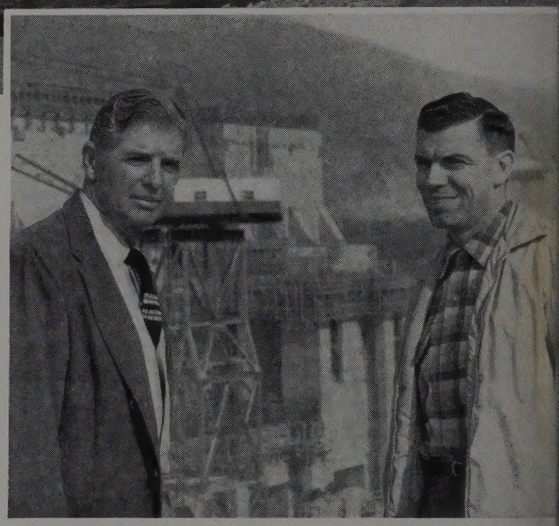
ESTERN
NSTRUCTION

OCTOBER 1959

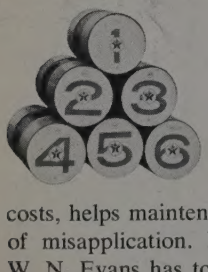
Rocky Reach Dam and Powerhouse on the Columbia River is being constructed for the Public Utility District No. 1 of Chelan County, Wenatchee, Washington. The Project was designed by Stone & Webster Engineering Corporation and construction is under their supervision.

Contracts approximating $70,000,000 for its construction were let in two stages. Both contracts were held by a contracting group called Rocky Reach Contractors. Members of the group are L. E. Dixon Co., The Arundel Corporation, Guy F. Atkinson Co., The Hunkin-Conkey Construction Co., and American Pipe & Construction Company. Contractors Manager is W. N. Evans, Vice President of L. E. Dixon Company.



W. N. Evans (left), Contractors Manager for Rocky Reach Contractors, points out that the general high production rate on the job can be attributed to extended machine life and decreased downtime. He specified Texaco lubricants after thorough experience with these products in previous major Western dam projects. E. S. Saunders, Texaco Contractor Sales Representative, helped him choose the six basic lubricants required for all equipment on the job.

Texaco Simplified Lubrication Plan keeps Rocky Reach Construction on Schedule



Only six lubricants are needed to handle all major requirements on the Rocky Reach Dam project. That's how the Texaco Simplified Lubrication Plan keeps inventory down, cuts handling and storage costs, helps maintenance personnel sidestep the dangers of misapplication. Here's what Contractors Manager W. N. Evans has to say about it:

"The high production we've been getting from our equipment at Rocky Reach Dam is due in large measure to the help we've had from Texaco. The Texaco Lubrication Plan—and the service that goes with it—really help keep our equipment on the job. We've had little downtime and we're getting longer machine life."

Mr. Evans and the local Texaco Lubrication Engineer chose the six basic Texaco lubricants to meet the requirements of the project after a complete lubrication survey of all equipment. Their selections: (1) *Texaco Ursa Oil Super Duty* for all super-charged engines; (2) *Texaco Ursa Oil Heavy Duty* for all other diesel and gasoli engines and air compressors; (3) *Texaco Rock Dr Lubricant EP;* (4) *Texaco Marfak Multi-Purpose 2* f all grease applications; (5) *Texaco Track Roll Lubr cant;* and (6) *Texaco Crater Fluids* for open gears a wire rope.

Your Texaco Lubrication Engineer can show you ho much the Texaco Simplified Lubrication Plan has sav other contractors—how it can help you. Call the near of the more than 2,300 Texaco Distributing Plants, write Texaco Inc., 135 East 42nd Street, New Yo 17, N.Y.

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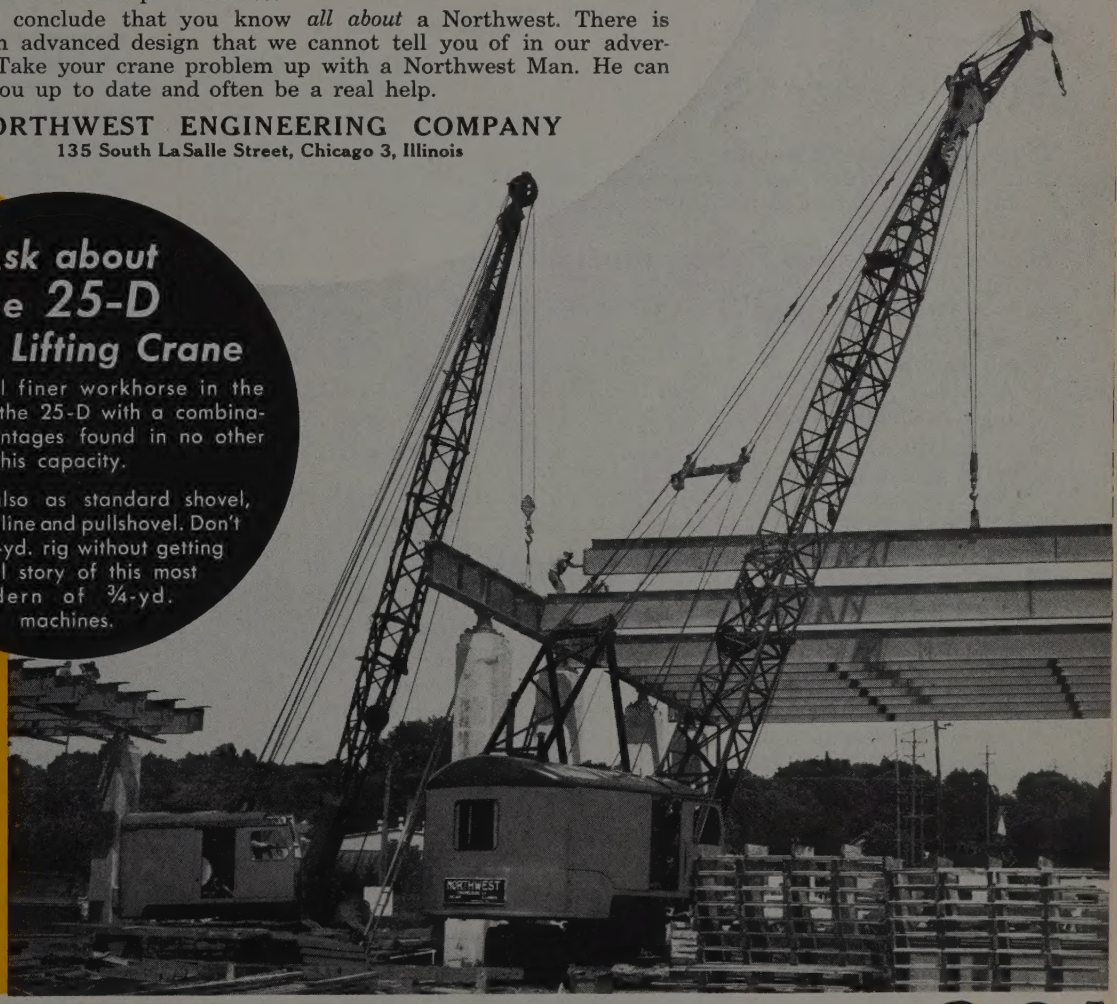

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WESTERN CONSTRUCTION

OCTOBER
1959
Vol. 34 No. 10

CONTENTS

COVER—Heavy steel brackets hung from completed spillway piers of Ice Harbor Dam will support contractor Guy F. Atkinson's temporary construction bridge. Another highlight of final phase work is a 1,000-ft. suspension bridge carrying aggregate conveyor across the Snake River. See page 43.

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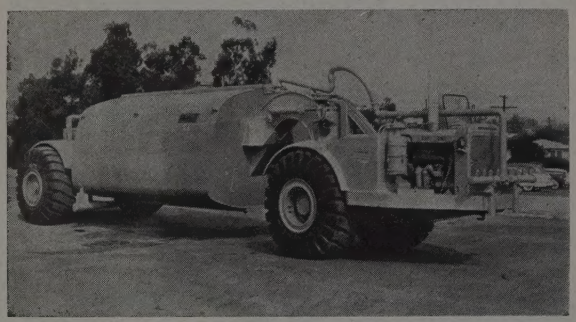
NEW EQUIPMENT

Obtain more information on these new developments in construction equipment by circling the corresponding numbers on reply postcard.

Sprinkler tank by Yuba-Southwest

A new model of semi-trailer sprinkler tank has been announced by **Southwest Welding and Manufacturing Division.** Identified as Model STT-80, the unit has a capacity of 8,000 gallons with front, rear, and gravity spray bars. These sprayers can deliver 1,500 gallons



per minute over a width of 55 ft. The nozzles on the front and rear pressure bars are manually adjusted for both the direction and volume of flow. Air actuated valves operated by the driver control the actual flow of water. Two loading systems are offered either from a top inlet or a suction valve arrangement. The STT-80 is designed for use behind Caterpillar DW-21 and DW-20 tractors. The Southwest line of sprinkler trucks also includes units of 5,000 and 6,000-gallon capacities. *. . . Circle No. 150*

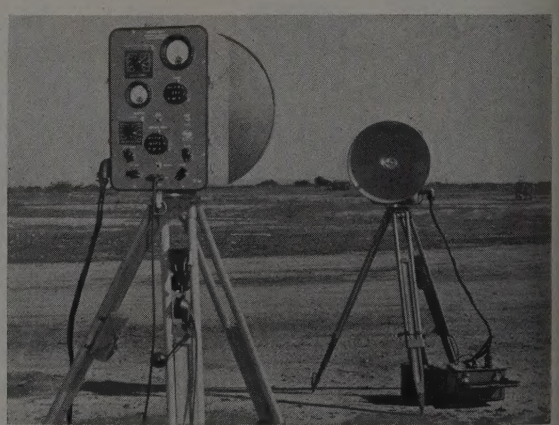
Highest capacity vibratory compactor

Designed specifically for the speed and volume of modern highway and airport construction, the **Construction Equipment Division of Baldwin-Lima-Hamilton Corp.** announces the Super-Roadpacker. This is the world's highest capacity vibratory compactor and is estimated to cut from 50 to 75% of the time required to condense granular materials into adequate foundations for concrete or bituminous pavements. The Super-Roadpacker is claimed to more than double the capacity of the fastest vibratory compaction machine previously available.

Compaction is carried out by two 15-ft. rows of vibrating shoes arranged in tandem. As shown in the photograph, one row is mounted ahead of the front axle, and the other is behind the front axle. Hydraulically operated and controlled, these vibrating shoes can compact various widths of material by running in any combination from 4 to the total of shoes. Vibrating speeds are up to 2,200 oscillations per minute. Each vibrating shoe is completely sealed against sand and dust, and the end shoes can be raised to reduce the width of the machine for working in restricted areas. With a maximum gross weight of 26,900 lb. the unit is 26 ft. 9 in. long, 10 ft. 10 in. wide, and 10 ft. 2 in. high, including muffler and air intake. It may be powered by either gasoline or diesel engines with one used to drive the vibratory system and the second to propel the vehicle. It can move over the highway at speeds up to 24 mph. and compact at speeds between 26 and 268 ft. per minute. It operates equally well forward or reverse from a comfortable full view cab. *. . . Circle No. 151*

Electronic surveying with new features

New design features in both the electronic and mechanical phases provide new accuracy and speed in surveying done with the Micro-Dist. This precision electronic equipment manufactured by **Cubic Corporation** is described as the most advanced of its type.



Using the microwave technique the design has emphasized increased accuracy and permits operation under a wider range of weather conditions. One of the unusual features is the design which permits either one of two stations to be operated either as an interrogator or responder. This feature permits rechecks of measurements and also has the advantage of covering more points with fewer set-ups. Measurements up to 50 miles made with a two station system offer an accuracy, according to the manufacturer, of 3 parts into 1 million, plus or minus 1 inch. Power supply can be provided by any standard 12- or 24-volt battery. Construction is water-tight of aluminum and an automatic temperature control provides for operation under a wide variation in atmospheric conditions. *. . . Circle No. 152*

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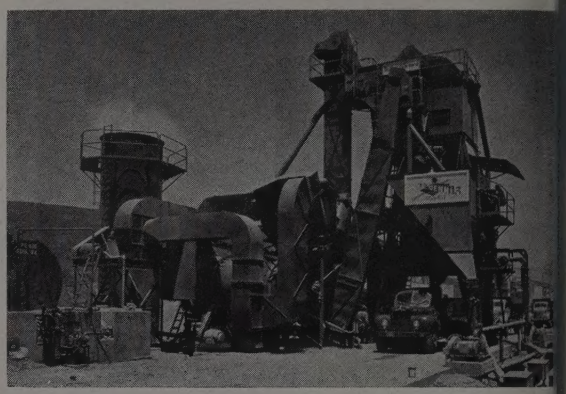
. . . for more details, circle No. 13 on Reader Service Postcard

Dust collector meets rigid requirements

To meet the most rigid air pollution requirement such as those prevailing in the Los Angeles area **Barber-Greene** has announced its Models CN-50, 6 and 70 Wet Collectors. These units are designed fo use with all sizes of Barber-Greene asphalt plants a well as for application to plants made by other manu facturers. The collectors employ a new principl using a dual compartment design dividing the wettin and recovery phases. Since the collectors are equippe with independent fans and power units they do no impose any additional back pressure on the drye

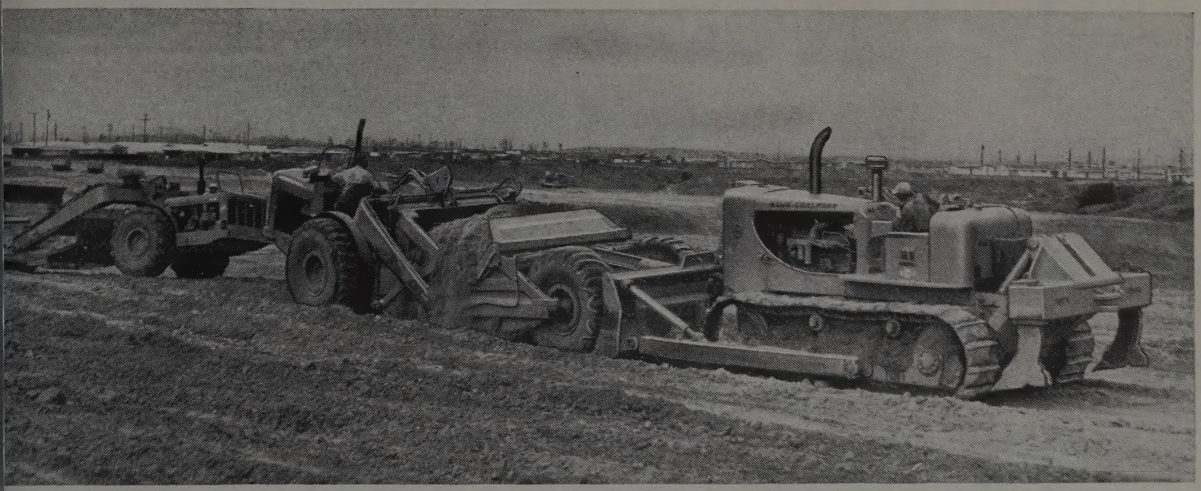


or the dry rust collector. The addition of one of th Wet Collectors, therefore, does not reduce drye capacity.

Briefly the operations of the collector are as follows The exhaust from any dry dust collector is piped int the Wet Collector with the air passing through fine water spray mist introduced through a singl nozzle. The dust particles in the air stream are su rounded by the mist and thoroughly wetted. Th wet air passes through an orifice which imparts twisting motion to insure uniform wetting. In th second compartment the wet dust is separated fro the air by centrifical force. The dust laden water an the wet sludge drains out of the separator into settling pond and the clean air is exhausted out the separator's stack. . . . *Circle No. 1*

Allis-Chalmers has new 1½-yd. tractor shovel

Incorporting advances in design and features t increase work capacity, service simplicity, and oper tor appeal, **Allis-Chalmers Manufacturing Co.** a nounces its new 1½-yd. HD-60 tractor shovel. Pow ered with an A-C diesel engine rated at 72 net hp the unit has four forward speeds with a 5.5-mph. to



One of Johnson's Allis-Chalmers hydraulic scrapers is push-loaded by a turbocharged HD-21. These fast-loading motor scrapers used their hydraulic down pressure and short turning radius to good advantage in the tough material and tight fills.

ature 90-degree steering and re-
uire less turning area than any
ake of comparable size (less
an 31 feet) was a real timesaver
the close quarters of the nu-
erous sliver fills.

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ind. Select the correct units for
our next jobs and see them in
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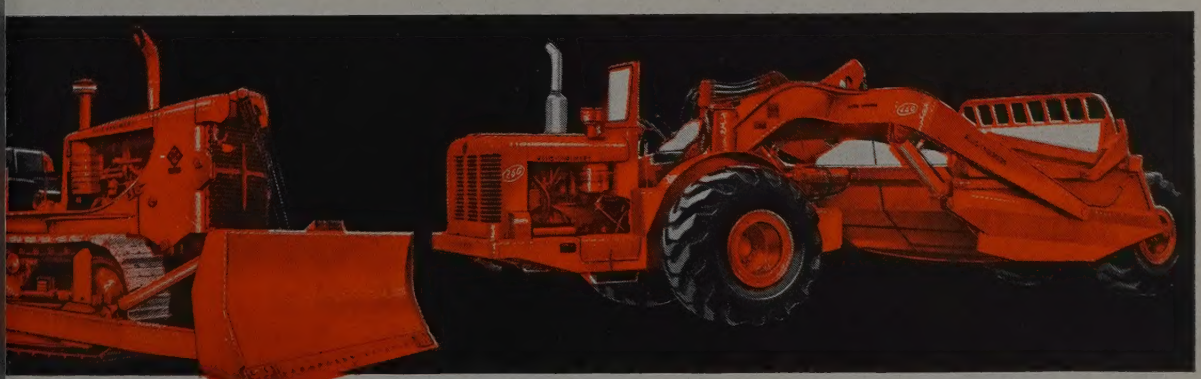
range the details.

The 225-hp, turbocharged HD-21 rips the cut to speed loading.



ID-21 225 net engine hp—torque converter drive **TS-260** 230 hp, 17 yd heaped

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Southern Idaho Equipment Co. of Boise, Inc.—Boise

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American Machine Company—Spokane

WYOMING
Studer Tractor & Equipment Company—Casper

. . . for more details, circle No. 16 on Reader Service Postcard

and two reverse speeds all selected by a single leve shift within easy reach of the operator. Dumpin height of the new unit is more than 9 ft. with a ample reach to put bucket loads in the center trucks. The curved-bottom bucket tips back 40 de at ground level with 21,500 lb. of pry-out force at th cutting edge. Boom design provides exceptional st bility and strength, and the six-roller tracks distribu weight to provide for safe handling.

. . . Circle No. 1

Flex-Plane has two separate drives

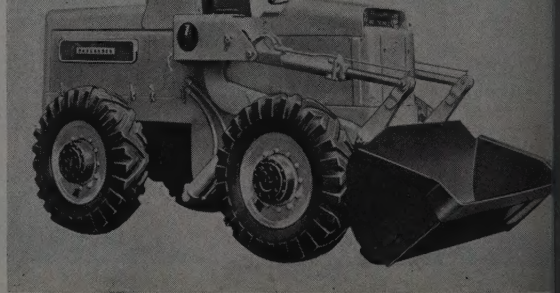
By using two separate gas-electric drives, enginee of **Heltzel Steel Form & Iron Co.** have provide a smoother flow of power and more speed ranges i the new 1959 model Flex-Plane. This is a combinatio

finisher-float machine designed to assure contracto the ultimate in finishing concrete slabs. By using th separate drives the rate of machine travel does no affect screed operations. The machine can be use independently for finishing, which is another featur of flexibility. Also, the finisher can be quickly d tached and used independently. It has a frame whic adjusts from 12 to 26 ft. in width.

. . . Circle No. 1

New Payloader of 5,000-lb. capacity

With more power available for both hydraulic and traction, **Frank G. Hough Co.** announces a ne 5,000-lb. capacity Payloader—the Model H-50. Th model replaces Model HU. Among other new fe

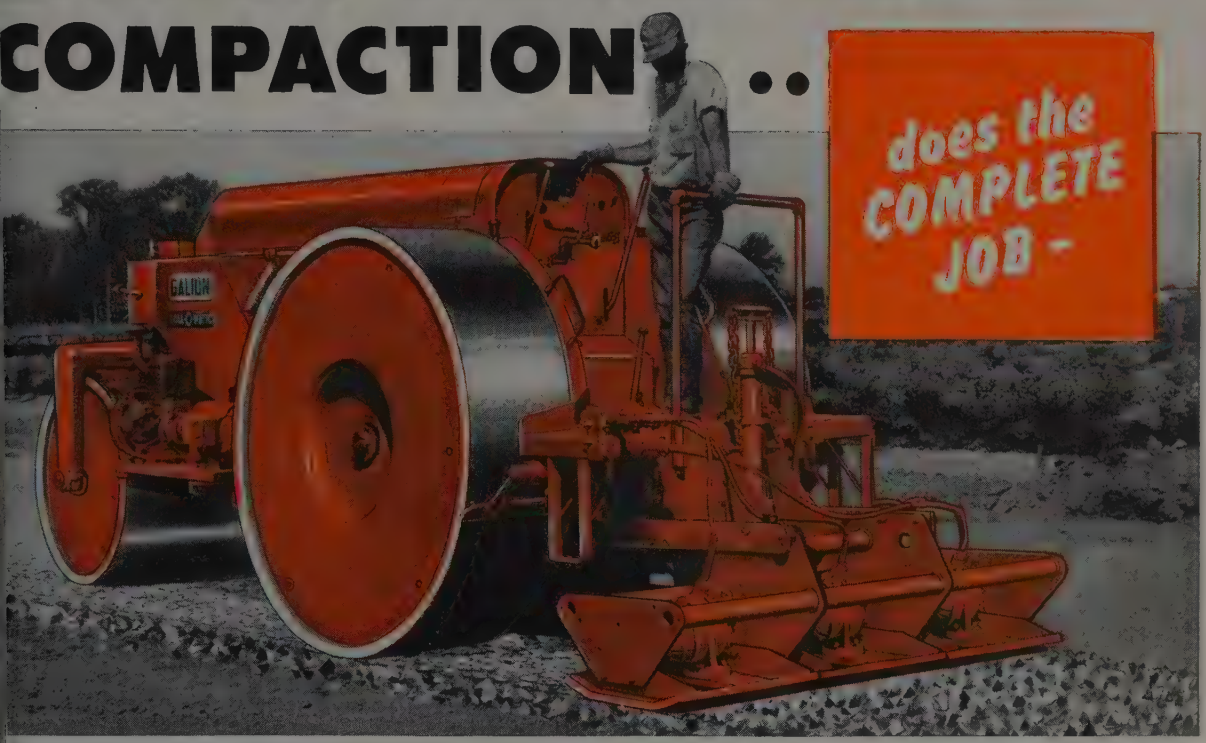


tures the unit has a complete power shift tran mission, power steering, pry-out bucket action, safe boom arms, and other design improvements. Eith gasoline or diesel engines provide 90 hp. and a equipped with large capacity oil bath air cleane to give protection to the engines in dusty workin conditions. Front service brakes are sealed to kee out dust and foreign matter.

. . . Circle No. 1

(Turn to page 134 for more New Equipment. New Literature can be found on page 128.)

GALION VIBROSTATIC COMPACTION ..



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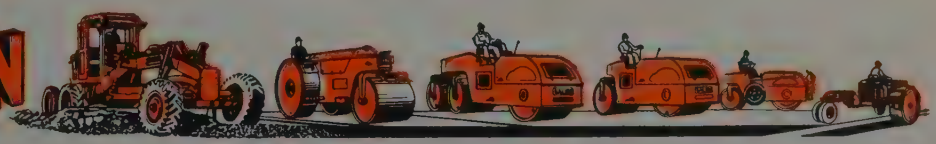

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The WEST from WASHINGTON

By E. E. HALMOS, JR., Washington, D. C.

The delay of several months in allocating Federal-aid highway money won't be too serious, in itself, for Western highway operations. More serious consequences of Congress' delay in approving financing for the depleted Highway Trust Fund will flow from the facts that: (1) Allocations of Interstate money will be cut back, and (2) all letting of new highway contracts must be curtailed to some extent to prevent a deficit in the trust fund.

Thus, a 1-cent gas tax increase, for instance, means a loss of about $180 million in Federal money allocated for the Interstate program in the 12 Western states; and some drop in the $215.6 million already allocated to these states for ABC highway programs.

That's the best estimate you can get in Washington of what may result. There's another factor, too—but it is probably impossible to put a money-tag on it. That would be the cost of the confusion and delay caused by the long uncertainty as to how much new highway money would be available.

In terms of money flowing west from Washington, it boils down this way:

You'll remember that under the 1958 Highway Act, total funds of $2.5 billion for the Interstate and $925 million for ABC work were to be allocated for Fiscal Year 1960 (which started July 1, 1959). Of these national totals, the 11 Western states were to have received $644 million for Interstate, and the $215.6 million for ABC. If the Administration's 1½-cent gas tax increase (strongly backed by Oregon's Democratic Senator Neuberger) had been accepted, there would have been no dent in the overall program.

But anything less than that amount, according to Bureau of Public Roads statisticians, must mean a corresponding drop in money available to the states. BPR has no choice but to remain within the resources of the Trust Fund, regardless of what Congress may say is desirable.

Thus a 1-cent gas tax increase works out mathematically to a sizeable cut in allocations to the states for their Interstate programs. It means no actual cut in ABC money, but requires curtailment of ABC contracts to keep the whole program in the black.

In detail, here's how the cutback would work—the first figure given being the allocation under the full $2.5 billion program, the second the allocation possible with the $1.8 billion national program possible under a 1 cent tax increase:

Arizona, $34.0 million to $24.6 million; California, $252.8 million to $182.9 million; Colorado, $19.3 million to $13.9 million; Idaho, $17.2 million to $12.4 million; Montana, $28.3 million to $20.5 million; Nevada, $13.0 million to $9.4 million; New Mexico, $29.8 million to $21.6 million; Oregon, $43.1 million to $31.2 million; Utah, $23.3 million to $16.8 million; Washington, $45.0 million to $32.6 million; Wyoming, $25.8 million to $18.7 million.

* * *

Concern for relations with Canada over the vital question of international waters brought Northwestern states Senators into that long and often apparently aimless debate over diversion of additional water from Lake Michigan into the Ilinois Waterway at Chicago. (The bill was finally shelved by reference to committee).

In general, opposition to an additional diversion of 1,000 cfs. (to aid Chicago in disposing of its sewage into the Illinois waterway) came from Lakes states and eastern states (such as New York) which feared lowering of Lake levels at the cost of damage to navigation and loss of hydroelectric power.

But Pacific Coast senators jumped into the eight-day debate because of the strenuous objections of the Canadian government to the measure (HR 1) which the House shouted through, but which completely ignores Canadian interests in international waters (the House bill completely bypassed the House and Senate committees on international affairs).

Specifically, it was brought out in the debate that Canada has proposed diversion of some 15,000,000 ac. ft. of water annually from the Columbia River into the Fraser River, to increase hydro-power production—a move which would cut off about 25% of the flow into the Columbia from Canada. This matter is now before the International Joint Commission for adjudication after U. S. interests protested the Canadian moves.

Western senators pointed out that Canada has agreed voluntarily (this and other actions by the International Joint Commission, and that the U. S. would show very bad faith by arbitrarily by-passing the commission in the Lake Michigan action. Northwest area power companies—both public and private operated—have added their protest to arbitrary action.

* * *

Projects in nine Western states were among those 67 "new starts" included in the $1.2 billion public works bill (HR 7509) that caused President Eisenhower to veto the measure. Although accounting for "only" $50 million in the budget this year, the 67 projects would oblige the government to spend $800 million or more before they were finished, said the President.

(The veto, by the way, caused no halt in current Army Civil Works and Bureau of Reclamation projects, even though a move to override failed. Congress promptly passed a traditional "continuing resolution" which authorizes these agencies to continue work at the level of 1959 appropriations for a month at a time.)

Singled out in the Presidential disapproval were these projects (figures in parentheses show estimated Federal costs); Army Civil Works: California — Mill Creek levees ($1.7 million); New Hogan Reservoir ($19.3 million); Redwood City Harbor, 30 ft. depth ($1.4 million); San Jacinto River and Bautista Creek ($5.8 million); New Mexico—Two Rivers reservoir ($6.9 million); Rio Grande Floodway, Cochiti to Rio Puerco ($4 million). Oregon—Malheur River, Vale unit ($423,000).

Bureau of Reclamation: California—Trinity power facilities ($59 million). Idaho — Burns Creek ($44.6 million). Washington—Greater Wenatchee diversion ($7.6 million). Montana—East Bench unit, Missouri River Basin Project ($20.6 million). Colorado—Upper Colorado River Project, Smith Fork ($4.4 million). New Mexico—Hammond Project, Upper Colorado ($3.3 million). Wyoming— Seedskadee Project, Upper Colorado ($37.9 million).

* * *

Dimension of the problem of providing schoolroom space for mush

(Continued on page 39)

Washington

(Continued from page 34)

rooming populations in Western states can be drawn from a report of the Department of Health, Education and Welfare.

Education Commissioner Lawrence G. Derthick said that total U. S. school and college enrollment for 1959-60 will reach 46,480,000—a jump of nearly 2 million students over 1958-59. Which means that nearly one out of every four persons in the U. S. is attending school at some level.

In the West, HEW figures that last year's total enrollment of about 8,123,000 students will jump by an average of over 17% by 1963. Biggest percentage increase, incidentally, is figured for Nevada, whose current crop of some 70,000 students is expected to jump by 32.86%.

* * *

Although 29 Senators appear as co-sponsors of a new measure to declare a national policy on conservation, development and utilization of natural resources, there's no difficulty in determining where the major interest lies.

Introduced by Montana's Senior Senator Murray, the sponsors include the entire senatorial delegations from Alaska, Idaho, Oregon, Washington and Texas. All floor comment when the bill (S 2549) was presented, came from this Western delegation.

The bill (which won't get action until the January session) calls for an annual Presidential report on the condition of the natural resources of the nation; establishment of a council of advisors to the President on natural resources problems and to assist him in developing policies; establishes a joint Congressional committee to watch Federal programs.

Real significance, according to sponsors, is the formal declaration that the U. S. has overall responsibility for maintenance and improvement of natural resources—and that any developments should be conducted with the cooperation of the states. This last point, incidentally, is another facet of a continuing battle in this Congress to force Federal compliance with state laws concerning resources development. (S. 159, by the way, is a similar bill, except that it would require consideration of costs of recreation in determining feasibility of the project).

* * *

Lost in the last-minute shuffle of important measures, as Congress raced toward adjournment were two other bills concerning water—one California's huge ($1.2 billion) San Luis project, the other a nationwide boost in Federal grants to aid communities with sewage disposal problems.

"Lost" isn't exactly the right word: Both measures had passed at least one house, and were hung up in committees of the other as the session ended. They'll be revived next January.

The San Luis project (S. 44) got through the Senate after nearly a week of heated debate that centered around the claim that the project would benefit large landowners, and that the initial Federal contribution of about $480 million would be only the beginning of Federal expenditures. A House committee, however, was taking its own time about reporting the bill out, as Congress decided to quit for the year.

The pollution measure (HR 3610) would have raised Federal allocations for pollution elimination works from $50 million annually to $100 million, over a 10-year period. It was almost shouted through the House, then bogged down in a Senate committee, which started by cutting the annual allotment to $60 million, then reached an apparent deadlock over other provisions.

* * *

Also put aside without final action were a group of some thirteen bills concerning the assertion of state laws over Federal regulation in handling water matters; and another group of bills calling for the establishment of wilderness areas in many national parks and other government lands in the West.

Western spokesmen opposed the wilderness measures, in particular, on the ground that such set-asides would make the lands, for all practical purposes, untouchable even for water power development.

* * *

Shorts: Highway construction costs dropped 2.7% in the second quarter of 1959—in what BPR said was the largest quarterly decrease since 1954. The agency cautioned that the drop "does not necessarily" indicate a downward trend—rather a continued trend toward stabilization . . . U. S. Public Health Service will investigate possible contamination of underground water supplies at Denver, near the Army's Rocky Mountain Arsenal.

ENGINEER'S FIELD REPORT

LUBRICANT RPM AUTOMOTIVE GREASE

FIRM JAMES BOND TRUCKING CO Phoenix, Arizona

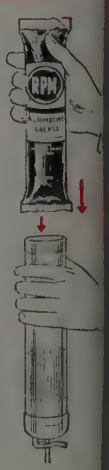
No chassis lubricant failure in 5,550,000 miles

Firm's entire fleet is lubricate with RPM Automotive Grease regu larly every Saturday. Vehicles in clude Fruehauf dump trailers (left) International (above), GMC, White and Kenworth trucks (below).

Despite extreme dust conditions, James Bond Trucking Company has had no lubricant-caused failures of chassis bearings or fifth wheels since changing to RPM Automotive Grease three years ago. Firm's 60 units (including trucks, trailers, and other vehicles) travel more than 1,850,000 miles per year hauling sand, gravel, crushed rock and paving materials, but regular lubrication with this all-purpose grease has eliminated premature wear.

"We have to keep our equipment running," says Bond Trucking Company's Operations Manager, Frank Crandall, "there's no leeway for breakdowns caused by improper lubrication. That's why we continue to use RPM Automotive Grease. We know from experience it keeps chassis parts and fifth wheel assemblies working smoothly in spite of heavy loads, high temperatures, dust and grit."

RPM Automotive Grease in exclusive new package simplifies lubrication



- Handy 12-oz. plastic cartridges fit right into your grease gun...speed loading, end waste... also available in usual containers
- One grease fully protects wheel and chassis bearings, universal joints, water pumps, fifth wheels
- Stays in bearings, maintains proper consistency even when units operate in mud, water, extreme heat or cold
- Provides a tough lubricant film that protects against shock and overload pressures

For More Information about this or other petroleum products, or the name of your nearest distributor, write or call any of the companies listed below.

TRADEMARK "RPM" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, 225 Bush Street • San Francisco 20, California

THE CALIFORNIA COMPANY, P. O. Box 780 • Denver 1, Colorado

STANDARD OIL COMPANY OF TEXA P. O. Box 862 • El Paso, Texas

. . . for more details, circle No. 26 on Reader Service Postca

WESTERN CONSTRUCTION

New Cars Add to Highway Headaches

JUST WHEN Western highway engineers have adjusted thinking and plans to the cars of today, the auto industry pulls a switch and plugs smaller cars for tomorrow. Their acceptance, particularly here in the West, will await demonstration but the threat of a reversal in trend adds to highway headaches.

If the public, in its fickleness, adopts the new cars with their lighter, shorter design, it would be usual procedure to chide the engineers for failure to anticipate such a trend in their plans and designs. Highway engineers have always been forced to guess the merchandising thinking of the auto industry, and at the same time meet the desires of the public. Complaints come from both sides with the engineer caught in the middle.

Always short of necessary funds to meet growing demands, the highway engineers of the West struggle with these loaded problems. Years ago, if the future could have been predicted, planning would have anticipated our modern transportation requirements with possibly some application of controls on automotive growth, and route locations where highways would be desired. However, in this country the idea of control represents a harsh term as applied to private industry, and the public is never aware of its needs until too late. So, the highway engineer continues to deploy the available dollars with highway designs for the larger cars of today and possibly the smaller cars of tomorrow.

Planning gets very sticky. For example, should the highway administrator try to anticipate the possibility of future gas tax revenues if the trend goes strongly to the new small cars? Could it be that the public will complain that highways are too big, wide and strong, as well as costly, for its new little cars? The committing of public funds into "permanent" engineering works is a serious problem. This is particularly true when forces beyond engineering control are free to make changes that seriously affect such designs.

All of this has been aggravated during the past two years. First there was almost childish thinking on the part of the public that the Interstate System would spring up over night and solve all driving problems. The time required and the cost involved were not properly appreciated, also the fact there would be inconvenience to drivers during the years of construction. For the first time, the public became really aware of highway engineers and their importance to transportation. Immediately they were accused of doing very little that was right and failing to anticipate the unexpected.

The final unfortunate act was the selection of the word "freeway" and what it conjured up in the public mind. Obviously the word was a bad choice since it applies to the most expensive form of highway in the first place, with necessary restrictions in certain aspects of service. Moving across these wide Western spaces the highways designed as freeways represent a relatively simple problem in design but the majority of the traffic originates and terminates in populated centers. Highway engineers are expected to deliver this traffic to the heart of the metropolitan area and are then bombarded with restrictions and complaints on the resulting local problems.

To these growing problems, the engineers will face the new unknown factor of the 1960 models and all they may represent in revised public demands and modified revenues.

Jim Ballard

Instead of joints, there are only tiny cushion spaces . . . look of the future on newest highways calls for concrete

The highway ride of 1975 is here!

New-type, sound-conditioned concrete for your new Interstate System of super-roads

There's not a "thump" to be heard when you drive this continuous-laid concrete. It has been developed to meet the 1975 standards set for America's greatest highway building program—41,000 miles—now under way.

Almost like riding *above* the pavement, instead of on it. You'll say this new-type concrete gives you the smoothest, most quiet ride ever.

Don't waste time listening for the "thumps." There simply aren't any. This new pavement is laid without interrupting joints. Then only the tiniest cushion spaces are sawed into the surface. You never feel or hear them.

Roughening and flaking of the surface due to freezing, thawing and de-icers can't happen—due to a modern process called "air entrainment." A special granular base under the concrete makes permanent that new smoothness . . . that good, flat, solid feel under you. Studies show you save up to 4% on car expenses—gas, oil, brakes, steering—for you don't have asphalt's surface "drag."

Sound reasons why new-type concrete is the preferred pavement for the new Interstate System.

Built to cost taxpayers less

Only concrete can be engineered to match expected traffic loads, serve 50 years and more. Its first cost is moderate. New-type concrete roads save taxpayers' dollars on maintenance . . . which will be up to 60% less than for asphalt.

NEW-TYPE
Concrete

PORTLAND CEMENT ASSOCIATION

816 W. Fifth Street, Los Angeles 17, Calif. • 903 Seaboard Building, Seattle Wash. • 721 Boston Building, Denver 2, Colorado • Mezzanine, Placer Hote Helena, Mont. • 425 Newhouse Building, Salt Lake City 11, Utah • 21 First Avenue, Phoenix, Arizona

A national organization to improve and extend the uses of concrete

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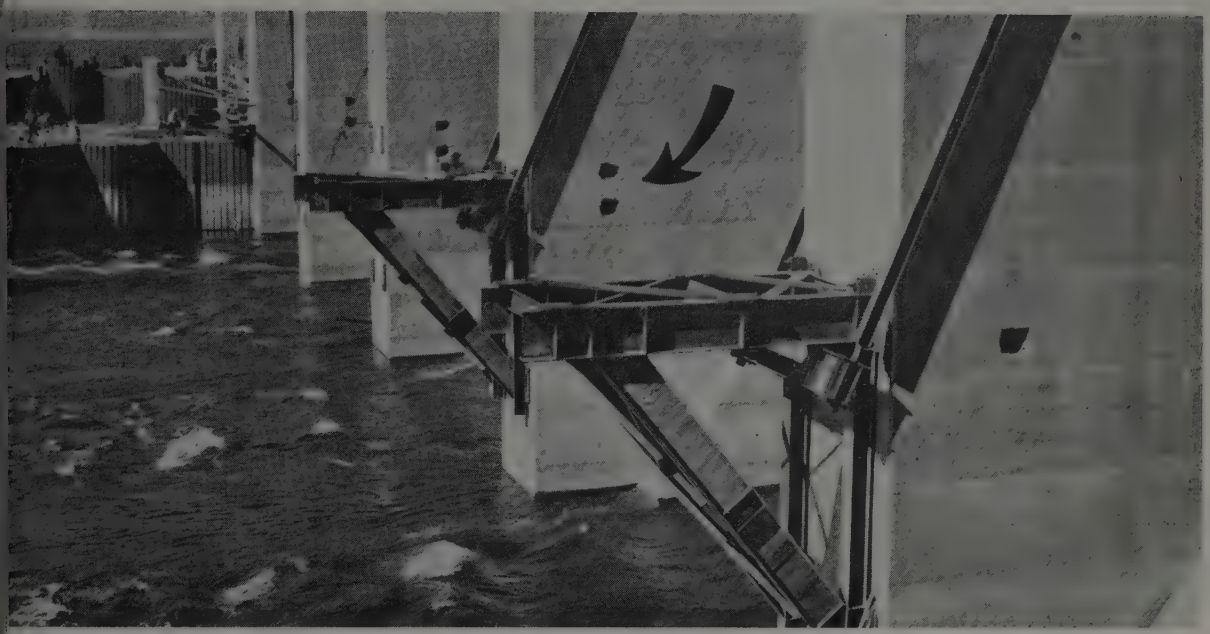
KING PUBLICATION

WESTERN CONSTRUCTION

OCTOBER 1959



MPORARY CONSTRUCTION BRIDGE hung on side of completed illway piers is imaginative idea which will simplify transportation oblems. Photo shows first two heavy steel brackets in place. Arrow points out holes in pier walls through which bearing plates were installed at ends of 6-ft. anchor bolts. Slanting upward are suspender beams which take load and keep anchor bolts free from shear.

Final phase starts at Ice Harbor

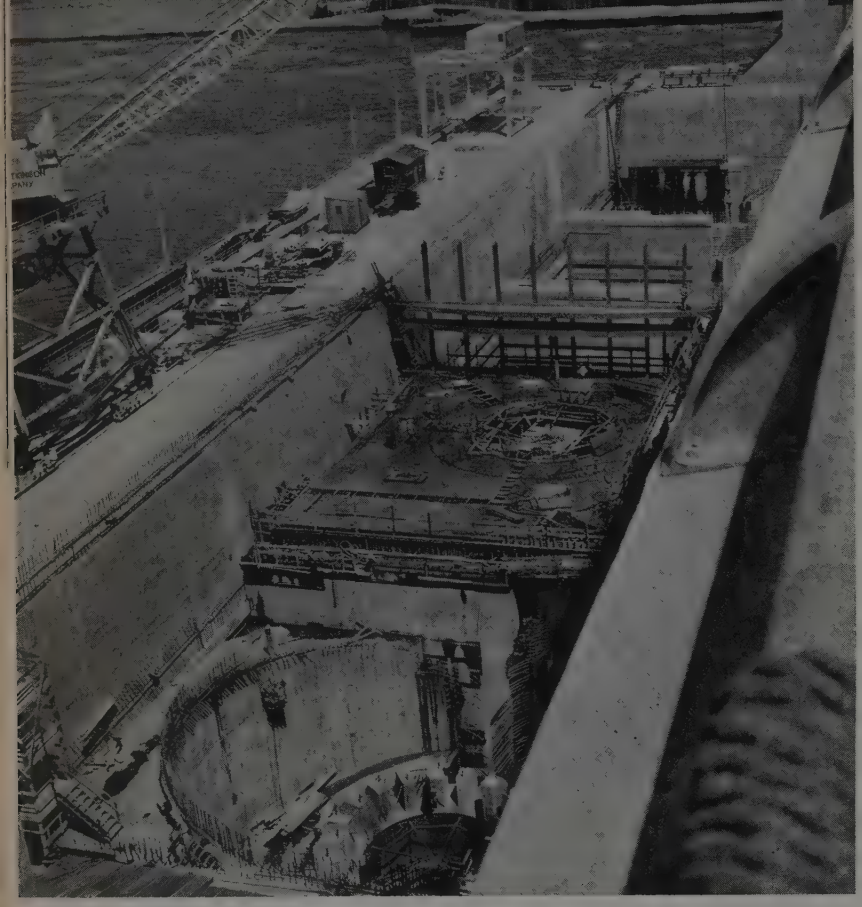
Guy F. Atkinson Company is off to a fast start on the north shore contract at Ice Harbor Dam, Corps of Engineers project on the Snake River in Washington. A suspension bridge with span of 1,000 ft. to carry aggregate across the river, and a construction bridge hung from the completed portion of the dam highlight the construction plan.

HE SNAKE RIVER is about to ave its mouth closed. Ten miles om the point where the Snake lds its strength to the Columbia, e Harbor Lock and Dam is grow- g. In two years this $130,000,000 ncrete harness will be ready to ke the full weight of the Snake iver, converting its energy into able electric power, extending ck water navigation another 35 iles and providing irrigation ater and additional recreational pportunities for southeastern ashington.

The Corps of Engineers, Walla alla District, planned the project in four major phases. Starting things off in 1955 was the south shore cofferdam, a $1,362,377 contract won by Guy F. Atkinson Company. Next was the south shore dam structure and the first 6½ spillways, a $29,475,396 contract recently completed by Montag, Halvorson, & Austin. The powerhouse contract was awarded to Guy F. Atkinson for $7,900,000 in 1958 and is now about 48% completed. In May of 1959 Atkinson won a $21,000,000 contract for the final phase, the north shore work which includes a cofferdam, 2½ more spillway bays, the north shore fish ladder and the navigation lock.

Ice Harbor Dam is the first of four authorized dams on the lower Snake River that will ultimately extend slack water navigation from the confluence of the Snake and the Columbia rivers, 150 mi. upstream above Lewiston, Idaho.

The other dams are Lower Monumental at river mile 41.6, Little Goose at river mile 70.3, and Lower Granite at river mile 113. The other three dams are very similar to Ice Harbor in size and design features. The navigation locks on all four, for example, will be exact-



INSTALLATION of turbines was hampered by sun's rays, which caused uneven expansion of metal parts. Problem was solved by shading area with temporary wooden roof sections.

ly the same size—86 ft. wide and 675 ft. long. This corresponds to the lock dimensions at McNary, The Dalles, and John Day. Source of aggregate is about 6 miles south of the dam. Aggregates are supplied to the contractors at the dam site by Curtis Construction Co. of Spokane. Curtis built the 6-mi. gravel haul road and keeps it carefully maintained with two graders. Investigations are under way now to determine whether or not it would be feasible to eliminate maintenance expenses entirely by blacktopping the road. No decision has as yet been reached.

The haul road crosses paved highways at two points. Stop and Go lights have been erected which give the haul rigs a green light at all times. The green light is activated by the rigs passing through an electric eye beam several hundred feet from the crossing.

The haulers, mostly Cat and DW 15 bottom-dumps, unload through a grizzly and screening arrangement. Aggregate is carried on a 24-in. wide conveyor to the top of four storage bins.

From the bottom of the storage bins aggregate passes through a rinser and re-screen to a 30-in. conveyor which carries it to the top of the batch plant. The conveyor belts are covered with corrugated sheet steel to protect the belts from wind, which in this area can reach gusts of 70 mi. per hr.

Atkinson is using a Noble automatic multibatch plant with two 2-yd. tilting mixers. This plant could take up to 4 mixers, but there is no need for that many on this phase of the work. To carry the 4-yd. concrete buckets from the batch plant a quarter of a mile to the point of placing are 4 modified Euclid trucks. The end-dump bodies have been removed from the trucks and replaced with platforms which provide space for two buckets. The crane operator swings the buckets into place from the side.

When the powerhouse contract first began, the contractor used conventional Coulee hooks when handling the concrete buckets. This required a man stationed on a small walkway at the top of the concrete hauling trucks to engage and disengage the hooks. But recently a Gar-Bro automatic hook has been placed in service and is working out very well. This hook carries an air compressor powered by a small gasoline engine. By bumping an operating lever inside the hook the hook can be opened or closed by the crane operator. This eliminates a hook tender and also eliminates lines running from the hook to the crane operator.

Concrete forms for the powerhouse work are built in the contractor's carpenter shop on the job and designed by Atkinson's central design group in the headquarters office in South San Francisco. (Forms and falsework on all Atkinson projects are designed by this highly skilled team.) Forms are designed for maximum re-use and they include such features as scaffold walkways and handrails for maximum safety for the workmen.

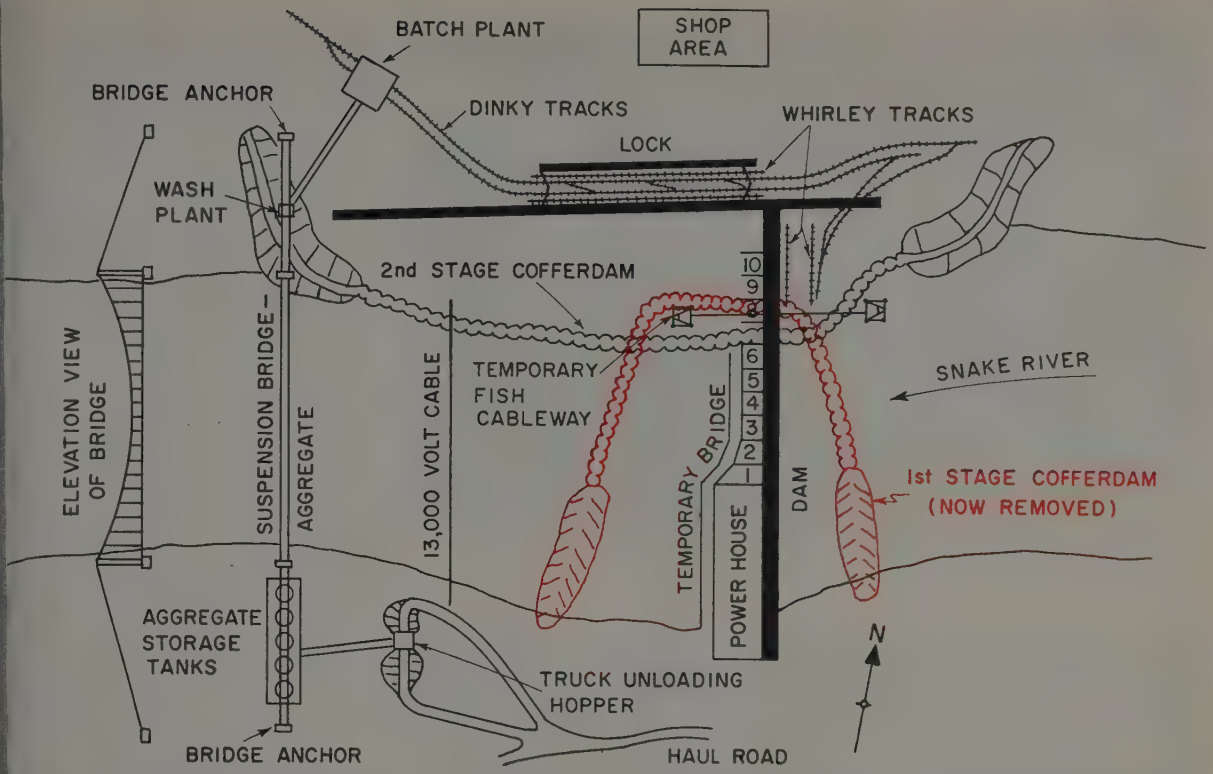
Two sets of form plans are received from the headquarters office. One set shows how the forms are put together (each form is numbered) and the other contains the detailed working drawings from which the carpenters build the forms. Top job supervisors determine the concrete placing sequence and hence the order in which the forms will be built.

Before concrete is placed in the forms, the plywood concrete contact surfaces are coated by brush with a varnish-like plastic resin, which prolongs the life of the forms and makes stripping and cleaning easier. The plastic resin made by A. C. Horn Chemical Co. pays for itself by prolonging the life of the wood.

Use of large form panels is another cost cutter. In forming the powerhouse walls, which are 80 ft. high, 4 ft. thick at the bottom, and 2 ft. thick at the top, the contractor is using a cantilevered panel 57 ft. wide by 15 ft. high. The panel is picked up by one of the two Clyde Whirley cranes with the help of a spreader beam.

When the forms are stripped it is not necessary to send them back to the carpenter shop for cleaning. They are brushed on the spot and ready for resetting. The contractor's field engineer gives the carpenter controls to use in setting the forms.

The contractor has his own re-steel fabrication yard with a traveling overhead crane. This is in contrast to many projects where the re-steel fabrication and placemen



MPLIFIED PLAN VIEW (not to scale) shows main elements of con-actor's planned construction plant. Unusual features are suspension ridge for aggregate conveyor (both plan and elevation views given at left) and bridge hung from completed spillway piers (see front cover). Numbers along dam refer to spillway bays. Cofferdam in red was used in construction of first stage and has been removed.

sub-contracted. Atkinson uses a olor code along with tags to indi-ate the length and position to the iron workers. Colored paint spots are applied with spray cans. Cages are pre-assembled as large as possible in the interest of speed and safety.

Selected bids for Final Phase of Ice Harbor

(1) Guy F. Atkinson Company	**$20,744,405**
(2) Montag-Halvorson-Austin & Assocs.	**21,798,729**
Johnson, Drake & Piper, Inc. and Winston Bros. Co. (joint venture)	**23,643,955**
Engineer's estimate	**22,027,422**

		(1)	(2)
Foundation preparation for cofferdam cells	Lump sum	$ 5,000.00	$ 25,000.00
Placing sheet piling, straight web section	920 ton	100.00	90.00
Rock fill	71,500 cu. yd.	1.45	2.00
Impervious fill	275,000 cu. yd.	.65	1.25
Gravel filter	21,200 cu. yd.	4.20	2.30
Class A riprap	23,800 cu. yd.	3.40	3.50
Furnish, install, oper. initial pump. facilities	Lump sum	455,000.00	286,000.00
Temporary fish facilities	Lump sum	502,000.00	750,000.00
Operate temporary fish facilities	25 weeks	3,500.00	2,610.00
Remove existing (1st-step) cofferdam	Lump sum	122,000.00	289,869.00
Remove sec. step (1st & 2nd stgs.) cofferdam	Lump sum	400,000.00	175,000.00
Excavation, rock (1st sub-item)	88,000 cu. yd.	7.80	10.10
Excavation, rock (2nd sub-item)	47,000 cu. yd.	2.50	3.00
Excavation, common (1st sub-item)	93,000 cu. yd.	1.88	4.25
Impervious fill	236,000 cu. yd.	.60	1.00
Rock fill	157,000 cu. yd.	.62	1.00
Foundation blanket	22,000 cu. yd.	2.50	1.90
Channel excavation, common (dry)	185,000 cu. yd.	.50	.50
Channel excavation, common (in river)	75,000 cu. yd.	.80	.70
Channel excavation, rock (in river)	21,000 cu. yd.	2.75	3.00
Steel reinforcement	7,330,000 lb.	.14	.15
Portland cement (used with Pozzolan)	370,000 bbl.	4.65	5.25
Concrete, mass	628,000 cu. yd.	12.50	10.65
Concrete, structural	13,500 cu. yd.	22.00	20.00
Conc., struc., in no. shore fishlad., pumph'se	18,900 cu. yd.	38.80	45.00
Raise low spillway bays	Lump sum	400,000.00	300,000.00

Installation of turbines in the completed section of the powerhouse was done with the use of the two Whirley cranes. The walls and roof of the powerhouse are being completed as rapidly as possible so the overhead crane can be used in setting the remaining mechanical parts. The installation of the turbine was made more difficult by the effect of the sun, which caused the steel parts to expand unevenly. Tolerances of only a few thousandths are allowed at certain points. In considering various ways shade could be provided, it was decided to use temporary timber roof sections. Three were made up in 20-ft. widths 70½ ft. long. The roof trusses were out of the way of the workmen and were easily handled by the cranes.

There is about 51,400 cu. yd. of concrete in the powerhouse and 4,200,000 pounds of reinforcing steel. Completion date is scheduled for early 1962.

North shore work

The north shore cofferdam has been closed and the flow of the river diverted through the low com-

TRUCK CRANE on floating barge moved by tugboat helps erect temporary construction bridge. Method proved to be easier than working from above with hanging scaffolds.

FIELD OFFICE of Guy F. Atkinson Co. is familiar sight on this contractor's projects. Several office trailers are covered with roof and connected with elevated wooden walkways.

CONCRETE HAULING TRUCK is a converted Euclid end-dump. Dump body was replaced with platform which receives two buckets. Walkway is no longer needed because of automatic hooks.

pleted spillway bays of the sout shore work and three skeleton uni of the powerhouse. Closing the co ferdam was not difficult since t flow of the river is low at this tim of year. The middle part of t cofferdam consists of conventiona circular sheet pile cells filled wit gravel, and impervious earth em bankments tying it to the shore a each end. A low embankment wa constructed along the line of th cofferdam at the downstream se tion first, in order to cut off th current so that the sheet pile dri ing could be done in relatively sti water. This closure was made b filling the gap with rather larg rocks followed by dumping impe vious material which percolate into the spaces between the rock gradually rendering the embank ment impervious.

The 55.7-ft. diameter sheet ste cells are now being driven alon the upstream arm of the cofferdam This is being done in the conven tional manner with the aid of a spud-supported interior circula template around which the inte locking sheet piles are driven. Th gravel ballast material is place in the cells by rear-dump Euclid trucks using a chute which direct the material to the center of th cell and allows it to build up in cone under the template. Whe the template is removed a sma tractor is lowered inside the cell t spread the material around as it dumped.

Before the sheet piles are drive the bottom of the river is cleane up with a clamshell. After the pile are in place a diver is lowered t

MAJOR EQUIPMENT
ICE HARBOR DAM

- 3 Bucyrus Erie crawler shovels
- 1 Northwest 80D shovel
- 1 Lima shovel
- 1 Caterpillar D9 tractor
- 4 Caterpillar D8 tractors
- 4 Caterpillar DW21 scrapers
- 1 Southwest 50-ton roller
- 2 Bay City truck cranes
- 1 Austin-Western Hydro-crane
- 2 Caterpillar No. 12 graders
- 2 General Electric locomotives
- 1 Vulcan locomotive
- 9 Euclid 36TD end-dump trucks
- 3 Ford sedans
- 22 Ford pickups
- 2 ambulances
- 2 Ford service trucks
- 4 Ford flat rack trucks
- 9 Ford trucks with booms
- 2 Clyde Whirley cranes
- 1 Michigan loader
- 2 McKiernan-Terry pile hammers
- 2 McKiernan-Terry pile extractors
- 2 Malsbary steam cleaners
- 8 Kit office trailers

lace sacks of a sand-cement mix-
ıre on the upstream side of the
ell to assure a water-tight seal at
ıe bottom of the cell.

The embankments at each end
f the cofferdam will be in effect
iniature earth-fill dams with im-
ervious zones, a sand-and-gravel
lter zone, and a miscellaneous
ne for structural stability. The
lect sand and gravel filter zone
aterial will be brought to the
orth shore from the aggregate
lant by conventional highway
ucks.

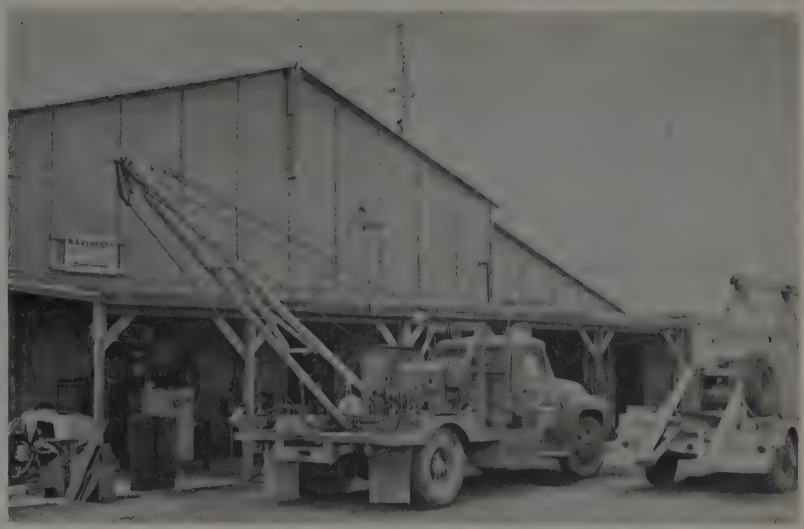
By the time concrete work starts
r the remaining spillway bays
ıd navigation locks, the contrac-
r will have erected a suspension
idge carrying a conveyor belt in
der to eliminate the long ag-
egate haul. Aggregate will be
ought 6 miles from the screen-
g plant at the pit to the south
ore where it will be transferred
storage hoppers for the trip
ross the suspension bridge by
nveyor to washing and re-screen-
g facilities on the north side be-
re it enters the batch plant. The
spension bridge will carry only
e aggregate conveyor, and will be
milar in design to the lightweight
spension bridges used to carry
pe lines across rivers. The towers
the bridge will be about 100 ft.
gh.

onstruction bridge

A construction bridge is also
ing built in order to facilitate
ovement of materials, men, and
achines from one side of the river
the other. The design of this
idge is a good example of what
experienced and imaginative
ntractor can do when confronted
th a construction problem. The
idge is being suspended on heavy
el brackets from the completed
ncrete piers of the dam. On the
rth end traffic will travel on the
p of the cofferdam. Construction
a temporary bridge downstream
m the dam would have been
out three times longer and
uld have been subjected to the
zards of river current. Suspend-
g it from the side of the com-
eted piers removes it from the
ter and keeps the span lengths
wn. The contractor, however,
d to assume responsibility for
y damage done to the completed
rk.

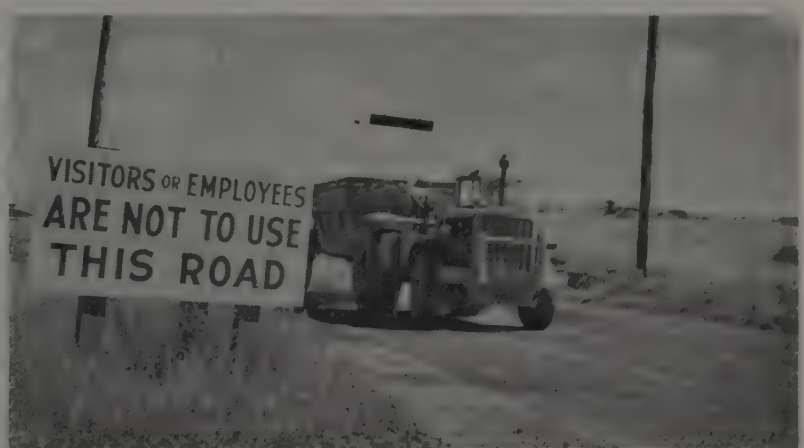
The steel brackets are made of
WF 94 and 24 WF 76 all-welded
el members. The brackets are
tached to the piers by 6-ft. long

(Continued on page 75)

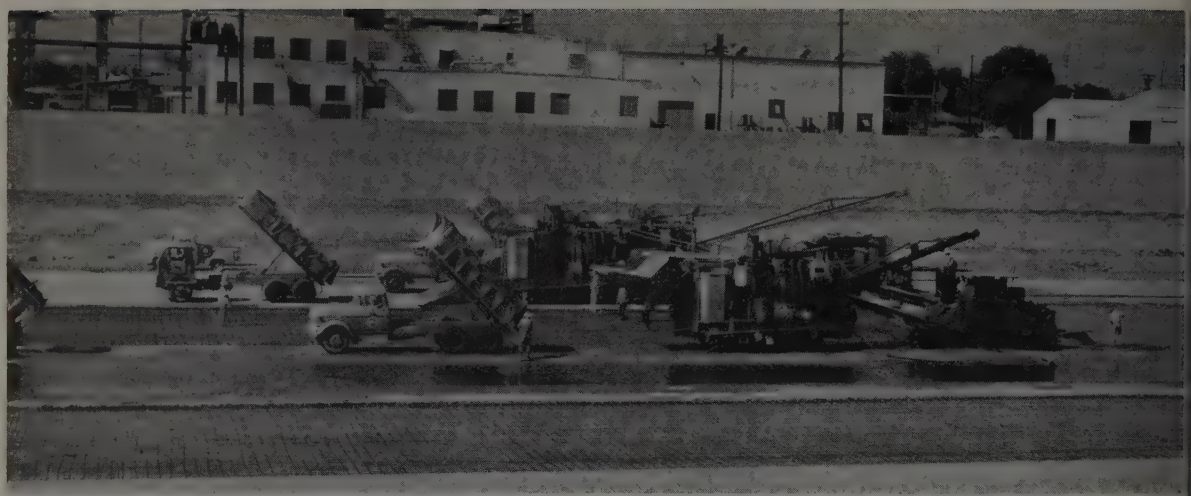


HANDY TOOL is light truck equipped with boom. Nine boom-equipped Ford trucks are on job serving the various crafts. Complex, spread-out project calls for such fast, mobile rigs.

SERVICE TRUCK gets serviced on metal ramp. Contractor also installed in shop a conventional hydraulic vehicle hoist but found it needed modifications to permit easy removal.



HAUL ROAD runs six miles from pit to dam site and is for exclusive use of haul rigs. Where haul road crosses highway, electric-eye-operated traffic light gives haulers right-of-way.



THE SPREAD marches along bottom of Los Angeles River. Up to 25 batch trucks are needed to keep pavers supplied. Average 10-hour shift places 2,500 cu. yd. of concrete in 10-in. mat. Slip-form tracks run on previously-placed slabs. "River" confined to low-flow channel.

Slip-form meets highway test on Los Angeles River paving job

A SLIP-FORM paver responding to signals, from a push-button control panel is chugging along the bottom of the Los Angeles River at a steady rate of 4 ft. per minute. Behind it stretches a 48-ft. wide trail of concrete and ahead two taut piano wires.

Contractors throughout the West are interested in both the before and after elements of this operation. The piano wires, before, which supply both grade and line for the big machine in place of the familiar header boards; and the pavement which comes after, in particular its smoothness as measured by a conventional 10-ft. straightedge or a newer bicycle-wheel profilograph.

The Corp of Engineers and the Griffith Co. are interested in the performance of this spread for a more immediate reason: the successful completion of a fast-paced job involving paving some 3.87 mi. of river bed with a 10-in. reinforced concrete mat averaging 320 ft. in width. The $3,800,000 job must be completed by October 15.

The completion date is set by contract, but the penalty for it over-running may well be exacted by the weather. The Los Angeles River is a strange waterway. For most of the year its flow is easily contained in a shallow channel about 20 ft. wide and 2 ft. deep, but given a hatful of rain anywhere in the Los Angeles area, the huge drainage ditch can run the bank full and threaten to bust the levees. The rainy season starts anytime after Columbus Day. With this in mind the contractor has set up a concrete assembly line starting with a batch plant located near the center of the job and extending through a truck fleet ranging from 15 to 25 trucks and terminating with 3 Koehring 1½-yd. pavers which tend the slip-form. The line turns out about 2,500 yd. of concrete per 10-hr. shift.

The River project includes 312,000 yd. of grading of which 175,000 yd. is removed from the river, and placement of 195,200 cu. yd. of concrete. Paving included forming a "low flow" channel down center of river bed. This channel is 20 ft. wide at the bottom, 28 ft. at the top with 4-ft. sloping sides. The flat pavement extends on either side of this channel the full width of the river bed.

All the paving, including forming the low-flow channel was done with the slip-form. (For the low flow, a trapezoidal template was attached to the bottom of the form.)

The contractor, with the cooperation of the Corps of Engineers and the California Division of Highways, poured two 24-ft. (road width) strips on each side of the channel section, the full length of the job, forming in effect a test road of about 15 miles long produced with a slip-form paver. When these strips were completed they were tested by the Highway Division using a profilograph, a long straightedge on wheels with a re

OPERATOR guides slip-form and handles operations from push-button control pane

INISHING operations watched by Gordon McGrew, superintendent, left. One man works float, nd two others work the edges behind slip-form. Burlap drag completes finishing.

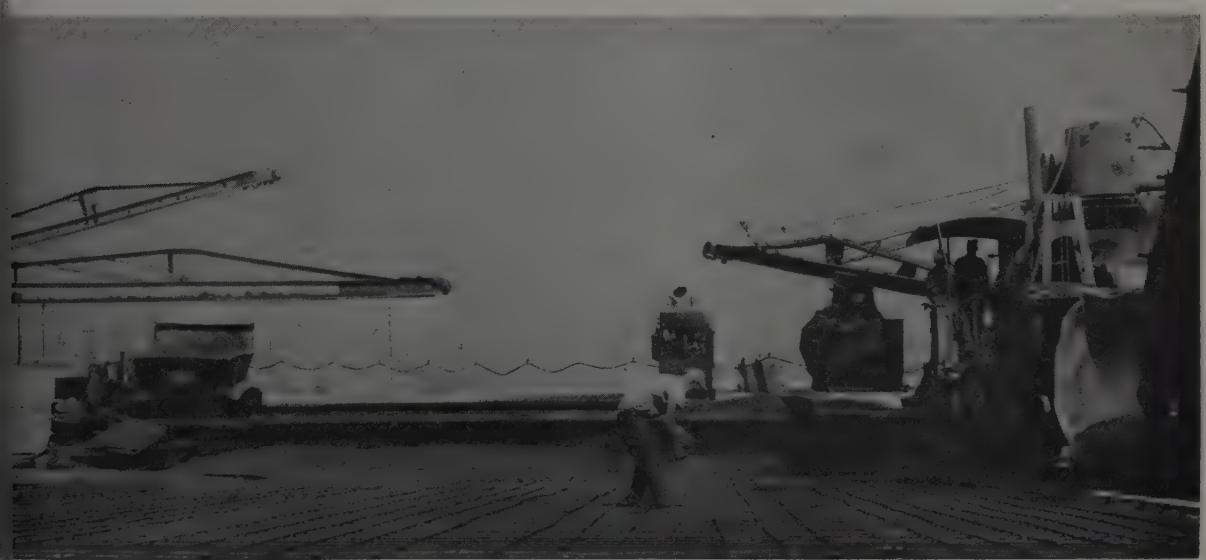
Riverbed paving job for Corps of Engineers ncludes 15 mi. of road-width strips placed with slip-form nd measured for smoothness by California Division of ighways. Contractor placed 195,200 cu. yd. of concrete n six months using 48-ft. form.

ording device which charts uneven-ess of the surface as it passes over . Specifications for finished high-ays in California are 1/8 in. error er 10 ft. and not more than 7 in. ccumulated error in one mile. The rofilograph was used to spot check noothness of the test strips for a otal of 0.3 mi. The smoothness nown in these tests was not spec-tacular, but was judged acceptable under State Highway standards.

The machine which paves not only the 24-ft. test slabs but the low flow channel and two outside 48-ft. strips is manufactured by Guntert and Zimmerman of Stock-ton, California. It is actually two 24-ft. sections bolted together in the center. The composite form consists of a long, narrow hopper with a vibrator running the full length of the paver. Behind this is a heavy steel screed. The unit runs on crawler assemblies at either end. It rides on hydraulic cylinders which can raise or lower the form. A 2-yd. cement car with clam-shell gates rides on tracks above the hopper to distribute the mud. All functions of the form are elec-trically operated with a diesel gen-erator as the power source. Con-trols are grouped on a push button console near the center of the ma-chine. The operator moves the con-crete car back and forth on its tracks, opens and closes the gates by punching the appropriate but-tons. The motors running the track assemblies are controlled by individual rheostats enabling him to steer the machine manually and to turn it 90 deg. in its own length by reversing one track. The form can also be raised or lowered man-ually from the same control panel.

However, manual operation is re-served for fill-in when the tracks ride on previously poured slabs which supply the grade control. At other times the automatic controls take over. These controls receive their operating instructions from sensitive forks which straddle two piano wires stretched out in front of the machine at either side. Forks are set horizontally across the wire for grade control. Another fork straddles the wire vertically to sup-ply the steering impulse.

Normally a crew of five men run the slip-form. This includes an op-erator, an oiler, and 3 finishers. One finisher works a long handled



ICOMING slip-form covers resteel at rate of 4 ft. per min. Two pavers d the form while a third dumps directly on sub-grade. Strip is 48 ft. wide. Slip-form is made of two 24-ft. units bolted together. Diesel-generator supplies power.

float from a deck across the back of the slip-form and two other finishers work at the edges of the slab. A burlap drag strung on a wire behind the slip-form is the final finishing operation.

The slip-form machine was used on the Los Angeles River job partly to test its highway capabilities and partly for its speed in turning out large masses of concrete.

Speed is essential on this job. Superintendent Gordon McGrew characterizes it as a real highball, adding ruefully that "you can't afford to make many mistakes." To supply the big slip-form which consumes 1½ cu. yd. of concrete for every lineal foot, McGrew set up a Noble batch plant at a rail siding midway along the job. Cement for the plant is shipped in rail cars from Monolith Cement Co., while sand and gravel are delivered by truck from Owl Rock Products Co. Since the plant uses about 5,000 tons of aggregate and 10 to 13 cars of cement a day, maintaining a constant flow of supplies is a continuing problem. This is especially true with cement. Storage silos at the plant will hold about four cars which is less than half a day's supply. Supplementary cars to fill out each day's production must be ordered about three days in advance. Aggregate supplies are somewhat less critical but still a problem.

The plant itself functions at a high rate of efficiency. It turns out a 1½-yd. batch every thirteen seconds. The automatic bin gates are set for a delayed sequence which drops the rock ahead of the sand and cement to provide better distribution of these materials in the truck compartment. Batch trucks are operated on a sub-contract by Miles and Sons Trucking Service. When the paving spread is close to the batch plant it can be kept supplied with fifteen trucks. As it moves further along the project the truck spread is increased to a maximum of twenty-five.

PROFILOGRAPH used by state highway officials to test smoothness of concrete strips placed by slip-form. California specifications permit 7 in. accumulated error per mile.

The project started with a grading operation. The river channel was directed to one side by a small earth dike at one end of the project. A fleet of 11 DW 20's handled the earth-moving. Using two one-way haul ramps constructed on the steeply sloping side of the river channel the scrapers moved 175,000 yd. of material out of the river bed for disposal in a nearby area. For clean-up operations and fine grading, the material was windrowed with a grader and then loaded into trucks with an Athey belt loader.

During grading operations the contractors got a foretaste of things to come. Late in June the Los Angeles area got a light rain amounting to .33 in. The rain occurred on a weekend when the job was shut down, and Superintendent McGrew drove by the job to check on his earth-moving spread. He found his equipment marooned in the run-off which covered the entire river bottom up to a depth of 2 ft.

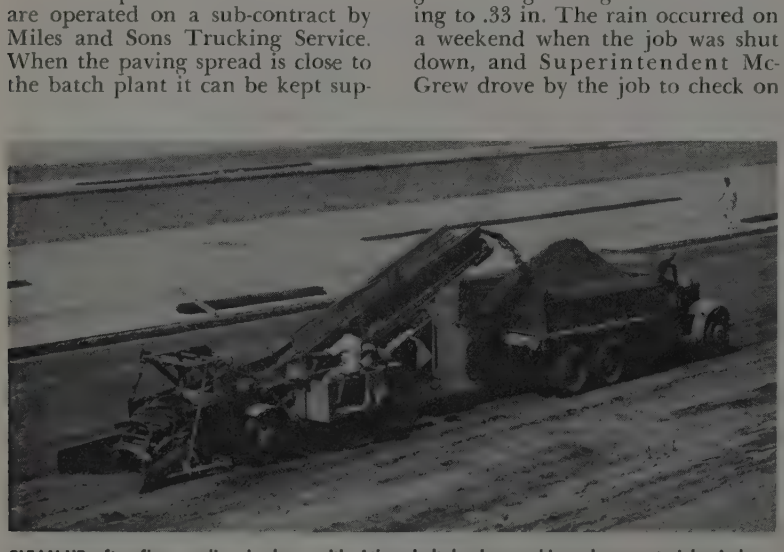
Paving operations are preceded by placing reinforcing steel, handled on a sub-contract by Southwest Steel Co. The job uses ⅝-in. steel bars tied on 12-in. centers.

Larry Wheeler, superintendent of the steel work, observed that this phase of the project was highly educational. It attracted large numbers of college students who were quickly educated to the fact that wrestling 60-lb. steel enforcing bars was not as easy as it looked. "We have issued a lot of half-hour checks," he noted.

In its paving operations, the Griffith Co. had to continue with a number of problems. These included handling numerous small streams emerging from storm drains opening in the river bank; and paving around piers of the three street bridges which cross the project. The close-set piers of one of these bridges were too narrow to permit the 48-ft. slip-form to pass between them. Additionally in paving the outermost slabs, one side of the form would ride on the previously placed strip while the other would ride on the sub-grade following on the even edge of the channel side.

The water problem was solved by hand-pouring short sections from the drain outlet to the low-flow channel in the center of the river bed. Water was then brought across the slabs between low earth dikes which could easily be crossed by the equipment.

Pavement was also hand poured around the bridge piers and in



CLEAN-UP after fine grading is done with Athey belt loader working along material windrow. Bulk of grading was done with scraper fleet.

(Continued on page 75)

Each of the compactor units employed in the workheads of these machines supplies FORTY-TWO HUNDRED 6,000 lb. VIBRATORY BLOWS PER MINUTE and achieves maximum density of any granular material used in base courses and fills in the fastest possible time.

Each compactor unit may be operated independently and hence units may be detached from the maximum coverage arrangement of 6 units in the workhead (13′, 3″) to ideally fit each job; or they may be regrouped in a wide variety of tandem arrangements for more rapid densification of narrower areas. And in the case of the TRAILER COMPACTOR as many as eight compactor units may be employed in two workheads of 4 each — one in front and the other following the trailer.

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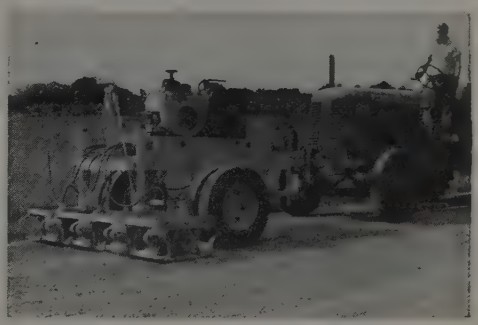

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Dams by the dozen!

Under direction of the U. S. Soil Conservation Service the Small Watershed Act enters its active stage and will result in projects throughout the West that will develop contracts which could equal the highway program in volume of earthwork.

MILLIONS of yards of earth going into dozens of dams will be handled by the contractors of these Western states during the next few years as the Watershed Protection Flood Prevention Act passed by Congress in 1954 and 1956 enters an active stage. Potentially, the program administered by the U. S. Soil Conservation Service could represent more work for earth moving contractors than the highway program.

Although it has not received its rightful share of attention, while moving through the stages of planning and pilot projects, multi-million dollar projects are ready for the bidding stage. Further, because the conservation and regulation of water is so important to the growth of this Western region, the program may find a particularly heavy proportion of work carried out in the states served by *Western Construction.*

Perhaps the simplest way of understanding the relation of this program to the larger programs of storage and flood control carried out by the Bureau of Reclamation and the Corps of Engineers, is to say it is intended to function in the smaller (250,000-ac. maximum) watershed areas. It is designed to provide flood protection and the conservation of water for local and downstream areas. Another basic feature of the program is that projects originate with local interests, must be approved by the state and then reach the Federal agency for investigation, study, and possible acceptance, with substantial financial assistance.

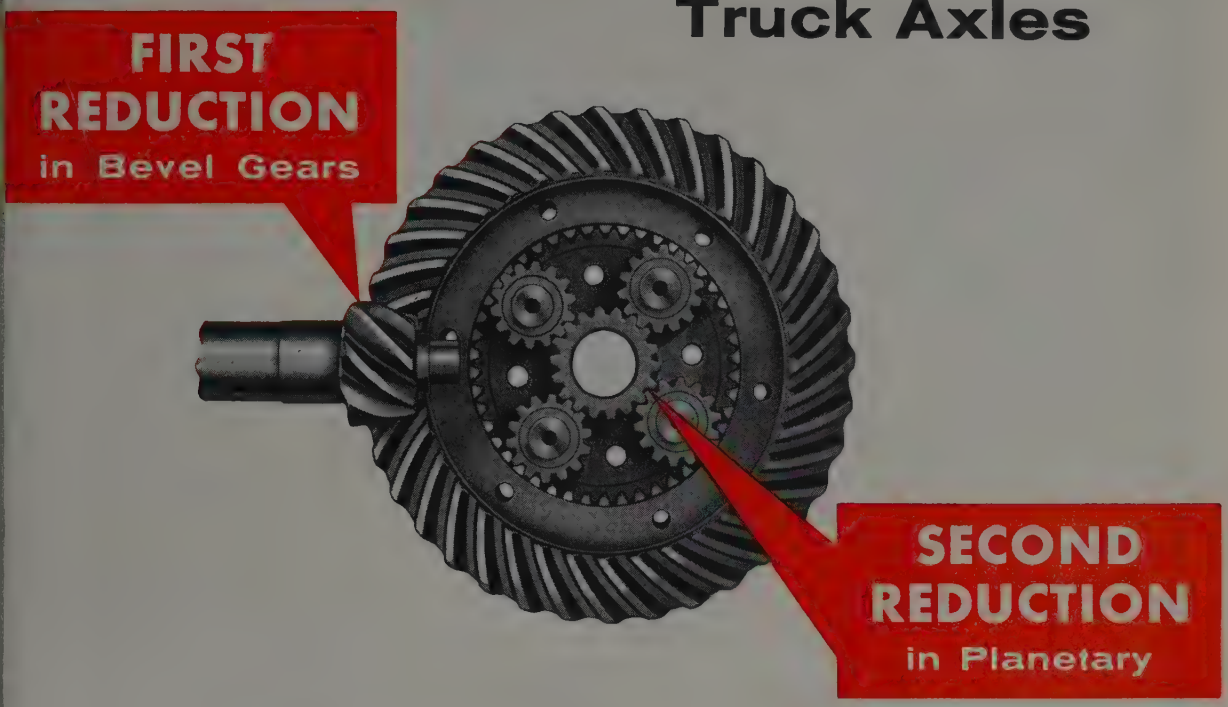
For a couple of decades the U. S. Soil Conservation Service has been working with ranchers and other individual land owners to develop practices in land use which will result in conserving both valuable top soil and water. These efforts have a normal tendency toward the establishment of local districts for carrying forward these programs at the local level. Leveling, terracing, and the contour plowing are features of this grass roots program. This work represents considerable earth-moving in the aggregate, but has not reached beyond the capacity of the local contractor equipped for this type of earth handling.

At the other end of our other major river systems, the threat of damaging floods has resulted in the continuing program of multi-purpose projects initiated by state or Federal agencies and carried forward with a minimum of local participation.

Between these two extremes exist hundreds of small watershed areas with problems outside the scope of the individual land owners and not representing the required magnitude for state or Federal consideration. It was the realization of this void and its importance in the national program of water conservation that the Watershed Protection Flood Prevention Act was passed in August 1954, and amended in 1956.

Commonly referred to as the Small Watershed Act it established machinery for Federal assistance, if and when local interests took the

A New Concept in Double Reduction Truck Axles



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Cost Less to Maintain—When and if repairs are necessary, parts are readily available—most of them interchangeable with other Eaton Axles. Simple construction—similar to the famous Eaton 2-Speed Axle, with which all truck service men are familiar—holds maintenance labor to a minimum.

Previously, double-reduction axles have been available only in the extra heavy-duty sizes. Eaton PDR Axles are available in a wide range of sizes—the last word in equipment to meet the demands of today's hauling conditions. By actual comparison they cost less to buy, less to maintain. They have established outstanding performance records in all types of heavy-duty operation.

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Ask your Truck Dealer for Complete Information about Eaton PDR Axles

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AXLE DIVISION
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CLEVELAND, OHIO

CONSTRUCTION activity on typical projects of the Small Watershed Act will involve excavation, earth fill, rock fill, channel improvement, pipe drains and ditching. The average project will be of a size that will provide work for small fleets of equipment. Contracts will be awarded by the local agency.

initiative in the study of a problem and presented a request for assistance.

The entire program is carried out under the Department of Agriculture acting primarily through the Soil Conservation Service. Realizing that this was a relatively new development in water conservation, the Service carried out several pilot projects to establish the best administration and operating procedures. Two of these projects were in the West, both in Utah: Pleasant Creek, costing $556,684, and Santaquin Canyon, costing $114,299.

With this experience behind it the Service began to let the program assume its natural expansion as the people in small watersheds realized that machinery was available for local-Federal cooperation.

Local interest must initiate

A well emphasized feature of the entire program is the fact that initiation must always come from the local level. On any watershed which does not represent an area of more than 250,000 ac., local individuals or organized groups take the first step. It is most efficient and practical to carry out this preliminary step working through some existing agency, such as a soil conservation or irrigation district. These agencies have legal power of taxation to cover preliminaries and financing, and the state must deal with an agency having such legal authority.

The preliminary plan for the project including some estimate of the works required and the benefits is submitted to the proper agency of the state. The state then makes its investigation and must approve the application of the local agency before the plan can be submitted to the Federal level. The application then moves to the headquarters office of the Soil Conservation Service for review and complete study. Detailed engineering plans are prepared at this time based on field studies. The work can be done by private engineers or by the Service. With engineering plans completed and cost estimates prepared, the project is ready for final decision. Projects representing a cost which does not exceed $250,000 can be approved directly by the Administrator of the Soil Conservation Service. Projects costing more than this amount requires Congressional approval.

On the larger projects, the steps just outlined follow the same sequence, although it is common for several state and Federal agencies to participate in the studies.

Plans for financing are always on a joint basis with the local organization taking care of those parts of the program which represent improvements affecting irrigation, drainage, or other agricultural water management while the Federal Government pays for construction cost (including engineering) and all works relating to flood protection. Easements and rights-of-way must be made available by the local group which also takes over responsibility of operation and maintenance of the project after construction has been completed. The sponsoring group is the agency for calling bids and awarding contracts.

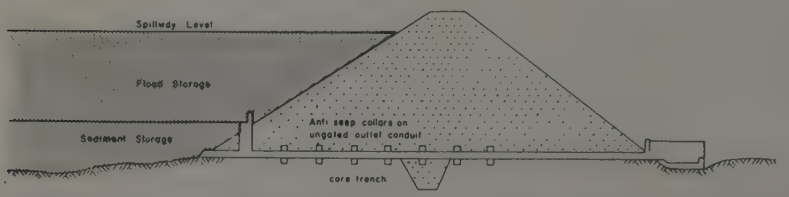
Two examples

The best way of indicating the type and scope of these projects is to review two in different states and representing different problems.

In July 1956, several severe storms in the vicinity of Silver City, Utah, caused considerable damage to residences, stores, and streets. No lives were lost, but the town remained under the threat of similar floods. Several months later the city and the county government, with the cooperation of the Iron County Soil Conservation District, made application for Federal assistance in providing flood protection. In line with the steps already outlined, the problem and proposal were studied, a work plan was drawn up, and the project was authorized for construction by the Soil Conservation Service in April 1957. This time interval indicates the speed with which such a deserving project can be implemented.

Within the following twelve months contract operations were virtually completed and Silver City was removed from possible flood damage. The construction work consisted of building two basins,

(Continued on page 58)



SECTION through typical floodwater retarding structure showing the unregulated discharge for reducing the flood peak without storage. This represents conservation and protection without involving the complex legal problem of water rights and consumptive use.

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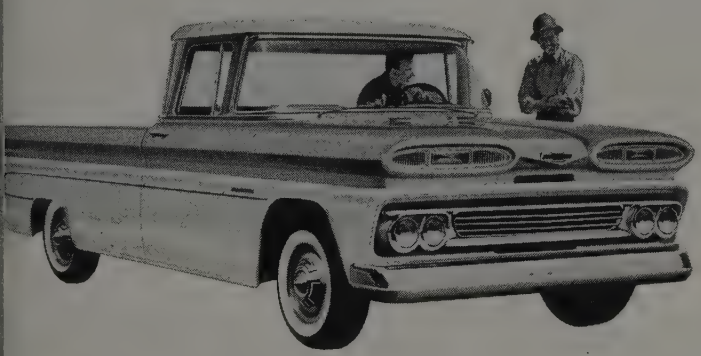
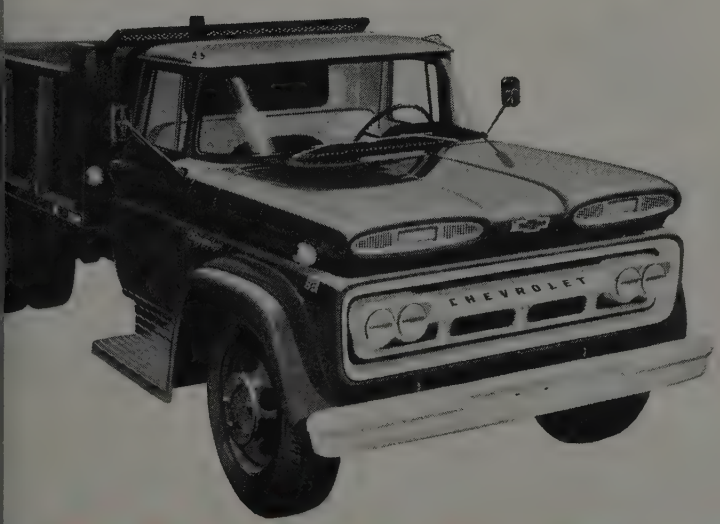
lling in on revolutionary torsion springs, these 1960 Chevies smooth as silk yet tough as nails . . . totally new in scores of fit-boosting ways! In the light-duty class, for example, big Series 40 chassis-cabs and stakes add to your earning er with G.V.W's up to 14,000 lbs. And virtually every model rs a new lower-to-the-ground build (without sacrificing road rance) which improves truck stability and makes cab entry er. In the big-truck class, too, Chevy for '60 sports big-profit .W.'s — up to 19,500 lbs. in middleweights and 36,000 lbs. in vyweights — with stronger components including new frames n more massive bracing and brawnier side rails, new bigger es, and the latest in low-cost V8 or 6-cylinder power.





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New custom cabs! Available in all 1960 cab models, they include distinctive exterior door pillar and rear belt line moldings . . . handsome chrome grille (light-duty models) . . . new Super Cushion Seat with foam seat cushion and backrest . . . sunshade, armrest, cigar lighter and control knob trim.

New compact L.C.F. models! Twenty-six new Chevrolet Low Cab Forward models with short cab design allow for maximum length trailers and extra cargo space. Short wheelbase and turning radius give exceptional maneuverability. Bumper-to-back-of-cab dimension is as short as 90 inches. G.V.W.'s go up to 25,000 lbs. and new cab design makes entering easier. And in series 50 and 60 models you can choose 6-cylinder or V8 power.

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And they're POWERED to improve your profit picture, too! Chevy for '60 offers a *wide* choice of better-than-ever power plants; in every weight class you can choose from famous economy 6's or V8's that lead the field for efficient short-stroke design! Three big sixes and four advanced V8's allow you to match the engine to your job for top performance.

Chevy's 1960 trucks with *total newness* are now on display at your Chevrolet dealer's, so stop by sometime soon! . . . Chevrolet Division of General Motors, Detroit 2, Mich.

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SMALL DAMS

(Continued from page 54)

three retarding dams, and a flood water diversion. These structures are inter-related and the primary function of the three basins is to remove sufficient of the debris from the flood water so that it can be released into the diversion system. Passing through the retarding basin the water is diverted around Silver City and into a third retarding basin where any remaining flood peak is removed.

Construction work in this project involved about 60,000 cu. yd. of excavation, 200,000 cu. yd. of earth fill, 1,100 cu. yd. of reinforced concrete, 2,400 cu. yd. of rock, and 430 lin. ft. of concrete pipe. Cost of the project was about $280,000.

Illustrating a project of a different magnitude, the Central Sonoma Watershed Project, near Santa Rosa, Calif., should be under active construction by next spring. Estimated cost of this program is more than $15,500,000, representing the largest project of the program up to this time.

A watershed area of about 50,000 ac., drained by Santa Rosa Creek and its tributaries produces damaging floods in the vicinity of Santa Rosa at least annually, and often several times during the rainy season. The average annual flood damage to crops, farm lands, homes, businesses, roads and utilities is estimated at slightly more than $700,000.

Through the cooperation of the Gold Ridge Soil Conservation District, City of Santa Rosa, Bellevue-Wilfred Drainage District, and others, the planning for the Central Sonoma Watershed Project was carried forward. Additional technical help was provided by the Soil Conservation Service. Financing is on a joint basis, with local interests providing land and rights-of-way together with the relocation of roads and bridges at a total cost of about $2,000,000. Federal participation provides a contribution approaching $10,000,000, which covers all flood prevention structures. Local contributions will be acquired to maintain and operate the project over a fifty year period.

Physical works will include si earthfilled dams and 31 mi. o channel improvement, about 2 mi of concrete lining within the cit of Santa Rosa and 2,000 lin. ft. o bank stabilization. The fill in th six dams is more than 650,000 cu yd. The largest structure will b the Santa Rosa Creek Dam with height of 45 ft. and fill totalin 350,000 cu. yd. A typical sectio through these retarding structure was shown on page 54.

These two examples indicate th type of problems and manner o solving threat of flood damag with corresponding advantage i water conservation, as being ca ried out under the Small Wate shed Act.

Projects approved for plannin or engineering stage include th following breakdown by state Arizona, 3; California, 15; Idah 12; Nevada, 5; Oregon, 9; Utal 7; Washington, 10, and Hawaii, Behind the scenes and in the pr liminary stages of organization an planning are hundreds of othe projects scattered throughout th entire West which will be movin forward during the next few year

And now for bidders on Small Watershed work, some —

Cost keeping rules for earth movers

EVERY CONTRACTOR who works in the conservation and Small Watershed program must determine how low he can bid a job. The low bidder is normally the successful bidder, but that doesn't necessarily mean he's a successful contractor; he may have underestimated his costs and bid the job at little or no profit. To aid in securing a profit the following information and a simple form for estimating costs has been supplied by the Caterpillar Tractor Co.

Every contractor hates to lose a bid, but it's not good business to win a bid and lose your shirt the bargain, since profit is the li blood of any business. Given adequate return on capital inve ments, any company can contin to prosper and grow. Otherwi the reverse can happen.

It's important, of course, th

mix for profit day after day

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For Cold Mixes—all you need are mixer and calibrated feeder to produce capacities to 55 tons per hour.

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Compare your hourly operating costs to this example

	Example Costs	Your Costs
OWNING COST		
Depreciation—$20,000 (price) ÷ 10,000 (hours)	$ 2.00	
Interest, insurance, taxes—3¢/$1,000 of cost	.60	
Total	$ 2.60	
OPERATING COST		
Fuel and lubricants—		
Diesel fuel—5 (gph) × 14 (¢/gal.)	$ .70	
Gasoline—(for starting and cleaning)	.03	
Lube oil, engine—.05 (gph) × 100 (¢/gal.)	.05	
Lube oil transmission and final drive— .03 (gph) × 80 (¢/gal.)	.02	
Filters	**	
Grease—.04 (lb./hr.) × 20 (¢/gal.)	.01	
Repairs—.90 × $2.00 (hourly depreciation)	1.80	
Total	$ 2.61	
**Less than 1¢.		
Operator's wages	$ 2.50	
Total Owning and Operating Costs for Tractor	$ 7.71	
ATTACHMENTS		
Straight bulldozer	$ .53	
No. 435 scraper	2.04	
Cable control	.55	
Total	$ 3.12	
TOTAL OWNING AND OPERATING COSTS	$10.83	

every contractor be able to determine at the end of the year whether he realized a profit or suffered a loss. Even more important, however, is the ability to forecast what the year-end review will show—the ability to *plan* for profit. This means that he must be able to estimate accurately just how low he can bid on every job and still break even. The difference between this "break-even" figure and the amount of the bid determines how much profit can be expected.

There are many things which must be considered in determining this "break-even" point. Direct machine expenses for depreciation, fuel, lubrication and repairs, plus cost of labor for operating the machine are, of course, the most obvious. Equally important, however, are overhead expenses — cost of office space and supplies; transportation equipment such as trucks and lowboys; cost of insurance, licenses and taxes; office and supervisory personnel wages; and numerous other incidental costs of running a business.

Records are important

For the purpose of finding out hourly owning and operating costs, it is best if a complete record showing all fuel, oil and repair costs is kept on each piece of equipment. Lacking complete records, however, owners may obtain assistance in estimating average cost figures from equipment dealers for their particular machines.

Hourly owning and operating costs must include an allowance for depreciation, plus the direct costs for fuel, oil and repairs, as well as the operator's hourly wages. It will be assumed that the equipment will depreciate 100% in five years, or 10,000 hr. of operation under average conditions.

Using a Caterpillar D7 tractor as an example, let's see how these hourly owning and operating costs are arrived at. Price of the D7 tractor with standard equipment is about $20,000.

Interest, insurance and taxes could cost approximately 3¢ per $1,000 of price per hour. The tractor might consume approximately 5 gal. of fuel, 5/100 gal. of crankcase lube oil, 3/100 gal. of transmission lube oil, and 4/100 lb. of grease per hour. Repairs could cost about 90% of the hourly depreciation figure per hour of operation.

With all these figures in mind, cost per hour under average conditions could be approximately those shown in the table. However, costs will differ from area to area. Any contractor can put his own in the right hand column.

This type of contracting work requires the tractor to be equipped with certain attachments and equipment. Assume that this D7 is equipped with a straight bulldozer, a No. 435 scraper (13 cu. yd. struck capacity), and a double-drum cable control for operating the dozer and scraper.

Average hourly owning and operating costs for these attachments, obtained in the same manner, are also shown in the table.

There's still more costs

But, these figures don't even touch the overhead costs. Wages for office and supervisory personnel, rental of office space, purchase of office supplies, transportation of equipment to the job site, maintenance of an equipment yard and repair shop, and provision for operation of any other vehicles used in the business must be included.

Remember, too, that in computing money paid out in wages, such fringe benefits as Social Security, insurance plans and any other expenditures necessary to keep employees on the job must be figured.

The average contractor doing conservation type of work probably uses two or three tractors, including two in the D7 class. For the sake of simplicity, we will assume that the equipment fleet we are speaking of consists of three D7-No. 435 machines working approximately 1,500 hr. per year. Overhead expenses for an operation of this size might well total $10,000 per year. In other words, to cover overhead expenses, the machines must earn approximately:

$$\frac{\$10{,}000 \text{ (overhead)}}{1{,}500 \text{ (hr. operated)}} = \$6.66 \text{ per hr.}$$

Divide this figure by three, and each machine must earn an additional $2.22 per hour to cover overhead expenses.

Thus, the total hourly minimum rate that each machine must earn if the owner is to break even would be:

	Example Costs
Tractor owning and operating costs	$ 7.71
Attachment and equipment owning and operating costs	3.12
Overhead	2.22
	$13.05

Overhead costs can be spread out thinner as the number of hours worked during the year increases.

Remember also that costs for permits, plans and other expenses directly attributable to each job must be figured in the bid price.

All that remains after ascertaining the required hourly rate for machines is to decide how much time the job will require and add on the profit (a percentage of the total) to arrive at a final bid price.

AINBOW Bridge National Monument with this greatest natural bridge in the world must be rotected from the rising water in Glen Canyon reservoir.

Will this be the site of the West's toughest job?

N THE NEXT four to six years he rumble of trucks and bull-ozers will be heard from one of he most isolated and inaccessible pots on the North American Con-nent. The cause of this activity ill be Rainbow Bridge, a natural ban of sandstone bordering the olorado River near the Utah-Ari-ona line in the Navajo Indian eservation.

Rainbow Bridge is considered by any as one of the greatest and ost symetrically formed of the orld's natural bridges, standing ore than 300 ft. high and span-ing 287 ft. It is also standing in he path of the man-made lake to created by the construction of he Glen Canyon Dam project on he Colorado River.

Protection of the Rainbow Bridge, which is required by the law authorizing Glen Canyon Dam and reservoir, will require construction activity at a remote location, in terrifying terrain and with no access routes.

Protection of Rainbow Bridge was written into the law creating the Upper Colorado River Storage Project. The act requires that "The Secretary of the Interior take adequate protective measures to preclude impairment of Rainbow Bridge National Monument." Such protective provisions are conservatively estimated at $5,000,000 and could run higher before the job is done.

The Glen Canyon reservoir will back water 186 mi. up the Colorado River and create arms out of existing tributaries which now feed into Glen Canyon between the damsite and Cateract Canyon. Rainbow Bridge itself is located about 4½ mi. above the mouth of Aztec Creek in Bridge Canyon, both minor drainages of the Colorado, 52½ mi. upriver from the Glen Canyon Dam.

Preliminary surveys by the Bureau of Reclamation engineers indicate the elevation of the left or lowest abutment of the arch looking downstream is at 3,721 ft. or 21 ft. above the normal water elevation of the reservoir. It is expected that under extremely rare flood conditions the Glen Canyon Reservoir could rise above elevation 3,700 ft., but never above 3,711, at which point the spillways of Glen Canyon Dam will function at full capacity.

The elevation of the channel bottom at the monument's east boundary, 1,200 ft. upstream from Rainbow Bridge, is approximately 3,700 ft. And elevation of the channel bottom 2,000 ft. downstream from the bridge at the west boundary is about 3,605 ft. Unless controlled by some kind of restraining dam the variations in the length of the Bridge Creek arm of the Glen Canyon reservoir would undoubtedly occur within the Monument boundary. In short, the Bridge Creek arm of the reservoir would extend into the Monument and under Rainbow Bridge at normal water surface elevations.

Unless a person has seen the broken maze of canyons and plunging cliffs that delayed the discovery of Rainbow Bridge until 1909 he cannot appreciate the almost impenetrable nature of the country. The location is in a little known and largely unsurveyed section of Utah bordering the Colorado River.

At the present time Rainbow Bridge has only two means of access: One from the river and the other by a two-day mule trip from the Navajo Mountain trading post in Arizona. The trip upriver from Glen Canyon Dam is now made by outboard motor boat in the spring and summer months when high water reduces the danger from submerged logs and rocks.

The mule trail now skirts the

north and northeast flank of Navajo Mountain replacing the spectacular if not more dangerous Rainbow trail which dipped through Cliff Canyon over seemingly endless switchbacks to the natural bridge. Both overland approaches have been ruled virtually impossible for vehicular travel.

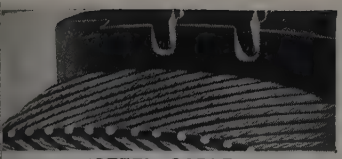
The pros and cons for protection of Rainbow Bridge are more in the realm of politics than engineering. The law creating the Upper Colorado River Storage Project states: "It is the intention of Congress that no dam or reservoir shall be constructed under the authorization of this act within the boundaries of any national park or monument."

Although final plans have not been detailed the protection of Rainbow Bridge is shaping up something like this: A restraining dam will be built somewhere below the monument boundary. At the same time a diversion dam and a 1-mi. diversion tunnel will be built above Rainbow Bridge to drain off the normal flow of Bridge Canyon into an adjacent side canyon. The building of these two small dams and tunnel might well become the greatest construction feat logistic-wise in the history of construction in the West.

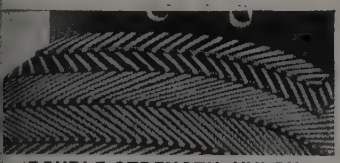
Although the exact method of transportation of equipment and materials needed for the job has not yet been determined, it is a safe assumption that these items will come in by the river. Barges could be moved from the Glen Canyon Dam to the mouth of Aztec Creek, then materials would be transported over a road built the 6 mi. from the Colorado River to the monument boundary.

Getting bulldozers, trucks, drilling equipment, and needed materials the 3,200 ft. across the monument without marring the park with roads and trails would be difficult to imagine. One official conceded it is possible but quite difficult to build the dams and tunnel without roads or trails through the national monument. Along with the barges large helicopters may be used in some phases of the work.

Timing of the construction of these protective structures will also have to be just right. Equipment laden barges could not be moved 52 mi. against the current of the Colorado River. In all probability construction will have to wait until the reservoir has at least reached the mouth of Aztec Creek and this won't be until 1962 when the big dam is scheduled to start storing water.



(STEEL CABLE)



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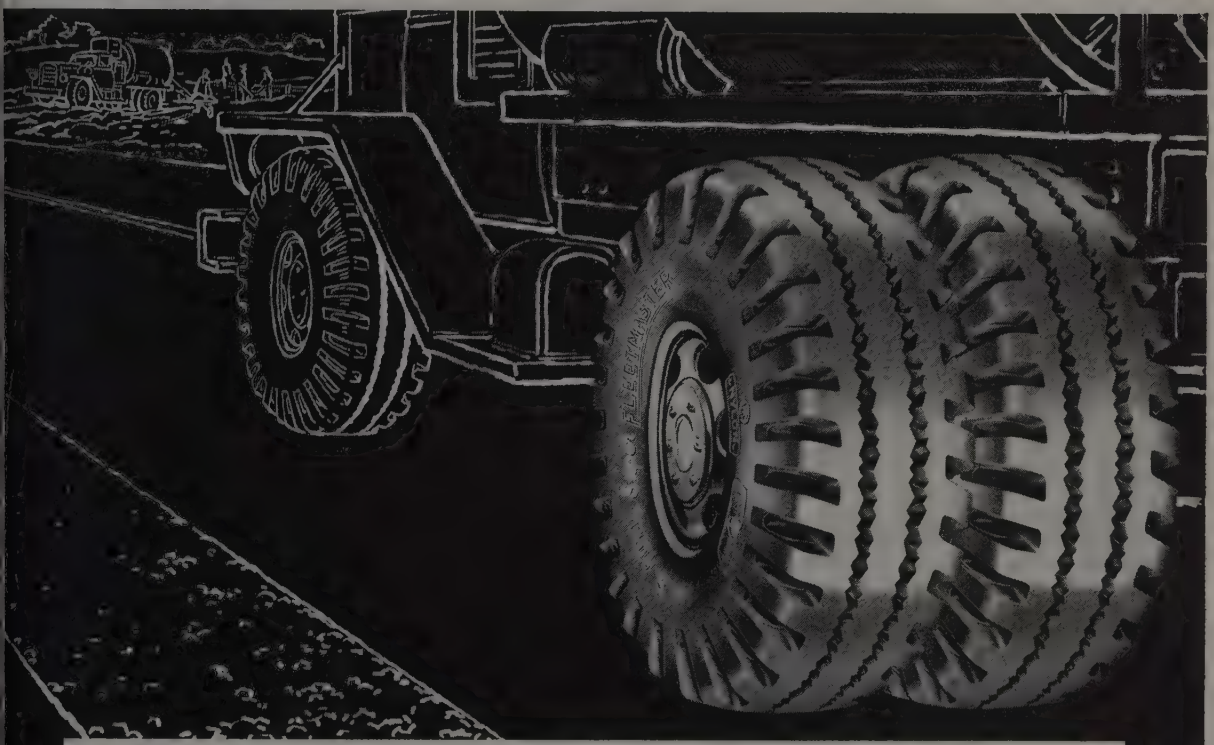

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What you should know about Wage Laws

By HARRY E. CUNNINGHAM
Western Counsel
Bureau of Public Roads

IN 1956, when Congress declared its intent that the Interstate System should be completed as nearly as practicable over a thirteen-year period, and to that end increased the Federal share of the cost to at least 90%, there was set forth for the first time direct interest in Federal predetermination of minimum wage rates to be paid laborers and mechanics employed on the construction of that System. Such minimum rates were to be determined by the Secretary of Labor in accordance with the Davis-Bacon Act and included by the States in the advertised specifications and in the contract for each project involving initial construction work. The 1956 Act further provided that the Secretary of Commerce was responsible for taking such action as may be necessary to insure compliance with the aforesaid minimum wage rates and the proper classification of labor to which they apply.

State labor laws

Minimum wage rates. Contrary to the usual rule of law that where a Federal statute covers the same field as a State statute the former has a preferred status, both Federal and State statutes fixing minimum wage rates can and do coexist without the one swallowing up the other. In other words, where a State by reason of its own law is required to fix minimum wage rates for State contracts, full compliance therewith may be had without invading the Federal field. It only means that a contractor will have to pay the higher of the two minimums.

Of the 14 Western states, including Hawaii which is now completing its statehood vows, all except Idaho and Wyoming have statutory minimum wage rate requirements. In six states the minimum rates are to be determined by a Labor Commissioner or Industrial Commission. In California and Texas they are determined by the contracting agency, while in Colorado such rates are determined by the State Legislature itself and set forth in the statute. Montana ties its minimum wage rates to those established by collective bargaining, while Oregon simply requires a covenant by the contractor that he will pay not less than the rates prevailing at the time he submitted his bid as may be determined by the contracting officer.

Eight hour laws. Federal eight hour laws do not apply to any State contract for a Federal-aid project for the reason that the Federal enactment concerns only contracts of the United States. Of the 14 Western states, all except New Mexico have some form of a State eight hour law, but the variations among them are great. Only Alaska, California, and Hawaii permit contractors to work their employees more than 8 hours a day under nor mal conditions, and provided tha such overtime is paid for at leas one and one-half times the basi salary rate. Seven states prohibi any work in excess of 8 hours a da except in case of emergency involv ing imminent danger to life o property, or, in the case of Oregon where the public policy absolutel requires it. Three of these seven Arizona, Oregon and Washington require payment for overtime a not less than time and one-half but the remaining four states d not authorize other than regula pay for such overtime work. Mon tana, Utah, and Wyoming likewis prohibit work in excess of 8 hou a day except in emergencies, bu their statutes remain silent on th rate to be paid for such overtim work.

Maximum work week. Alaska Hawaii, Oregon, and Utah have 40-hr. work week provision with requirement that pay for hours i excess of 40 shall be at one an one-half times the basic hourl rate. Among these, Oregon goes little further and requires time an one-half for all Saturday work a well as for work on any legal hol day. Colorado has a maximum 48 hr. work week with no authoriz tion or provision for any wor in excess thereof. Nevada come through with a 56-hr. work wee and provision for any overtime a basic wage rates.

Anti-kickback statutes. Only fou of the Western states, California Hawaii, Nevada, Washington, hav enacted Anti-kickback legislatio which, in most instances, parallel the Federal statute. Penalties var from jail sentences to merely a te mination of the contract.

Unpaid labor, contract termination, blacklisting

In order to carry out the Federa laws on minimum wage rates an anti-kickback relating to Interstat System projects, there is require to be included in each State con tract certain required provisio which are set forth in Attachme 1 to Bureau of Public Roads Poli and Procedure Memorandum 40- These required provisions also i clude two important conditions (that breach of any of the stipul tions included therein may b grounds for terminating the co tract, and (2) sufficient sums ma be withheld from amounts othe wise due the contractor to insu payment to laborers and mechani

Editor's note: This article is taken from an address delivered by the author at the annual convention of the Western Association of State Highway Officials at Billings, Mont.

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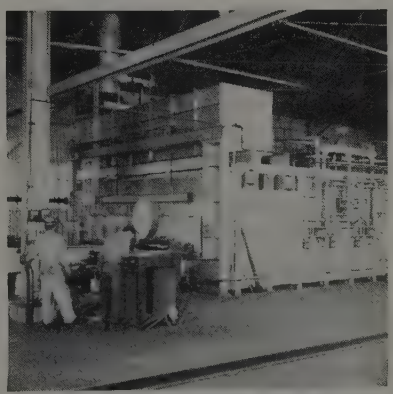

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of the full amount of wages required by the contract.

Authority to pay labor. While the right of a State to withhold sufficient sums from the contractor to insure full payment of contract wages seems firmly established, there generally is lacking any authority for the State to make direct settlements with the employees involved should the contractor refuse to do so or goes into default. Only in Hawaii, New Mexico and Utah is found statutory authority to accomplish such payments directly.

Authority to terminate contract. Five of the Western states have statutory authority to terminate contracts for failure or refusal on the part of the contractor to comply with the labor provisions thereof. Whether a similar right exists by reason of the contract provisions may be in some doubt, particularly where special means are provided to insure payment and there is not in evidence any interference with the progress of the work.

Authority to blacklist. Statutory authority to blacklist a contractor for a period of time, usually from one to three years, for wilful violation of state labor laws is found only in Hawaii and New Mexico. The rule in connection with Federal work under the Davis-Bacon Act is a three-year suspension for aggravated or wilful violation.

In general, however, other avenues are open to the states through their licensing laws and prequalification procedures to deal effectively with contractors who knowingly and wilfully are in violation of labor provisions of state law or contract.

Compliance procedures

Federal Highway Administrator, B. D. Tallamy, has repeatedly emphasized that the State highway department, as contracting agency, is primarily responsible for compliance with Federal labor provisions pertaining to the contract in addition to whatever responsibilities it may have in respect to enforcement of State labor laws. Federal labor provisions directly pertaining to the contract work are set forth in the previously mentioned required contract provisions.

The State's project engineer being regularly on the job is in a position to know or reasonably to determine that all applicable Federal and State labor provisions are being complied with. Such findings should come not only from periodic inspection of the contractor's payrolls, but include spot interviews with the employees themselves. The initial investigation of reported violations is also considered within the scope of this responsibility with the assistance and cooperation of the Public Roads' representative in Federal matters.

Tallamy further stresses the responsibility of the Public Roads' field representative reasonably to insure compliance under the terms of the contract, not only as to engineering but also labor matters.

State labor laws. The State highway department will take whatever action it deems warranted in respect to any violation of State labor laws independently of matters involving a Federal labor law.

Labor classifications. The labor classifications set forth in the minimum wage rate decision of the Secretary of Labor are to be used unless there is some clear-cut reason why they cannot. In some situations, however, where there may be insufficient work of a particular kind for the full time of the employee, and he is used on some work of a different classification, the minimum rate applicable to such classification must be used. For example, an employee may be used for three hours as a carpenter, two hours as a cement finisher and two hours driving a tractor. The applicable time and rates for each must be shown.

Job visits by Federal representatives. It is the responsibility of the Bureau of Public Roads in behalf of the Secretary of Commerce to insure compliance with Federal minimum wage rates and the Anti-kickback statute. In conducting job checks and investigating reported violations, the initial contact is with the State's representative on the job, as is customarily done on engineering inspections.

Additionally, however, there is recognized the responsibility placed on the Secretary of Labor to prescribe appropriate standards, regulations and procedures in order to assure coordination of administration and consistency of enforcement of the labor standards provisions involving all Federal labor laws. In carrying out investigations in that regard, inter-departmental arrangements have been made to the end that the Public Roads' field representative will normally accompany the Labor representative to the job site and render whatever assistance he can.

In the administration of contract matters, some confusion has resulted from the independent application and enforcement of the Fair Labor Standards Act pertaining especially to overtime at one and one-half times the basic hourly rate for work in excess of 40 hr per week. The administration of this Act is directly under the Wage and Hour Division of the Department of Labor and does not come through as a contract matter.

According to its provisions, the Fair Labor Standards Act applies to industries engaged in commerce or in the production of goods for commerce.

By way of explanation, employees of a contractor are considered to be covered by the Act if their work is so directly and vitally related to the functioning of the facility of interstate commerce as to be in principal effect a part of it rather than an isolated local activity. This sweeps in the maintenance and construction of roads as well as their survey and design when not performed by employees of the State. In a recent case involving a professional engineering company preparing plans for roads and waterways, the Supreme Court of the United States decided that the employees of the company used in the preparation of plans and designs were engaged in the production of goods for interstate commerce. The construction and repair of city streets have also been included in the coverage of the Act when directly connecting with any interstate highway.

Job inspections

In connection with compliance with the provisions of the Fair Labor Standards Act, representatives of the Wage and Hour Division of the Department of Labor make job inspections on their own initiative and independently of inspections by the Bureau of Public Roads. Such inspections by representatives of the Wage and Hour Division are confined to matters pertaining to the Fair Labor Standards Act. If, however, as a result of these inspections some apparent violation of the minimum wage rate and anti-kickback provisions of the contract is noted, such matters are called to the attention of Public Roads for such further action as may be deemed necessary.

It would be inappropriate and at variance with the Fair Labor Standards Act to include any clause in the contract pertaining to its application or enforcement. Such does not preclude, however, a statement calling attention to the possible application of such Act to the work.

Slip-Form

(Continued from page 50)

laces where the wide slip-form ould not be maneuvered.

Contractors solved the problem f the narrow bridge by paving all f the job above the bridge and ien hauling the paver sideways irough the piers to work on the st of the project. A level was ounted on the outboard side of ie slip-form when paving against ie river bank to enable the opera- r to compensate for difference in ade.

Three pavers are used in the pav- g operations. One drops directly to the slip-form hopper where e action of the vibrator distributes e material. On the opposite side e two other pavers move along echelon. The inside machine, rking directly along on the edge the strip, deposits concrete on e subgrade in front of the slip- m. The outside machine has an tended boom to enable it to feed e concrete car on the form. The o machines are fed by one water k towed behind the rear paver.

The concrete has a 1½ to 1¾-in. mp and is designed for a strength 3,000 psi. in 28 days. An entrain- agent "Air In" is supplied by Hunt Company, Inc., which also nishes the curing compound and plies it on a sub-contract.

Maintaining uniform slump and ength in this big volume opera- n is the responsibility of Floyd ilds, resident engineer for the rps of Engineers, and his chief pector Clarence Grove. Break s have shown excellent results, h test cylinders yielding 1,750 or more at seven days, and well r the 3,000-psi. minimum at 28 s.

ear and wear on the earth- ving spread constitutes the big- t maintenance problem on the . Working over rock and gravel the river bed, the scrappers tend ear loose chunks of the tire caps l get put out of action with flat s. Master mechanic H. L. Jones mmended that use of recaps be ontinued on the job.

sonnel

he Corp of Engineers: district ineer for the Los Angeles area olonel C. T. Newton. Chief of struction is W. J. J. Leen. On project itself Floyd Childs is ject engineer; Clarence Grove, f inspector; Kurt LeBlanc, of- manager; and John Close, soil concrete technician.

ersonnel for the Griffith Co. in-

BATCH PLANT weighs out 5,000 tons of aggregate per shift, drops a 1½-yd. batch in 13 sec. Cement is received from rail cars at left, and aggregate conveyed from stockpiles at right.

clude Joe Porcher, project manager; Gordon McGrew, superintendent; Bill Tate, assistant superintendent; Don McGrew, grade foreman; Jess Bitner, concrete foreman; Leo Peterson, finisher foreman; Pierre Domercq, batch plant foreman; Steve Griffith and Clair Shively, engineers; and Bill Croker and Bob Holley, office managers. The slip-form is operated by Nibbey Muscluo and R. A. Nuckols.

Final phase starts at Ice Harbor

(Continued from page 47)

anchor bolts which bear against 1-ft. square bearing plates attached by drilling holes in the sides of the piers. This arrangement can be better understood by referring to the photograph with this article. In addition, long steel wide flange members run from the top of the bracket to the top of the pier to give additional support to the brackets and to remove the possibility of the anchor bolts being subjected to any shear. The hole through the brackets for the anchor bolts is slotted, permitting the anchor bolts to move up and down, transferring load to the suspender members. Seventy-two-inch plate girders will span from bracket to bracket topped by a solid mat of 2 x 12 planks resting on 10 x 10 transverse members.

To handle concrete for the north shore work, Atkinson will use a standard gauge railroad system with special flatcars handling 3 buckets. There will be four or five trains running on 2 tracks under the batch plant and two under the Whirley cranes. Automatic spring switches will be used. Electrical switches were investigated but rejected as being too expensive and too liable to damage from the heavy dust conditions. A special railroad system to handle concrete is justified by the volume of concrete to be placed. Specifications estimate that 628,000 cu. yd. of mass concrete will be placed.

Personnel

There are about 500 men at work on the project at the present time. No living quarters are provided on the job because of the nearness of Pasco, Kennewick and Richland, about 15 miles to the west.

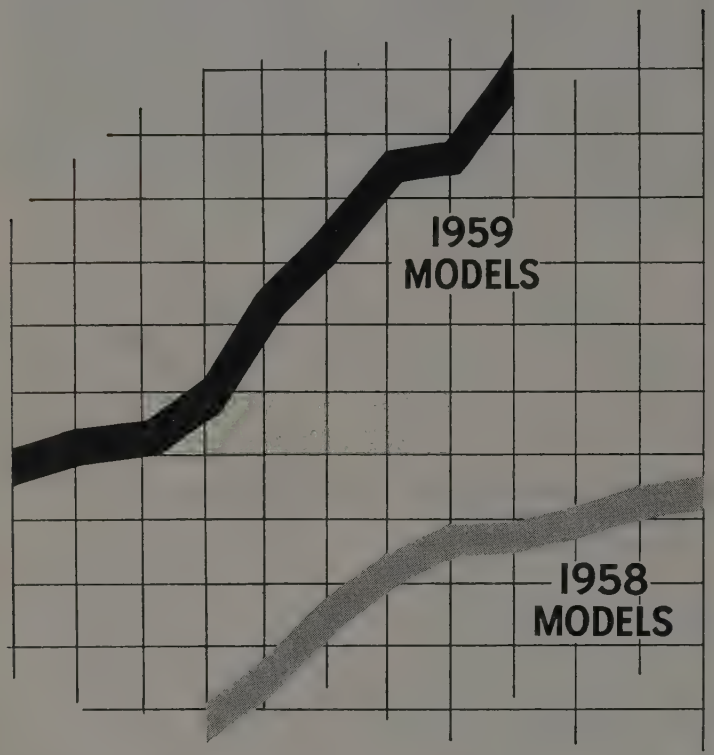
For the U. S. Army Engineer District, Walla Walla, L. G. Estey is resident engineer, and W. P. Eng is assistant resident engineer and supervisor of construction management engineering. K. F. Ramsey is chief of construction engineering.

George McCoy, Jr., is project manager for Guy F. Atkinson Company, assisted by J. K. Scharf. Don Stager is project engineer, and Bill Henager is office engineer. John Bowman is general superintendent, and Harold Ballew is field engineer.

Shift superintendents are Marshall Ward and H. G. Germaine. M. W. Erickson is carpenter superintendent, and Gene Boynton is carpenter shop foreman.

The BIG SUCCES

1959 FORD SUPER DUTY TRUCK SALES MORE THAN DOUBLE THOSE OF LAST YEAR



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Ford's increase in sales of Super Duty Trucks, while impressive in itself, by no means tells the whole story. Over half of the 1959 unit sales were the result of repeat orders from operators like Trucking Contractors, Inc., who bought because the Ford "Big V" provided the kind of performance and durability needed for their work.

And for 1960, the Ford Super Duties offer additional refinements designed to provide an even greater degree of dependability. Bigger optional axles and increased GVW's permit greater payloads and more profitable operation. Automatic radiator shutters to keep the engine temperatures within the most efficient operating range, submerged-type electric fuel pump to prevent vapor lock, and redesigned wiring for longer, more dependable operation are but a few of the improvements which add to the performance and durability of these units.

The changes offered for 1 tested and evaluated by A foremost independent au research organization. The results of the studies by partial firm (name ava request) provide proof th Super Duty Trucks are e dependable.

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"Tried 8 in '58—bought 20 more in 1959," says Curtis E. Brost, President, Trucking Contractors, Inc. "In 1958 we bought 8 Ford T-850's with lightweight chassis options and specially built 5-batch bodies which gave us a full extra batch per truck. A 5-batch load is a real strain on the truck when you consider we're 'running the ditches' on this highway paving job in North Dakota. These T-850's worked out so well that we ordered 20 more in '59. Our Ford Tandems with the 477 engine give us good mileage and the drivers are real happy with them. It's a rough go on trucks with soft footing and dust so bad we have to drive with headlights on. Despite such operating conditions, downtime has been negligible and these '477' Fords have given us less trouble than other trucks we have operated."

ith Certified Durability

ame operating conditions had erature range from 102° to The temperature variation of)° with shutters means less ex- n and contraction in engine and cylinder heads. Higher atures with radiator shutters leaner fuel-air mixtures with ssibility of raw gas washing ylinder walls. Warm oil circu- ore freely, reducing internal . All these factors contribute er engine life.

d Dependability with longer- lectrical system! Ford's '60 ed wiring harness and the iring harness were subjected ker table tests plus constant exposure to oil and water vapors and temperatures of 200°. Certified results prove that the greater resistance to deterioration by heat, oil, water and abrasion obtained with the 1960 wiring harness more than doubles wiring harness life.

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Test results like these plus the experience of satisfied users are important but that is not all. For 1960, the Super Duty line has been broadened to provide even more flexibility in power train options. Get the facts from your Ford Dealer!

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MODEL of Y-shaped interchange is complete in detail, including 2,000 autos molded to scale.

"Mixmaster" for Los Angeles Traffic

Four freeways are joined in a $10,000,000 interchange, the largest contract let by the California Division of Highways

THEY CALL it the Mixmaster, and it isn't the sort of job a superintendent dreams about unless he had too many onions for supper. Officially known as the East L Angeles Interchange, the $9,726,000 project brings together four freeways in a complicated splice of ramps, roadways, and bridges woven over, under, around, and through the existing Santa Ana Freeway.

The contract is held by Peter Kiewit Son Co. who, with the aid of numerous subcontractors, will install 32 bridges of vario size and complexity, 20 retaining walls, excavate 1,500,000 cu. yd. of dirt, lay 23,0 cu. yd. of pavement, lace the area with 1 000 lineal feet of drain pipe ranging diameter from 24 to 66 in., and install t major storm drains of 96-in. concrete pi totaling 745 ft. in length.

Construction will be carried on in t midst of Los Angeles perpetual traffic ja The job is divided by the heavily-trave Santa Ana Freeway which runs lengthw through it, and criss-crossed by three terial streets. Traffic must be kept flowi on all of these streets. This divides the j into a number of compartments. Unh pily the cut-and-fill schedule does not c form to this arbitrary compartmentati and the contractor is faced with the pr lem of moving material across the tra

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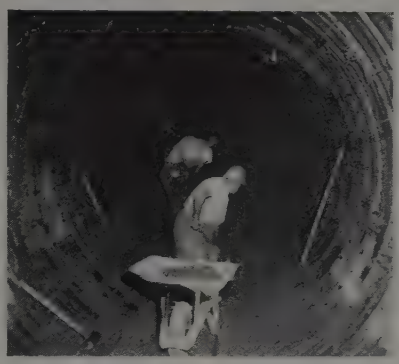

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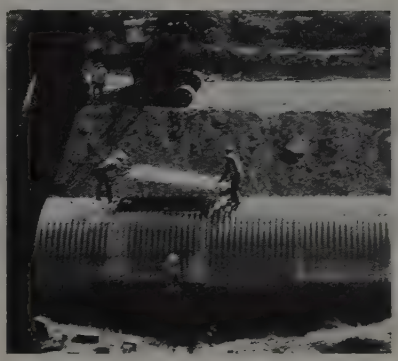

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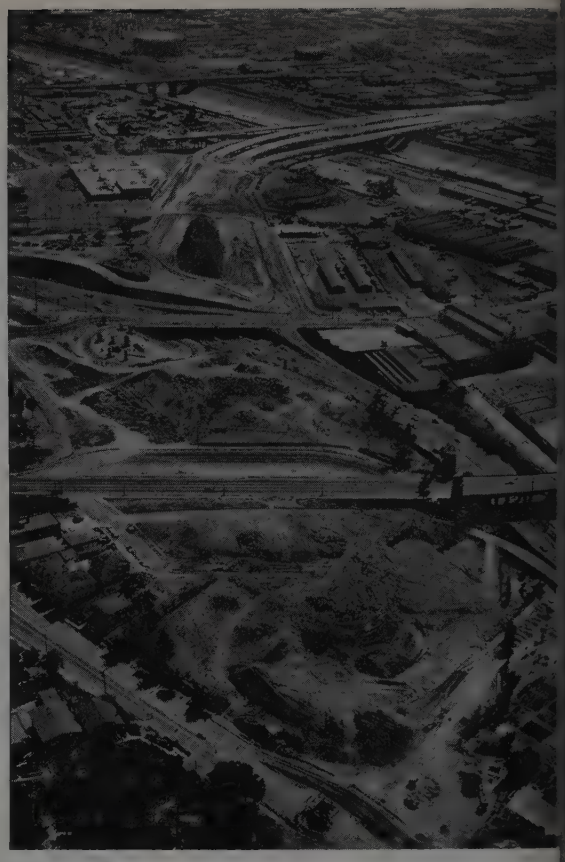
MODEL shows completed Golden State Freeway from Los Angeles River bridge, top. Santa Ana Freeway crosses area, top center.



SAME AREA under construction seen from air. Bridge, industria plants, freeway and other landmarks easily identified in model at left

barriers. This is by no means an easy job since he cannot interrupt the flow of traffic long enough to bring a scraper spread through, and if he could, he is still prohibited from moving heavy equipment over the numerous existing bridges on the job.

The entire project is tightly encircled by residential areas and industrial plants leaving very little elbow room for maneuvering big scraper fleets. Nor is there any spare ground within the project itself where right-of-way costs are extremely high.

Neither is there any time to spare. The contract calls for completion in 475 working days.

These are the conditions which surround the largest single contract ever issued by the California State Division of Highways.

To deal with the triple threat problem of complexity, time and traffic Peter Kiewit Sons' Co. moved in a team of top flight supervisory personnel, all of whom have a wide base of experience in freeway interchange construction. The team is headed by Norman Barnes, superintendent, who recently completed the Carquinez Bridge Interchange. Three of Barnes' six key men are job superintendents in their own right. Zel Mullican, structure superintendent, has just completed a $3,500,000 freeway bridge over the Los Angeles River which will form part of the interchange. Tom Kelly, excavation superintendent, and Bill Roache, pipe superintendent, are both veteran highway builders.

Completing the staff are Wes Thomas, project engineer; Bob Witbeck, assistant structure superintendent; and Bob Fink, master mechanic.

Traffic barriers

The physical restrictions of the job and its many traffic barriers require that it be done piecemeal. Contractor expects to have as many as 20 bridges under construction at one time. In order to accomplish this a master plan and master schedule were drawn up well in advance of construction. As Barnes put it, "We took the project engineer and our key men and locked ourselves in a room for a week. When we came out we had the plan pretty well outlined."

The general strategy of the mas ter plan is to break through th traffic barriers that arbitrarily di vide the job to gain mobility fo moving the 1,500,000 yd. of dir This is to be done by constructin two key overpass bridges and a unusual temporary bridge over bridge.

Scale model

Planning the construction of thi complex project was aided consid erably by a huge scale model of th entire interchange constructed i elaborate detail by the Bridge A chitectural Design Section of th Division of Highways. Built in an shape, each leg of the model about 10 ft. long and 3 to 4 ft. wid The legs come apart for cratin and shipping. Built to the sam scale in both vertical and horizon tal dimensions, the model is e tremely accurate and in fact r vealed a number of discrepanci in the hundreds of individual d signs which go to make up the co struction plans.

The model is also extremely lif like in appearance. Surroundin

chools, houses, churches, and industrial plants are faithfully reproduced. The right-of-way is landcaped with vegetation made of ponge rubber and Japanese seaweed. At the upper end of one leg, where the freeway crosses Hollenbeck Park, there is a very wet looking plastic lake surrounded by the correct number of palm trees made of wire and caribou hide. Final ouch is provided by some 2,000 iny plastic vehicles ranging from ports cars to busses patiently noulded by the department's mod-l makers.

Vertical scale was maintained by llowing 1/32 in. for the thickness f the paint which was applied as he last step.

Base of the model was made of eavily reinforced plywood painted ith two coats of white paint and anded. On this was traced the outines of the various interchange eatures. Roadways were carefully ut from pine blocks to supply the ertical dimension and glued in lace. Bridge structures were built ndividually and simply set in place o be glued down after the final ighway striping job was comleted. Data for the interchange eatures came from the plans themelves which were redrawn to the in. to 50 ft. scale of the model. Details of the surrounding area ere provided by oblique aerial hotos, contour maps, and, in at east one case, the actual plans of he industrial building involved. Workers carefully scaled the photoraphs using some object of known eight to get accurate proportions f schools and other large buildings. They did not attempt to reproduce exactly the more than 1,000 houses in the area. Instead they moulded five styles of houses and used these to simulate the residential pattern. Builders of the model were Louis Baker, Jack Alexander, Fred Gordon, and Warren Ludlow of the Bridge Architectural Design Section. The entire job took some 3,000 man hours over a period of 14 months. When completed it was insured by the department for $20,000.

Interchange layout

The interchange which this model depicts is roughly Y shaped with the Santa Ana Freeway cutting through the center lengthwise. The left arm of the Y is made up of the Santa Monica Freeway now under construction. The right arm is the new Golden State Freeway, also under construction, and the terminal of the Y is the Pomona Freeway which, except for the ininterchange, is still on the drawing boards. Through this Y runs the existing Santa Ana Freeway. The interchange is constructed so that each freeway has direct access to the other three, resulting in a mass of ramps, overcrossings, and undercrossings in addition to the main roadways. As if this were not sufficiently complicated, three arterial streets, 7th Street, Boyle Avenue, and Soto Street, run laterally across the area at more or less regular intervals.

Because they cut across all the various roadways, these three streets form the chief barriers to orderly earth-moving. The contractor is building key crossing structures on each of these streets. The uncompleted roadway beneath will be used for haul roads.

The big problem of crossing the Santa Ana Freeway was solved by building a temporary bridge over an existing concrete bridge. The existing bridge carrying Boyle Avenue over the freeway was scheduled to be lengthened on either side to span additional roadways running parallel to the freeway at that point. The contractor cut away both bridge approaches, leaving a steep haul ramp on either side. He then set 12 x 12 timbers over both bridge abutments and directly over the bent in the center of the bridge. On these timbers were placed eight steel beams from abutment to center bent, and eight more from center bent to the opposite abutment. These steel stringers were then covered with a solid layer of 12 x 12 timbers to form the bridge deck. Plans for this bridge were carefully checked out both with a consulting engineer and with highway department officials. The structure enabled heavily loaded earth-movers to cross the freeway without putting any load on the existing bridge deck. Cost of the structure was nominal since the contractor was able to use materials on hand.

At Soto Street the contractor is erecting a crossing structure in the glory hole with excavated dirt piled wherever he can find room for it. When this bridge and a similar one farther along on Boyle Avenue are

GIANT auger built by contractor used to drill 0-ft. holes for concrete piles.

STEEL scaffolding falsework for box girder bridge. Steel frames can be re-used on many of the 32 bridges which make up project. Units work best on level footing.

completed he will have a traffic-free haul road to bring material into his biggest fill area, a swale called Fickett Hollow immediately beyond Soto Street. Simultaneously with construction of the bridges a great deal of activity is now going on in Fickett Hollow. This is one of the low spots in the project, and a 75-in. and a 66-in. storm drain are being installed in the bottom of the draw. Before this can be done, however, an existing section of box culvert must be chipped out and removed. The culvert, originally installed for drainage purposes, was not considered strong enough to support the 80-ft. fill which will go on top of it. The contractor does get one break here, however. When the Santa Ana Freeway was built it was carried over the swale on a bridge intended as an overcrossing for the projected Pomona Freeway. This bridge will become an important link in the haul road system.

BLACK BELT at base of cut is road oil sprayed on sandy bank to retain moisture and prevent fall-out. Steep cut necessary because of restricted site.

Site prepared

Before these and a multitude of other construction jobs which make up the project could be undertaken, however, the site first had to be prepared. Four detours were constructed and paved. One of these involved relocating streetcar tracks.

At the upper end of the project one end of a small lake in Hollenbeck Park was diked and drained to provide a construction area for the overhead bridge.

At the opposite end of the project a pedestrian underpass under the Santa Ana Freeway was lengthened at both ends to provide for additional roadways. A school adjoining the project lost half its playground, and this was replaced with a corresponding fill on the hillside below the school. These two jobs involve the first of many deadlines on the projects since they were completed prior to opening of the fall term.

The contractor also had to excavate and remove some 82,000 yd. of rusted tin cans and old bedsprings which comprised a former dump.

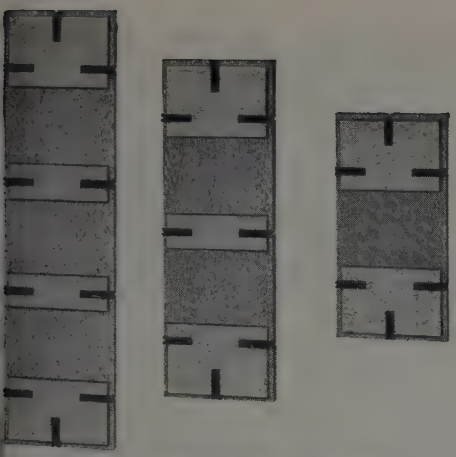
At the now dry end of Hollenbeck Lake a 96-in. storm drain line is being installed. Part of the tributary lines to this system were installed by a subcontractor, C. E. Meier Co., who employed a novel method for crossing the freeway with a 69-in. concrete line. The contractor dug a shaft 35 ft. deep beside the roadway, and at the bottom of this drove a sloping tunnel beneath the road. The tunnel was lagged, and a concrete invert or cradle, shaped to fit the curvature of the pipe was built. Pipe sections were then lowered to the mouth of the tunnel and pushed into place with jacks. When sections were in place the void on the outside was pumped full with grout and the joints were sealed from inside.

At other points high pressure water mains, as much as 51 in. in diameter, are also being installed. These along with the storm drains must be built as nearly failure proof as possible. A break or leakage in these lines would undermine some of the most heavily traveled roadways in the country and create traffic problems of truly hideous proportions.

Hazardous operations

In the bridge construction phase probably the most difficult and hazardous operation is the two long bridges which sweep over both the Santa Ana Freeway and the 7th Street Bridge above. Located at the heart of the Y, this bridge takes off from an abutment at the base of a hillside cut beside the freeway. It is supported in the center by a series of rectangular piers rising 40 ft. from the freeway dividing strip, and from there crosses both the freeway and the 7th Street Bridge to the opposite hillside abutment. A companion bridge crosses the freeway on the other side of 7th Street to connect inbound and outbound traffic streams from the Golden State to the Santa Monica freeways. Similar piers for the second bridge are located on the other side of the 7th Street cross

BRIDGE on a bridge permits heavy earth-movers to cross freeway. Timber haul bridge rests on steel girders erected over concrete deck of existing structure.



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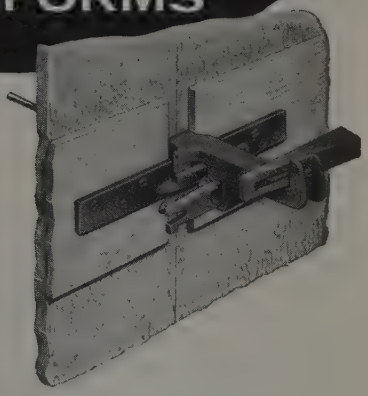

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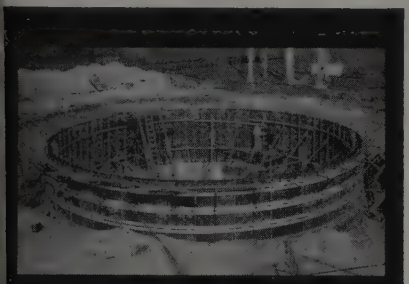

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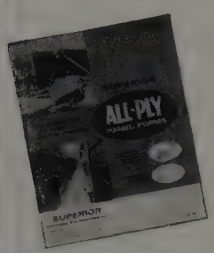

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ing. In all, a dozen of these rectangular reinforced concrete structures will be placed in the narrow dividing strip between six lanes which appear to be packed solid with speeding autos throughout most of the day. The contractor is permitted to block off only one lane of the freeway at a time, between 10 a.m. and 2 p.m. This provides barely enough room to cut away the curbs, make the necessary excavations, and pour the footings. The speeding traffic is a constant hazard, and the carpenter who steps back to admire his work may find himself draped over a strange fender headed for Disneyland.

Pier forms are, of course, prefabbed in the contractor's yard. They consist of conventional timber and plywood panels attached to welded steel walers. They are crane placed and bolted together. On the two forms closest to the bridge on either side, the crane can operate from the top of the 7th Street Bridge. When the forms are secured, grids of reinforcing steel are swung out on the hook, gently slipped into the form, and tied into position. When the first of these piers was being erected a solemn group of men, consisting of the general superintendent, the excavation superintendent, the structure superintendent, and the project engineer, lined the bridge railing, giving their ulcers exercise as they sweated out the maneuver. The last mat of two tons of reinforcing steel was swung out over the form, turned into position, and carefully lowered in place. Beneath the operation five lines of traffic roared past.

For succeeding columns the crane will work from the roadway itself. Bridge concrete is supplied in transit mix trucks. When the piers are poured and capped the freeway will be spanned with structural steel girders. These will be placed at night between midnight and 5 a.m. when the freeway will be closed. The contractor plans to place solid scaffolding on the lower flanges of the bridge girders to provide a base for erecting deck forms as well as to keep wet concrete and possible heavier items from conking motorists on the head.

Most of the other bridges in the project will be of box girder concrete construction. A few precast and prestressed members also are called for to meet special conditions.

Wherever possible the contractor will use steel scaffolding for bridge falsework. A stockpile of these tubular steel frames and cross members has been assembled at the job site. Primary advantages of these steel frames is the speed at which they can be assembled and knocked down, and their reuse qualities. Disadvantage is the difficulty in erecting the frames on sloping or uneven footing. Consequently, they are destined for use on a relatively level base.

Cylindrical columns are formed with half-circle steel sections flanged at top and side. Four-foot diameter sections can be bolted together for column of any height.

Weekly schedule

The necessity for keeping a large number of individual operations going on schedule in a highly integrated project such as this one requires more than a master plan and master schedule. Each week's work is scheduled in minute detail at weekly meetings of all foreman and supervisory personnel.

Supplementing these meetings and planning sessions is a two-way radio dispatching system which is used extensively to shift equipment and crews from any completed operation to the next critical spot.

A number of timesaving methods and devices are employed on the job. Many of the piers on the job are 4-ft. cylindrical columns. These are made with sectional steel forms built to the contractor's design. Each semi-circular section is flanged so that the sections can be clamped together to form a column of any desired height.

Concrete caps on the columns are formed without use of falsework. A heavy steel bolt is poured into each column perpendicular to the axis of the cap. To this bolt at either end are attached steel brackets. Steel cross members are placed on the brackets, and the framing for the column cap erected on them. This method is particularly useful where the caps are 5 ft. or more from the ground, which is frequently the case on the interchange project.

Contract calls for driving 1,33 concrete bearing piles for bridg footings in location where the sub structure is unstable. In many cases, and with the approval o highway division engineers, cast-in drilled-hole piles will be substituted. Holes for these piles will b drilled by a 50-ft. hydraulically op erated auger of 16-in. diameter built by the Kiewit company. Th auger, mounted on a boom-like mast assembly, is moved and positioned with a truck crane. Th auger hole of course acts as its ow form when the concrete piling poured.

Another example of neat pou ing is in excavations for wing wa footings and various small struc tures where a Gradall is used t make precise excavations.

Working in close quarters, th contractor frequently must mak steep cuts which carry some slid danger. In one such area the co tractor sprayed the cut walls wit a light coat of road oil. The pu pose of the oil was not to pave th walls, but to seal off a deep lay of sand to prevent it drying ou and possibly giving way.

Despite its cramped quarters, an other problems, the job has at lea one advantage: supply and materi sources are close at hand and rea ily obtainable. Thus, if a majo piece of equipment breaks down, rental replacement is available o short notice. It is not necessary t maintain extensive inventories

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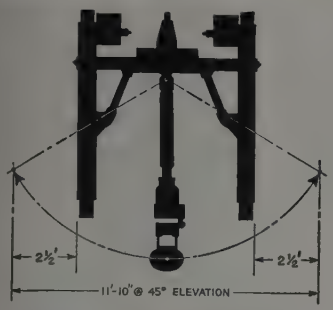

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SUPERVISING the complex job are, from left, Tom Kelly, excavation supt.; Wes Thomas, project engineer; Zell Mullican, structure supt.; and Norman Barnes, project supt.

job materials at the site.

In the opening phases of construction some 200 men are employed working one shift from 7 a.m. to 3:30 p.m. in order to avoid at least one of the heavy traffic periods. At maximum operations the work force will be increased to around 300.

The equipment spread includes two Caterpillar D-9 tractors, five D-8's, two D-6's, one D-7, three motor graders, six DW-20 scrapers, and three DW-21's, all of 18 to 20-yd. capacity, a Northwest 25 crawler crane, and a Northwest 6 backhoe, four Lorraine truck cranes, one American 40-ton truck crane, one Austin-Western 6-ton utility truck crane, two Gradalls, and one Northwest 95.

The equipment list is subject to considerable change as operations vary from week to week. The contractor plans no winter shutdown, but will keep working right through the rainy season, weaving pipe, dirt, bridges, and abutments into one continuous operation.

Personnel for the contractor have already been listed. For the State Division of Highways, Edward T. Telford is Assistant State Highway Engineer and the chief administrative officer of Highway District VII. Alfred L. Himelhoch is District Engineer of Operations. Heading a force of some 30 field engineers and inspectors is L. E. Steele resident engineer.

This is Kiewit's second go at the Santa Ana Freeway. The first post-war freeway contract to be awarded went to them in 1945, from First to Fickett Street. They now have the task of removing some of their own handiwork.

Land clearing starts at Flaming Gorge

A $2,385,000 contract for clearing the first stage of the Flaming Gorge reservoir site on the Green River in northeastern Utah has been awarded. The contract goes to Herman H. West and Co. and Phillips and Jordan, low among five bidders. The work under the contract is to be completed within 2½ years after notice to proceed.

The contract involves clearance of roughly 7,800 ac. of the reservoir site, extending from the dam upstream some 15 mi. The area which may be exposed by water fluctuation will be fully cleared. Because of the extremely rugged terrain in the lower canyon, only 15% of the clearing work is expected to be done with heavy machinery. Several contractors, after checking the proposed work, commented that this was the most difficult clearing job they had ever inspected.

The five bids submitted ranged from the low bid to a high of $380,000. Schutt Construction Co. of Eugene, Ore., was second low with a bid of $3,875,000, and Huckner & Michner, Inc., of Denver was third low, with a bid of $4,075,000.

Some 40% of the complete clearing job will have to be done under another contract.

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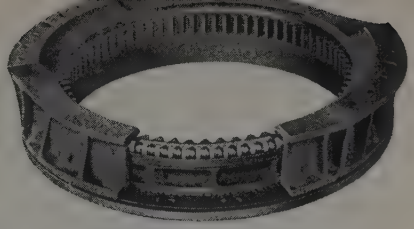

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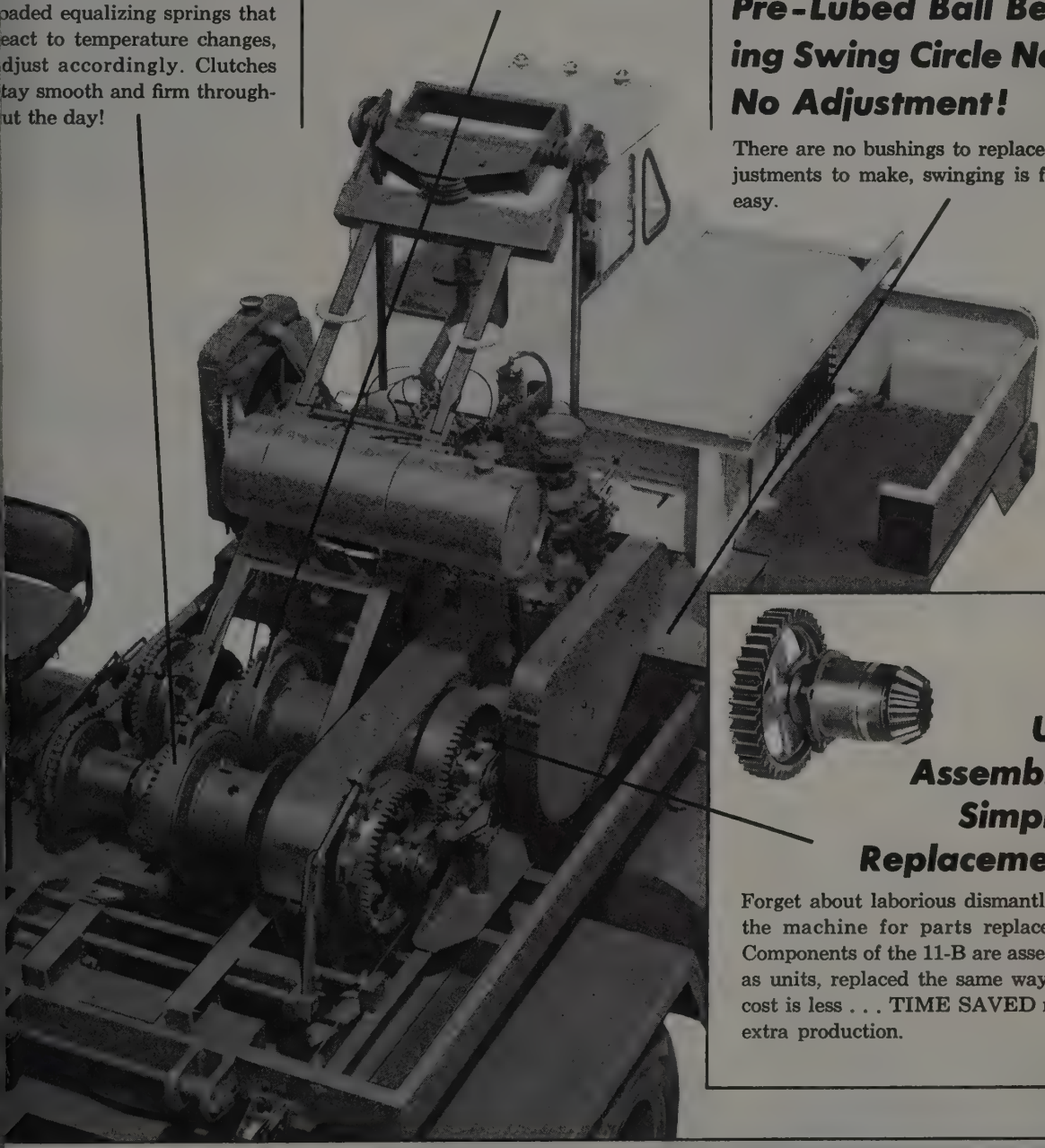

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OFFICIALS Neil Grimes, left, manager, and R. A. Hanson, president of the firm.

DEMONSTRATION of No-Joint pipe form watched by part of the crowd of 124.

No-Joint field day features death-defying strength test

AN UNSCHEDULED, death-defying test of the strength of No-Joint pipe was a feature of a field day demonstration staged recently by R. A. Hanson Co., Inc., at the firm's plant in Palouse, Wash. Some 124 contractors, engineers and guests watched an Allis-Chalmers HD 20 with 5-ton dozer blade try to break down a section of No-Joint pipe with its inventor inside.

Gilbert D. Williamson, president of No-Joint Concrete Pipe Co., Yuba City, Calif., and holder of the pipe patents, crawled inside a 30-in. ID section of demonstration pipe poured 70 hours previously while Neil Grimes, general manager of R. A. Hanson Co., pipe machinery manufacturers, drove the crawler over the exposed top of the pipe.

When this failed to dent the concrete, the trench was filled with 7 inches of loose earth and mounded up to form a crown to take the entire weight of the crawler. Grimes drove up on the mound and banged away with the 10,000-lb. dozer blade trying to break the pipe, which withstood the barrage. Williamson was retrieved from the pipe, equally unscathed.

Visitors also were shown the Hanson ditcher with a patented mercury switch grade control and lateral leveller which automatically cuts a shaped trench to grade with a high degree of accuracy.

A re-designed No-Joint pipe form was put through its paces. The machine has a new oscillating consolidator which forms a continuous ring beneath the receiving hopper (which is removable for low-clearance work). Hydraulic power has been substituted for electric motors on most of the machine's functions.

The 124 guests at the day-long demonstration included engineers from the Philippine Islands, India and Alaska as well as dealers and contractors from the Western states. The impromptu pipe strength test was made in response to a challenge by one of the visitors.

PIPE FORM on display showing new consolidating ring, and removable aluminum form.

FINISHED pipe supports crawler. Inventor Williamson stayed inside pipe during test.

WESTERN CONSTRUCTION NEWS

Contractor seeks court ruling on High Gorge Dam contract

NOTHER eruption has taken lace in the long-continued contro- ersy between Merritt-Chapman & cott Corp. and Seattle City Light ver the construction of Gorge am on the Skagit River. The con- actor has filed with the U. S. Dis- ict Court asking for a termina- on of the contract. The project already a staggering 907 days be- nd schedule.

The Gorge Dam job has been a ouble spot ever since work got nder way early in 1955. This mag- ine aired the controversy in the pril 1957 issue when statements ere published from City Light nd Merritt-Chapman & Scott con- rning the negotiations which ere then under way to terminate e contract and place responsibil- for the unforeseen difficulties d expenses. The argument cen- rs around the use of a barrier of tificially frozen foundation ma- rial whose purpose is to block the w of water into the excavation. his "ice dam" as first designed d constructed was inadequate d had to be revised and enlarged. he technical details of the ice rrier as originally designed and stalled were reviewed in *West- n Construction,* November 1956, ge 30.

atures of the problem

Briefly, the High Gorge Dam oject consists of building a new m a few hundred feet down- eam from the existing Gorge Di- rsion Dam, to replace this struc- re and to provide more head for e generators in the Gorge power use. Foundation conditions pre- ted a major engineering and nstruction problem. The river annel at the site includes a con- erable depth of sand, gravel, and ulders through which water es- ing under and around the pres- diversion dam flows in con- erable volume. The unusual ice barrier or frozen curtain between the old and new structure enables excavation to proceed without endangering the old structure.

In the complaint filed by Merritt-Chapman & Scott it is charged that the original plans have been "abandoned and become unrecognizable" and that the contractor is "being forced under constant threats of default and imposition of penalties to perform an entirely different contract from the one upon which it bid."

The complaint states that "de-

(Continued on page 110)

LeTourneau suit settled

LE TOURNEAU-Westinghouse Co., of Peoria, has withdrawn its suit in Federal District Court against R. G. LeTourneau, Inc., and the company's president, Robert G. LeTourneau. The suit, which was about 16 months old, was filed to clarify certain features of a contract, and satisfactory understanding between parties has been reached which resulted in withdrawal of the suit.

In 1953, the original LeTourneau firm sold its earth-moving business, two of its four plants and certain patents and trademarks to Westinghouse Air Brake Co., which established the firm of LeTourneau-Westinghouse Co. as a subsidiary. A provision of the sale was that the original LeTourneau company and its president would stay out of the earth-moving equipment business for a period of 5 years. This period expired in May of 1958 and the suit was filed the preceding month.

R. G. LeTourneau, Inc. with headquarters at Longview, Texas is moving forward with plans to expand its line of earth-moving equipment. The firm plans to introduce two new types of earth-moving machines within the next few months.

N. Mex. Highway Department changes in personnel

RECENT changes in top administrative personnel of the New Mexico State Highway Department present the following:

D. B. Dixon, Chief Highway Engineer, formerly district engineer located at Albuquerque
H. R. Payne, Director, Administrative Services
D. W. Thornburg, Administrative Assistant
Robert W. De La Rue, Right-of-way Engineer
A. G. DeLong, Engineer of Construction
C. O. Faulk, Administrative Assistant (Construction Division)
T. E. McCarty, Construction Engineer
C. W. Johnson, Materials & Testing Engineer
L. E. Wheeler, Engineer of Design
W. E. Strohm, Bridge Engineer
C. H. Muchmore, Engineer of Surveys
W. Cramer Wells, Field Design Engineer
P. L. McClernon, Engineer of Maintenance
S. A. Bennett, Maintenance Engineer
Dave Wagner, Road Design Engineer
John Whittington, Equipment Superintendent
H. S. Wiley, Planning Director

Bid opening set Oct. 14 on Feather River bridge

BIDS were called Aug. 31 for the combination highway-railroad bridge over the West branch of the Feather River, the final link in the highway relocation to clear the way for the Oroville Dam and reservoir. State Department of Public Works engineers estimated the $10,000,000 final link of the realigned U. S. Highway 40 alternate will take about two years.

The new bridge, about 11 mi. north of Oroville, will be a two-deck structure with highway traffic using the upper deck and Western Pacific rail lines crossing below.

Work will be performed by the Department of Public Works under an agreement with the Department of Water Resources. Bids will be opened October 14 in Sacramento.

Length of the 56-ft.-wide highway portion of the bridge will be 2,731 ft., and length of the railroad portion will be 1,875 ft. The bridge will rise 470 ft. above streambed, and will have a maximum span of 576 ft.

The bridge, for which $11,800,000 was appropriated by the 1959 Legislature, will connect two sections of the relocated Highway 40-A which were recently completed by McCammon-Wunderlich Co.

The 13.3 mi. of completed highway includes a stretch 7.5 mi. long extending from the site of the bridge west to a point north of Wicks Corner, and a stretch 5.8 mi. long extending east from the bridge to the old Highway 40-A near Jarbo Gap.

The bridge will also join portions of the relocated rail line between Tunnels Nos. 1 and 2, the two southernmost of five railroad tunnels included in the relocated line. A contract was awarded in July for construction of Tunnels 2 and 3. Funds for Tunnel No. 1 will be requested in the 1960-61 budget. Tunnels Nos. 4 and 5 have been under construction since the fall of 1957 and are expected to be completed by April 1960.

Contract awarded by EBMUD for large reservoir

CONTRACT has been awarded to Williams & Burrows for the building of a 15,000,000-gal. distribution reservoir by the East Bay Municipal Utility District on a bid price of $571,018. This bid was the lowest of four received for the work. The Danville reservoir will be located near the town of that name at an elevation of 550 ft. It will be an excavated, open-cut reservoir and will have a specially designed impervious lining. The reservoir will be covered with an improved type of corrugated asphalt cement roof and the material will be treated with coloring to minimize glare and provide a more pleasing effect. Total area of the roof will be about 113,000 sq. ft. Time required for construction will be two years.

Work starts on first natural steam power plant

CONSTRUCTION activities have started on the first geothermal steam generating station to be built on the North American Continent. Pacific Gas and Electric Co. has awarded a beginning contract for the building and approach roads. When completed the generating station is designed for a 12,500-kw. capacity and it is located 26 mi. north of Healdsburg in Sonoma County, Calif. Scheduled for completion next summer, the power plant will utilize natural steam brought from wells in this historic geyser site. The power company expects to invest about $2,000,000 in the project.

Interests controlling the producing area have announced that completed wells can already supply steam in excess of the 250,000 lb. per hr. requirement for the planned plant.

New business center to cost $30,000,000

THE world's first complete city within-a-city will rise next year on a three-square block area along Los Angeles' Wilshire Blvd. The $30,000,000 center being designed by Charles Luckman Associates will have five main buildings which are tentatively scheduled for construction beginning early next year. Plans call for all buildings to be completed two years after the start of construction.

The Wilshire Blvd. development will be the first of its kind on the scale combining fine office, commercial and residential structures in a planned community. The buildings will be widely spaced, occupying only 26% of the land area to permit the inclusion of parks, swimming pools and other recreation areas within the development. Underground three-level garage space for 3,400 cars will be provided.

A 16-story, 340-room hotel will occupy one end of the development. The hotel will contain specialty dining rooms and restaurants which will appear to float above ground because of the design which specifies a folded plate type of concrete construction. A 22-story, 240,000-sq. ft. office building will be located adjacent to the hotel. Other plans include two apartment buildings, one a 22-story rental building and the other a 12-story cooperative. All commercial enterprises will be concentrated in a single story building located in the center of the project.

Pedestrian bridges will span the two streets within the area, and join all buildings together, and all public entrances to the below-level parking would be from the streets within the project.

AIR CONDITIONING PLANT IN ALASKA

Hard to believe, but large air-conditioning units are being installed by the U. S. Army Engineer District, Alaska. At outposts that overlook the Arctic Sea, these units are installed to maintain proper air temperature and humidity for the costly and complicated electronic equipment at these stations. Regardless of outside temperature the equipment rooms must remain under constant control so the electronic gear will function at maximum efficiency and with minimum repair. So important is this that the District employs an air-conditioning engineering specialist, *Allen Woodridge*, who supervises the installation and operation of the equipment.

Big dredge to build islands in Lake Tahoe

AN engineering project unusual in scope and location has been undertaken on the south shore of Lake Tahoe where an aquatic community is being developed out of 725 ac. of marshland. The meandering mouth of the upper Truckee River is being transformed into a development known as Tahoe Keys. Work started in June when hydraulic dredgers began moving the first of 4,500,000 yd. of granite sand.

A hydraulic dredge, purchased from the Southern Pacific Railway and moved piecemeal from Great Salt Lake, is the principal piece of equipment being used. Moved on 13 flat cars by rail to Reno, it is by far the largest ever put into service in the High Sierra.

When completed, Tahoe Keys will contain 2,000 improved homesites, most of which will have private beaches and boat docking space.

The primary phase of the work consists of excavating granite sand that underlies the entire area. This decomposed material, deposited in an alluvial fan by the Truckee, will be excavated to depths ranging from 14½ to 20 ft. to form the waterways and also to provide borrow for the keys. Excavation work is being done by J. H. Pomeroy & Co., Inc. Engineers are Riffe, Shipherd and Jones, Inc.

$63,000,000 slated for airport building

THE Federal Aviation Agency closed out receipt of applications for Federal-aid airport construction money for Fiscal Years 1960 and 1961 on Sept. 1, and announced it would formulate both programs (under its recently approved $126,000,000 appropriation) at the same time.

The 1960 program, however, will be announced about Nov. 1; the 1961 program about Jan. 1, 1960. Projects will stress increased air safety—all projects being screened to assign highest priority to safety. E. R. Quesada, administrator, commented pointedly that airport terminal buildings, for instance, will not be programmed "if they are in competition with safety items either on the airport concerned, or on any other airport in any state."

Western state shares of the $63,000,000 set up for each of the two fiscal years will be:

Alaska	1,350,000
Arizona	$ 939,544
California	2,734,099
Colorado	955,269
Hawaii	750,000
Idaho	694,985
Montana	1,157,301
Nevada	$ 827,050
New Mexico	985,691
Oregon	932,127
Texas	3,093,777
Utah	719,824
Washington	868,070
Wyoming	754,789

Contractor licensing is expanding in California

CONTRACTOR licensing has increased 116% since it was instituted in 1946. Keeping pace with this increase the Registrar of Contractors, E. W. Ford, reports that the agency has maintained a corresponding expansion in its disciplinary action. Investigations by the board during the past fiscal year totaled 12,817 which was an increase of 663% from those in the first fiscal year. Non-license criminal actions taken during the last fiscal year total 3,570 which was an increase of 330% over those during the first year. A parallel comparison indicated that 530 licensee disciplinary actions were taken last year or an increase of 213%.

Applications for contractors licenses which were processed during the last fiscal year totaled 19,952.

The license board also points out that for the 13th consecutive year, California has led all states in the nation in construction, with a dollar volume in the state which was 2½ times the dollar volume of agriculture and stock raising combined. This volume of construction activity has kept steady pace with the 63% increase in population in California during the same period.

$3,500,000 plant starts in Los Angeles

STEEL erection will soon start on the R. C. Mahon Company's $3,500,000 West Coast plant facilities at Torrance, Calif. The 200,000-sq. ft. manufacturing, and 10,000-sq. ft. combined administration-engineering buildings will be completed before the end of this year. L. E. Dixon Company of Los Angeles is the prime contractor.

Third power tunnel starts on Kings River

WORK will begin this month o the tunnel and surge chamber fo Pacific Gas and Electric Company Kings River Powerhouse in Fresn County. A contract for this phas of the project has been awarded t Winston Brothers Co. and Gree Construction Co. The two firm bid on the job as a joint ventur The powerhouse, scheduled for o eration in the spring of 1962, wi be the third and final new plant PG&E's $80,000,000 Kings Riv Project begun in 1955. Two othe upstream and two reservoirs hav been in operation since last winte

The horseshoe-shaped tunn will be 14 ft. in diameter and i two sections totaling 3½ mi. It wi be connected by a 2,000-ft. inverte siphon crossing Dinkey Creek, tributary of the Kings River.

Plans call for the contractor t establish camp at Dinkey Cre and drive the 9,500-ft. downstrea section of tunnel between the and the powerhouse, which will l located at the high water level Pine Flat Reservoir at an elevatio of 950 ft. The crews will then dri upstream to the afterbay reservo of the Balch No. 1 and No. 2 po erhouses, which will be the foreb of the new plant.

The third phase of the Kin River Project now starting, inclu ing the tunnel, siphon, 42,000-k powerhouse, 1,800-ft. penstock a related works, will cost an es mated $13,000,000.

New bulk loading facilities at Calaveras cement plant

BULK loading facilities have be extended and placed in operati at the plant of Calaveras Cem Co. With these additions and t existing loading facilities, th bulk cement trucks, two sack ment trucks and a railroad car be loaded simultaneously.

The new installation consisted two steel bulk loading tanks 25 in diameter and each having a pacity of 2,700 bbl. These tanks mounted above a Fairbanks-Mo truck scale so that cement can rapidly discharged by gravity the bulk truck on the scale. Th loading tanks will be kept fil from storage silos at the pl about 350 ft. away. Tanks w designed, fabricated and erected Chicago Bridge & Iron Co.


CAMPANELLA & CARDI

Trends in highway costs

THE OVERALL national highway cost trend showed a drop of 2.7% in the second quarter of the year, which is the largest quarterly decrease since 1954. This information comes from the Federal Highway Administrator, Bertram D. Tallamy. The index figure comes from the study of average bid prices compiled by the Bureau of Public Roads, on construction contracts awarded by state highway departments.

This sizable drop in the U. S. index for the second quarter follows a 0.6% decrease in the previous quarter. The figures are looked upon as representing a trend toward the stabilization of prices rather than a definite downward trend. The latest report places the index 3.2% below the level of a year ago.

California cost index

During the same second quarter of 1959 the California Highway Construction Cost Index stood at 270.4 (1940—100) which is 25.1% above the first quarter of 1959. The figure is also 13.4% above the fourth quarter of 1958. Before accepting these current index figures, they should be qualified by the factor resulting from the curtailed construction and contract-award program during the past quarter. The figure represents the highest point reached on the cost index curve since it was started in 1940 (all-time high was 277.7 in 1957 first quarter).

Two factors contribute in an important degree to the upswing during the second quarter of the current year. The first factor, as pointed out by J. P. Murphy, assistant state highway engineer, is the comparison from a false 9.4% decrease during the first quarter of this calendar year. That decrease resulted from extreme competition among bidders, with small regard for cost figures and with evident interest in maintaining a volume of work during any slowdown in the Federal Highway Program. The other important factor was the smaller volume and different character of the work let during the current quarter. The reduction in volume came from the well recognized uncertainty that surrounded the future Federal Highway funds. This caused a reduction in the number of large projects in the budget, which, because of size and type, would have resulted in large scale operations and economies in construction. Of the contracts awarded during the quarter many were for resurfacing with considerable costs required for traffic handling and corresponding increase chargeable to the work items.

Bidding competition remained high, with an average of 6.3 bidders per project, but a reduction from the 8.2 average in the first quarter of the year. Incidentally, the number of pre-qualified highway bidders in California has increased to 1,045 as compared to 1,018 a year ago.

Idaho cost index

The cost index of the Idaho Department of Highways for the second quarter of 1959 stood at its lowest point since December 1954 —this is a figure of 88.4 which is 20.5 points or 18.8% below the previous quarter. This index is based on 1950 as 100 and represents figures from 9 work items comprising 75% or more of all highway contracts awarded.

Of the 9 items included in the makeup of the index figure, 4 advanced in price and 5 items declined. Most important factor in the decline was a drop figure for unclassified excavation from $0.6588 in the first quarter to $0.3643 for the second, or a decline of 44.7%. By comparison the bid price on sprinkling water showed an increase of 38.7%. Crushed surfacing per ton was down almost 11% while the cost of asphalt (all grades) was up 16.3% per gal. Reinforcing steel per pound increased about 1% while structural steel moved up 15.7%.

Colorado price index figure

Using the "Composite Mile Index" and base year of 1949, the Colorado State Highway Department reports a trend figure of 0.925 for the second quarter of the year as compared to 0.972 for the first quarter. This figure of 0.925 also compares to a figure of 1.025 for the corresponding quarter of 1958. The cost of excavation for the composite mile (10,630 cu. yd.) dropped from a figure of $4,156 in the first quarter to $3,050 in the second quarter of the current year. The total for all items making u the composite mile index stood a $17,077 for the second quarter a compared to $17,963 for the firs quarter of the year.

Judson Pacific-Murphy low on Carquinez Bridge job

LOW BID was received from Jud son Pacific-Murphy at $5,769,00 for the substructure of the bridg to be built between Benicia an Martinez across Carquinez Strai in Upper San Francisco Bay. Th 6,215 ft. bridge will be built by th California Division of Highways a part of a $34,000,000 project. Othe units of the project will be place in the active stage as the bridg work progresses.

Second low bidder was Ben C Gerwick, Inc. and Morrison-Knud sen Co., Inc. at $6,130,502. Thir low was a bid of Ben-Mar Construc tors, Richmond, at $6,172,830.

The work will include the build ing of 19 piers, nine of which wi be located in the waters of th strait. The bridge deck will b 187 ft. above water at its highe elevation and 62 ft. wide betwee curbs, providing a four lane high way and a 10-ft. dividing strip The deck-truss type structure wi be about 200 ft. downstream fro the present S.P. Railroad bridg

Ninth unit at The Dalles starts power production

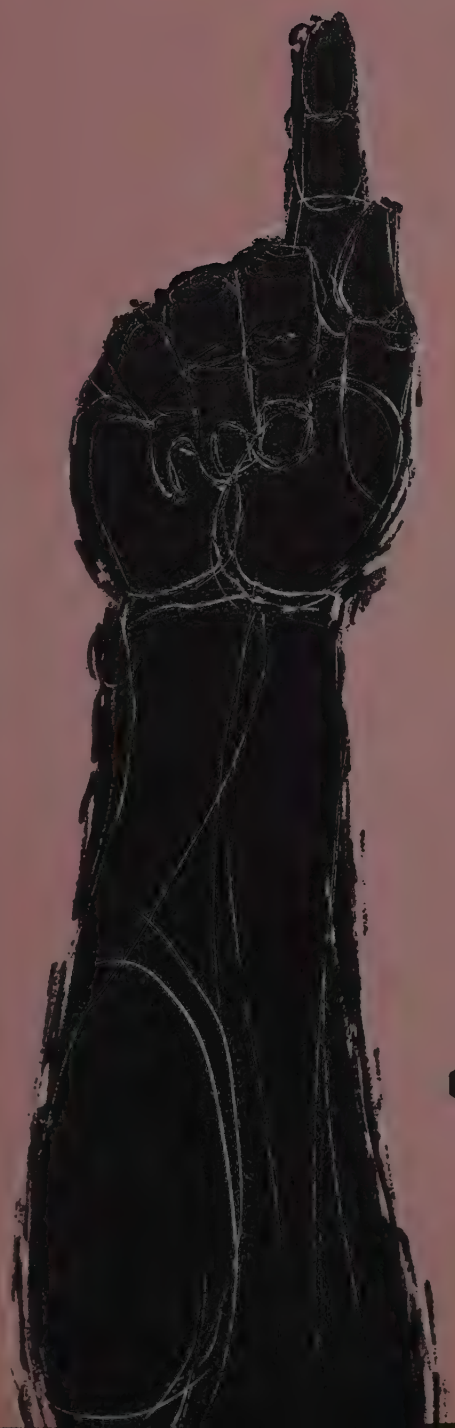
THE DALLES DAM main ge erating unit No. 9 began puttin power on the lines of the Pacif Northwest power pool late in A gust, according to Lt. Col. J. Ne ton Cox, Acting Portland Distri Engineer.

The 78,000-kw. generator boos the installed capacity of The Dall powerhouse to 729,000 kw. Each the other eight main units has a installed capacity of 78,000 and t two fishwater units 13,500 kw. eac

The remaining five main uni at the Columbia River project w be in operation by the end of 196 going on the line at about thr month intervals.

The Dalles Dam's initial fou teen generators will have an i stalled capacity of 1,119,000 k and the powerhouse will have a ultimate capacity of 1,743,000 k

Dedication of The Dalles Da will take place Oct. 10. An all-d program has been planned wi formal dedication by Vice-Pre dent Richard Nixon.



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ALASKA Newsletter

By CLIFFORD S. CERNICK, Fairbanks

NEW ALASKA LIFELINES—Some interesting future possibilities for Alaskan growth were brought out at the Pacific Northwest Trade Assn. Fairbanks meeting early in September. Robert Bonner, minister of trade for British Columbia, told the delegates about a network of new land and sea connections which had been proposed to link British Columbia and Alaska. Some of the new routes proposed include a Rocky Mountain trench railway from Prince George, through the Yukon to Alaska; the Stuart-Cassiar road now under construction north and south along the B. C. side of the Alaska Panhandle and the proposed extension of the island highway between Campbell River and Port Hardy, which could then be linked to Kitimat by ferry and then to Fairbanks via the Stuart-Cassiar road. The latter route would cut the distance between Seattle and Fairbanks to about 1,900 mi. from the present 2,400. The PNTA meet in Fairbanks brought together leaders from Canada and the U. S. to discuss problems of development affecting both nations.

NEW CONCEPTS — Imaginative new concepts of northern construction were touched on in a PNTA address by Alvin Hamilton, the Canadian minister of northern affairs and natural resources. Hamilton stressed: "We must not be bound in our thinking by conventional concepts which reflect vastly different and better known conditions in more temperate areas. Techniques which are sound and economic in Ontario or California are not necessarily equally effective in Fairbanks or Frobisher Bay. Surely it is not beyond the wit of man to design buildings as well fitted to northern requirements in our age as the igloo was in earlier times."

ATOMIC HARBOR — Here's the latest on plans for blasting out an atomic harbor near Cape Thompson. Tentative date for the blasting will be some time in the spring of 1961. The blast site is at the mouth of Ogotoruk creek on the northwest Alaska coast—about 150 mi. from Siberia. The main activity at the site right now consists of the drilling of two experimental core holes. One of them is being drilled about 200 ft. offshore and the other about a half mile inland. Each of these drill tests will provide core samples to a depth of about 1,000 ft. These samples will furnish clues to the depth and hardness of the permafrost — Alaska's frozen tundra — in that locality. Plans call for three atomic charges at a depth of 450 ft. in the channel and two charges on shore at a depth of 750 ft. More than 70 scientists and specialists have been working at the site beginning July 1.

NINTH INNING — For the construction season in Alaska, it's the last half of the ninth inning and it's precisely at this stage of the game that we may get the most action so far as the union-contractor dispute is concerned. As this is being written, Federal mediator Albin Peterson is scheduled to arrive in Fairbanks to reopen negotiations in the carpenters' strike. A spokesman for the Associated General Contractors said Fairbanks was selected as the site for negotiations because it was believed "a change in scene might be advantageous." An AGC representative said that even if an immediate settlement is reached, no new jobs will be started because of the lateness of the season. However, some partially-completed jobs could be resumed.

It's fairly clear, here, in my opinion that even an immediate agreement would not restore much activity. The onset of winter is so close that in the opinion of many construction industry representatives, it would be best to negotiate for 1960 and give up the 1959 construction season as almost a total loss. Many AGC members are more than a little bit unhappy and bitter over the developments so far.

The carpenters have clung more stubbornly to their demands than anyone thought possible, even to the point of having to be ordered by their international headquarters to man critical defense jobs. A ke phrase in the AGC announcemen at the end of August characterize the contractors' resistance to de mands they feel are exorbitant an excessive: "The Alaska Chapter ha no intention of unstabilizing th construction wage pattern in Ala ka by agreeing to wages and ben fits for the carpenters which ar out of line with the seven othe trades since, for many years, ther has been parity of wage increas and benefits between the two unio groups."

A DAMAGE SURVEY—Last yea when it came time to make n annual construction season for cast, this column predicted glo ing things for 1959. Unhappily, the year begins to wane, I'm calle upon to tell about the work th was NOT done — rather than a important accomplishments. T actual loss to the Alaskan econom to the construction industry, a to union men themselves, is inc culable. Guesses on the magnitu of this loss range from $20,000,0 on up. I'll not attempt a catal of projects affected by the wal out—this would take all my spa Instead, let's look at just a few jo that have been affected—and I selected those I consider typic In Anchorage, for example, J. Daum, a builder of housing, h announced that his plans to st work on 30 homes this year wou be deferred until next year beca of the protracted carpenters stri even though a contract for the j had already been awarded. A t cal military construction proj that had to be closed down was $2,246,320 U. S. Air Force Stati at Indian Mountain. This scheduled for completion in 19 but that date will now have to moved ahead. Previously, the U Army Engineer District in Ala announced shutdown of simi military construction projects St. Lawrence Island and Spa vohn Air Force stations. Ever the strike is settled at this writi these projects cannot be resu this year. More than 40 such p ects have been held up, cl down or postponed by the la disturbance. This should co a sense of the magnitude of disruption this walkout has ca in Alaska during the 1959 const tion season.

SITUATION AT CLEAR — M than 400 men, including 46 car ters, are at work on "critical" C

issile detection site jobs at this riting. Sam Baker, Jr., president f Baker & Ford Co., principal con-ractor at Clear, said 230 of the orkers are on the payroll of his ompany – the others are working or Patti-MacDonald, which has a ontract for relocating 10 mi. of ne Alaska Railroad. Baker, whose rm has a total of $15,000,000 in ontracts at the site, said he has st all hope of getting buildings losed in to allow winter work. reviously, he had indicated there as a good chance that a large pay-ll could be kept on through the inter months. Had it not been r the carpenters dispute, more an 1,000 men would currently be orking on the $250,000,000 proj-t. Baker said he would go as far possible with the work before eezeup, using double-shifting as uch as practicable.

ETERRENT TO SETTLE-ENT—One of the factors which s made it difficult to effect a ttlement in the carpenters' dis-ite is the fact that a majority of e carpeners are already at work nder interim agreements signed th contractors who do not be-ng to AGC. As one carpenter ex-essed it to me: "I haven't missed day's work all summer—I've got erything to gain and nothing to e by holding out until the con-ctors meet our terms." By con-st, the plumbers, whose mem-rship was more than two-thirds led by the strike, reached a ompt agreement on their differ-ces late in August. The two-irds of the carpenters member-ip currently at work is provid-g a strike fund for the one-third employed by the walkout. This considered a major obstacle in aching an early settlement.

ONCRETE POURED—Concrete uring began early in September the new municipal port project Anchorage. There will be seven tion pourings, about a week urt. Because of schedule disrup-n this year, it is now definite t port construction will not be npleted until the spring of 1961 tead of the original target date September 1960. The port's con-uction schedule was disrupted by carpenters' strike. There also delay because of replacements piling lost in a storm earlier in season. All of the piling sched-d for installation this year is in.

HAWAII Report

By ALAN GOODFADER, Honolulu

BOOM IN A BREATHER?—The General Contractors' Association of Hawaii reports that bid openings for the first half of 1959 totaled $98,500,000. This was 22% less than in the first half of 1958. Bid openings of $26,900,000 in June made that month the first this year to cap the total for the same a year ago, when bid openings totaled $20,900,000. The totals still are reaching for a record, however, if you go by construction completed. The Bank of Hawaii puts construction completed during May at $18,700,000—36% above May 1958. Construction started in August was listed by the Contractors' Association at $11,300,000 — $3,200,000 more than a year ago.

MAUI STRIKE-BOUND — Construction on the Island of Maui was at a halt at this writing as skilled building trades workmen stayed away from their jobs because of two disputes. Eleven electrical trades unionists went on strike because of stalemated contract negotiations. Other skilled workers were demanding recognition for the AFL-CIO Building Trades Council by the Maui Contractors' Association as their bargaining agent.

ASSOCIATION ELECTS—Calvin Y. L. Ching has been installed as president of the Hawaii Chinese Building Industry Association. Other new officers are Alexander Yuen, vice president; Wilfred Y. P. Wong, secretary; Dat Quon Pang, treasurer, and Boy Chee, William Au, Jonah Ting and Percy Chung, directors.

CONGRESS GIVETH—The House Appropriations Committee recently approved the spending of $10,241,000 for military construction here and hinted it may open the way for some big-time tourist construction. The hint was contained in a blast that was anything but equivocal. The blast was directed against military land policies in Hawaii, specifically that the Pentagon should have disposed of Waikiki Beach property at Honolulu's Fort DeRussy. DeRussy is f former coast defense post that ha been turned into a 72-ac. militar recreation center. According to th committee, retention of the whol $43,000,000 parcel of land is co trary to Defense Department polic It ordered the Defense Departmer to make a "thorough study" of i land holdings here (300,370 ac with an eye toward maximum u of its land and disposal of exce holdings. The tourist bit comes i because there has been agitatio here to get the Army to release pa of DeRussy for plush tourist a commodation construction. T h committee denied some milita construction requests pending land use report from the Pentago The requests it approved includ the following: Army, $177,000 Fort Shafter and $1,251,000 Schofield Barracks; Navy, $4,79 000 at the Pearl Harbor Naval Su ply Center, $47,000 at the Kaneo Marine Air Station, $350,000 at t Lualualei Naval Radio Statio and $274,000 at the Wahiawa Na al Radio Station; Air Natior Guard, $2,662,000 for Honolu construction, $446,000 on the land of Maui and $238,000 on t Island of Kauai.

MISSILE RANGE SPENDING In the more immediate futu Maj. Gen. Emerson C. Itschn Chief of U. S. Army Engineers, nounced here recently that $ 000,000 worth of projects in t Pacific will be "operated" out its Honolulu office this year. H will be on missile range work, other half on Capehart Housi Among the projects will be $5 000 for a Hickam Air Force B maintenance hangar, apron a taxiway to be let for bids this f 864 new Capehart units at Oa Fort Shafter and Schofield racks; missile range work on cific islands and other work.

IT'S "ADMIRAL" KAISER NO — Henry J. Kaiser has unve plans for a series of floating bu ing materials plants that he will "revolutionize industry in Hawaiian Islands" and slash c struction costs here. He has bou

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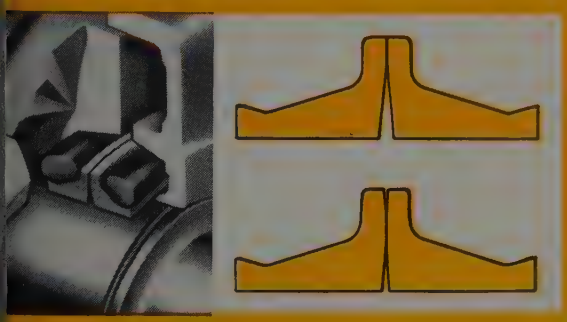

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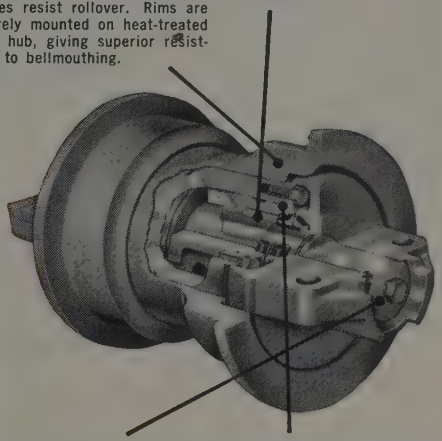

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ERVICE TIP: When rebuild time finally comes, be sure to keep the metal rings matched in original pairs, being careful not to nick or mar the lapped faces.

. . . for more details, circle No. 50 on Reader Service Postcard

landing craft of various types for hauling cement and dredge material throughout the Islands. These would work in conjunction with shoreside plants through a conveyor belt and pipeline system anywhere in Hawaii. In this way, Kaiser believes, cement and aggregate can be delivered to dealers more cheaply. He has staffs here and on the mainland developing new portable equipment to be used in the program. Meanwhile, Kaiser's Permanente Cement Co. has called for bids on its projected $13,500,000 cement construction plant here. Eight 90-ft. silos for storage are to be erected at the plant's Waianae, Oahu, site through the "speedy slip form" method and a packing plant is included in the job. Kaiser still plans to have the 1,700,000-barrel capacity plant in operation in August.

NEW NAME—Kansas City builder Robert W. Long of Long Construction Co. may be stepping into the local construction industry in a big way. He confirmed reports he's negotiating for a 29-ac. tract of land between Downtown Honolulu and Waikiki and next to the mammoth new Ala Moana Shopping Center. Offering price is reported at about $7,000,000. He indicated he is considering the construction of office buildings and some retail stores by his own construction firm.

OIL FIRM CONSTRUCTS—Hawaiian Dredging & Construction and James A. Glover, Ltd., are building the first sections of what is to be a multi-million-dollar petroleum service project that brings Armour Oil Co. to the Islands. End result will be a petroleum tank farm in Honolulu, another in Hilo (on the Island of Hawaii), service stations, pipelines and an office building. HD&C is building an 8-tank 400,000-gallon tank farm in Honolulu for Armour. Glover is building a marine terminal at Hilo for storage of bulk petroleum products. The contract price was not given.

CITY SPENDS—Honolulu City is expecting to spend $1,600,000 soon on school construction. The City Council is expected to rule favorably on its finance committee recommendation that Mayor Neal Blaisdell be allowed to advertise for bids on the projects.

Low bids and contract awards

ALASKA

Peter Kiewit Sons' Co. of Seattle, Wash. received a $1,261,790 contract for construction of support facilities at Fort Greely. The work includes construction of dormitory and mess, earthwork, foundation and underground plumbing. A $215,120 contract was received by **Chris Berg, Inc.**, of Seattle, Wash. to provide bank protection for the U. S. Air Station at Galena.

ARIZONA

Tanner Bros. Contracting Co., Inc., Phoenix, submitted a low bid of $1,198,984 for grading and surfacing on 10 mi. of the Cordes Junction-Flagstaff highway near Flagstaff in Coconino County. **Arizona Concrete Pipe Co.**, Phoenix, submitted a low bid of $527,178 for construction of storm drain, grading, surfacing and related work on 2.5 mi. of the Phoenix Interstate Freeway in city of Phoenix, Maricopa County. A low bid of $415,701 was submitted by **The Ashton Co., Inc.** of Tucson for construction of 2 bridges and traffic signals on the Phoenix Freeway, southwest of Phoenix. **Royden Construction Co.**, Phoenix, submitted a low bid of $348,822 for 2.1 mi. of grading, surfacing and related work on the Cameron-Navajo Bridge highway north of Cameron in Coconino County. **Wallace & Wallace** of Phoenix submitted a low bid of $233,798 for grading, surfacing and structures on 6.5 mi. of the Strawberry Hill section in the Coconino and Tonte National Forest in Coconino and Gila counties. A low bid of $194,221 was submitted by **Bentson Contracting Co.**, Phoenix, for grading, surfacing, and related work in city of Phoenix. **L. M. White Contracting Co.** of Tucson submitted a low bid of $162,189 for 2 mi. of grading and surfacing on the East Broadway road, east of Tucson in Pima County. A low bid of $115,470 was submitted by **Givens Construction Co., Inc.**, Phoenix, for grading and surfacing on various sections of highway in Apache County.

CALIFORNIA

Madonna Construction Co., San Luis Obispo, received two contracts for roadwork in Placer and Santa Barbara counties: a $4,739,175 contract to construct 5.1 m of 4-lane freeway together wit ramps, connections, grading an surfacing and construction of bridges west of Monte Vista i Placer County, and $552,181 fo 4.1 mi. of grading and surfacin south of Santa Maria in Santa Ba bara County. **Guy F. Atkinso Company** of South San Francisc received a $2,240,793 contract fo grading, paving and related wor on 4.4 mi. of 4-lane freeway nea Healdsburg in Sonoma County. $607,627 contract was received b **Griffith Co.** of Los Angeles for 2. mi. of grading and surfacing, bridge to be widened and 1 bridg extended in and near Bakersfiel in Kern County. **Oliver W. Sco & Son & Affiliates** of Santa An received a $498,775 contract fo widening 2 lanes to 4 and 6 lane on 3.4 mi. of highway in Cost Mesa, Orange County. **A. Teicher & Son, Inc.**, Sacramento, submitte a low bid of $331,849 for 5.2 m of grading and surfacing and wi ening 1 bridge north of Robbin and Sutter Causeway in Sutte County. **Dan Caputo,** San Jose, re ceived a $303,399 contract for co struction of a bridge over Sa Lorenzo Creek north of Haywar in Alameda County. **Wright Bro** of Gridley submitted a low bid o $289,622 for 8.5 mi. of grading an surfacing between Callahan an Cedar Gulch in Siskiyou Count A $217,184 contract was receive by **L. B. Wells Construction Co** of Visalia for reconstructing an widening to provide 2 lanes of fu ture 4-lane divided highway on 4. mi. north of Hanford in Kin County. **Redding Sand & Grave Inc.** of Redding received a $202,45 contract for 4.2 mi. of grading an surfacing south of Redding i Shasta County. **Baldwin Contract ing Co., Inc.**, Marysville, receive a $186,879 contract for reconstruc ing and widening on State Hig way Route 45, east of Butte Cit in Glenn County. A low bid o $155,280 was submitted by **Ray mond Construction Co.** of Fresn for grading and surfacing at Hun ington Lake Maintenance Statio in Fresno County. **Fredericksen & Kasler** of Sacramento received $238,033 contract for 1.4 mi. o grading and surfacing on 4-lan divided highway, east in Palmdale Los Angeles County. **Puget Soun Bridge & Dry Dock Co.**, (Lockheed subsidiary) Seattle, Wash. and **Di versified Builders, Inc.** of Para

mount, joint-venture, will serve as general contractors on construction on $2,500,000 modern headquarters building for Lockheed Electronics plant at Newport Beach.

NEVADA

Silver State Construction Co., Fallon, received a $339,738 contract for construction of 13.4 mi. of the State Highway system southwest of the Oregon-Nevada line in Humboldt County.

NEW MEXICO

Skousen-Hise Contracting Co. of Albuquerque received a $251,000 contract for 20 mi. of grading and surfacing on the Regina-Coyote route of the Santa Fe National Forest in Rio Arriba County.

UTAH

Fife Construction Co. of Brigham City received a $435,000 contract for 4.5 mi. of grading, surfacing, and related work on the Fairview-Huntington Canyon route of the Manti National Forest in Emery County. **Johnson Construction Co.** of Salt Lake City submitted a low bid of $100,117 for earthwork, pipe lines and structures, Ricks Creek Laterals, Davis Aqueduct Lateral System, Weber Basin Project.

WASHINGTON

Bass Construction Co., Inc. of Seattle received a $312,228 contract for construction of 1 bridge and 5.5 mi. of new roadway north and east of the city of Enumclaw in King County.

WYOMING

Davis Construction Co., Inc. of Grand Junction, Colo. submitted a low bid of $593,237 for earthwork and structures on the Oregon Trail Division, Glendo Unit of the Gray Reef Dam.

Seattle bridge job goes to McRae Bros.

THE Washington State Highway Commission has awarded a contract for building bridges to carry traffic across the Seattle Freeway at East 45th and East 50th streets north of the Lake Washington Ship Canal. MacRae Bros. Construction Co., Seattle, won the contract on a low bid of $594,506. Each bridge will carry city street traffic across the route of the Seattle Freeway.

Contract awarded for gates in Glen Canyon tunnel

CONTRACT has been awarded by the Bureau of Reclamation to Yuba Consolidated Industries, Inc., for $509,655 to furnish the outlet gates for the left diversion tunnel at the Glen Canyon Dam project. Work will involve the fabrication of six 7 x 10½-ft. gates that will be installed in pairs in the tunnel. These gates will be installed by Merritt-Chapman & Scott Corp., the prime contractor on the project.

The actual low bid for the work was submitted by an Austrian manufacturer with a price of $489,850 but the addition of the 6% differential added to the foreign bids brought it up to second place.

Book on placing rebars is out in pocket size

WITH complete information on how and where to place reinforcing bars in concrete construction, the Concrete Reinforcing Steel Institute has published a 281-page book, which is available in handy pocket size. The volume contains much more information and practical hints on reinforcing bar placement than normally available in textbooks on the subject.

The manual was prepared under the direction of the Engineering Practice Committee and was originally written as a guide for the trade. Subsequently it was extended to include vital information for engineers, contractors and field inspectors. It is well illustrated, with both photographs and detailed drawings. The handbook sells for $3.00 and can be obtained by writing to Concrete Reinforcing Steel Institute, 38 South Dearborn Street, Chicago, Ill.

Another Alaska job closed by strike

BECAUSE it was impossible to get the buildings closed-in to permit work to continue during the winter, Peter Kiewit Sons' Co. have closed work on its $2,246,000 contract for the U. S. Air Force Station at Indian Mountain, Alaska. This information comes from the U. S. Army Engineer District, of Alaska, the work being located about 200 mi. northeast of Fairbanks. The work provided by the contract calls for construction of a composite building, installation of water and fuel tanks.

Natural gas pipeline is $191,700,000 project

THE Federal Power Commission recently authorized Transwestern Pipeline Co. to construct a $191,700,000 natural gas pipeline system to deliver 300,000,000 cu. ft. of natural gas daily from producing areas in Texas to markets in Southern California. The PFC granted, at the same time, certificates for producers to sell their natural gas to the pipeline company.

The construction aspect of this project would involve the building of 1,809 mi. of pipeline and the installation of about 41,000 hp. of pumping capacity. This pipeline system would have its origin in the Panhandle area of Texas and terminate at Topock, Ariz.

High Gorge Dam

(Continued from page 95)

lays through changes in design and experimentation are still continuing, so that plaintiff has been and still is unable to intelligently plan its work and work force. . . ." Most of the 100 Change Orders cited in the complaint centered on the City Light's specifications for use of the freeze curtain. The contractor claims that the Lighting Department specified in detail how this freeze curtain was to be established, and assumed complete responsibility for its structural adequacy.

According to the contractor, "trial and error" methods of engineering resulted in the first stage freeze curtain taking 589 days to establish instead of the 90 days originally contemplated, and costing $5,156,000 compared to the original estimate of $566,000.

Under a 427-day extension allowed, the completion date set by City Light is now fixed at April 6, 1960. Under terms of the original contract M-C & S will be subject to $4,000 per day penalty if the project is not completed by that time. The complaint estimates that the dam cannot be completed before May or June, 1961. The complaint states that the contractor is being forced by City Light to perform extra work on a payment basis which does not even return to the contractor its actual costs.

But City officials feel that the delays are due to defective performance and lack of planning on the part of the contractor. Gordon S. Clenton; Mayor of Seattle, said, "By the contractor's own statement the project is now some 861 days behind schedule. While the Merritt firm seeks to blame this on difficulties encountered with the ice curtain, City records show that the contractor was already at least one year behind schedule before any difficulties arose with respect to the ice curtain."

Mayor Clenton indicated further that the City will consider action against the contractor to recover for the losses and expenses incurred by the City occasioned by the contractor's failure to live up to its agreement.

Commenting upon the court action, Lighting Superintendent Paul J. Raver said, "The contract clearly provides that the City would not be liable for any stand-by expenses incurred by the contractor in the event that freezing operations should cause any delay. This provision was written into the contract to protect the City against claims of the very type now asserted by Merritt-Chapman & Scott. Certainly Merritt-Chapman & Scott must have considered this possibility when it formulated its bid to the City. Now because this contingency has come about, and apparently because of the $4,000 a day penalty, the contractor has asked the court to decree the contract out of existence. A the same time it seeks to declare the contract void, it continues to draw payments from the City for work done under the contract. Thus the Merritt firm is trying to maintain two inconsistent positions."

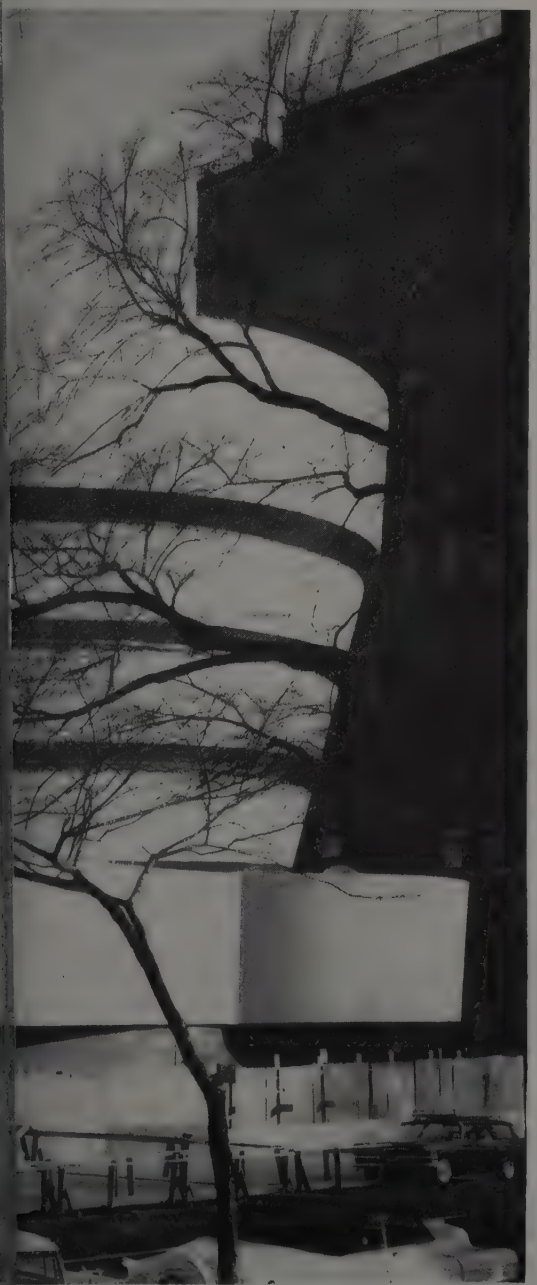
It is the City's position that the contract is still in effect, and all work done by the contractor and payments made to it are under that agreement.

The contractor estimates that total cost of the project will be nearly $22,000,000 or about $7,000,000 greater than the original contract terms.

Merritt-Chapman & Scott is presently constructing three other major dams in the West: Priest Rapids Dam on the Columbia River near Ephrata, Washington, a $98,000,000 project for Grant County Public Utility District; Glen Canyon Dam on the Colorado River in northern Arizona, a $108,000,000 project for the U. S. Bureau of Reclamation; and Cougar Dam on the south fork of the McKenzie River near Eugene, Oregon, a $24,000,000 project for the U. S. Army Corps of Engineers. It was recently announced that Priest Rapids Dam is 16 months ahead of schedule after three years of work.

r plywood
n Guggenheim Museum"

Charles Spero, job superintendent, Euclid Contracting Corporation



MON R. GUGGENHEIM MUSEUM
TION: New York City
ITECT: Frank Lloyd Wright
RAL CONTRACTOR: Euclid Contracting Corp.
New York City

Once again, fir plywood's superiority as a form material is dramatically demonstrated—on Frank Lloyd Wright's Solomon R. Guggenheim Museum, New York City. Plywood was used almost exclusively for the form work on all walls, on the curving ramps, and even on the 4-foot diameter columns.

"The job could not have been done without plywood," says Superintendent Spero. "Because everything is curves here, of constantly changing radii, there was never any other choice. It's smoother, certainly more durable, and cheaper in the long run."

Other advantages cited by Mr. Spero: handling ease, a minimum of cutting, a reduction of finishing time, very little backing required.

Put plywood's advantages to work for you. For information on specification and use, write (USA only):

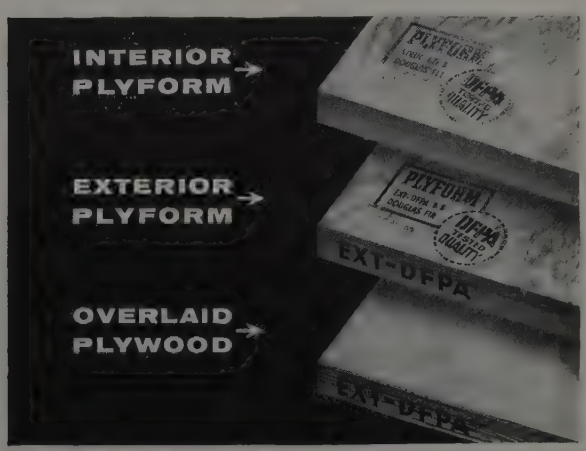
DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—a non-profit industry organization devoted to research, promotion and quality control

ALWAYS SPECIFY DFPA-QUALITY TRADEMARKED PLYWOOD. Grades manufactured expressly for concrete form work include:

INTERIOR PLYFORM®—standard concrete form grade plywood made with water-resistant glue. Gives multiple (up to 10-12) re-uses.

EXTERIOR PLYFORM®—standard concrete form grade plywood made with waterproof glue to give as many as 25 or more re-uses.

OVERLAID PLYWOOD—special panel with hard, glossy, plastic-like fused resin fiber surfaces. Forms smoothest concrete; up to 200 re-uses.



. . . for more details, circle No. 53 on Reader Service Postcard

ENGINEERS and CONTRACTORS

H. Cedric Roberts, prominent general building contractor of Southern California, has been elected chairman of the Contractors' State License Board for the 1959-60 fiscal year. This is his third appearance as board chairman since becoming a board member in 1944. **Joseph A. McNeil,** former chairman, was chosen to fill the vice-chairman's post. A past president of Southern California Chapter of Associated General Contractors, McNeil is a well known general building contractor with headquarters in Los Angeles.

* * *

Two new appointments are announced by the Portland Cement Association. In the Los Angeles district office **James E. Amrhein** has been promoted to structural specialist. He has been with the Asso-

J. E. Amrhein

A. C. Carter

ciation for the past five years, working as a field engineer in the Long Beach and Orange County areas. Appointed a district engineer for the Salt Lake district is **Alan C. Carter.** He has been a field engineer here since 1953. In his new position Carter will have charge of the Association's activities for the state of Utah.

* * *

Charles E. Reed, 83, died at Glendale, Calif. Aug. 5. He was co-founder and director of Gibbons & Reed Co., well known contracting firm of Utah, and was active with the company for 46 years.

* * *

John G. Lewis was chosen manager of the new Pacific Coast offices of the Ford, Bacon & Davis, Inc., engineers and business consultants of New York City. The Western offices are at 235 Montgomery St., San Francisco.

* * *

Engineers in the various district offices of the Utah State Road Commission recently reassigned to new projects include: **Melvin E. Dunkley,** in charge of a road-mix bituminous surface road and a 2-span concrete structure, in Beaver County, on which Thorn Construction Co. is the contractor. Between Moroni and Mt. Pleasant, **Ted V. Christensen** is representing the State on a road-mix bituminous road under construction by D. W. Brimhall Construction Co. On Jack B. Parson Construction Co.'s job of a plant-mix bituminous road, 2 mi. long, in Box Elder County, **C. M. Fonnesbeck** is the resident.

Representing the highway department on a 98-ft. long concrete structure being built by F. R. Knowlton & Sons Construction Co. near Bluff is **Arland Esklund,** who also represents the department on a recent job being handled by Nelson Brothers Construction for the laying of bituminous material and gravel on State Road 261. **Lindon Fiack** is resident on a concrete and steel overpass on U.S. 6-50 in Carbon County, with Allred & Mitchell Construction Co., the contractor. On a Gardner Construction Co. highway project covering 1.6 mi., a concrete and steel overpass, and two small structures in Ogden, **William Marsden** is resident engineer. **Ross Slye** is acting as resident on a 200-day job under construction by Strong Construction Co. consisting of 8.4 mi. of surfacing on U.S.-40 and on State Road 88.

* * *

Following the retirement of **E. G. Nielsen,** associate chief engineer of the Bureau of Reclamation in Denver, several engineering personnel changes have taken place. **Bernard P. Bellport,** regional director of the Bureau at Sacramento, Calif., for the past two years, has been appointed associate chief engineer, and the new director of Region 2 is **Hugh P. Dugan.** He comes to Sacramento from Denver where he had been assistant chief development engineer. His assistant will be **Edwin F. Sullivan,** who has been chief of the Fresno office as supervisory general engineer. Sullivan replaces **A. N. Murray** who left the Bureau to become general manager and chief engineer of the California State Reclamation Board.

Nielsen, who had been associate chief engineer since March 1958, was assistant commissioner in Washington from February 1955 to 1958. Prior to that he was regional director at Boulder City, Nev.

In announcing Nielsen's successor, **Commissioner Dominy** said that "Barney Bellport, a veteran of 23 years with Reclamation, is eminently qualified for his new job by reason of his diversified construction experience, outstanding engineering competence, and managerial ability."

* * *

Graeme K. MacDonald, president of MacDonald, Young & Nelson, Inc., general construction firm of the San Francisco Bay area, was one of a group of California industrialists who recently visited Russia. As a representative of the construction industry, MacDonald is expected to visit various major construction projects in the USSR and meet with his contractor counterparts there.

Highway Directory

The 1959 edition of ARBA's convenient, pocket-size directory of "Highway Officials and Engineers" is now available. This latest edition contains more than 1,700 names, titles and addresses of administrative engineers and officials in the 50 state highway departments; administrative personnel of the Bureau of Public Roads, including heads of its regional offices, and the division offices in each state; engineers and administrative personnel of toll road authorities; and officers and directors of ARBA, its eight divisions, and its Washington headquarters staff. Available at $1.00 per copy from the **American Road Builders' Association,** World Center Bldg., Washington 6, D. C.

engine power BY CATERPILLAR

NEW

Caterpillar announces the D320—a high performance, lightweight, compact 120 HP Diesel Engine for ¾ yard excavators, small portable rock crushers, road rollers and 250 CFM rotary compressors. The D320 Electric Set is ideal for area lighting, standby and portable batching plants.

The Caterpillar D320 is a brand new four-cycle, four-cylinder, valve-in-head, precombustion chamber, turbocharged diesel. It is the most modern package of 120 HP you can find to power your equipment. As an electric set, it gives you 40 KW in a compact configuration.

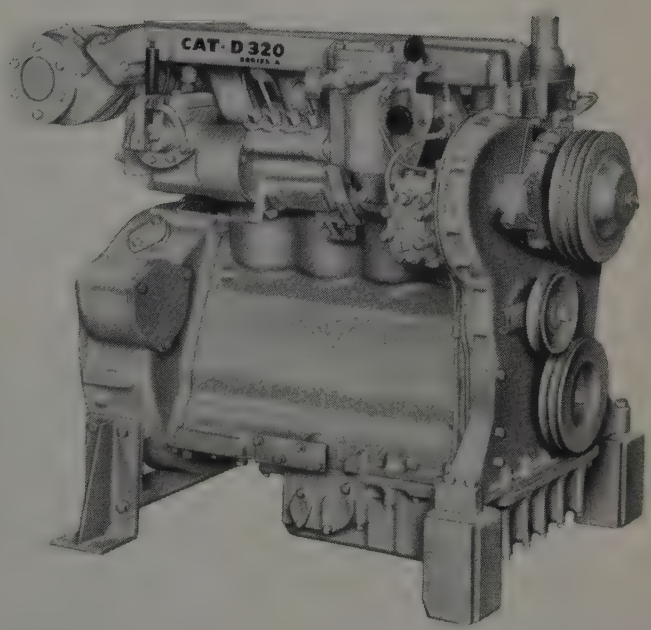
The D320 weighs in at only 1,300 pounds, is just 44″ long, less than 28″ wide and just 36″ high. With these compact dimensions, you can easily install the D320 on present equipment. It may make it possible for you to raise equipment profitability with increased HP—even though space is limited and weight must be held down.

And of course you get traditional Caterpillar Engine dependability, operating economy, maintenance ease and long life. This is a *heavy-duty* engine in every way.

Your Caterpillar Dealer has a lot more information on the D320. It's profitable information to have if you're considering repowering, ordering new equipment, or if you're planning to add a 40 KW portable electric set. Ask your Dealer's Engine Specialist for complete specifications. Also, write us for more detailed facts, and let us know the kind and size equipment you have in mind.

OTHER RATINGS

The ratings on this page are published as a general guide for world-wide use in a broad range of applications. Other ratings, yielding gains in performance and economic return, are available to meet the needs of particular applications when detailed information is submitted.



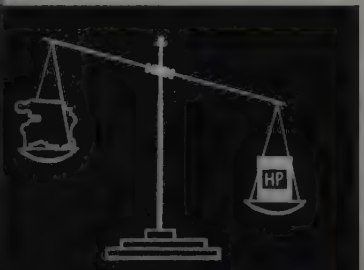
CATERPILLAR

Engine Division, Caterpillar Tractor Co., Peoria, Ill., U.S.A.

Less weight per HP—more engine in less space. Lightness and compactness minimize enclosure and undercarriage problems.

Ratings shown are for D320 with Turbocharger and Aftercooler, which is added for maximum engine output.

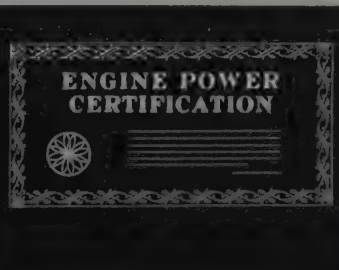
Every Cat Engine is built to rigid Caterpillar standards and carefully tested prior to delivery. Workmanship and power output capacity are certified.



D320 HORSEPOWER RATINGS*

Maximum Output Capacity	120 HP	2400 RPM
Intermittent	95 HP	2400 RPM
Continuous	75 HP	2000 RPM

*WITHOUT FAN



SUPERVISING the jobs

Phil Devish is supervising $893,196 worth of grading, culvert installation and concrete boxes on 7 mi. of road in Fremont County, Wyo. Other key men for the contractor, Platte Valley Construction Co., are: **Don Naab,** office manager, and **Keith Joyce, Nathan Boyd** and **Wayne Stalder,** all foremen. Contractor started work in August and hopes to see it finished about September next year.

* * *

Harry S. Clyde is acting as project manager, and **Hal M. Clyde** and **William R. Clyde,** as superintendents on a recent award to W. W. Clyde & Co. for structure, grading and surfacing on 3.9 mi. of Highway 15 in Salt Lake County, Utah. Bid price was $2,558,284.

* * *

Louis M. Keith, superintendent for Gibbons & Reed Co., is in charge of a road-widening job for the company in Salt Lake County, Utah. On U.S. 40, the $457,962 job consists of 2.2 mi. of grading and surfacing. Foremen are **Frank Young,** concrete, **Rex Gray,** pipe and utility, and **Eugene Marvin,** grade. Work has been going on since July and will be complete about May 1960.

* * *

Douglas Nelson is superintending construction of two interchanges and two grade separations for Montana Bridge Co., successful bidder for the job at $231,507. Located on the Sun River — Great Falls road in Montana, construction started in August scheduled for completion next June.

* * *

John F. Strong of the contracting organization of Strong Company, is acting as his own superintendent for a grade, gravel and plant-mix contract recently awarded the company on a low bid of $598,315. **Lyman Robbins,** also a member of the construction firm, is serving as concrete foreman. Other foremen are **Frank Johnson, Tex Crammer** (grade), and **Marv Naylor.** Work, which is located on U.S. 89, near the Utah-Wasatch County line, has been under way since August and will be completed about next June.

On another recent award to the Strong Company, **Carl G. Peterson** of the firm is supervising, with **Lee Gillman** assisting as foreman. This job is on U.S. 40 near Fort Duchesne in Utah, and went to Strong on a low bid of $797,215. It consists of 8.1 mi. of grading, surfacing and related work. Work started in August and is expected to be finished next July.

* * *

Roscoe W. Phillips, as project manager, is in charge of $984,227 award to Erickson, Phillips & Weisberg for bridge construction over the Eel River on US 101 south of Scotia, Calif. With October 1960 the target date, construction has been going on since June. Resident engineer is **George W. Thomson.**

Jim Barkley, project manager for Isbell Construction Co., is head man on a recent award for grading and surfacing to relocate 7.6 mi. around future reservoir and spillway area of Terminus Dam, near Lemon Cove in Tulare County, Calif. Another important man assigned to this job is **Harry Mills,** master mechanic. Isbell bid the job at $3,532,415, commenced work in July, with July 1961 the target date.

* * *

Carl Kircher, project manager, **W. O. Richey,** superintendent, and **B. Gitchel,** engineer, have been named by C. H. Leavell & Co. as its chief personnel on construction of a hospital at Davis Monthan AFB, Tucson, Ariz. A $2,081,000, 480-day job, work got under way in July.

* * *

Warren Kniss and **LeRoy Dietrick,** foremen for Russell J. Boe, are the key men on a highway relocation job in Chelan County which went to the Boe firm on a low bid of $262,964. Work consists of 4.5 mi. of grading and surfacing on SSH 15-D near Telma. Job started in June, earmarked for completion next January.

Jess Hoopes, general superintendent, **Fred Platz,** assistant superintendent, **John Hull,** project engineer, **Bob Pierce,** assistant project engineer, and **Al Curren,** office manager, comprise the chief personnel for the contractor on construction of Jaybird Powerhouse, penstock, and appurtenant work of building tramway down an 86% slope for the installation of penstock and concrete to the powerhouse. Part of the Upper American River project in El Dorado County, Calif., this $2,462,645 contract is being executed by Pacific Bridge Co. Shown (l. to r.) are Platz, Hoopes, Curren, Pierce, and Hull.

CONSTRUCTION BRIEFS

How to drill post holes through solid concrete

HANNAN BROTHERS of Portland have come up with a unique, fast, labor saving way for driving post holes for guard rails on part of Highway 30 in Portland. Because the Federal highway program calls for dividing multi-lane highways to reduce head-on collisions, Hannan was awarded the contract for putting in guard rails on the concrete divider island. The divider was to be a concrete island 6 in. high and 4 ft. wide, with posts placed in the island and guard rail run between them.

For economy reasons, the paving contractor had paved the entire width of the roadway shoulder to shoulder. Then the concrete island part of the divider was laid over the center of the already paved road. To set the posts for the guard rail it was necessary to break through the island, the paving beneath and the road bed to a total depth of 4½ ft. including 4 in. of concrete, 8 in. of asphalt, 18 in. of base rock and approximately 20 in. of rock fill.

The old method for putting down these post holes was to first drill a series of small holes in a circular pattern with a hand-held drill. After the holes were drilled, a paving breaker was used to bust them out, and this was followed up with a shovel and post hole auger to clean out the hole. Production using this method averaged two holes per man per hour. Hannan was restricted by time and wanted equipment that would do the work faster and more efficiently.

Hannan and Dave Ford of Clyde Equipment Co., along with representatives of Joy Manufacturing Co., devised a way of making use of an old shovel chassis that the contractor had, and designing a rig for mounting a Joy TM-500 drill. The drill and the feed were taken from a TWM-3 Challenger that Clyde had in stock. The feed was shortened to 8½ ft. and a saddle from a TDL Trac-Drill was used for mounting the feed to the rig. Hannan wanted the drill to be remote controlled from the cab of the shovel, so the controls were taken from the same TWM-3 that furnished the drill and feed.

Drill steel for the job was furnished by taking a 20-ft., 2-in. diameter Joy drill steel and cutting it into three 6-ft. sections. A 6-in. Joy J-10-R6 T-C rock drill bit was used for the drilling, and to complete the package the contractor added a Joy Airvane RP-600 portable compressor to provide the airpower for the drill.

The results were excellent; particularly when considering the short time limit in which Hannan had to complete the job. In 145 hr. the contractor was able to drill 5½ mi. of post holes 12½ ft. apart and 4½ ft. deep. To accomplish the same production by the old method, it would have taken fourteen men to do what two men and the equipment did. Total accessories used were three 6-ft. drill steels, two striking bars and two 6-in. J-10-R6 T-C rose bits.

New highway bulletins available from ARBA

THREE technical bulletins have been issued by the American Road Builders' Association. They are:

No. 238. Welded Wire Fabric Reinforcement in Asphaltic Concrete Overlays, by Edward M. Howard, Field Engineer, Wire Reinforcement Institute, Inc., Washington, D. C. A summary of recommended practices relating to styles and sizes of welded wire fabric, asphaltic mixtures and aggregate sizes, minimum thicknesses and installation procedures.

No. 239. Lime Stabilization Ex-

pedites Construction of SAC Jet Runway. Report of experience in using hydrated lime to stabilize a heavy clay subgrade under pavement at the Bergstrom Air Force Base, Austin, Texas.

The bulletins may be ordered for 50¢ per copy from American Road Builders' Association, World Center Bldg., Washington 6, D. C.

The use of blast furnace slag for producing non-skid road surfaces is discussed in the third bulletin.

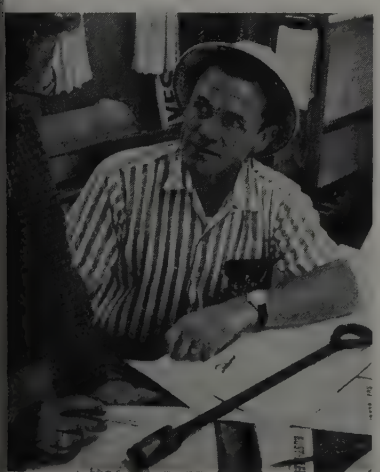
Listed at Technical Bulletin No. 241, "Skid-Proofing City Streets, County and State Highways Using Blast Furnace Slag" is an adaptation of a paper presented at ARBA's 1959 convention by E. W. Bauman, managing director of the National Slag Association.

The illustrated bulletin may be ordered for $1 per copy. Each ARBA member is entitled, upon request, to one free copy.

Rock bolt principle for tunnel hangers

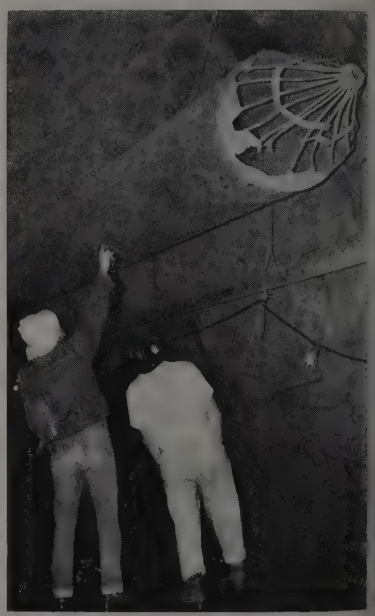
A specialty fastener designed to facilitate installation of ventilating lines in tunneling operations has been developed by Bethlehem's Pacific Coast Division. The device is an eye bolt hanger, 2½ ft. long and fashioned from ½-in. diameter rod threaded at one end to receive a K type expansion shell used in rock anchor bolts.

The hanger was designed for Frazier-Davis Construction Co., con-



PROJECT manager Howard O'Dell looks over new rock bolt type hanger for ventilation system.

tractors for the 21,000 ft. Jaybird Tunnel, part of the Sacramento Municipal Utility District's hydroelectric development on the Upper American River. First phase of the project includes Ice House, Junction and Camino reservoirs, Jaybird Tunnel and Powerhouse and transmission lines. Estimated cost of this phase is $31,500,000. Ultimately, the project will include ten dams, seven powerhouses, and 23 mi. of tunnels to produce about 465,000 kw. Some 80 mi. of roads will link this system and a central supervisory control system will be



VENTILATING pipes in the Jaybird tunnel are held in place with new anchor bolt hangers.

provided at Sacramento. Bechtel Corporation are engineers and supervisors of construction. A description of the project appeared in *Western Construction,* August 1958, page 36.

Tunneling operations began in the latter part of September 1958, driving a 765-ft. adit to the tunnel intersection. The adit is located some 13 mi. north of Riverton in El Dorado County.

The formation in this area is mostly hard quartzite, fairly uniform in density. In the tunneling operation, Frazier-Davis is using two-decked platform jumbos, one in each heading. These are mounted on Euclid truck beds with a total of 5 hydraulic boom drills. A Gardner-Denver Model 2 MC drill with a 5-in. bit is employed to make burn cuts on the centerline.

During drilling operations at the

face, a stoper is used to drill holes for the eyebolt hangers in the roof. Four pairs of these hangers are used for every 40-ft. section of 36-in. diameter vent pipe. The hangers are inserted in the drill holes and tightened into the expanding shells at the back of the hole. A sling of steel wire strand hanging from the paired hangers holds the vent pipe.

The tunnel is 14-ft. diameter horseshoe shape, with advance averaging about 43 ft. per day per heading. Crews average five rounds per day in the downstream and upstream headings. Mucking is with a Joy JSL 7.

A 14-ft. diameter surge shaft is located approximately 480 ft. from the downstream portal. The contractor has completed sinking the shaft to a depth of 170 ft. and has lined it with concrete. The tunnel and 2,600-ft. penstock for the Jaybird powerhouse is designed to produce a 1,432-ft. net effective head.

Project manager for Bechtel Corporation is Dave Culver. The project manager for Frazier-Davis Construction Co. is Howard O'Dell. Project engineer is Robert McCoy.

Plans advanced for iron ore development in Wyoming

ENGINEERING designs have been substantially completed for the proposed taconite ore processing facility near Atlantic City, Wyo., by Columbia-Geneva Steel. This phase in the development of the proposed project was done by the Bechtel Corp.

There has been no definite decision that the Division of U. S. Steel Corp. will proceed with the development of this iron ore reserve or with the building of the refining and beneficiation facilities that will be required because of the low iron content of the ore. However, general contractors have been asked to review the designs in order for the Corporation to evaluate future potential of the project.

Personnel of the Union Pacific Railroad have surveyed the right-of-way for a 76-mi. spur line from the main line of the U. P. to the site, which would be used to haul the ore from the location.

Precise location is in Fremont County, 28 mi. south of Lander, the county seat. The site is 8,300 ft. above sea level and the property, if it is developed, will represent the highest altitude large-scale open pit mining operation in the U.S.

MASTER MECHANIC®

High speed final drives cut long haul cycle time

HIGH SPEED final drive gears in two-wheel tractor-scrapers, available from equipment manufacturers, will effectively cut overall cycle time if there are long hauls and the haul roads are in good shape. The greater speeds available with optional gears, up to 23% faster in some cases, can mean greater productivity and lower cost per cubic yard of dirt removed. The higher speeds are possible without an appreciable sacrifice in rim-pull, transmission gear steps or acceleration.

The high speed gears should be used only if the top speeds they make possible can be fully utilized. Rules guiding when to consider using them are:

1. Haul roads must be in condition to permit high speeds.
2. Total resistance (grade plus rolling resistance) does not generally exceed 120 lb./ton.
3. Haul distance must be great enough to permit the high speeds to be reached and held long enough to result in a lower cycle time.

Field testing information from Caterpillar Tractor Co. indicates that haul roads must be at least 2,000 ft. long before the high speed final drives will result in significant cycle time reductions. Recent studies indicate that 44% of the two-wheel tractor-scraper units are working on hauls of 2,000 ft. or more.

Although optional final drive gears have been available for several years, it is only recently that they have been considered as suitable for any but a limited number of applications. One reason for this was the generally poor haul road conditions common until recently.

Today's higher horsepower machines have increased rim-pulls at higher speeds. The result is that wheel tractors are now able to work at high speeds with more than adequate rim-pulls over a wide range of job conditions.

Over the past 10 years, the speed of tractor-scraper units as a group has been increased an average of 10 mph. During the same period, the overall productivity of these units has also climbed since the scraper capacities either held constant or were increased.

The improved tractor performance has resulted primarily from increases in the horsepower to weight ratio, safer and more dependable steering, better tires and better braking.

But, the high-potential of these improved units could not have been realized if contractors as a group had not improved job conditions. With the advent of larger motor graders and longer average hauls, good haul roads have, however, been established as a prerequisite for economical earthmoving.

These improvements in turn have led to demands on the part of contractors for ever bigger and more powerful, high production equipment designed to fit varying job conditions. The optional final drive gears are an example of manufacturers' response to these demands.

The following chart for a typical high speed final drive gear arrangement shows that a unit equipped with these gears has rim-pull adequate for a variety of job conditions along with the advantage of high speeds.

Gear	MPH	Rim-pull (lb.)	Rim-pull (max.)
1st	3.2	31,330	39,565
2nd	6.1	16,175	20,530
3rd	10.0	9,890	12,480
4th	17.0	5,825	7,375
5th	27.9	3,545	4,490
Rev.	4.1	.....	.....

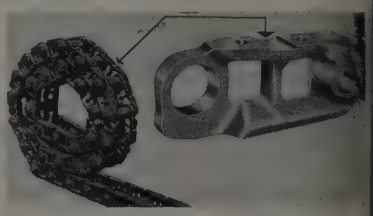
For comparison, rim-pulls and speeds for the same machine equipped with standard final drives are listed below.

Gear	MPH	Rim-pull (lb.)	Rim-pull (max.)
1st	2.6	38,670	49,100
2nd	5.0	20,000	25,390
3rd	8.1	12,190	15,465
4th	13.8	7,185	9,115
5th	22.6	4,375	5,550
Rev.	3.3	.....	.....

From these comparisons it is readily seen that the standard gearing offers higher available rim-pulls in each gear range while the optional final drive gears have the higher speeds without a serious lack of rim-pull. On this particular example, the high speed gears give a 23% faster top speed while maintaining 81% of the rim-pull in first gear.

Heavy-duty crawler track rail

Adding another product to its line of replacement parts for crawler tractors, **Hensley Equipment Co., Inc.** announces a heavy-duty track rail built to rigid specifications designed to provide peak performance over longer periods of service.



Dimensions given by Hensley indicate that the new rails are taller than standards on regular models of tractors. Steel has been heat treated by most modern methods and the rolled alloy steel pins are ground for precision fit.

. . . Circle No. 157

Off-road tire tool kit

A new line of hand tools, designed for ease of maintenance of tires on off-the-road equipment, has just been introduced by the **Dill Manufacturing Co.**

Eight models are included: a hex valve cap tool, a valve stem refacer, two models of valve stem rethreaders, a valve stem reseater, screw driver, valve inside extractor, and a screw driver valve cap tool. Tools are available individually or in handy packaged kit. All are designed to save time on the job or in the shop, and are of particular value where service work must be performed on a valve located in a difficult or awkward position. They are of rugged construction and equipped with durable, shock resistant handles.

. . . Circle No. 15

The best manuals on asphalt plants

A roundup of the best available literature on the subject of asphalt plants. All items described are yours for the asking.

Barber-Greene

Among the many excellent pieces of literature this company publishes on its various models of asphalt plants (as well as on all its equipment) only two will be described here, "Principles of Continuous Asphalt Plants" and "Principles of the Batchomatic." Both manuals are highlighted by extraordinary three-color cutaway drawings which show at a glance the features and principles of the two types of plants. In the manual on continuous plants a combination of drawings and easy-to-read texts explains the principles of measuring and mixing asphalt and aggregate, how the two phrases are interlocked for accuracy; advantages of continuous pugmill, and how the mixing cycle is controlled without affecting tonnage production. The manual concludes with a series of tables that show how, on specific construction projects, Barber-Greene continuous plants adhered closely to mix specifications. The manual also includes a series of typical questions and answers about continuous plants.

. . . Circle No. 159

The manual on batch plants is equally attractive in its combination of three-color perspective drawings and clear text. The Barber-Greene Bathomatic contains a number of new principles designed to eliminate the human element and provide automatic operations. For instance, instead of the conventional single weigh-hopper in which the aggregates are weighed by adding one after another, the Batchomatic hopper has five individual compartments, one for each size of aggregate, including the mineral filler. Each compartment has an adjustable side wall which varies its capacity. For automatic operations the weigh-hopper compartments are pre-set to measure the correct weight of each aggregate. The manual also fully explains the asphalt measuring principle and the pugmill principle. Also explained is how the operator can instantly switch from manual to automatic operation and vice versa. He can instantly cancel the pre-set proportions and weigh-out special loads in the conventional batch plant manner.

. . . Circle No. 160

Cedarapids

A reference manual containing 40 pages of valuable charts and tables pertinent to asphalt plant operations and paving materials production in general is available from Iowa Manufacturing Co., maker of the Cedarapids line of equipment. A look at just a few titles of the many graphs, charts, tables, and reference material indicates the value of this handbook: apron feeder capacities, how to find capacities and power requirements of belt conveyors working with such variables as angle of incline, belt length, length, materials handled, width, etc.; bucket elevator, power requirements and capacities; capacities and power requirements of cone, jaw, and roll crushers; horsepower and time requirements for aggregate dryers; weights and characteristics of common soils and rocks; capacities and power requirements for various types of screens; water requirements for washing aggregate, highway weight and size restrictions state by state; detailed glossary of 200 aggregate and bitumen terms. This is just a small sample of the many subjects covered in this valuable manual.

. . . Circle No. 161

Included in the many operation and maintenance manuals, descriptive verses, and specification sheets that Iowa Manufacturing Co. publishes, describing its various types of equipment, is one on the Model G series of self-erecting portable batch-type bituminous mixing units. This 24-page brochure is profusely illustrated with photographs and two-color perspective, cutaway drawings which very closely describe the many features and characteristics of the equipment. Chapters in the brochure cover the hot elevator, horizontal screen, batcher and mixer, operator controls, pugmill, dust collector, dryer, and self-erecting mechanism. The latter feature is described in a series of line drawings which show how the plant can be set up without the need of auxiliary cranes.

. . . Circle No. 162

Cummer

A catalog describing the line of batch-type asphalt plants manufactured by F. D. Cummer & Son Co. is available by request from the company. Photographs, descriptive text, and a table of specifications are given for each of the various models running from 50 tons an hour to a capacity of 140. Individual components are also pictured and described and a glossary of terms is included.

. . . Circle No. 16

Hetherington & Berner

The large line of batch-mix asphalt plants manufactured by Hetherington & Berner, Inc., is described in a series of brochures published by the company. There is a 16-page brochure on the Type T plant with numerous job photos, dimensional drawings of typical plant setups, and an excellent two-page cutaway perspective drawing with all features of equipment labeled and explained. The text points out that the Type T series represents an asphalt plant that has been completely re-engineered from the ground up. Among the many features pointed out are the all-welded plate construction which eliminates most of the miscellaneous pieces; a new type flat screen which provides excess screening capacity; self-contained dust bins, and many others.

. . . Circle No. 1

Littleford

A very colorful and informative brochure on the Model 121-30 portable asphalt plant is available from

CONCRETE

FORM TIES

ACCESSORIES

BUILDING AND ROAD SPECIALTIES

SPIROLOC Form Ties

SPIROLOC Cone Nut Assembly

The most positive internal spreader and form tie

aster erection . . . Positive holding . . . Easier stripping . . . Greater tie strength for heavy construction. Fewer es per sq. ft. of form area. Positive breakbacks. Permanent reuseable equipment.

TWISTYES

Combination wedge and bearing plate . . . easy application . . . won't twist or fall off — ample take-up.

SNAP TIES

Curved ends speed installation and stripping . . . long slope wedge for ample take-up. Extra nail holes permit nailing clamp in any position.

ow cost ties for job-built or prefabricated forms. Used with or without walers. Accurate breakbacks. Choice of preader washer.

FORM CLAMPS

"Sure-Grip" principle means positive locking SAFE . . . SURE Tieing

2 Form clamps and a mild steel rod make a tie to handle any condition.
Wide clamp base gives more bearing on waler . . . won't "bite" at maximum loads.
Notched base permits nailing to waler.

REINFORCING BAR SUPPORTS

For complete information on all of these items plus Universal's complete line send for our catalog 759.

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. . . for more details, circle No. 59 on Reader Service Postcard

Littleford Bros., Inc. Anyone sending for this brochure can be assured of up-to-date information because it is designed in such a way that the pages can be replaced whenever information is out of date. The seven replaceable pages cover the dual feeder bin, Trail-O-Dryer, enclosed hot elevator, storage hopper, batching hopper, pugmill and elevating platform. The pages contain dimensioned line drawings of these components along with detailed technical specifications. An attractive feature of the brochure is the large, full-color photograph of the plant in operation.

. . . Circle No. 165

Madsen

Among the manuals published by Madsen Works, division of Baldwin-Lima-Hamilton Co., is one on its Model 481 asphalt plants which are in the 4,000/8,000-lb. capacity class. The 18-page manual is well illustrated; it's a combination of blueprints, photographs, and drawings. The Model 481 is designed for portability in that all units are within legal road widths and may be readily transferred by truck tractor on their own tires. The plant sets up quickly because each component is in box-like, readily stacked sections with a minimum number of loose or separate pieces to be handled. Discussed in detail are the hot stone elevator, the screen assembly, the mixer weigh-box assembly, and the operating controls. A section is included describing and illustrating asphalt plant accessories made by Madsen.

. . . Circle No. 166

McConnaughay

A handy bituminous concrete calculator is available from McConnaughay Mixers, Inc., makers of a complete line of asphalt batching mixers distributed nationally by Asphalt Equipment Co., Inc. The small plastic slide rule finds quickly the weight in tons of asphalt needed, using the variables of length, width, and thickness of their slabs. The calculator is based on a density of 4,000 lb. per cu. yd. but a correction scale permits other densities to be used. A handy item for anyone who wants quick answers to paving volume problems.

For a copy of the bituminous concrete calculator,

. . . Circle No. 167

For copies of illustrated specification sheets carrying the company's line of asphalt paving mixtures,

. . . Circle No. 168

Pioneer

In a series of bulletins **Pioneer Engineering Works** describes and illustrates the three sizes of continuous bituminous plants and the automatic type of batching plant. One bulletin reviews the features of Model 51 which is rated at an hourly production of 40 to 60 yd. A similar bulletin covers Model 81 rated at 60 to 80 yd. per hour and the final bulletin describes the Big 102 which is rated up to a maximum of 200 tons per hour. Each of these bulletins features a cutaway illustration which shows the entire plant from feeder to discharge with key numbers that describe the various operations and elements of the plant. All three of these plants are designated by the title, Continue Flow, to indicate that they are designed to produce hot bituminous

nix as an interrupted flow of material. The bulletin on the batch ype of plant shows two separate utaway illustrations, one of which ictures and describes the drier elenent and the other covers the creening and mixing plant. Each f the four bulletins reviews operting procedures, design characterstics with illustrations of separate eatures in addition to the overall utaway drawing.

. . . Circle No. 229

Standard Steel

Classed as "semi-portable" the Model RM asphalt plants of Standrd Steel Corp., are diagrammed, ictured and described in a 16-page rochure. The plants range in size rom 2,000 to 6,000-lb. batch caacity, and all are available with ither direct electric drive or with combination of diesel engine and lectric power. Basic illustration in he brochure is a schematic drawng which shows all features of the lant and through the use of key umbers describes both design and perating features. The remainder f the brochure describes and illstrates in detail the various elenents including dryer, mixer and he operating station. Various acessories are pictured and deribed. Other illustrated material overs a trailer-mounted asphalt lant and one which features the rinciple of self erecting. This older shows the step-by-step proess from moving sections of the lant into position and erecting it ntil it is ready for operation. Portble plants come in 4,000, 5,000 nd 6,000-lb. batch capacities.

. . . Circle No. 169

White

Literature is available from the White Manufacturing Co. describg its Model L-20, an asphalt plant the ½-ton batch size. Several rge photographs of the machine company text which points out detail the changes which imrove it over its predecessor, the -10. Complete technical data and imensions are given. Also availble is an eight-page brochure givng assembling and operating inructions as well as a spare parts st. The reader is given step-by-ep instructions on the operation the plant.

. . . Circle No. 170

NEW LITERATURE

To obtain free copies of literature described in this section, circle the corresponding numbers on reply postcard.

Gravel washer

Transformation of waste material to merchantable rock is quickly accomplished by El-Jay gravel washers, described in an 8-page booklet issued by the **El-Jay Manufacturing Co.** Washer units, adapted from the company's log washers, consist of an inclined tub, continuous flight paddles, and high pressure water jets. Gravel is carried up from the low end of the tub by the paddles, working against a counter-flow of water. Abrading action of the paddles and scouring action of water remove deleterious material. The company reports that gravel processed by an El-Jay washer at one job was so clean and free of slime that cement was cut by ½ sack per cu. yd. and produced stronger concrete. Booklet shows construction details of machines and describes their operation.

. . . Circle No. 171

How to line a tunnel

Illustrated articles on construction of a dozen major tunnels are contained in a 28-page book published by **Master Builders Co.** Articles describe railroad, highway and water tunnels, and the use of Pozzolith in solving a number of concreting problems. Among the projects covered is the famous Tecolote Tunnel through the Santa Ynez Mountains where workmen rode to the face in water-filled muck cars as protection against the extreme heat developed by underground hot springs. Other jobs included are the Hydro-Quebec Bersimis tunnel with its unique concrete requirements, and the Aluminium Co. of Canada's Kemano project with its huge underground powerhouse. These and nine other case histories tell how Pozzolith was used to help solve concreting problems. Tunnel construction techniques are well illustrated by photos and accompanying texts.

. . . Circle No. 172

Electric crane data

Two data sheets describing their new series R-30 and R-45 electric cranes have been issued by **R. G. LeTourneau, Inc.** Designated bulletins No. 721 and 722 the individual data sheets describe the unusual machines which employ individual electric motors for all power functions. Basic power source is a Cummins diesel engine with a direct coupled LeTourneau generator. Carrier is a heavy skeletonized frame moving on 4 electric drive wheels with 6-ft. diameter rubber tires. It includes power set outriggers which can be positioned in a few seconds and which have a spread of more than 20 ft. Units feature simple controls, a single electric control governs travel speed, power and braking while another handles line speed pull and braking and a third governs swing speed. Maximum lift of the R-30 series is 30 tons at 10-ft. radius on a 30-ft. beam. Capacity of the larger R-45 is 45 tons at 15-ft. radius on a 50-ft. boom. Data sheets provide physical specifications, mechanical data, lifting capacities and descriptions of various features of these machines.

. . . Circle No. 173

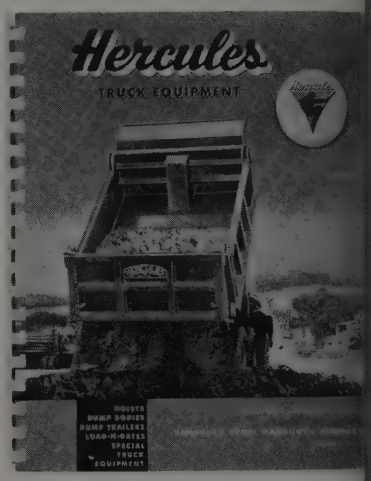
Rotary air compressor

A cutaway view of a new 2-stage rotary air compressor is featured in two new 4-page booklets issued by **Ingersoll-Rand** describing the company's new Gyro-Flo portable rotary air compressor. Booklets cover the Model 125 with a capacity of 125 cfm. and the larger Model 250. The new Gyro-Flo compressor which is used on both models consists of two cylindrical rollers fitted with vanes rotating inside off-center cylinders. The air pockets formed by the vanes between the cylinder and the roller gradually increase and decrease in size during each revolution. Available with gasoline or diesel engines the compressor units can be mounted on their own running gear or on trucks or skids. The booklets give complete tables of weights and dimensions as well as describing various operating features.

. . . Circle No. 174

Dump body catalog

The complete line of dump bodies, hydraulic hoists, and accessories is described in a new 58-page catalog issued by **Hercules Steel Products Co.** Publication covers single and tandem axle, light, me



dium, and heavy-duty contractor type dump bodies, dump trailer units, and hydraulic hoists, all o which embody new design and construction features. The well illustrated book also includes dump body and hoist specifications, special truck equipment including hydraulic tail gates, and a new series of engineering charts designed to aid in dump body and hoist selection.

. . . Circle No. 17

Earthmover booklet

Full details of the 495 Payscraper and its companion 495 Paywagon are contained in a 2-color, 36-page catalog released by **International Harvester Co.** Both the scraper and the bottom-dump wagon are pulled by the 495 tractor, a 3 wheeled unit of 375-hp. with a International 6-cylinder turbocharged diesel engine, and a top speed of 35.7 mph. Scraper unit has a capacity of 34 cu. yd. heaped and 24 struck, while the wagon will carry 40.5 cu. yd. heaped and 27 struck. Among the scraper features described in the profusely illustrated book are: advanced lif

IEW 60-TON
ORAIN MC-760
MOTO-CRANE
ith 8 x 4 carrier
ower-Set" Outriggers

IG PERFORMANCE ON THE JOB

Lorain Power-Set Outriggers set up in less than 60 secds, automatically adjust to uneven terrain, permit 40-cond move-ups.

"Shear-Ball" turntable connection eliminates all aintenance and adjustment. Only routine lubrication eded. Warranted for 10 years.

A 40′ basic boom extends to 170′ with center sections. uare-tubular-chord design, new alloy steel . . . lighter, nger, stronger.

Front bogie is Lorain-designed with solid equalizer ams to provide big "on-rubber" capacities.

Folding gantry, power operated, lowers to carry boom travel position without exceeding overall cab height.

Boom is raised and lowered by positive and independt clutch control for extreme precision.

With a 230″ wheelbase, an overall width of 135″, the C-760 has a heavy, welded box-section chassis frame . no weave, no deflection under the heaviest loads.

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Forward speeds from 1.2 to over 37 mph. Air brakes all 8 wheels.

17,000-pound rear counterweight is easily removed th timesaving, hydraulic jacks to reduce road weight.

Removable outrigger boxes and beams have fastion, pin connections and hydraulic disconnects.

Hydraulic assist, patented, centralized steering proles effortless driving, best front wheel tracking.

Low overall height. A 14′ span between second and rd axles meets most stringent bridge formulae.

Tandem drive rear axles. Final reduction through anetary wheel hubs to relieve power train of strains.

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YUKON EQUIPMENT INCORPORATEI
(For Alaska) Seattle, Wash.
Fairbanks. Anchorage and Ketchikan, Alaska

frame design, exclusive tapered bowl design, 131-in. cutting width and 98-in. high apron opening. The Paywagon has positive-controlled dumping with wagon doors power-opened by a combination cable and hydraulic action. Wiper plates shave sticky material from wagon doors as they open. New clamshell doors speed pullouts from fill by retracting parallel with the hopper sides.

. . . Circle No. 176

Joint compound spec sheets

Data and specifications are covered in two new catalog sheets issued by **Philip Carey Mfg. Co.** on its Sewertite asphalt base, and tar base joint compounds. The material is cold-applied and used for joining concrete, citrified clay and tile. Condensed information includes product description, uses, features; performance data regarding non-volatile matter, chemical resistance, workability, condition and application. Tabular guide lists coverage for tongue-and-groove pipes from 12 in. to 108 in., and bell-and-spigot joints from 4 in. to 36 in.

. . . Circle No. 177

Tractor brochure

Allis-Chalmers HD-21 crawler tractor, powered by the new 225-hp. turbocharged diesel 21000 engine, is described in a two-color 16-page catalog recently issued by the company. The big tractor weighs 45,500 lb., has an 84-in. tread, and 70,000-lb. maximum draw-bar pull. It has two forward speed ranges with a top speed of 8 mph. The new 21000 engine and its controlled turbulance combustion system are described in the booklet along with torque converter drive, power train, frame construction, controls, and other featured components. The publication also covers matched equipment such as scrapers, dozer blades, rippers, side booms, and cable controls.

. . . Circle No. 178

Wire rope fatigue

Tips on how to prolong the life of wire rope are contained in a new service bulletin published by **Leschen Wire Rope Division, H. K. Porter Co., Inc.** The 4-page illustrated brochure explains the importance of the proportion between the diameter of the rope and the diameter of the sheaves and drums on which it runs. A useful formula described as the D/d ratio provides a quick answer to the problem. Also included is a handy table showing the relative bending life of all the major wire rope constructions and suggestions concerning reverse bends and fatigue damage caused by end attachments.

. . . Circle No. 179

Emergency brakes for heavy rigs

Maxibrake, a unit which provides automatic mechanical application of the brake when the normal air supply is depleted, is described in a 4-page folder published by **Maxibrake Inc.** Placed between the service brake chamber and its mounting bracket, the Maxibrake attachment operates as an "air-released, spring applied" device. It does not affect operation of the brakes if air pressure is adequate to compress the attachment springs. When the service brake air supply drops below a pre-determined pressure, the attachments begin to apply force to the brake chamber push rods. They cannot be released until normal pressure is restored to the brake system. The safety attachments were developed by the Maxi Corp. for use on its own crane carriers and allied equipment. Rights have been sold to Maxibrake Inc. for general manufacture.

. . . Circle No. 180

Truck shovel bulletin

A 20-page, two-color catalog detailing the newest CraneMobile has been published by **Bay City Shovels, Inc.** The brochure contains more than 40 photos of the cranes, assemblies and components. The truck-mounted crane features the Bay-City-built carrier available with tandem or single front axles and with rated lifting capacities up to 40 tons. Pictured are the precision machinery, brakes, clutches and cable drums, helical gears, swing brake and house lock, power-controlled load lowering and other mechanical features. Cranes have easily-removed counter weights as well as removable outrigger frames, pin-connected booms and jibs. CraneMobile is capable of raising maximum boom and jib without assistance.

. . . Circle No. 181

Heavy-duty flooring

Case histories and before and after photographs which show how concrete floors were protected against damage from heavy equipment moving over them are contained in a 12-page brochure issued by the **Walter McGuire Co.** The booklet describes uses of Emeri Crete flooring made from a proprietary formula of Emeri aggregate and cement which is applied as a topping to concrete floors receiving especially heavy traffic.

. . . Circle No. 182

Rubber tired tractor

The four-wheel-drive rubber tired Tournatractor, rated at 218 hp. with a top speed of 17.2 mph is described in a 16-page three-color booklet published by **LeTourneau Westinghouse.** The booklet emphasizes the relatively high operating speeds of this rear engine Model C tractor unit. It contains numerous action photos of the tractor operating as a dozer pulling scrapers and pulling compacting rollers. Numerous drawings are included showing frame, power train, and component parts. Catalog also includes photos and details on various accessories. Available with either GM or Cummins engine, the unit weighs 34,000 lb. with dozer.

. . . Circle No. 183

Rope thread drill steel

A flyer announcing the new line of rope thread blast hole drilling tools has been issued by **Brunner & Lay.** The literature covers rope thread Rok-Bits, rope threat Carbo Rok extension steel, couplings, and striking bars. Size and type specifications are given. *. . . Circle No. 184*

Crawler crane literature

On-the-job photos of the model 205 crawler-mounted crane are featured in a 16-page catalog issued by **Koehring Division, Koehing Co.** Photos show the 205 working as ½-yd. shovel and hoe, a crane handling a concrete bucket, a ¾ yd. dragline, and ¾-yd. clamshell. Also pictured on the job is the 205 "Railaid" for on or off the track right-of-way maintenance. Assembly photos show self-cleaning crawler system, smooth swinging hook rollers, and enclosed gearing in the upper machinery. Emphasis is also placed on the double box section boom of the shovel and the hook box section boom of the hoe.

. . . Circle No. 18

Fork truck operator manual

A new 20-page instructors manual for training fork truck operators has been issued by **Automatic Transportation Co.** The 20-page cartoon-illustrated booklet is divided into 6 lessons and contains many step-by-step instructions on safe economical operation. Subjects covered are theory of operation, good driving practices, details of construction in principal types of trucks, practical operation of the truck, demonstration and written examination for the driver trainee.

. . . Circle No. 186

Chart of conversion factors

A wall chart listing many common conversion factors such as inches to centimeters, watts to h.p. as well as conversions that are difficult to locate in reference manuals is offered without charge by **Precision Equipment Co.**

. . . Circle No. 187

Fast, accurate leveling

Operation of the Lenker L-E Vation Rod which features footage scale on an endless steel band is outlined in a 4-page folder published by the **Lenker Mfg. Co.** Keyed to a bench mark, the rod provides direct reading of elevations in subsequent settings Rod can be lengthened to 10 ft., automatically bringing the proper numerals into view on the endless band. Total length of 14 ft. is possible with 4-ft. extension boot.

. . . Circle No. 188

Clearspan roofs

A pocket-size booklet "How to Plan Commercial and Industrial Buildings," is available from **Taylor Roof Structures.** The 8-page publication discusses the advantages of clear-span construction and use of Taylor bowstring wood trusses. Trusses are cheaper than conventional post construction, and are safer and require less maintenance than steel.

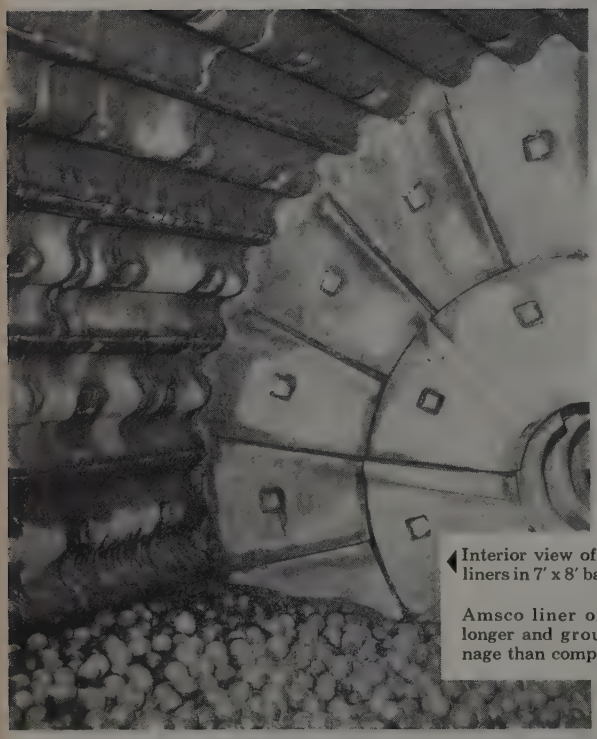
. . . Circle No. 189

Concrete joint saw

A self-propelled concrete saw available in 30 and 36-hp. models is described in a new catalog sheet issued by **Cardinal Engineering Corp.** The balanced unit will not slide out of the cut nor jam into the cut from excessive front-end weight. Unit works at speeds up to 36 ft. per minute, and cuts to depths of 6¾ in. A wide selection of abrasive and diamond cutting blades is offered.

. . . Circle No. 190

How AMSCO helps you HANDLE



Interior view of Amsco double wave liners in 7′ x 8′ ball mill, using 2″ balls.

Amsco liner on left lasted 123% longer and ground 134% more tonnage than competitive liner on right.

Bucyrus 88 D four-yard bucket, equipped with Amsco Simplex 2-part Teeth, removing rock for power station. All of Tuscarora Constructors' shovels used for rock excavation are equipped with Amsco Simplex Teeth.

IORE TONS PER DOLLAR

Read how AMSCO Mill Liners and Dipper Teeth are outlasting competitive parts in severe service

AT A LARGE NEW YORK ZINC MINE...

THEY'VE DOUBLED SERVICE LIFE WITH AMSCO CHROME-MOLY BALL MILL LINERS

Amsco double wave chrome-moly liners are used on an Allis-Chalmers 7′ x 8′ ball mill at this large northern New York zinc mine. The mill is operating *24 hours a day, six days a week* . . . grinding rod mill discharge consisting of sphalerite, pyrite and the balance silicate and limestone gangue.

These Amsco liners ground 670,000 tons during their 29-month life . . . as against an average of 286,000 tons and 13-month life for the type of liners previously used. That adds up to over *100% increase in service life*. In addition to their longer life, another fact that impresses the operators about Amsco liners is that there's no circumferential grooving until the very end of their service life.

TUSCARORA CONSTRUCTORS HAVE FOUND...

AMSCO 2-PART DIPPER TEETH ARE "BEST-WEARING TEETH WE'VE EVER USED"

At the Niagara Power Project, Tuscarora Constructors are building the power station and pumping station. They're digging almost entirely in rock, working their dippers 24 hours a day, six days a week.

Dell Lundmark, Equipment Superintendent for Tuscarora, was responsible for selecting Amsco 2-part reversible teeth for his dippers. He'd heard of their fine performance elsewhere, and now describes them as the "best wearing teeth we've ever used". He says the design of the teeth is very good for rock, and adds, "We're getting *15% to 20% longer wear* than from competitive 2-part teeth".

Approximately 10,000 tons of rock are handled before the teeth are turned over . . . and tips are easy to replace when completely worn.

This combination of a new alloy steel, plus the design features engineered into the Amsco Simplex Teeth, are causing equipment superintendents everywhere to change to Amsco for better, lower cost digging.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

Other Plants In: Denver • Los Angeles • New Castle, Dela. • Oakland, California • St. Louis

In Canada: Joliette Steel and Manitoba Steel Foundry Divisions

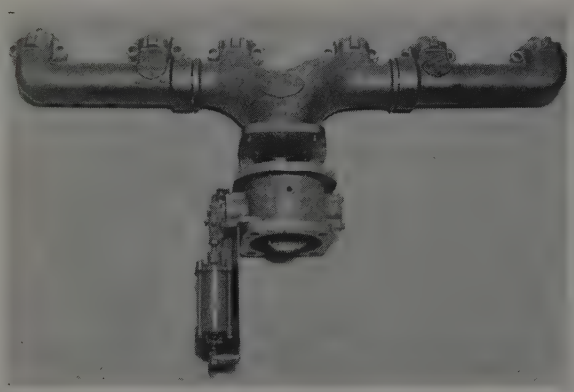
. . . for more details, circle No. 64 on Reader Service Postcard

NEW EQUIPMENT

Obtain more information on these new developments in construction equipment by circling the corresponding numbers on reply postcard.

Braking device uses exhaust gases

Using the wasted power of exhaust gases, **Power Brake Equipment Co.** has available a braking device which reduces vehicular operating and maintenance costs. Already in use by over-the-road truckers, the device is particularly suited for all types of construction and earth-moving vehicles. It can also be used to retard the motion of cranes, winches, and other types of equipment.



Made of stainless steel and easily installed on the engine manifold, the device converts each cylinder of the engine into an individual low pressure (40-50 psi.) air compressor, and as long as the engine turns over, each cylinder continues to provide positive braking action. When actuated, the brake smoothly slows down moving loads, and any load that the engine can accelerate can be decelerated by this compression brake.

In basic design, the brake consists of a butterfly valve and shaft in a housing which bolts directly to a stainless steel manifold outlet. Position of this butterfly valve is controlled by a hand lever. When descending a long grade with the hand lever set in operating position, the valve closes against the baffle. On each succeeding exhaust stroke, the engine builds up back pressure within the manifold. This pressure, in turn, exerts the braking influence against the piston heads.

. . . Circle No. 191

GMC truck engine has 60-deg. "V" design

A new family of V-6 gasoline truck engines is announced by **GMC Truck and Coach Division.** These new engines include a 12-cylinder power plant having the same 60-deg. "V" design common to the entire group. Tests made by GMC indicate a durability which gives the engines a potential of between 100,000 and 200,000 miles of continuous operation without major overhaul, using proper application and maintenance procedures. A characteristic of importance is the ability of the new engines to develop maximum torque at about 1,400 rpm. compared to 2,500 rpm. for typical V-8 engines, which improves fuel economy and reduces engine wear. The new engines are de-

signed for easy maintenance and have a high degree of interchangeability. All 6-cylinder engines have more than 70 parts in common, and both 6- and 12-cylinder units have more than 50 parts in common.

. . . Circle No. 19

Roadpacker compacts 600 tons per hour

By compacting as much as 600 tons per hour of granular materials in lifts up to 12 in., the new Model D Roadpacker of **Baldwin-Lima-Hamilton Corp.** will increase the speed of compaction on highway and airport construction by as much as 50%. The new unit, introduced in early summer, is a successor of Model C. The high production of new Model D for all types of material including gravel, crushed stone, sand and various stabilized bases results in the lowest available cost per ton for this operation. The six hydraulically operated vibrators produce deep penetration and uniform densities in all granular materials. These vibrators are completely sealed from outside dirt, and require no lubrication or daily maintenance.

Driven by a fluid motor while compacting, the speed of the unit can be varied by a dial selection or an

Likes the TL-20 because it's

MODERN, VERSATILE, RUGGED

With 325 miles of northern Illinois roads to look after and a budget to watch, Field Superintendent H. B. Brown, of Winnebago County, makes sure the equipment he has is modern and efficient in every respect.

He points out his TL-20 TRACTOLOADER as a good example because it is fast, does all kinds of jobs in the yard or out on the network of roads — and it's rugged.

Here are some of the jobs the TL-20 handles and the reasons it does 'em so well.

LOADS TRUCKS — Operator goes into and out of any gear at will with one lever — shortens loading time by using fastest gear working conditions allow. One-lever speed and direction control is an Allis-Chalmers exclusive!

STOCKPILES — Low carry and extra stability means no spilling and tipping — extra operator comfort.

CLEANS DITCHES — Tip-back bucket follows ditch without gouging banks or altering contours.

EXCAVATES — Digs into hard-packed material with bucket teeth . . . even handles the more demanding excavating jobs.

QUARRYING — Tears out rubble in quarries. Pin-connected planetary axle and one-piece welded frame proves itself in rough going.

OFF SEASON — During winter months, the TL-20 is a big help on snow removal and loading salt, cinders, crushed stone. In the spring, it digs out frost boils from the black top.

Want budget-beating performance on your work? Let your Allis-Chalmers dealer show you the TL-20 in action. There's a whole family of buckets to choose from — 2¼ to 5 cu yd. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

TRACTOLOADER is an Allis-Chalmers trademark.

move ahead with ALLIS-CHALMERS

. . . POWER for a growing world

. . . for more details, circle No. 65 on Reader Service Postcard

speed between 20 to 95 ft. per min. For transporting a high speed range is available with speeds up to 30 mph. on the job or over the highway. During transportation the end vibrators fold up to permit highway travel. Model D compacts in either forward or reverse direction, and there are no gears to shift.

Vibrating units are mounted on a common control bar, providing maximum compacting widths of more than 13 ft. By the use of a widener attachment, two of the shoes can be operated in a widening trench up to 11 in. below the existing pavement. Model D is powered by Waukesha and General Motor engines, either gas or diesel.

. . . Circle No. 193

Terraload'r features power

Newest addition to the **Case** Terraload'r line is Model W-10 which provides an excellent power to weight ratio. The unit has 4-wheel drive and a carry capacity of 6,500 lb. at 4 mph. The standard bucket size is 2 cu. yd. and the lift capacity is 13,000 lb. The unit is powered by a 100-hp. diesel engine built by Case which is a feature in securing the good ratio of power to weight. Rear wheels carry 40% more empty weight than front wheels providing greater

digging traction as well as greater stability for carrying loads. A safety feature is the fact that all moving parts of the loader are ahead of the operator which not only increases visibility but makes it possible to get in or out of the operator's compartment with the bucket fully raised. Power steering and power shifting are standard equipment on the W-10. A full range of optional equipment is available from snow plow to fork lift.

. . . Circle No. 194

White Motor Co. has new truck line

Designed to provide maximum payload and dura bility for the construction industry, **The White Motor Co.** announces a complete new line of tandem-axle trucks. More than four years of research, engineering and job testing lie behind the line. The construction trucks are designed to be used with dump bodies, dump trailers, concrete mixers, and flatbeds. Four models, both gas and diesel driven, represent a range in weight between 35,000 and 75,000 lb. A wide range of component options permits the purchaser to tailor the chassis, engine transmission and axle combinations in each model to exact job requirements. Realizing that ease of maintenance is an important consideration on construction jobs, all models of the new White line have simplified radiator and fender assembly. The radiator core can be removed without moving the shell. Bumper and a front fender can be removed in

about 5 min. to allow mechanics to stand between the out-turned front wheel and the engine for efficient work under the hood.

. . . Circle No. 195

Improved Chevrolet truck line for 1960

An extensive list of improvements characterizes the **Chevrolet** truck line for 1960. These include impressive advances in ride, handling, durability, and safety through an exclusive suspension system. This suspension design represents the nearest approach to passenger car ride and handling ever achieved for trucks.

Breaking with tradition, independent front wheel suspension with ball joints and torsion rod springs are on all but two series. Variable-rate, two-stage lift spring rear suspensions are new on two-ton and heavier models. Tandems are equipped with the Eaton-Hendrickson tandem suspension with short lightweight, rugged springs which are not required to absorb torsional strain.

Another feature of the redesign is the change in styling to achieve a more rigid, lower and roomier cab.

All of these changes add up to the most extensive redesign in Chevrolet truck's history in series and model designations, wheelbases, and GVW ratings. The complete line now contains 165 models.

Four basic engines are offered in the 1960 truck line—235 and 261-cu. in. sixes and the 283 and 348 cu. in.—V8's. Twelve transmissions are available.

. . . Circle No. 196

Power plant designed for easy trailing

Designed especially as a trailer with full sized Goodyear balloon tires and convenient hitches, **Pacific Mercury** has introduced a new 10,000 AD electric plant. The unit furnishes 60-cycle 120- or 240-volt

COOK BROS. BOTTOM DUMP TRAILERS DO MORE JOBS

EARN MORE MONEY

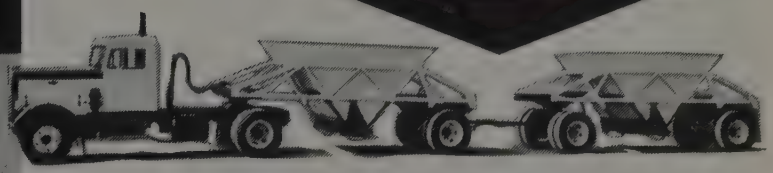
Cook Bros., the West's foremost manufacturer of trailer equipment, offers truck operators a wide selection of versatile bottom dump trailers. Because of their many hauling uses, operators are finding C-B Bottom Dump Trailers a far more profitable investment for both on and off the highway service.

See these C-B Bottom Dump Trailers working on your job—arrange for a demonstration NOW!

COOK-BROGDEX BULK-HAULER
26 Ton Legal Payload Capacity

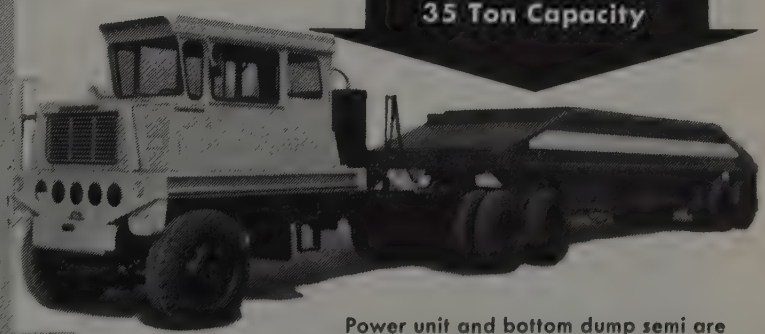
combines an aluminum hopper with lightweight steel frame, and is used for hauling cement, chemicals, sugar and other dry bulk materials.

C-B LIGHTWEIGHT AGGREGATE TRAIN
26 Ton Legal Capacity



also a combination of aluminum and steel. This unit with wide cross-gates is engineered for spreading work. It can also be used for dumping into underground storage hoppers.

C-B EARTHKING
35 Ton Capacity



Power unit and bottom dump semi are designed and engineered as an integral unit for large, off-highway earth moving projects. Fast loading and unloading, it travels with full load at modern freeway speed and assures the fastest hauling cycle of any equipment on the market today.

CB COOK BROS.

*Factory Branch

COOK BROS. EQUIPMENT CO.

3334 San Fernando Road, Los Angeles 65, California • CLinton 6-3151

Manufacturers Of Stabilift End Dump Trailers • Bottom Dump Trailers • Transfer Trailers

DISTRIBUTED IN THE WEST BY:

CALIFORNIA & NEVADA: Cook Bros., Los Angeles*, Oakland*
OREGON: Cramer Machinery Co., Portland & Eugene
WASHINGTON: Reo Washington Sales, Seattle
Andrews Equipment Service, Spokane
MONTANA: Seitz Machinery Co., Billings & Great Falls
Roberts Truck & Parts, Butte
ARIZONA: Cook Bros., Phoenix*
UTH & IDAHO: Harris Truck & Equipment Co., Tremonton & Logan, Utah
Boise, Idaho
COLORADO & WYOMING: Jacobs-Kerr & Co., Denver, Colorado
NEW MEXICO: Inland White Truck Company, Albuquerque

. . . for more details, circle No. 66 on Reader Service Postcard

power from a 4-cylinder air-cooled Wisconsin engine. Sixteen outlet receptacles are included at no extra cost. The unit is completely equipped with battery charger, speed indicator, automatic spark advance and mildew proof windings. The plant is also available for skid mounting.

. . . Circle No. 197

Agitator body for mixed concrete

For the economical transportation of central-mixed concrete, S & M Manufacturing Co., Inc. has announced a new 8-yd. Agitor. This new large model is in addition to the 6½ and 4-yd. models which have been available over the past few years. An agitator

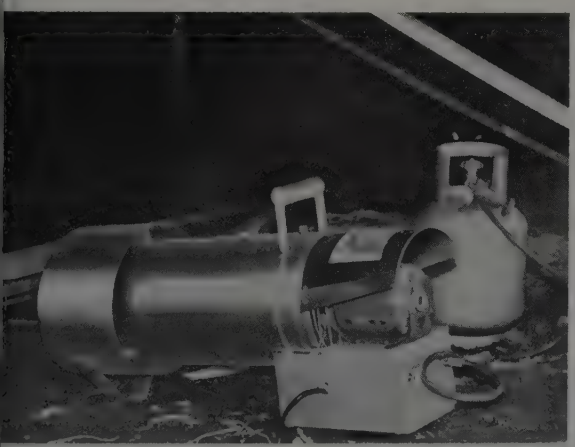
ssembly rotating inside the body meets all specifications for transportation of ready-mixed concrete. Segregation is prevented and the agitator allows for the maximum permissible time limit of haul. The open top is a special feature which permits instant charging, visual inspection of each load, and easy washing.

The unit is hydraulically powered from a take-off eliminating complicated drive shafts or a separate engine. This hydraulic power not only turns the agitator, but hoists the body and raises and lowers the chutes. The 8 cu. yd. of concrete can be discharged in 65 sec.

. . . Circle No. 198

Portable space heater burns LPG

Designed specifically for the construction industry, **Stow Manufacturing Co.** has put on the market a new portable space heater which burns liquid petroleum gas. Because of its portability, it can be moved easily around the job to warm working areas, thaw out machinery, cure concrete, and general space heating.



The model LPG200 heater is engineered for quiet, spotless production of 200,000 btu. A ⅛-hp. motor drives the circulating fan, and a burner control turns off the fuel if either the power or flow of gas is interrupted. It weighs only 45 lb. and its outer shield acts like a Venturi tube sucking in cold air from the floor and mixing it with hot air to provide a warm blast.

. . . Circle No. 199

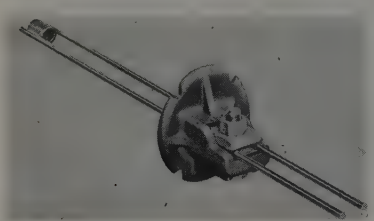
Form for smooth concrete

A new glazed plywood concrete form panel designed for maximum reuse on jobs requiring smooth architectural concrete is marketed by **St. Paul & Tacoma Lumber Co.** Called PlyGlaze 101, it has a high density overlay in distinctive translucent brown color, in contrast to the regular PlyGlaze amber. The overlay is a phenolic resin permanently fused to the panel. It has greater resistance to alkaline conditions and is completely waterproof. Available in all standard sizes, the panels meet all U. S. standards.

. . . Circle No. 200

Tie clamp for tough jobs

An open end tie clamp assembly for forms for warped or other unusual walls has been developed by **Superior Concrete Accessories, Inc.** Assembly consists of an open end coil tie and a new tie clamp which features hardened serrated jaws to give positive grip. The coil end of the tie, kept back from the exposed

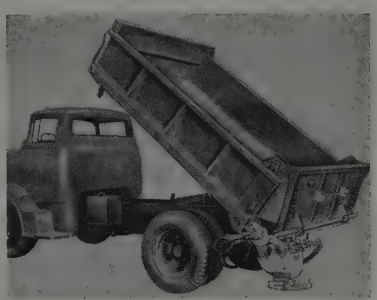


concrete face, is held in the conventional way with a coil bolt and flat washer. Clamp, which includes a heavy cast bearing plate, is slipped over the open end of the coil tie and locked securely in place at any point by a few turns of a nut. Especially recommended for complicated form work, the assemblies are simple to apply and require no special tools. The tie clamp may be reused indefinitely. Clamp fits standard Superior ½-in. open end coil ties and has a safe load of 6,000 lb.

. . . Circle No. 201

Tailgate spreader

A vane-type spreader which mounts on the tailgate and is operated from the cab via hydraulic controls is announced by **Highway Equipment Co.** The model "TG" is operated by one man and can spread material in any width from 5 to 40 ft. Designed for ice control or seal-coating work, it has a stabilizer bar which keeps the 18-in. diameter spinner level at all times, regardless of the dump body angle.



A screw-type auger has agitator action to break up frozen lumps of material and feed evenly to the spreader. The unit can be installed on any standard dump body measuring 6½ to 8 ft. in width. Hydraulic drives are powered by low speed, high-torque motors. There are no chains, sprockets, gears or mechanical drives.

. . . Circle No. 202

"Flip-Top" compressor housing

With a "Flip-Top" housing and featuring clean styling, **Le Roi Division of Westinghouse Air Brake Co.** announces a 75-cfm. rotary

compressor. The unit operates with gasoline engine and is the fifth rotary model to be added to the Le Roi line. The "Flip-Top" housing is aluminum, provides full view of the machine for servicing and maintenance. The model is light, weighing only 1,605 lb. One man can deliver and spot the compressor on the job. Full load speed of the 4-cylinder is only 1,850 rpm. and unloaded speed is 1,000 rpm.

. . . Circle No. 203

Concrete workability increased

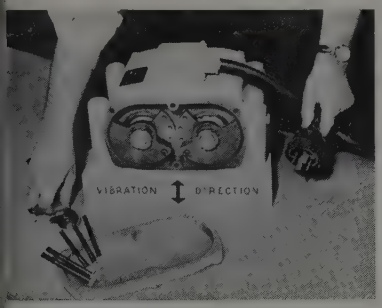
An additive called "Symentard" which slows down the rate of hydration and lengthens the working time has been developed by **A. C. Horn Companies, Division of Sun Chemical Corp.** The additive is said to produce stronger, denser concrete that will have high resistance to cracking. It is not an air entraining agent but acts by slowing down the rate of hydration. In hot weather use of Symentard makes it unnecessary to add additional water to concrete mixes to prolong working time. It is recommended for use on all types of structural concrete and particularly for use during hot weather. Literature covering physical properties and laboratory test reports available.

. . . Circle No. 204

. . . for more details, circle No. 70 on Reader Service Postcard

Silent vibrator

A dual motor vibrator operating four rotating eccentric weights which produces practically noiseless vibration in a wide range of impact has been marketed by **Cleveland Vibrator Co.** The unit, Model RC2-50, produces straight line vibration in any direction. It uses four weights, two on each motor, contra-rotating. Variable impact

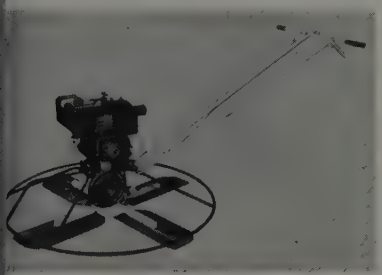


range is from 640 to 2,220 lb. and any impact change can be made in a matter of minutes. Because there are no pulleys or belts in this totally enclosed unit, it is practically noiseless. Recommended for heavy-duty applications requiring continuous flow, it weighs 100 lb. and is about 12 in. long, 12 in. wide.

. . . Circle No. 205

Low cost troweling machine

A large size concrete troweling machine with 43-in. trowel diameter, priced below other machines of comparable size, is announced by **Champion Mfg. Co.** The machine, Model 430-G, is powered by a 5-hp.



Briggs & Stratton engine. It is available in three blade or four blade models. Features include a stationary guard ring for safety which allows troweling up to obstructions and a "dead man" safety grip that automatically stops rotating of the trowels when the handle is released. The company makes other models in 29- and 36-in. sizes as well as a 44-in. unit powered by a 7-hp. Wisconsin engine.

. . . Circle No. 206

Heavyweight truck cranes

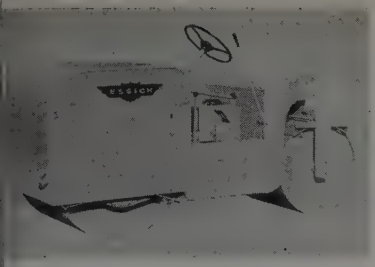
The world's largest truck crane an 80-ton capacity unit which can handle up to 250 ft. of boom, heads the list of five new crane models introduced by **Harnischfeger Corp.** Capacities range from 35 through 80 tons. The big unit, Model P&H 775-A-TC, is capable of pouring concrete, setting steel and handling lifts as high as a 21-story building. Among its exclusive features is a P&H patented method of transmitting power electro-magnetically for swing. This system, called Magnetorque, is said to eliminate friction clutches, requires no lining

replacements, adjustments or maintenance. The new 35 and 40-ton models are also equipped with Magnetorque. The machines also have a sealed power box in which all gearing is completely enclosed and running in a bath of oil. The 35-ton crane will handle up to 180 ft. of boom while the 40-ton, 50-ton and 60-ton models will handle 200 ft. of boom. All the new machines have booms of T-1 steel tubular chord and lattice construction. The carriers are all built by P&H. The company's P&H symbol is derived from its founders, Pawling and Harnischfeger, who set up shop 7[illegible] years ago.

. . . Circle No. 20[illegible]

Tandem roller redesigned

The Essick 2-ton tandem roller has been completely redesigned to give it a lower profile, wider roll, a lower center of gravity and considerable increase of stability. The new Model 210 has a rugged transmission which incorporates externally adjustable twin disc clutches and electrically welded steel plate yoke. Controls are grouped in the most comfortable operating position. Roller provides 110 lb. per lineal inch compression. The unit features large diameter guide roll



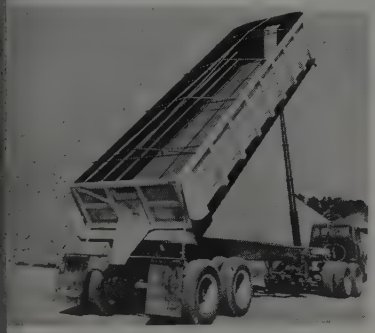
which roll on top of the asphalt or oil, resulting in a smooth surface rather than pushing the material into a "wavy" uneven surface. Its sprinkler system features individually controlled spray bars fed by 55-gallon water tank.

Similar revisions have been made in the Essick 3-ton tandem roller, now designated Model 310. A new high-frequency vibrating compactor with 72-in. roller width and close-coupled drive powered by a Continental engine, also has been announced by the company. The new model is designated VR-72-TEC. Three of these units in triplex hook-up are capable of compacting a 17-ft. path in one pass.

. . . *Circle No. 207*

Designed for maximum payload

Designed to secure maximum payloads in line with highway restrictions a new extra-long dump trailer is available from **Hercules**



Steel Products Co. It is a full frame design and has the weight properly distributed between the dump body and the chassis on which it is mounted. The 28-ft. steel body is mounted on a 31-ft. chassis to obtain a maximum legal payload of 43,000 lb. Body is of corrugated steel construction.

. . . *Circle No. 208*

Transistorized radio

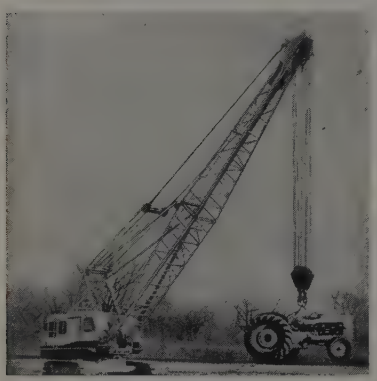
A two-way radio system featuring fully transistorized receiver and power supply has been marketed by **Motorola**. It is available in six

models from 25 to 50 watts covering frequency ranges of 25-54 mc. and 150-174 mc. Advantages of the system include lower operating temperatures, lower power consumption and clearer signal.

. . . Circle No. 209

Lift crane handles 95 tons

A crawler-mounted crane which handles up to 190,000 pounds working at a 12-ft. radius with a 60-ft. boom has been introduced by Koeh-



ring Division, **Koehring Co.** The new crane, Model 1295, is the largest of 8 crawler model machines built by the company. The model is equipped with special wide axles providing a crawler width of 13 ft., 4 in. center to center of the girders. With 42-in. shoes the outside crawler width is 16 ft., 10 in. Length of the crawlers is 19 ft., 3 in. Maximum boom lengths for the machine are 170 ft. of main boom or 160 ft. of main boom with 30 ft. of jib. The crane can be equipped with a third drum, automatic power boom lowering, power load lowering and independent traction as optional equipment, either at the factory or in the field.

. . . Circle No. 210

Ateco ripper for D8, series H

Designed specifically for Caterpillar D8, Series H tractors, a heavy-duty tractor-mounted rock ripper is now in production by **American Tractor Equipment Corp.** The model HR48-D8H ripper has an offset tool beam with ample clearance for mounting on tractors equipped with No. 29 rear cable control. Model HR-D8H has the standard straight tool beam. Both models will rip with 1, 2 or 3 shanks to a maximum depth of 48 in. Straight or curved shanks with 25, 42, or 48-in. ripping depths are available.

. . . Circle No. 211

Handle cement by air

Advantages of handling bulk cement by air rather than by elevator or screw conveyor are incorporated

in a new line of equipment announced by **Engineered Equipment, Inc.** To convert any existing plant to the new method of handling, engineers of the company will design and construct from standard parts a complete pneumatic bulk handling system. This design provides a system which can be used with any truck equipment for handling bulk cement.

. . . Circle No. 21

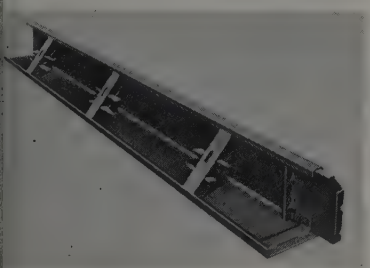
luid dispensing pump y Lincoln

Operated by air motor, a new luid dispensing pump designed for eavy construction contractors has een introduced by **Lincoln Engineering Co.** It is a high volume, to 1 ratio, double-acting pump elivering 2/3 pint per cycle or almost 12 gal. per min. with 50 psi. f air pressure.

. . . *Circle No. 213*

lighway forms of etter design

Several important improvements n design are featured in the new ex road forms as announced by **hain Belt Co.** The units come



ith either single or double wedge esign, with slotted stake holes for utomatic alignment. The stake ockets are closed, eliminating uild-up of concrete or gravel, and l pockets are electrically welded the face and base of the form. he ends of each form have extra -in. steel reinforcing plates and ll depth ¼-in. steel lock plates. aterial is a high grade, high rength carbon alloy steel.

. . . *Circle No. 214*

rott unit now on IH tractor

The Drott Skid-Shovel has now een adapted for use with the **nternational Harvester** T-340 rawler tractor. The well known rott design provides a bucket that n be used as a standard bucket, ulldozer, carry-type scraper and

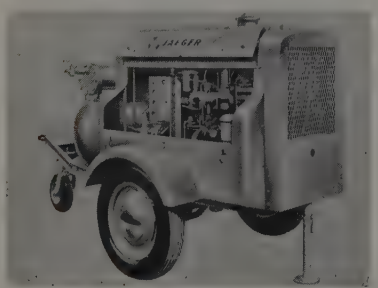
clamshell. The operator, by means of a selector level, makes the change-over in the machine action. A particular feature of design is the Skid-Shoes mounted beneath the bucket which permit a prying action for handling material that cannot be moved by normal lifting action. Bucket capacity is 5/8 cu. yd. struck and 7/8 cu. yd. heaped.

. . . *Circle No. 215*

Small compressor of big design

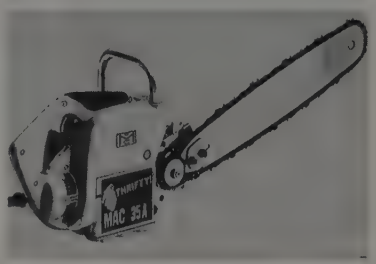
With features similar to those on its larger rotary compressors, **Jaeger Machine Co.** offers Model 85. Powered with a Continental engine developing 45 hp., and equipped with a 12-volt electric starter, this latest model includes other special features usually found on large machines. The compressor unit is a single-stage oil-cooled rotary which develops 85 cfm. at 100 psi.

. . . *Circle No. 216*



Line of McCulloch chain saws

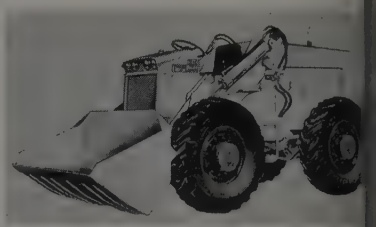
Headed by MAC 35A, of popular size and operating characteristics, **McCulloch Corp.,** has announced a new line of seven chain saws, including a gear driven model. This new gear drive is designed for jobs where extra lugging power is required from a medium sized engine. The MAC 35A, weighing only 19 lb. is the popular model, both light and efficient for all types of miscellaneous jobs. It has optional gear ratios of either 4.22:1 or 2.95:1.



. . . *Circle No. 217*

Loader designed for speed

Designed especially for speed on construction jobs, **Allis Chalmers**

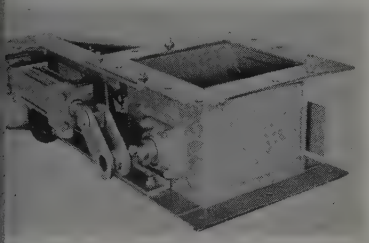


Mfg. Co. announces Model TL-1 TractoLoader. The new mode weighs 18,000 lb. and has a carry capacity of 7,000 lb. Available are five different sizes of buckets rang ing from 1½ to 4 cu. yd. For rapid loading the bucket tips back 4 deg. at ground level, and for added stability while traveling the tip car be increased to an angle of 45 deg at carry height (14 in. above the ground). The units can be obtained with either a 109-hp. Hercules gaso line engine or a 104-hp. Allis Chalmers diesel. Top speed, either forward or reverse is 27 mph.

. . . *Circle No. 218*

package of batching control

Designed to offer new or existing ants a push-button type of auto- atic batch control, **Engineered quipment, Inc.** has announced a ackage." Standardized compon- nts can be adapted to fit any atching situation and a 2-stage

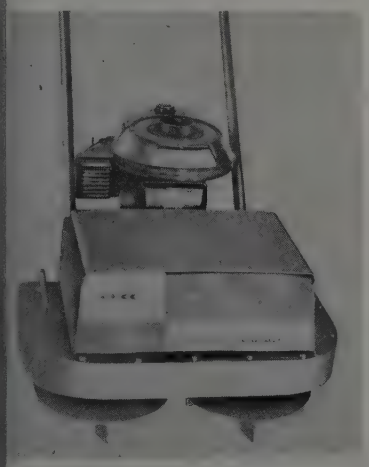


toff is provided to give accuracy id complete control. Jogging for ther valves or gates, with proper ntrol system and sensing device gether with all connecting wiring included. Complete installation structions are provided, or the ckage can be installed under fac- ry supervision. The entire pack- ge costs only a fraction of the ice for a fully automatic plant.

. . . Circle No. 219

igh speed concrete grinder

Portable, but capable of grind- g rough concrete slabs in record ne, **Equipment Development Co.** as announced a new unit. Used ther wet or dry, the grinder has most 2 sq. ft. of grinding area



ing six standard grinding stones eld in place by hardwood wedges. our large rubber tired wheels pro- de easy movement. Power is avail- le either electric or gasoline.

. . . Circle No. 220

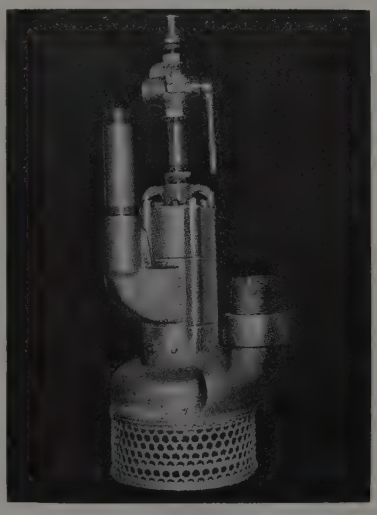
Joint matcher for paver

An automatic joint matching attachment that controls longitudinal screed level during bituminous paving is now available for use with Model PF-90, the **Blaw-Knox** Express Paver. When the joint matching attachment is adjusted to an adjacent compacted surface at the joint line, it maintains accurate paving depth control at the screed without manual attachment.

. . . Circle No. 221

Air-operated sump pump

Operated on compressed air (60 to 100 lb. pressures) **Worthington Corp.** has introduced a new sump pump with durable, long-life steel casing. The unit weighs only 56 lb. and is designated the WAP-100. A special design feature, referred to



as the air exhaust check valve, prevents water from entering the air motor even when the pump operates in a submerged condition. Position of the impeller permits removing of water down to within 1 in. of the bottom of the sump.

. . . Circle No. 222

Finger-tip shifting for Cats

Developed expressly for the demands of heavy earth-moving service, **Caterpillar Tractor Co.** has introduced its SynchroTouch Transmission Control on DW20 and DW21 tractors. It is introduced as optional equipment and manual shift transmissions will continue to be available. The prime advantage of the new, finger-tip shifting, is to permit operators to shift up and

down instantly by setting a dial t the desired gear range. This elim inates the need for performing th usual gear shifting operation Shifting time is reduced and th operator is saved the physical effor of shifting. The foot operate clutch pedal, which is retained, i used only when shifting from neu tral to a gear range from standstill

. . . Circle No. 22

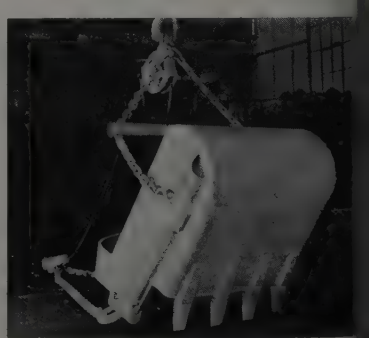
Concrete vibrator for big jobs in harsh mix

Designed particularly to knoc down and compact the heavy harsh mixes normally used in dams o other mass concrete jobs, **Vibro Plus Products, Inc.,** announce Model AO32. It will consolidat concrete containing aggregate size up to 10 or 12 in. in diameter Weight is 75 lb. and diameter o the head is 6 in. Air consumptio is 80 cu. ft. per min. and the uni operates on frequencies rangin from 7,000 to 8,000 vibrations pe minute.

. . . Circle No. 22

New line of buckets

A completely new line of drag line buckets for general service, in cluding irrigation ditches and th



andling of sand and gravel, are eing offered by the **Williams ucket Division, The Wellman En-ineering Co.** The customary lip, ottom scoop plate and skid run-ers are replaced by a heavy 1-piece ottom to produce smooth interior nd exterior surfaces for fast dig-ing and instant dumping. This mplified design and construction so reduced maintenance on ucket wear. Designated Type DC ie new models are available in zes from 3/8 to 1 cu. yd.

. . . Circle No. 225

Wedge for frozen ground

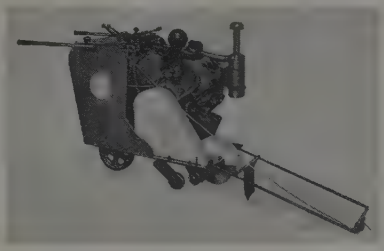
Fast breaking of frozen ground as been designed into the inclined iape of the **Brunner & Lay** frost

edge. The unit is supplied in ree shank sizes, 1x4½ in.; 1⅛x6 . and 1¼x6 in. The length under e collar for all three is 17½ in.

. . . Circle No. 226

Power feature of concrete saw

A heavy-duty concrete saw powered with a 36-hp. engine is claimed to feature the most powerful propelling unit installed on this



type of machine. This propelling power is provided through torque control and built-in pump design. The new model CP-369 of **Concut Sales, Inc.** also features an optional center-mount blade positioned for increased blade life and ease of handling. The heavy-duty unit is designed to reduce operator fatigue to a minimum. It also features full hydraulic controls, forward and reverse propelling, positive braking, power raise-out and a device that stops the blade when the water pressure drops.

. . . Circle No. 227

Space heater with new design

In its new model of the Champ heater, **Champion Heater Co.** has introduced a principle which is new to the regular design of space heaters. This is the principle common to residential type oil burners with two entirely separate sources of air, one to support combustion and the second (shown on top of the heater) for heater air circula-

tion. A built-in thermostat, standard on Model 120-T will shut off the unit at any predetermined temperature and also serves as a heat-limit safety switch. The unit operates on 110-volt current.

. . . Circle No. 228

News of DISTRIBUTORS

New outlet in Rocky Mountain area

The Colorado Builders Supply Co., Equipment Division, with offices in Denver, Colo., and Casper, Wyo., has acquired the Browning Manufacturing Co. account for compactors, rollers and other items.

Two new M-F dealerships

Appointment of Smith Booth Usher Co., Los Angeles, and Hartley Motors, Inc., Palmer, Alas., as area dealers for Massey-Ferguson Industrial Division is announced by Charles F. Hill, division general manager. These concerns will handle the Work Bull industrial tractor, Davis loaders and backhoes, and other M-F equipment.

Pump distributor named

Laurence Myers & Co., San Francisco, announce their appointment as exclusive distributor for Northern California for the Azar line of Du-All grout, plaster, and cement pumps. With factory trained personnel, Myers will provide regional service throughout the area, and carry a complete stock of parts.

Globe Linings appointed

B. F. Goodrich Industrial Products Co. has appointed Globe Linings, Inc. of Long Beach, Calif. as distributor in the eleven Western states for its line of plastic linings for reservoirs, ponds, lagoons, canals, etc. Globe Linings will also serve as engineers and installation contractors for Koroseal linings.

Modern Machinery handles Joy line

Modern Machinery Co., Spokane, Wash., through its president A. M. Kennedy, announces the acquisition of a new line: Joy Manufacturing Co. of Pittsburgh, Pa.

Sanford Tractor completes modern facilities

New shop with an area of 7,100 sq. ft., equipped with complete facilities for truck repairing, has been completed by Sanford Tractor & Equipment Co. in Reno, Nev. A complete machine shop where all jobs will be expertly and efficiently handled by capable personnel is also being established. A particular feature of this shop will be a lathe with a 40-in. swing.

Diamond T Motor Truck appoints Montana dealership

Empire Equipment Sales, Kalispell, Mont., has been named dealer for the products of Diamond T Motor Truck Co. A full stock of factory replacement parts for the manufacturer's line of heavy-duty trucks is also maintained by the new dealer.

DESIGNED exclusively for the reconditioning of used earthmoving and construction equipment, the new plant of H. W. Moore Equipment Co. in Denver has over 7,000 sq. ft. of floor area. Its facilities include a Dynomometer for electronically measuring engine performance under full load conditions, and a track roller rebuilding machine which will rebuild eight crawler-tractor track rollers at one time. View shows the "Used Equipment Factory" as it neared completion.

Personnel changes at San Diego distributorship

Personnel changes in the sale and service departments of Con struction Machinery Co., are an nounced by Donald J. Mather president. Promoted to sales man ager is Keith Robertson, who joined CMC two years ago after working with Allis-Chalmers dea

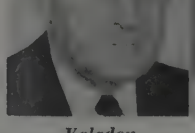
Keith Robertson

ers as a factory sales representative Included in his field experience a period of seven years with Pete Kiewit Sons' Co., large contractin organization. Another man i CMC sales with plenty of practica experience in the construction fiel

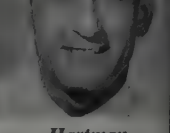
Darrough

Collier

is Clarence Darrough. Darrough' early exposure to machinery led t his becoming an operator, and late he became a contractor in his ow right. Also W. S. "Curly" Collie who has fourteen years experienc with machinery, nine as CMC part manager, has now become a mem ber of the sales force. His forme post has been taken over by Wayn Kreutzberg.

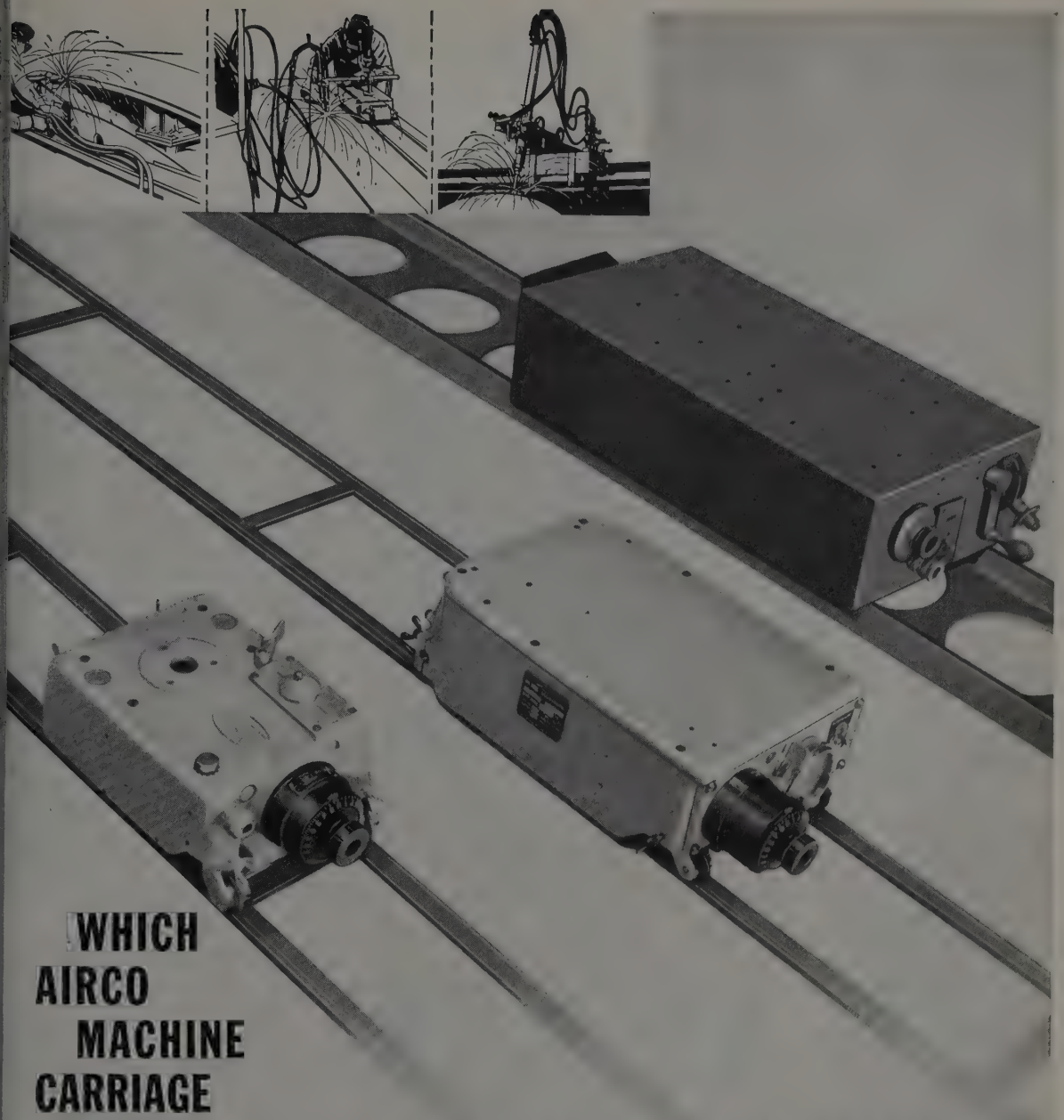


Valadon



Hartman

In the service department, Fre Valadon is the new departmen head. He comes from the Allis Chalmers dealership in Oakland Previously he was A-C factor branch service representative fo



WHICH AIRCO MACHINE CARRIAGE for your CUTTING . . . WELDING . . . FLAME-TREATING?

If you use machine carriages you know this: You need the best carriages to do the best work.

For that reason Airco produces these motor-driven and portable Radiagraphs . . . track or contour guided. The No. 41 is designed particularly for the heavyweight jobs; speed range: 1½ to 72 ipm. The No. 20 is a natural for the jobs involving medium-to-heavy cutting and welding equipment; speed range: 2 to 240 ipm. The No. 10 type is built to breeze through the lighter gauge jobs, speed range: 2 to 50 ipm.

Fingertip speed control allows an infinite selection over the entire speed range. Easy-to-attach accessories equip them for arcs, circles, ovals, and many other applications.

At least one of the Airco Radiagraphs will handle your toughest jobs. For catalogs on all, send your name on your letterhead. Do it now.

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Western Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

. . . for more details, circle No. 81 on Reader Service Postcard

ten years. Valadon expects to spend half his time in the field with CMC customers, while Ben Hartman, assistant service manager and shop foreman, takes care of customers at the distributor's headquarters, 2175 Newton Ave., San Diego, Calif.

Le Roi appoints Atlas Equipment

Appointment of Atlas Equipment Co., Salt Lake City, as a distributor of Le Roi products is announced by R. H. Koehler, general sales manager of Le Roi Division, Westinghouse Air Brake Co., Milwaukee. Atlas will offer sales and service to the construction industry of Le Roi equipment in all of Utah, Uinta County in Wyoming, and Elko, White Pine, and Lincoln counties in Nevada.

R. G. LeTourneau names S.W. rep

A new distributor has been appointed to handle heavy-duty logging equipment manufactured by R. G. LeTourneau, Inc. of Longview, Tex., in the states of Arizona and New Mexico. The new outlet is J. T. Jenkins Co., with headquarters in Phoenix, Ariz. Vice president in charge of the Phoenix area activities is Lee G. Crayton. Organized in 1934, the company is reported to have established an outstanding record in the marketing of heavy equipment.

Air-Mac adds to lines and sales force at Portland

Two new accounts have been taken on by Air-Mac, Inc. of Oregon, as announced by Oliver Jessup, sales manager at Portland. They are Koehring of California and the Stow Manufacturing Co. Jessup also reports three new salesmen: Ray Hibbard, Ed Hughes, and Don Caster.

Changes in personnel and new accounts

L. S. "Buck" Shumway recently joined the sales staff of Andrews Equipment Service of Washington, Inc., Spokane. He will cover the Lewiston area in Idaho, and replaces Roger Chesrown who has gone into business for himself. Shumway has a background of many years in the truck and heavy equipment field. Also announced is the appointment of E. C. Haugan as rental and service manager. A long-time Lorain serviceman fo Andrews, Haugan has lately bee selling heavy equipment.

Andrews Equipment Service ha taken on the Winco line of gen erators, and the Miller swivel hoo and block line, and most recentl became distributor of Pacific wir rope, carrying one of the most com plete stocks of wire rope in th Inland Empire.

Sabor names So. Calif. distributor

Sabor Tooth Co., manufacture of Sabor forged shanks and teet for crawler tractor ripping, has ap pointed Ball & Black of Los An geles its Southern California dis tributor. Main office of Sabo Tooth Co. is at 777 100th Ave. Oakland, Calif.

Brown-Bevis branch personnel

The Riverside branch of Brown Bevis-Industrial Equipment Co. o Los Angeles is in charge of C. D Chase, with Glyn McCook, sale manager, and W. B. Wicker, offic manager.

Coggins new Hi-Way distributor

J. D. Coggins Co., Albuquerque N. Mex., is a new distributor fo Highway Equipment Co., Ceda Rapids, Ia. Coggins handles the Hi Way line of ice control spreader and bituminous paving equipmen for most of New Mexico and thre counties in Arizona.

Clayton Mark broadens Western marketing

The Kenneth B. Schumann Co. manufacturer's representative i the electrical supply field, locate in Denver, Colo., has been name to represent the Conduit Divisio of Clayton Mark & Co., Evanston Ill. Electrical steel conduit manu factured by Clayton Mark is use in virtually all types of construc tion projects, including airports industrial plants, etc.

Distributors wanted for Eversman highway plane

Territory is available for North ern and Southern California di tributors to handle Eversman high way planes. These planes are di cussed in the August 1959 issue o *Western Construction* in an articl beginning on page 124 entitle "Finishing Base Courses With Nev Highway Plane." Distributors in terested in handling this equip ment should contact F. L. Bligh Eversman Manufacturing Co., Cur tis at 5th St., Denver 4, Colo. An

e wishing to secure a copy of the
icle describing this piece of ma-
inery may obtain same by writ-
g to *Western Construction*, 609
ission St., San Francisco 5, Calif.

ANUFACTURERS

ain Belt buys Spanall operations, estern outlets unaffected

Purchase of the operations for tributing Spanall products from niversal Builders Supply Co., c., New York City, was recently nounced by Chain Belt Co., Mil-ukee. Spanall will supplement ain Belt's established line of oducts for concrete road-build-g, ready-mix and general con-uction industries. Chain Belt has ganized two new companies to oaden and facilitate Spanall dis-bution: Rex-Spanall, Inc., New rk, N. Y., and Rex-Spanall ternational.

The operation of Spanall of the cific, Inc., will not be affected the above Eastern transaction. ne Western firm will continue to as distributor for this shoring tem in five Western states and aska. In Hawaii, the product will ntinue to be handled by Spanall Hawaii, Inc. According to aeme K. MacDonald, president, anall of the Pacific, Inc., he ns no change at this time in per-nnel or sales channels which for me time have been handled by e nine West Coast offices of . J. Burke & Co.

mes Lovell retires from du Pont

The Explosives Department of I. du Pont de Nemours & Co. nounces the voluntary retire-ent of James L. Lovell, Western presentative of the Contractors ction who has completed 36 years service with the du Pont Com-ny. L. B. Conrad succeeds him d will headquarter in the San ancisco area. The Mid-western presentative will be T. F. R. ngan, with headquarters in St. uis, Mo.

uclid Service School heduled for San Francisco area

A series of courses covering pre-ntive maintenance: trouble-ooting, and repair of major com-nents used on Euclid earthmov-g equipment is offered by the mpany's Service Training De-rtment. From Nov. 16 through

Dec. 18 the school will be held at the General Motors Training Center, 1444 First Ave., San Leandro, Calif. It will be open to all Euclid owners, operators, and service personnel from the San Francisco area. There will be three separate courses covering the TS-24 Scraper, Allison Torqmatic Transmission, and the C-6 and TC-12 Crawler Tractors. Those interested in attending one or all of these sessions can obtain detailed information from their local Euclid dealer whose name can be found in the following list:

Min-A-Con Equipment Co., Phoenix, Ariz.; Lively Equipment Co., Albuquerque, N. Mex.; Northern California Euclid, Inc., Sacramento and San Francisco, Calif.; San Diego Tractor & Equipment Co., San Diego, Calif.; The Colorado Builders' Supply Co., Denver, Colo., and Casper, Wyo.; Intermountain Equipment Co., Boise and Pocatello, Idaho, and Spokane, Wash.; Hall-Perry Machinery Co., Butte, Great Falls, Missoula and Billings, Mont.; Sierra Machinery Co., Reno, Nev.; Archer Tractor & Machinery Co., Salt Lake City, Utah; Interstate Tractor & Equipment Co., Portland and Eugene, Ore.; Evans Engine & Equipment Co., Inc., Seattle, Wash.; Euclid Division GMC, Los Angeles Branch, La Puente, Calif.

New company formed

Announcement is made of the formation of Plastic Sealer Corp., 830 W. Lane Ave., Columbus, Ohio. The new company specializes in compounds for use in asphalt and concrete pavements. According to Floyd H. Baker, president, nationwide distribution facilities are being completed, with a limited number of opportunities available for representation on an exclusive territory basis.

New Roebling sales representative

Claude Sutherland has been named sales representative for the Wire Rope Division of John A. Roebling's Sons Corp., Trenton, N. J. Sutherland will service Roebling industrial and contractor accounts in Los Angeles County, Calif.

Hetherington & Berner business sold to American Hoist

Hetherington & Berner, Inc., pioneer Indianapolis manufacturer and first builder of asphalt mixing equipment in the United States, has been purchased by American Hoist & Derrick Co. of St. Paul, Minn. Donald R. Berner, H & B vice president, who has been retained as general manager, said that the company's plants in Indianapolis would continue to be operated under the Hetherington & Berner name as a subsidiary. Robert Berner, H & B president, who has had nearly sixty years experience in the asphalt and structural steel business, is retiring.

"Ateco" trade name replaced

Greenville Steel Car Co. announces that it will now market its rippers, scrapers, loaders, and related products under the trade name of "Greenville." The "Ateco" trade name is being discontinued. Change is effective immediately according to William A. Bright, Sales Manager of the Earthmoving Equipment Division.

James Bell heads RB&W Western sales

James M. Bell has been named to the newly-created position of assistant vice president of sales in charge of the Western division for

ussell, Burdsall & Ward Bolt & ut Co. Announcement was made John S. Davey, sales vice presi- nt of the 115-year old industrial stener manufacturer. Bell has en Pacific Coast sales manager ice 1954 and will continue to be adquartered in Los Angeles, at 66 Worth St.

a Pont Works in Northwest lebrates 50 years

Recently the Du Pont plant lo- ted at Du Pont, near Tacoma, ash., celebrated its fiftieth anni- rsary with an open house. The ant was shut down so that the ployees, retired employees, and ests could have an opportunity visit the seldom-seen manufac- ring facilities on the "powder e" railroad which normally car- s explosive ingredients from one lated building to another. Ex- osives manufactured in those ildings have been used on Grand oulee Dam, the Cascade Tunnel, e Alaska Railroad and other his- ic construction projects in the cific Northwest.

y appointments by Hyster

Hyster Company announces two y personnel changes. Robert F. body, sales manager of Hyster's lustrial truck division, has been pointed general sales manager

Moody *Welch*

d will move back to Portland, e., from Danville, Ill., where he s been for the past several years. ed Welch has been appointed neral parts and service manager d will also assume full responsi- ity of the operation of the mpany-owned retail dealerships. elch has been head of the mar- ing division for the past two rs and has managed Hyster re- l operations both in Seattle and n Francisco. He will continue to adquarter in Portland.

clusive Ruby production

Ruby portable batch plants and rtable silos are now being ex- sively manufactured by Koehr- Company of California.

Buffalo-Springfield drops "Roller"

Change in the name of "Buffalo-Springfield Roller Co." to "Buffalo-Springfield Co." is announced by the Koehring Company, the parent corporation. Buffalo-Springfield has been a pioneer and leading manufacturer of road rollers and compaction equipment for seventy years.

Daybrook appoints Bob Logan

Robert L. Logan has been appointed Western zone manager for Daybrook Hydraulic Division, Young Spring & Wire Corp., Bowling Green, Ohio. Logan will work with Daybrook truck equipment distributors in California, Washington, Oregon, Arizona, Nevada, Utah, and Idaho in the sales and service of the company's dump bodies, hydraulic hoists, Power Gates, Power Loader and Power Packer. Logan has been associated with the construction equipment field on the West Coast for the past several years. Zone headquarters for the Division are at 238 Camille Ave., Alamo (San Francisco), Calif.

L. A. Gosden moves to head Seattle branch of White Diesel

The new Seattle Branch manager of White Diesel Engine Division, The White Motor Co., is L. A. Gosden. He has been branch manager for the Division at San Francisco for the past three years. From his Seattle headquarters he will service industrial engine users in all of Washington and in Alaska.

Jack Connors named manager

Jack H. Conners has been named vice president and general manager of KW-Dart Truck Co., Kansas City, Mo., a subsidiary of Pacific Car & Foundry Co. The appointment was announced by Robert D. O'Brien, vice president in charge of sales for the parent company. Connors comes to his new post with KW-Dart, a leading manufacturer of heavy-duty off-highway trucks, from a similar position with another PC&F subsidiary.

Pettibone Mulliken offers installment-pay plan

A new installment sales plan to increase the sales of road building, construction, and other industrial equipment produced by Pettibone Mulliken Corp., Chicago, is announced by E. J. Seifert, president. The plan will be administered by James Talcott, Inc., one of the nation's oldest financing institutions.

Fruehauf awarded cement hopper order for Glen Canyon

Fruehauf Trailer Co., Detroit, Mich., has received an initial order of 20 sets of cement-hoppers to be used to haul cement for construction of the huge Glen Canyon Dam in Arizona. Announcement of the purchase of the newly designed bottom-dump hoppers was made by J. L. Belyea, president of Belyea Truck Co., who has the cement hauling contract. About 24,000 truckloads of bulk cement will be transported by Belyea from the Phoenix Cement Co. mill at Clarkdale, Ariz., a 376-mi. round-trip haul.

Reynolds aluminum now sold by Ryerson at San Francisco

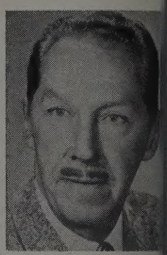
Robert H. Wasz, general manager of Joseph T. Ryerson & Son, Inc., San Francisco, announces that Reynolds aluminum has been added to the company's stocks. Service on aluminum, in addition to service on steel, is given to metal users in the Northern California area. Heading the new aluminum sales department is Thomas A. Edwards, who was a Ryerson sales representative for six years prior to taking over the management post.

E. K. Hubbard heads Chicago Pneumatic's Seattle district

E. K. Hubbard has been appointed manager of the Seattle district of Chicago Pneumatic Tool Co. He has been with Chicago Pneumatic since 1937 and brings to his new position much experience with construction accounts, as well as industrial, automotive and petroleum. Hubbard fills the vacancy occasioned when R. S. McBeth retired after 18 years of service to the Pacific Northwest for Chicago Pneumatic.

R. C. Peterson heads Trojan sales in Rocky Mountain area

Robert C. Peterson has been appointed district sales representative of the Trojan Division of The Yale



R. C. Peterson

& Towne Manufacturing Co. for the Rocky Mountain states. Before joining the Trojan Division, Peterson served in a similar capacity for five years with a major construction equipment manufacturer.

First wood treating plant in Alaska

Koppers Company, Inc., will build and operate the first wood preserving plant in the 49th state. Douglas Grymes, Jr., general manager of Koppers Wood Preserving Division, states that construction of a plant has started at Whittier, Alaska. Guy Phillips, formerly manager of the Wauna, Ore. plant, has been named manager of the new plant.

J. A. Ransford succeeds Parson as Washington rep

J. A. Ransford has been named Washington representative for Tidewater Oil Co. He succeeds L. W. Parson, Tidewater's Washington representative since 1942, who retired in September.

E. McCuaig heads ydrocrane Division

Douglas E. McCuaig has been pointed product engineer in arge of the Hydrocrane Division Bucyrus-Erie Co., South Milwau- e, Wis. He had been project en- neer for walking draglines and mmercial cranes and excavators.

D. Allis appointed

Appointment of Charles D. Allis vice president in charge of sales announced by McCulloch Corpo- ion, Los Angeles, manufacturer power chain saws. He was for- rly general sales manager.

anges in key positions at M-M

James A. Miller, who was chief gineer of lift-trucks for Clark uipment Co., has been appointed ector of engineering of Minne- olis-Moline Co. Distinguished his achievements in designing terials-handling equipment, nsmissions for construction and ner machinery, and heavy-duty cks, etc., Miller will direct the ff of engineers and designers at M-M experimental laboratory d engineering headquarters at pkins, Minn. Also announced he promotion of Walter J. Rai- from the position of assistant nager of the parts division to nager of M-M's marketing ser- es.

hn Scialli heads General Tire es in Northwest

John J. Scialli has been named nager of The General Tire & bber Co.'s Portland, Ore., tire vision, succeeding Robert B. nt-Evens, who has taken over management of a British Co- mbia firm. Scialli has been with neral Tire since 1952. In his w position he will direct tire es in Oregon, Washington, Idaho d Alaska.

lweld appoints new es manager

Announcement is made of the pointment of F. W. Schroeder, , to the position of sales man- er by Calweld, Inc., Los Angeles, lif., manufacturer of Calweld th drills and Surfa-Slick asphalt ving tools. Schroeder was former- national sales manager of the illiams Hole Digger Division of elyn Manufacturing & Supply

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Space is sold as advertisers inches. All advertisements in this section are ⅛ in. short of contracted space to allow for borders and composition.

Rates are $15.50 a column inch. Copy should be sent in by the 15th of month preceding publication date.

V. A. Miller named head of Blaw-Knox department

V. A. Miller has been named West Coast sales representative of the Advanced Projects Department of Blaw-Knox Co., Pittsburgh, Pa. This department was organized last January to coordinate development and handling of defense work and other large projects requiring efforts of more than one division. A registered civil engineer, Miller will have his office in the General Petroleum Bldg., Los Angeles.

Three sales positions changes at Soule

Three new assignments at Soule Steel Co.'s sales management level are announced. H. Scott Anderson, formerly district manager at San Diego, moves to the position of product manager for commodity items at the San Francisco headquarters office; George Halgedahl, Salt Lake district manager, moves to San Diego; and Thomas Regan has transferred from the Sacramento sales district to district manager at Salt Lake City.

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