. It is delivered to one of eight storage bins located above and controlled by the automatic batchers. The batching and mixing plant consists of two complete, automatic units which operate independently of each other. The plant design permits the operators to mix a wide range of combinations of aggregate as required without a delay in making changeovers, either for the size of rock required or the quantity of cement employed.

SAND FROM PIT is screened directly into this 48-in. washer and conveyed to bunkers. Coarser material is processed and sand goes to second washer.

Material is bled from the overhead storage bins by the automatic batchers and fed directly into one of two 35-S stationary mixers which, in turn, discharge into 3-yd. gob hoppers. The gob hoppers automatically weigh and record the weight of each batch as the basis for payment for concrete delivered by the contractors. From the hoppers, concrete may be delivered directly to concrete buckets, transit mixers, or dump trucks, and all three methods of delivery are being used for transportation to the various parts of the projects which require concrete.

Bulk cement is handled from railroad cars on a nearby siding by unloading units, and is pumped either into cement silos, or an auxiliary cement storage warehouse which has a capacity of twenty-five carloads. From the two 500-bbl. silos, cement is drawn off by

Concrete Plant Equipment

2 150-ton overhead 4-compartment bins.
2 5-beam Noble automatic batchers.
1 210-ft. 30-in. delivery conveyor.
1 Fuller-Kinyon system.
2 500-bbl. cement silos.
2 35-S Ransome stationary mixers.

the batchers. The batching and mixing plant, with a mixing capacity of 250 cu. yd. per hr., is completely automatic, thoroughly fool-proof, and electrically operated throughout.

Organization

Ryberg Co.-Strong & Grant is a joint venture consisting of W. E. Ryberg Co. and Strong & Grant, two of the West's outstanding paving contractors. The personnel of the Ryberg Co. includes W. E. (Bill) Ryberg, one of the Intermountain Territory's largest producers of sand, gravel and railroad ballast; Charles L. Stillman; and A. E. Christenson. The other half of the joint venture, consisting of Strong & Grant, includes Ernest A. Strong and Joseph Grant, who have done all of the paving at Hill Field, Utah, and Camp White, Oregon.

Ernest A. Strong, as project manager of the aggregate and concrete production project, laid out the installation and is responsible for the efficient operation. Bert Strong is superintendent of the rock products plant which has turned in an outstanding performance to date, and A. P. Kibbe, a newcomer to construction projects in the Utah area, is superintendent of the batching and mixing plant.

The equipment installation was furnished by The Lang Co., construction equipment distributors of Salt Lake City who also assisted in the design and layout of both plants.

MICROPHONE and amplifying system in a small box are suspended from a light standard near the instrument to receive rod readings called by levelman.

Survey Crew Solves Hearing Problem With "Listening Aid"

By C. FRED OLIPHANT
Resident Engineer
California Division of Highways
District VI, Fresno

Heavy winds, traffic noises, and more lately the noise of low flying airplanes, have long been the bane of survey crews, but until a year ago no satisfactory solution to the problem of hearing signals against these obstacles had been developed. During the latter part of 1941 a survey crew of the California Division of Highways District VI, taking cross-sections on heavily traveled U. S. highway 99 north of Bakersfield, resorted to the use of a listening device which proved to be of material assistance in eliminating the obstacle of traffic noises.

Adoption of the listening aid, which consisted principally of an instrument, a set of earphones and connecting wire permitted the levelman to call rod readings to the notekeeper in spite of heavy traffic noises and against heavy winds. It also made possible an increase in the length of turns and greatly increased the speed and efficiency of the survey work.

Turns shortened

As the survey crew worked north from Bakersfield along highway 99, the main route between San Francisco and Los Angeles, traffic at times was so heavy that it was impossible to hear above the noise, even by shouting. In carrying levels short turns of about 100 ft. were made in order to keep the levelman near enough to the notekeeper that calls could be heard. Even at such short distances, the rod reading would have to be repeated many times and occasionally resort was made to hand signals in order to transmit the reading to the notekeeper.

Conditions became worse as the work progressed and the crew neared an adjacent flying field. Large numbers of airplanes were constantly droning overhead, and every hour or so long freight trains would go puffing past on the nearby Southern Pacific main line. At the time this work was being done long convoys of army trucks were using the road. All this, coupled with the heavy civilian traffic, resulted in so much noise that it was practically impossible to hear voices more than 50 or 60 ft.

It was apparent that something had to be done. The levelman's voice was beginning to crack, and the notekeeper was wearing out the question, "What was that last rod reading?" A search of Bakersfield for some type of phone that could be used by the survey crew led to a radio repair shop where the assistance of the repairman was enlisted.

Listening aid adapted

Stored away in the corner of the shop was a discarded device which had been used as a listening aid in locating noises in radios. It consisted, principally, of two radio tubes, small A and B batteries, and a universal microphone set in a small box. By the use of earphones attached to a lead wire from the listening aid, voices could easily be heard about a block away. With 300 ft. of rubber covered wire connecting the earphones to the listening aid the device was tried out on the job. It worked perfectly.

Now it was again possible to make the usual turns of 250-ft. backsights and 250-ft. foresights without encountering any difficulty in hearing the rod readings called by the levelman to the notekeeper. By the use of this device the notekeeper could stay with the rodman and watch their work, instead of trying to be halfway between the rodmen and levelman. This not only avoided many errors, but speeded up the work 100 per cent.

When in use the listening aid is suspended near the levelman from a light pipe standard (see accompanying photograph) placed so that he can speak into it without moving from the instrument. From the listening aid the lead wire is laid along the ground to the earphones

WEARING a headset connected by wire to the microphone near the instrumentman, the notekeeper can hear rod readings easily, and at same time work close to rodmen.

worn by the notekeeper. To prevent the drag of the wire from being transmitted to the headset, the wire is clamped lightly to the notekeeper's belt which absorbs the drag of the wire.

Several months later the same survey party was working near King City at a time when the wind was blowing so hard that it was very difficult to hear rods called against it. By the use of the listening aid again, rod readings called against the wind in a low voice were easily distinguishable to the notekeeper.

Organization

C. H. Purcell is state highway engineer of California and E. T. Scott is district engineer of District VI, in which the listening device was first used. The device was discovered by the writer, and its use developed by members of his survey party including Harvey W. Porter, Raymond M. Cooley, James J. Grant, and Willard L. Goss.

Decontamination Station for Gas Casualties Is Demountable

UNDER THE DIRECTION of A. M. Rawn, chief engineer of the Los Angeles County Sanitation Districts and senior gas officer for the Los Angeles County Defense Council, a standard gas decontamination unit station has been developed and adopted for early construction of several units by the Los Angeles County Defense Council. Construction of the unit will be inexpensive and simple comprising a concrere floor upon which is placed a timber frame to support canvas walls and partitions.

Serving primarily to protect the personnel and equipment of casualty stations, the decontamination stations will be constructed adjacent to the former with all removeable materials and equipment to be stored in the casualty station. The gas unit is designed as simply as possible to provide shielding of patients from public view and separate facilities for male and female cases able to walk and for stretcher cases.

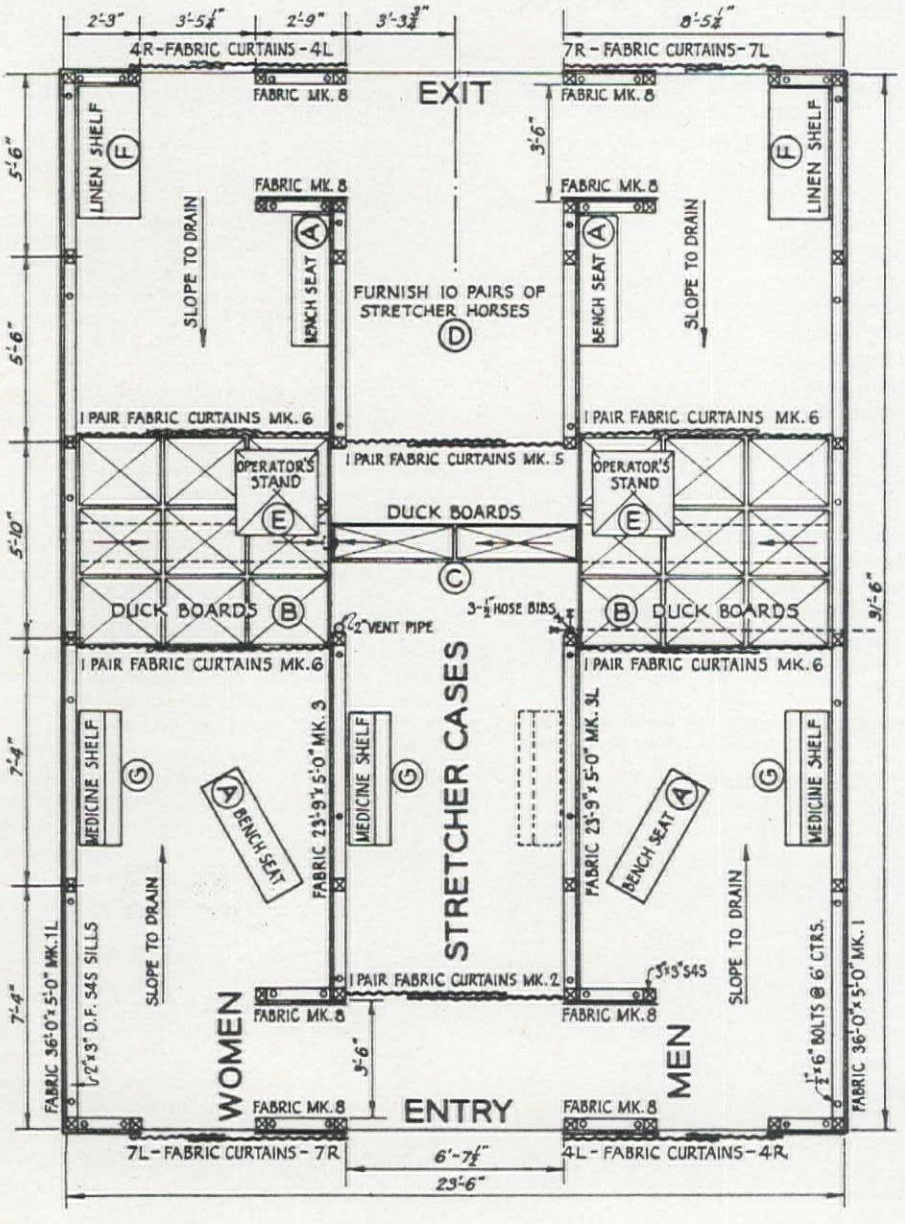
Construction of the stations according to the plan as shown by the drawing on this page and full equipment most of which will be of field construction is estimated to cost about $1,000. The program of the County Defense Council calls for construction of the concrete foundation, waste system, piping, and timber framing at the site. Canvas partitions, curtains, moveable furniture, detachable plumbing fixtures, oil lanterns for station lighting, and medical equipment will be stored in the nearby casualty station.

In the case of an air raid alarm or black-out the decontamination squad assigned to the station moves in and sets up the decontamination station as promptly as possible. To facilitate speedy erection, the canvas sides and walls are all numbered, and can be hooked and tied in place without confusion. Furniture is built in light, easily carried sections and can be readily erected. All equipment is simple. With a little practice a decontamination squad should be able to erect the entire station in a few minutes. Following use, the station equipment is cleaned up, decontaminated, and re-stored for future use.

Each station will be manned by 25 individuals and will be under the direction of the medical officer of the casualty station to which it is attached. The layout of the station will permit stretcher cases to move directly through the center aisle in a straight line without turning corners. Most of the plumbing fixtures ordinarily needed for this type of work have been eliminated by a plan of operation which calls for a station attendant in each bath operating a hand spray as required. Warm water for soaping will be furnished in pails or cans, while the shower for removing the soap will be cold.

The station is well ventilated with the canvas wall a foot off the ground and the entire top open. Oil lanterns will be used for station lighting. Except for the medical equipment, all other, including benches, tables, horses, duckboards and the like will be of field construction. The station is considered suitable for use along the West Coast, and with some modifications, almost anywhere.

Harold W. Kennedy is executive director of the Los Angeles County Defense Council. Full construction details of the unit have been completed and printed in a 10-page manual.



PLAN of the standard gas decontamination unit station developed by the Los Angeles County Defense Council indicates the simplicity of layout and construction. The estimated cost of constructing and equipping a station of this type is about $1,000.

Have You Contributed to:
The Steel Scrap Stockpile?

Still greater effort must be exerted to insure that all scrap metal from the construction industry is added to the stockpiles at the mills—Many yards have not been cleaned of scrap and much abandoned equipment has not reached the stockpile

ALTHOUGH RESPONSE by members of the construction industry in the eleven western states to last month's call for assistance in collecting scrap for war production was encouraging and indicates that the construction industry is awake to its responsibilities, there still remains much to be done before all of the available scrap held by the construction industry is returned to production. Many contractors have not yet made a complete cleanout of their equipment yards, much abandoned equipment is still rusting in out of the way places, and many other important sources of scrap remain untouched.

The need for steel scrap, particularly, was emphasized by the report of steel production for the third quarter of 1942. Whereas the steel industry now claims a theoretical production capacity of 90,000,000 tons per year, the actual production during the past nine months has been at a rate of about 81,000,000 tons per year. A lack of steel scrap, which constitutes about 50 per cent of all new steel, is held responsible to a large degree for the reduced operating capacity of the steel industry. With steel one of the most needed materials, not only for ships, tanks, shells and trucks, but also for new construction of industrial plants, military and naval structures and for the manufacture of badly needed new construction equipment, no stones can be left unturned in the search for scrap which will increase steel production. The construction industry can and must make its contribution to the solution of this problem.

It isn't necessary to fill out the coupon at the bottom of this page and return it to *Western Construction News* to do your part in making the scrap collection drive a success, but if you do it will help to show the War Production Board and the people of the country that the construction industry is doing its level best to eliminate the serious steel shortage. If you know of any abandoned construction equipment, or structures, that could possibly be salvaged, fill out the coupon below with as much information as you have available and send it to *Western Construction News*. All information being received from these returned coupons is being turned over to the nearest representative of the WPB Industrial Salvage Section the same day it is received, and the leads furnished are being followed immediately by field representatives of the Section. Your efforts in providing leads to scrap sources will not be neglected.

Let's Have the Proof

OF COURSE everyone knows that the construction industry is doing its part in contributing scrap to the salvage drive, but let's show everyone just what the construction industry in the eleven western states is doing. Again this month *Western Construction News* will pay $5 for each of the first ten photographs received showing abandoned construction equipment that may be salvageable. Send the coupon below, filled in, with your snapshots. You get $5 and the construction industry gets the credit.

To assist in the industrial salvage program, private industry is loaning more than 3,000 trained field men to the WPB Conservation Division for a period of 90 days. Recruited from the Associated Equipment Distributors, American Steel Warehouse Association, the National Association of Sales Executives and the iron and steel industry, these men will call on industrial plants throughout the country to stimulate interest in the scrap program, and to insure that all possible dormant scrap is moved. The three major labor groups of the country, the American Federation of Labor, the Congress of Industrial Organizations, and the Railroad Brotherhoods have pledged themselves to an active part in the scrap salvage drive. Building and Construction Trades Councils and affiliated unions and locals, as the principal labor group in the construction industry can be of valuable service in the scrap drive.

During the past few weeks many typical and some unusual scrap contributions have come to light. Here are just a few of them:

Towers and cables of the Tacoma Narrows bridge which collapsed two years ago will provide an estimated 8,400 tons of scrap steel. Dismantling of the structure is now in progress.

Nevada State Prison contributed an abandoned rock crusher as a part of 50 tons of scrap metal.

The Board of Harbor Commissioners of San Francisco Harbor have authorized dismantling of the steel pedestrian overhead across the Embarcadero at the Ferry Building.

DON'T PASS UP the chance to send in your suggestions for salvaging abandoned construction equipment just because someone else might have sent in the same lead. We can take care of the duplications, but we can't pass on leads that are not sent in. Fill in the coupon below with any information you may have of abandoned equipment.

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

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

Location.....

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

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

.....

.....

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

THROW YOUR SCRAP INTO THE FIGHT!

Preliminary Design Chart . . . IV

Volume Curves for Concrete Dams

Volume of concrete in dams of either spillway or bulkhead section may be determined for preliminary estimates by considering the dam in segments and referring each one to the chart

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

A COMPREHENSIVE CHART giving volume of concrete in a dam of any type has long been needed. Today the limited personnel in engineering offices who are expected to turn out as much work as formerly handled by a large staff feels the need more poignantly than ever. To aid and assist these harassed individuals in making preliminary estimates the following curves were prepared.

Gravity dam quantities are shown by two curves; one for a non-overflow or bulkhead section, and the other for an overflow or spillway section. The height range covered by the chart is from 20 to 700 feet representing the upper limits to which it is at present deemed practicable to construct a gravity dam. The gravity bulkhead curve is not a straight line but contains a break at a height of 50 feet. At this point it is advisable to slope the upstream face in the interest of reducing stresses and utilizing the stabilizing effect of the superimposed water when the dam is loaded.

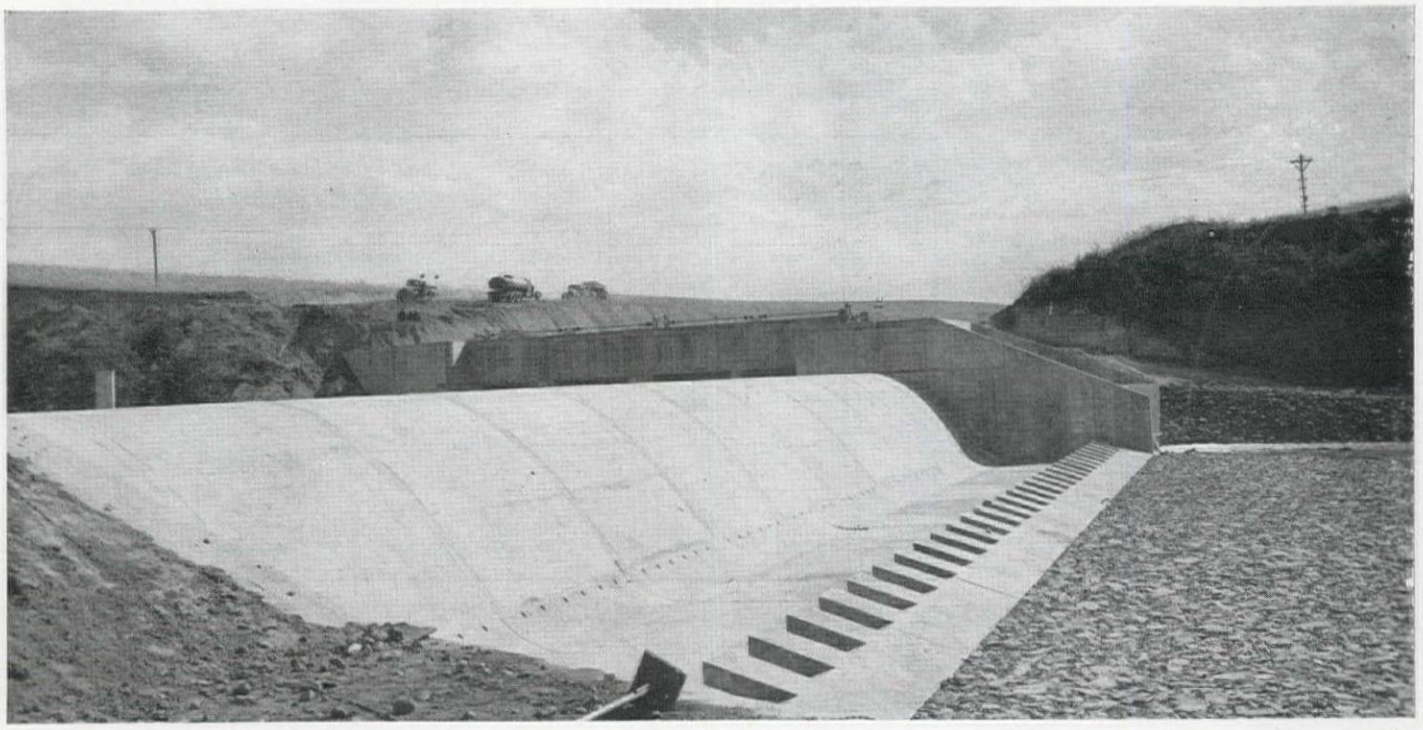
The spillway curve for a gravity dam has a forked end, allowing determination of concrete in either a fixed concrete crest, a crest with an elevated gate on the top, or a crest containing a recessed drum gate. Since all of these curves are for preliminary or comparative estimates only and not for final design no attempt is made to show difference in volume for various depths of overflow or for various sizes of orifices under a varying head as under an elevated gate. Also, the recessed drum gate is assumed to be of a large size, 28 feet high in the raised position, as at Grand Coulee or Shasta dams. Knowledge of the limitations of the curves will prevent their improper use.

The slab and buttress type of non-overflow section is given by the curve so designated, and yields concrete quantities for dams from 45 to 300 feet high. Again, the upper limit of height is the practical limit to which dams of this type have been constructed. A spillway curve covers dam heights from 10 to 200 feet. Spacing of buttresses, slope of upstream and downstream dam faces and thickness of buttresses are all examples of conservative good practice without waste of materials but with an allowable magnitude of first principal stress of 800 lbs. per square inch and no secondary principal stresses. Corbels and slabs employing flexural stresses to resist loads are economically designed with balanced steel reinforcement.

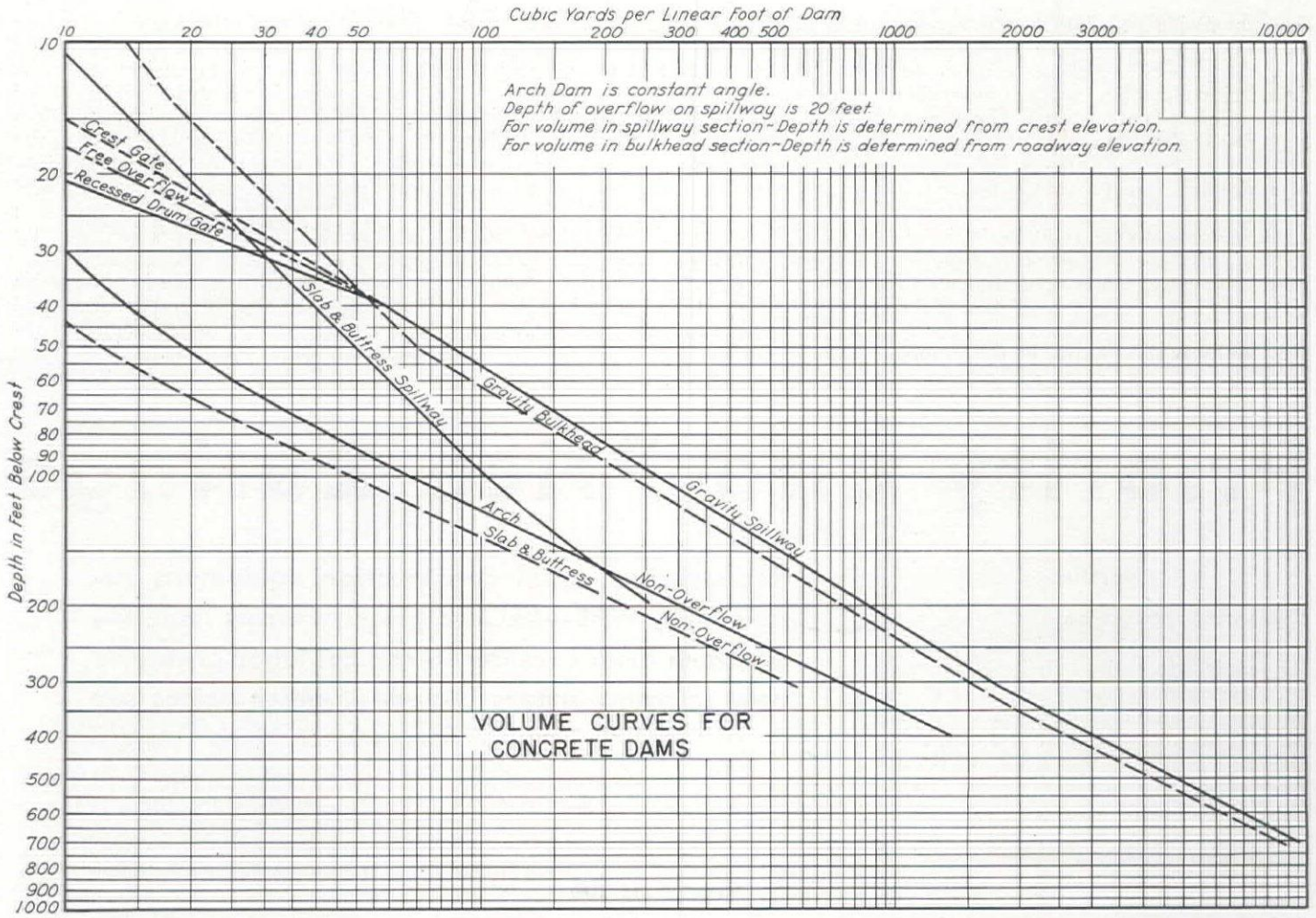
The arch dam curve is for a constant angle arch of a height from 30 ft. to 400 ft. The upper limit here approaches the massive arch of which Ruby Dam is a good example. Since there is such a wide divergence of conditions under which arch dams may be, and have been, built it was thought advisable to strike an average of some 15 arch dams located in the West. Included in these dam studies are both constant radius and constant angle arches as at Gene Wash, Copper Basin, Dan River, Mormon Flat, Gibson, Seminoe, Ariel and Pacoima dams.

Magnitude of stresses

A question of limiting concrete stresses used in curves of this type always bothers the engineer and until he is reassured that there is a sound basis in this respect he will not use a chart even



MILL CREEK DAM at Walla Walla, Washington, is of the slab and buttress type, and was but recently completed. The purpose of the dentated sill on the apron is to prevent erosion and undercutting.



for comparative estimates of quantity. In the case of the gravity dam volume curves it may be reassuring to note that designs of Cottage Grove dam in Oregon, Conchas dam in New Mexico, Marshall Ford dam in Texas, Grand Coulee and Shasta dams are only some of the several designs studied and on which the curve is based. Critical combinations of dead, water, earthquake, uplift, and ice loads will yield a maximum first principal stress in the heel of approximately 300 lbs. per sq. inch and at the toe 700 lbs. per square inch for the highest section. Second principal stress, maximum in the heel will be 30 lbs. per square inch and at the toe it will be zero except for the depth of backwater on the dam.

Flexural compression stresses in concrete are limited to 800 lbs. per square inch and tension stresses in reinforcing steel will not exceed 18,000 lbs. per square inch. To produce the slab and buttress dam curves meant that a minute study of existing and proposed dam plans be made that include such structures as Mill Creek in Washington, Hansen and Imperial in California, Stony Gorge and Rodriguez dams.

Application of curves

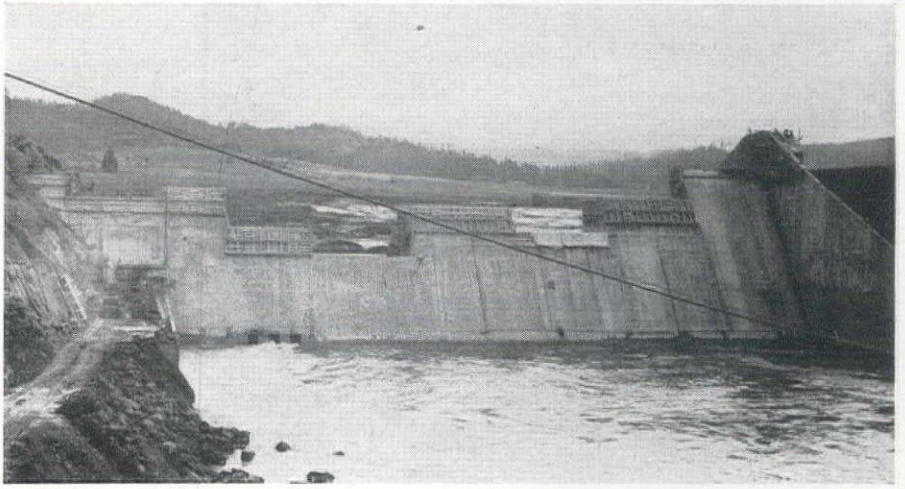
To apply the curves to any cross section of a river valley or canyon it is necessary to locate the axis of the dam and establish the top and bottom elevations. Where doubt exists as to whether a gravity or an arch dam is most economical both axis lines can be located and a reasonably accurate comparison quickly made. No deviation from accepted rules and standards is proposed for selecting the type of dam. As in the past this will be governed by local conditions, foundation, ratio of length to height of dam, accessibility, climate and other factors best known to the engineer acquainted with the project. The procedure in applying the gravity spillway curve can be stated in 5 steps by way of example:

VOLUMES OF CONCRETE contained in any type of dam can be read from the chart. If the design is irregular, the dam is considered in sections either axially or in depth, and the chart read for each.

1. At a particular site select the elevation of the spillway crest, the location of the spillway on the cross section of the valley and the type of gate or absence of gates on the spillway.

2. Determine the foundation elevation

COTTAGE GROVE DAM while under construction. This is a typical example of the gravity type spillway dam, and is 90 ft. high. No crest gates were added. Cottage Grove dam is the second unit of the Willamette Valley Flood Control system and is located south of Eugene, Oregon, on the Willamette River.



from available data at 50-ft. intervals which correspond to 50-ft. monoliths.

3. Compute the distance between the foundation elevation and the unmovable spillway crest (not the top of the gates).

4. For each of these heights get the volume of concrete from the curve. Measure downward from the upper left hand corner of the chart for these ordinates and pass to the right to the intersection with the spillway curve. Proceed vertically upward and read number of cubic yards per linear foot of dam at the top of the chart.

5. Multiply this volume by the 50 foot interval (or any other convenient spacing between foundation elevations) and obtain total volume of concrete in the spillway.

Bulkhead or non-overflow sections can be computed in the same way. Mention is made that the bulkhead curve uses heights from the foundation level to the top, or roadway level of the dam which includes adequate freeboard. These heights are always greater than spillway heights for equal foundation levels because they are raised by the height of the spillway gates plus the assumed freeboard.

Other types of dams are estimated by the same procedure. In the case of the arch dam the axis plane is taken as a developed surface and the increments of 40 or 50 ft. stepped off with a dividers along the axis from one abutment to the other. The ease with which combinations of gravity and arch or gravity and slab and buttress dams can be estimated through this chart makes it especially useful.

Note: The fifth article in this series will appear in the December issue, and will be devoted to draft tubes for hydraulic turbines.—Editor.

Priority and Price Rulings

Priorities

Registration of all construction equipment required by WPB—Revised priority forms issued—Western area considered critical labor area and new freezing orders issued—Lumber prices set

Equipment registration

All owners of construction equipment are required to register their equipment with the regional office of the War Production Board not later than October 31, 1942, according to the terms of Limitation Order L-196 issued by WPB on Aug. 31. Registration is required of all individuals, companies, and city, county and state organizations, and other public agencies owning construction equipment. Registration cards may be obtained from the regional offices, and limited supplies are available from local offices of the Associated General Contractors and local members of the Associated Equipment Distributors.

Members of the Associated Equipment Distributors have been enrolled by WPB to assist in the registration, and are available to help in filling out the cards. All cards should be filed with the Used Construction Equipment Regional Specialist in the region in which the equipment is located. Western regional offices of the War Production Board are located as follows: Region 8—Fidelity Bldg., Dallas, Texas—includes Oklahoma, Texas and Louisiana; Region 9—U. S. National Bank Bldg., Denver, Colo.—includes Wyoming, Utah, Colorado, and New Mexico; Region 10—1355 Market St., San Francisco, Calif.—includes California, Nevada and Arizona; Region 13—Stuart Bldg., Seattle, Wash.—includes Washington, Oregon, Idaho, and Montana.

Priority applications

A revised project application form PD-200 is now available from the War Production Board for use in obtaining priority assistance and authority to begin construction. The new form has three principal uses, and will replace Form PD-1A. It is to be used for (1) application for authority to begin construction in accordance with the provisions of Construction Limitation Order L-41; (2) application for priority assistance for any project involving new construction, reconstruction, remodeling or conversion; (3) application for priority assistance in securing construction equipment. When construction is involved, PD-1A application forms will not be considered, but when no construction is involved, PD-1A forms will be accepted for equipment.

Form PD-200 does not replace Form PD-105, which is used for securing priorities on privately financed war housing. It does not replace PD-406, required for remodeling houses in critical war areas, nor does it replace Form PD-3A, required for projects owned by the armed services, and usually identified as "command" construction. Blank PD-200 application forms are available at all WPB field offices, county war boards of the Department of Agriculture, field offices of the Federal Housing Authority, field offices of the Army, Navy and Maritime Commission, and many financial institutions.

Priority approval

Ratings for priority assistance on military construction will be assigned by an order from the P-19-h series by the Army and Navy Munitions Board with the written approval of WPB. Military construction has been defined as the construction of facilities which will be owned and operated for the Army, Navy or Maritime Commission, and airport or other aircraft facilities to be built or owned by the Civil Aeronautics Authority for the use of the Army or Navy. All construction other than military will be rated only by WPB. Command construction ordered by the Chief of Staff of the Army or the Chief of Operations of the Navy to be built under contract awarded by the Corps of Engineers or the Bureau of Yards and Docks, and having a value of less than $500,000, may be rated by procurement officers on Form PD-3A. Further exceptions from the rule for assigning priorities for military construction include emergency flood control projects costing less than $100,000 which come under the jurisdiction of the Corps of Engineers. These projects may also be rated by procurement officers on Form PD-3A.

Construction limitation

Reduction in the amount of construction in several types of work has been made by WPB in an amendment to Limitation Order L-41. Allowable residential construction has been reduced to $200; multiple residential construction has been increased to $1,000; agricultural construction remains unchanged at $1,000; industrial construction remains unchanged at $5,000; certain types of commercial construction have been reduced to $200; and highway, sub-surface and utilities construction has been reduced to $1,000. Even though construction may come under these limits, the owner must be able to acquire sufficient material to complete the project without priority assistance, and the project must not require the use of any material to supply gas, electricity, water, steam, telephone, or sewage disposal service.

Brick and clay products

The building materials branch of WPB has urged producers of brick and other clay products to gauge production to meet an anticipated increased demand for these materials as a substitute for lumber on temporary or permanent structures. The nation's available supply of lumber is expected to fall 6,000,000,000 f.b.m. short of meeting this year's demand, and WPB believes that at least 2,000,000,000 f.b.m. could be saved by an increased use of brick and tile, and another 100,000,000 f.b.m. saved

by the use of gypsum board. The use of clay products is also expected to reduce the load on transportation facilities, since there are generally clay products plants within 100 mi. of every likely site of construction.

The Pacific Coast production area, which includes Washington, Oregon, Montana, Idaho, Nevada, Utah, Arizona, and California, is estimated to have an annual production capacity of 1,098,000,000 bricks, 311,000,000 tons of clay sewer pipe, and 106,200,000 sq. ft. of ⅜-in. gypsum wall board. Estimates indicate that a reasonable surplus in all classes will exist except in the production of gypsum board, where a 10 per cent deficit is estimated in the Pacific Coast area. This deficiency may be made up by shipments from Colorado and New Mexico, where a surplus is expected to exist.

Automotive replacement parts

Manufacturers of automotive replacement parts have been granted an automatic rating of AA-2X by Amendment No. 2 to Limitation Order L-158. Under the terms of this amendment, manufacturers producing replacement parts for passenger automobiles, light, medium and heavy motor trucks, truck trailers, passenger carriers, and off-the-highway motor vehicles may schedule the production of parts in the same manner as if the orders carried a rating of AA-2X.

Douglas fir allocation

Authority to allocate Douglas fir logs and to direct or prohibit production of lumber items from them has been established by WPB through the issuance of General Preference Order M-234. Under the terms of the order the Director General for Operations may allocate specific quantities of logs to specific persons, and may also determine the specific manner and quantities in which delivery shall be made. The particular uses of Douglas fir logs may also be directed or prohibited. Allocations will be made by the office of the WPB Western Log and Lumber Administrator at Portland, Ore.

Armored cable

The manufacture of armored cable has been prohibited after Oct. 19 by WPB as a means of conserving steel. Under the terms of Limitation Order L-165, manufacturers may no longer secure raw materials for the production of armored cable. It is believed that there are sufficient substitutes available in the form of non-metallic or fabric-sheathed cable to fulfill all necessary purposes.

Prices

Price standards

The Office of Price Administration has created a Standards Division which will incorporate quality definitions in price, rent and rationing regulations. Seven sections have been established under the Division, including food and drugs (which will also handle paints and chemicals); textiles, leather and apparel; consumer durable goods, home furnishings; lumber and building materials; agriculture and industrial machinery; and rubber and rubber products. Additional sections to handle fuel and petroleum products; chemicals and paints; transportation equipment; paper, paper products and containers; and metals and metal products are being organized. The lumber and building material section is headed by Elroy A. Ledwith, an architect who had been associated with the Department of Commerce and the National Defense Advisory Commission. At the head of the agricultural and industrial machinery section will be H. Seymour Pringle.

Lumber prices

Maximum prices for the sale of Douglas fir, hemlock, Idaho pine, Ponderosa pine, sugar pine, and western red cedar shingles from distribution yards have been established by Maximum Price Regulation No. 215. The maximum prices for which lumber may be sold at retail are to be based on four factors: (1) the f.o.b. mill maximum price as established by the applicable OPA regulation; (2) inbound transportation charges to the distribution yard; (3) handling charges, which include $5.00 per thousand f.b.m. for lumber, 30 cents per square for shingles, and 60 cents per hundred for lath; (4) ten per cent of the total of the first three items.

Maximum prices are to include loading at the expense of the seller, but not transportation to the buyer. The regulation is intended to cover the retail distribution of all lumber covered by Maximum Price Regulations No. 19, No. 26, No. 94, and No. 164. It applies to the sale of lumber in quantities of 5,000 ft. or more to the Federal Government or to contractors and subcontractors of the Federal Government; to State Governments, but not to contractors and subcontractors of State Governments; to shipbuilders, dam builders, bridge builders, and other contractors and subcontractors who will use the lumber to fill a contract with shipbuilders, etc.

Transportation

Truck operating certificates

After Nov. 15, 1942, no person will be permitted to operate a commercial motor vehicle without the possession of a Certificate of War Necessity issued by the Office of Defense Transportation. General Order ODT No. 21 provides that operators of trucks and busses, except those operated by or under the direction of the military forces of the United States, must have the Certificate of War Necessity. The term "commercial motor vehicle" includes all trucks, combination truck-tractors and semi-trailers, full trailers, and any other rubber-tired vehicles primarily for the purpose of transporting property. Private passenger automobiles are not included.

Certificates will be issued to applicants whose operations are necessary to the war effort, or conducted to assure maximum utilization of the motor vehicle service and conserve rubber and other critical materials used in the manufacture, maintenance and operation of the vehicles. The order makes it unlawful for anyone to transfer motor fuel, or mount or install parts or tires on any commercial vehicle unless the operator presents a valid Certificate of War Necessity pertaining to the vehicle in question.

All tires mounted on commercial vehicles must be submitted to an authorized agency for inspection every 60 days, or at the end of each 5,000-mi. period of operation. Inspecting agencies will certify that all reasonable and necessary adjustments and repairs have been made before the vehicle may be placed in operation again. A weekly record of all vehicles operated under a Certificate of War Necessity must be maintained by the operator, and carried in the vehicle for examination by representatives of ODT.

Manpower

Western area critical

The War Manpower Commission, last month, declared the twelve western states to constitute a "critical labor area," and prohibited migration of 200,000 workers in lumbering and nonferrous metal industries. As a means of checking migration of workers from these industries into the shipbuilding, airplane and armament plants, the local Selective Service Boards were instructed to re-classify workers leaving their jobs without permission. At the same time WPB ordered Pacific Coast logging operations to be extended to 48 hours per week, and the War Labor Board recommended wage increases over the 15 per cent cost-of-living formula for metal miners in Idaho and Utah.

W. K. Hopkins, West Coast regional director for WMC, has established local management-labor committees in California, Oregon, Washington, Arizona, and Nevada. Special WMC representatives have also been appointed in Dallas, Texas, and Denver, Colo., to assist in setting up local War Manpower Committees in critical areas. Appeal machinery for workers who wish to transfer from one job to another will be the responsibility of local and regional management-labor committees.

Certificates of separation may be granted to workers on a number of different grounds, including (1) worker able to perform higher skilled work than employer can provide; (2) employment for a substantial period at less than full time; (3) unreasonably great distance between residence and employment; (4) compelling personal reasons; and (5) wages or working conditions less favorable than those prevailing in the community for the same kind of work.

Government employees

Under Directive No. 10, issued by the War Manpower Commission, the Civil Service Commission has been authorized to transfer civilian employees to the Federal Government from any department or agency of the executive branch to any other department or agency in which the employee can make a more effective contribution to the war effort,

with or without the consent of the employee. Under the terms of the Directive, the Civil Service Commission may also transfer a civilian employee to a private enterprise with the consent of the employee, and with or without the consent of the department or agency of the Federal Government in which he is employed. In the case of the transfer of an employee from a Federal position to private enterprise, he is to be carried on a leave-without-pay basis for a period extending not beyond six months after the end of the war.

Proof of citizenship

Contractors and subcontractors for the War and Navy Departments have been granted three means by which applicants for employment may furnish satisfactory evidence of citizenship. Applicants for employment on work under Army and Navy contracts may (1) produce an official certificate of naturalization for citizenship, or a birth certificate, or other satisfactory evidence of American birth; (2) if honorably discharged from the Army, Navy, Marine Corps, or Coast Guard, produce the honorable discharge certificate, unless the certificate shows that the bearer was an alien at the time of issuance; (3) execute a prescribed Declaration of Citizenship form in the presence of two witnesses, one of whom must be an Army or Navy District Procurement, Factory or Plant Protection representative, or an officer of the United States Army, Navy or Marine Corps, or a member of the Auxiliary Military Police on duty at the plant. Fulfillment of any of the three recommended procedures by employee does not relieve the employer from the primary duty of making further investigation when there is reason to question the applicant's loyalty or citizenship.

NEW BOOKS...

TECHNIQUE OF PLYWOOD—By Charles B. Norris. Published by I. F. Laucks, Inc., Seattle, Washington. 250 pages, 4½x7½. Price $2.50.

Consisting of reprints of a series of articles published between 1937 and 1939, this handbook has been published to present quantitative technical information on the subject of plywood. The subject matter is subdivided into five parts, the first subdivision having to do with the strength, deformation and elastic stability of plywood sheets. The formulas in this section should be helpful to engineers engaged in the design of structures in which plywood sheets are used as stressed skin coverings. They do not cover all cases met in aircraft design, but do cover all cases met in the design of plywood housing. The second section discusses a two-dimensional elastic theory for plywood. The third subdivision discusses briefly the manufacture of plywood. The fourth, warpage of plywood and its causes. The fifth subdivision treats the relatively new field of bent, moulded and embossed plywood.

* * *

INTRODUCTION TO HIGHWAY ENGINEERING—By John H. Bateman, Professor of Civil Engineering, Louisiana State University. Published by John Wiley & Sons, Inc., New York, N. Y. 459 pages, 6x9. Price $4.00.

Intended to serve as a text book in an introductory course in highway engineering, emphasis has been placed on fundamental principles and processes. Following a brief historical background and descriptions of the highway systems, the volume covers the properties of soils, drainage, and general features of highway design, and methods employed in earthwork construction. Following this, the subject of surfaces is considered, beginning with bituminous material and including the theory of flexible pavement design, the theory of concrete pavement design, and methods of constructing bituminous pavements, concrete pavements, and asphaltic concrete pavements. A chapter is devoted to maintenance; one to surveys, plans, specifications, and supervision of construction; one to the economics of highway improvement; and one to highway planning, financing, and administration. The appendix includes a series of problems to assist the instructor in presenting the material.

* * *

DEPRECIATION PRINCIPLES AND METHODS—Published by the State Law Reporting Company, 30 Vesey St., New York, N. Y. 85 pages, 6x9. Price $1.50.

Representing the report of a special committee on Depreciation of the National Association of Railroad and Utilities Commissioners, the booklet presents a series of recommendations for the establishment of depreciation principles and methods for public utilities commissions. The straight-line method of depreciation is recommended for use generally for accounting and regulatory purposes as being the most practical and easy of administration when applied consistently. The report discusses accounting for depreciation; depreciation in rate cases; compares the results of straight-line and sinking-fund methods of depreciation; and suggests methods of estimating depreciation rates. Fifteen tables and twelve charts are included in the report.

* * *

EFFECT OF RECENT COURT DECISIONS UPON STATE COMMISSION JURISDICTION RESPECTING DEPRECIATION—By John E. Benton, general solicitor, National Association of Railroads and Utilities Commissioners. Published by the State Law Reporting Co., 30 Vesey St., New York, N. Y. 13 pages, 8½x11. Price $1.00.

Beginning with the case of the Railroad Commission of Louisiana vs. the Cumberland Telephone and Telegraph Co., presented before the Supreme Court in 1909, the author discusses a series of court decisions affecting the jurisdiction of state and utility commissions in respect to depreciation. The discussion carries through to the Pacific Gas & Electric Co. case, in which the court upheld the order of the California Railroad Commission.

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NATURAL TRIGONOMETRIC FUNCTIONS to Seven Decimal Places for Every Ten Seconds of Arc—By Howard Chapin Ives, Consulting Engineer. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y. 351 pages, 7x10. Price $9.00.

In addition to the sines, cosines, tangents and cotangents of every ten seconds of arc, to which the major proportion of this volume is devoted, the tangents and cotangents are given for every second of arc from 0 to 2 deg. due to the rapid changing of these functions in the smaller angles. Part II of the volume is devoted to miscellaneous tables, including the lengths of circular arcs with a radius of 1; the coefficient K for central angles of given curves; the radii from arc definition; the radii from chord definition; even foot radii, deflections and chords; functions of a one-degree curve; corrections for tangent distances; and correction for external distances. There are also included a number of trigonometric functions, formulas and triangle solutions. Minutes of a degree are reduced to decimals in a table, and equivalents of length and surface units are given. Definitions and fundamental theory of trigonometrical functions and traverses and curves are discussed briefly. Final pages of the volume are devoted to a discussion of the use of the tables, each table being taken up in a separate paragraph.

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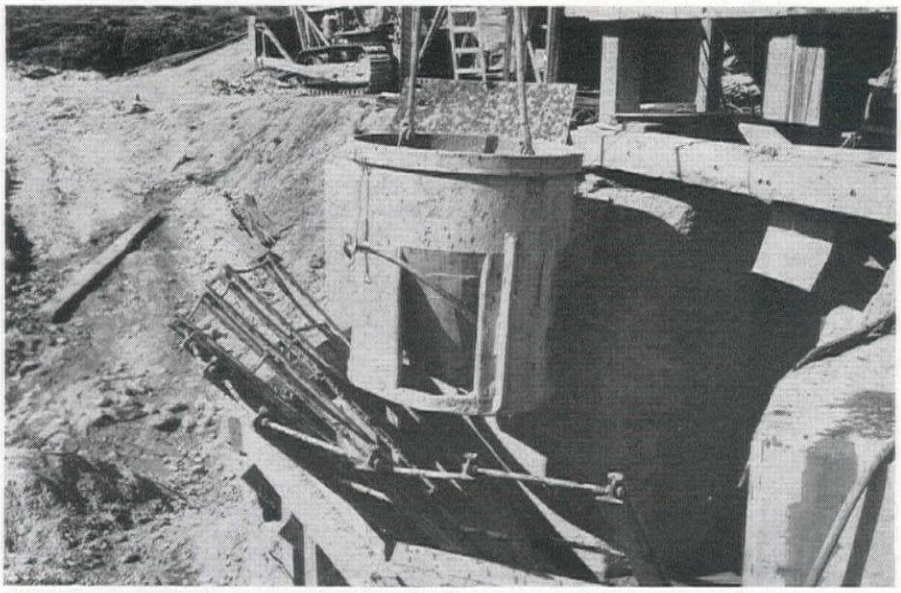
CONCRETE WORK—Prepared by a staff of technical experts under the direction of E. Molloy. Published by the Chemical Publishing Co., Inc., Brooklyn, N. Y. 140 pages, 5½x8½. Price $2.50.

Concrete construction methods as used in England provide the subject matter for this volume. Those who are accustomed to dealing with the highly technical aspects of concrete construction may not find the book sufficiently advanced, but for the practical worker there is much detail of construction methods which may be found of value, and which is seldom found in American volumes on the subject. Prepared by a group of technical experts, the eight chapters cover concrete materials, mixing and placing; steel reinforcement, bending and fixing; concrete foundation, walls, floors and roofs; formwork for concrete buildings; precast work; concrete paths and garden steps; concrete roads and road repairs; and surface treatment of concrete walls and floors. This book is No. 4 in a "Building Practice" series.

HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD EDITOR'S NOTEBOOK



LANDING GUIDE built of 75-lb. railroad rails insures proper placing of bucket under spout from mixer, no matter from what direction bucket is brought on the cableway, saving time used in spotting.

Developments at Keswick Dam Save Time, Maintenance Costs

Two plant developments by the Atkinson Kier Company, constructors of Keswick Dam, are of particular interest.

Bucket Landing Dock

Concrete is mixed in a plant on the east wall of the canyon, above the final elevation of the dam, and is transported to its point of placement in 4-yd. Garbro buckets suspended from a 1400-ft. cableway. The headtower of the cableway is stationary, a short distance back of the mixing plant, but the tail tower on the opposite canyon wall has a swing of approximately 400 ft., thus enabling concrete or other objects carried to be lowered at any spot on the job.

This 400-ft. swing of the tail tower changes the direction of the main cable very noticeably, and as empty buckets are brought in from the two extremes of the arc, there is a considerable variation in the position in which they will land. Ordinarily it would be necessary to spot the bucket properly under the chute from the mixer by hand, or move the tail tower of the cableway to a centered position.

Both of these possible adjustments are obviated, however, by a landing guide built of second-hand 75-lb. railroad rails radiating upward in a semi-circle from the proper bucket position beneath the chute. With this dock, the bucket can be dropped from any cableway position and will be guided directly to its loading place. This landing device is called a "ferry slip" by the employees of the plant. The mixing plant at Keswick Dam consists of two 2-yd. Koehring mixers, fed by Kron-Johnson weigh batchers.

Air-cooling motors

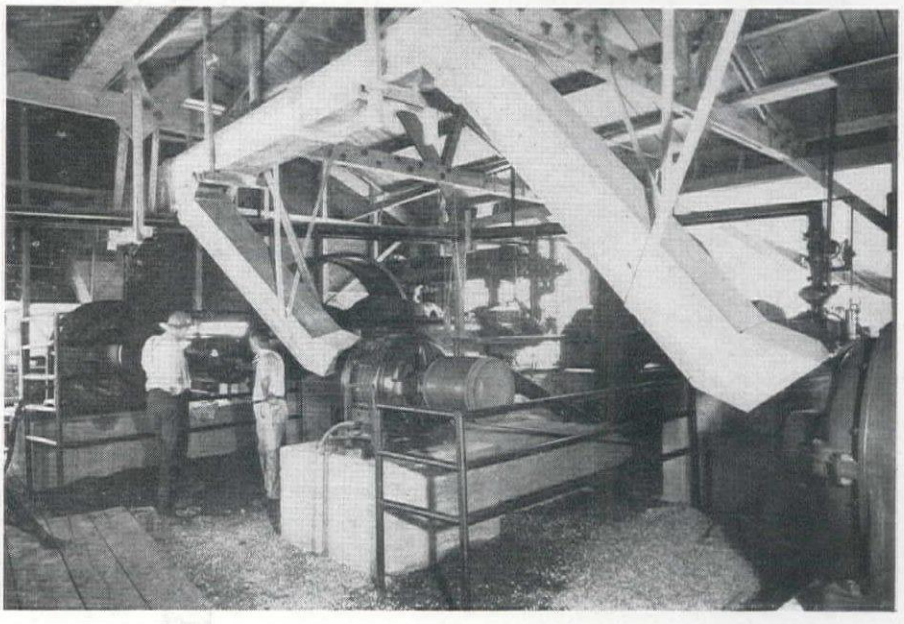
Compressed air is used in drilling, sand-blasting, tamping, shop work, and many other phases of construction at the dam. To supply the demand, an extensive compressor plant has been erected. Three Ingersoll-Rand Imperial type 10 compressors are in use, and deliver 2,750 cu. ft. per min. to the storage tank. They are driven by 2 General Electric 200 hp. motors and a General Electric 100 hp. motor. Another 500 cu. ft. per min. compressor driven by a 100 hp. motor is maintained as a standby.

Because summer daytime temperatures reach 120 deg. or more in the Sacramento Valley, and because the compressors are in continuous operation, the motors have a tendency to run hot and thereby require a good deal of maintenance work.

This has been considerably reduced by construction of a timber air duct leading from the storage tank with one branch blowing directly onto the axle and rotor of each of the motors. Each branch of the duct leading to the motors is built of 1x8-in. timbers, making a 6x8-in. tube. The whole arrangement is suspended from the roof of the compressor house to be out of the way. The flow of air is regulated by a valve at the tank.

Keswick Dam is a unit of the California Central Valley Project, being built by Atkinson Kier Co., of San Francisco, under the direction of the Bureau of Reclamation. Earl M. Jennett is project superintendent for the contractor, and Ralph Lowry, construction engineer, Kennett Division, is in charge for the Bureau.

MOTORS are cooled at Keswick Dam air compressor plant by continuous blast of air. Excessive temperature of the Sacramento Valley in summer and continuous operation of the compressors make motors run dangerously hot, if not artificially cooled.



NEWS OF WESTERN CONSTRUCTION

OCTOBER, 1942

California, Oregon Highways Approved for Post-War Work

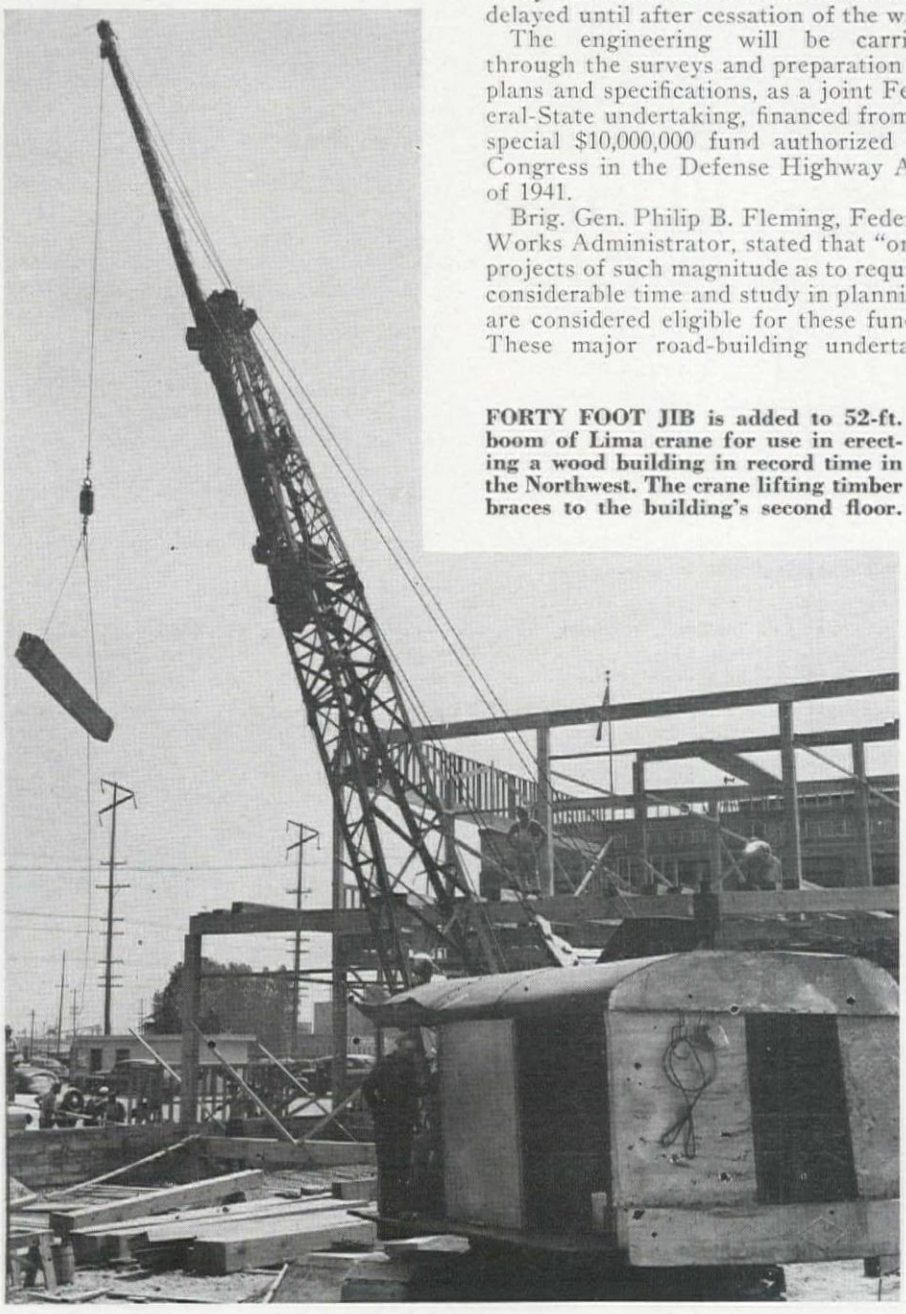
CALIFORNIA AND OREGON are two of the seven states in which post-war highway construction has been approved by the Public Roads Administration of the Federal Works Agency, and upon which engineering studies have already been started. Construction will be delayed until after cessation of the war.

The engineering will be carried through the surveys and preparation of plans and specifications, as a joint Federal-State undertaking, financed from a special $10,000,000 fund authorized by Congress in the Defense Highway Act of 1941.

Brig. Gen. Philip B. Fleming, Federal Works Administrator, stated that "only projects of such magnitude as to require considerable time and study in planning are considered eligible for these funds. These major road-building undertakings, form an important part of the reserve shelf of necessary public works that the Federal Works Agency is accumulating to help take up the slack of post-war readjustment."

The two California roads included in the first list of approved projects are (1) Completion of Bayshore Freeway from the San Francisco-Oakland Bay bridge on the west side of San Francisco Bay via San Mateo, Redwood City, Moffett Field and San Jose to connect with the present route southeast of San Jose, length 42 mi. (2) A new limited access highway from a point on High Street in Oakland along the east shore of San Francisco Bay to connect with the proposed Bayshore Freeway north of San Jose. This new route, 33 mi. long, will be known as the Eastshore Freeway and will bypass congested urban areas.

The two Oregon highways to win approval are (1) Major relocation of the Columbia River Highway (U. S. 30) in a practically continuous section between Cascade Locks and The Dalles, following as closely as possible along the Columbia River, a length of 41 mi. (2) Relocation of the Oregon Coast Highway (U. S. 101) between Tillamook and Pleasant Valley, a distance of 8 mi.



FORTY FOOT JIB is added to 52-ft. boom of Lima crane for use in erecting a wood building in record time in the Northwest. The crane lifting timber braces to the building's second floor.

Crane Helps Set Record in Northwest Building

Ninety days from open field to finished office building is the record made by General Construction Co., of Seattle, Wash., on a contract for the Seattle office of the U. S. Engineer Department. Contractors, interested in speeding the war effort, are daily establishing construction records formerly considered impossible.

The structure, erected "somewhere in the Pacific Northwest," is a two-story, 200x224-ft. office building. Shortages of critical materials dictated the use of a minimum of steel and concrete—only steel is in the anchor plates, and only concrete is in the footings—and a maximum of wood.

To assist in the speedy erection program, a Lima Model 701 crane with a 52-ft. boom was employed. In order to reach greater distances and assist in second story construction, a 40-ft. jib boom of treated Douglas fir was added. With this addition, the lifting strength of the crane was 2½ tons, amply adequate.

Classes Scheduled in Construction Subjects

COURSES for both in-service personnel and men and women about to enter the construction field are scheduled by the University of California War Training office to begin during the months of October and November.

A management course in time and motion study will begin on the Berkeley campus, Oct. 20, with Daniel Canty, of Columbia Steel Co., as instructor. Men and women with two years of college work in engineering, business administration, economics, or equivalent industrial experience, are qualified for the class.

The week of Oct. 26, a class in electrical machinery laboratory has been scheduled by Professor C. F. Dalziel, of the University's electrical engineering department. Two-hour sections will be offered each night of the week, with a Saturday section if demand warrants.

For men engaged in the fabrication and testing of ferrous materials, a mechanical engineering course in metallurgical testing and inspection begins October 29 on the Berkeley campus, and will include laboratory tests to cover physical properties of ferrous metals.

To prepare draftsmen for war industries, engineering drawing classes are being offered: a full-time women's class to start October 19, and evening classes for men and women, starting November 9 on the campus.

Structural detailing and design classes, both elementary and advanced, begin the week of Nov. 16 in Berkeley and at Wilmerding school in San Francisco. Meeting one night a week for three hours, the elementary course covers use of conventions and symbols, simple designs, etc., while the advanced class includes practical design problems in steel, wood and concrete.

Futher information may be obtained from the War Training office, Room 201, California Hall, University of California, Berkeley, Telephone THornwall 5377; or Wilmerding School, San Francisco, Telephone MArket 1647.

Extend Irrigation Area for Drought Protection

EXPANSION of the irrigable area of the Buford-Trenton water conservation and utilization Reclamation project in North Dakota has been approved by the President. The farm land to be included in the irrigable area of the project, originally set at 13,400 ac., will be 14,800 ac., a 1,400-ac. increase.

The Buford-Trenton project was authorized for construction by the Bureau of Reclamation under the water conservation and utility projects section of the Interior Department Appropriation Act of 1940 to stabilize agriculture and employment in the Great Plains and other semi-arid regions affected by periodic drought.

It is one of 12 comparatively small irrigation projects whose construction was undertaken by the Bureau with the cooperation of the Work Projects Administration and the Civilian Conservation Corps. The Department of Agriculture also participated, having charge of land development activities.

Although retarded by curtailed WPA and CCC funds and the difficulty of obtaining construction materials the water conservation and utilization project program has progressed fairly rapidly. One project is already in operation and construction on 8 others is well advanced.

In the course of construction work by the Bureau of Reclamation on the Buford-Trenton project it was found that the area just approved by the President could be developed without the purchase of additional equipment.

Wage Scales Established for Three Bureau of Reclamation Projects

WAGE SCALES for three major Bureau of Reclamation projects have recently been established, following the approval of the Secretary of Interior of reports by three wage boards. The boards were appointed last December, and have been engaged in reviewing prevailing wage rates for various classes of laborers and mechanics in the vicinity of the three projects. Duncan Campbell, from the office of the Secretary of the Interior, was chairman of all three boards, and Charles A. Bissel, of the Bureau of Reclamation engineering staff, was likewise a member of all boards. E. A. Moritz, construction engineer at Boulder Dam, was the third member of the Boulder Canyon Project wage board. Ralph A. Lowry, construction engineer of the Kennett Division, Central Valley Project, was the third member of the Central Valley Project wage board, and S. A. McWilliams, construction engineer at Parker Dam, was the third member of the Parker Dam Power Project wage board. The wage scales recommended, and made effective on July 15 are given in the accompanying tabulation.

Type of Work	Central Valley Project	Boulder Canyon Project	Parker Dam Project
Air compressor operator	$1.25	$1.25	
Air compressor operator, portable			$1.00
Air compressor operator, stationary			1.25
Air tool operator (air hammer, jackhammer, paving breaker, high scaler)	1.00		1.00
Blacksmith	1.50		1.25
Blacksmith helper	1.00		.90
Boat operator			1.15
Boilermaker			1.50
Buffer operator, surface		1.00	
Bulldozer operator	1.50		
Cable splicer		1.75	
Carpenter	1.37½		1.25
Carpenter foreman	1.50		1.37½
Cement finisher	1.50		1.37½
Cement screening operator	1.25		
Chuck drill tender			1.25
Concrete chipper			1.00
Concrete foreman			1.37½
Concrete mixer operator, under 1 c.y.	1.25		
Concrete mixer operator, over 1 c.y.	1.50		1.25
Concrete vibrator operator	1.00		.90
Core driller	1.25		1.25
Core driller helper	.90		
Crane operator			1.50
Diamond driller			1.25
Disposal plant operator		1.12½	
Electrical foreman	1.75		1.62½
Electrical worker	1.50		1.50
Electrical worker helper	1.10		.90
Filter plant operator		1.12½	
Gasoline engine operator			1.12½
Glazier			1.12½
Grader operator, power or pull blade	1.62½		
Grout machine operator	1.25		1.25
Grout pump operator (mechanic)		1.50	
Hoist drum operator			1.37½
Labor foreman	1.25		1.25
Laborer	.85		.80
Laborer, concrete (wet or dry)	.90		.90
Laborer, leadman			.92½
Laborer, track	.90		

(*Continued on next page*)

Lineman			1.50
Lineman helper		.90	.90
Machinist foreman	1.62½		
Machinist	1.50		1.50
Machinist helper	1.10		1.00
Mechanic, automotive		1.50	1.50
Mechanic, automotive helper		1.00	
Mechanic, heavy duty			1.37½
Oiler or fireman	1.10		.97½
Painter, brush	1.37½		1.25
Painter, spray	1.50		
Painter, swing stage	1.50	1.50	
Painter, erected structural steel	1.50	1.50	
Pipefitter foreman	1.62½		1.62½
Pipefitter	1.50		1.50
Pipefitter helper	1.10		.90
Plumber	1.50		
Powderman			1.25
Powerhouse crane operator	1.75		
Power shovel operator, under 1 c.y.	1.60		1.62½
Pump operator			1.00
Pumpcrete operator			1.25
Reinforcing steel foreman			1.50
Reinforcing steel worker	1.50		1.37½
Rigger foreman	1.75		1.62½
Rigger (Ironworker)	1.50		1.50
Roofer			1.25
Sand blaster, pot tender			1.00
Sand blaster, nozzleman			1.12½
Sheetmetal worker	1.31¼		1.25
Structural steel foreman			1.62½
Structural steel worker			1.50
Survey axeman	.85		.62½
Tractor driver	1.50		1.50
Truck crane operator	1.60		
Truck driver, under 4 c.y.	.90		
Truck driver, 4-8 c.y.	1.06¼		
Truck driver, dump, under 5 tons		.87½	
Truck driver, dump, 5-10 tons		1.00	
Truck driver, 1½ tons and less			.85
Truck driver, over 1½ tons			1.00
Truck driver, flatbed, under 5 tons	1.00	.87½	
Truck driver, flatbed, 5-10 tons		1.00	
Truck driver, flatbed, 10-15 tons		1.12½	
Truck driver, flatbed, 15-20 tons		1.25	
Truck driver, pickup, under 1000 lb	.87½		
Truck driver, water, under 2500 gal		.90	
Truck driver, water, over 2500 gal		1.12½	

Seattle Viaduct Unit Given Steel Priority

AT LEAST 70 per cent of the traffic problem will be solved with completion in December of 40 per cent of Seattle's Spokane Street viaduct, the remaining 60 per cent of the project will be held up "for the duration" or until such time as sufficient steel can be supplied for its entire completion.

City Engineer Charles L. Wartelle and R. M. Murray, project engineer of the viaduct construction, have received assurances from the priorities division of the War Production Board that the 70 tons of reinforcing steel needed to complete the most vital unit of the structure is on its way to Seattle. An advanced rating from A-1-E to A-1-A has been approved.

Completion by next Dec. 15, of the portion of the viaduct extending from Sixth Avenue S. W. to First Avenue S., is expected, with balance of the allotted structural steel being delivered by October. The unit will overpass with a four lane highway the two busiest thoroughfares—Colorado Street and East Marginal Way. Colorado Street is a "slow freight" crossing and East Marginal Way the most congested traffic arterial in the Spokane Street "bottleneck."

L. A. Offices Opened by Pan-American Contractors

THREE CONTRACTING GROUPS recently awarded contracts for construction of a total of approximately 500 miles of the Pan-American Highway through Central America, have set up offices in Los Angeles, Calif., in which city is located the office of Col. Edwin C. Kelton, engineer in charge of the project for the U. S. Engineer Department.

The combination firm of Lindgren and Swinerton, San Francisco, Calif., Tucker-McClure, Balboa, C. Z., and A. S. Vinnell Co., Alhambra, Calif., have established offices at 714 Pacific Finance Bldg., Los Angeles, with F. E. Sloan in charge. In San Jose, Costa Rica, Don Daybell will direct the field activities of the company.

The Foundation Co., of New York City, also has a contract for one section of the highway. Their Los Angeles office has been established at 811 W. 7th St., with A. L. Anstine as office manager. Their representatives in Central America, also with offices in San Jose, Costa Rica, are Cecil B. Hall, district manager, H. M. Baker, senior project manager, Philip A. Lasalle, project manager, and James A. Gudgell, general superintendent.

The third contractor is the Martin Wunderlich Co., of Jefferson City, Missouri. Its Los Angeles office is at 812 W. 8th St., and A. L. Munday, chief auditor of the company, is in charge. George Leonard is acting as the company's project manager at San Jose, Costa Rica.

First Concrete Poured for Tacoma Power Dam

FIRST CONCRETE was poured September 23 at La Grande dam, one unit of the Second Nisqually power project being built by the municipal power system of the city of Tacoma, Washington, on the Nisqually River near the town of La Grande.

La Grande dam will be approximately 210 ft. high and have a crest length of 710 ft. The central section will be curved, but each end will be a straight wall gravity dam section. The main dam will use 94,000 cu. yd. of concrete, and approximately another 10,000 cu. yds. will be used in the spillways and appurtenant structures.

L. E. Dixon Co., of Los Angeles, Calif., was awarded the contracts in April for erection of La Grande dam and also Alder dam, another unit of the same project. The La Grande contract was for $1,705,849. Verne Gongwer is chief construction engineer on the project for the City of Tacoma.

A review of the specifications for the two dams appeared in the March, 1942, issue of *Western Construction News.*

Bridge Design Contest Open to Students of Engineering

ANOTHER ANNUAL bridge design competition for students of structural engineering and architecture in technical schools of the United States has been announced by the American Institute of Steel Construction. Three cash prizes of $200, $100 and $50 respectively are offered for the designs placed first, second and third by a jury of nationally known engineers and architects. The subject of the design is a steel grade separation carrying a highway over the four-track main line of a railway, a navigable canal, and a dual four-lane highway. Drawings must be received by the American Institute of Steel Construction, 101 Park Avenue, New York, New York, not later than Feb. 8, 1943.

WASHINGTON NEWS

. . . for the Construction West

By ARNOLD KRUCKMAN

Washington, D. C.—The most important news for you here are the changes that have taken place behind the scenes in WPB. In effect they mean the control of the business and industry connected with War, as was absolutely inevitable, has been taken over by those most closely related to the armed services. The pattern originally made by Bernard M. Baruch for the first World War, essentially modified and amplified, finally has been accepted by the present Government. In all likelihood you will shortly hear that the WPB Chairman, Donald M. Nelson, will go to London in November to study Britain's comparable industrial War organization at first hand.

It is the understanding in responsible quarters here that when Mr. Nelson returns his chief function will be to handle public relations, to sell the functions of the industrial War machine to many gatherings, and to define the industrial issues of the War machine in their broadest terms. He will exert his magnetism, his salesmanship, the charm of his remarkable personality in crystalizing public spirit to give the industrial effort full team support.

It has become sharply clear to the Capital that Mr. Nelson emerges with many of the remarkable qualities of leadership possessed by Wendell Willkie, but far more appealing and smoothly finished. Nelson is deeply human, sympathetic, engaging, understanding, patient, convincing, and utterly sincere. There are few audiences he cannot win. The new WPB alignment relieves him of the burden of directly determining the details of industrial programs. His chief deputy, who was regarded as the heir-apparent under the old set-up, has always emphasized that Donald Nelson has had no production experience.

WPB organization

The realistic detail of supplies and delivery of materiel for the armed services, Maritime Commission, and Lend-Lease, will come directly under Ferdinand Eberstadt, lately chairman of the Army-Navy Munitions Board. He virtually takes the Army-Navy Munitions Board into WPB. It is generally understood the Army-Navy Munitions Board now becomes more or less moribund.

Eberstadt, a New York banker who was in France with the A.E.F., knows the military problems as they are known by the armed services, and talks the language of the heavy industry mogul as well as the industrialist. He is tough, forceful, a driver, and has the hardboiled qualities understood by the military and construction leader. He knows what the Army, Navy and Lend-Lease people want, and he will see that they get what they want, when they want it, and where they want it. Washington regards Eberstadt as the key man in the new WPB.

The other new deputy chairman is Charles E. Wilson, who quit the presidency of General Electric Co., to head the new WPB Production Executive Committee which includes Lieut. Gen. Brehon B. Somervell, Army Supplies; Maj.-Gen. Oliver P. Echols, Army Air Forces; Vice Admiral Samuel M. Robinson, Navy; Rear Admiral Howard L. Vickery, U. S. Maritime Commission. Hiland G. Batcheller, left the presidency of Allegheny-Ludlum Steel Corp., to take over WPB Steel and Iron Branch. Col. Charles R. Baxter, Ordnance Department, U. S. Army, who becomes chief of the new Materials Redistribution Branch, a Colorado man, is regarded as the first of a large number of Army and Navy men who will follow Eberstadt into WPB to take over various functions in key places.

Priorities system out

One of the most immediate changes resulting from this shift in direction will be the final actual scrapping of the priorities system. Nelson told a meeting the other day it has become practically useless. Priorities may or may not be honored, even with Army-Navy support. The breakdown is almost complete. PRP, called Purp here, the Production Requirements Plan, which it was hoped would be the cure, apparently was too complicated. It went to pieces even before it was fully under way. The last quarter applications demanded over four times as much steel as could be supplied. The general idea is that PRP will gradually fade away. Allocations finally will be the answer, and, it is hoped by the Eberstadt crowd, allocations will be the answer that will settle the problem once and for all.

Wilson has the responsibility for making schedules of needs, and Eberstadt will organize the flow of the supplies to comply with the schedules. The contractor will receive warrants for a specific amount of the materials he needs. He will probably be handed his warrant with his agreement. It is a British plan. It has worked there successfully. The warrant in effect is the contractor's materials' bank book. It shows exactly how much he may draw. He cashes the warrants with producers or distributors, but when the quantities or amounts credited in his bank book have been drawn, there is no more for him.

Industry committees will be more useful. They will be reorganized to represent the specific industry, the armed services including lend-lease, and the WPB civilian official. Each part of a committee will submit its needs and the WPB man will umpire any disagreement. Army and Navy will continue to buy supplies directly, and will make their own contracts for ships, construction, heavy equipment, and all other materiel. Civilians at least theoretically will head WPB, but Army and Navy people will formulate policies of the economic command.

Do not expect priorities to be withdrawn at once. You will operate under priorities and PRP for some time. They do not make such complete shifts abruptly in Government. You will not notice decisive changes for weeks. You will apparently have the same forms and the same procedures to follow. But they will gradually disappear, and your business with the military will gradually increase. Speaking wholly by horse sense, and not by official information, it would seem likely the new program will be in complete operation by February.

Steel specifications

The Directive issued by WPB Specifications Branch, C. L. Warwick, Chief, and C. A. Willson, Chief Civil Engineering Section, provides national emergency specifications that apply to all steel buildings which Government constructs or finances. American Institute of Steel Construction, 101 Park Ave., New York City, has published the document. The specifications become mandatory on Nov. 9, and were officially published on Sept. 10. They apply to all construction, design, fabrication and erection of structural steel for Army, Navy, Maritime Commission, RFC, National Housing Commission, and all activities under direction and control of WPB.

The specifications provide 24,000-lb. per sq. in. basic unit stress; those in charge of the design of a steel building must file a sworn statement of compliance and a guarantee that the design saves the greatest quantity of steel "through continuity in design and welded fabrication." WPB holds the increased unit stress and special design requirements will save at least 10 per cent weight in steel in construction.

Construction price ceiling

Price ceilings on non-War construction formulated by OPA involve certification by the contractor that cost-plus contracts are based on actual cost of materials and supplies; plus labor at the rates prevalent in the area of installation on July 1; plus rentals paid for equipment; plus direct costs; plus subcontracts; plus mark-up for overhead, administration, supervision profit.

Any similar work between Jan. 1, and Mar. 31, 1942, performed by the contractor is the mark-up the contractor may charge on the current job. If he did no work in that period he uses a comparable mark-up in the same period used by himself or by others in the industry. Lump-sum or unit prices are calculated similarly to cost-plus contracts, using estimates in place of actual costs. If the actual cost exceeds the estimate the contractor may charge another 10 per cent maximum. If the loss is in excess of 10 per cent it becomes the contractor's bad luck to that extent. It has been variously estimated the ceilings

will apply to 10 to 18 per cent of all construction.

Bureau of Internal Revenue announced that companies returning money as result of renegotiation of War contracts should refund only the amount of profits above Federal income and excess profits taxes paid or assessed on the sum involved. This applies on renegotiated agreements involving prior taxable years for which returns already have been filed and taxes paid. The repayment is not allowed as a deduction in the income and excess profits for any taxable year.

When agreements are renegotiated before returns have been filed, the gross income should not be reported with excess profits rebated, no tax attributable to excess profits thus will be assessed or paid. The same procedure rules in cases involving cost-plus-fixed-fee agreements when an item for which the negotiator has been reimbursed is disallowed as an item of cost and the negotiator is required to repay the U. S. the amount disallowed.

Alaska highway

Reported here the trail preceding the roadway the Army is building to Alaska is practically complete. This job is wholly the work of the Public Roads Administration. It also is the word here that the road itself, so far as it has been built, is now useful for transport. Four inches of snow has packed solidly the width of the right-of-way and makes a very serviceable surface. It is understood the present delay is at Peace River, not far from Dawson Creek, where the bridge is yet unbuilt pending some decisions. Meanwhile, we are told, materiel is accumulating at that point in readiness for transport farther north as swiftly as the problem is determined.

Secretary Stimson himself announced here recently the road would be ready for use by Dec. 1. The Secretary says the road is a well-graded, well-drained, truck road for two-way traffic. He says the muskeg has been conquered or bypassed. The Secretary, with Bible quotations, told us the winter maintenance arrangements include telephone installations, weather observation posts, rest camps for truck convoys, and barracks for engineer maintenance troops. The Secretary says the road will not be useful during the thaw in April and May.

Mr. Stimson named the highway "Alcan" and officially plotted its route from Dawson Creek, B. C., north of Edmonton, northwest of Whitehorse, Yukon, and then westward across the Alaskan boundary to Fairbanks. It connects with rail and highway at Dawson Creek, coming from the United States. Secretary Stimson also told us that much of the success of the job is due to the extraordinary helpfulness of the well-trained Federal highway engineers assigned to the job by the Public Roads Administration.

Working under the general supervision of Chief Thomas H. MacDonald, the field work came under Dr. Lawrence I. Hewes, assistant chief, in charge of all the West Slope Public Road Work, and his district engineer, J. S. Bright. We were told the Corps of Engineers has built the pioneer road and that cuts and fills were made wide enough for permanent use. The grade was given a high crown, local materials being used for surfacing when possible. Timber from the right-of-way was used to build the bridges and culverts, and pontoon bridges were used to transport the construction troops and forces.

Northwest Service Command

The work in the north which was in charge of Brig.-Gen. C. L. Sturdevant has been transferred to Brig.-Gen. James A. O'Connor, who had been in charge of the Southern section. Gen. O'Connor, now in charge of all activities of the troops in British Columbia, Alberta, Yukon and MacKenzie, also has been placed in full charge of construction and supply on the highway from Whitehorse to Fairbanks, and the bases at Skagway and Alaska, as well as the White Pass and Yukon railways.

Gen. O'Connor's new section of the U. S. Army has been integrated as the Northwest Service Command. His headquarters are now at Whitehorse, Yukon Territory, Canada. The War Department defines the purpose of the new command as a mission "to direct and coordinate construction, maintenance and supply activities over highways, railways, inland waterways, air routes and pipelines serving the United States forces in the area, except for those supplies peculiar to the Army Air Forces." Gen. O'Connor, recently promoted as a Brigade Commander, belongs to the U. S. Corps of Engineers, and has served in Hawaii, as well as in France during the first World War.

Railroad possibilities

The War Department officially describes the road as 24 ft. wide, running 1,559 mi. from Dawson Creek to Fairbanks, where it connects with the Central Alaska Railroad which runs to the sea at Anchorage. Unofficially it is now estimated the road will cost in excess of $50,000,000. A supplementary coast route is under discussion, as well as a railroad to be built on the coast side of the mountains from Prince George, B. C., to Fairbanks.

The Corps of Engineers has surveyed one-third of this railroad right-of-way, 400 mi. of the 1,300-mi. rail link. This would tie Fairbanks by rail with the transcontinental route of the Canadian National Railway which terminates at Prince George. The Prince George-Fairbanks undertaking is regarded as the biggest piece of railroading since the Milwaukee road was opened to Puget Sound in 1911.

Frederic A. Delano, the President's uncle, chairman of the National Resources Planning Board, a retired railroad man who was once general manager of the Burlington lines, is regarded as the creator of the new Alaskan railway project. He has suggested that the Pacific Great Eastern, owned by the British Columbian Provincial Government, be extended from Vancouver to Prince George.

Transcontinental highways

HR 7558, introduced by Chairman Cartwright of the House Committee on Roads, will repeal Section 19 of the Federal Highway Act, making it unnecessary for the Secretary of Agriculture to make detailed reports about his administration of the Law. HR 7601, introduced by Rep. Wene of New Jersey, would provide a system of transcontinental military superhighways also to be used by commercial vehicles.

One highway would start at Portland, Maine, and pass through Colorado, Utah and Nevada to its terminus at San Francisco; another would start at Philadelphia, and pass through New Mexico and Arizona to its terminus at San Diego, and then north to Los Angeles and San Francisco. A third route would start at Boston, and pass through Montana and Idaho to Seattle and Portland and thence to San Francisco.

In addition to a series of North and South highways and laterals, there would be regular airplane landing fields and emergency fields. The cost is estimated at $10,000,000,000.

Miscellaneous

Champion Sillimanite, Inc., has filed an application with the Federal Power Commission to continue operation of a hydroelectric installation with capacity of 350 h.p. in Mono County, California, on Milner Creek, a tributary of the Owens River, the energy to be consumed locally for operating the Vulcanite Mine, pumping water, and for domestic needs.

The Employment Information Corner

Air corps engineers

The Army Air Corps at Wright Field, Dayton, Ohio, has issued an urgent call for Junior Mechanical, Junior Electrical and Junior Aeronautical engineers, with a basic salary of $2000 per year, and added overtime, making a total of $2400 per year. Applicants are required to be graduates of professional engineering courses and not now doing war work of equal skill, or not immediately liable for army service. Interviews for immediate appointment will be given at the office of the 12th U. S. Civil Service Regional Office in the Federal Building, San Francisco, Calif.

Field and office engineers

Transitmen, chainmen, concrete inspectors, and two designers and detailers, are needed by the Dept. of Public Works, Tacoma, Wash., for work on its Second Nisqually project, on which active work is now in progress. Salaries are not stated. Verne Gongwer is chief construction engineer for the project, with offices in the City Hall, Tacoma, and requests that applicants submit a statement of experience to him.

PERSONALLY SPEAKING

Brig.-Gen. J. A. O'Connor, formerly commandant of the army engineer school at Fort Belvoir, Va., has been appointed head of the Northwest Service Command, stationed at Whitehorse, Yukon Territory. For several months past, he has been in charge of construction of the southern section of the Alaska Highway, but his new position will put him in charge of all army activities in Canada, to co-ordinate construction, maintenance and supply over all the means of communication to Alaska, including highway, railroad, pipeline, and air.

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Recent changes in the staff of the Seattle office of the U. S. E. D. include the following: **Capt. Arthur B. Smith,** district personnel officer has been made assistant to **Major Arthur C. Nauman,** area engineer at Spokane; **1st Lt. Edward L. Pine,** formerly assistant engineer of Reno, Nev., and recently assistant chief of the engineering section at Seattle, has been made assistant to the area engineer at Everett, Wash.; **Maj. Carl Anderson,** acting area engineer of the Upper Columbia area, has been assigned to the district control section; **George F. Tait** has been advanced from the rank of captain to that of major; **1st Lt. Wm. J. NePage** has been transferred from the service branch of the office to the position of personnel officer; **Capt. Charles A. Jackson, Jr.,** formerly head of the construction section, is the new Upper Columbia area engineer; and **Otto R. Lunn,** civilian engineer, will assume the duties vacated by Capt. Jackson.

* * *

Col. Bradley W. Rumbarger has been appointed area engineer at Colorado Springs, Colo., and **Capt. John S. Marshall** has been made assistant area engineer. Rumbarger was formerly operations engineer at the Salt Lake City, Utah, office of the U. S. E. D., and Marshall has been chief of highway design in the office of the Colorado state highway department for the past 20 years. He was commissioned in August.

* * *

C. E. Blee, project manager for the Tennessee Valley Authority, has recently transferred to Fontana Dam on the Little Tennessee River, a 450-ft. structure, the highest east of the Rocky Mountains. He formerly held similar positions on Hiwassee and Fort Loudoun dams, both part of the same project.

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George R. Anderson, Jr. is now office engineer for Morrison-Knudsen Co., Inc. on construction of the Casper, Wyo., airfield housing, hangar, hospital and other buildings along with necessary utilities. He has recently been transferred from Fort Huachuca, Ariz., where he was utilities engineer, on construction of water pumping, sewage disposal, and other utility projects.

GERALD D. BLETCHER is administrative superintendent and chief of inspectors in the Spokane area office of the U. S. E. D.

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Joe W. Johnson, formerly a hydraulic engineer with the Soil Conservation Service in Washington, D. C., has been named assistant professor of mechanical engineering at the University of California.

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On the WPB's Board for Individual Awards, which grants special recognition to employees of defense industries who make improvement or time-saving suggestions, two westerners have been named. They are: **John L. Savage,** chief design engineer of the Bureau of Reclamation, and **Dr. Robert F. Blanks,** chief of the Bureau of Reclamation testing laboratories, in Denver, Colo.

RAYMOND F. BRACELIN is project engineer for an important army air depot in the Pacific Northwest, under the Spokane area office of the U. S. Engineer Department.

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H. C. Vensano has been appointed director of public works for the city of San Francisco, Calif., succeeding Alvin D. Wilder, who died recently. He has had a long and successful career in the design and construction of engineering structures in the San Francisco area, having been in private business there since 1922. In 1939 he was named director of works at the Golden Gate Exposition, and since early in 1942 has been engaged in building a $5,000,000 project at Mare Island navy yard.

* * *

John Summersett, designing engineer for Northwestern Electric Co., in Portland, Ore., has been commissioned in the Corps of Engineers, and ordered to active duty in the Salt Lake City, Utah, district office of the engineers. He was associated in the design and construction of Ariel dam.

* * *

Jack T. Viele, formely an engineer with the Bureau of Reclamation, is now an ensign in the navy, and is stationed at Norfolk, Va.

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J. G. Shepard, Federal Works Agency engineer in Juneau, Alaska, since July, 1941, has resigned to accept a position with the R. J. Commers Construction Co., supervising construction of various projects in Alaska, for which contracts have been awarded to the company.

* * *

L. P. Jones, formerly office engineer at Friant Dam in California, for the Bureau of Reclamation, is now in a similar position at the Valley gravity and storage project on the lower Rio Grande Valley in Texas. He is located at McAllen, Tex., and is employed mainly on canal investigations and locations.

* * *

John Walker, formerly an engineer with the Bureau of Reclamation at Klamath Falls, Ore., is now an ensign in the U. S. Navy bureau of aeronautics, stationed at San Diego, Calif., following a training period at the University of Minnesota last summer.

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Warren G. Tilton for the past seven years head of the forest conservation department of the West Coast Lumbermen's and Pacific Northwest Loggers' Associations, has been commissioned a captain in the Engineer Corps. He has

FIRST LIEUTENANT HARRY L. HART is assistant to Major A. C. Nauman, U. S. E. D. area engineer at Spokane, Wash.

been succeeded by **William D. Hagenstein,** forest engineer of the conservation department of the association, and **Charles Reynolds** remains in charge of the forest industries co-operative tree nursery at Nisqually, Wash.

* * *

H. Loren Thompson, assistant professor of civil engineering at the University of Idaho, has accepted a similar position at Northwestern University, and **Orvill C. Cromer,** assistant professor of mechanical engineering at Idaho, has taken a position as superintendent of a naval training school at Purdue University.

* * *

Elmer H. Elwin has been commissioned a lieutenant in the Corps of Engineers, and assigned to be assistant to the chief of Alaska operations for the Seattle office of the U. S. E. D. He was formerly with the U. S. Fish and Wild Life Service, and the Bonneville project.

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William W. Robertson, building contractor of Bellflower, Calif., has been appointed by the governor of California as emergency supervisor of state transportation, to direct the pool of all state-owned auto equipment, with a view to saving the maximum of rubber.

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Ben W. Schubert, formerly Idaho area engineer for the Public Works Reserve, and prior to that an engineer with the U. S. Forest Service in Ogden, Utah, has been made priorities analyst in the Boise, Ida., district office of the WPB.

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Frank Casey, engineer at the Remington Arms Ordnance Depot at Denver has resigned to accept a commission as lieutenant in the U. S. Navy.

* * *

Neil B. Nelson, office engineer for the past 22 years in the office of the Pierce Co., Wash., road engineer, has been given a leave of absence to accept a position with Teufel & Carlson, contractors of Seattle, on their $3,700,000 contract to build a housing project at Vancouver, Washington.

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E. A. Limbaugh, formerly chief inspector at the Lone Star Ordnance Plant, under construction at Texarkana, Ark., is now a captain in the chemical warfare service, and is stationed at Edgewood Arsenal, Maryland.

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Owen G. Stanley, principal engineer in the South Pacific Division of the U. S. Engineer Department, has been promoted to the position of head engineer.

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A. B. Pinkley, formerly inspector of penstocks and trash racks for the Bureau of Reclamation at Shasta Dam, has accepted an ensign's commission in the Navy, and has reported to the naval training school at Princeton University for training.

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Melvin D. Williams has been appointed Federal Works Agency representative on the Alaska War Council. He is district engineer for the Public Roads Administration, stationed at Juneau.

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Julius S. Conrad, Glenn F. Sudman, and **Carl N. Zanger,** all former members of the engineering department at the Denver office of the Bureau of Reclamation, have resigned to accept commissions as lieutenants in the U. S. Army.

* * *

MAURICE STRANDBERG, formerly in the Detroit, Mich. office of the Austin Co., is now with Interstate, Collins, Universal Co., of Kansas City, Mo. The company holds the prime contracts for the Sioux Ordnance Depot at Sidney, Nebr.

Dean Swift, resident engineer of the Oregon state highway department at Baker, Ore., has resigned that position, and is now with the Elliott Construction Co., of Seattle, Wash., at a blimp base in western Oregon.

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L. D. Conkling, head of the civil engineering department of Montana State College, and a member of the college staff since 1914, has accepted a position in the civil engineering department at Kansas State College.

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Charles E. Schnell, division designing engineer for the Pacific Gas & Electric Co., located in Fresno, has been called to Washington, D. C., to act as consultant to the Priorities section of the power branch of the WPB.

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Hollis O. Britt and **Floyd M. Holdaway,** engineers with the Denver office of the Bureau of Reclamation, have both been commissioned in the U. S. Navy, Britt as a lieutenant, junior grade and Holdaway as an ensign.

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George F. Hopkins has been commissioned a captain in the Corps of Engineers, and assigned to be head of field studies in the Seattle district office. He has been a civilian employee of the Seattle district since 1930.

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F. D. Kinnie has been transferred by the A. T. & S. F. Ry., from his former position of regional engineer at Los Angeles, Calif., to that of chief engineer of the eastern division of the road, stationed at Topeka, Kansas.

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Glenn Rippey, for ten years field engineer for the Portland Cement Association at Tulsa, Okla., has been made district engineer, and assigned to headquarters at Oklahoma City.

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Percy H. Bliss, until recently in the hydraulic laboratory of the University of Iowa, is now a lieutenant in the navy, and is on active service overseas.

* * *

Frank A. Johnson, district structural engineer for the California Division of Highways, located at Los Angeles, has been transferred to a similar position at Sacramento, Calif.

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P. D. Wilson, Toppenish, Wash., construction engineer, is now in the Navy's "Sea-Bee" construction battalion.

* * *

W. W. King, a member of the staff of the Tacoma, Wash., city engineer office for 33 years, has gone into retire-

ment. It is said that during the 33 years, he has held every title in the engineer's office at one time or another.

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John C. Peterson, assistant city engineer of Ontario, Calif., has left that position to enter the civilian service of the navy. **Ralph Berryman** has been appointed to fill the vacancy.

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Thomas J. Watkins, superintendent of road construction for the U. S. Forest Service in Denver, and associated with the service for 35 years, retired recently at the age of 70.

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Robert G. McLendon is now a resident engineer for the Public Roads Administration in Alaska. He was formerly connected with the Mississippi state highway department.

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P. R. Rosen, city engineer of Aberdeen, Wash., has been commissioned a first lieutenant in the Corps of Engineers, and is at Camp Claiborne, La.

* * *

Carl Olson will be superintendent in charge of the new Salt Lake City office of the Olson Construction Co. **W. G. Dahms** will be assistant superintendent, and **M. L. Rawson** will be office manager.

Tom J. Allen, until recently chief engineer of the Linda Vista housing project at San Diego, Calif., has received a commission as major in the Corps of Engineers.

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Lester M. Cory, assistant road engineer of Pierce Co., Wash., since 1924, has been appointed road engineer, to fill the vacancy caused by the resignation of **E. A. White.**

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Robert L. Proctor, former city of Seattle superintendent of building, is now a civilian inspector of construction for the Seattle office of the U. S. E. D.

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Henry M. Jones, district highway maintenance supervisor in the Idaho Bureau of Highways, has resigned due to ill-health.

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Thomas D. Shiels, field engineer of the Portland Cement Association at Abilene, Texas, has been made a captain in the army air force, and has been assigned to Lowry Field, Denver, Colo.

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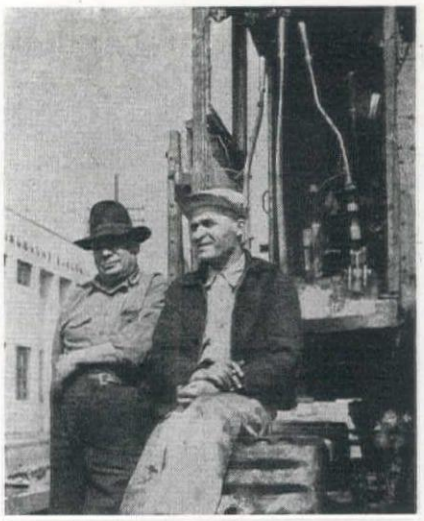
A. W. Welch is an associate engineer attached to the Portland, Oregon, office of the U. S. E. D., and is assigned to work at Gowen Field, near Boise, Ida.



TONEY ROMANO, contractor, left, and BOB McLEAN, shovel operator, discuss the use of a shovel as a rail-puller on Romano's contract to remove street car rails from First Avenue South, Seattle, Washington.

SUPERVISING THE JOBS

Jack Connelly is project manager, and **Harry Tuck** is general superintendent for Barrett & Hilp, of San Francisco, on their $4,038,120 contract to erect additional drydock and other facilities at Hunters Point, in San Francisco Bay, a Navy Dept. project. Assisting them are **John Sparolini,** assistant general superintendent, and **Ross Trewhitt, Clark Abbott,** and **Ed Whitson,** job superintendents on various portions of the work. **Geo. Washington** is chief structural designer, **C. A. Kulmann,** chief electrical and mechanical designer, and **Jack Devitt,** architect.

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Al Gotterdam, until recently assistant general superintendent at Fontana, Calif. on erection of the steel mill there, has been made general superintendent for MacIsaac & Menke and Pozzo Construction Co., of Los Angeles, on construction of civilian housing at an air depot in Weber Co., Utah. **Glen Roberts** is project manager and **George Thomas** is office manager. The contract is for between $1,000,000 and $2,000,000.

L. G. (Len) Krull is job superintendent for J. A. Casson, Hayward, Calif., and N. M. Ball Sons, Berkeley, Calif., joint contractors on an award of over $1,000,000 to grade and surface the runways, aprons, and taxiways, at an airport in Monterey Co., Calif. Others on the same project are **Jack Salter,** excavation superintendent; **Dutch Snowden,** master mechanic, and **K. J. King,** paymaster.

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Ray Weist, superintendent, and **Jake Seitz** and **Donald Russell,** plant foremen, have been named by Carbon Bros., contractors of Spokane, Wash., to direct construction of three highway projects at the same time. The contracts are as follows: $54,974 for stockpiling and bituminous surfacing on 8.1 mi. between Blueslide and Tiger, in Pend Oreille Co., $51,815 for surfacing 3.4 mi. north of Cusick in the same county, and $51,016 for 2.7 mi. of roadmix surfacing on Graves Rd. and 1.5 mi. of bituminous treatment on Crestline Rd. in Spokane County.

Herb Ball has been made construction manager, supervising erection of steel, brick, and concrete buildings at an ordnance depot in Tooele Co., Utah, for the Intermountain Construction Co., Salt Lake City, an association of several large contracting firms. The contract is announced as between $1,000,000 and $5,000,000. **Don Carlson** is district manager for the firm, **Clyde Jenkins** is chief engineer and **Jack D. LaRock** is district purchasing agent.

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C. W. Roberts is project manager for the H. K. Ferguson Co., of Cleveland, Ohio, on their contract for more than $100,000 to construct concrete and steel buildings for the Chemical Warfare Service as a part of the Rocky Mountain Arsenal, near Denver, Colo. The company is a newcomer into western construction. Roberts' last assignment was construction of a large sulfuric acid plant for the U. S. Phosphoric Works near Tampa, Fla. Chief accountant on the Denver job is **Oscar Manol.**

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John M. Clifton, Jr., is project manager on a $10,000,000 contract to construct a naval supply depot in Spokane County, Washington, which was recently awarded to Clifton & Applegate and Henry Georg, Spokane contracting firms. Job superintendent will be **William A. Hearst,** and his assistant will be **Ed C. Culver.** General carpenter superintendent on the big project is **James Jones,** and **James McGee** is purchasing agent.

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J. B. Roberts is serving as job superintendent for Rex D. Kitchens Construction Co., Austin, Tex., contractor, on the contract held by that company to construct temporary frame buildings for the army in Brown Co., Texas. **Ernest Parker** is first assistant superintendent,

and **Harold Eitze** is second assistant superintendent on the more than $1,000,000 contract.

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W. E. Connolly is acting as superintendent for the T. E. Connolly, Inc., and Hanrahan Co. contract to construct the Pit River No. 5 power project for the Pacific Gas & Electric Co., in northern California. **Harry F. Scott** is tunnel superintendent, and **Earl T. Walsh** is superintendent of construction of dams. **Robert K. Baker** is office manager, and **Charles F. Ewing** is purchasing agent.

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W. B. Kesterson is superintendent for Fritz Ziebarth, contractor of Long Beach, Calif., on a contract valued at more than $100,000 to construct utilities at a quartermaster depot in Riverside Co., Calif. Assisting him as foremen are **Lyle Varley, Morris DeRock** and **Chas. Bill. Howard Davidson** is job auditor.

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James Sherry is general superintendent and **Christ Fuglevand** is construction superintendent for Askevold & Rund Co., contractors of Great Falls, Mont., on their contract "between $100,000 and $500,000" for construction of temporary frame buildings in Fergus Co., Montana. **I. R. Howland** is architect-engineer on the project. Another contract in the same amount awarded simultaneously to Askevold & Rund, for housing in Glacier Co., Mont., finds **Wilbur Graham** as general superintendent, **Henry Hansman** as construction superintendent, **F. Bosuth** as architect- engineer, and **B. Kroeger** in charge of materials and supplies. **Fred Brinckman** is chief engineer of the company, and is supervising both jobs.

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N. H. Daniels has been appointed superintendent of construction on the project to build a pumping plant and sewage treatment plant at a staging area in Riverside Co., Calif. Foremen on the job are **Ray T. Fogarty, Marion Spires, Paul Ware,** and **A. H. Ueltzen. H. S. Davidson** is job auditor. The contract was secured by Fritz Ziebarth, of Long Beach, for over $100,000.

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Frank Hurt is superintendent for the E. W. Duhame Construction Co. at a reception center in Pinal Co., Ariz., where the Phoenix, Ariz., company has an "over $100,000" contract to build warehouses and sheds.

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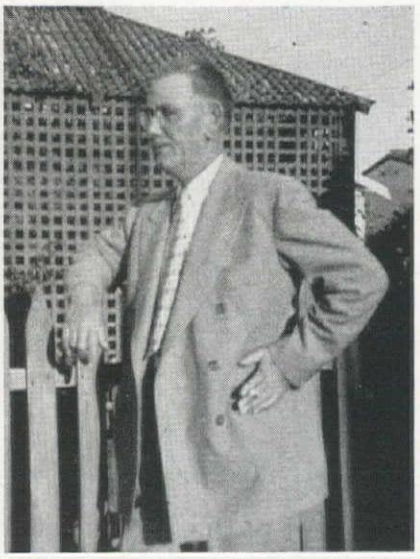
Emmett Mills is superintendent on an over $100,000 contract to construct taxiways, runways, aprons, etc., at an airport in Sacramento Co., Calif., for Harms Bros. and Larsen Bros., Sacramento, who secured the contract for more than $100,000. **Joseph Yott** is the bookkeeper on the job.



CHARLES S. GORMALY

Chas. S. Gormaly, named as superintendent on construction of 4 mi. of sanitary sewer being built in 11th St., San Diego, Calif., will be assisted by **W. H. Collins,** engineer, **Gus Oddi, J. Ferrari,** and **Ola Nelson,** foreman, and **John Schuetz,** master mechanic. The $314,133 contract was awarded to J. S. Barrett, general contractor, San Diego. Gormaly was superintendent for the same firm on construction of Prado Dam.

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H. W. McKinley is general superintendent for Macco Construction Co., of Oakland and Clearwater, Calif., on construction of runways at an airport in Alameda Co., Calif., an over $500,000 contract. Job superintendent is **Roy Arrowsmith.** Others on the job are **Earl Caldwell,** quarry foreman, **Andy Cathay,** grade foreman, and **Armond Willis,** timekeeper.

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Robert P. Coluccio is serving as superintendent on the "more than $50,000" contract held by L. Coluccio, of Seattle, to construct sewer lines and a sewage pumping station at Paine Field in Washington.

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Hugh L. Smyer returned to the mainland last month after 2 years in the Pacific islands with Hawaiian Constructors, serving as master mechanic. He had the task of keeping 64 shovels and 2,100 dump trucks in operation.

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J. T. Brodie will be in charge of construction of the utility systems at an airfield in Otero Co., N. Mex., for R. H. Fulton & Co., of Lubbock, Tex., who were awarded the contract at less than $200,000.

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N. P. Nielson, formerly chief operator, has been made superintendent of the Pueblo, Colo. sewage plant, relieving **Eugene Holden,** now in the U. S. Army.

Ed Propst will act as superintendent of construction, and **Joe Bailey** will be his assistant, on two Oregon flight strip contracts being built simultaneously by Clifford A. Dunn, contractor of Klamath Falls, Ore. One is on the Lakeview-Burns highway in Lake Co., the other near Rome in Malheur Co. Both contracts are for slightly over $200,000.

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G. N. Eubank is construction supervisor, and **Ed F. Bridgeman** is general manager of the project, on the contract they were awarded jointly at less than $200,000 for housing and facilities in Cochise Co., Arizona. **L. E. Ward** was named by the contractors as job superintendent.

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O. J. Harryman is serving as job superintendent on a contract valued at more than $100,000 for construction of civilian war housing (dormitory type) in San Bernardino Co., Calif. This contract was awarded to M. J. Brock & Sons, and Davies & Keusder, Los Angeles contractors, jointly. **A. D. Brain** is assisting him as carpenter foreman.

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Douglas Jardine, Denver, contractor, is himself acting as job superintendent on a more than $1,000,000 contract awarded to him for construction of the plumbing and heating systems at an army special training camp in Eagle Co., Colo. Key men assisting him on the project are **Donald Esch, Alvin Wright, Paul Edwards, Floyd Sanders, Fred Trautman,** and **Arthur Sharp.**

* * *

J. B. Batchler, superintendent for Waco Construction Co., of Waco, Texas, on the construction of railroads in Cochise Co., Ariz., will have as his principal assistants, **Joe Cherry,** office manager, **Fred Hall, Jr.,** excavation foreman, and **John Stringfellow,** track foreman. The contract is for "$100,000 to $500,000."

* * *

Oliver Pope will be job superintendent for Fredericksen & Westbrook and D. McDonald joint contractors of Oroville, Calif., on the contract awarded them at over $100,000 for construction of runways, taxiways, etc. at an airfield in Butte Co., Calif. **P. A. Amodei** is the accountant assigned to the job.

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Byron Wittorff is general foreman for Intermountain Constructors, Salt Lake City, Utah, on defense construction at Camp Kearn, near Salt Lake City. He was formerly in the engineering bureau of the California Division of Fish and Game.

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William Hoops, Jr., superintendent, **W. Osterloh,** timekeeper, and **Wm. Chase** and **Eli Priest,** foremen, have just completed work on a road construction

job near Burley, Idaho, for Hoops Construction Co. of Twin Falls, and are beginning a $91,581 contract to lay 16.2 mi. of crushed gravel surfacing between Gooding and Fairfield, Ida., for the same contractor.

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P. Andy Nielsen will direct construction of army buildings at an airfield in Otero Co., N. Mex., for L. H. Hansen & Sons, of Fresno, Calif., who were awarded the contract for the less than $700,000 job. **Otis Mills** will work with him as assistant superintendent.

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Sherman Weisgerber has been named by Quinn Robbins & Co., Boise, Idaho, as job superintendent for their $145,331 contract to construct the drainage structures and a crushed gravel surface on 4.1 mi. of the Old Oregon Trail from Glens Ferry westerly, in Elmore Co., Idaho. **E. W. Woods** is office manager for the project.

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C. M. Sanford, reinforcing steel foreman for Robt. E. McKee Construction Co., has been transferred by the company from El Paso, Tex., to San Bernardino, Calif., where they have a contract for over $1,000,000 to erect supply buildings at an army air depot.

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Ray Britton, superintendent for Trewhitt, Shields & Fisher, contractors of Fresno, Calif., is in charge of repairs to a long pile trestle, and construction of a new concrete deck on the same, across the Napa River at the west city limits of Vallejo, Calif. Value of the contract is $247,865.

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A. A. Mundt is representing J. H. Blackmore & Sons, contractors of Austin, Tex., as superintendent on their contract for more than $100,000 to construct a surface storage reservoir and sewage disposal system in Hays Co., Texas.

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F. M. Reising, contractor of Edinburg, Tex., is acting as his own superintendent during construction of a drainage system at a camp in Bexar Co., Texas. The contract is for over $100,000. **A. R. Rogers** is foreman on the job.

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Lawrence Gorton is superintendent for D. A. Sullivan, contractor of Parkwater, Wash., on a $75,990 contract which he secured to stockpile gravel and cover coat material on several highways in Bonner Co., Idaho.

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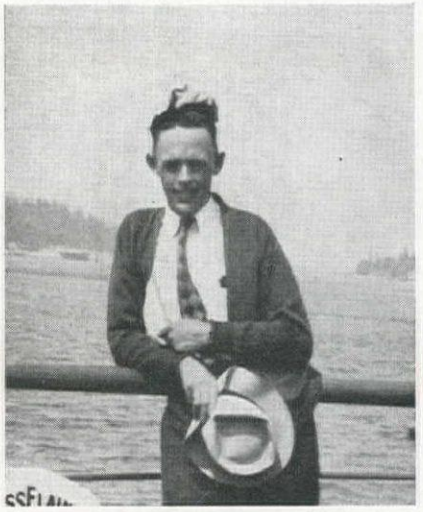
Charley Mason will supervise construction of a concrete and structural steel bridge across the boat channel in San Diego. This is a state highway contract secured by Ralph A. Bell, contractor of Eureka, Calif., at $341,499.



WADE A. PERONG

Wade A. Perong has been named project manager for R. J. Daum, contractor, Inglewood, Calif., on the job erecting temporary housing at an army air base near Salt Lake City, Utah. **Norman C. Smith** is serving as job superintendent. The amount of the contract is "$100,000 to $500,000."

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I. D. Stokes has been named superintendent for Lobnitz Bros., of Boise, Ida., on their $68,965 contract to put a crushed rock surface on 10.8 mi. of the Nezperce highway between Craigmont and Nezperce. **John Warner** is timekeeper on the job.

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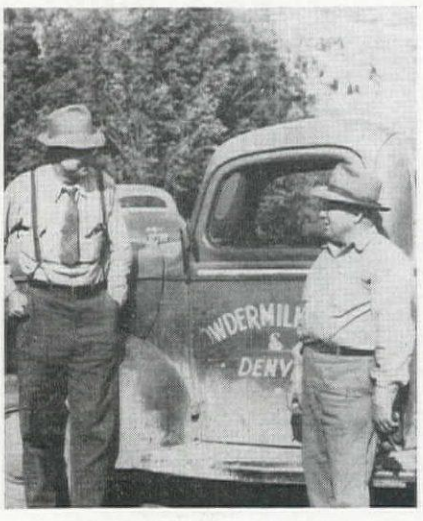
F. E. Gillespie is plant superintendent for Union Paving Co., San Francisco, Calif., on their two contracts for paving roads in the vicinity of Reno, Nevada.

* * *

ZIMMIE LOWDERMILK, left, and W. C. WILSON, superintendent for Lowdermilk Bros., Denver contractors, are directing work on the contract to relocate Colorado state highway No. 9 near Green Mountain dam, 23 mi. south of Kremmling.



OBITUARIES . . .

Alvin D. Wilder, director of the San Francisco department of public works since 1938, and former California director of the PWA, died Sept. 18 in San Francisco at the age of 57. He had been an active construction engineer ever since 1915, when he assisted in building the San Francisco Exposition buildings. He was at one time chief engineer of the Sydney E. Junkins Corp., and directed construction of a $2,500,000 tunnel and $5,000,000 harbor development for the Canadian Pacific Railway. He was a member of the American Society of Civil Engineers.

* * *

Gustave B. Hegardt, 83, died Sept. 1, in Oakland, Calif. He was one of a board of three engineers engaged to study the possibilities for harbor development at Oakland in 1925, and became chief engineer and port manager, when the project was approved. He served in these capacities until 1932, when he retired. He built the Cascade locks in the Columbia River, Oregon, and the jetties at the mouth of the same river, also locks in the Illinois River, and many other important stream developments.

* * *

Asa Columbus Baldwin, 55, civil engineer, died suddenly at his home in Seattle Sept. 18. Baldwin had engaged in private engineering practice in Seattle and Alaska since 1909 when he was field officer of the international boundary commission that established the boundary between Alaska and Canada from Mount St. Elias north to the Arctic Ocean.

* * *

William J. Mumford, pioneer road contractor of Washington, died Sept. 3, in Seattle, on his 47th wedding anniversary. He was 74 years old and lived in Seattle since his retirement from active business in 1925. His operations extended to include Oregon and Montana, in partnership with K. L. Goulter, Seattle contractor.

* * *

John H. Kimball, secretary of the East Bay Municipal Utility District, Oakland, Calif., from its organization in 1923 until his retirement a year ago, died Sept. 11 at the age of 71.

* * *

Watson Townsend, office engineer of the maintenance division of the Oregon state highway department, and an employee of the department since 1911, died in Salem, Ore., on Sept. 9, at the age of 69.

* * *

Francis E. Davis, superintendent of the Los Angeles, Calif., street department from 1902 to 1939, died in that city on Sept. 22.

Against LOST TIME!

Contractors, operators, owners of Lorain equipment—we call on you to take the offensive against lost time. This is a material-handling war—a heavy equipment war—and every hour your machine stands idle delays your country's "2nd front," and makes Victory that much harder.

How Lorain Distributor Service can help Avoid Time-Consuming Delays

Keep your Lorain at peak performance. Remember, the most expensive repair part is the one "not on hand," and many troubles can be avoided if spotted in time. Let your Lorain distributor ***inspect*** your machine at regular intervals. Let him ***rebuild*** parts in which normal wear is apt to cause trouble. Ask him for a copy of the ***Thew Service Handbook*** for your model Lorain . . . follow a regular schedule of ***lubrication*** . . . and if you need ***spare parts*** there are 31 Lorain distributors strategically located to give you quicker service on deliveries.

THE THEW SHOVEL COMPANY • *LORAIN, OHIO*

THEW-LORAIN

CRANES • SHOVELS
DRAGLINES • MOTO-CRANES

THEW CENTER DRIVE

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

(*) Carries a representative stock of spare parts.

UNIT BID SUMMARY

Bridge and Grade Separation . . .

California—Mendocino County—State—Concrete and Steel

Fred J. Maurer & Son, Eureka, were low bidders at $345,528 to the California Division of Highways, on construction of a timber, steel and concrete bridge across the Albion River at Albion, having an aggregate length of 969 feet. The state will furnish railroad rails to be split and used for reinforcing, and some salvage structural steel, while the contractor will be required to supply the other materials to be used. Both timber and precast concrete piles are included. The following bids were submitted:

(1) Fred J. Maurer & Son $345,528
(2) J. H. Pomeroy & Co., Inc. 371,333
(3) Trewhitt-Shields & Fisher $390,805
(4) E. E. Smith 391,430

	(1)	(2)	(3)	(4)
Lump sum clearing and grubbing	$4,000	$5,500	$3,500	$12,175
Lump sum rem. and salv. exist. steel bridge across Feather River	$15,000	$9,500	$30,000	$17,625
800 cu. yd. struct. excav. Type "A"	10.00	6.00	18.00	21.00
2,400 cu. yd. struct. excav. Type "B"	6.00	10.00	5.30	6.00
305 T rock and screenings (B.S.T.)	10.00	8.00	7.00	5.00
16 T liq. asp. SC-6 (Pr. Ct. & B.M.S.)	35.00	90.00	40.00	50.00
818 MFBM redwood timber	205.00	205.00	198.00	173.00
320 cu. yd. cl. "A" P.C.C. (footing blk.)	30.00	30.00	25.00	45.00
450 cu. yd. cl. "A" P.C.C. (towers)	70.00	80.00	61.00	97.50
1,110 cu. yd. cl. "A" P.C.C. (struct.)	35.00	40.00	38.00	45.00
137,000 lbs. erect. salv. struct. steel	.10	.07	.20	.11
9,760 lin. ft. furn. timb. piles	.30	.55	.35	.60
244 ea. driv. timb. piles	30.00	90.00	125.00	60.00
960 lin. ft. furn. precast conc. piles incl. Tst. P.	3.00	5.00	5.00	2.50
48 ea. driv. precast conc. piles incl. Tst. P.	100.00	100.00	125.00	150.00
2,900 lin. ft. railroad rail straps	.50	.25	.75	1.50
7,100 lin. ft. splitting R.R. rails	.50	1.00	.50	.60
145,000 lbs. placing R.R. rail reinf.	.03	.03	.04	.04
34,000 lbs. bar reinf. steel	.10	.03	.075	.06
250 sq. yd. mesh reinf.	2.00	1.00	.50	1.00
Lump sum misc. items of work	$8,000	$6,000	$1,500	$16,500

Washington—Thurston County—State—Timber and Steel

Goetz & Brennan, Seattle, lone bidders at $87,590 to the Director of Highways, Olympia, received the contract to construct a steel girder bridge over the Deschutes River, and a treated timber bridge over the tracks of the Weyerhauser Timber Co. and the Chehalis Western Railroad between Rainier and Tenino. Time for completion was set at 240 calendar days.

3,230 cu. yds. unclassified excavation (incl. haul)	.60
1 only concrete Federal Aid marker in place	15.00
4 only reflector units complete in place	10.00
BRIDGE AND OVERCROSSING	
540 cu. yds. structure excavation	12.00
85 MBM timber and lumber (untreated) in place	120.00
75 MBM timber and lumber (treated) in place	150.00
900 lin. ft. furnishing timber piling (untreated) at site	.30
2,000 lin. ft. furnishing timber piling (treated) at site	.90
52 only driving timber piles (treated) in place	40.00
36 only driving timber piles (untreated) in place	40.00
1 only furnishing and driving timber test pile in place	300.00
370 cu. yds. concrete class "G" in place	32.00
96 cu. yds. concrete class "H" in place	32.00
305,000 lbs. structural steel in place	.10
900 lbs. cast iron in place	.25
Lump sum removing existing structures (2)	$6,000
140 cu. yds. ballast	1.00

Sewerage . . .

California—Los Angeles County—Public Works—Storm Drain

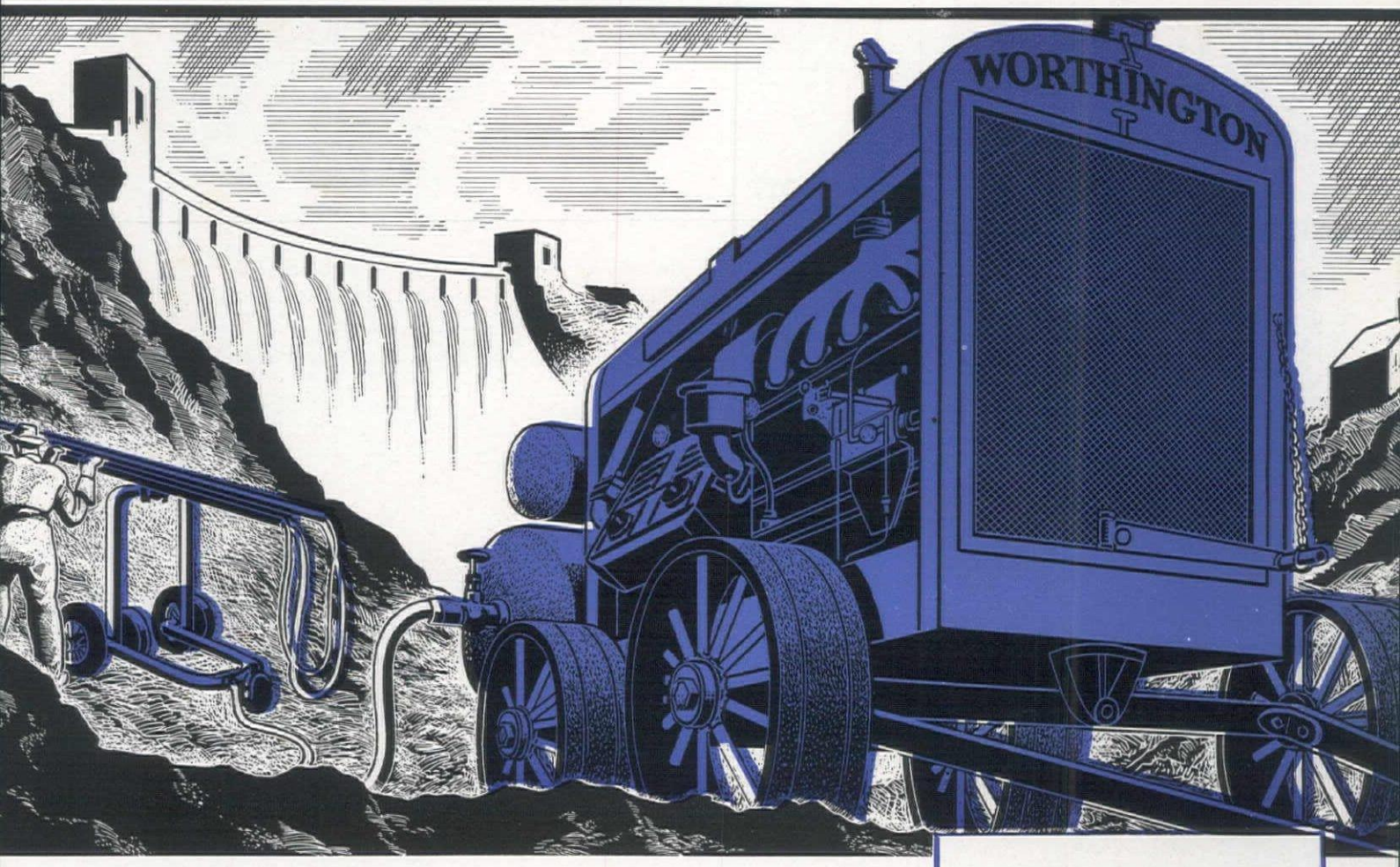
George J. Bock Co., and Byerts & Dunn, Los Angeles, bidding jointly, submitted low bid of $159,817 to the Defense Public Works section of the Federal Works Agency, Los Angeles, and were awarded the contract for construction of the lower section of Lockheed Storm Drain, a tributary of the Burbank Western Storm Drain System, running through the Lockheed Aircraft Co. plant at Burbank. A portion of the reinforcing steel is being furnished by the government, but the contractor must supply all other materials. Bids submitted were as follows:

(1) George J. Bock Co. and Byerts & Dunn $159,817
(2) Shannahan Bros. 161,563
(3) Matich Bros. and E. L. Yeager $196,940
(4) W. J. Disteli 198,810
(5) Baruch Corp. 226,464

	(1)	(2)	(3)	(4)	(5)
Lump sum, remove and protect. exist. structs., except well shed	$4000	$3120	$3000	$5000	$3000
Lump sum, protecting well shell	200.00	690.00	$1500	350.00	261.00
40,500 cu. yd. channel excavation	.60	.52	.65	.60	1.635
250 cu. yd. struc. excavation	3.00	2.15	4.00	2.00	2.608
525 cu. yd. trench excavation	4.00	1.50	4.00	1.75	2.6095
16,000 cu. yd. backfill—compacted	.40	.47	.40	.75	.3912
5,000 cu. yd. backfill—uncompacted	.30	.115	.30	.60	.1956
250 cu. yd. grav. in pockets and drains	4.00	2.86	5.00	2.70	5.22
1,050 cu. yd. conc., channel invert	10.00	12.00	14.00	16.00	15.9190
4,900 cu. yd. conc., channel walls	15.00	17.00	20.00	23.00	17.3061
215 cu. yd. conc. channel cover	25.00	20.10	40.00	23.00	28.8372
460 sq. yd. 6-in. street paving	2.25	2.45	2.70	2.00	3.913
375 sq. yd. 8-in. street paving	3.00	3.25	3.00	2.50	* 5.2133
125 sq. yd. conc. sidewalks	2.00	1.70	2.25	.75	3.288
190 lin. ft. conc. curbs	1.00	1.50	1.50	1.00	1.3052
60 cu. yd. conc. pipe cradle	10.00	9.30	15.00	12.00	19.5666
100 cu. yd. conc. side drainage and misc. structs.	35.00	28.60	40.00	18.00	20.87
16,000 lbs. inst. reinf. bars, furn. by Govt.	.04	.036	.05	.03	.1304
12,000 lbs. furn. and inst. reinf. bars	.08	.085	.10	.08	.2085

(Continued on next page)

BRUTE LUNGS, BUT NO BACK-TALK . . .



Look into the vitals of this Worthington Blue Brute Compressor and get a new angle on lung-power! All muscle, you'll say, and plenty of it. Then start it up and listen to the way it breathes!

You'll find that this Brute's smooth delivery through Worthington Feather* Valves will get your next job done more quickly, more safely, more economically—without the air-gulping "back-talk" and whining of lesser breeds.

All Worthington Blue Brutes *save air*. Blue Brute Compressors . . . portable and semi-portable, gasoline-driven, diesel or electric . . . *deliver more air* for every power-dollar you spend. And Blue Brute Air Tools *use less air* for every compression-dollar invested.

Now's the time to investigate those Blue Brute features that give you *extra* lung-power, *extra* stamina — over and above the rock-bottom fact of Blue Brutes' tip-top quality.

FREE EQUIPMENT-SAVER SPEEDS VICTORY

Save tools, time and money, by getting Worthington's new EQUIPMENT-SAVER, *complete instructions* for all tool operators. Your nearest Worthington distributor, listed on page 470 will supply you. If there is none near you, write for it direct to Holyoke.

* Reg. U. S. Pat. Off.

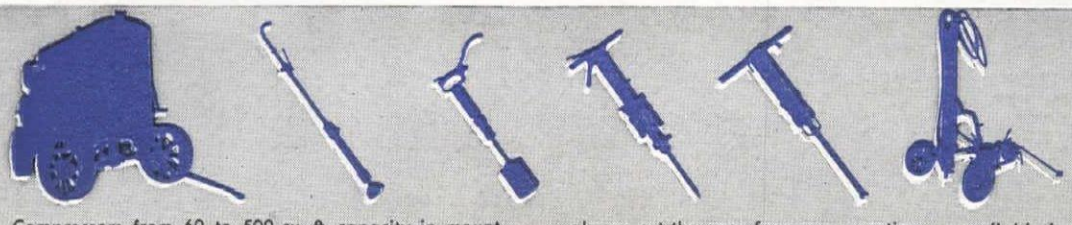
On the Job with

BLUE BRUTES

A western construction man writes: "Have sent in order for some spare parts but I think that I won't have to use them. All three BLUE BRUTE compressors that I have do not give one minute's trouble and operate as perfectly as they did when they first came on this job."

Get more WORTH from air with WORTHINGTON

BUY BLUE BRUTES



Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs. Rock Drills and Air Tools that have always set the pace for easy operation — available in a wide range of weights and sizes.

WORTHINGTON

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

195 sq. yd. asph. conc. 4-in. base, 2-in. wear. surf.	2.50	2.60	3.00	1.75	4.5794
6,050 sq. ft. ¼-in. fiber expans. jt. material	.15	.16	.20	.12	.2256
6,400 sq. ft. ½-in. fiber expans. jt. material	.20	.22	.25	.16	.4523
70 lin. ft. 36-in. modified reinf. conc. pipe	10.00	17.45	10.00	8.50	13.0428
240 lin. ft. 60-in. modified reinf. conc. pipe	17.50	33.40	20.00	16.00	26.0833
50 lin. ft. jacking only, 36-in. C.M.P.	15.00	7.15	25.00	10.00	52.20
80 lin. ft. install 36-in. C.M.P. in trench	1.00	2.86	10.00	1.50	1.9625
Lump sum, sewer siphon and manholes	$7000	858.00	$5000	950.00	$3915
5,550 lin. ft. channel fencing	.25	.29	$1387½*	.18	.7030
Lump sum. const. and maintain detours and barricades	$3000	$1800	$3000	$1075	$1955
Lump sum, furn. and erect field office	$2000	$1360	$2000	$1300	$1313
2 ea. furn. and erect project signs	50.00	80.00	200.00	25.00	130.50

*Total.

Airport . . .

Oregon—Lake County—State—Flight Strip

C. A. Dunn, Klamath Falls, at $204,368, submitted the only bid to the Oregon State Highway Department, Portland, and was awarded the contract for construction of the Alkali Lake Flight Strip, on the Lakeview-Burns highway. The work includes grading, surfacing, and bituminous macadam paving. This contract and another awarded simultaneously to the same contractor for similar work in Malheur County, constitute the first for the flight strips desired by the Government as auxiliary landing fields to be built in the Northwest.

All specified clearing and grubbing	$7000
151,000 cu. yds. general excavation, unclassified	.45
All specified finishing and trimming earthwork	$2500
40 lin. ft. 18-in. concrete pipe	2.70
42,000 cu. yds. pit-run gravel in sub-base and surfacing	1.20
7,700 cu. yds. screened gravel in base and surfacing	1.75
2,400 M-gals. sprinkling	3.00
All specified preparation of base	$2500
8,300 cu. yds. furnishing and placing aggregates	3.00
530 tons furnishing and placing 151-200 asphalt	32.00
270 tons furnishing and placing RC-3 asphalt	32.50
1,100 rods woven wire stock fence	2.00
2 only wind cones	200.00

Nevada—Elko County—State—Flight Strip

Hunt & Frandsen, Reno, with a low bid of $306,025, were awarded the contract to construct a flight strip adjacent to State Highway Route No. 11, about 5 miles west of Owyhee, by the Department of Highways, Carson City. This is one of the flight strips being built all over the United States for use as auxiliary bases for military operations by the army air force. About 80 are proposed for the entire country, as stated in Western Construction News for August, 1942. The bids submitted for the flight strips were as follows:

(1) Hunt & Frandsen	$306,025	(4) Carl E. Nelson	$391,627
(2) Dodge Construction Co.	309,816	(5) Marshall S. Hanrahan	571,550
(3) Harms Bros.	352,412		

	(1)	(2)	(3)	(4)	(5)
128 acres clearing	25.00	25.00	50.00	25.00	100.00
54 lin. ft. remove culvert pipe	2.00	1.50	1.00	2.00	1.00
156,971 cu. yd. excavation	.37	.35	.35	.35	.58
252 cu. yd. drainage excavation	1.00	1.00	2.00	1.00	2.00
55 sta. V type ditches	10.00	10.00	5.00	5.00	50.00
283,839 sta. yd. overhaul	.02	.015	.02	.03	.01
3,427 yd. mi. overhaul	.15	.15	.30	.30	.20
283 cu. yd. structure excavation	2.00	2.00	2.00	4.00	2.00
254 cu. yd. backfill	1.00	1.00	2.00	3.00	2.00
492,354 sq. yd. subgrade, type B	.015	.025	.02	.03	.07
7,375 M. gal. water	2.25	2.00	1.75	3.00	2.50
185,909 T type 1 gravel base	.58	.55	.75	.90	1.28
10,857 T type 2 gravel base	1.00	.90	1.25	1.20	2.00
11,142 T gravel surface	1.00	1.00	1.30	1.30	2.00
167 T liq. asph. MC-1, prime coat	30.00	35.00	35.00	35.00	39.00
92 T liq. asph. RC-4, surf. treatment	30.00	35.00	35.00	35.00	39.00
670 T sand screenings	4.00	5.00	4.00	4.00	4.00
652 T paving asph. pen. 120-150, plantmix	30.00	35.00	35.00	35.00	7.50
10,857 T "F-2" plantmix bitum. surf.	3.00	3.50	3.00	3.00	7.00
7 MFBM timber	175.00	200.00	250.00	200.00	195.00
116 cu. yd. mortar rubble masonry	25.00	25.00	40.00	30.00	40.00
44 lin. ft. relay culvert pipe	2.00	1.50	1.00	2.00	1.00
19,200 lin. ft. construct fence	.17	.20	.30	.25	.50
16 ea. monuments	4.00	5.00	5.00	10.00	6.00
69 lin. ft. 12-in. plain concrete pipe	3.50	4.00	2.00	3.00	2.50
141 lin. ft. 15-in. plain concrete pipe	4.50	5.00	3.00	3.50	3.00
45 lin. ft. 18-in. plain concrete pipe	5.50	6.00	4.00	4.00	4.00
48 lin. ft. 24-in. plain concrete pipe	7.00	8.00	5.00	5.00	5.00
1 ea. 22-ft. timber cattle guard	650.00	$1000	500.00	700.00	200.00
16 hr. 95-hp. tractor and dozer	9.00	9.00	10.00	10.00	12.00
24 hr. motor grader	6.00	7.50	7.00	6.00	10.00
750 hr. tractor and 8-ft. tamping roller	9.00	9.00	9.00	7.00	12.00
250 hr. ea. addtl. 8-ft. tamping roller	3.00	3.00	3.00	5.00	3.50
500 hr. power roller	6.00	6.00	7.00	8.00	8.00

Nevada—Lincoln County—State—Flight Strip

Dodge Construction Co., Fallon, at $207,821, was low bidder to the Nevada State Highway Department, Carson City, for grading and surfacing an area adjacent to Route 93, about 21 mi. west of Caliente. The area will be used as a flight strip by the army air force. The bids submitted were as follows:

(1) Dodge Construction Co.	$207,821	(3) McNutt Bros.	$282,761
(2) Russell Olson	216,156		

	(1)	(2)	(3)
115 acres clearing	25.00	25.00	50.00
40 lin. ft. remove culvert pipe	1.50	2.00	2.00
173,516 cu. yd. excavation	.39	.42	.48
6,120 cu. yd. drainage excavation	.39	.50	1.00
36 sta. V type ditches	10.00	10.00	10.00
246,598 sta. yd. overhaul	.02	.02	.03
6,378 yd. mi. overhaul	.20	.20	.30
86 cu. yd. structure excavation	2.00	5.00	5.00
49 cu. yd. backfill	1.00	1.00	3.00

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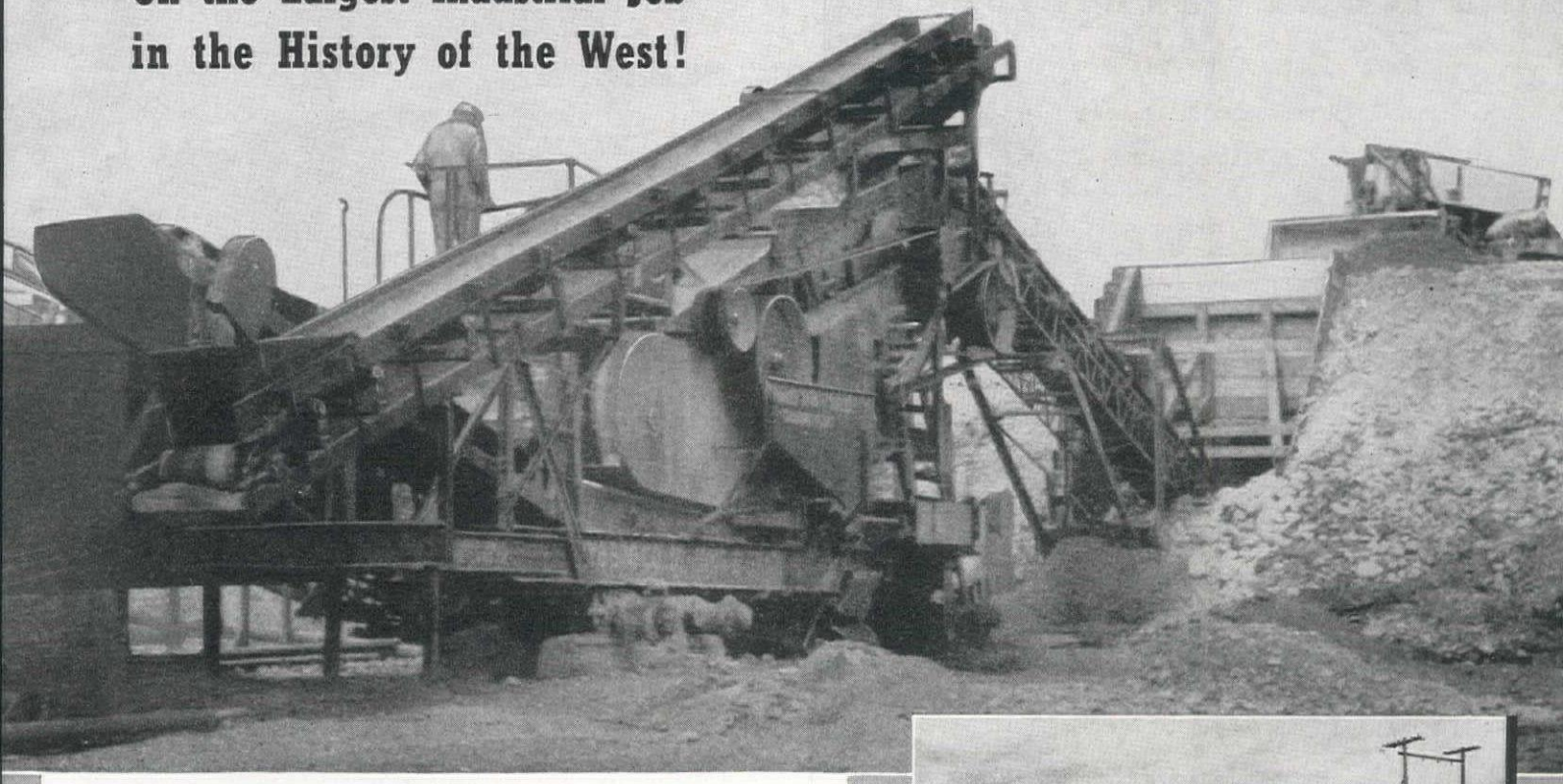
Processing 6,000 TONS *per day*

On the Largest Industrial Job in the History of the West!

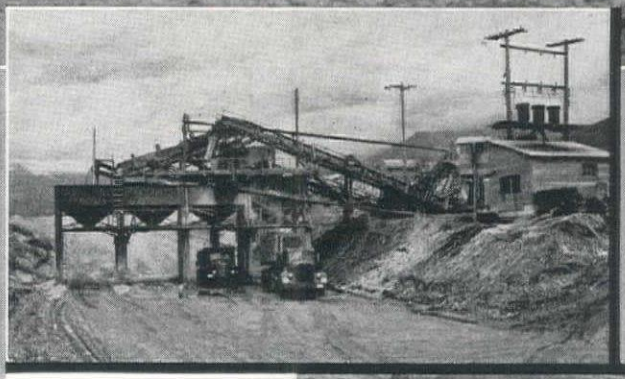


PIONEER Aggregate Installation to Process 400,000 cu. yds. for the *Censored* Plant in Utah

A Pioneer 48-V portable crushing plant, plus a Pioneer double deck tandem vibrating screen and two sand washers together with Pioneer conveying equipment make up this aggregate installation. It is producing all the concrete aggregate for the biggest industrial job in the history of the West.

This all-Pioneer installation is processing aggregate for over 400,000 cu. yds. of concrete. This is used in the construction of a major war plant. Aggregate, averaging 6000 tons per day, is graded in four sizes from sand up to 3 inches. An additional 200,000 cu. yds. of rock will be produced as rock ballast for the railroad spur.

Major war jobs demand the best in construction equipment. Pioneer is doing the job right . . . and with the greatest possible speed.



(**A**) Over-all picture of the installation, showing Pioneer tandem screens mounted over loading bins.

(**B**) Close-up of the Pioneer sand washer, cleaning and delivering sand to storage.

Pioneer

ENGINEERING WORKS
MINNEAPOLIS • MINNESOTA

186,062 sq. yd. subgrade, type "B"	.025	.03	.10
3,377 M gal. water	7.50	7.50	6.00
41,080 T gravel surface	.75	.75	1.60
87 T liquid asphalt, RC-4, surface treatment	27.50	30.00	40.00
640 T screenings	5.00	5.00	2.60
106,667 sq. yd. roadmix	.20	.20	.12
871 T liquid asphalt, MC-3, roadmix	25.00	25.00	35.00
2 MFBM timber	200.00	200.00	200.00
34 cu. yd. "B" concrete	50.00	50.00	70.00
40 lin. ft. relay culvert pipe	1.50	2.00	2.00
2 ea. move pipe culvert headwalls	25.00	50.00	100.00
19,200 lin. ft. construct fence	.25	.30	.15
8 ea. monuments	5.00	5.00	20.00
1 ea. 22-ft. cattle guard	$1000	750.00	900.00
750 hr. tractor and 8-ft. tamping roller	9.00	9.00	15.00
250 hr. each additional 8-ft. tamping roller	3.00	4.00	8.00
500 hr. power roller	6.00	6.00	8.00

Utah—Tooele County—State—Flight Strip

Reynolds-Ely Construction Co., Springville, was awarded the contract on its bid of $259,920 to the Utah State Road Commission, Salt Lake City, for construction of an 8,000-ft. flight strip near Low. This was the only bid submitted. The strip is the first to be built in Utah of the 80 proposed for all parts of the United States as auxiliary emergency landing fields or for use in military operations.

(1) Reynolds-Ely Construction Co.....$259,920 (2) Engineer's Estimate.....$198,880

	(1)	(2)
185,000 gal. bituminous material, Type SC-3	.11	.09
18,000 gal. bituminous material, Type RC-4	.15	.11
1.160 mi. scarifying and mixing	7000	5000
1,000 T cover material	4.00	5.00
77,000 T cr. rock or cr. gravel surf. course	1.25	.85
30,000 T gravel or cr. rock base course	1.00	.80
200,000 cu. yd. unclassified excavation	.40	.35
3,000 hr. rolling	6.00	3.00
2 ea. cone	250.00	500.00

Highway and Street...

California—Los Angeles County—City—Pavement

T. E. Sherlock, Los Angeles, offered the only bid to the Board of Public Works, Los Angeles, at $205,828 (using asphaltic base) for improving Olympic Blvd. between Park View St. and Western Ave., in Los Angeles. Alternate bids were submitted, as follows: using disintegrated granite base, $203,593, and using a selected material base, $204,205. There was little variation from the engineer's estimate.

(1) T. E. Sherlock.....$205,828 (2) Engineer's estimate $203,622

	(1)	(2)
Lump sum, grading	$22,000	$22,000
Lump sum, removals	$17,750	$17,750
72,124 sq. ft. 4-in. asph. base	.125	.10
5,410 T asph. conc. wearing surface	3.48	3.82
13,910 T asph. conc. base	3.55	3.82
1,075 T rock and oil roadway	3.55	3.72
86,395 sq. ft. 8-in. conc. pave	.28	.32
1,650 sq. ft. 6-in. conc. pave	.25	.24
1,971 lin. ft. type "A" curb	.55	.47
322 lin. ft. type "B" curb	.60	.56
9,422 lin. ft. type "D" curb	.65	.57
2,278 lin. ft. monolithic curb	2.00	1.33
52 lin. ft. standard curb	2.00	.50
54,818 sq. ft. 3-in. walk	.18	.135
3,096 sq. ft. 4-in. walk	.20	.19
12,673 sq. ft. 6-in. walk	.28	.26
12,011 sq. ft. monolith. walk	.24	.21
4,369 sq. ft. 6-in. conc. gutter	.25	.30
459 sq. ft. 8-in. conc. gutter	.50	.40
Lump sum, roof drains	300.00	320.00
Lump sum, sewer work	600.00	380.00
Lump sum, manholes	225.00	150.00
Lump sum, reconst. manholes	200.00	150.00
869 lin. ft. 6-in. house connect.	2.00	2.10
Lump sum, storm drain	$27,000	$18,600
49 ea. reset MH frame and cover set	20.00	10.00
1 ea. flush tank	250.00	200.00
3,035 lin. ft. 1½-in. light. conduit	.90	.30
160 lin. ft. 2-in. light. conduit	.90	.30
148 sq. ft. "C" resurfacing	.45	.40
ALTERNATES FOR ITEM NO. 3:		
72,124 sq. ft. dis. granite base	.094	.10
72,124 sq. ft. sel. mat'l. base	.10	.13

Washington—Spokane County—State—Pavement

Charles A. Power, Spokane, submitted the only bid, $337,099, to the Director of Highways, Olympia, and was awarded the contract to construct approximately 6 miles of Primary State Highway No. 2 between Geiger Field and Galena. The job includes clearing, grading, and paving with portland cement concrete, along with a considerable amount of drainage structures, using metal, concrete and clay pipes.

Lump sum clearing and grubbing	200.00
103,810 cu. yd. common excavation incl. haul of 600 ft.	.40
5,490 cu. yd. solid rock excavation incl. haul of 600 ft.	1.50
400 cu. yd. common trench excavation incl. haul of 600 ft.	1.00
28,760 cu. yd. stas. overhaul on above materials	.02
776.10 M. cu. yd. stas. overhaul on above materials	5.00
2,115 cu. yd. structure excavation	1.25
2,430 cu. yd. removal and disposal of exist. surf. boulders	.50
39,050 lin. ft. slope treatment	.05
319.9 stas. finishing roadway	15.00
69,570 cu. yd. sel. rdwy. borrow in place (incl. haul)	.75
570 cu. yd. one course screened gravel surfacing	3.00
201 tons type I-1 asph. conc. pavt. cl. "B" wearing course	9.00

(Continued on next page)

14-Ton Welcoming Committee

From the Arctic to the Tropics, wherever our fighting forces disembark, they are generally greeted by the sight of a sturdy Baker Bulldozer that is busy making things ready for them.

Mounted on massive, powerful tractors, they are a welcome sight to Johnny Doughboy who saw Bakers doing the groundwork at camps and airports at home with speed and precision. But they're not a welcome sight to enemy bombers who know that our air bases won't stay bombed, with Bakers ready, willing and able to move right in after an attack to fill craters and remove debris. In fact, they've got those Jackaxis—Hitler, Hirohito and Mussolini—not a little worried. Thought they had us bottled up.

Well, they've got another guess coming. They'll find Bakers with their direct hydraulic blade lift and full down pressure can build camps and mold air bases—clearing brush and trees, leveling and grading — faster by far than forced hand labor can do it! Bakers are doing their part to win a rapid victory —send for a copy of "The Unsung Heroes of War."

Baker "V" type and One-Way Truck and Tractor Snow Plows will keep war production plants accessible this winter and army camps and airports free of snow.
Baker Road and Airport Building Equipment has enlisted for the duration, too.

THE BAKER MFG. CO.
542 Stanford Ave., Springfield, Illinois

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

76,247	sq. yd. cem. conc. pav't. std. 14 day 5 sack mix	2.54
1,045	sq. yd. cem. conc. pav't. high early str. 5 sack mix	2.84
22	lin. ft. pavement header No. 3	1.00
90	sq. yd. removing existing concrete pavement	1.00
19	only temp. bridge across pav't. (takedown type)	100.00
32	cu. yd. concrete class "F"	40.00
60	only std. conc. catch basin with wood grate comp	50.00
50	only concrete right-of-way markers in place	5.00
2	only concrete Federal Aid markers in place	15.00
15	only removing exist. conc. pipe headers	5.00
3,016	lin. ft. removing exist. cable guard rail	.20
153	lin. ft. relaying corr. metal culvert pipe 12-in. diam.	.50
954	lin. ft. relaying corr. metal culvert pipe 18-in. diam.	.50
335	lin. ft. relaying corr. metal culvert pipe 24-in. diam.	.60
56	lin. ft. relaying corr. metal culvert pipe 36-in. diam.	1.00
66	lin. ft. relaying concrete culvert pipe 18-in. diam.	.75
20	lin. ft. relaying concrete culvert pipe 30-in. diam.	1.25
360	lin. ft. perforated conc. drain pipe 12-in. diam.	1.25
2,700	lin. ft. pl. conc. or V.C. culvert pipe 12-in. diam.	1.25
609	lin. ft. pl. conc. or V.C. culvert pipe 18-in. diam.	2.25
423	lin. ft. pl. conc. or V.C. culvert pipe 24-in. diam.	3.50
378	lin. ft. std. reinf. conc. culvert pipe 30-in. diam.	6.00
332	lin. ft. std. reinf. conc. culvert pipe 36-in. diam.	7.00

California—Kern County—State—Pavement

Union Paving Co., San Francisco, with a bid of $336,341, was low to the California Division of Highways, Sacramento, for grading and paving with portland cement concrete about 4.9 miles of highway between Snow Road and a point 2½ mi. south of Shafter Road. The state agrees to furnish railroad rails to be used as reinforcement, wire mesh, and reinforced concrete pipe, and the contractor will supply all other items. Bids submitted were as follows:

(1) Union Paving Co. ..... $336,341 (2) Griffith Co. $358,615

		(1)	(2)
50	cu. yd. remov. concrete	6.00	5.00
Lump sum	clearing and grubbing	800.00	800.00
31,000	cu. yd. roadway excav.	.75	.49
1,800	cu. yd. struct. excav.	1.80	1.60
200	cu. yd. ditch and chan. excav.	2.50	1.25
24,000	sta. yds. overhaul	.025	.015
115,000	cu. yd. imp. borrow	.65	.694
62,000	sq. yd. prep. subgrade	.09	.14
Lump sum	dev. W.S. and furn. wat. equip.	1,000	10,300
8,000	M. gals. applying water	1.50	1.25
257	sta. finishing roadway	10.00	10.00
2,500	tons crusher run base	4.00	3.00
26,000	sq. yd. prep., mixing and shap'g. surf. (BST)	.10	.12
260	tons liq. asph. SC-3 (bit. surf. trt.)	12.00	13.00
5,100	tons min'l. agg. (PMS)	4.00	3.85
260	tons liq. asph. SC-6 (PMS)	12.00	13.00
25	tons liq. asph. SC-2 (pr. ct.)	12.00	15.60
1,300	tons asph. conc. (base and lev. cse.)	4.50	4.25
650	tons asph. conc. (type "A" surf. cse.)	5.00	4.70
30	tons asph. emul. (sl. ct. and pt. bdr.)	30.00	35.00
150	tons screen (sl. ct.)	4.50	4.10
13,700	cu. yd. class "B" PCC (pav't.)	10.20	11.40
30	secs. pav. xing dev. (type "C")	80.00	55.00
1	MFBM rdwd timb. DSAH struct. gr.	150.00	300.00
380	cu. yd. class "A" PCC (structs.)	30.00	34.00
46,200	lbs. placing R.R. rail reinf.	.04	.045
540	sq. yd. placing wire mesh reinf.	.63	.25
12	cu. yd. class "A" PCC (curbs)	30.00	32.00
38	ea. monuments	4.00	4.00
76	lin. ft. lam. gd. railing	3.00	2.25
20	lin. ft. mov. and reset'g. gd. railing	1.70	1.50
55	ea. culv. mkrs. and mon. mkrs.	4.00	3.50
0.6	mi. mov. and reset'g. fences	800.00	1,300
240	lin. ft. plac. 18-in. RCP	1.00	.90
399	lin. ft. plac. 24-in. RCP	1.25	1.15
684	lin. ft. 24-in. unreinf. conc. pipe (2000-D)	1.00	3.50
168	lin. ft. salv. exist. pipe culvs.	1.00	.70
168	lin. ft. rel. salv. metal culv. pipe	1.00	.70
1,000	sq. yd. shattering exist. pav.	.30	.27
275	tons sand backfill	3.00	2.50
Lump sum	misc. bridge items	1,300	640.00

Washington—Grays Harbor County—State—Surface

Goetz & Brennan, Seattle, with a proposal of $480,606, were the only bidders to the Director of Highways, Olympia, on 6.4 miles of Secondary State Highway No. 13-A to be constructed between Chapin Creek and Johns River. The largest items involved were the clearing, grubbing and excavation. A treated timber bridge was included. The bid was rejected.

67.7	acres clearing	800.00
55.3	acres grubbing	600.00
287,910	cu. yd. unclass. excav. including haul of 600-ft.	.55
1,400	cu. yd. com. trench excav. including haul of 600-ft.	2.00
293,890	cu. yd. st. overhaul on above materials	.02
782.91	M. cu. yd. sta's. overhaul on above materials	8.00
1,360	cu. yd. structural excavation	3.50
900	cu. yd. channel change excav. including haul	1.00
19,780	lin. ft. slope treatment	.10
333.4	sta's (100-ft.) finishing roadway	15.00
80,830	cu. yd. selected roadway borrow in place	.90
360	cu. yd. gravel backfill (pit run) in place	5.00
14,230	cu. yd. ballast in place on roadway	2.60
4,030	cu. yd. cr. stone surf. top course in place on roadway	3.40
350	cu. yd. sand filler in place (including haul)	2.80
674	M gals. water	2.00
2,270	cu. yd. crushed cover stone in stockpile	3.30
	Mineral Aggregate for Nonskid Single Seal Treatment—Schedule "A"	
980	cu. yd. coarse crushed screenings ⅝-in. to ¼-in. in stockpiles	4.50
310	cu. yd. fine crushed screenings ¼-in. to 0 in stockpiles	4.50
	Light Bituminous Surface Treatment—Method "A"	
6.4	mi. prep. constr. and finishing	700.00
201	ton bituminous cement MC-2 in place	35.00
1,630	cu. yd. placing crushed cover stone	1.50
	Nonskid Single Seal Treatment—Schedule "A"	
118	tons bituminous cement RC-3 in place	35.00
1,290	cu. yd. mineral aggregate in place	1.50

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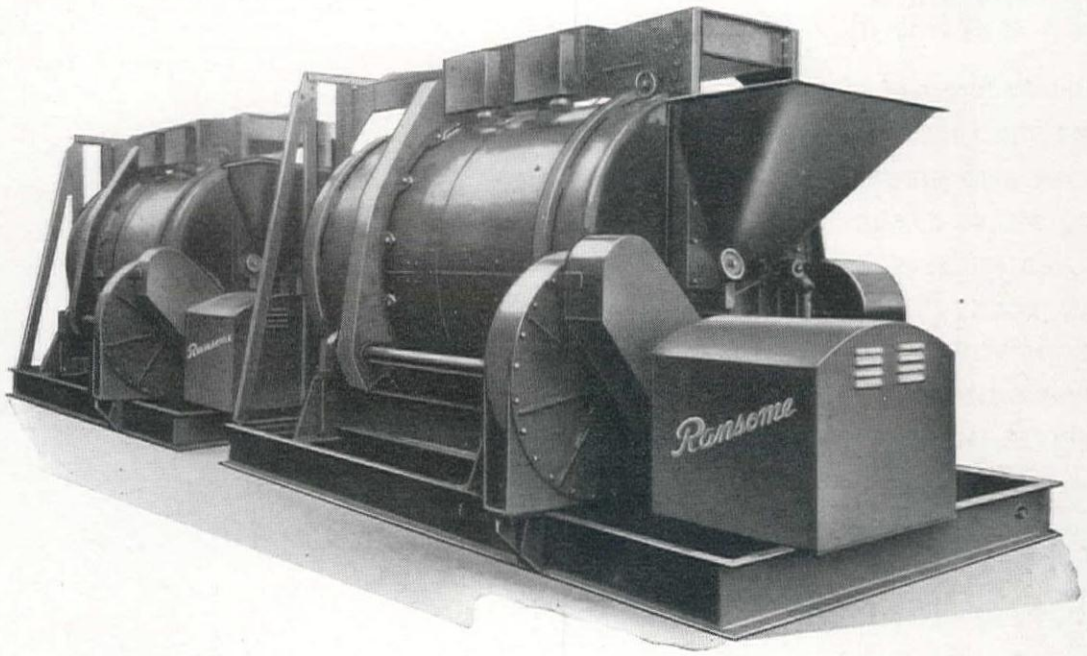
Ransome 35S Dual Drum Mixers

. . . Mixing 400,000 Cu. Yds. of Concrete for the BIGGEST INDUSTRIAL JOB IN THE WEST'S HISTORY!



Typical of the two 35-S Dual Drum Mixers being used on the job described.

THE fast and continuous production of high quality concrete were the chief factors in the selection of Ransome 35-S Dual Drum Mixers for the entire mixing job of 400,000 cubic yards of concrete to be placed in a $126,000,000 war plant in Utah.

Where modern batching plants are used, as in this case, Ransome Dual Drum Mixers eliminate the usual delay in mixing time and insure a high steady production. Write for complete details.

RANSOME MACHINERY COMPANY
DUNELLEN • NEW JERSEY

	Miscellaneous Items	
1	only conc. Fed. Aid marker in place	10.00
99	only conc. R/W markers in place	3.00
4,000	lin. ft. standard guard rail type No. 5 in place	1.00
2,845	lin. ft. spec. wood gutter des. No. 3 in place	1.00
230	lin. ft. spec. wood spillway in place	1.00
12	MBM timber and lumber (treated) in place	125.00
105	lin. ft. cedar pipe cradle complete in place	5.00
8	only reflector units complete in place	10.00
120	lin. ft. plain conc. or V.C. culvert pipe 12-in. diam. in place	1.50
990	lin. ft. plain conc. or V.C. culvert pipe 18-in. diam in place	3.00
171	lin. ft. plain conc. or V.C. culvert pipe 24-in. diam. in place	5.00
462	lin. ft. std. reinf. conc. culvert pipe 24-in. diam. in place	5.00
72	lin. ft. std. reinf. conc. culvert pipe 36-in. diam. in place	7.00
33	lin. ft. extra strength reinf. conc. culvert pipe, 36-in. diam. in place	8.00
	Bridges	
70	cu. yd. structure excavation	3.00
143	MBM timber and lumber (treated) in place	125.00
6.5	MBM timber and lumber (salts treated) in railing in place	165.00
6,700	lin. ft. furnishing cedar piling untreated at site	.65
136	only driving cedar piles untreated in place	18.00
5	only furn. and driving untreated timber test piles	250.00
Lump sum	removing exist. bridges (6 structures)	$1100.00
	Detour Bridges	
34	MBM timber and lumber (untreated) in place	85.00
1,940	lin. ft. furn. timber piling untreated at site	.25
48	only driving timber piles untreated in place	18.00

New Mexico—Eddy County—State—Surface

D. D. Skousen, Albuquerque, was the only bidder, with a proposal of $154,362, to the New Mexico State Highway Department, for construction of 5.3 miles of State Road No. 260 between Loving and the potash mines. The road was to have a roadmix surface. The bid was so far in excess of the engineer's estimate, that it was rejected.

(1) D. D. Skousen ..... $154,362 (2) Engineer's estimate $96,498

		(1)	(2)
Lump sum	removal of old drainage structures	500.00	100.00
63,100	cu. yd. excavation—unclassified	.50	.25
700	cu. yd. excavation for structures	2.00	2.00
200	cu. yd. excavation for pipe culverts	2.00	2.00
93,000	sta. yd. overhaul	.03	.03
77,000	¼-mi. yd. haul	.10	.06
745	hr. rolling, sheepsfoot roller	5.00	4.00
12,429	ton base course surfacing—No. 1 aggregate	1.25	.75
1,260	M. gal. watering	3.00	3.00
53.635	MBM treated timber box culverts	250.00	150.00
16	cu. yd. class "A" concrete	30.00	24.00
1,619	lb. reinforcing steel	.20	.12
244	lin. ft. concrete pipe culv. 24-in. diam., 4½-in. shell	6.00	3.50
228	lin. ft. concrete pipe culv. 30-in. diam., 5¼-in. shell	8.00	5.00
120	lin. ft. concrete pipe culv. 36-in. diam., 5½-in. shell	10.00	6.50
2	ea. concrete monument and marker	30.00	15.00
49	ea. bracing	3.00	3.50
50	ea. right-of-way and station markers	5.00	3.00
24,700	lin. ft. removing and rebuilding fence	.05	.04
827	ea. new posts for rebuilding fence	.50	.35
55	hr. rolling, steel tired roller	5.00	4.00
17,700	lin. ft. contour ditches	.10	.03
466	bbl. liquid asphaltic road oil, type MC-0	7.00	5.00
5.399	mile mixing oil and aggregate	$1,000	500.00
2,025	bbl. liquid asphaltic road oil, type MC-3	6.00	5.00
5.256	mile seal coating	100.00	200.00
246	bbl. liquid asphaltic road oil, type RC-4	7.00	5.00
54	ea. reflectorized warning posts	5.00	4.50
20	ea. warning posts	5.00	4.00
28,600	ton ballast	.90	.60
440	hr. mechanical tamping	3.00	3.00
	BRIDGE ITEMS		
176	cu. yd. excavation for structures	5.00	2.00
24	cu. yd. class "B" concrete	30.00	24.00
19,444	MBM treated timber—superstructure	250.00	150.00
9.800	MBM treated timber—substructure	250.00	150.00

Washington—Lincoln County—Bur. of Reclam.—Surfacing

L. A. Woodward Co., Missoula, Mont., submitted the low bid at $259,814, to the Bureau of Reclamation, Coulee Dam, and was awarded the contract for earthwork, surfacing and structures on the relocation of the Lincoln County Road between Creston and Fort Spokane. This work is a part of the Columbia Basin Project. The bid was divided into two schedules. Bids were received from the following:

(1) L. A. Woodward Co. $259,814
(2) C. E. O'Neal 271,685
(3) K. L. Goulter & Co. $292,678
(4) Barnard-Curtiss Co. 310,845

		(1)	(2)	(3)	(4)
35	acres clearing right-of-way	300.00	240.00	200.00	300.00
17	acres grubbing right-of-way	70.00	200.00	150.00	200.00
160,900	cu. yd. excavation, common, for roadway	.27	.24	.25	.38
34,100	cu. yd. excavation, rock, for roadway	.85	.95	1.00	.98
248,300	sta. yds. overhaul	.02	.01	.03	.02
6,400	cu. yd. excavation, common, for drainage channels and dikes	.30	.85	.50	.38
1,830	cu. yd. riprap	1.50	3.00	2.00	2.50
1,600	cu. yd. excavation, common, for structures	1.50	5.00	2.50	3.00
30	cu. yd. excavation, rock, for structures	5.00	10.00	3.00	6.00
920	cu. yd. concrete	34.00	22.00	28.00	25.00
12,000	lbs. placing reinforcement bars	.05	.05	.06	.04
1,460	cu. yd. backfill	.50	.75	1.00	.75
1,460	cu. yd. compacting backfill	.50	.75	.50	.75
15	sq. yd. dry-rock paving	5.00	8.00	5.00	5.00
64	lin. ft. removing 12-in. corrugated pipe in existing culverts	1.00	1.00	1.00	1.50
79	lin. ft. removing 18-in. corrugated pipe in existing culverts	1.00	1.00	1.00	2.00
58	lin. ft. removing 30-in. corrugated pipe in existing culverts	1.00	2.00	3.00	3.00
64	lin. ft. laying 12-in. corrugated metal pipe	1.00	.50	1.00	1.00
47	lin. ft. laying 18-in. corrugated metal pipe	1.00	.80	1.00	1.50
46	lin. ft. laying 30-in. corrugated metal pipe	1.00	1.20	3.00	2.00
384	lin. ft. laying 12-in. concrete pipe	1.00	.75	1.00	1.50

(Continued on next page)

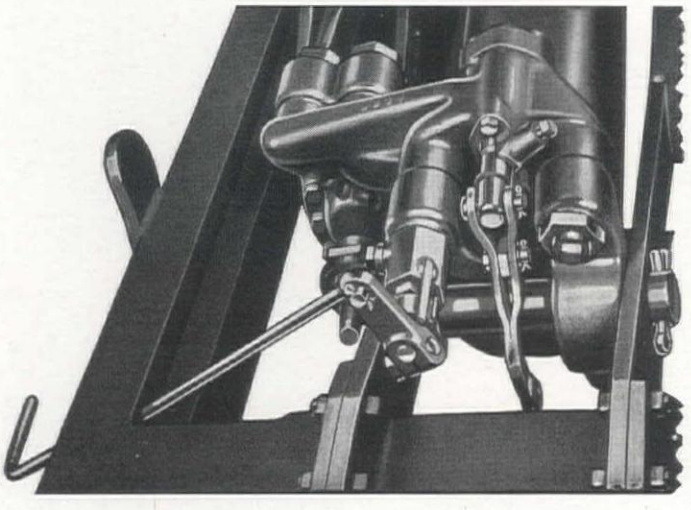
HERCULES
IS ON THE
"SPEED SHIFT"

It's not a new development—this quick action of Hercules Speedraulic Hoists, but it is playing an important part in the fast moving war construction program. There's a simple explanation of Hercules speed and dependability: The "Center Lift" hoist action, by applying power ahead of load center with double, bridge type lift arms, requires only minimum lifting effort and lowest oil pressures. "Center Lift" is a fast, easy lift. There is no high pressure oil piping.

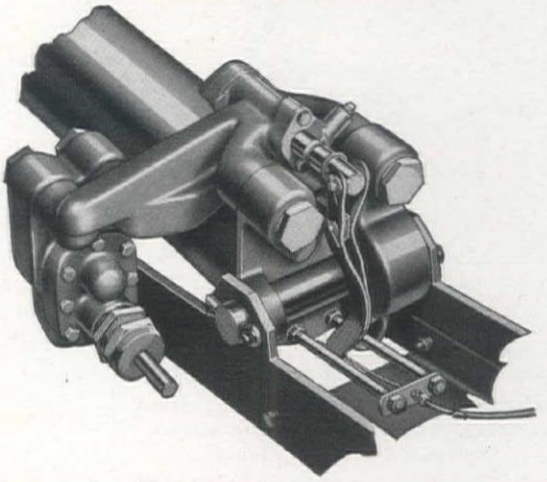
Easy action means dependable service—Speedraulic action with no strain on hinge bolts, no pushing against body hinges, no chains or gadgets, but plenty of power for any job. 6″, 7″, 8″ and 10″ cylinder Speedraulic Hoists and a wide range of body styles are available through your Hercules distributor.

Diversion Valve

Used for the operation of underbody graders, snow plows, etc., this valve is located in the hoist manifold assembly. A single lever diverts oil pressure from the heavy duty Hercules Pump to the auxiliary equipment. All additional hydraulic mechanism is eliminated, making a Hercules Diversion Valve the easy and economical way to operate complete maintenance units.



Balanced Piston Valve



The operation of hydraulic hoists by means of a Balanced Piston Valve was pioneered by Hercules. Used on all Hercules Speedraulic Hoists, this Valve operates entirely independent of oil pressures. As the Piston Valve is entirely surrounded by oil, pressure is equalized on all sides of the mechanism assuring finger tip control of hoist action at all times.

SPEEDRAULIC HERCULES HOISTS

HERCULES STEEL PRODUCTS CO.
GALION, OHIO

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

1,704	lin. ft. laying 18-in. concrete pipe	1.00	.75	1.50	2.00
369	lin. ft. laying 30-in. concrete pipe	1.10	2.00	3.00	3.00
7.3	MFBM fabricating and driving timber sheet piling	200.00	100.00	95.00	60.00
82,000	lbs. erecting structural steel in bridge	.05	.10	.066	.035
22.1	MFBM erecting timber in structures	50.00	50.00	70.00	25.00
1,090	lin. ft. constructing timber guard-rails	1.00	1.00	1.00	1.00
2	mi. constructing right-of-way fences	300.00	150.00	250.00	350.00
17,190	cu. yd. selected-roadway-borrow base course	.60	1.00	1.00	1.00
8,210	cu. yd. crushed-stone top course	1.50	1.60	2.50	1.50
1,225	cu. yd. filler	.25	1.00	1.50	.75
230	M gals. watering	2.00	2.50	3.00	3.00
388	stas. finishing roadway	10.00	6.00	10.00	10.00
	SCHEDULE NO. 2				
28	acres clearing right-of-way	200.00	200.00	150.00	200.00
9	acres grubbing right-of-way	70.00	100.00	100.00	200.00
149,100	cu. yd. excavation, common, for roadway	.27	.24	.25	.32
11,400	cu. yd. excavation, rock, for roadway	.85	1.10	1.00	.98
59,200	sta. yds. overhaul	.02	.01	.02	.03
210	cu. yd. excavation, common, for drainage channels and dikes	.30	.70	.50	.50
730	cu. yd. excavation, common, for structures	1.50	2.00	1.50	3.00
20	cu. yd. excavation, rock, for structures	5.00	5.00	3.00	6.00
5	cu. yd. excavation of concrete	10.00	5.00	5.00	10.00
111	cu. yd. concrete	34.00	22.00	28.00	35.00
10,200	lbs. placing reinforcement bars	.05	.05	.06	.05
50	lin. ft. drilling holes for anchor grouting bars	2.00	1.00	5.00	2.00
1,000	cu. yd. backfill	.50	.75	1.00	1.00
1,000	cu. yd. compacting backfill	.50	.75	.50	1.00
25	sq. yd. dry-rock paving	5.00	8.00	5.00	5.00
28	lin. ft. removing 18-in. corrugated pipe in existing culverts	1.00	1.00	1.00	2.00
60	lin. ft. laying 18-in. corrugated pipe	1.00	.50	1.00	1.00
294	lin. ft. laying 12-in. concrete pipe	1.00	.75	1.00	1.00
1,615	lin. ft. laying 18-in. concrete pipe	1.00	.75	1.50	1.50
300	lin. ft. laying 24-in. concrete pipe	1.00	1.20	2.00	2.50
213	lin. ft. laying 36-in. concrete pipe	1.10	2.50	5.00	3.50
8.9	MFBM erecting timber in structures	50.00	60.00	70.00	25.00
1.5	mi. constructing right-of-way fences	300.00	150.00	250.00	350.00
15,170	cu. yd. selected-roadway-borrow base course	.60	1.00	1.00	1.00
7,220	cu. yd. crushed-stone top course	1.50	1.60	2.50	1.55
1,085	cu. yd. filler	.25	1.00	1.50	.65
200	M gals. watering	2.00	3.00	3.00	3.00
341	stas. finishing roadway	10.00	6.00	10.00	10.00

Arizona—Greenlee County—State—Surfacing

W. E. Orr, Phoenix, offered the lowest bid at $397,373, to the Arizona State Highway Commission, Phoenix, and was awarded the contract for grading, draining, and aggregate base course between 1 mile and 3 miles southeast of Clifton. More than two-thirds of the contract is for excavation, made necessary by the extremely rough country traversed. The bids submitted were as follows:

(1) W. E. Orr.....$397,373
(2) L. M. White Contracting Co..... 400,369
(3) Packard Contracting Co.....$411,254

		(1)	(2)	(3)
295,410	cu. yd. roadway excavation (unclassified)	.97	.98	1.05
14,700	cu. yd. overbreakage	.7275	.735	.7875
14,700	cu. yd. slides	.485	.48	.525
1,900	cu. yd. drainage excavation (unclassified)	.97	1.00	.80
6,850	lin. ft. grader ditches	.10	.10	.15
2,713	cu. yd. structural excavation (unclassified)	2.50	3.00	2.00
404,277	sta. yd. overhaul	.035	.03	.02
3,888	cu. yd. mi. haul	.35	.30	.35
8,232	ton fine aggregate base course	.97	1.00	.90
6,120	M. gal. sprinkling	1.50	2.50	2.00
2,410	hours rolling	4.00	4.00	3.50
954	cu. yd. class "A" concrete	35.00	30.00	31.00
47	cu. yd. class "B" concrete	35.00	30.00	31.00
1,820	lb. reinforcing steel (bars)	.10	.10	.10
905	lin. ft. 21-in. plain concrete pipe	5.00	4.00	3.50
52	cu. yd. dry rubble masonry	12.00	20.00	16.00
100	lin. ft. resetting 3-in. cast iron pipe	1.00	1.00	1.00
100	lin. ft. resetting 4-in. cast iron pipe	1.00	1.00	1.00
480	lin. ft. reconstructing cable road guard	1.00	1.00	1.25
66	ea. R/W markers	5.00	4.00	4.00

Utah—Weber County—State—Surfacing

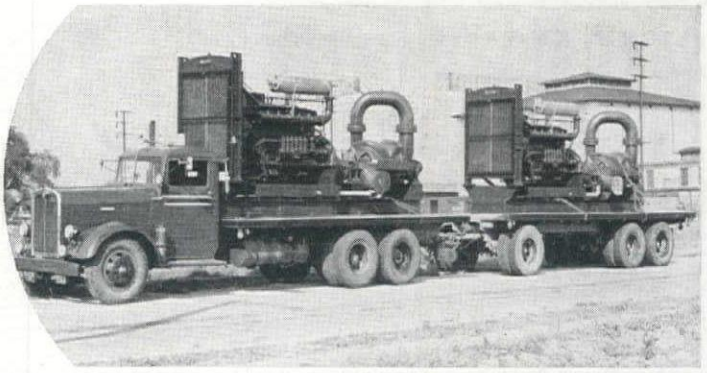
W. W. Clyde & Co., Springville, was the lowest bidder at $258,932 to the Utah State Road Commission and received the award, for 2.5 miles of 2½-in. roadmix bituminous surfacing between Nye's Corner and Wilson Lane. The feature of the job is the tremendous amount of excavation and overhaul involved. The following bids were submitted:

(1) W. W. Clyde & Co.....$258,932
(2) Olof Nelson Construction Co..... 269,102
(3) Wheelwright Construction Co.....$314,964
(4) Engineer's estimate 200,587

		(1)	(2)	(3)	(4)
75,500	gal. bituminous material, Type SC-3	.10	.12	.12	.09
14,500	gal. bituminous material, Type RC-4	.15	.14	.15	.10
685	ton cover material	4.00	4.00	5.00	2.50
24,500	ton crushed rock or cr. gravel surf. course	.80	1.00	1.25	.65
23,700	ton gravel or crushed rock base course	.80	1.00	1.25	.60
2.544	mile scarifying and mixing (26-ft. wide)	$1,200	800.00	$1,000	800.00
0.744	mile scarifying and mixing (22-ft. wide)	$1,000	800.00	900.00	650.00
0.683	mile scarifying and mixing (gutter 7-ft. wide)	$1,000	800.00	$1,000	$1,000
0.271	mile scarifying and mixing (sidewalk 5-ft. wide)	800.00	800.00	800.00	600.00
240,000	cu. yd. unclassified excavation	.35	.33	.40	.25
1,600,000	st. yd. overhaul, class "A"	.015	.015	.025	.015
77,000	yd. mi. overhaul, class "B"	.20	.15	.30	.15
1,675	cu. yd. channel excavation	.50	2.00	.80	.30
4,050	1,000 gal. watering	2.50	2.00	1.25	1.25
3,400	hour rolling	4.50	5.00	6.00	2.50
2,052	lin. ft. 8-in. underdrains	1.25	1.00	.70	.60
114	lin. ft. 15-in. sewer pipe	2.00	2.50	1.60	2.30
165	lin. ft. 18-in. sewer pipe	2.75	3.00	2.35	2.75
1,533	lin. ft. 18-in. concrete pipe	3.75	3.50	2.85	3.45
129	lin. ft. 24-in. concrete pipe	4.50	4.25	3.55	4.00
90	lin. ft. 24-in. concrete pipe (extra strength)	4.60	5.00	4.15	4.50
213	lin. ft. 18-in. concrete pipe syphons	4.25	4.50	3.00	4.50
28	lin. ft. relaying 18-in. concrete pipe	2.00	2.00	1.25	.60
80	lin. ft. relaying 12-in. C.G.M. pipe	1.50	1.00	1.00	.35

(Continued on next page)

What ARE CRITICAL MATERIALS?



According to the War Production Board, materials become "critical" when their limited supply threatens to slow down war production. But to the contractor, materials may be just as "critical" because there is too much in the wrong place. The problem of moving a huge tonnage in a hurry may be just as vital to the success of our war effort as are supplies of aluminum and steel.

Huge new jobs, requiring the rapid movement of record tonnages, have been given the Motor Transport Industry, and these jobs have been handled successfully. New camps and airports have been built faster than was believed possible—raw material deliveries have kept pace with manufacturing schedules—dams and power plants and highways and pipe lines have been completed ahead of schedules.

New types of Fruehauf Trailers, each adapted to a specific class of work, have made important contributions toward getting these tremendous jobs done on time. Formerly unheard of tonnages are now regular loads in many parts of the West. Distances have been shortened, deliveries speeded, costs reduced by help of these specially designed Fruehauf Trailers.

The convenient Fruehauf Branches are ready and anxious to help you in the moving of "critical materials"—call upon them for advice on converting trucks to tractors and to help you convert, rebuild or maintain your trailers.

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY

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FRUEHAUF TRAILERS

ENGINEERED TRANSPORTATION

Reg. U. S. Pat. Off.

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

301	lin. ft. relaying 15-in. C.G.M. pipe	1.75	1.00	1.00	.50
236	lin. ft. relaying 18-in. C.G.M. pipe	2.00	1.00	1.00	.50
400	cu. yd. gravel backfill	1.50	2.00	1.75	1.25
3,200	cu. yd. excavation for structures	1.50	3.00	2.00	1.00
67	cu. yd. concrete, class "A"	40.00	35.00	35.00	40.00
575	cu. yd. concrete, class "B"	35.00	35.00	35.00	35.00
12,600	lb. reinforcing steel	.10	.12	.10	.08
19.6	MFBM lumber (treated)	160.00	160.00	150.00	150.00
4,800	sq. yd. removal of existing pavement	.80	1.25	.45	.75
19,300	lin. ft. right-of-way fence, type "B"	.18	.25	.22	.15
44	ea. 14-ft. gates	30.00	25.00	25.00	22.00
14	ea. 4-ft. gates	20.00	12.00	16.00	10.00
2	ea. F. A. P. markers	20.00	20.00	20.00	10.00

Irrigation . . .

Colorado—Grand County—Bur. of Reclam.—Aggregates

M. and E. Construction Co., Denver, was low bidder at $90,060, to the Bureau of Reclamation, Denver, on the preparation of concrete aggregates from the Canal Gravel Deposit, near Grand Lake, Colo., as a part of the Colorado-Big Thompson project. The materials are to be stockpiled for later use. The bids submitted were as follows:

(1) M. and E. Construction Co. $90,060
(2) Millray & McBride Contractors $137,250

		(1)	(2)
9,000	cu. yd. excavation, stripping deposit	.95	1.00
21,000	cu. yd. preparing and stockpiling sand	1.43	2.25
11,000	cu. yd. preparing and stockpiling coarse aggregate ⅜ to ½ in.	1.43	2.25
13,000	cu. yd. preparing and stockpiling coarse aggregate ½ to 1 in.	1.43	2.25
12,000	cu. yd. preparing and stockpiling coarse aggregate 1 to 2 in.	1.43	2.25

Miscellaneous . . .

Washington—Pierce County—State—Ferry Slip

Hart Construction Co., Tacoma, bid low at $44,618, to the Director of Highways, Olympia, and was awarded the contract for construction of a ferry slip and approach trestle, and reconstructing a cradle and dolphins, at the Point Fosdick Terminal of the Tacoma Narrows ferry. This is a part of Primary State Highway No. 14. The ferry has been restored to service since the collapse of the Tacoma Narrows suspension bridge. The following bids were submitted:

(1) Hart Construction Co. $44,618
(2) Industrial Engineers and Contractors, Inc. $49,952

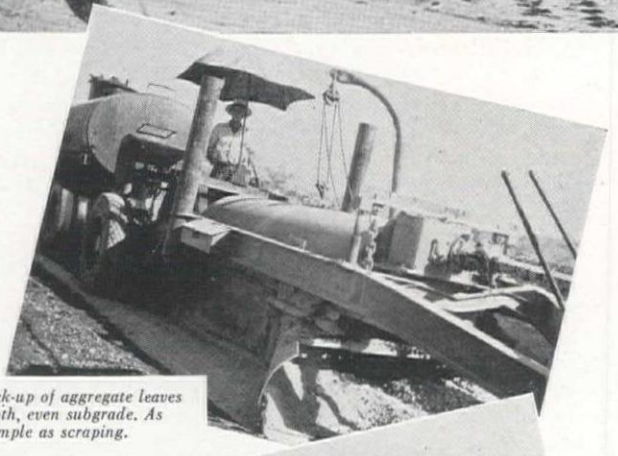
		(1)	(2)
130	MBM timber and lumber (untreated) in place	95.00	107.00
7	MBM timber and lumber (creosote treated) in place	185.00	175.00
2,500	lin. ft. furn. timber piling (creosote treated) at site	1.04	.75
3,300	lin. ft. furn. timber piling (chemonite salts treated) at site	.56	.65
13,900	lin. ft. furn. timber piling (copperized treated) at site	.57	.66
7,600	lin. ft. furn. timber piling (mineralized cell treated) at site	.64	.72
444	only driving timber piles (treated) in place	12.00	12.00
Lump sum	erecting second-hand trusses in place	$4,000	$5,500
9,500	lbs. structural steel	.21	.20
2,500	lin. ft. ¾-in. cable, in place	.20	.25
120	lin. ft. ⅜-in. cable, in place	.12½	.15
Lump sum	miscellaneous equipment, complete in place	150.00	200.00
Lump sum	electrical wiring and fixtures, complete in place	$1,400	$2,100
Lump sum	removing portions of existing structure	350.00	480.00

California—San Bernardino Co.—Bur. of Reclam.—Transmission Line

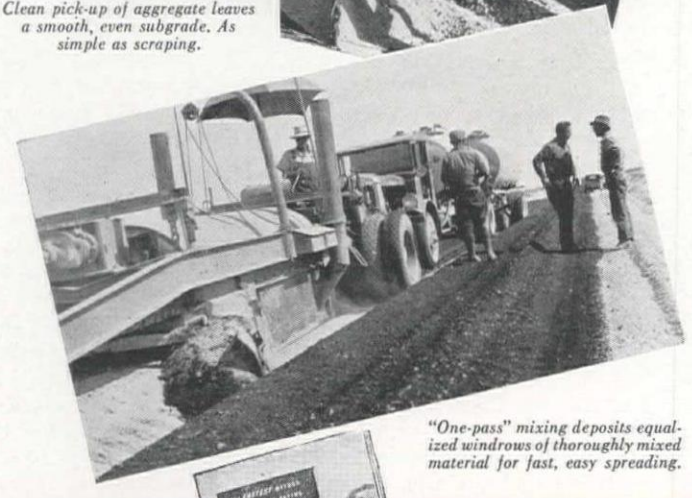
Oman Smith Co., Nashville, Tenn., was the only bidder, with a proposal of $189,136, to the Bureau of Reclamation, Parker Dam, for construction of a 69,000 volt three-phase, single circuit, wood-pole transmission line from the Parker Dam power project to Baghdad Mine, a distance of approximately 65 miles. The Government is to furnish all transmission line materials that will become a part of the completed work, and the contractor will furnish all materials necessary to complete the project. He will be responsible for hauling, storing, and erecting the materials.

8	ea. construct. type HS struct's. with 40-ft. poles, except guys and X-braces	$245.00
26	ea. construct. type HS struct's. with 45-ft. poles, complete, except guys and X-braces	245.00
75	ea. construct. type HS struct's. with 50-ft. poles, complete, except guys and X-braces	250.00
264	ea. construct. type HS struct's. with 55-ft. poles, except guys and X-braces	250.00
37	ea. construct. type HS struct's. with 60-ft. poles, except guys and X-braces	255.00
9	ea. construct. type HS struct's. with 65-ft. poles, except guys and X-braces	265.00
1	ea. construct. type HT struct's. with 40-ft. poles, except guys and X-braces	255.00
4	ea. construct. type HT struct's. with 45-ft. poles, except guys and X-braces	260.00
9	ea. construct. type HT struct's. with 50-ft. poles, except guys and X-braces	260.00
12	ea. construct. type HT struct's. with 55-ft. poles, except guys and X-braces	270.00
4	ea. construct. type HT struct's. with 60-ft. poles, except guys and X-braces	285.00
1	ea. construct. type HT struct's. with 65-ft. poles, except guys and X-braces	310.00
2	ea. construct. type HA struct's. with 40-ft. poles, except guys and X-braces	250.00
2	ea. construct. type HA struct's. with 45-ft. poles, except guys and X-braces	250.00
4	ea. construct. type HA struct's. with 50-ft. poles, except guys and X-braces	260.00
8	ea. construct. type HA struct's. with 55-ft. poles, except guys and X-braces	265.00
1	ea. construct. type HA struct's. with 60-ft. poles, except guys and X-braces	285.00
1	ea. construct. type HA struct's. with 65-ft. poles, except guys and X-braces	285.00
1	ea. construct. type HTR struct's. with 55-ft. poles, except guys and X-braces	270.00
2	ea. construct. type HTR struct's. with 60-ft. poles, except guys and X-braces	290.00
5	ea. construct. type HTR struct's. with 65-ft. poles, except guys and X-braces	295.00
1	ea. construct. type 3A struct's. with 50-ft. poles, except guys	285.00
1	ea. construct. type 3A struct's. with 55-ft. poles, except guys	290.00
1	ea. construct. type 3A struct's. with 60-ft. poles, except guys	300.00
1	ea. construct. type 3AT struct's. with 55-ft. poles, except guys	330.00
1	ea. construct. type 3AT struct's. with 60-ft. poles, except guys	380.00
9	ea. construct. type 3T struct's. with 50-ft. poles, except guys	345.00
6	ea. construct. type 3T struct's. with 55-ft. poles, except guys	360.00
2	ea. construct. type 3T struct's. with 60-ft. poles, except guys	365.00
5	ea. construct. type 3T struct's. with 65-ft. poles, except guys	370.00
30	ea. attaching X-braces	30.00
300	ea. construct. guys, except placing anchors	25.00
260	ea. placing anchors	25.00
65	mi. line stringing 3-phase copper-conductor lines	685.00

AIRPORTS RUNWAYS ROADS HIGHWAYS



Clean pick-up of aggregate leaves a smooth, even subgrade. As simple as scraping.



"One-pass" mixing deposits equalized windrows of thoroughly mixed material for fast, easy spreading.

BUILD 'EM FASTER AND AT LESS COST WITH WOOD ROADMIXERS

Wood Roadmixers are being used on an increasing number of defense projects, and they are putting down paving in record time—with less man power, and at less cost.

As a complete traveling mixing plant, the Wood Roadmixer picks up the aggregate, mixes it with the liquid binder and deposits it in windrows for blading and spreading. Any man who can handle a scraper can operate a Wood Roadmixer. Power for pulling and mixing is supplied by a standard track-type tractor.

Wood Roadmixer originated the traveling plant method of fast, low-cost asphaltic pavement construction. Today, as the leader in this field, Wood Roadmixers are proving their ability to build airports, runways, roads and highways faster, better and at less cost.

Before you tackle your next paving job, regardless of what it it, where it is, or the conditions encountered, get all the facts about Wood Roadmixers. You'll be time and money ahead.

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

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

WOOD ROADMIXER

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

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

Union Paving Co., San Francisco, Calif., was awarded the contract at $336,340 to grade and pave with portland cement conc. 4.9 mi. betw. Snow Rd. and 2½ mi. south of Shafter Rd., Kern Co., Calif.

Jacobsen-Jensen Co., Portland, Ore., has received a contract for approx. $400,000 to construct roads and railroads in Umatilla Co., Oregon.

L. A. Woodward Co., Missoula, Mont., has the contract for earthwork, structures and surf. on relocation of Lincoln county road betw. Creston and Ft. Spokane, Columbia Basin Project, Wash., at $259,813.

Arizona Constructors were awarded contract at over $1,000,000 for airfield facilities in Cochise Co., Ariz.

Hunt & Frandsen, Reno, Nev., $306,025 for grading and surfacing a flight strip 5 mi. west of Owyhee, Nev.

Nolan Bros., Minneapolis, and **C. A. Wagner Construction Co.**, Sioux Falls, S. Dak., jointly, less than $3,000,000 for airfield facilities, roads, and drainage in Curry Co., N. Mex.

Clifford A. Dunn, Klamath Falls, Ore., two contracts for flight strips—$204,368 in Lake Co., and $201,645 in Malheur Co., Oregon.

Cage Bros., and **J. Floyd Malcolm**, Bishop, Texas, was awarded contract for more than $1,000,000 for runways and aprons in Brown Co., Texas.

W. W. Clyde & Co., Springville, Utah, received contract at $305,-147 to clear, grade, drain and pave airport at Delta, Utah.

Peter Kiewit Sons' Co., Omaha, Neb., over $1,000,000 for extensions to runways and taxiways at an airfield in Natrona Co., Wyo.

B. H. Sheldon, Corvallis, Ore., received contract at $199,000 to construct a sewage treatment plant at Renton, Wash.

George J. Bock Co. and **Byerts & Dunn**, Los Angeles, at $159,-817 awarded contract for lower section of Lockheed storm drain, Burbank, Calif.

John R. Austin Co., Grand Lake, Colo., $418,080 for construction of earth and rock fill dikes at Granby dam, Colorado-Big Thompson project.

A. Teichert & Son, Inc., and **John C. Gist**, Sacramento, Calif., has a contract for housing and facilities at an airport in Cochise Co., Arizona, at less than $2,000,000.

Los Angeles Contracting Co., and **O. W. Karn**, Los Angeles, given a contract at $4,885,300 for temporary housing at the Marine Corps Barracks, San Diego, Calif.

Peter Kiewit Sons' Co., Omaha, Nebr., has award of a contract for 374 bldgs. at Camp Carson, Colo., at over $2,000,000.

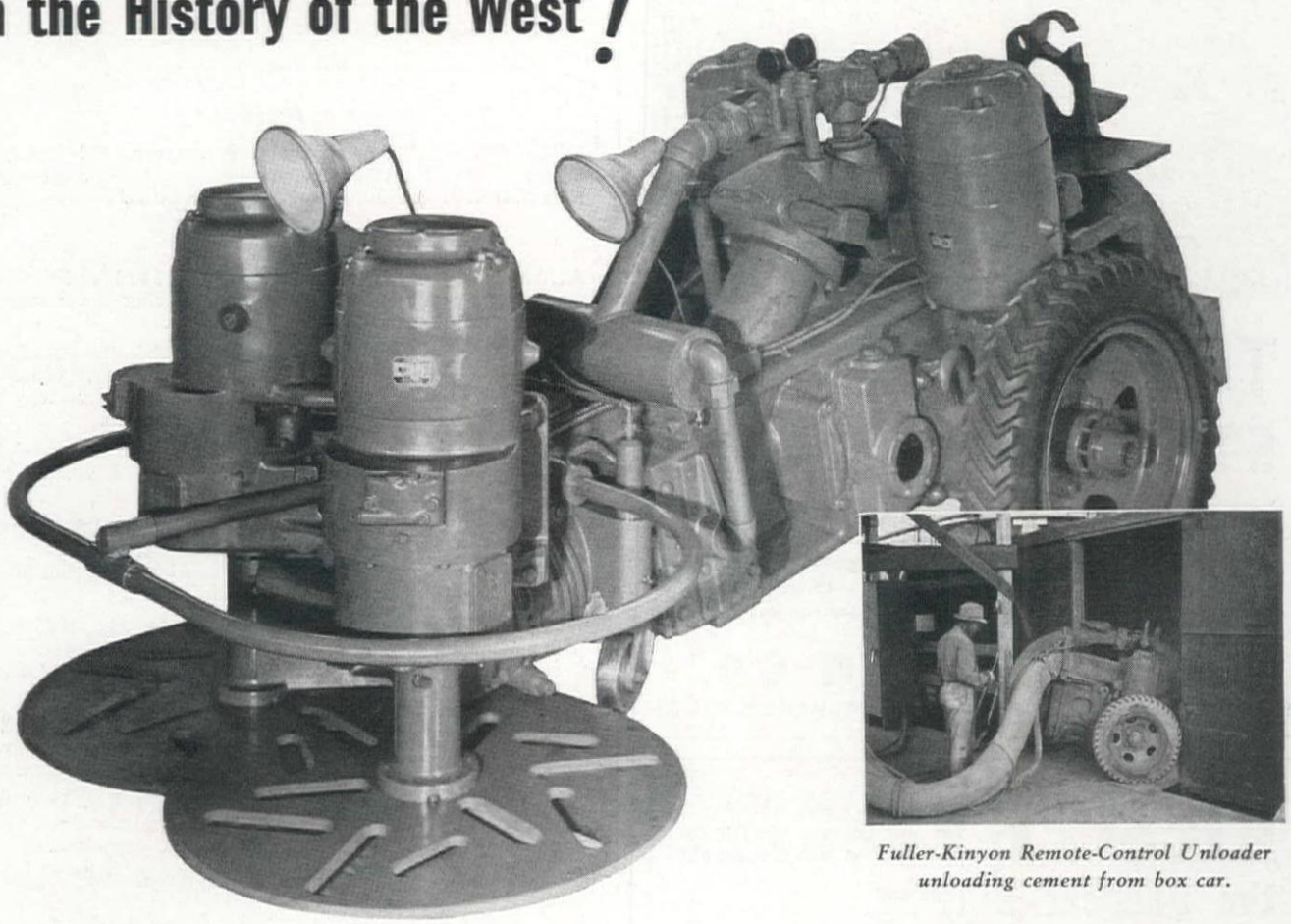
M. M. Sundt Construction Co., Tucson, Ariz., over $1,000,000 for construction of theater of operations bldgs. and utilities in San Miguel Co., N. Mex.

K. E. Parker Co., San Francisco, received contract at $1,321,000 for additional facilities at naval magazine at Port Chicago, Calif.

Oman Smith Co., Nashville, Tenn., award of $189,135 for 69 kilovolt transmission line from Parker dam to Baghdad mine, Calif.

FULLER-KINYON UNLOADERS

. . . Speeding Construction of the Largest Industrial Job in the History of the West!



Fuller-Kinyon Remote-Control Unloader unloading cement from box car.

Again Fuller-Kinyon Remote-Control Unloaders were selected for unloading bulk cement . . . this time at the $126,000,000 [redacted] (censored) war plant, now under construction in Utah.

Fuller-Kinyon Unloaders quickly and efficiently take bulk cement from the cars and pump it into storage bins. There are no break-downs, delays or demurrage charges to worry about . . . Fuller-Kinyons are built to give uninterrupted service and speed up operations in handling cement.

On any size job . . . large or small . . . profit-wise contractors will use a Fuller-Kinyon Unloader. There are many types and sizes. Call our nearest office to find the one which will suit your needs.

FULLER COMPANY

CATASAUQUA, PENNSYLVANIA

Chicago: 1144 Marquette Bldg.
San Francisco: 320-321 Chancery Bldg.

P-56

FULLER-KINYON, FLUXO, AND AIRVEYOR CONVEYING SYSTEMS · · · · ROTARY FEEDERS AND DISCHARGE GATES
ROTARY AIR COMPRESSORS AND VACUUM PUMPS · · · · AIR-QUENCHING COOLERS · · · · BIN SIGNALS

Strong & McDonald, Tacoma, Wash., $348,903 for relocating tracks of Tacoma Eastern Ry., on site of Second Nisqually power project, in Washington.

Contractors Pacific Naval Air Bases Contracts, Alameda, Calif., awarded contract at $13,044,200 for additional facilities at Pearl Harbor, T. H., and in the islands of the Pacific.

Highway and Street...

CONTRACTS AWARDED

Arizona

COCONINO CO.—**Arizona Constructors,** 312 Luhrs Bldg., Phoenix—less than $50,000, for roads and drainage—by U. S. Engineer Office, Albuquerque, New Mexico. 9-17

California

ALAMEDA CO.—**Lowrie Paving Co.,** 1540 16th St., San Francisco—over $100,000, for hardstanding paving of a storage area—by U. S. Engineer Office, San Francisco. 9-21

KERN CO.—**Union Paving Co.,** 310 California St., San Francisco—$336,340, for 4.9 mi. grade and portland cement conc. pave. betw. Snow Road and 2½ mi. south of Shafter Rd.—by California Division of Highways, Sacramento. 9-28

LOS ANGELES CO.—**Vido Kovacevich,** 5400 Imperial Hwy., South Gate—$10,499, for improving Tweedy Blvd. and Hildreth Ave., South Gate—by City Council, South Gate. 9-8

RIVERSIDE CO.—**Arthur Malcolm** and **V. S. Price,** 10820 Collins St., North Hollywood—over $100,000, for bldgs., streets and parking areas at a camp for anti-aircraft battalions—by U. S. Engineer Office, Los Angeles. 9-1

RIVERSIDE CO.—**Calowell Construction Co.,** 1835 E. Wardlow Rd., Long Beach—over $100,000, for roads, driveways and parking areas at an airport—by U. S. Engineer Office, Los Angeles. 9-10

SAN BERNARDINO CO.—**Bohannan Paving Co.,** 13236 Victory Blvd., Van Nuys—less than $50,000, for service roads in an igloo area—by U. S. Engineer Office, Los Angeles. 9-16

SAN FRANCISCO CO.—**Lowrie Paving Co.,** 1540 16th St., San Francisco—less than $50,000, for hardstandings at a storage area—by U. S. Engineer Office, San Francisco. 9-15

SAN FRANCISCO CO.—**Peter Sorensen,** 927 Arguello St., Redwood City—$16,540, for a portion of the seaplane harbor road at San Francisco Airport—by Public Utility Commission, San Francisco. 9-16

SAN JOAQUIN CO.—**Stockton Construction Co.,** 40 W. Clay St., Stockton—$27,652, for asph. conc. paving on portions of Country Club Blvd., Orange St., and other streets in Stockton—by City Council, Stockton. 9-11

SAN MATEO CO.—**California Paving Co.,** Box 96, San Mateo—$35,055, for 2.9 mi. cr. rock and armor coat surf. on Junipero Serra Blvd. extension, betw. Cypress Lawn Cemetery and Sneath Rd.—by Joint Highway District No. 10, San Francisco. 9-4

SANTA CLARA CO.—**Union Paving Co.,** 310 California St., San Francisco—$15,698, for surf. on Alamitos Road betw. the bridge below the Dam and Twin Creeks—by Board of Supervisors, San Jose. 9-21

SOLANO CO.—**A. G. Raisch,** 2048 Market St., San Francisco—$32,994, for grading and asph. conc. paving on Waterfront Rd., betw. Virginia St. and Quincy Alley—by City Council, Vallejo.

Colorado

EAGLE CO.—**Brown Construction Co.,** Colorado Springs—less than $50,000 for access road—by U. S. Engineer Office, Denver. 9-26

Idaho

ADA CO.—**Jerry Nottingham,** Boise—less than $50,000, for roads, streets, sidewalks and drainage ditches—by U. S. Engineer Office, Portland, Oregon. 9-5

BONNER CO.—**D. A. Sullivan,** Box 39, Parkwater, Wash.—$75,990 for stockpiling cr. gravel and cover coat matl. along North and South Hwy., Clarks Fort Hwy., and Priest River road—by Bureau of Highways, Boise. 9-11

BONNEVILLE CO.—**Dan Cavanagh,** Twin Falls—$98,321, for roadbed, drainage structures and crushed gravel surf. on 6.4 mi.

KEEP YOUR FWD's ROLLING AND WORKING . . . NO MATTER HOW OLD . . . WITH FWD SERVICE

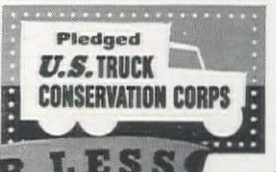
This is no time to have any trucks standing idle . . . or to make only part-time use of old, worn trucks. Every truck is valuable to the war effort . . . use 'em or recondition 'em to keep 'em rolling! Because extra ruggedness — extra dependability — is built into FWD trucks in keeping with the traditionally sound FWD four-wheel-drive principle, you can gain many added miles of service and complete full-time usefulness from FWD trucks that are veterans of heavy service of ten years or more.

See your FWD branch or dealer . . . ask about FWD's progressive interchangeability of improvements and vital parts . . . find out how worn parts and units, subject to heavy wear and tear, can be progressively replaced with modern equipment and your truck kept in action! See your FWD branch of dealer . . . they're pledged with the Government's program . . . they are equipped with the facilities, skill, and experience to put new life into even the oldest FWD — no matter how "scarred" with long years of service.

FWD dealers and branches have signed the Office of Defense Transportation Pledge and are qualified to display this official poster.

THE FOUR WHEEL DRIVE AUTO COMPANY
CLINTONVILLE, WIS. • *Canadian Factory*, KITCHENER, ONTARIO

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 decalcomania transfer—from your nearest FWD branch or dealer.



FWD

TRUCKS HAUL LONGER FOR LESS

of Twin Buttes Hwy., and Shelley-New Sweden road betw. Shelley and Idaho-Mont. Hwy.—by Department of Public Works, Boise. 9-2

ELMORE CO.—**Quinn Robbins & Co.,** Boise—$145,331, for roadbed drainage struct. and crushed gravel surf. on 4.1 mi. of the Old Oregon Trail from Glenns Ferry westerly—by Department of Public Works, Boise. 9-10

FREMONT CO.—**Nick Burggraf, Inc.,** Idaho Falls—$55,393 for grading, draining and surf. with cr. gravel 3.1 mi. of the road betw. Parker and Egin—by Bureau of Highways, Boise. 9-16

GOODING AND CAMAS COS.—**Hoops Construction Co.,** Box 431, Twin Falls—$91,581 for 16.2 mi. cr. rock surf. betw. Gooding and Fairfield—by Bureau of Highways, Boise. 9-11

LATAH CO.—**Carbon Bros.,** 3430 N. Cook St., Spokane, Wash. —$96,280 for 12.5 mi. cr. rock surf. on the Moscow-Boville Hwy. betw. Troy and Deary—by Bureau of Highways, Boise. 9-11

LEWIS CO.—**Lobnitz Bros.,** Boise—$68,965 for 10.8 mi. cr. rock surf. on Nezperce Hwy. betw. Craigmont and Nezperce—by Bureau of Highways, Boise. 9-11

SHOSHONE CO.—**Colonial Construction Co.,** W. 326 First Ave., Spokane, Wash.—$123,986 for roadbed, drainage and crushed rock surf. on 1.4 mi. of Coeur d'Alene-Yellowstone Trail betw. Big Creek and Teddy mine—by Bureau of Highways, Boise. 9-25

Montana

FERGUS CO.—**S. Birch & Sons Construction Co.,** Great Falls —less than $50,000, for roads and drainage—by U. S. Engineer Office, Fort Peck. 9-5

GLACIER CO.—**Frank J. Haas,** 512 9th Ave., N.W., Great Falls—less than $50,000, for roads on military site—by U. S. Engineer Office, Fort Peck. 9-22

Nevada

CLARK CO.—**Gibbons & Reed Co.**—259 W. 3rd South St., Salt Lake City, Utah—less than $50,000, for access roads and parking area at an army gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 9-16

New Mexico

BERNALILLO CO.—**Skousen Bros.,** 205 Springer Bldg., Albuquerque—over $50,000, for roads at an airfield—by U. S. Engineer Office, Albuquerque. 9-25

McKINLEY CO.—**Denison & Shotwell,** Albuquerque—over $50,000 for grade and asph. pave 3 mi. of road and 4 mi. of railroad grading at a depot—by U. S. Engineer Office, Albuquerque. 9-14

Oregon

JACKSON CO.—**M. C. Linninger & Sons,** Ashland—less than $50,000, for surf. roads and parking areas—by U. S. Engineer Office, Portland. 9-8

UMATILLA CO.—**Jacobsen-Jensen Co.,** 517 NE Stanton St., Portland—$400,000 (approx.) for roads and railroads—by U. S. Engineer Office, Portland. 9-22

Texas

BELL CO.—**Holland Page,** Austin—over $50,000, for reconst. of streets and parking areas—by U. S. Engineer Office, San Antonio. 9-26

BELL CO.—**Southern States Construction Co.,** Houston—less than $50,000 for roads and walks—by U. S. Engineer Office, San Antonio. 9-12

BEXAR CO.—**O. L. Neyland,** San Antonio—less than $50,000, for roads, walks and fence—by U. S. Engineer Office, San Antonio. 9-15

BEXAR CO.—**A. M. McNeel,** San Antonio—over $50,000, for street surf.—by U. S. Engineer Office, San Antonio. 9-15

CAMERON CO.—**J. O. Mack, Jr.,** San Antonio—over $50,000, for roads, walks and fence—by U. S. Engineer Office, San Antonio. 9-23

PALO PINTO CO.—**Louis P. Reed,** Meridian—over $100,000, for clearing, grading, grubbing and paving—by U. S. Engineer Office, Denison. 9-19

REEVES CO.—**Uvalde Construction Co.,** 920 Santa Fe Bldg., Dallas—over $100,000 for road surfacing—by U. S. Engineer Office, Albuquerque, New Mex. 9-12

TAYLOR CO.—**W. G. Drummond Construction Co.** View—

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less than $50,000, for roads and sidewalks—by U. S. Engineer Office, San Antonio. 9-22

TOM GREEN CO.—**Reece Albert,** San Angelo—less than $50,000, for paving—by U. S. Engineer Office, Galveston. 9-15

Utah

WEBER CO.—**W. W. Clyde & Co.,** Springville—$258,932, for 2.5 mi. of 2½-in. roadmix bitum. surf. road betw. Nye's Corner and Wilson Lane—by State Road Commission, Salt Lake City. 9-22

Washington

KING CO.—**A. W. Johnson, Inc.,** and **Goetz & Brennan,** 208 E. Pacific St., Seattle—over $100,000, for widening and paving road—by U. S. Engineer Office, Seattle. 9-4

LINCOLN CO.—**L. A. Woodward Co.,** Missoula, Mont.—$259,813, for earthwork, struc. and surf., on relocation of Lincoln County road betw. Creston and Ft. Spokane, Columbia Basin Project—by Bureau of Reclamation, Coulee Dam. 9-8

PIERCE CO.—**Woodworth & Co.,** 1200 E. D St., Tacoma—$37,763 for widening 11th St., Tacoma, from city waterway bridge to Puyallup River bridge—by Board of Contracts and Awards, Tacoma. 9-12

SNOHOMISH CO.—**Associated Sand & Gravel Co.,** 3124 Paine St., Everett—less than $50,000, for grading, drainage and access roads—by U. S. Engineer Office, Seattle. 9-8

SPOKANE CO.—**Charles A. Power,** E. 27 8th Ave., Spokane—$337,099, for 6 mi. clear, grade and pave with portland cement conc. on Primary State Hwy. No. 2, betw. Geiger Field and Galena—by Director of Highways, Olympia. 9-8

SPOKANE CO.—**Carbon Bros.,** 3430 N. Cook St., Spokane—$51,016, for 2.7 mi. roadmix bitum. surf. on Graves Rd., and 1.5 mi. surf. with selected borrow cr. stone and roadmix bitum. surf., on Crestline Rd., near Spokane—by Director of Hwys., Olympia. 9-4

SPOKANE CO.—**Erickson Paving Co.,** and **K. L. Goulter,** Box 135, Spokane—less than $50,000, for bitum. surf. on a road—by U. S. Engineer Office, Seattle. 9-5

PROPOSED PROJECTS

Arizona

APACHE CO.—State Highway Commission received no bids for grade, drain, and roadmix bitum. surf. on 2.7 mi. of Holbrook-Lupton Highway, southwest of Lupton. 9-12

California

LOS ANGELES CO.—No bids were received by Board of Public Works, Los Angeles, for grading, asph. conc. paving, curbs, gutters and walks on Hooper Ave. for 520 ft. southerly from 112th St. 9-11

Washington

GRAYS HARBOR CO.—Director of Hwys., Olympia, rejected the only bid received for clearing, grubbing, grading, draining and surf. on Secondary State Highway No. 13-A, Chapin Creek to Johns River. 9-4

Bridge & Grade Separation...

CONTRACTS AWARDED

California

MENDOCINO CO.—**Fred J. Maurer & Son,** 369 Pine St., San Francisco—$345,528, for a timber, steel and conc. bridge 969 ft. long, across Albion River, in Albion—by California Division of Highways, Sacramento. 9-29

Colorado

EL PASO CO.—**J. H. & N. M. Monaghan,** 332 S. Race St., Denver—$12,838, for widening bridge on State Hwy. No. 1 betw. Colorado Springs and Fountain—by State Highway Department, Denver. 9-4

Washington

THURSTON CO.—**Goetz & Brennan,** 914 Seaboard Bldg., Seattle—$87,590, for a steel girder bridge over Deschutes River and treated timber bridge over tracks of Weyerhauser Timber Co. and Chehalis Western Railroad betw. Tenino and Rainier—by Director of Highways, Olympia. 9-4

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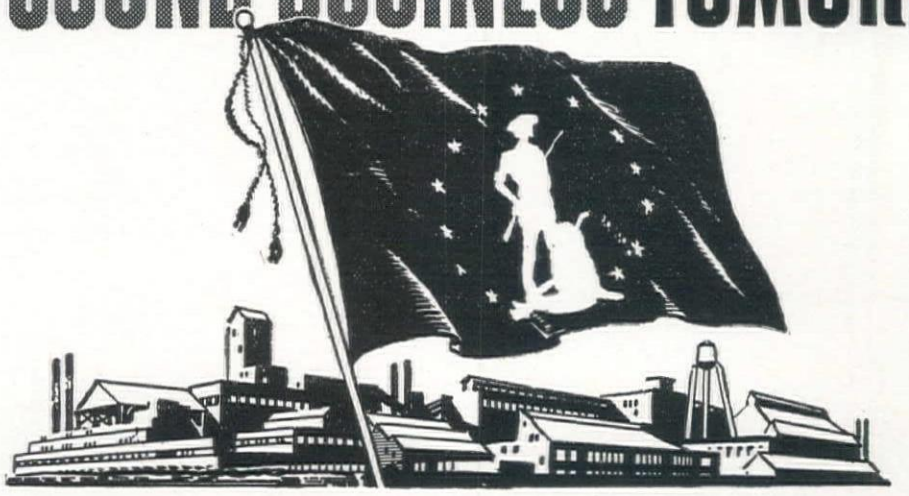

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Airport . . .

CONTRACTS AWARDED

Arizona

COCHISE CO.—**Arizona Constructors,** 312 Luhrs Bldg., Phoenix—over $1,000,000, for airfield facil.—by U. S. Engineer Office, Albuquerque, New Mexico. 9-22

COCHISE CO.—**Arthur Pinner, Jr.,** 116 W. 94th St., Los Angeles, Calif.—less than $500,000, for auxiliary landing fields—by U. S. Engineer Office, Albuquerque, New Mexico. 9-29

MARICOPA CO.—**C. T. & W. P. Stover,** Box 87, Claremont, Calif.—over $100,000, for airways detachment at an airport—by U. S. Engineer Office, Los Angeles, Calif. 9-30

YUMA CO.—**Clyde W. Wood,** 208 W. 8th St., Los Angeles, Calif.—over $500,000, for auxiliary landing fields No. 1, 2, 3 and 4, at an air force flying school—by U. S. Engineer Office, Los Angeles, Calif. 9-25

California

ALAMEDA CO.—**Macco Construction Co.,** Ferry and Freight Sts., Oakland—over $500,000, for runways at an airport—by U. S. Engineer Office, San Francisco. 9-8

KERN CO.—**Griffith Co.,** 1060 S. Broadway, Los Angeles—over $100,000, for surfacing—by U. S. Engineer Office, Sacramento. 9-8

LOS ANGELES CO.—**R. W. Hampton Co.,** 4031 Goodwin Ave., Los Angeles—over $100,000, for hardstandings, taxiways and drainage facils. at an airport—by U. S. Engineer Office, Los Angeles. 9-18

LOS ANGELES CO.—**Ansco Construction Co.,** 2725 Atlantic Blvd., Long Beach—$21,797, for asph. conc. apron at Long Beach Municipal Airport—by City Council, Long Beach. 9-29

MARIN CO.—**Campbell, Nicholson and Moore,** 1701 San Leandro Blvd., San Leandro—less than $50,000 for runway extension at an airfield—by U. S. Engineer Office, San Francisco. 9-16

RIVERSIDE CO.—**R. A. Conyes** and **Ralph O. Dixson,** 3901 Medford St., Los Angeles—over $100,000, for hardstandings and taxiways at an airport—by U. S. Engineer Office, Los Angeles. 9-10

RIVERSIDE CO.—**Harvey Adair Construction Co.,** 1147 E. Garvey Ave., El Monte—less than $50,000, for taxiways, revetments, etc., at an airfield—by U. S. Engineer Office, Los Angeles. 9-1

SACRAMENTO CO.—**Harms Bros. and Larson Bros.,** Rt. 4, Box 2220, Sacramento—over $100,000, for taxiways, runways, and hardstandings at an auxiliary landing field—by U. S. Engineer Office, Sacramento. 9-2

SACRAMENTO CO.—**A. Teichert & Son, Inc.,** Box 1113, Sacramento—less than $50,000, for paving parking area—by U. S. Engineer Office, Sacramento. 9-26

Colorado

DENVER CO.—**Blanchard Bros.,** Cheyenne, Wyo.—over $50,000, for grading, subgrade preparation and drainage structures for taxiways—by U. S. Engineer Office, Denver. 9-23

Nevada

ELKO CO.—**Hunt & Frandsen,** Box 1626, Reno—$306,025, for graded and surf. area for a flight strip, 5 mi. west of Owyhee—by State Highway Department, Carson City. 9-14

LINCOLN CO.—**Dodge Construction Co., Inc.,** Fallon—$207,822, for a graded and surf. flight strip—by State Highway Department, Carson City. 9-28

New Mexico

CURRY CO.—**Nolan Bros.,** Minneapolis, Minn., and **C. A. Wagner Construction Co.,** 230 E. 8th St., Sioux Falls, S. Dak.—less than $3,000,000, for airfield facil., roads, and drainage—by U. S. Engineer Office, Albuquerque. 9-1

EDDY CO.—**Bradford and Smith,** Haskell, Texas—over $100,000, for flying field facil.—by U. S. Engineer Office, Albuquerque. 9-26

LEA CO.—**Reynolds & Sutton,** Tyler—over $500,000, for landing field facil. at an airfield—by U. S. Engineer Office, Albuquerque. 9-25

LUNA CO.—**Brown Brothers,** Box 1479, Albuquerque—over

$500,000, for landing field facil. at an airfield—by U. S. Engineer Office, Albuquerque. 9-25

Oregon

LAKE CO.—**Clifford A. Dunn,** Box 431, Klamath Falls—$204,368, for grading and surf. Lake flight strip, on Lakeview-Burns Hwy.—by State Highway Commission, Portland. 9-4

MALHEUR CO.—**Clifford A. Dunn,** Box 431, Klamath Falls—$201,645, for grading and surf. flight strip on I.O.N. Secondary Hwy.—by Oregon State Highway Commission, Portland. 9-4

MULTNOMAH CO.—**Newport Construction Co.,** 7031 NE Halsey St., Portland—$197,207 for airport at Troutdale—by Civil Aeronautics Administration, Boeing Field, Wash. 9-30

Texas

BROWN CO.—**Cage Bros.,** and **J. Floyd Malcolm,** Bishop—over $1,000,000, for runways and apron—by U. S. Engineer Office, San Antonio. 9-15

REEVES CO.—**Ernest Loyd,** Box 1077, Fort Worth—over $500,000, for flying field facil. at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 9-25

WARD CO.—**Uvalde Construction Co.,** 920 Santa Fe Bldg., Dallas—over $1,000,000 for taxiways, runways, aprons, etc.—by U. S. Engineer Office, Albuquerque, N. Mex. 9-5

Utah

MILLARD CO.—**W. W. Clyde & Co.,** Springville—$305,147, for clearing, grading, paving and drainage of airport at Delta—by Civil Aeronautics Administration, Santa Monica, Calif. 9-21

SALT LAKE CO.—**W. W. Gardner,** Salt Lake City—over $100,000, for surf. for expansion area—by U. S. Engineer Office, Salt Lake City. 9-22

TOOELE CO.—**Reynolds-Ely Construction Co.,** Springville—$259,920 for 2½ in. roadmix bitum. surf. on 8000-ft. flight strip near Low—by State Road Commission, Salt Lake City. 9-14

TOOELE CO.—**Victor Newman,** 320 Whitney Ave., Salt Lake City—over $100,000 to furnish, haul and spread gravel for runways—by U. S. Engineer Office, Salt Lake City. 9-10

WEBER CO.—**Robert E. McKee,** 4700 San Fernando Rd., West, Los Angeles, Calif.—over $100,000, for concrete aprons—by U. S. Engineer Office, Salt Lake City. 9-25

UNANNOUNCED CO.—**Strong & Grant,** Springville, and **W. E. Ryberg Co.,** 207 Interurban Bldg., Salt Lake City—less than $1,000,000, for conc. landing aprons, etc., at a bombing range—by U. S. Engineer Office, Salt Lake City. 9-10

Washington

GRANT CO.—**Woodworth & Co.,** 1200 E. "D" St., and **MacDonald Building Co.,** 1517 S. Tacoma Way, Tacoma—over $1,000,000, for an army installation—by U. S. Army Engineer Office, Seattle. 9-3

SKAGIT CO.—**Parker-Schram Co.,** Couch Bldg., Portland, Ore., and **Erickson & Goulter,** Box 135, Spokane—over $500,000 for runways, taxiways, and hardstandings—by U. S. Engineer Office, Seattle. 9-28

SNOHOMISH CO.—**Axel Osberg,** 502 N. 62nd St., Seattle—over $500,000, for runways, taxiways, hardstandings and roads—by U. S. Engineer Office, Seattle. 9-21

UNANNOUNCED CO.—**MacDonald Building Co.,** 1517 S. Tacoma Way, and **Woodworth & Co.,** 1122 E. "D" St., Tacoma—over $100,000 for grading and drainage in Eastern Washington—by U. S. Engineer Office, Seattle. 9-10

Wyoming

NATRONA CO.—**Peter Kiewit Sons' Co.,** 1024 Omaha National Bank Bldg., Omaha, Nebraska—over $1,000,000, for extension of runways and taxiways—by U. S. Engineer Office, Omaha, Nebraska. 9-22

Water Supply . . .

CONTRACTS AWARDED

Arizona

COCHISE CO.—**Wininger Bros.,** Safford—less than $50,000 for drilling a water well—by U. S. Engineer Office, Albuquerque, N. Mex. 9-12

PIMA CO.—**Roscoe Moss Co.,** 4360 Worth St., Los Angeles—less than $50,000, for drilling water well No. 3, at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 9-14

California

MARIN CO.—**Underground Construction Co.,** 354 Hobart St., Oakland—$58,185, for Alto Reservoir—by Defense Public Works, San Francisco. 9-15

ORANGE CO.—**R. A. Wattson Co.,** 1026 N. McCadden Place, Los Angeles—over $50,000, for expanding water supply system at an air force training center—by U. S. Engineer Office, Los Angeles. 9-29

ORANGE CO.—**Vinson & Pringle,** 2505 W. Sixth St., Los Angeles—less than $50,000, for addtl. water and sewer lines at an air base—by U. S. Engineer Office, Los Angeles. 9-10

RIVERSIDE CO.—**C. O. Brand,** 3696 Everest St., Arlington—over $100,000, for water and sewer systems at ground air support base—by U. S. Engineer Office, Los Angeles. 9-25

RIVERSIDE CO.—**Pacific Pipeline Construction Co.,** 8732 S. Juniper St., Los Angeles—less than $50,000, for water and sewer systems at a reception center—by U. S. Engineer Office, Los Angeles. 9-29

RIVERSIDE CO.—**Roscoe Moss Co.,** 4360 Worth St., Los Angeles—less than $50,000, for drilling a well at a ground air support base—by U. S. Engineer Office, Los Angeles. 9-3

SAN BERNARDINO CO.—**Contracting Engineers Co.** 2310½ W. Vernon Ave., Los Angeles—over $50,000, for water supply system at an air depot—by U. S. Engineer Office, Los Angeles. 9-3

Colorado

PROWERS CO.—**Hollow Drilling Co., Inc.,** Wichita, Kansas—less than $50,000, for water supply wells—by U. S. Engineer Office, Albuquerque, New Mexico. 9-24

New Mexico

DE BACA CO.—**Samuel Butler & Oren F. Butler,** Roswell—less than $50,000, for water supply wells—by U. S. Engineer Office, Albuquerque. 9-15

OTERO CO.—**R. H. Fulton & Co.,** Lubbock, Tex.—less than $200,000, for water supply and distribution and addtl. sewage collection and disposal systems at an airfield—by U. S. Engineer Office, Albuquerque. 9-11

Texas

BELL CO.—**Gayle Bros.,** Houston—less than $50,000, for water and sewer systems—by U. S. Engineer Office, San Antonio. 9-12

BEXAR CO.—**Trueheart, Caldwell & Lee,** San Antonio—less than $50,000, for water and sewer system—by U. S. Engineer Office, San Antonio. 9-15

BEXAR CO.—**Fred W. Geyer,** San Antonio—less than $50,000, for water and sewer systems—by U. S. Engineer Office, San Antonio. 9-18

BROWN CO.—**Osage Construction Co.,** Dallas—over $50,000, for water and sewer systems—by U. S. Engineer Office, San Antonio. 9-18

BROWN CO.—**J. W. Mundy Construction Co.,** Temple—less than $50,000, for water and sewage systems—by U. S. Engineer Office, San Antonio. 9-19

CAMERON CO.—**Wm. Anderson Plumbing & Heating Co.,** Brownsville—less than $50,000, for water and sewage systems—by U. S. Engineer Office, San Antonio. 9-12

DALLAS CO.—**The Parkersburg Rig & Reel Co.,** Parkersburg, W. Va.—less than $50,000, for water storage tank—by U. S. Engineer Office, Denison. 9-12

GUADALUPE CO.—**J. D. Scarborough,** San Antonio—less than $50,000, for water supply and observation towers—by U. S. Engineer Office, San Antonio. 9-19

PALO PINTO CO.—**M. F. Fisher & Son,** San Antonio—less than $50,000, for water and sewer systems—by U. S. Engineer Office, San Antonio. 9-12

Washington

CLARK CO.—**J. T. Scott & Son,** and **King & Co.,** Vancouver—less than $50,000, for water and sewer systems—by U. S. Engineer Office, Portland, Oregon. 9-5

FRANKLIN CO.—**Thorburn & Logozo,** Walla Walla—less

than $50,000, for water and sewer systems—by U. S. Engineer Office, Portland, Oregon. 9-5

GRANT CO.—**McDonald Building Co.,** 1517 S. Tacoma Way, and **Woodworth & Co.,** 1200 E. D St., Tacoma—less than $50,000 for a water supply and storage system—by U. S. Engineer Office, Seattle. 9-10

GRAYS HARBOR CO.—**Patterson Drilling Co.,** Olympia—less than $50,000 for drilling test wells for water supply—by U. S. Engineer Office, Seattle. 9-28

KITSAP CO.—**N. Moschetto,** 5501 13th Ave. S., Seattle—$51,932 for a water distribution system in Annapolis—by Federal Works Agency, Seattle. 9-18

WHATCOM CO.—**Washington Lumber Co.,** Seattle—less than $50,000, for installing a water supply and sewer system—by U. S. Engineer Office, Seattle. 9-21

PROPOSED PROJECTS

California

SAN BERNARDINO CO.—California Division of Highways, San Bernardino, received no bids for drilling and casing a water supply well near Amboy Maintenance Station. 9-16

Sewerage . . .

CONTRACTS AWARDED

California

ALAMEDA CO.—**McGuire & Hester,** 796 66th Ave., Oakland—less than $50,000, for drainage facil. at an airport—by U. S. Engineer Office, San Francisco. 9-8

CONTRA COSTA CO.—**MacDonald & Kahn Co., Ltd.,** 200 Financial Center Bldg., San Francisco—less than $50,000 for sewage pumping station, near Pittsburg—by U. S. Engineer Office, Sacramento. 9-14

CONTRA COSTA CO.—**McGuire & Hester,** 796 66th Ave., Oakland—less than $50,000 for wooden box culverts at a railroad holding yard—by U. S. Engineer Office, San Francisco. 9-10

LOS ANGELES CO.—**A. H. Koebig, Jr.**, Los Angeles—less than $50,000 for an outfall sewer—by U. S. Engineer Office, Los Angeles. 9-12

LOS ANGELES CO.—**P. & J. Artukovich,** 3755 W. 60th St., Los Angeles—$15,114 for sewers in Florence Ave., Specht Ave., Eastern Ave., and alleys—by Board of Supervisors, Los Angeles. 9-2

LOS ANGELES CO.—**Ivan M. Metkovich,** 143 E. 81st St., Los Angeles—$12,998, for sanitary sewers and water mains, in Monterey Ave.—by Board of Supervisors, Los Angeles. 9-23

LOS ANGELES CO.—**Ivan M. Metkovich,** 143 E. 81st St., Los Angeles—$7,460, for sanitary sewers in Fostoria St.—by Board of Supervisors, Los Angeles. 9-10

MARIN CO.—**Campbell, Nicholson & Moore,** 1701 San Leandro Blvd., San Leandro—over $50,000 for addtl. drainage and improv. of levees, at an airfield in northern California—by U. S. Engineer Office, San Francisco. 9-14

RIVERSIDE CO.—**Fritz Ziebarth,** Box 569, Long Beach—over $100,000, for sewage pumping plant and sewage treatment plant at a staging area—by U. S. Engineer Office, Los Angeles. 9-3

SAN MATEO CO.—**L. C. Smith,** 1st and Railroad Ave., San Mateo—$3,402, for storm drain system in Perry St.—by City Manager, Redwood City. 9-29

Montana

FERGUS CO.—**Glacier Construction Co.,** Cut Bank—less than $50,000, for sewage treatment plant—by U. S. Engineer Office, Fort Peck. 9-12

GLACIER CO.—**Glacier Construction Co.,** Cut Bank—less than $50,000, for sewage treatment plant and facil.—by U. S. Engineer Office, Fort Peck. 9-3

VALLEY CO.—**J. L. McLaughlin Construction Co.,** Great Falls—less than $50,000 for sewage treatment plant—by U. S. Engineer Office, Fort Peck. 9-10

New Mexico

DE BACA CO.—**F. D. Shufflebarger,** Albuquerque—less than $50,000 for a sewage disposal system at an air school—by U. S. Engineer Office, Albuquerque. 9-10

Texas

HAYS CO.—**J. H. Blackmore & Sons,** Austin—over $100,000 for sewage disposal system and surface storage reservoir—by U. S. Engineer Office, San Antonio. 9-8

Utah

WEBER CO.—**Wheelwright Construction Co.,** 2434 Monroe Ave., Ogden—$60,596 for a storm sewer in Wall St., Ogden, betw. 24th and 26th Sts.—by City Commission, Ogden. 9-12

Washington

KING CO.—**B. H. Sheldon,** Corvallis, Oregon—$199,000, for a sewage treatment plant at Renton—by City Council, Renton. 9-24

KING CO.—**Matt Malaspina,** 1803 30th Ave. South, Seattle—$58,209, for trunk sewer in Sunset Highway from 4th Ave. north, Williams St. north, and in 6th Ave. north—by City Council, Renton. 9-15

PIERCE CO.—**Paine-Gallucci, Inc.,** 1521 S. Grant St., Tacoma—over $50,000, for storm sewers—by U. S. Engineer Office, Seattle. 9-11

SNOHOMISH CO.—**Washington Lumber Co.,** Seattle—less than $50,000, for sanitary sewer system—by U. S. Engineer Office, Seattle. 9-19

WALLA WALLA CO.—**Leonard & Slate,** 7805 S.W. 40th Ave., Portland, Oregon—$200,000 (approx.), for a drainage system, grading and other misc. work—by U. S. Engineer Office, Portland, Oregon. 9-23

PROPOSED PROJECTS

California

LOS ANGELES CO.—Board of Public Works, Los Angeles, received no bids for sewers in Belle Porte Ave. and 260th St. 9-3

SAN JOAQUIN CO.—Board of Supervisors, Stockton, received no bids for sewerage system and pumping plant for the new unit at San Joaquin General Hospital. 9-15

Waterway Improvement . . .

CONTRACTS AWARDED

California

CONTRA COSTA CO.—**Lee J. Immel,** Box 65, Station "A", Berkeley—$37,230, for enlargement of wharf facil. including paving, bridge, tracking, fencing and lighting facil.—by Richmond Terminal Corp., San Francisco. 9-3

LOS ANGELES CO.—**George J. Bock Co.,** and **Byerts & Dunn,** 1120 N. Las Palmas Ave., Los Angeles—$159,817, for lower section of Lockheed storm drain, Burbank—by Defense Public Works, Los Angeles. 9-17

LOS ANGELES CO.—**Warren-Southwest Inc.,** Box 386, Wilmington—$80,000 (approx.), for an all-timber finger pier at Berth 136, Los Angeles Harbor—by Consolidated Steel Corp., Los Angeles. 9-21

LOS ANGELES CO.—**Macco-Case Construction Co.,** 815 Paramount Blvd., Clearwater—for extension of pier "A"—by U. S. Engineer Office, Los Angeles. 9-15

MARIN CO.—**Raymond Concrete Pile Co.,** 333 Kearny St., San Francisco—for ferry slip at shipyard—by Marinship, Sausalito. 9-24

SAN MATEO CO.—**L. C. Smith,** 1st and Railroad Ave., San Mateo—$19,200, for 190,000 cu. yd. excavation in channels of Colma Creek, betw. Linden and Orange Aves.—by City Council, South San Francisco. 9-15

SUTTER CO.—**H. Earl Parker,** 1112 "G" St., Marysville—over $50,000, for levee reconstruction—by U. S. Engineer Office, Sacramento. 9-15

Canada

BRITISH COLUMBIA—**Todd Construction Co.,** c/o 8031 Hudson St., Vancouver—$15,000, for reconst. of a wharf off Huron St., at Victoria—by Home Oil Distributors, Ltd., Vancouver. 9-30

Dam . . .

CONTRACTS AWARDED

Washington

WALLA WALLA CO.—**Leonard & Slate,** 7805 S.W. 40th Ave., Portland, Ore.—$40,000 for repairs to dam—by U. S. Engineer Office, Portland, Ore. 9-29

PROPOSED PROJECTS

WHATCOM CO.—The Seattle Board of Public Works rejected only bid for the second step of Ross Dam on the Skagit River. 9-15

Irrigation . . .

CONTRACTS AWARDED

California

IMPERIAL CO.—**Norman I. Fadel,** 10733 Landale St., North Hollywood—$67,251 for 2 culverts and a pumping plant on the All-American canal system 5 mi. west of Yuma, Ariz.—by Bureau of Reclamation, Boulder City, Nev. 9-30

Colorado

GRAND CO.—**John R. Austin Co.,** Grand Lake—$418,080, for earth and rock fill dikes at Granby Dam, 5 mi. northeast of Granby, Colorado-Big Thompson Project—by Bureau of Reclamation, Denver. 9-8

Building . . .

CONTRACTS AWARDED

Arizona

COCHISE CO.—**A. Teichert & Son, Inc.,** and **John C. Gist,** 1846 - 37th St., Sacramento, Calif.—less than $2,000,000 for hous-

ing and airfield facil. at an air base—by U. S. Engineer Office, Albuquerque, New Mexico. 9-22

COCHISE CO.—**John W. Murphey-Leo B. Keith Building Co.,** Box 2267, Tucson—less than $200,000, for housing and utils. at a cantonment—by U. S. Engineer Office, Albuquerque, New Mexico. 9-4

COCHISE CO.—**Ed. F. Bridgeman,** Albuquerque, New Mexico —over $50,000, for temporary frame bldgs.—by U. S. Engineer Office, Albuquerque, New Mexico. 9-10

MARICOPA CO.—**Del E. Webb Construction Co.,** 1633 W. Jefferson St., Phoenix—over $100,000, for addtl. bldgs. and util. at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 9-25

MARICOPA CO.—**J. K. Thomas,** and **Theo. A. Beyer,** 533 Chamber of Commerce Bldg., Los Angeles, Calif.—over $100,000, for hangars at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 9-22

MARICOPA CO.—**Tifal & King,** 2880 El Cajon Ave., San Diego, Calif.—over $50,000, for civilian war housing (dormitory type) at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 9-16

PIMA CO.—**J. S. Sundt** and **L. M. White,** Box 2592, Tucson—over $100,000 for a hospital group and appurt. facils.—by U. S. Engineer Office, Los Angeles, Calif. 9-12

PIMA CO.—**M. M. Sundt Construction Co.,** Box 2244, Tucson—over $50,000, for an armament and instrument bldg. at an airfield —by U. S. Engineer Office, Los Angeles, Calif. 9-16

PIMA CO.—**J. S. Sundt,** P. O. Box 2592, Tucson—over $50,000, for addtl. army air warehouse—by U. S. Engineer Office, Los Angeles. 9-17

PIMA CO.—**William Peper Construction Co.,** Box 1564, Phoenix—over $50,000, for addtl. warehouse at an airfield—by U. S. Engineer Office, Phoenix. 9-17

California

CONTRA COSTA CO.—**George Tandy** and **Grover Carpenter,** 1212 - 20th St., Richmond—$150,000, for ten 4-unit apartment bldgs. on Macdonald Ave. adjoining Nicholl Park—by Idemore Co., Inc., Richmond. 9-18

CONTRA COSTA CO.—**Oliver M. Rousseau,** 321 Kearny St., San Francisco—2,200 housing units at the Kaiser Co. shipyards in Richmond—by U. S. Maritime Commission, Washington, D. C. 9-30

CONTRA COSTA CO.—**Robert McCarthy Co.,** 1050 Kirkham St., San Francisco—for 1,900 housing units at the Kaiser Co. shipyards in Richmond—by U. S. Maritime Commission, Washington, D. C. 9-30

CONTRA COSTA CO.—**Louis C. Dunn,** 424 Monadnock Bldg., San Francisco—for 1,900 housing units at the Kaiser Co. shipyards in Richmond—by U. S. Maritime Commission, Washington, D. C. 9-30

KERN CO.—**Albert Reingardt,** 3021 E. 2nd St., Long Beach—over $100,000, for hospital bldgs. and util. at a bombing range—by U. S. Engineer Office, Los Angeles. 9-11

KERN CO.—**Trewhitt-Shields & Fisher,** Fresno—over $50,000, for temporary frame bldgs.—by U. S. Engineer Office, Sacramento. 9-12

LASSEN CO.—**MacDonald & Kahn, Inc.,** 200 Financial Center Bldg., San Francisco—over $100,000, for temporary frame bldgs. —by U. S. Engineer Office, Sacramento. 9-12

LOS ANGELES CO.—**H. W. Baum,** 232 S. Van Ness Ave., Los Angeles—$575,000 (approx.), for a warehouse (300x680 ft.) for Lockheed Aircraft Corp., Burbank—by Defense Plant Corp., Los Angeles. 9-24

LOS ANGELES CO.—**Gail A. Bell,** Security Bank Bldg., 5th and University Sts., San Diego—over $100,000, for temporary frame bldgs. and streets—by U. S. Engineer Office, Los Angeles. 9-8

LOS ANGELES CO.—**Fritz & Robert Ziebarth,** 820 W. Esther St., Long Beach—over $50,000, for personnel shelters—by U. S. Engineer Office, Los Angeles. 9-22

LOS ANGELES CO.—**Tarnutzer & Cameron,** 540 N. Camden Dr., Beverly Hills—over $50,000, for bldgs. and util. at a factory training school—by U. S. Engineer Office, Los Angeles. 9-18

LOS ANGELES CO.—**Macco-Case Construction Co.,** Box 549, San Pedro—for warehouse and several shop and util. bldgs. on Smith's Island, San Pedro—by Los Angeles Shipbuilding & Drydock Corp., Los Angeles. 9-18

LOS ANGELES CO.—**Anton Jensen, Ellis Martin,** and **M. S. Jepsen,** 1730 S. Hayworth Ave., Los Angeles—over $100,000, for bldgs. and util. for a factory training school at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 9-8

ORANGE CO.—**Griffith Co.,** 1060 S. Broadway, Los Angeles—over $100,000, for addtl. temporary bldgs. at an army air base—by U. S. Engineer Office, Los Angeles. 9 -16

ORANGE CO.—**H. M. Secrest** and **D. N. Leneve,** 1943 W. See Dr., Whittier—for civilian war housing (dormitory type) at a replacement center—by U. S. Engineer Office, Los Angeles. 9-3

RIVERSIDE CO.—**Jacobson & Wikholm,** 1614 Wellington St., Los Angeles—over $500,000 for 75 ground air support base bldgs.—by U. S. Engineer Office, Los Angeles. 9-10

RIVERSIDE CO.—**J & B Construction Co.,** 5572 Valley Blvd., Los Angeles—over $100,000, for seven warehouses at a general hospital—by U. S. Engineer Office, Los Angeles. 9-3

RIVERSIDE CO.—**Brunzell Construction Co.,** 3104 Greenfield Ave., West Los Angeles—over $100,000, for hospital bldgs. —by U. S. Engineer Office, Los Angeles. 9-23

RIVERSIDE CO.—**Furbass-Heinz Construction Co.,** 1340 "E" St., San Diego—over $50,000, for bldgs. and util. at an air support command base—by U. S. Engineer Office, Los Angeles. 9-10

RIVERSIDE CO.—**Means & Honer,** 111 E. 6th St., Santa Ana —over $50,000, for theater bldg. at an airfield—by U. S. Engineer Office, Los Angeles. 9-29

SAN BERNARDINO CO.—**Robert E. McKee,** 4700 San Fernando Rd. W., Los Angeles—over $500,000, for airplane repair bldgs. at an air base—by U. S. Engineer Office, Los Angeles. 9-21

SAN BERNARDINO CO.—**M. J. Brock & Sons,** and **Davies & Keusder,** 107 N. Larchmont Ave., Los Angeles—over $100,000, for civilian war housing (dormitory type) at an army flying school—by U. S. Engineer Office, Los Angeles. 9-3

SAN BERNARDINO CO.—**Webber & Co.,** 606 S. Hill St., Los Angeles—over $50,000, for medical supply bldgs. and util. at an air depot—by U. S. Engineer Office, Los Angeles. 9-21

SAN BERNARDINO CO.—**Central Building Co.,** 804 Loew's State Bldg., Los Angeles—over $50,000, for addtl. bldgs. and water supply system at a municipal airport—by U. S. Engineer Office, Los Angeles. 9-29

SAN DIEGO CO.—**Los Angeles Contracting Co.,** and **O. W. Karn,** 4816 W. Pico Blvd., Los Angeles—$4,885,300, for temporary housing at Marine Corps barracks, Naval operating base, San Diego—by Bureau of Yards & Docks, Washington, D. C. 9-21

SAN DIEGO CO.—**Furbass-Heinz Construction Co.,** 1340 "E" St., San Diego—over $50,000, for addtl. bldgs. and util. at a camp —by U. S. Engineer Office, Los Angeles. 9-10

SAN DIEGO CO.—**Tifal & King,** 2880 El Cajon Ave., San Diego—over $50,000, for shelter and facil. for medical regiment, at two locations—by U. S. Engineer Office, Los Angeles. 9-15

SAN FRANCISCO CO.—**Swinerton & Walberg,** 225 Bush St., San Francisco—$110,000, for alterations of machine shop at Bryant and Beale Sts., San Francisco—by Matson Navigation Co., San Francisco. 9-23

SAN LUIS OBISPO CO.—**Doudell Construction Co.,** Box 488, San Jose—over $100,000, for temporary frame bldgs.—by U. S. Engineer Office, San Francisco. 9-12

SANTA BARBARA CO.—**M. A. Imhoff & Associates,** 1748 New Ave., San Gabriel—over $100,000, for civilian war housing and util. at a camp—by U. S. Engineer Office, Los Angeles. 9-8

SANTA CRUZ CO.—**Oliver M. Rousseau,** 321 Kearny St., San Francisco—over $100,000 for service bldg. and appurt. facil. at a camp—by U. S. Engineer Office, San Francisco. 9-3

STANISLAUS CO.—**Theodore G. Meyer,** 735 Portola St., San Francisco—over $100,000, for temporary bldgs.—by U. S. Engineer Office, Sacramento. 9-24

YUBA CO.—**H. W. Robertson,** 3004 "F" St., Sacramento—over $100,000, for temporary frame bldgs., sewage, electric and water, conc. and steel bldg.—by U. S. Engineer Office, Sacramento. 9-12

Colorado

DENVER CO.—**Brown-Schrepferman & Co.**, 240 Washington St., Denver—over $100,000, for temporary frame bldgs.—by U. S. Engineer Office, Denver. 9-1

DENVER CO.—**Brown-Schrepferman & Co.**, Denver—over $50,000, for temporary frame bldgs.—by U. S. Engineer Offce, Denver. 9-19

EAGLE CO.—**Richard E. Wear,** Montrose—over $50,000 for temporary frame bldgs.—by U. S. Engineer Office, Denver. 9-12

EL PASO CO.—**Peter Kiewit Sons' Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb.—over $2,000,000 for 374 bldgs. at Camp Carson—by U. S. Engineer Offce, Denver.

EL PASO CO.—**Ed. H. Honnen Construction Co.**, Box 92, Colorado Springs; **Peter Kiewit Sons' Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb.; and **George W. Condon Co.**, Omaha, Nebr.—less than $5,000,000 for 300 bldgs., electric system, and roads at an army camp near Colorado Springs—by U. S. Engineer Office, Denver. 9-30

PUEBLO CO.—**Newstrom-Davis & Co.**, Box 366, Denver—over $100,000, for temporary frame bldgs., and necessary services, grading, roads, walks, drainage, etc.—by U. S. Engineer Office, Denver. 9-21

New Mexico

BERNALILLO CO.—**K. L. House Construction Co.**, Albuquerque—over $100,000, for bldgs. at an airfield—by U. S. Engineer Office, Albuquerque. 9-25

CURRY CO.—**Gerald K. Mora,** 312 Sabine St., Houston, Tex.—over $1,000,000 for additional temporary bldgs.—by U. S. Engineer Office, Albuquerque. 9-28

CURRY CO.—**Gerald K. Mora,** 312 Sabine St., Houston, Texas—less than $900,000 for 161 temporary bldgs. at an airfield—by U. S. Engineer Office, Albuquerque. 9-4

LUNA CO.—**K. L. House Construction Co.**, Albuquerque—less than $200,000, for laundry housing at an airfield—by U. S. Engineer Offce, Albuquerque. 9-14

OTERO CO.—**L. H. Hansen & Sons,** 313 Palm Ave., Fresno, Calif.—over $500,000 for bldgs. at an airfield—by U. S. Engineer Office, Albuquerque. 9-4

SAN MIGUEL CO.—**M. M. Sundt Construction Co.**, Box 2592, Tucson, Arizona—over $1,000,000 for theater of operation bldgs. and utils.—by U. S. Engineer Office, Albuquerque. 9-8

Oregon

UMATILLA CO.—**A. Ritchie & Co.,** Walla Walla, Wash.—$55,000 for temporary frame bldgs.—by U. S. Engineer Office, Portland. 9-8

Texas

BELL CO.—**R. D. Jones Construction Co.,** Dallas—over $100,000, for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 9-15

BEXAR CO.—**Wm. G. Farrington,** San Antonio—over $100,000, for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 9-8

BEXAR CO.—**John Westerhoff & Son, Inc.,** San Antonio—over $50,000, for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 9-12

BROWN CO.—**Hale, Sessions & Ricks,** Arp—over $50,000, for temporary frame bldgs.—by U. S. Engineer Office, San Antonio. 9-12

COOKE CO.—**Gaylord Shaw & Co.,** Dallas—over $50,000, for conc. and steel bldg.—by U. S. Engineer Office, Denison. 9-3

DALLAM CO.—**Star Steel Erection Co.,** Oklahoma City, Oklahoma—over $100,000, for temporary frame bldgs.—by U. S. Engineer Office, Tulsa, Oklahoma. 9-5

PRESIDIO CO.—**McGough Bros.,** Bankers Mortgage Bldg., Houston—over $100,000, for temporary frame bldgs.—by U. S. Engineer Office, Albuquerque, New Mexico. 9-22

WICHITA CO.—**H. S. Moore,** Ada, Okla.—over $500,000, for temporary frame bldgs.—by U. S. Engineer Office, Denison. 9-15

Utah

CARSON CO.—**Strong & Grant,** Springville, and **W. E. Ryberg Co.,** 207 Interurban Bldg., Salt Lake City—for 450 homes at Columbia—by Defense Plant Corp., Washington, D. C. 9-12

SALT LAKE CO.—**Intermountain Securities Corp.,** 513 First National Bank Bldg., Salt Lake City—over $100,000, for addtl. alterations to bldgs. at fairgrounds—by U. S. Engineer Office, Salt Lake City. 9-22

SALT LAKE CO.—**R. J. Daum,** 6803 West Blvd., Inglewood, Calif.—over $100,000 for temporary frame bldgs. at an army base—by U. S. Engineer Office, Salt Lake City. 9-10

TOOELE CO.—**Intermountain Construction Co.,** 325 Atlas Bldg., Salt Lake City—over $1,000,000 for brick, steel, and conc. bldgs. at an ordnance depot—by U. S. Engineer Office, Salt Lake City. 9-12

TOOELE CO.—**Harry Hart** and **R. W. Blanchard,** 4149 Farmdale Ave., North Hollywood, Calif.—over $500,000, for hospital facil.—by U. S. Engineer Office, Salt Lake City. 9-22

UTAH CO.—**H. J. McKean,** Dooly Bldg., Salt Lake City—for a housing project of 68 units at Timpanogos Village, near Brigham Young University, Provo—by J. Willis Sessions & Lloyd L. Cullimore, Provo. 9-15

WEBER CO.—**Paul Paulsen Co.,** 55½ W. 1st South, Salt Lake City—over $100,000, for engine storage and repair bldg., and appurt. facil. at an air depot—by U. S. District Engineer Office, Salt Lake City. 9-21

WEBER CO.—**James I. Barnes Construction Co.,** 1119 Montana St., Santa Monica, Calif.—over $100,000 for 20 civilian housing dormitories at an army camp—by U. S. Engineer Office, Salt Lake City. 9-30

WEBER CO. — **Whitmeyer, Bowers, Jacobsen and Olson,** 2759 Grant Ave., Ogden—over $50,000, for temporary frame bldgs.—by U. S. Engineer Office, Salt Lake City. 9-10

Washington

FRANKLIN CO.—**W. C. Smith Co., L. H. Hoffman** and **Howard S. Wright & Co.,** Seattle—over $50,000, for bldgs., water and sewer lines—by U. S. Engineer Office, Portland, Oregon. 9-25

GRANT CO.—**MacDonald Building Co.,** 1517 S. Tacoma Way, and **Woodworth & Co.,** 1200 E. "D" St., Tacoma—over $1,000,000, for housing facil.—by U. S. Engineer Office, Seattle. 9-11

PIERCE CO.—**J. W. Bailey,** 228 9th Ave., N., Seattle—$575,000 (approx.) for 164 dwellings in Highland Addition, near Tacoma—by Northwestern Development Co., Tacoma. 9-30

PIERCE CO.—**John Helstrom,** Astoria, Oregon—over $100,000, for housing—by U. S. Engineer Office, Seattle. 9-19

PIERCE CO.—**C. E. Larson,** Pacific Savings Bldg., Tacoma—over $50,000, for housing at a military site—by U. S. Engineer Office, Seattle. 9-25

PIERCE CO.—**O. F. Larson & Son,** Tacoma—over $50,000 for temporary frame bldgs.—by U. S. Engineer Office, Seattle. 9-21

SPOKANE CO.—**Sound Construction & Engineering Co.,** Northern Life Tower, Seattle—over $500,000, for army supply bldgs.—by U. S. Engineer Office, Seattle. 9-11

SPOKANE CO.—**Hazen & Clark,** 417 Welch Bldg., Spokane—over $100,000, for a medical supply bldg.—by U. S. Engineer Office, Seattle. 9-7

Wyoming

NATRONA CO.—**Morrison-Knudsen Co., Inc.,** Boise, Idaho—over $100,000, for temporary frame bldgs.—by U. S. Engineer Office, Omaha, Nebraska. 9-23

Canada

BRITISH COLUMBIA—**Smith Bros. & Wilson, Ltd.,** 1267 Richards St., Vancouver—over $500,000 for a large number of bldgs. at an undisclosed West Coast Canadian centre—by Department of Munition & Supply, Ottawa. 9-30

BRITISH COLUMBIA — **Bennett & White Construction Co., Ltd.,** 510 W. Hastings St., Vancouver—$500,000 (approx.), for temporary accommodations at service flying training school No. 18, Boundary Bay—by Federal Government, Ottawa. 9-30

BRITISH COLUMBIA—**Marwell Construction Co., Ltd.,** 540 Howe St., Vancouver—$145,000, for temporary accommodation at a west coast centre (exact location withheld)—by Department of Munitions & Supply, Ottawa. 9-30

BRITISH COLUMBIA — **Bennett & White Construction Co., Ltd.,** 510 Hastings St., Vancouver—for 100 new homes in the James Bay area of Victoria—by Wartime Housing Ltd., Victoria. 9-30

Miscellaneous . . .

CONTRACTS AWARDED

Arizona

COCHISE CO.—**Waco Construction Co.,** Waco, Texas—less than $500,000, for railroads—by U. S. Engineer Office, Albuquerque, New Mexico. 9-10

COCHISE CO.—**Aqua Systems, Inc.,** New York, N. Y.—over $50,000, for gasoline fueling system at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 9-1

COCONINO CO.—**Arizona Constructors,** 312 Luhrs Bldg., Phoenix—over $50,000 for const. railroads—by U. S. Engineer Office, Albuquerque, New Mexico. 9-25

MARICOPA CO.—**J. S. Sundt** and **L. M. White,** Box 2592, Tucson—over $100,000 for an electrical distribution system at a relocation center—by U. S. Engineer Office, Los Angeles, Calif. 9-12

MARICOPA CO.—**J. S. Sundt** and **L. M. White,** Box 2592, Tucson—over $100,000 for sewer, water and gas systems at a relocation center—by U. S. Engineer Office, Los Angeles, Calif. 9-8

PINAL CO.—**J. S. Sundt** and **L. M. White,** Box 2592, Tucson—over $100,000, for electrical distribution system—by U. S. Engineer Office, Los Angeles, Calif. 9-3

PINAL CO.—**M. M. Sundt Construction Co.** and **L. M. White Contracting Co.,** Box 2592, Tucson—over $100,000, for sewer, water, gas, and electrical distribution systems at a reception center—by U. S. Engineer Office, Los Angeles. 9-1

YUMA CO.—**Calowell Construction Co.,** 1835 E. Wardlow Rd., Long Beach, Calif.—over $100,000, for miscellaneous construction at a relocation center—by U. S. Engineer Office, Los Angeles, Calif. 9-11

California

ALAMEDA CO.—**A. D. Schader,** 144 Spear St., San Francisco—over $100,000 for railroad holding yard—by U. S. Engineer Office, San Francisco. 9-3

ALAMEDA CO.—**Lewis Construction Co.,** 354 Hobart St., Oakland—over $50,000, for temporary frame bldgs. and gasoline facil.—by U. S. Engineer Office, San Francisco. 9-5

ALAMEDA CO.—**MacDonald & Kahn, Inc.,** 200 Financial Center Bldg., San Francisco—for shipways, crane runways, and

welding slab — by Bethlehem-Alameda Shipyard, Inc., Alameda. 9-11

CONTRA COSTA CO.—**K. E. Parker Co.,** 135 S. Park St., San Francisco—$1,321,000, for addtl. facil. at Naval Magazine at Port Chicago—by Navy Department, Washington, D. C. 9-8

CONTRA COSTA CO.—**Swinerton and Walberg Co.,** 225 Bush St., San Francisco—over $50,000, for miscellaneous const.—by U. S. Engineer Office, Sacramento. 9-2

KINGS CO.—**Owl Truck & Materials Co.,** 420 S. Alameda St., Compton—over $50,000 for misc. const.—by U. S. Engineer Office, Sacramento. 9-22

LOS ANGELES & OTHER COS.—**George Pollock Co.,** Box 903, Sacramento, and **Guy F. Atkinson Co.,** 662 Russ Bldg., San Francisco—$5,989,570, for addtl. facil. at naval operating base, San Pedro; Roosevelt Base, Terminal Island; Naval Hospital, Corona; Naval Reserve aviation base, Los Alamitos, San Pedro, Long Beach and Port Hueneme—by Navy Department, Washington, D. C. 9-2

LOS ANGELES CO.—**Standard Shipbuilding Corp.,** Long Beach—$434,845 each, for six 150-foot wooden seagoing tugs—by U. S. Maritime Commission, Washington, D. C. 9-22

LOS ANGELES CO.—**Sam M. Duff,** 733 W. 14th St., Long Beach—over $100,000, for bldgs., utilities, and paving at a factory training school—by U. S. Engineer Office, Los Angeles. 9-1

MONTEREY CO.—**Howson Bros.,** Gilroy—over $50,000, for motor repair and servicing facil.—by U. S. Engineer Office, San Francisco. 9-12

RIVERSIDE CO.—**L. P. Scherer & T. C. Prichard,** 208½ Orange St., Redlands—over $50,000, for installing oil heating equip. and fuel oil storage for hutments at a camp—by U. S. Engineer Office, Los Angeles. 9-22

RIVERSIDE CO.—**Drury Electric Co.,** 615 - 19th St., Bakersfield—over $50,000, for lighting system at an airport—by U. S. Engineer Office, Los Angeles. 9-18

SAN BERNARDINO CO.—**Kenneth Fraser,** 1542 N. Lake Ave., Pasadena—over $500,000, for steam distribution system and fuel oil storage facil. at an air depot—by U. S. Engineer Office, Los Angeles. 9-21

SAN BERNARDINO CO.—**Oman Smith Co.,** Nashville, Tenn.—$189,135 for 69 kilovolt transmission line from Parker dam to Baghdad mine—by Bureau of Reclamation, Boulder City, Nev. 9-30

SAN BERNARDINO CO.—**H. W. Raun** and **J. F. Cummins,** 245 E. Olive Ave., Burbank—over $100,000, for bldgs., grading, paving, util. for civilian war housing, at a holding and reconsignment depot—by U. S. Engineer Office, Los Angeles. 9-14

SAN BERNARDINO CO.—**R. V. Mead,** 633 S. La Brea Ave., Los Angeles—over $50,000, for steam plants No. 1 and 2, at an air depot—by U. S. Regional Engineer, San Bernardino. 9-26

SAN DIEGO CO.—**R. D. Russell,** 620 Calmar Ave., Oakland—over $100,000, for protective concealment at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 9-21

SAN FRANCISCO CO.—**Carrico & Gautier,** 365 Ocean Ave., San Francisco—over $50,000, for addtl. gasoline distribution system and shelters—by U. S. Engineer Office, San Francisco. 9-21

SAN JOAQUIN CO.—**Wagner, Parker, Eaton and Smith,** 715 Ocean Ave., San Francisco—over $100,000, for roadway, paving, fence, sanitary sewer, storm drain, electric dist. and supply systems, etc.—by U. S. Engineer Office, Sacramento. 9-25

SANTA BARBARA CO.—**Andrew Nordin & Eric Flodine,** 3030 Exposition Blvd., Los Angeles—over $50,000, for motor fuel facil. for an army camp—by U. S. Engineer Office, Los Angeles. 9-17

SANTA CRUZ CO.—**Coast Counties Construction Co.,** Salinas—over $100,000, for misc. const.—by U. S. Engineer Office, San Francisco. 9-12

SOLANO CO.—**E. E. Lowell,** 1248 Georgia St., Vallejo—less than $50,000 for paving two bldg. areas—by U. S. Engineer Office, San Francisco. 9-3

SOLANO CO.—**M. A. Jenkins,** 3560 Broadway, Sacramento—$40,100, for a T-shaped timber wharf at Morrow Cove—by Division of Architecture, Sacramento. 9-4

SOLANO CO.—**Jere Strizek,** Bohemian Village, Sacramento — $21,650, for reinforced conc. retaining walls in shop area at Benicia Arsenal—by the Commanding Officer, Benicia Arsenal, Benicia. 9-17

VENTURA CO.—**California Electric Co., Perry J. Martinsen,** and **Alton B. Carter,** 30 E. Victoria St., Santa Barbara—over $50,000, for sewer, water and elec. distribution systems—by U. S. Engineer Office, Los Angeles. 9-15

UNANNOUNCED CO.—**Southern Pacific Co.,** 65 Market St., San Francisco—for a holding yard in northern California—

by U. S. Engineer Office, San Francisco.

UNANNOUNCED CO.—**Southern Pacific Co.,** 65 Market St., San Francisco—for a holding yard in the San Francisco Bay area—by U. S. Engineer Office, San Francisco. 9-15

Colorado

DENVER CO.—**Aqua Systems, Inc.,** New York, N. Y.—over $50,000, for gasoline storage, lubricating oil system and pump house—by U. S. Engineer Office, Denver. 9-2

EAGLE CO.—**Harry G. Worsham,** Denver—over $100,000, for misc. const.—by U. S. Engineer Office, Denver. 9-26

GRAND CO.—**M. & E. Construction Co.,** 319 S. Broadway, Denver—$90,060 for preparation of conc. aggregates at canal gravel deposit, Colorado-Big Thompson project—by Bureau of Reclamation, Denver. 9-30

Idaho

BANNOCK CO.—**Central California Construction Co.,** 230 California St., San Francisco, Calif.—$65,000, for gasoline storage and fueling system—by U. S. Engineer Office, Portland, Oregon. 9-19

Nevada

CLARK CO.—**General Construction Co.,** and **J. Walter Johnson,** 5205 Hollywood Blvd., Los Angeles, Calif.—over $100,000 for sheds, electric distribution system, and plantmix surf. at a flexible gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 9-11

New Mexico

CHAVES CO.—**Gunnison Pecos Valley Co.,** Roswell—over $100,000 for miscellaneous construction—by U. S. Engineer Office, Albuquerque. 9-28

CURRY CO.—**Hayner & Burn,** Las Cruces—less than $200,000, for water, gas, electric and sewage systems at an airfield—by U. S. Engineer Office, Albuquerque. 9-10

CURRY CO.—**Patrick and Prestridge,** Albuquerque—over $50,000 for a railroad—by U. S. Engineer Office, Albuquerque. 9-21

McKINLEY CO.—**F. D. Shufflebarger,** Albuquerque—over $50,000 for sewage, elec. and water systems at a depot—by U. S. Engineer Office, Albuquerque. 9-14

OTERO CO.—**R. H. Fulton & Co.,** Lubbock, Texas—less than $200,000, for water, gas, electric and sewer systems at an airfield—by U. S. Engineer Office, Albuquerque. 9-4

Oregon

BENTON CO.—**De Luca & Sons,** 1745 Filbert St., San Francisco, Calif.—over $50,000, for gasoline storage and fueling systems—by U. S. Engineer Office, Portland. 9-5

UMATILLA CO.—**Paul N. Odegard, W. C. Smith Co., L. H. Hoffman** and **Howard S. Wright & Co.,** 715 S.W. Columbia St., Portland—$150,000 for addtl. const.—by U. S. Engineer Office, Portland. 9-24

Texas

BELL CO.—**H. J. Von Rosenberg,** San Antonio—over $500,000 for addtl. const.—by U. S. Engineer Office, San Antonio. 9-23

BEXAR CO.—**J. A. Sharrock,** Dallas—over $50,000, for addtl. const.—by U. S. Engineer Office, San Antonio. 9-18

BROWN CO.—**S. O. Yarborough** and **George T. Reinhardt,** Austin—over $100,000, for miscl. const.—by U. S. Engineer Office, San Antonio. 9-18

EL PASO CO.—**A. P. Kasch,** Big Spring—less than $100,000, for a gasoline fueling system at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 9-1

MEDINA CO.—**R. W. Briggs & Co.,** Box 1981, San Antonio—over $50,000, for clearing, excavating and fencing—by U. S. Engineer Office, San Antonio. 9-18

TAYLOR CO.—**Abilene Construction Co.,** Abilene—over $100,000, for addtl. const.—by U. S. Engineer Office, San Antonio. 9-18

WARD CO.—**Uvalde Construction Co.,** and **P. S. Sorenson Co.,** 920 Santa Fe Bldg., Dallas—less than $300,000 for utilities at an airport—by U. S. Engineer Office, Albuquerque, N. M. 9-12

Utah

SALT LAKE CO.—**Paul Paulsen Co.,** Salt Lake City—over $50,000, for addtl. motor transportation service facil.—by U. S. Engineer Office, Salt Lake City. 9-25

Washington

KING CO.—**Pre-Fabricated Ships, Inc.,** Smith Tower, Seattle—$425,000 each, for 6 wooden sea-going tugs—by U. S. Maritime Commission, Washington, D. C. 9-22

KING CO.—**General Construction Co.,** 3840 Iowa Ave., Seattle—over $50,000, for military const.—by U. S. Engineer Office, Seattle. 9-11

PIERCE CO.—**A. J. Phillips Construction Co.,** Olympia—over $50,000, for misc. const.—by U. S. Engineer Office, Seattle. 9-17

PIERCE CO.—**Strong & McDonald,** 4045 Ruston Way, Tacoma—$348,903, for clearing, grading and bridging a new location for Tacoma Eastern Ry. tracks on the site of the Second Nisqually power proj.—by Tacoma Board of Contracts and Awards, Tacoma. 9-8

SKAGIT CO.—**Anacortes Ship Ways Inc.,** Anacortes—$3,228,000 for six 274-ft. barges—by U. S. Maritime Commission, Washington, D. C. 9-30

SPOKANE CO.—**Clyde M. Ludberg,** W. 326 First Ave., Spokane—over $100,000 for steam distribution system—by U. S. Engineer Office, Seattle. 9-28

WALLA WALLA CO.—**Central California Construction Co.,** 230 California St., San Francisco, Calif.—$65,000, for gasoline storage and fueling system—by U. S. Engineer Office, Portland, Oregon. 9-19

Wyoming

LARAMIE CO.—**Kroh Bros. Nurseries,** Cheyenne—less than $50,000, for soil stabilization—by U. S. Engineer Office, Omaha, Neb. 9-2

Territories

CANAL ZONE—**Tucker McClure,** Box M, Balboa—$1,150,000, for advance base—by Bureau of Yards & Docks, Washington, D. C. 9-28

HAWAII—**Hawaiian Dredging Co., Raymond Concrete Pile Co., Turner Construction Co., Morrison-Knudsen Co., Inc., J. H. Pomeroy & Co., Inc.,** and **Byrne Organization,** Naval Air Station, Alameda, Calif.—$13,044,200, for addtl. facil. at Pearl Harbor and Islands of the Pacific—by Bureau of Yards & Docks, Washington, D. C. 9-28

TRADE WINDS

News of Men Who Sell to the Construction West

CALIFORNIA

Ivan L. Johnson, of the *Pacific Steel Casting Co.,* Berkeley, Calif., has been named as one of five men on the board of consultants serving in an advisory capacity to the Smaller War Plants Division of WPB, it has been announced by Lou E. Holland, head of the division.

* * * *

J. S. Moore, Pacific Coast manager for *Mine Safety Appliances Co.,* announces a move by the company to new and larger quarters at 325 Wall St., Los Angeles, Calif.

* * * *

Lee and Thatro Equipment Co., 821 S. Santa Fe Ave., Los Angeles, Calif., has been appointed southern California and Arizona factory representatives for the Wire Rope Corporation of America.

* * * *

George W. Gardner, Sr., developer of Gardner machinery for mixing bituminous road materials, died in Redlands, Calif., Sept. 12, at the age of 68. His equipment is in use all over the country.

* * * *

PACIFIC NORTHWEST

Lawrence C. Newlands, president of the *Oregon Portland Cement Co.,* Portland, Ore., died at Oregon City Aug. 30, at the age of 65. He was a past president of the Portland Chamber of Commerce.

* * * *

J. "Dusky" Brown, formerly manager of Concrete Devices, has entered business in his own name in Seattle, Wash., with a complete stock of concrete form ties and timber connectors, along with other allied items.

* * * *

Chapin D. Foster, Chehalis, Wash., publisher, has been appointed western coordinator of the American Forest Products Industries, and will maintain his office in Chehalis.

* * * *

British Columbia Manufacturing Co., Ltd., lumber dealers and manufacturers of New Westminster, B. C., have contracted for the erection of a new dry lumber shed 120 x 84 ft., and another building 110 x 28 ft. to house double chamber dry kilns.

* * * *

William Dalin, of *Lewis & Dalin, Inc.,* Portland, Ore., and **Curtis T. Vaughan,** of *George C. Vaughan & Son,* San Antonio, Tex., are two members of the Wholesale Lumber Distribution Industry Advisory Committee of the WPB. **Arthur Upson** is government presiding officer for the committee.

* * * *

AMONG THE MANUFACTURERS

Techtmann Industries, Inc., is the new name of Pack-Rite Machine Corp., Milwaukee, Wis., and Pack-Rite will be known as a division of the larger company. The reason for the reorganization is the large number of war-use industrial tools and machines developed by the company recently, and now being manufactured in addition to its packaging machines.

* * * *

The U. S. Maritime Commission has awarded the Maritime "M" pennant and the Victory Fleet Flag to the *Marion Steam Shovel Co.,* Marion, Ohio, in recognition of its production record. The Company is manufacturing cranes for the Maritime Commission varying in capacity from 3 to 43 tons. They are used for loading and unloading ships, and in shipbuilding.

* * * *

Charles E. Wilson, president of *General Electric Co.,* has been named vice-chairman of the War Production Board, in which position he will act as chairman of the newly organized Production Executive Committee. His resignation was accepted by the directors of the company, and honorary president **Gerard Swope** was requested to resume the duties of the office. Chairman **Philip D. Reed,** also in the service of the government, was released, and his position filled by honorary chairman **Owen D. Young.**

* * * *

The Ready-Power Co., Detroit, Mich., producers of gas-electric power plants for industrial truck operation, has increased floor space of its factory 600% by erection of new plants, and its production has gone up 300% since the beginning of 1941. The company is operating wholly on war production and defense plant installations.

* * *

Tubular Products, Inc., a new subsidiary of United States Steel Corp., has acquired the plant of *National Tube Co.,* at Gary, Ind., and has changed its name to *Tubular Alloy Steel Corp.* **Benjamin F. Harris,** president of National, has been named president of the new corporation, and **E. N. Sanders,** vice-president.

* * *

Wm. T. Sanford has been made service manager of the railroad division of the *Buda Co.,* Harvey, Ill. He was formerly Illinois field engineer for Sinclair Refining Co., and for Socony-Vacuum Co.

* * * *

Barber-Greene Co., Aurora, Ill., manufacturer of material handling equipment, was presented with the Army-Navy "E" pennant on Aug. 25, for "ahead of schedule" production of ditching, airport paving, and other equipment for use of the armed forces. Col. A. Robert Ginsburgh, who made the presentation, called it "a military decoration conferred for conspicuous contribution to the war effort." Individual "E" pins were also presented to each employee. A colorful ceremony was enacted in the yard of the plant, a speaker's stand being erected in front of a whole trainload of Barber-Greene equipment ready for shipment to United Nations bases.

COL. A. ROBERT GINSBURGH, military aide to Undersecretary of War Patterson, presenting the Army-Navy "E" banner to Barber-Greene Co. at impressive ceremonies held in the company's yard before a trainload of Barber-Greene products ready to be sent to the armed forces.

Johns-Manville Corp., recently dedicated a service flag with 1,792 stars representing a contribution of that many men to the armed forces of the United Nations. The solemn ceremony was held at the New York office of the company.

* * * *

At a brief ceremony during noon hour on Sept. 16 at *General Electric Co.'s* Schenectady works, the company was presented with the Army-Navy "E" for the quality and quantity of its war production. Capt. Joseph S. Evans, U. S. N., made the award to officers of the company and employees. He expressed the thought that the employees of the war industries are just as important a part of the fighting forces as are the men in the Army and Navy.

* * * *

S. G. Sargis has been appointed assistant manager of industrial relations for *Columbia Steel Co.*, subsidiary of the United States Steel Corp., replacing **C. T. Spivey**, recently transferred to the company's Utah operations. He has been employed by the company since 1933.

* * * *

In the presence of more than 4000 employees, *Chain Belt Co.*, Milwaukee, Wis., was awarded the Army-Navy "E" for excellence on Sept. 19. The presentation was made by Lt. Col. D. J. Martin, and accepted by **J. T. Brown**, vice-president of the company. The company manufactures power transmission machinery, conveyors, and various types of construction equipment, and almost the entire output is now going into war work. At the ceremony, the letter of commendation from Asst. Secy. of War Robert Patterson was read, and this was followed by the reading of a letter from Winston Churchill, written after the first World War, similarly praising Chain Belt for its contributions to that struggle.

* * * *

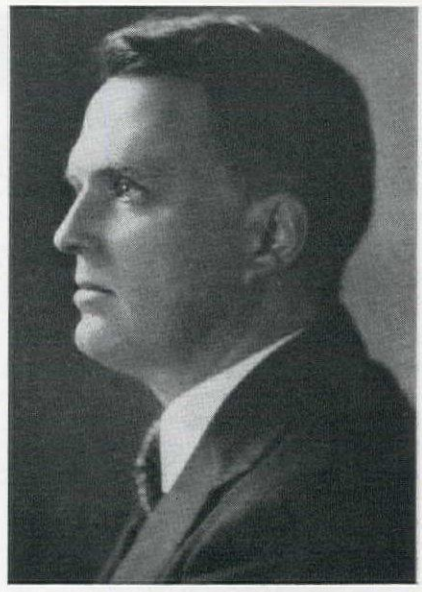
American Hoist & Derrick Co., St. Paul, Minn., received the U. S. Maritime Commission "M" burgee for outstanding achievement in war production on Sept. 18, 1942.

* * * *

The Carver Pump Co., manufacturer of a variety of centrifugal pumps, announces a change in factory and main office location from Rock Island, Ill., to Muscatine, Iowa, the increased plant capacity being made necessary by increased contractor and government demands.

* * * *

The Ready-Power Co., Detroit, Mich., manufacturer of power units for industrial trucks, generator plants, and other installations, found steel very scarce when increased demand for their products recently made expansion mandatory, so instead of the brick, steel, and concrete building that had been planned, they erected eight wooden structures, each with a floor space of about 5000 sq. ft. Production of their products is now up 150 to 400 per cent since the beginning of the year.



EDWARD W. P. SMITH, consulting engineer of the Lincoln Electric Co., Cleveland, Ohio, died suddenly Sept. 19. He was a graduate of Colorado College, and had been with the Lincoln Co. for more than 20 years.

* * * *

B. F. Goodrich Co. has established a tire conservation department to study conservation of rubber and to render tire consultant service, fees for which are based on the number of vehicle miles run. **John T. Staker** and **James E. Carhart** have been made managers of the new department.

* * * *

Ransome Concrete Machinery Co., Dunellen, N. J., will hereafter be known as the Ransome Machinery Co. It will continue to manufacture mixers and pavers.

* * * *

W. F. Hebberd, head of W. F. Hebberd & Co., Chicago, manufacturers of "shop mules" (small tractors), recently made his first trip to the Pacific Northwest for a visit with dealers and a "close-up" of business conditions. In Seattle Mr. Hebberd visited W. A. Wylie, manager of the Seattle branch of Howard-Cooper Corporation and president of the local group of the Associated Equipment Distributors.

* * * *

Aluminum Industries, Inc., Cincinnati, Ohio, received the Army-Navy "E" on Sept. 12, at a presentation ceremony at which Commander G. H. Bowman of the Navy awarded the pennant. Permite products, the trade name of the items presented by the company, are used in many types of war machines. A huge building program, instituted before war was declared, has just recently been completed, and production is now going at top speed.

* * * *

T. E. Callahan, until recently specializing in *B. F. Goodrich & Co.'s* war production ef-

OLDEST EMPLOYEES of Joshua Hendy Iron Works, Sunnyvale, Calif., stand by to raise Maritime Commission "M" burgee recently awarded to the company because of the outstanding performance of its triple expansion steam engines in newly-launched Liberty ships. The pennant was awarded by Adm. Vickery, vice-chairman of the Maritime Commission.

forts, has been made western district manager of the company's national sales and service division, with headquarters at Chicago, Ill. He succeeds **Walter W. Thomen,** who has been called into active military service with the rank of major in the office of the Chief of Ordnance, Washington, D. C.

Dealers for *International Harvester Co.*, Chicago, Ill., are cooperating with various schools and governmental agencies in training girls in the operation of farm machinery, in order to alleviate the shortage of men in farming work.

* * * *

The *Universal Crusher Co.* changed its name on Oct. 1 to the *Universal Engineering Co.* Officers, executives, and personnel remain unchanged, and nothing is being eliminated from the line of equipment manufactured by the company, which is credited with being the first United States manufacturer of overhead eccentric jaw crushers. **A. W. Daniels** is president of the new organizational set-up, **H. F. Rikhoff** is secretary-treasurer, **A. H. Sargent** is vice-president, **L. S. Hackney** is sales manager, and **L. W. Dunlap** will serve as assistant to the president.

Opportunity Section

NEW EQUIPMENT

MORE COMPLETE information on any of the new products or equipment briefly described on these pages may be had by sending your request to the Advertising Manager, Western Construction News, 503 Market St., San Francisco, Calif.

Emergency Floodlamp

Manufacturer: National Carbon Co., Inc., New York, N. Y.

Equipment: Emergency floodlight.

Features claimed: Simple lamp assembly, attaching directly to battery, will floodlight areas up to 1,000 sq. ft. Suitable for inside police, fire, and air raid warden work, because can be carried about like a lantern. By removing reflector, it is suitable for general illumination. Battery and lamp life are unusually long.

Tool and Parts Etcher

Manufacturer: Ideal Commutator Dresser Co., Sycamore, Ill.

Equipment: Metal etcher.

Features claimed: Small tools and parts are etched by laying them on work plate, turning on heat to proper limit, and simply writing. Device has 14 etching heats between 115 and 1300 watts; cables are asbestos covered, and point has an alloy tip. Weight is 32 lbs. A red lamp indicates degree of heat turned on.

Glass Camouflage Garnish

Manufacturer: Owens-Corning Fiberglas Corp., Toledo, Ohio.

Equipment: Glass fibers for camouflage.

Features claimed: Light weight, non-decaying, non-inflammable, and unaffected by water, flexible glass fibers thinner than human hair are being used as covering or garnish for camouflage nets. They are also strong enough to bear ice and snow when supported by framework, and may be painted to resemble any surrounding terrain.

Remote Welder Control

Manufacturer: Hobart Bros. Co., Troy, Ohio.

Equipment: Welder remote control unit.

Features claimed: One thousand combinations of voltage and current are possible with a control dial that is connected to welder by long cord, so that changes of heat may be made at considerable distance from machine, speeding production and improving weld quality. It is protected from accidental breakage by metal pull-out handle and cushion springs on back of porcelain rheostat.

Luminous Cloth

Manufacturer: E. I. duPont de Nemours & Co., Wilmington, Del.

Equipment: Coated luminous fabric.

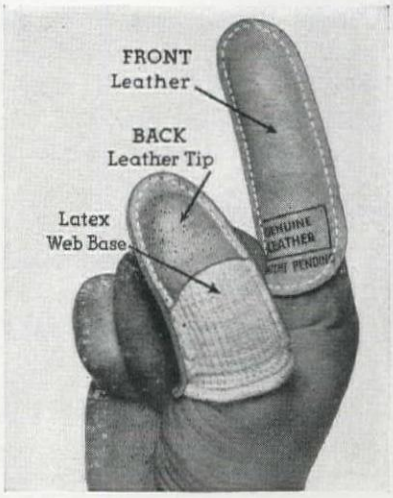
Features claimed: Fabric will glow for minimum of four to six hours after exposure to electric or sun light for only 30 sec., emitting bluish light, and may be renewed an endless number of times. May be cut into strips of figures for identifying various objects. It is cheaper than luminous paint, and is easily applied and removed.

Leather Finger Guard

Manufacturer: Industrial Gloves Co., Danville, Ill.

Equipment: Steel-grip finger guard.

Features claimed: Made safer by having an added leather section over the back of the finger, as well as in front, assuring operator of full finger protection when operating punch presses, sanding, grinding, buffing, and similar



work. The guard is adaptable to fingers of any size because a special elastic webbing has been inserted in the back. This also adds to comfort, flexibility, and close cool fit.

Foot-operated Drill Vise

Manufacturer: Studebaker Machine Co., Chicago, Ill.

Equipment: Vise for drill press.

Features claimed: Entirely foot-controlled, and hydraulically operated. By means of levers, any holding grip up to 10,000 lbs. may be obtained, handles all work, heaviest to lightest with safety, speed, and precision. Operator's hands are free for use on the work exclusively.

Steam Generator

Manufacturer: Vapor Car Heating Co., Chicago, Ill.

Equipment: Recirculated type steam generating unit.

Features claimed: Produces steam from cold start to pressures up to 300 lbs. in less than 2 minutes. Generator requires no boiler room or high stack, is completely automatic. The staggered steel tube coil assembly is easily removed, and special automatic regulation assures complete safety.

Flame Cutter

Manufacturer: Victor Equipment Co., San Francisco, Calif.

Equipment: Light-weight flame cutting machine.

Features claimed: Sturdily built, light weight, easily accessible mechanisms. Can be used for either circle or straight-line cutting, with one or two cutting torches, adjustable to any angle. Four different cutting speeds may be used, bearings need no oiling.

Plastic Oil Package

Manufacturer: Macmillan Petroleum Corp., Los Angeles, Calif.

Equipment: Oil container made of plastic.

Features claimed: One hundred per cent elimination of tin for use in packaging lubricating and other oils, 10% saving in weight, avoidance of rehandling drums and other packages, and use of considerable quantities of corn and other farm and forest products. Containers are capable of withstanding hard usage and wide temperature changes, but are easily opened.

Shock-proof Pump

Manufacturer: Hydra-motive, Inc., Detroit, Mich.

Equipment: Shock-proof pump.

Features claimed: Heavier section reinforcing webs, conical instead of flat cover plate, and standard mounting bracket, which permits replacement of existing pumps or use as original equipment without changing designs. Vanes are bevelled on two edges, reducing wear and over-heating, and increasing operating efficiency.

Automatic Arc Welder

Manufacturer: General Electric Co., San Francisco, Calif.

Equipment: Coated electrode welding equipment.

Features claimed: Complete equipment for automatic arc welding with heavily coated stick or coiled electrodes, especially useful where one complete joint is to be made with a single electrode, such as shells, wheels, and tubes where starting and finishing ends of a weld bead overlap. Machine strikes and maintains arc, feeding electrode at proper rate, length of weld being accurately controlled by limit switches.

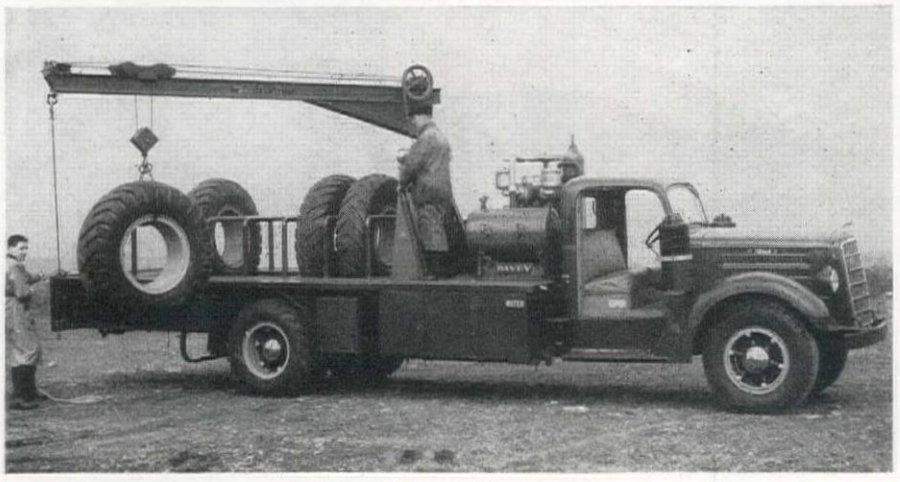
Welding Lens

Manufacturer: B. F. McDonald Co., Los Angeles, Calif.

Equipment: Welding lens for aluminum welders.

Features claimed: Developed by Dr. R. C. Burt of Lockheed Aircraft, Inc., to filter out blinding glare developed in aluminum welding. Lens is scientifically ground, polished, and optically perfect. It will fit any standard welding goggle. Welding rod and working puddle are clearly visible, but tip of torch shows o... pale cone of light.

SIX TIRES, weighing a total of 3600 pounds are carried by a Mack truck which is used to service big Mack dumpers working on the Panama Canal third locks project. Biggest job for the service truck is tire changeovers, no mean job with 600-lb. tires.



Mixer Chute

Manufacturer: T. L. Smith Co., Milwaukee, Wis.

Equipment: Self-aligning Feed Chute for mixers and agitators.

Features claimed: Combination feed chute and closing door support eliminating all need for manual adjustments; uniform contact between revolving sealing ring and mixer drum is achieved throughout entire 360 deg. surface. Self-cleaning, and grout which might work past seal cannot get into bearing surface.

Movable Crane

Manufacturer: The Osgood Co., Marion, Ohio.

Equipment: Wide gauge movable crane.

Features claimed: Independent travel, independent boom hoist, extra wide chassis, 18 rubber tired wheels, hydraulic steering, and air brakes. Loads up to 30 tons may be lifted from sides or ends, and carried to desired location. All operating functions are air-controlled, and machine is one-man, one-engine operated. Variable length inserts available for boom, which has a safety brake to prevent running down under heavy loading.

Fire Fighter for Diesels

Manufacturer: American-La France-Foamite Corp., Elmira, N. Y.

Equipment: Portable fire-fighting unit for diesel engines.

Features claimed: Small cylinder carries carbon dioxide in liquid form, expanding to gas on release, which will penetrate every crevice of diesel engine. Permanent installation may be made on larger units, with attached piping, or portable unit with 50 ft. of flexible hose i available for smaller locomotives.

Steel Floodlight

Manufacturer: General Electric Co., San Francisco, Calif.

Equipment: All-steel floodlight.

Features claimed: Made entirely of steel, uses 200-watt bulb, provides wide beam which can be pointed in any direction by means of two-jointed shaft. Three different reflectors are available: Chromium plated for narrow beams, painted steel for wider beams, and internal silvered glass, giving 10 to 35% higher efficiency. Light may be used open, or with completely dry sealed glass door.

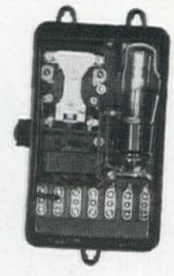
Gas Tank Water Detector

Manufacturer: Photoswitch, Inc., Cambridge, Mass.

Equipment: Water detector lock.

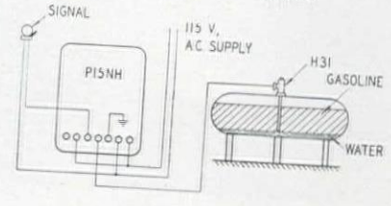
Features claimed: Probe is mounted in standard pipe fitting at top of gasoline tank, extending to within 3 in. of bottom. When water seepage rises to tip of probe, electric circuit takes place through water itself, and pumping machinery is automatically shut off.

Diagrammatic sketch of the operation of the Photoswitch electronic water detector lock, designed to prevent harmful accumulation of water in gasoline storage tanks.



PHOTOSWITCH
CONTROL
P15NH

INDICATING
WATER LEVEL
IN
GASOLINE STORAGE
TANKS



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.

B. F. Goodrich Co., Akron, Ohio—A booklet entitled "Rubber Conservation for Users of Industrial Rubber Belting," gives many examples of rubber saving, such as making vulcanized repairs and cutting down worn belts to fit smaller drives. Many detailed illustrations show procedures in repairing rubber installation.

Macwhyte Co., Kenosha, Wis.—Ropeology, a leaflet devoted to a collection of wire rope users' experiences, is an assortment of helpful ideas for preserving rope now in service and selection of proper rope for specific jobs.

American Bottlers of Carbonated Beverages, Washington, D. C.—Booklet entitled "Fatigue versus Efficiency," outlines causes and effects of fatigue in industry, the home, and the school, and suggests methods of relief, including rest periods, refreshment, and diet.

Joshua Hendy Iron Works, Sunnyvale, Calif.—A publication entitled "Iron Men of Hendy," tells of recent presentation of Maritime Commission "M" burgee to the company, some of the activities in the plant which is producing engines for ships, and numerous personal items about employees.

Marmon-Herrington Co., Indianapolis, Ind.—First number of a monthly publication, purposing to "promote greater comradeship among the employees and broaden the knowledge of common activities of the various departments." Also, a reprint from *Saturday Evening Post*, of August 8, 1942, with an article about activities of the plant and "Hell-on-wheels" Herrington, president.

American Colloid Co., Chicago, Ill.—Data No. 240 explains method of inserting bentonite, a clay substance, and water into burning gas mains, to plug flow of gas. This method has been found very successful, as the material is completely non-inflammable, and is not difficult to remove when repairing after fire is extinguished.

Vapor Car Heating Co., Inc., Chicago, Ill.—Two-color, loose-leaf catalog showing detailed drawings and specifications for "Packaged Steam" generator, as well as illustrations and descriptions of many other items, such as valves, traps, alarms, and thermostats. In addition there are several pages of useful engineering data, and a drawing of a typical lay-out of a steam generating unit. The items listed are especially adaptable to marine, industrial, institutional, and refinery fields.

American Manganese Steel Division of the American Brake Shoe & Foundry Co., Chicago Heights, Ill.—Bulletin No. 842-WS on the subject of wheels and rollers, gives several pages to description and advantages of manganese steel for industrial use, then illustrates great variety of wheel types manufactured by the company, including ones for steel mill cranes, conveyors, mine and skip cars, sprocket, and miscellaneous, also sheaves and gears for many purposes.

National Door Manufacturers Association—A new minimum standards program designated as the Toxic Water Repellent Minimum Standards, designed to protect wood sash and frames from fungus growth, which sometimes develops in wood subjected to abnormal moisture conditions. These standards are a step ahead from the Toxic Treatment standards issued by the organization in 1939.

The Baker Manufacturing Co., Springfield, Ill.—Twelve-page booklet entitled "Snow—Friend of the Enemy" tells of the threat to victory presented by snow-bound pilot training centers and other military installations. Whereabouts of the present and past output of Baker snowplows is explained, and booklet is replete with pictures of truck and tractor-driven snowplows in action. Illustrations and specifications are given for various types of Baker plows, and last page shows a horse-drawn snowplow of about 1908. Also shown is a map of the United States with contours of average annual snowfall over the country.

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