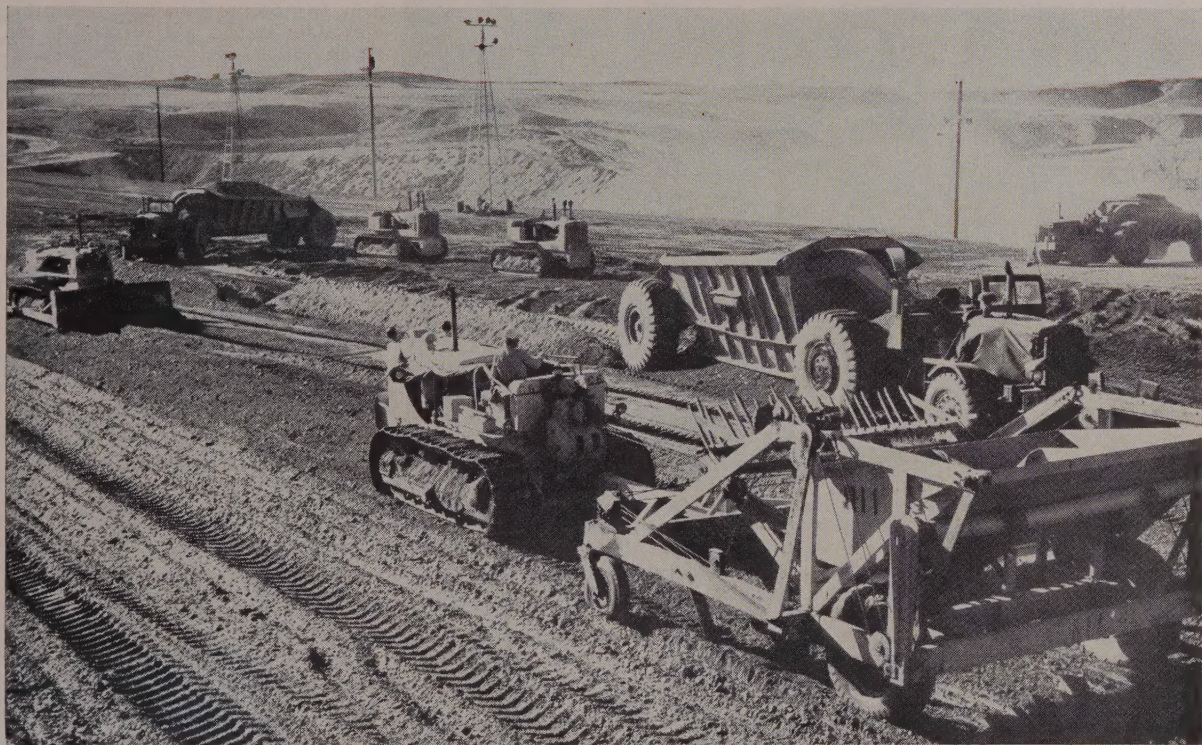


APRIL 1955



Bureau of Reclamation photo

Right up front in the spread, a rock picker handles—

Cobble control on Tiber Dam

ROCK PICKING is something of a specialty operation on embankment work. And it's usually done with tractor attachments or hand labor. But James & Wunderlich, joint venturing at Tiber Dam in Montana, have put their heads together with a farm equipment manufacturer and come up with a 7½-ton machine that puts rock picking on a production basis. It's the Bestland "Rockmaster," and it is the sole item of equipment responsible for cobble control in the three specified types of fill for Tiber.

The contractor points out that methods for handling rock depend on the quantity of rock encountered. The common practice of setting up and operating a grizzly could not be justified at Tiber. At the same time, Bureau of Reclamation specifications required (1) nothing bigger than 5 in. in impervious and semipervious material, and (2) nothing bigger than

10 in. in the pervious sections.

The original approach to the work was conventional—sometimes a D8 with a rock rake bulldozer, sometimes a D4 with a rock rake front-end loader, and sometimes hand labor with dump trucks. The arrangement was flexible with the demand for rock picking. But it was "a definite nuisance," according to the superintendent, "and the use of hand labor could get expensive when we hit a temporary heavy run of oversize rock."

It picks 'em and it totes 'em

The answer has been a high-production model of the Bestland rock picker. This line of machines ranges from 1½ tons to 7½ tons. They have been developed since 1946, and are manufactured and distributed by Self Manufacturing Co. of Twin Falls, Idaho.

All models are similar in most respects: a 4-wheeled chassis incorpo-

rating an adjustable rake frame that swings up and back to discharge into a hopper. The hopper in turn tilts backward for dumping. Dumping height varies from one model to the next, Rockmaster topping them all at 10 ft.

In operation they rake a swath varying from 6 to 12 ft. (Rockmaster). The 4-wheel arrangement means easier hitching, and assures that the rake tines follow the land contours, picking everything within the desired depth range. The rake tines are adjustable for spacing—here is the control of rock sizes passed and retained.

The small pickers are all hydraulically operated. The Rockmaster may be specified for hydraulic or cable operation. In either case, the tractor operator runs the whole show without leaving his seat. If soil builds up on the rake he can even flip a lever that will vibrate the tines and clear



UP SHE GOES . . . and 6 tons of rock lands in stockpile at edge of fill. It can be dozed off the edge later on, or put to constructive use where the opportunity presents itself.

them instantly without further labor.

The Rockmaster hopper—this is the model in use at Tiber Dam—has a capacity of 6 tons. And this has been known to include individual boulders up to 1,000 lb. The hopper can be loaded on the move, but heavy rock conditions make it generally a good thing to stop when tilting the rake up. Besides, fast as the rake action is, raising it on the move means coming back later for a cleanup run to catch holidays on the fill. Power has something to do with this practice. It takes a machine of D8 or HD-20 size to haul the Rockmaster in the first place.

Only 8 days from pricing to payroll

HERE'S A REPORT of fast service by a construction equipment distributor that's hard to beat. Justifiably proud of it is A. H. Cox & Co. of Seattle.

It all began late last July, when Portland General Electric Company awarded a \$1,146,400 contract for clearing 1,433 acres of old growth timber in the Timothy Meadows reservoir site, Clackamas County, Ore. The award went to Paul C. Helmick Co. of Seattle. After that, here's the way Cox tells the story:

Everything but fog lights!

"On August 2 the Helmick Company placed their order with Cox for eight Allis-Chalmers machines: two HD-20 torque converter tractors (with Carco land clearing blades, L-12 power control units, Carco canopy tops, and Model J-10 drums with swivel couplers and free-wheeling brakes), and six HD-15s (four with Carco land clearing blades and two with Carco straight dozer blades; all with L-12 power control units, Carco

In sizing up the possibilities for this type of machine, F. A. Bleecker, superintendent for James & Wunderlich, contacted several manufacturers. The upshot was a trial of Bestland's standard model:

"We knew that the unit would be too small for our requirements, but it was purchased more or less as an experiment to try out the principle. Our tests with the machine indicated that a larger model would effect definite savings in our operation, and we then negotiated with the manufacturer for design and construction of a larger model."

This was the Rockmaster, which

Self now offers as a more or less standard addition to its line. Recognizing that a contractor would use a picker on a steady production basis (10 hr. daily at Tiber), instead of only occasionally as a farmer would, Self emphasized rugged framing and simplicity of moving parts in the new model. Also, for working a 12-ft. swath and toting 6 tons of rock, the Rockmaster has to be a considerably heavier machine than its little brothers. Main frames are 10- and 12-in. structural channels, cross frames are 10-in. I-sections, the hopper is $\frac{3}{4}$ - and $\frac{1}{2}$ -in. plate, and the picking tines are 2-in. spring steel.

Performance good, application simple

How has the machine worked out for James & Wunderlich? Here's what Bleecker says: "This past season we have used the special Bestland rock picker for all our rock removal operations on the fill and, although there were a few minor changes necessary as on all new models of equipment, we found the operation to be very successful . . .

"Our use of the rock picker is a very simple operation. It is drawn by a D8 tractor over the fill or embankment after each lift of material has been spread. When the bucket of the rock picker is full, it is drawn to the edge of the embankment and dumped where the rock can later be handled as required."

Performance is the proof. Self Manufacturing Co. notes the clincher: James & Wunderlich intend to add another Rockmaster for the 1955 season. The new rig will be hydraulically operated.



TEAMED TRACTORS tackle tough timber, trample teeming tangle to trash at Timothy Meadows.

canopy tops, and Model G-4 drums with swivel couplers and free-wheeling brakes).

"By August 3 we had set up an emergency shop in Portland, manned by our service foreman and four factory-trained Allis-Chalmers mechanics. The following day the tractors began arriving for installation of all the allied equipment, shipped

from Pacific Car & Foundry Co. at Renton.

"By Friday, August 6, four of the tractors, completely equipped, were on the Helmick job. By Monday evening, August 9, the installation work was complete. And Tuesday morning, August 10, the full fleet of eight new tractors was working on the job."

It's really new: It's a pre-mixed slurry for patching and sealing roads

THE LOS ANGELES County Road Department under the direction of Sam R. Kennedy, Road Commissioner, has been experimenting with a specialized type of premixed patching and sealing operation which has proven, so far, the possibilities of revolutionizing present procedures. Results have been evaluated on the bases of type of mixing emulsion aggregate materials, equipment, method of application, speed of application and costs.

This particular process has proven to be a vital necessity for the solution of certain problems involved in given areas whereby the rate of patching has increased many fold. The quality of work has proven satisfactory, and the economic value of this procedure is not to be ignored.

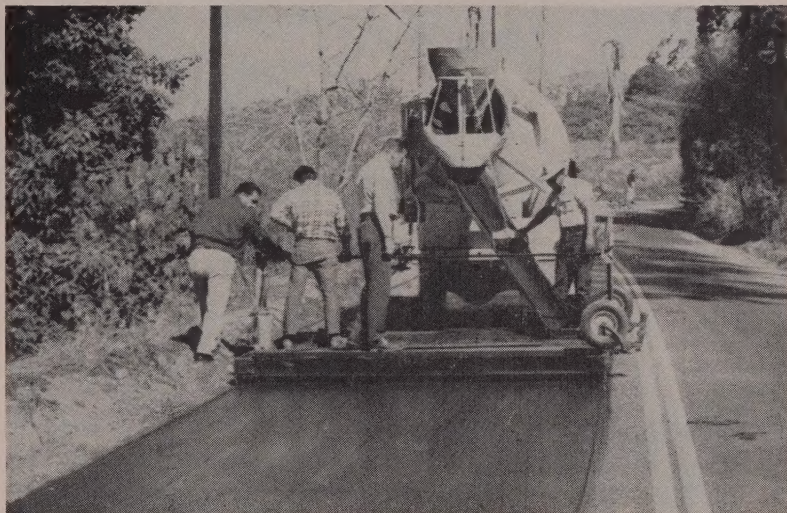
First trials

Experimentation started in the spring of 1953, using an asphaltic mixing emulsion, sand and rock dust slurry paving mixture. Numerous petroleum products producers furnished mixing emulsion samples from time to time; all samples conformed to Departmental Specifications and special provisions for laboratory test, but considerable difficulty was encountered with most of the products when applied in quantity to pavements for testing in the field. The desirable end result being a stable emulsion and rock dust mixture uniformly saturated that will show all aggregate particles coated after application.

Good emulsion found

Many emulsions of various vendors after application showed a definite segregation of the materials, the emulsion migrating to the top and bottom of thicker patches, denuding the center particles of asphaltic coating. However, in making pats in the laboratory these same emulsions had shown no tendency to leach out. Most of the experimentation has been carried on with emulsion supplied by the American Bitumuls & Asphalt Co. Experiments are being continued and emulsions and aggregates in various quantities are being tested for stability. The Asphalt Institute designation of the emulsions being used is D-Grade mixing emulsion, SS-1 (150-200 penetration) or SS-2 (65-85 penetration).

Mixes of river sand, plaster sand, and hand-screened rock dust were tried initially in various proportions with the emulsion. A minimum of 6% blown rock dust passing the 100-mesh was found essential to the aggregate. The results were satisfactory from a usage standpoint, but the



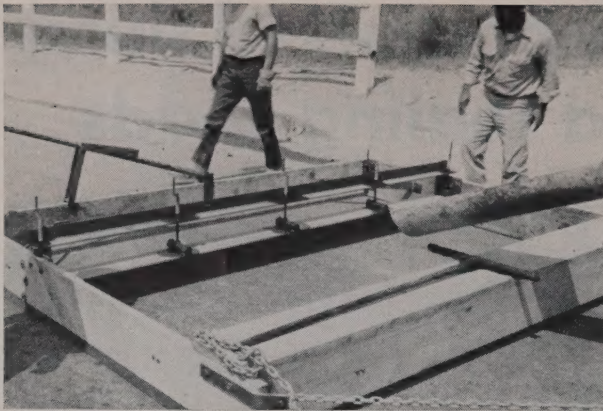
SPREADING the emulsion-aggregate slurry is simply a dumping process. Transit-mix truck is used here with uniform thin sheet spread over road surface by spreader box acting as a large squeegee.



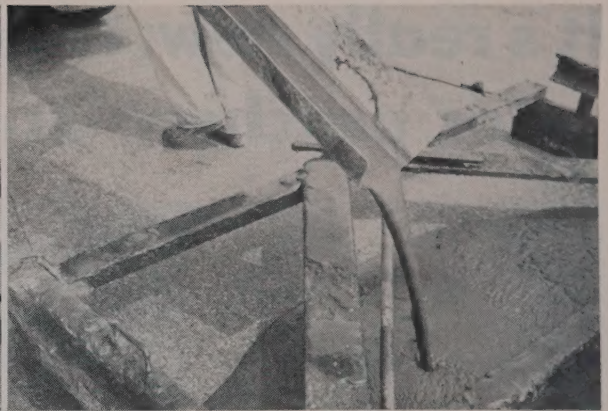
PATCHING small deteriorated road areas can be done with hand squeegees and small mixer—equipment normally available to any city. Traffic can be allowed over patch in about 1 hr.

Here are sample batch quantities used by Los Angeles County Road Department.

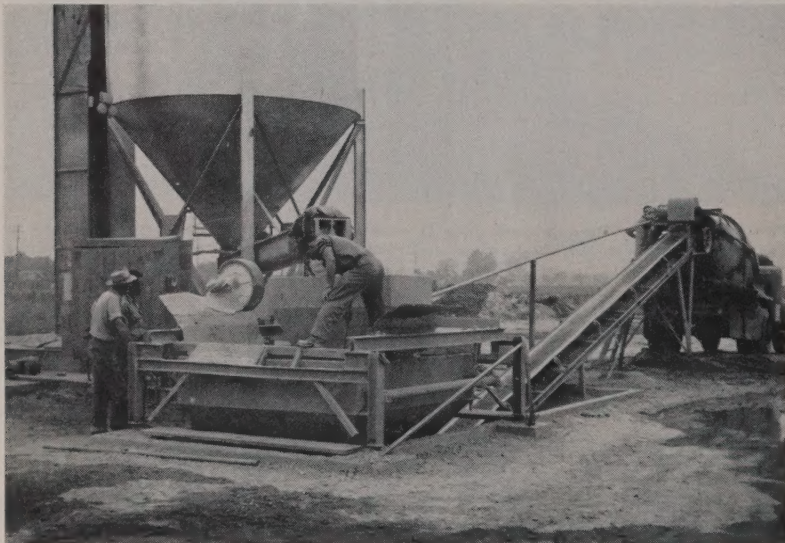
Truck mixed:	Aggregate—C-22	700 lb.
	Emulsion—SS-2	20 gal.
	Water (amount variable)	15 gal. maximum
Transit-mix: (3 cu. yd.)	Aggregate—C-22	3000 lb.
	Aggregate—Plaster sand	3000 lb.
	Emulsion—SS-2	140 gal.
	Water (amount variable)	80 gal. base measure



SPREADER BOX 10 ft. wide covers one full lane. Adjustable rubber edged strike-off can be set for any road crown and slurry thickness.



FREE-FLOWING slurry is composed of D-grade mixing emulsion, rock dust passing the 20-mesh screen, plaster sand, and water.



BATCH OF AGGREGATE is loaded into transit-mix truck from weigh hopper. This must be done slowly to prevent mixture in truck from balling and breakdown. Constant observation is necessary.

higher unit costs of sand and the hand labor involved in screening #5 rock for fines passing the 100-mesh screen were economically infeasible for carrying on an extensive program. A rock products company furnishes a specialty plant product designated as C minus 22 rock dust in bulk which has proven to be adaptable and satisfactory for this process. The screen analysis is as follows:

Passing	Percentage
20 mesh	99%
30 mesh	91%
50 mesh	54%
100 mesh	20%
200 mesh	3%

The procedure of mixing the slurry has been carefully standardized to the following method under normal operating conditions: water and emulsion (15% and 20% maximum base measure by weight, respectively) are blended into the tank and dry aggregate is then added evenly

and slowly to prevent balling or lumping. If aggregate is wet, only a small amount of water is needed with the emulsion initially. The batch is mixed in standard concrete mixers and mixed together for a minimum of 5 min.

For small batches the plaster-type mixer was found to be the most satisfactory. Constant observation of this process is necessary, with special care being taken to the addition of the aggregate, in order to obtain a uniform fluid consistency of materials. The mixture should not be allowed to become too dry or stiff during the mixing; if necessary, a measured amount of additional water can temper the mix to proper fluidity and homogeneity before adding balance of the aggregate. During the entire mixing process no bubbling, breaking, segregating, or hardening of the emulsion, nor balling, lumping, rolling, or swelling of the aggregate must occur.

When using straight rock dust it has been found desirable to increase the proportion of emulsion. Both SS-1 and SS-2 can be used separately or blended for any consistency. To prevent slick surfacing on roads carrying a fairly heavy traffic volume, the addition of plaster sand up to 50% by weight per batch has been found beneficial. Proportioning of #4 or #5 rock in the aggregate may be used for thicker layers to provide additional binding and wearing expedients; however, a plant-run premix would probably be found to be cheaper as this process is used primarily for sealing.

Plant-run rock dust should be allowed to cool to atmospheric temperature; stockpiling for a week or more will suffice to allow heat to dissipate. Hot dust is exceedingly detrimental to the mixing process, as it causes immediate balling, lumping, and separation of the emulsion. Plaster sand should not have a moisture content in excess of 5% by weight. If aggregate material becomes wet by rainfall, little or no water will be needed for blending with the emulsion during the mixing process. When using transit-mix trucks the problems are intensified in the original mixing; more care must be taken to control the rate and amount of aggregate entry. The drum should be revolving slowly at all times.

Handling the slurry

The spreading of the slurry on the road surface is simply a dumping process. This is then spread about by long-handled squeegees to the desired thickness and coverage for small areas or chuted into a wooden or steel-sided box dragged behind the truck and spread evenly to any desired thickness. An articulated or hinged-section neoprene rubber squeegee up to 10 ft. in width, adjustable to fit the crown of the road, is built into the box drag to distribute the slurry over the surface. The pavement is dampened by a water spray or mist before spreading. This wet-

ting is highly important to the application as it prevents draw-down of the latent moisture in the slurry.

This department has used three sizes of squeegee boxes: a 5x4-ft. drag for gutters, a 5x7-ft. and a 10x8-ft. drag for roads, these fitted with supplemental small squeegees dragging to the rear at the corners to prevent ridging between lanes. Burlap sacks will do as well. The surfaces patched and sealed have been water scoured and leached out, hair-cracked, pitted, "alligatored" and "dead." When completed the new surfacing is smooth and uniform; the emulsion does not puddle, string out, nor separate before or after drying; it adheres firmly to the old pavement in a hard, dark brown to black colored, evenly impregnated layer, impervious to water and traffic wear, and is not sticky or loosely compacted. It fills all voids, forms a smooth, even wearing surface, and may be placed to any desired thickness.

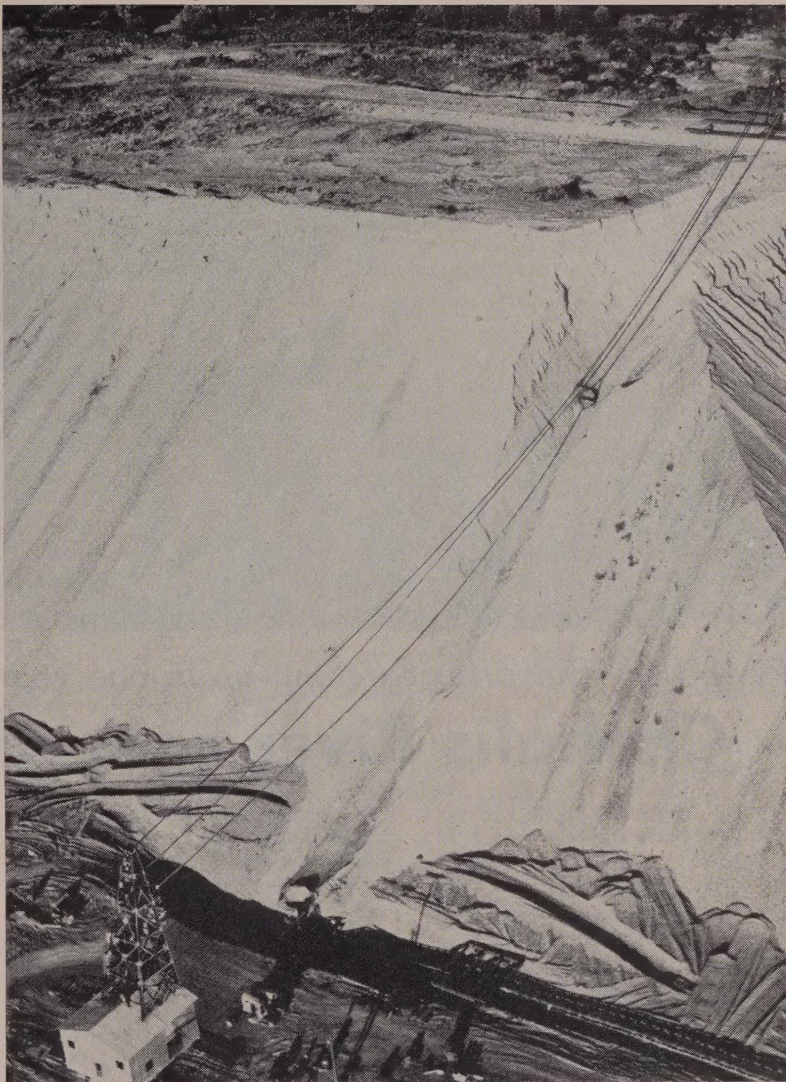
No traffic tie-up

Traffic may be allowed on it, except for heavy thicknesses, within an hour in warm, dry weather and fast traffic may use it within 3 hr. after application, although a few cars, through necessity, may be allowed on it with no permanent harm. In fact, traffic helps to beat it into the pavement. SS-1 has a lower softening point (104 deg.) but sets up quicker and may be used in cooler weather; SS-2 appears to whip off easier before taking its final set, but shows better flexibility for longer periods. With its higher softening point (115 deg.) is has been found desirable to use this in warm weather.

Extremely low cost

Costs coupled with rate of application are its outstanding feature. The Road Department, using a 6-man crew and a quarter-yard mixer, has covered an average of 50,000 sq. ft. of roadway in a 6-hr. working period at a cost for labor, equipment, and materials of \$0.0025 per sq. ft. By using 3-cu. yd. transit-mix trucks 60,000 sq. ft. have been covered in 1 hr. at a cost of \$0.002 per sq. ft. Costs are being compiled at present for the use of 5-cu. yd. transit-mix trucks on a 25 mi. round trip haul and are tentatively estimated as \$0.0015 per sq. ft.

The patching procedure as developed by this department has stirred unusual interest with the State Division of Highways, numerous municipalities, and private corporations, all of whom recognize its essential value when perfected. This department is available at any time during its normal scope of operations to discuss and demonstrate the emulsion-rock dust slurry process as tested and developed by its laboratory and engineering personnel, for the benefit and information of authorized representatives of interested organizations.



Glacial gravel on the move

WHAT IS BELIEVED to be the largest single tower excavator ever used in a sand and gravel plant is now in operation at the Pioneer Sand and Gravel Co., Seattle.

The machine, a Sauerman "Tower Excavator," moves about 12 cu. yd. of gravel to the hopper on each trip. It handles 450 cu. yd. per hour on an average haul of more than 300 ft. and has a maximum reach of over 600 ft.

The 12-cu. yd. Crescent scraper bucket works between a 90-ft. head tower which moves on rails at the floor of the pit and a 50-ft. tail tower traveling the top of the 240-ft. high bank. The Crescent is actuated by a load cable which pulls it toward the head tower and a pull-back cable which pulls it toward the tail tower, and is attached to a carrier which rides on the track cable. When the track cable is tensioned up, the scraper is lifted above the material

and returned to place of digging or any other position along the track cable. The cable is then slackened off and scraper is ready to dig.

The operator controls the haulage, pull-back, and tensioning hoists by remote air controls from his station in the head tower. The tower also houses the hoists, air compressor, and power supplies.

Pioneer is one of the largest suppliers of sand and gravel on the West Coast. The deposit being mined is that of the Nisqually Glacier on Puget Sound near Steilacoom. Most of the aggregate is moved by barge to points on Puget Sound, particularly Seattle where the company's distribution plants are located.

Four grades of sand and six sizes of gravel are processed at Pioneer. In the last 50-odd years, more than 20,000,000 cu. yd. of gravel have been taken from the Pioneer pit.



FAILURE! But after catching up in one year, contractor tells how— Chehalis River cofferdam rebuilt

By R. W. FINKE
Construction Engineer

and

C. R. STEELE
Assistant Construction Engineer
MacRae Brothers

IT IS SAID that Nature is unpredictable. It can also be said that she is unknown. Exactly what was thrown at Cofferdam 16 one stormy day in the winter of 1953-54 will never be known, and to conjecture is inconclusive.

Our contract for the center 1,140 ft. of the Chehalis River Bridge at Aberdeen, Washington, involves construction of two hollow piers (15 and 16) on either side of the main channel, each supporting one leaf of a double-leaf bascule span, and three solid shaft piers on the shore side of each large pier. These carry three lines of 3-span continuous plate girders.

Cofferdam case history

This article will describe the installation of the original Cofferdam 16, the method of setting the cofferdam frame, the treatment it was subjected to preceding installation of the original cofferdam, and the series of loads applied before its collapse. The method of reconstructing the cofferdam will follow, presenting removal of the wreckage, method of building, and setting the new cofferdam.

Cofferdam 16 is unusual in size, being 60 ft. 4 in. by 112 ft. in plan and from el. +14 to el. -49 in height. Sheet piling 70 ft. long were used to

secure a penetration of 7 ft. into the river bottom below the excavated depth. Seven sets of wales and struts were used in the frame, referred to by numbers from 1 to 7 beginning at the top.

The setting of the frame was accomplished by suspending the bottom ring from eight pick points consisting of hand winches on timber pile stands within the confines of the cofferdam. These pick points were arranged three on each side and one at the center of each end. After complete assembly of the bottom ring, vertical spacing posts were set and the frame lowered until it was in a workable position for assembling the next ring. This procedure continued until all rings were assembled and at final elevation. The steel sheet piling was then driven and the load on the winches transferred to the sheet piling until the seal was poured and the bottom ring encased in concrete. Seal was constructed by the Prepakt method.

Disaster!

The bridge site is situated in a narrows about 1 mi. above the widening bay. On days of maximum high and low tide there is a drop of 12 ft. in 6 hr., making a forceful run-off at mid-ebb. The storm which preceded the collapse had abated somewhat but had left behind water deposited by torrential rain. In the relatively short drainage basin this water and accompanying debris were soon in the river channel. Sunday morning, January 3, 1954, the cofferdam collapsed. River

action scoured a hole 25 ft. deep at the upper end of the cofferdam.

The general shape of the collapsed cofferdam was as shown in Figure 1. A few steel sheets were cracked at the bend line, and those with only web cracks. There were no opened interlocks. Timber foundation piling which had not been cut to grade, 6 in. above the seal, were broken and split where they interfered with the collapsing sheets, except in one spot where a timber pile pierced the sheets.

The trestles along the sides of the cofferdam were drawn inward, the decking and stringers were wrenched loose but not entirely displaced, some caps were wrenched loose, and all the 4-pile bents were racked. The approaching trestle was only slightly distorted, having been well built and braced for rough construction work. It withstood the tidal surges admirably.

The stiffleg derrick, situated on a pile pedestal immediately behind the work trestle, was deposited on the bottom of the river. The tidal surge broke piling under one side of the derrick and dropped that side, the derrick settling in a canted position on the river bottom with the boom collapsed across the trestle.

Removal of wreckage

Recovery of the stiffleg derrick was of prime importance, with speedy removal of the cofferdam being dependent upon the availability of this derrick. From an initial estimate of damage it was believed that the

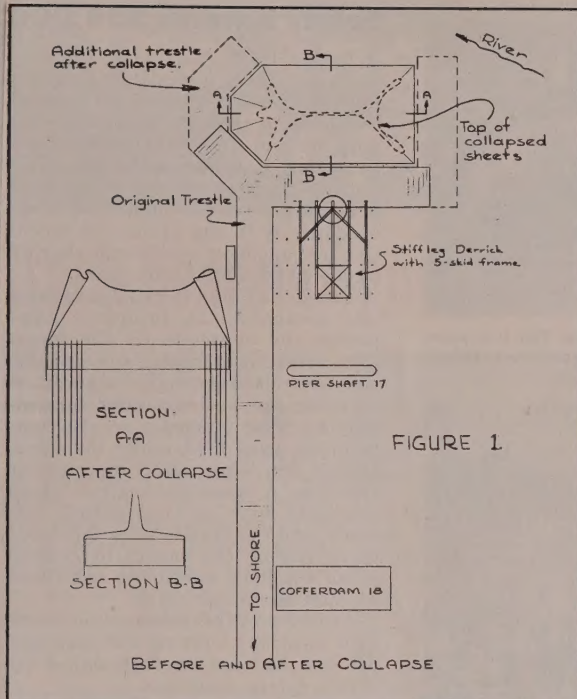


FIGURE 1.

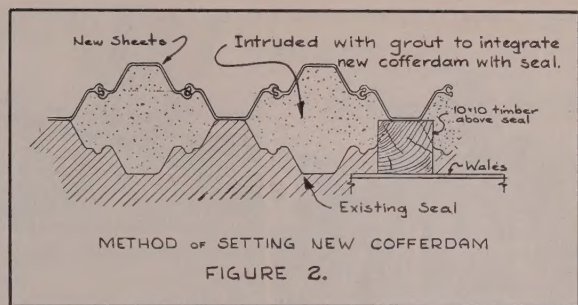


FIGURE 2.



ONE BIG LIFT, with 5 truck cranes and a derrick, pulls stiff-leg out of the drink. Collapsed sheets in foreground match position shown in sketch detail at left. Pile driver bangs away on new trestle piling.

5-skid frame was in need of straightening, that there was certain damage to the laylegs and stifflegs, and that the electric motors and switches would need overhauling.

With the trestle rebuilt around two sides of the derrick it was lifted with the combined assistance of five mobile cranes and one floating derrick. It was set on three units of navy pontoons previously assembled for this purpose. Floating thus, the derrick was moored alongside the access trestle and nearer to shore. While the pedestal piles were being redriven, the derrick and skid frame were repaired. A method of controlled heating and stress relieving was used to straighten the badly bent frame, one layleg, and various other pieces. One stiffleg was sent to a structural shop for replacement of a collapsed portion and a new section of boom was fabricated.

Stiff-leg is stiff as ever

In mentioning this repair, it is interesting to note that this derrick is now being used to its full capacity. Carrying 110 ft. of boom with a 7-part load line, and a 30-ft. jib, it was recently used to set a 30-ton structural member at a reach of 60 feet.

In the cofferdam site divers were employed to burn the sheets around the periphery and slightly below the bend line, a few feet above the top of the seal. The upper portion of the sheets was lifted out in long sections by making vertical cuts generally at every eighth sheet. The remaining lengths of straight sheets, about 22 ft. extending down the side of the seal, were removed by cutting pin holes in the top and attaching long pulling

bars from an extractor above the water surface. Removal of the wales and struts was accomplished by burning and removing them piece by piece.

With all sheets, wales, and struts removed, divers then cut to grade all foundation piling within a 6-ft. wide swath along each strut location to facilitate setting of the new frame.

Cofferdam 16 was originally planned for two uses. This feature held true for the new cofferdam but now its use would be in two different ways. First, the cofferdam would be used at Pier 16 with a frame consisting of six rings above and resting on the existing seal. Second, it would be used at Pier 15 with a full depth frame of seven rings, having a bottom ring within the seal which would be poured in and support the frame. Consequently the new design needed all the durability of a frame subjected to excavation work and pile driving. It needed appropriate incorporated devices for setting a full seven rings. It needed to have the same out-to-out wale dimensions as the original cofferdam frame so that when used at Pier 15 it would not enlarge the size of the seal. Yet at Pier 16 the sheets needed to fit outside the existing seal by some amount. This latter requirement was uniquely solved.

The new cofferdam at Pier 16 was built to just exceed the dimensions of the seal and the sheets set opposite hand to those of the previous cofferdam. This left a pocket approximately 20 in. wide by 26 in. long at every second sheet. See Figure 2. Specially fabricated corners were made to provide the additional length of wall resulting from the increase in overall dimensions. Each pocket so

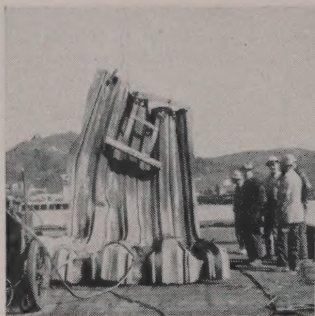
provided was excavated with a job-made air lift ejector and intruded with grout by the Intrusion Prepack Co. This grout integrated the new cofferdam with the existing seal. The only discrepancy in this arrangement occurred where sheets in the original cofferdam were reversed from the planned arrangement. As it developed, this occurred in only one spot; this tight space was excavated and cleaned with a water-jet.

The overall dimensions of the wale frame remained the same as the original cofferdam. Looking at Figure 2 again it will be seen that with MP 116 steel sheets there remains a distance of 10 in. between the wale and each bearing sheet. A 10x10 timber was bolted to each of those sheets to bear on the wale and extending from ring #2 to ring #6, with 10x10 blocks attached to ring #1 for the same purpose.

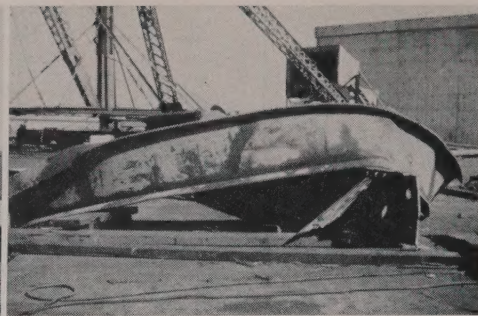
Economies: trussing vs. towers

The first planned method of lowering this new frame to the seal involved the use of steel towers resting on the seal and supporting hand winches at trestle elevation. This method soon appeared too costly, as a minimum of four towers required an elaborate trussing system between two rings spaced only 5 ft. apart, whereas to reduce the trussing to an economical plan increased the number of towers unreasonably.

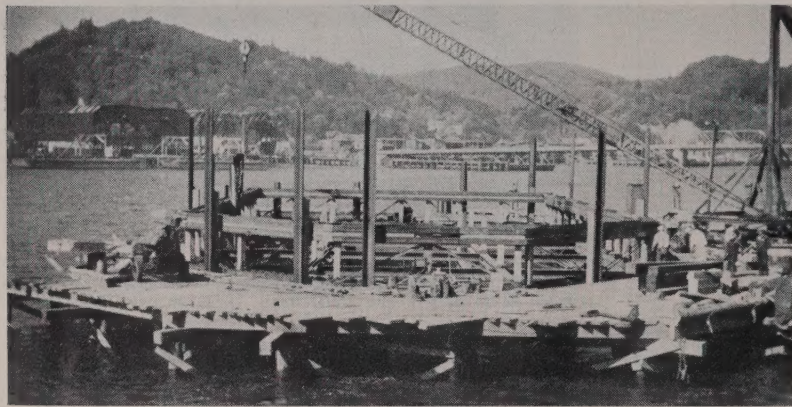
The final plan consisted of six pile-stands located two on each side and one on each end, driven outside of the seal. Each stand supported a 15-ton hand winch with a 3-part line, a total capacity of 45 tons. Trussing was placed between rings 4 and 5 em-



WRECKAGE comes out big and small. This is 45 ft. of sheet piling, bent flat across tremie seal.



COFFERDAM WALES took a beating, too. This is a piece of 24-in. wide flange steel, completely collapsed. Failure was spectacular in results like this.



NEW FRAME has trussing between rings 4 and 5, visible about at trestle deck level as rebuilding work goes ahead. Comparison with picture on preceding page shows range of tides at Aberdeen bridge site—up to 12 ft. at times without effects of floods.

playing a timber and steel Pratt truss system. Each side was carried by the two included pick points, each end by its individual pick point, making three independent truss systems so designed that any inequality in lowering would be met by a limber member rather than a restraining member. The new frame, being in no way attached to or imbedded in the seal, required trussing to offer vertical restraint at the strut intersections and reduce the unsupported length. This trussing was placed between each line of transverse struts and in the same space as the wale trussing.

The setting of this frame proved to have its problems, mainly that encountered by trussing between rings 4 and 5, the second space from the bottom. The cofferdam was completely surrounded by pile bents spaced at 17 ft. or less, which were either trestle bents or guide bents. An outrigger was bolted to each of these bents and cantilevered inward to support the bottom ring, the total capacity of these outriggers being sufficient to carry these complete rings. Rings 6, 5, and 4 were completely assembled on the outriggers and then the trussing installed between rings 5 and 4. The trussing in place, the frame was then self-supporting between pick points and could be lowered away. The upper rings were then assembled in the same manner as in the original cofferdam.

The cofferdam was aligned by setting guide sheets at about 15 points around the periphery of the seal, the bottoms located with the assistance of the diver.

The final position of the frame is interesting to note. By rough measurement, lengthwise location checked out good, downstream transverse location good, and upstream transverse location was 3 in. inshore.

The cofferdam served its purpose with little concern by anyone of the fate of its predecessor. The seal was tight and sound, the wales were level, and the sheet interlocks squeezed snug. The vertical bracing suffered its anticipated fate, some members sagged whereas others were tight.

Cofferdam has completed its service at that location. In fact, the frame has since been successfully used at Pier 15 also and is now being removed from that site. Pier 15 is complete above high water; and Pier 16 has gone ahead to the point where it now contains all the pit steel upon which 51 ft. of the bascule truss and the counterweight truss have been erected. The solid shaft piers are all done, and 226 ft. of plate girders and floor beams of the flanking spans have been erected from each to within 86 ft. of the main piers.

For the Department of Highways, this job is under the jurisdiction of J. C. Claypool, district engineer. Vern L. Dorsey is resident engineer.

Safety is worth \$54,000

A **SAFETY CAMPAIGN** among employees of Thomas P. Pike Drilling Co., Los Angeles, which reduced the accident ratio by 50 per cent, has won the firm a \$54,000 rebate of compensation insurance premiums paid out during 1954. Of this amount, 30 per cent goes to the employees in accordance with the system of incentive management with profit sharing under which the firm operates.

Oil well drilling is rated a dangerous occupation by insurance companies and consequently the insurance rates for workmen's compensation are relatively high. In an effort to make the business safer for employees, Pike started a safety campaign in April 1953, under the direction of Ben West, safety director for the firm. A scientific analysis of all accidents over a long period was made, and the results were tabulated to determine the causes in general of all company accidents, and those of each particular class.

Armed with this information, West held meetings with rig foremen and drillers. Rules were formulated for future safety measures.

The results were immediate and impressive. The accident rate fell 30 per cent in the first three months and leveled off at an average reduction of 50 per cent for the campaign year. This lower rate has been consistently maintained ever since and promises to earn further dividends from the insurance carriers.

West attributes the success of the campaign largely to the appeal to self interest which was made. Each man was shown that his pocketbook is hit whenever there is an accident, even when it happens to the other fellow.

All about admixtures

THE AMERICAN Concrete Institute has reprinted the ACI Committee 212 report "Admixtures for Concrete" in handy booklet form. (The report appeared in the October 1954 **ACI Journal**.) The 36-page booklet, in covers, is available for 75c from ACI headquarters, 18263 West McNichols Road, Detroit 19, Mich.

With the aim of providing a perspective of the field of admixtures for those confronted with the need of modifying concrete to meet special requirements of a given job, admixtures are classified into 11 groups. The 11 groups are: (1) accelerators, (2) retarders, (3) air-entraining agents, (4) gas-forming agents, (5) cementitious materials, (6) pozzolans, (7) alkali-aggregate expansion inhibitors, (8) damp-proofing and permeability reducing agents, (9) workability agents, (10) grouting agents, and (11) miscellaneous. Discussions are given of the factors which might indicate the usefulness of admixtures of each group.

The Engineer's Report

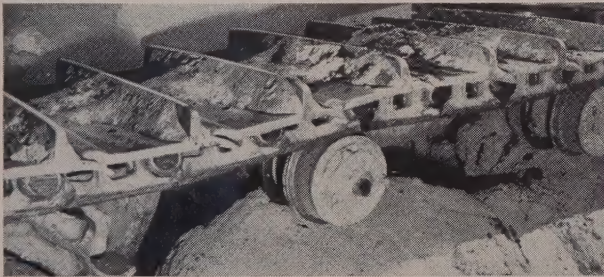
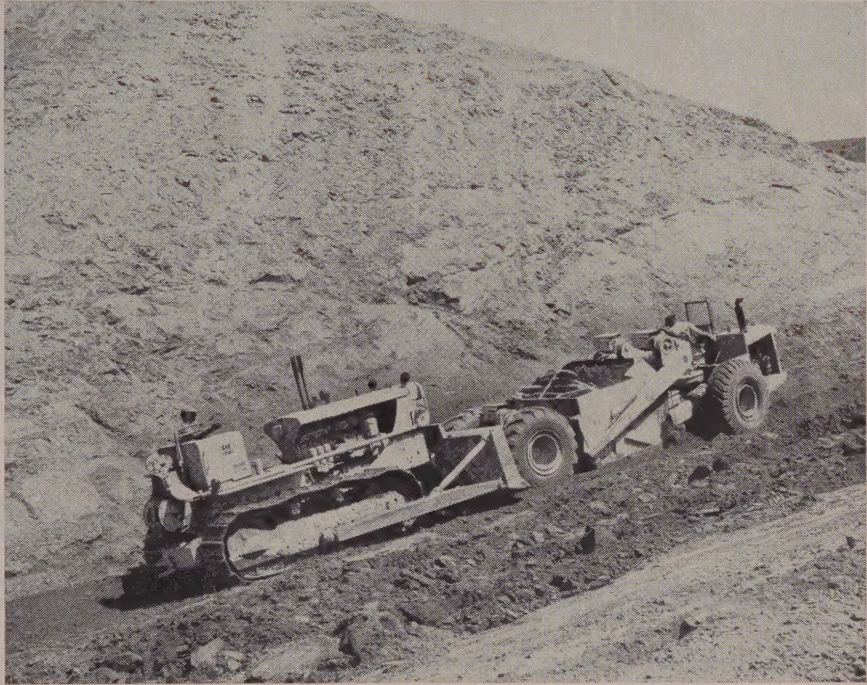
CASE HISTORY

RPM Tractor
PRODUCT *Roller Lubricant*
J. Tomei and Sons,
FIRM *Van Nuys, Calif.*

Track bearings good after 10,550 hours' tough work!

WORKING IN GRITTY DIRT with much side-hill operation, a dozer like this went 10,550 hours on a single set of track rollers, lubricated exclusively with RPM Tractor Roller Lubricant. The rollers were then replaced, but only because flanges were worn off. The bearings themselves were still in good condition, even after such extended service.

J. Tomei and Sons, Van Nuys, California, have used only RPM Tractor Roller Lubricant in track bearings since 1937. They report it gives them service like this in all their equipment even though most work is building roads through the highly abrasive decomposed granite of Southern California. They find it helps seal grit out of the bearings, tends to float away any dirt that does get into them, and won't squeeze off under extreme loads.



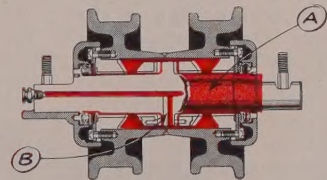
REMARKS: Three grades of RPM Tractor Roller Lubricant meet all climatic and operating conditions in Caterpillar-type track roller bearings. For Allis-Chalmers bearings, RPM Tractor Roller Lubricant A/C Type is recommended.

FOR MORE INFORMATION about petroleum products of any kind or the name of your distributor, write or call any of the companies listed below.



TRADE MARK "RPM" REG. U.S. PAT. OFF.

How RPM Tractor Roller Lubricant resists wear in the toughest service



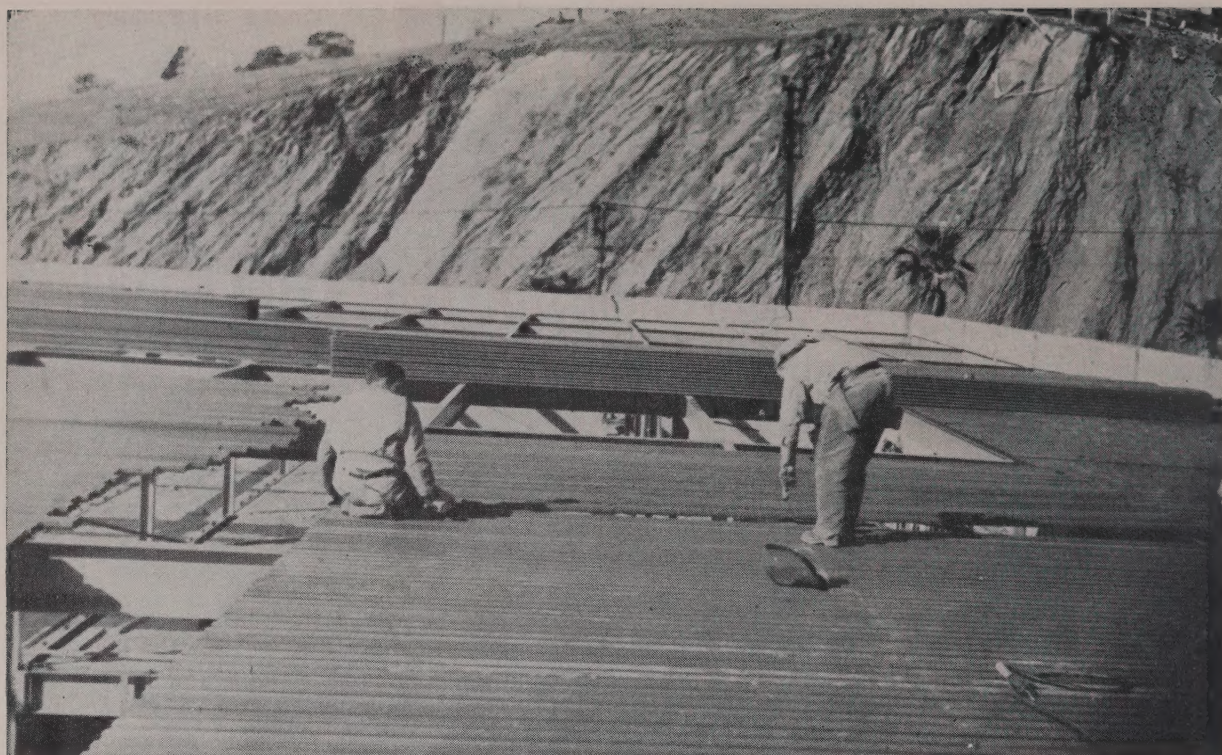
It flows evenly to all bearing surfaces, lubricates and retards rust formation.

- A. Contains chemical anti-wear agent—maintains tough lubricating film.
- B. Has stringiness compound—improved viscosity, resists leakage, helps keep protective grease seal outside bearings.

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 TEXAS
 P. O. Box 862 • El Paso, Texas



FINAL LINING UP and overlapping of male and female joints is done by two men before the welding operation. Bundles of decking, each

weighing 2 tons, were lifted and spotted on the roof purlins. One man then distributed individual sheets to approximate position.

280,000 sq. ft. of metal roof goes up fast on new warehouse

... and when you have two stories of tilt-up walls, and floor loading restrictions that limit the size of roof framing equipment, there's an interesting building.

HOW TO PUT a metal deck roof over 280,000 sq. ft. of area in rapid time could be recently seen at the new Broadway Department Store warehouse in Los Angeles. It was the first large scale use of this new metal decking on a job that had several interesting features.

The warehouse is a 392x738-ft., two-story structure. The site development required a deep fill, mostly debris. Foundation design called for Raymond concrete piles followed by pile caps and reinforced concrete grade beams. The first floor is 4-in. reinforced concrete over earth fill and the second floor is a 5-in. thick reinforced tapered slab. Both floors have a Silcrete finish done by the Robert J. Hiller Co.

A 40-ft. wide unloading dock runs parallel to the long dimension on one side of the building at the second floor level. Ground elevation is at the second floor on the north side and at the first floor level on the south side.

Exterior walls of both stories are precast tilt-up concrete. Casting of the walls was done on the floor slabs for both stories. Standard tilt-up erection was followed by using a crane located inside on the first floor for the first story and outside the



CROWN BEAD, 3/4-in. diameter, is tested. It anchors corners of four sheets to purlin.

building for the second story walls. Superior inserts were used for pick-up points. Pilasters were then formed and poured before steel erection began. Wall units measured 27 ft. wide by 27 ft. tall for the second story.

Erection limitations

One of the interesting design features of the building that affected the roof steel erection was the limitation of not over 10 tons of live load allowed in each 27 x 27-ft. bay of the second floor. The access doors to the building are small which precluded the use of truck cranes or any other such relatively heavy erection equipment. The contractors for the steel fabrication and erection, Pacific Iron & Steel Corp., of Los Angeles, came up with the following solution.

Structural steel for the roof structure was lifted over the exterior walls and on to the second floor with a large mobile crane. The steel was then sorted and distributed within the building using a Clark fork truck. Care was taken to see that not over 10 tons of steel was located in any one bay. An Autocar, the equivalent of a small truck crane, was used for the inside erection.

This crane has a 36-ft. boom with a 3-ton lifting capacity. All connections of the structural steel are bolted. Columns are an 8-in., H section and roof beams are a 12-in., wide-flange section. Spanning 27 ft. between the beams are purlins on 9-ft. centers.

The metal roof decking is a new product being manufactured by Pacific Iron & Steel Corp. Each roof unit in use here measures 1 ft. wide, 18 ft. 2 in. long, and is made of 20-gage sheet steel. The sheets are bent such that a male and female waterproof joint occurs at the jointing of sheets. The 18-ft. 2-in. length allows a 1-in. lap at each end for the adjacent rows of decking. One man can easily handle each roof unit.

Small crew on decking

The normal crew for the decking laydown consists of three sheet metal workers and one welder. The first three men lay the sheets down, see that the proper lap has been made over the next row, and press down the male and female joints where four sheets make a junction.

A chalk line is snapped down the middle of an 18-ft. wide laydown so that the welder can follow up to tack the sheets to the beams. For this tacking a Fleetwood L-70 rod is used. This gives a $\frac{3}{4}$ -in. crown bead that satisfactorily anchors the decking to the beams. When everything was running smoothly (weather permitting) two crews were kept busy and two Lincoln welding machines rated at 200 amp., 40 volts were going full time. The average area covered per crew was about 4,000 sq. ft. per 8-hr. working day but upwards of 5,000 to 6,000 could be laid when working large plain areas.

Over the roof decking is laid a 1-in. thick insulating layer of Canec and composition roofing.

Personnel

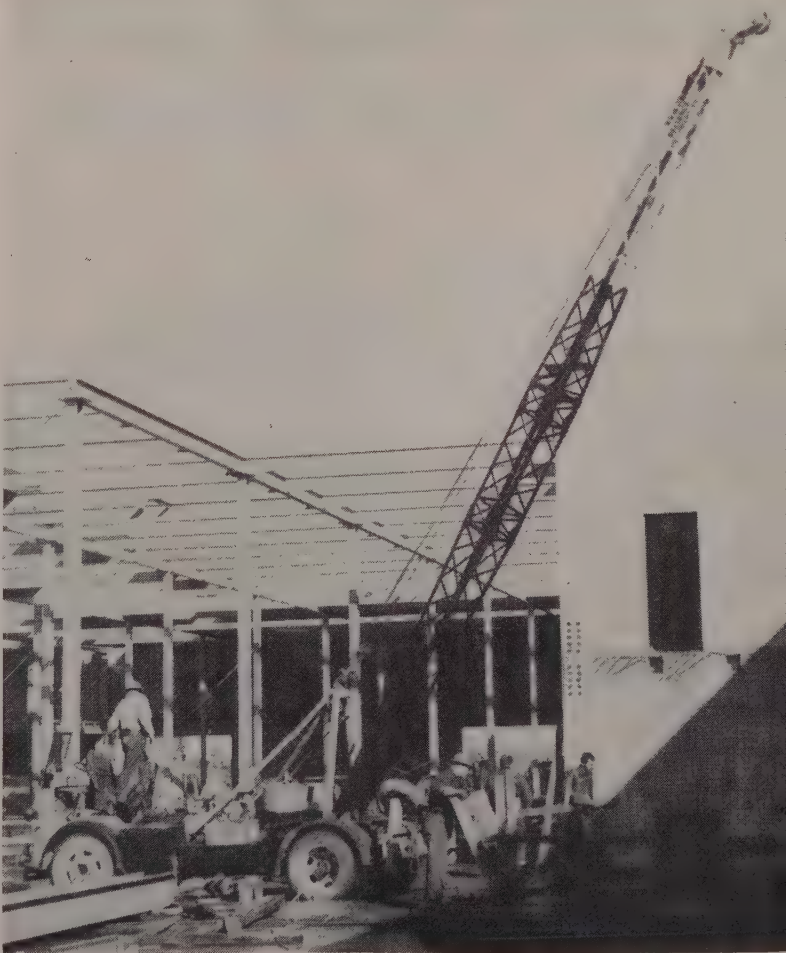
Architects for the building are Chaix & Johnson. Structural engineer is Brandow & Johnston; mechanical engineer is Lester R. Kelly.

General contractor for the building is C. L. Peck. For this firm A. B. Standard is general superintendent and G. W. Bauer is job superintendent. Millie & Severson was the joint venture contractor on the tilt-up wall construction and for whom Merne Nottingham was superintendent. Chet Gietik was foreman on the structural steel erection for Pacific Iron & Steel Corp. and Howard Curtis was foreman on the metal deck erection.

The project started in January of 1954. Floor and wall concreting was begun last June with the project slated to be finished in April of 1955. Cost of the finished structure will be about \$4,000,000. A rainy winter in the Los Angeles area did not help in the scheduling or performance of the many subcontractors involved.



WELDING of the metal roofing to the purlins went along at a fast clip. Two welders were required, using Fleetwood L-70 rod with power supplied by Lincoln welding machines.



LIGHT, HANDY CRANE used for steel and metal roof erection was this Autocar. Limited access to interior of building and requirement for light floor loads was reason for small crane.



OUTLET STRUCTURE for Rio Hondo is under construction in center while earthfill is built up on either side. Similar work for the San Gabriel River in the background is near completion.

invert to the surface of the roadway passing over it. There are four gate openings 30 ft. wide between piers 8 ft. wide. Tainter gates will control the openings. Almost half of the concrete (12,000 cu. yd.) went into the 10-ft. invert slab under the spillway proper. Tailrace concrete is only 2 ft. thick. During January after a very heavy rain, water ran 4 ft. deep through the outlet works—even though not completed—and with no damage.

Equipment list

- 10—Caterpillar D8 tractors
- 8—Caterpillar DW20 scrapers
- 2—Euclid scrapers
- 3—Caterpillar No. 12 motor graders
- 2—Northwest 80 cranes
- 1—Bay City truck crane
- 6—Ford 3,000-gal. water trucks
- 1—Southwest 50-ton pneumatic roller
- 2—Sheepsfoot rollers
- 2—Rex 34E pavers
- 1—Guntert & Zimmerman slip-form paver

Col. Arthur H. Frye is district engineer for the Los Angeles District, Corps of Engineers, and Gordon Lilley is project engineer. J. P. Cagle is superintendent for Teichert and Bevanda.

Whittier flood control project is on schedule

THE SUNNY SOUTHLAND of the West isn't always so. Progress on the west embankment and outlet works of the Rio Hondo was held up during much of January from intermittent rains. However, this \$3,087,946 project is currently well on schedule and past the 75% mark.

Work being done here by A. Teichert & Son and M. J. Bevanda, joint venturers, is part of the Whittier Narrows flood control project in Los Angeles County. The purpose of the final 3-mi. long, 55-ft. high, earth-fill dam and the two outlet works is to provide temporary storage of flood waters of the kind that have had devastating effect in the past. Storage in the order of 35,000 ac. ft. will be possible. The project will be completed in time for the 1955-56 winter season.

Large quantities involved

Some of the quantities involved on the Teichert and Bevanda contract include 1,024,000-cu. yd. earthfill for the dam, 100,000-cu. yd. earthfill on the Lincoln roadway, and most of 260,000-cu. yd. earthfill for levee construction. Borrow areas adjacent to the project were used.

Riprap quantities involved placing 12,000 tons for shoulder protection and 46,000 tons slope protection on the levees and upstream side of the embankment. Concrete quantities include about 26,000 cu. yd. that went

into the levee invert and slopes. Paving of these slopes was described in **Western Construction**, March 1955, p. 49. About 28,160 cu. yd. of concrete is going into the outlet structure.

The outlet works is 55 ft. high from

CONCRETE POURING on piers utilizes Rex 34E paver to mix prebatched aggregates delivered by truck. Northwest 80 crane uses 1½-cu. yd. Gar-Bro bucket for placing concrete. Picture was taken only two days after water had been flowing 4 ft., deep through this area. Flash floods are typical for the Los Angeles area and the reason for such projects as this.

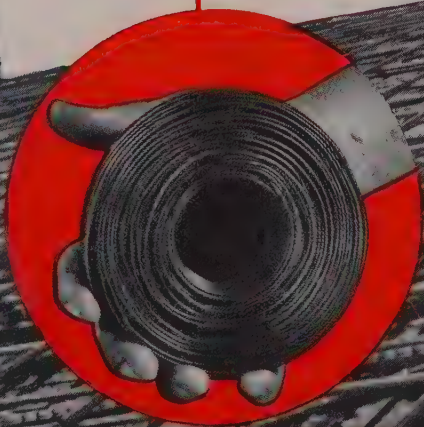


CAL-TIE WIRE...

***makes safe, light work
of tying re-bars***

■ Using CAL-TIE Wire in the aluminum reel dispenser makes the job of tying re-bars safe and easy. There are no heavy shoulder coils to be carried and no free ends to snag in the work or tangle underfoot. CAL-TIE Wire and the reel fit conveniently on the belt and together weigh only seven pounds. They end the wasteful practice of throwing away odd lengths of wire, too.

Contractors protect their profits and their men with CAL-TIE and the handy reel dispenser. CAL-TIE is available, either annealed or galvanized, in gauges from 14 through 20. Write, today, for full information.



CAL-TIE WIRE

THE COLORADO FUEL AND IRON CORPORATION



Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Los Angeles
Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • Seattle • Spokane • Wichita
CANADIAN REPRESENTATIVES AT • Calgary • Edmonton • Vancouver

2545

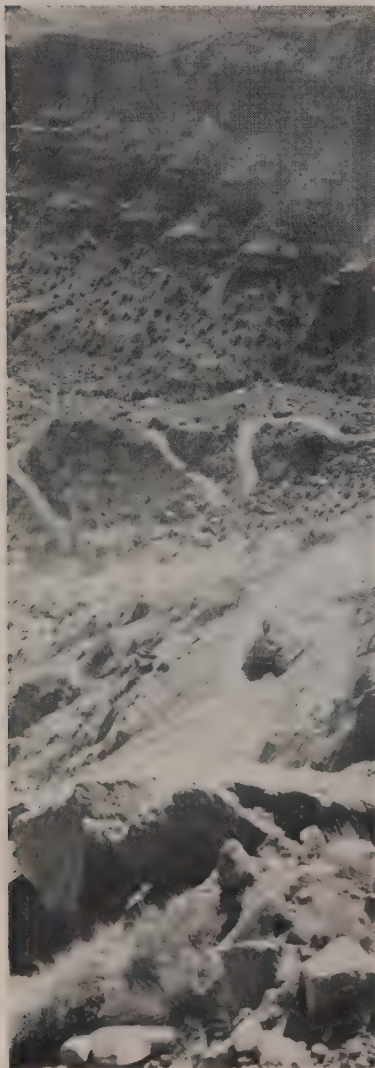
It's 3.4 miles up, only 1,500 ft. down

ONE OF THE MOST spectacular roadbuilding jobs in the West today "heads for the hills" in no uncertain way. It bridges the gap between the routine and the extraordinary in a length of only 3.4 mi.

The road takes off from State Highway 15 in Washington County, Utah, not far from Zion National Park, and works its way to the top of a nearby mesa. Grade on this stretch runs about 10 per cent maximum. The rock, hard clay, and shale is being moved with Cat crawlers by Smith-Wood-Northrup of Hurricane, Utah.

In this instance, "What's at the end?" surpasses the roadbuilding in the eye-opening department. Physically the road itself dead-ends at the mesa top, a table 12,000 ft. long, between a mile and a quarter-mile wide, varying only 20 ft. in elevation.

BOTTOM is forgotten as Cats get to . . .



TOP and shove last load over edge of mesa.

But on top, at an altitude of 5,100 ft., a supersonic military air research track about 1 mi. long will be built for the Air Research & Development Command. Sometime in 1955 this project will be completed, and then rocket cars will zoom down the track in tests designed to save the lives of combat pilots forced to bail out at supersonic speeds.

A rocket-powered engine will push a carriage along the track at supersonic speeds. As the rig reaches the end of the track, water brakes will suddenly halt the costly rocket engine, but the carriage will be shot out into space, clear of the mesa slope, where there is a sheer drop of 1,500 ft. to the ground below.

A large parachute is expected to prevent destruction of the carriage as it drops. As the big parachute opens, a smaller one also will open as the carriage ejects human riders and instruments.

Volunteers?

Although rocket car tracks are already in use elsewhere, the lofty Utah testing ground will be the first to provide a true simulation of flight by actually shooting model test planes, and eventually human beings into space. The 1,500-ft. drop is expected to give the first realistic test of pilot seat ejection which can be accurately evaluated. One test planned may determine if pilots bailing out at very high altitudes should be ejected in completely enclosed capsules. Such a capsule would not open into a parachute until falling to lower altitudes better tolerated by human body.

In addition to the access road and track, the project includes the construction of buildings and a chain of stations along the track which will check velocities of the rocket engine and carriage by means of automatic cameras.

WIRE ROPE TIPS—2

. A series of good ideas as laid out by L. C. Torrell, wire rope engineer for Bethlehem Steel Company.

CABLE OPERATED DOZERS and pan scrapers are almost invariably operated with drums and sheaves that are smaller than is customary on most other equipment and the conventional 1/2-in. diameter rope seems small by comparison, which indeed it is. From a wire rope engineer's viewpoint these are very severe operating conditions which tear up a short portion of the expendable rope in short order. The rope can be broken by relatively small overloading. However, this is secondary since these machines move so many cubic yards in a day that the small cost of the few feet of rope which must be pulled through and cut off is of little consequence.

It is only common sense to watch the condition of the rope at the points of greatest abuse and pull it through and cut it off before the short section is ruined and rethreading is necessary. The frequency of this cannot be determined by rule since digging conditions vary so widely. Increasing the size of the rope from 1/2 in. to 9/16 in. is not generally profitable nor is safety appreciably increased. The value of the extra strength in the larger rope when it is new is soon lost by the operation over sheaves and drum which are small even for the 1/2-in. size. This is supported by the fact that 1/2-in. rope outsells 9/16-in. for this service by 25 or 30 to 1.

Keep it oiled

The importance of wire rope lubrication is usually underestimated. Few realize that all component wire strands must be free to move in relation to one another when the rope is flexed over sheaves and drums. If they can not rope life will be greatly shortened.

The lubrication provided in any well made rope may be enough to minimize this inevitable friction in a scraper or dozer rope which is normally short lived, but this lubrication won't last forever. Frictional binding between wires creates the greatest overstressing in the outside wires—the ones which are also subjected to most of the wear and abuse from other causes, so ropes should be as well lubricated as any other part of the machine.

Lubrication also performs another very useful duty in retarding rust. Rusting results in corrosion pitting of the wire surfaces. These irregular pits are stress raisers which eventually result in wire fatigue breaks for the same reasons that a wire is most easily broken if it is first nicked then repeatedly bent. The rust does not reduce the strength very much but it sharply reduces the fatigue life.



In a class by himself . . . **DOG-LEG CHARLIE**

By **K. O. DUNCAN**

K. O. Duncan Co.
Los Angeles, California

IT'S ALMOST a universal practice. A jackhammer man will collar a drill hole in an alert manner. Then, when the tool is down 4 or 5 inches, he throws his leg over one of the handles and rides the hammer down to the length of the drill rod. Such a fellow, my friends, is known as "Dog-leg Charlie." You will find him on almost every drilling job around the country.

When an operator collars a hole the common method is for him to hold the drill bit between his two heavily shod feet, which are cocked on an angle so the turning of the bit will wear against his shoe soles, rather than the softer leather of the instep. This collaring operation takes only 20 seconds or so. Then he spreads his feet about 8 in. on either side of the drill bit, and with a hand firmly gripped to each handle of the tool, he extends the hole on down to a point where he has passed the weather-cracked area of the formation, and is in the "solid." Up to this

point he has drilled a round straight hole, perhaps 5 in. deep.

He then throws a leg over one of the jackhammer handles, lights a cigarette, and rides the hammer on down like a man.

Bad for the jackhammer

As soon as he does this his transfer of body weight (in a 180-lb. man) will amount to 60 lb. more pressure being applied to one side of the hammer than the other. This causes the hammer to cramp all the way from the back head to the nose of the chuck. This misalignment causes a serious

hardship to the entire rotating mechanism, as well as uncalled-for wear on the piston. It not only slows down the number of blows delivered, but the foot-pound strength of each blow as well. It also causes the piston to strike the end of the drill shank on an angle, which is conducive to spalling of the piston and frequent premature breakage of the drill shank. If, by chance, one side rod or through bolt is looser than the other, the practice frequently causes the tight rod to break just behind the tightening nut. Then Charlie is temporarily out of play until the nipper can bring him

THE AUTHOR has a selfish interest here. But in making his point he turns out some of the best "bible" we've seen lately.

Dog-leg Charlie is no joke at all. Breaking a drill shank and wrecking a foot is one thing. But Duncan also says:

"If a man is drilling a hole

while in this position and suddenly hits a change in the rock formation or a 'dutchman', the drill steel stops immediately and the jackhammer starts to twist around in the opposite direction. It will rip a man's clothes off, or anything else that might be in the way . . ."—Editor.

another hammer or repair the one he deliberately caused to break, and at no little expense.

Bad for the drill hole

However, there is another serious fault with Charlie's habit. The minute he "legs" his hammer and transfers two-thirds of his weight to one side of the tool, he forces the hammer to work at an angle, and he immediately changes the direction of the hole he is drilling—sometimes as much as eight degrees. If he cocks the jackhammer to the right, the drill bit and rod will wander in the same direction, and he has a hole with a dog leg in it.

After drilling his first run, down to the steel puller, he dismounts and blows the hole good. Then he puts in the second rod. Now, his right leg feeling rather numb, he throws his left leg over the other handle, putting the hammer in a new "bind," and changing the hole direction again. If Charlie is drilling a 16-ft. hole on a hillside slab cut, the bottom of the hole will be only about an inch out of plumb with the collar, but it will have more legs than a roach.

Lars, the powder man, takes a new dip of snooze when he loads some of these Charlie holes, as he is a cinch to have tamping stick trouble in even making a sounding. Charlie walks to camp after shift with the feeling of a man who has turned in a good day's work. He is too busy with his thoughts to notice that he is a hole and a half behind the other drill runners who "played it straight." And he never gives a thought to Lars' trouble and delay in loading these dog-leg holes.

Bad for Charlie

I was broken of this riding habit back in 1932, while running a hammer on Hamilton & Gleason's job on the road to Estes Park. I have three broken toes to show for it. It was



CHARLIE costs money. Said Ingersoll-Rand when providing pictures: "We're concerned with this method of operation since it puts uneven wear on the chuck and causes premature replacement."

extremely cold, which always is a contributing factor to excessive drill steel breakage, usually just above or below the shank collar. I was running my drill with one leg over the handle with my elbow resting on this leg. The drill shank broke, and being completely out of balance, the 55-lb. hammer dropped on the foot which was on the ground. The weight, plus the rotation of the chuck, did a first-hand job of ruining me. There were six other drill runners on that cut

and, to a man, they laughed like mad, each in turn telling me about the time the very same thing had happened to him. I ceased to be a jackhammer jockey from that time on.

The Roc-Jak . . .

Some six years ago I developed a multiple-piston hydraulic jack for breaking mass concrete structures, as well as open face ledge rock, where the use of explosives is not permissible. The tool has been highly acceptable to the trade and is now known throughout the country as the Duncan hydraulic Roc-Jak.

This being the case, you may wonder why I am taking such a pass at Charlie at this late date. Fact is, this man is causing more headaches for me than for the powderman and the drill doctor together. In order that the Jak function properly it must be used in a reasonably round straight hole, 2 ft. in depth. This is a simple matter to accomplish if the drill runner operates his jackhammer in the proper manner.

But, if Dog-leg Charlie is selected for the chore, my only hope is that he breaks the drill shank as soon as he starts his ride. The subsequent impact of the wild running hammer on his foot should take him out of play for a month or so.

. . . and how to ruin it

The Roc-Jak is hand-operated by a high pressure pump. The tool has 10 short, horizontal pistons that work through holes in the side of the Jak cylinder. They work together through the action of an equalizing feather, or shim. When pressure is applied, the pistons are forced against the hole wall, creating a concentrated pressure no concrete was ever made to withstand. Verily, its for sure you are inviting serious breakage when you put a 150-ton Jak in a crooked hole!

TerraTrac backs special lease-purchase plan

AN EQUIPMENT LEASE PLAN, with or without option to buy, and with as little as 10 per cent cash down, has been announced by American Tractor Corp., Churubusco (Fort Wayne), Indiana, producers of TerraTrac crawler tractors and equipment. The new arrangement, which provides for reduced payments during emergency periods, meets an industry-wide need and should be of special benefit to smaller contractors.

Local financing

Instead of being company- or dealer-financed the new plan is handled through local banks with endorsement by the company. It takes less cash to buy a new TerraTrac than it does to finance the average automobile.

The plan was developed on a pay-as-you-work basis as a service to

those who need new equipment immediately and can't wait for a more favorable cash position or special budget approval. The plan can also be beneficial to larger firms with limited budgets for current equipment purchases.

Contracts to 24 months

Following payment of the minimum 10 per cent advance monthly rental, a purchaser can take either a 12-, 18-, or 24-month lease, with or without option to buy the equipment. With the option to buy the purchaser can own the machine at the end of the lease period by paying \$1.00. The amount that the purchaser pays above the list price of the machine varies as to length of the lease and whether or not he wanted the option to buy. For example, on a 12-month lease with option to buy,

the purchaser pays the total cost of the machine plus 5 per cent for financing, after the first month's rent has been deducted. Without option to buy the 12 monthly payments would equal the cost of the equipment. A complete rate schedule is available from the manufacturer.

The feature of the American Tractor plan which makes it especially helpful to equipment users is the arrangement for as many as five reduced payments to help carry the customer through unforeseen emergencies.

Watch the tax angle

It should be pointed out that the plan is not a tax-saving device. Rental payments with option to buy should be treated as installment payments on a conditional sales contract. Payments under the straight lease plan are operating expenses and are deductible.

Driving 3 miles of small-bore tunnel through every type of rock

At noon on February 21 this year, a final blast was set off for the holing-through of a tunnel under construction for 14 months. Problems encountered and overcome include large amounts of ground water seepage, heaving rock, and the usual problems of working in a small bore tunnel.

STEADY, CONTINUOUS driving by The Arundel Corp. & L. E. Dixon, joint venturers, has resulted in the successful holing through of a 3-mi. long tunnel in the Hollywood hills of Southern California. This is shown by the 6 to 9 rounds that were completed on the average 24-hr. work day and the advance that averaged 30 ft. per day at each of the two headings.

This project, which carries a \$3,167,709 price tag, was awarded by the City of Los Angeles on Nov. 9, 1953. The purpose of the tunnel is to provide a sewer connection between the San Fernando Valley to the north, where there is a critical sewage disposal problem, to the Hyperion treatment plant to the south. Calendar completion time allowance was 700 calendar days.

Tunnel dimensions small

Physical factors involved with this project include a 15,300-ft. tunnel length to provide a finished 6-ft. diameter, concrete-lined section. The bore driven had a 7-ft. 6-in. diameter horseshoe section. This was the most economical shape and area to allow for steel sets, and the use of regular rail-mounted tunnel equipment, and to leave working room for the men. Also, no tunnel support material is allowed to be closer than 6 in. to the final concrete interior surface of the sewer.

Rock and method of attack

A wide variety of rock types was encountered. These included granite, conglomerate, basalt, sandstone, and interbedded sandstone and shale. There were no sections where it would have been safe to leave the tunnel unsupported. Badly faulted areas were combined with the generally fractured nature of each rock type.

The interesting methods used by the contractor can best be described by considering the sequence involved in drilling, shooting, and mucking a



AIR LINES ARE ATTACHED to the Eimco No. 12 mucker and the cleanup begins after firing of a round. Steel sets and timber bracing can be seen against right wall of tunnel ready to be used. Extra 2 in. of working clearance was gained by making air line to left oval-shaped.

single round. Since each of the two headings were similar, both north and south, the description will be limited to operations at the south portal. Work began on the south portal in January 1954, and at the north portal in April 1954.

The jumbo in use was a Chicago Pneumatic that had mounted on it two air-operated booms. On the booms were 3-in. bore Gardner-Denver drills capable of handling 4-ft. steel changes. The drill steel was in 4- and 7-ft. lengths to handle the average 5-ft. drill depth. About 24

holes were drilled for each round, which may seem a large amount, but necessary to provide good breakage of the rock into small pieces for later handling. Drill holes were loaded with Atlas No. 3 Geladyn powder and exploded with Hercules Primatubes using No. 0 to 7 delays.

On completion of the drilling, the jumbo was returned to the portal in the earlier stages, or to a widened place in the tunnel in the later stages to clear the tracks for the mucking equipment. The blast was then set off with about 15 min. time allowance



GOOD BREAKAGE came with the drilling of about 24 holes, 5 ft. deep, and using Atlas No. 3 Geladyn powder. Inspecting face after a round—(l. to r.) J. P. Williams, general superintendent; Joe DeMilita, south portal superintendent; Robert Stevens, shift foreman.



RESTRICTED CLEARANCE is evident at rear end of 120-ft. long conveyor belt where muck is loaded in successive cars of a 9-car string. Last car is being loaded here.



MUCK DISPOSAL at south heading. Cars are side dumped by an air-operated gantry hoist with further removal of the muck by trucks which are filled by front-end tractor loader.

afterwards for the gases to be sucked out. A 14-in. diameter air line (oval-shaped to make less room against the tunnel wall) was used to blow ventilating air in during all operations except immediately after blasting when it was reversed to suck the gases out.

Mucking operations

Two sets of tracks were carried forward for the mucking operation, the inner ones for the mucker, and the outer set for a gantry carrying the conveyor for loading the cars. The mucker was an air-operated Eimco No. 12 and attached to the 120-ft. long conveyor gantry—so that the two always moved together. Muck loaded on the conveyor was carried along the roof of the tunnel, allowing room for the muck cars to pass beneath. Loading a 9-car string of muck cars proceeded with the locomotive driver pushing each of the mine cars under the end of the conveyor belt in succession. As soon as one filled up, the next in line was placed under the end of the conveyor.

The length of the 9-car train was just equal to the 120-ft. length of the gantry conveyor system. Total capacity of the cars (70 cu. ft. each) was just equal to the average rock shot on one round.

Good rock breakage

The typical 5-ft. shot set off was usually a good one with the rock thrown back clear of the face. The rock was deposited mainly about 4 to 10 ft. from the face with very, very little scatter rock thrown as far back as 20 ft. Breakage was good—a necessity for the limited head room clearance between the conveyor and the tunnel roof.

With removal of the mucking equipment, the tunnel crew proceeded with erection of a new steel set. These were put on about 4- to 5-ft. centers. Steel used was a 4-in., 13-lb., H-section. Lagging with 2-in. lumber was used where necessary. At one place in the south heading, it was noticed that heaving ground was buckling the steel sets. Reworking and reboring a 100 ft. length was necessary for realignment. Steel sets were then put at 16-in. centers with almost solid lagging.

Lots of water

Water seepage into the south heading became a problem early. The tunnel gradient of .36% was insufficient as was the smallness of the tunnel section to allow the water to run out by gravity. The first pump, a 3-in. Jaeger, was installed 500 ft. in from the portal. After going another 1,200 ft., a 4-in. Marlow was added to take care of the increased flow which averaged about 700 gpm. Water ran 4 to 6 in. deep in long stretches of the invert section—adding to the difficulties of track maintenance and the operation of equipment. Water was pumped from the north heading also,

*Built.....
Engineered...*

When buying an asphalt mixing plant, the important things to check are the features that determine the plant's hour-by-hour, day-by-day production ability...its money-making ability! In the MADSEN Model 481 Asphalt Plant, MADSEN engineers have given the industry more features that add up to faster and more production — than can be found in any other plant of its type. For example: the MADSEN Twin-Shaft Pug Mill Mixer with improved mixing action and faster discharge; the MADSEN Asphalt Pressure Injection System (Patented) which pumps the asphalt into the mill in 5 to 7 seconds!; all air operation of bin gates, asphalt pressure injection and mixer gate; and fast, convenient finger-tip control of weighing and mixing levers. You will want these greater-production advantages when bidding on today's highway and air base jobs. And, for the long-range picture too, you will want the benefits of MADSEN's superior engineering which decreases maintenance and maintenance costs and adds money-making years to your asphalt plant operations.

Why not call your MADSEN Distributor today and get all the facts on the outstanding MADSEN Model 481 Asphalt Plant.

A FEW OF THE OUTSTANDING MODEL 481 FEATURES

- Exclusive bin design (Patent Pending) eliminates segregation, provides uniform aggregate withdrawal, and promotes improved aggregate distribution in the weigh-box.
- Unit construction designed for easy stacking in factory-matched unit sections, factory-fitted for quick field erection.
- Oversize capacity weigh-box...with air-operated gate, 4-point lever suspension, roller-mounted so that it may be quickly rolled out of the way for field maintenance.
- In-built reserve capacity and oversize construction throughout.

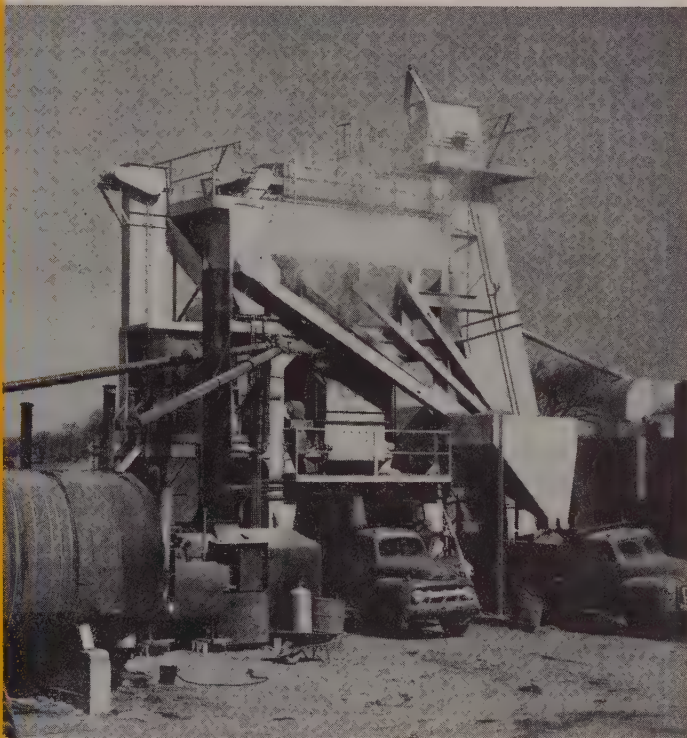


Equipment that Serves®

MADSEN

**ASPHALT PLANTS and
ASPHALT PLANT EQUIPMENT**

TO MAKE MONEY! TO LAST LONGER!



THE MONEY MAKING

Here is a MADSEN Model 481 Asphalt Plant. Note the clean, efficient appearance of the plant...the operator platform on the end of the plant away from heat and dust...and the combination overflow and reject bin mounted on the side of the plant for easy accessibility.

MADSEN

MODEL 481

ASPHALT PLANT

Manufactured by

MADSEN IRON WORKS, INC.

Subsidiary of Baldwin-Lima-Hamilton Corporation
14100 EAST ROSECRANS AVENUE, P. O. BOX 38
LA MIRADA, CALIF., U. S. A.



Construction Equipment Division



SOUTH PORTAL has gunited slopes to prevent bank cave-ins. Pipes to right (4- and 6-in. diameter) carry seepage water. Other pipelines to left carry air for ventilation and to run equipment.



MECHANIC GEORGE EASTON runs an efficient maintenance shop at the south portal. Battery changes on the Goodman locomotives are made every 6 hr. running time with use of gantry hoist shown here.



LOCOMOTIVE APPEARS to float in some places where water accumulated in 6-in. depths.



SEEPAGE WATER entered at faulted zones but was never large enough to require grouting. Average run-off at south portal was 700 gpm.

reaching a maximum of 150 gpm. towards the end of the excavation operation.

Muck was disposed of in a similar manner at each heading. Muck cars were side-dumped by an air-operated gantry hoist. With no waste area for the spoil at the site, a front-end tractor loader was used to load trucks which then hauled the material away.

Two Goodman battery locomotives

were used at the south portal. Usual running time before recharging a battery set was 6 hr. An efficient yard and maintenance shop set-up made such chores as the battery changing and the handling of materials for the tunnel a well-run operation.

Special muck cars

The mining cars used on this project were specially built to the contractor's specifications. These have a very low center of gravity and low overall height—necessary for the limited head room of the tunnel.

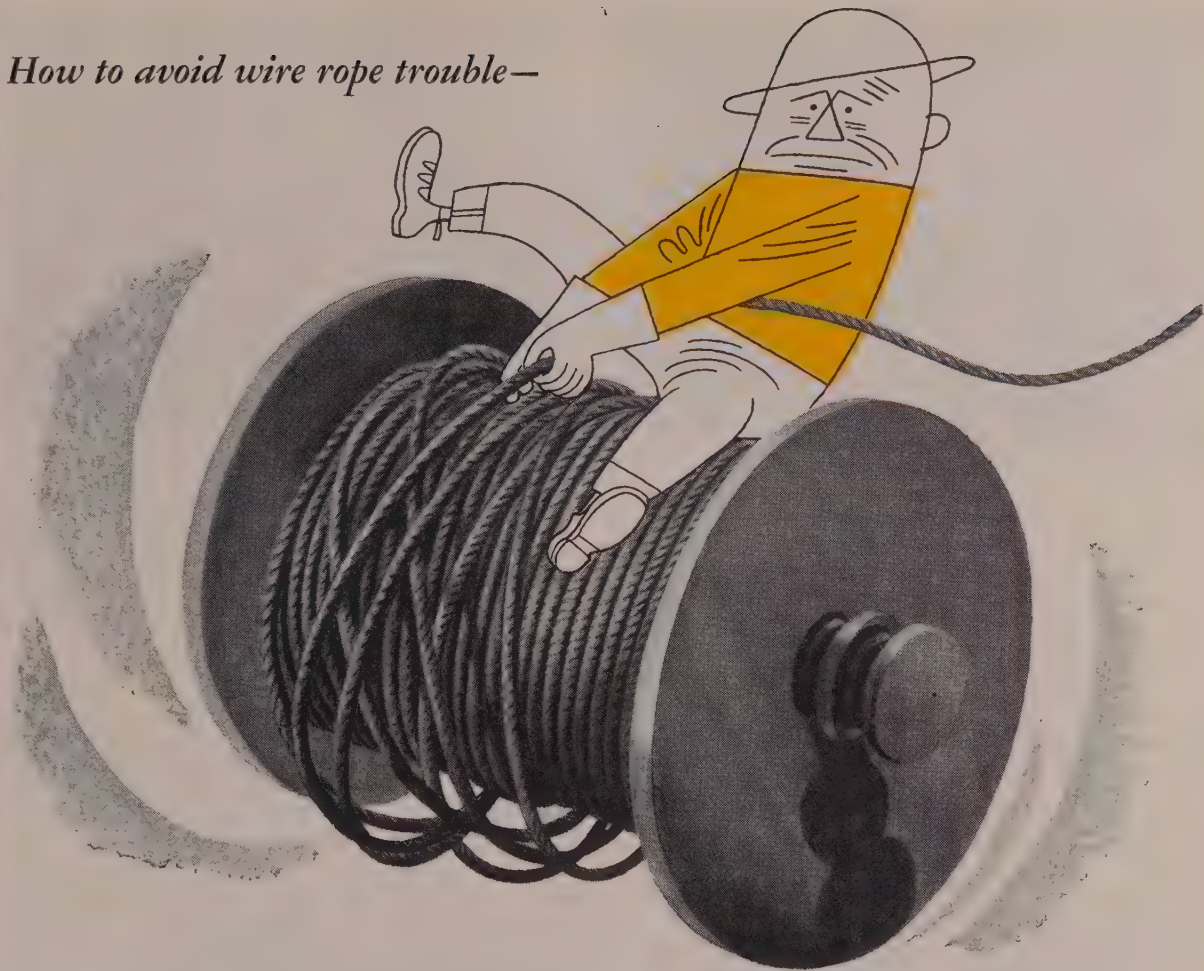
Stationary equipment at the portals included 3,000-cfm. Sutorbilt blowers to provide ventilating air. Sullivan 750-cfm. stationary air compressors were used to provide air for the drills and mucking equipment.

Concrete lining operations will soon be under way. Standard collapsible steel forms and pneumatically placed concrete will be used. Completion date on this part of the project is to be in November, this year.

Key personnel

For Arundel-Dixon, J. P. Williams is general superintendent. At the south portal, Joe De Milita is tunnel superintendent, and Oris "Heavy" Holman has the same title at the north portal. Representing Los Angeles City, Arthur Milicov is supervising construction engineer, Robert Oglesby is inspector at the south portal, and G. G. Thomas is inspector at the north portal.

How to avoid wire rope trouble—



Overwinding or crosswinding can cut rope life up to 90%

Because it causes crushing and abrasion, overwinding or crosswinding of rope on the drum greatly reduces rope life. If overwinding can't be avoided, you can reduce spooling problems by checking for undercut drum flanges, improper drum and sheave alignment, or excessive fleet angle. Installation of a "turnback bar", drum grooving, or "line spoolers" may also be profitable.

Most users in the West report less trouble, longer service when they rig up with Tiger Brand Wire Rope. No wonder it outsells all other brands. Want more facts? See your local Tiger Brand Distributor or write United States Steel, 1403 Russ Bldg., San Francisco 6.

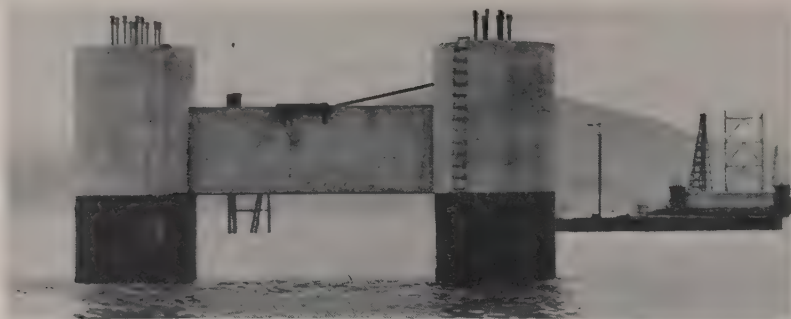


USS TIGER BRAND Wire Rope

*United States Steel Corporation—Columbia-Geneva Steel Division
In the East: American Steel and Wire Division*

UNITED STATES STEEL

Pier 41: Case history bottom to top



Contractor ingenuity shows up in extensive precasting operations for similar bell-type piers. With the substructure work now winding up on the Richmond-San Rafael bridge, here is the "life story" of one deep-water pier.

WHAT WENT INTO the making of the pier in the middle of the soon-to-be second largest major bridge in the world—and what were the important dates in its life? Of the 79 piers required in this 4-mi. long bridge, 62 are basically similar to pier 41 described here. Eight others are cofferdam-type piers, and nine were land piers. All are typical in that they are supported on H-piles driven to hard bearing strata.

Foundation conditions for the bridge as a whole consisted of water depths up to 50 ft. Bedrock is found under two-thirds of the crossing at depths of 40 to 210 ft. below sea level. Compacted sands and gravel deposits

underlay the central part of the crossing at depths of 140 to 150 ft.

The California Division of San Francisco Bay Toll Crossings conducted extensive foundation explorations, preliminary designs, comparative cost estimates, traffic analyses, and numerous conferences with concerned parties before the present construction could be realized. Resulting from this, however, was the green light for a \$62,000,000 revenue bond issue floated in late 1952 for the first stages of construction covering 80% of the total construction cost.

One of the first contracts awarded in early 1953 was for the entire substructure. It went to Ben C. Gerwick,

Inc., and Peter Kiewit Sons' Co. for their low bid of \$14,234,550—over \$1,000,000 under the nearest competitor. The bidders had been permitted maximum leeway in the methods to be used for the construction of the bell piers. The following account brings out the novel methods used by the Gerwick-Kiewit combine.

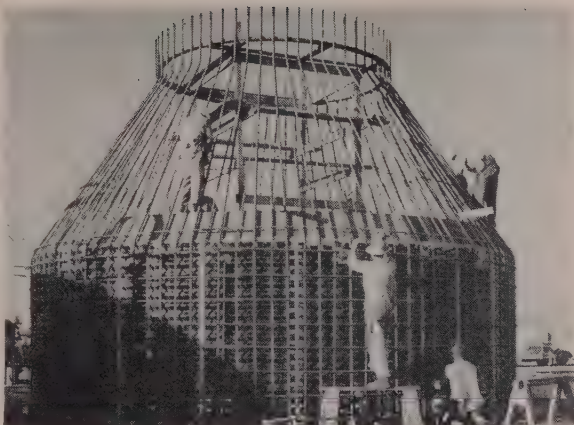
For the joint venturers, Don Weaver is project manager; William Talbot, project engineer; John Ford, project superintendent. Representing the Division of San Francisco Bay Toll Crossings is Norman Raab, projects engineer; Ben Balala, construction engineer; H. M. Eichstaedt, resident engineer.

1 SURVEY CONTROL PLATFORMS WERE ESTABLISHED BEGINNING in April 1953 parallel to and about 150 ft. south of the bridge centerline. The triangular-shaped, braced towers, 16 ft. on a side had legs of 12-in. diameter pipe extending into the bay mud. Steel pipe spuds, 10-in. diameter and up to 160 ft. long, were then driven through the legs to anchor the towers. From a triangulation network previously established for the entire bridge location, each tower's location was in turn established. These survey points served for the day-to-day control necessary for pier construction. Shown above is a steel pipe spud being threaded into a tower leg.



2 AT THE CASTING YARD, MEANWHILE, BIG THINGS HAD been going on. Gerwick's yard at Petaluma, 20 mi. up a creek from the bridge, was revamped for repetitive precasting of units such as those going into pier 41. Base setting grids (shown above) of the pier are 1-ft. thick reinforced concrete up to 34 ft. in diameter, and provided with slots through which the steel H-piles are driven. Lower ends of the slots are tapered for a close fit. Lifting lugs are cast into the grids and three sloping steel guide shoes are bolted to the grid to help position following precast units.

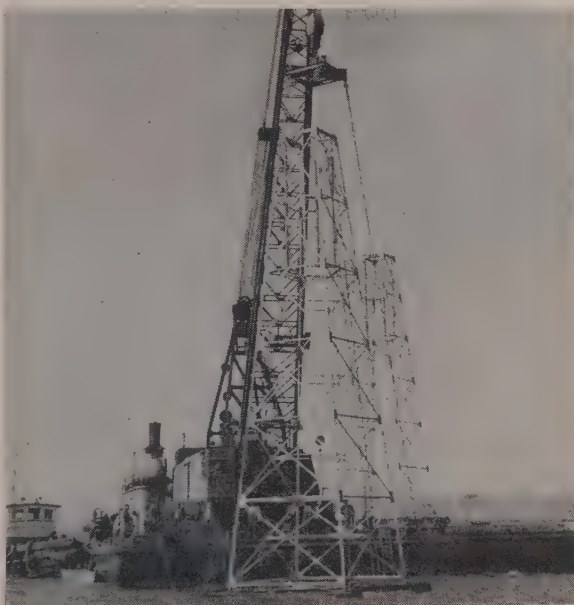




3 CYLINDRICAL BASE SHELLS RESTING ON the base grids are 9-ft. high sections with a wall thickness of $7\frac{1}{2}$ in. Forms were specially rolled to provide $1\frac{5}{8}$ -in. deep corrugations, 6 in. on center, for the interior surface of the shells to provide shear keys for later tremie concrete. Using only six 8-in. wide units per 4-ft. wide panel and using rubber-covered joints allowed the forming of various diameter shells with the same forms.



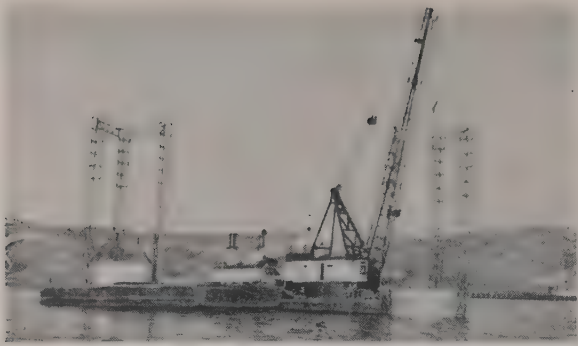
4 OVERALL YARD VIEW TAKEN FROM THE top of yard gantry crane shows—near the top—the two-bell cones with connecting diaphragm that are to rest on top of the lower cylindrical shells. Grids for smaller piers are in the middle, while 6- to 14-ft. diameter cylindrical shafts to rest on top of the two-bell cones are being constructed in the foreground. The largest shafts were 46 ft. long and weighed 95 tons. All units were transported from the yard to the bridge site by barge with some of the heaviest formed and poured on the barges. Advantages of precasting pier units were that underwater forming operations were held to a minimum, units when set were stable in the swift tide to waves, and that concrete and reinforcing steel placement was of highest quality.



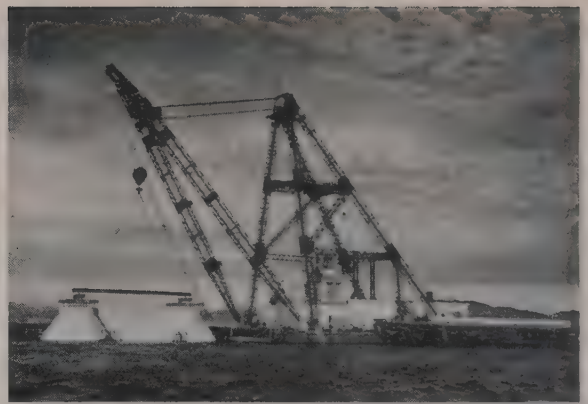
5 BEGINNING MAY 22, 1954, PIER 41 BEGAN its five-month construction life. The soft mud of the bay was clamshell dredged 12 ft. below the general level. On June 24, about 20 timber piles 75 ft. long were carefully driven in the excavated hole and located to support the two pancake concrete grids and yet miss the future steel piling. Seven days later these piles were cut off to grade with remarkable accuracy. A 4-ft. diameter saw blade mounted on a pipe shaft held in pile extension leads allowed a $\frac{1}{2}$ -in. maximum elevation variation on calm days. Placement of the two grids within a 6-in. circle of tolerance came July 9 and is shown above. A steel lifting grillage, on top of which was bolted a sighting tower, allowed lowering them accurately with simultaneous sighting from survey control points. A temporary steel connection truss aided divers in placing the second grid accurately.



6 TWO TEST PILES WERE DRIVEN JULY 14 near the center of each grid. This gave the information required for proper length fabrication of the remaining ones. Two weeks later, plumb piles were driven. Two weeks later yet, the batter piles, sloping 3 to 12, were driven. Piles (14-in. 89-lb. H-section) up to 194 ft. long were required and were driven from a floating driver having an 80-ft. tower supporting 124-ft. long leads. A telescoping section within the main leads would extend to 60 ft. below water. Grout was poured into the tapered slots of the grids on August 25 and 26 that bonded piling to grid. Experience showed that the timber piles plus the grout sealing of the slots held the grids securely.



7 SEPTEMBER 14 SAW PLACEMENT OF THE two lower cylindrical shells at pier 41. Attached to the perimeter of the shells were three towers extending about 20 ft. above water when placed. These towers served to support the tremie pipes for concreting and to later hold and align the upper cylindrical shaft sections. A 1½-in. tolerance was allowed for placing these sections. Following cleaning of silt and mud from the grid and shell—a difficult job for divers in the pile cluster protruding through the grid—a 4-ft. deep tremie pour was made within the shell.



9 CONE SECTIONS WERE PLACED ONLY three days later, September 18, on top of the bottom cylindrical shells after temporary removal of one or two of the towers. A 2½-in. erection tolerance had been allowed in the fabrication of the cones in the way they seated on the lower shells. This principle aided in the successive alignment of present units to keep within the 6-in. circle of tolerance allowed by specifications.



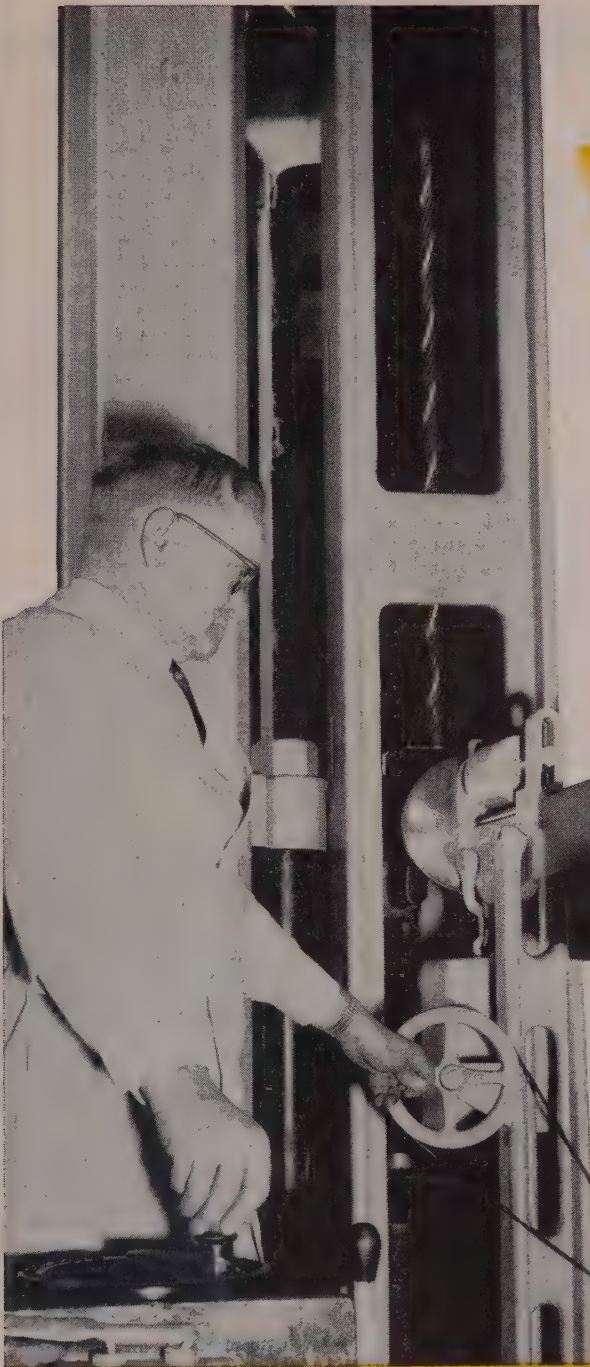
8 FLOATING BATCH PLANT FOR THE CONCRETE POURS WAS the Pacific Mixmaster. The plant was capable of producing 100 cu. yd. per hr. that was placed into tremie pipes as shown here with two crawler mounted cranes located on the barge. Aggregates and bulk cement were brought to the plant by barge, too.

11 A 100-TON PRECAST TIE beam was seated on October 1 on top of the plus 5-ft. elevation pour with forming operations beginning October 16 to carry the pier elevation to plus 13 ft. Cylindrical metal forms were used. Three days later on October 19, a concrete pour brought the pier elevation to within 2 ft. of the top. Pipe sleeves, 5-in. diameter, were embedded in the first pour to hold the anchor bolts and now ½x3-in. bar stock was welded to the pipes at the final grade elevation. The bars served as screens to bring the final pour (only 24 hr. after the other) to finished grade with a tolerance of only 1/32 in. Anchor bolts, 2½-in. diameter, were accurately located within the sleeves and grouted in. Thus ends the tale of pier 41.



10 TWO DAYS LATER AND the cylindrical shafts were seated and tied off to the three legged towers. Pictured (left) is the Pacific Atlas, capable of 160-ton lifts, picking up one of the shafts for placing. The main sling connects to an axle passing through the shaft near one end and allows the shaft to swing vertical when the other sling is released. It was now necessary to do the first and only underwater forming for a diaphragm that would connect the two shafts. Preassembled and reusable metal forms were used. After cleaning, one large concrete pour on September 24 now brought the inner tremie concrete level from 5 ft. above the base grid to 5 ft. above water level. Tremie pipes down each shaft and one in the diaphragm form were required. Type II cement was used originally at 5½ sacks per cu. yd. but later increased to 6½ to 7½. Maximum aggregate size was 1½-in. but increases in the amount of fine aggregate was found necessary with the increased cement.





**BRODERICK & BASCOM
ANNOUNCES**

NEW

**YELLOW STRAND
"POWERSTEEL"
WIRE ROPE**

Another addition to the famous Yellow Strand family — the new "POWERSTEEL!" Made of higher carbon content steel, new "POWERSTEEL" is 15% stronger, assures longer life. It withstands shock, resists wear. Preformed, with Independent Wire Rope Core, "POWER-STEEL" is a heavy-duty, crush-resistant rope, designed for long service.

**STRONGER
LONGER LIFE!**

Yellow Strand "POWERSTEEL" was proved in military service in World War II. Its long life has been established on rugged logging operations. Broderick & Bascom is now presenting this higher quality rope to industry. Check on Yellow Strand "POWER-STEEL" for your tough jobs — where extra strength is needed. See your Broderick & Bascom distributor, or write the branch nearest you for information.

Yellow Strand®

BRODERICK & BASCOM ROPE CO.

4203 UNION BLVD. - ST. LOUIS 15, MO.

Manufacturers of Wire Rope for 79 Years

455 EDMUNDS ST.
SEATTLE 8, WASH.
44 POTRERO AVE.
SAN FRANCISCO 3, CALIF.

32-30 43rd AVE.
LONG ISLAND CITY 1, N.Y.
2441 HUNTER ST.
LOS ANGELES 31, CALIF.

1518 N.W. MARSHALL ST.
PORTLAND 1, ORE.
117 JEFFERSON HIGHWAY
NEW ORLEANS, LA.

1330 W. FULTON ST.
CHICAGO 7, ILL.
7350 MARKET ST. ROAD
HOUSTON 15, TEXAS



Tacoma-Everett toll bonds are next

If you're a contractor, May 1956 may find you with a big piece of work in the heart of Seattle—perhaps just north of Mercer Avenue and up on the hill above Eastlake. You'll be doing excavation, grading, paving, structures and drainage — 10 lanes of toll road and all its "accessories" in a single contract package.

THE CIVIL ENGINEERING report by Greiner-Tudor Associates sets the entire 65.2-mi. project on a 42-month schedule from the time financing is complete. According to Ralph Tudor, this could be within the next 5 months.

Say September. Following a reported estimate of 8 months for engineering and acquisition of right-of-way before construction could start, you come up with a target date of May 1956.

This rough timetable—and the "case history" above—highlights some unique features of a completely unprecedented project. Even California, which has long boasted of having the greatest mileage of "free turnpikes" in the country, is cocking an interested eyebrow toward this challenging project to the north.

Tolls and traffic handling

The Tacoma-Everett toll road is the biggest in the West. (It's almost the only one, having the Denver-Boulder turnpike as a sole companion.) It is the only one that frankly passes straight through the heart of a city. And it does so twice—Tacoma and Seattle. In its preliminary design it overcomes no unusual physical problem—there is none. But it incorporates several noteworthy design kinks for toll projects.

Example: Toll plazas "stretched out" in staggered fashion along a normal right-of-way width, giving drivers a choice of 3 booths at each of 3 locations some 300 ft. apart. It's like a screening plant: if the first station is busy, you're "scalped off" to the next. Drivers "passed" at the first booths automatically bypass the others, and are eventually rejoined by others of the "finished product." (Nobody is "retained" unless he lacks the time required at most collection points!)

Example: In the busiest urban portions of Seattle, where the 10 lanes are divided (3-2-2-3), reversibility of flow is being provided. This will mean 7 southbound lanes in the morning for University District residents headed for Boeing! It also means a very fancy design problem at the interchanges en route in order not to complicate Seattle's street system at grade.

Early reality for these features is convincingly portrayed not only by the Greiner-Tudor engineering re-

port issued in mid-February, but by concurrent reports from Coverdale & Colpitts (traffic and revenue estimates) and Blyth & Co., Inc., and Lehman Brothers (financial arrangements).

A \$5,000,000 "pot"

A single drop of cold water, condensed by Coverdale & Colpitts, and subjected to analysis by Blyth and Lehman, has been swiftly evaporated by Washington state legislative action. It was this: Coverdale & Colpitts report showed that in a single year of toll operation (the first of 40), revenues available for interest requirements would be less than required (92% to be precise).

Blyth and Lehman picked up the fact and noted further that although revenues generally would be "sufficient to pay the principal and interest of the bond issue, the margin of safety always required in such bond issues, which is called 'coverage,' will be lacking at an assumed interest rate of 3½% per annum." The prospective underwriters thereupon recommended a conditional pledge by the state of \$5,000,000 per year, to be available if toll revenues should be insufficient to meet bond requirements in any one year.

The speed with which this idea has been accepted is startling. By early March a bill had been drafted. It passed the Washington House unanimously. And on March 10 it passed the Senate 43-1. Governor Langlie had already given it his blessing; now he signed it. Thus, added authority has been given the February statement of Blyth and Lehman that "the additional support given to the toll road project by such conditional pledge will, in our opinion, make the proposed bond issue marketable..."

A few formalities

Immediate future action will include a "test case" in the Washington courts to determine constitutionality of the conditional pledge legislation. This is a routine maneuver and is not expected to produce upsetting results.

Some amendments to the Washington Toll Bridge Authority Act will also be necessary. They amount to modernization, necessary in extending the authority's scope of activity from bridges alone to toll highways. As an example, the act

presently makes no allowance for the operation of gasoline service concessions on authority-administered projects. A change in this respect is sought both as a necessity on the 65-mi. Tacoma-Everett road and as an enhancement of project feasibility. Concession revenues would conceivably exceed \$250,000 annually in very short order.

The dollar yardstick

How does the whole project stack up? It depends on how you figure it. Right-of-way alone: \$53,454,000. Construction contracts alone: \$101,313,000. Both these items, and all others necessary to cutting the ribbon at both ends: \$194,000,000. Finally, the 3½% revenue bond issue to finance the undertaking: \$227,000,000.

The project was studied as a whole, and in several overlapping increments (Puyallup River to north end, 53.9 mi.; south end to King-Snohomish County line, 54.4 mi.; and Puyallup River to King-Snohomish County line, 43.1 mi.). All the alternatives showed about the same benefit-cost ratio of feasibility at total costs varying only between \$161,500,000 and \$194,000,000. On this basis it has been determined to go ahead with the works.

Design criteria

Physically the project will be built to the highest standards, in materials and in geometry. Roadways will be separated, and so will multiple lanes in one direction where there are more than three. Access will be limited, and separation complete. Structures for these and other purposes line up as follows:

Lake Washington ship canal crossing, 3,760 ft.	1
Puyallup River crossing, 1,246 ft.	1
Duwamish River crossing, 362 ft.	1
Stream crossings	5
Toll road overpass structures	43
Toll road underpass structures	46
Ramp separation structures	44
Pedestrian crossing structures	13
Box culverts	20
TOTAL	174

Structures generally will be of concrete, conforming to the present pattern in Washington. The decision is not primarily one of architecture. Rather, the present pattern has been determined by the local availability

and economy of concrete aggregates, cement, and form lumber.

In design, short structures will be reinforced concrete slab or T-beam spans. Long-span bridges, such as over the Puyallup and Duwamish, will be of structural steel plate girders. The double-deck bridge over Lake Washington ship canal is planned for 1,622 ft. of simple truss spans, a 530-ft. central cantilever span, and two 232-ft. anchor spans.

Investigations have been made of both major pavement types, including considerations of soils along the project. Cost estimates covered both construction and maintenance (during the anticipated life of the bond issue). As a result, asphaltic concrete will predominate, with portland cement at toll plazas. Typical designs used in the estimates were made up of the following courses:

FLEXIBLE:

Asphaltic surface course 4 in.
Crushed aggregate base course 5
Select roadway borrow 9

—
18 in.

RIGID:

Reinforced PCC 9 in.
Select roadway borrow 6

—
15 in.

Shoulders will consist of 4 in. of bituminous treated crushed aggregate laid on 14 in. of select.

42-month timetable

Now, how to build it? And what about time requirements? It all depends, says Greiner-Tudor on the rate that property is acquired and contractors granted entry; on the time required for final design surveys and the preparation of contract plans and specs; on timely consummation of agreements with outside parties and agencies as to easements, relocations, closing, etc.; on the scheduling of advertisements and awards. It depends too on the weather, and the length of the construction season. And, it depends on there being plenty of competent contractors available.

As to time, the engineers assume 8 months for concurrent preparation of plans and acquisition of right-of-way for the first part to be let. Thereafter, bid openings would follow, ideally, at two-week intervals. And in 4 months the last contract would be awarded. This, based on assumptions quoted earlier, puts the whole project under construction as of September 1956! A short 29 months later, in February 1959, it would be done.

Contract size

The first contracts will be in the urban portions, and in the worst spots at that. The reason is that they're the most important, yet are most likely to show complications and delays. In the case of Seattle and Tacoma, it is to be remembered, the full swing of construction will see both cities cut completely in two except for cross-connections provided

65 miles of major plan quantities

GRADING

Clearing and grubbing	Lump sum
Demolition and removal of buildings	Lump sum
Roadway excavation	24,140,700 cu. yd.
Removal of unsuitable material	2,156,900 cu. yd.
Topsoil stripping	1,351,000 cu. yd.
Borrow	4,152,600 cu. yd.
Special borrow for backfill	697,700 cu. yd.
Special borrow for slope stabilization	45,500 cu. yd.
Compaction of in-place material	1,727,000 sq. yd.
Spreading topsoil from stockpile in 2-in. lifts	1,451,000 sq. yd.
Furnishing and spreading topsoil in 2-in. lifts	243,600 sq. yd.
Removal of existing pavement	227,500 sq. yd.
Removal of existing structures	Lump sum
Removal of existing foundations	36,000 cu. yd.

TRAFFIC MAINTENANCE

Roadway excavation	107,000 cu. yd.
Selected roadway borrow	6,000 cu. yd.
Bituminous surface treatment	13,340 sq. yd.
Asphaltic concrete pavement	15,200 sq. yd.

DRAINAGE

Trench excavation for ditches	275,000 cu. yd.
Structures excavation	173,000 cu. yd.
Channel change excavation	70,000 cu. yd.
Class B concrete for headwalls	2,710 cu. yd.
Class B concrete for box culverts	8,090 cu. yd.
Re-steel for headwalls and box culverts	1,283,000 lb.
18- to 72-in. pipe for roadway culverts	38,300 lin. ft.
15- to 26-in. pipe for storm sewers	177,950 lin. ft.
9-ft. 6-in. by 6-ft. 6-in. structural plate pipe arch	160 lin. ft.
11-ft. 6-in. by 7-ft. 3-in. structural plate pipe arch	280 lin. ft.
Horizontal drains	6,000 lin. ft.
6-in. subsurface drains	261,000 lin. ft.
8-in. subsurface drains	32,000 lin. ft.
Aggregate for subsurface drains	46,650 cu. yd.

STRUCTURES

	Except ship canal	Ship canal
Structure excavation, dry	639,310 cu. yd.	21,500 cu. yd.
Structure excavation, wet	2,920 cu. yd.	10,700 cu. yd.
Special backfill for structures	621,400 cu. yd.	
Lightweight concrete for superstructure	7,450 cu. yd.	13,000 cu. yd.
Class B concrete for footings	69,510 cu. yd.	6,390 cu. yd.
Class A and E concrete above footings	171,440 cu. yd.	
Class E concrete above footings		12,800 cu. yd.
Class B concrete for retaining walls	103,460 cu. yd.	
Class H concrete seal	2,620 cu. yd.	4,500 cu. yd.
Re-steel	66,698,000 lb.	5,840,000 lb.
Structural low-alloy steel, trusses		21,460,000 lb.
Structural low-alloy steel, girders	9,171,000 lb.	4,610,000 lb.
Structural steel beams	4,098,000 lb.	
Foundation piles	361,140 lin. ft.	5,200 lin. ft.
Asphaltic concrete wearing surface	125,700 sq. yd.	51,100 sq. yd.

PAVEMENT (toll road and interchanges)

4-in. asphaltic concrete	2,397,800 sq. yd.
5-in. base course	2,505,300 sq. yd.
Selected road borrow	1,295,800 cu. yd.
Bituminous surface shoulders	991,700 sq. ft.
Concrete curb and gutter	288,700 lin. ft.
Concrete curb for ramps	72,800 lin. ft.
Concrete median curb for ramps	12,060 lin. ft.
4-in. concrete sidewalk	92,600 sq. yd.
Precast white reflecting curb	16,115 lin. ft.

PAVEMENT (cross roads and access roads)

Asphaltic concrete pavement	45,300 sq. yd.
Bituminous surfaced pavement	137,200 sq. yd.
Portland cement concrete pavement	158,380 sq. yd.
Selected roadway borrow	93,470 cu. yd.
Concrete curb and gutter	83,380 lin. ft.
Finishing roadway and shoulders	153,000 lin. ft.

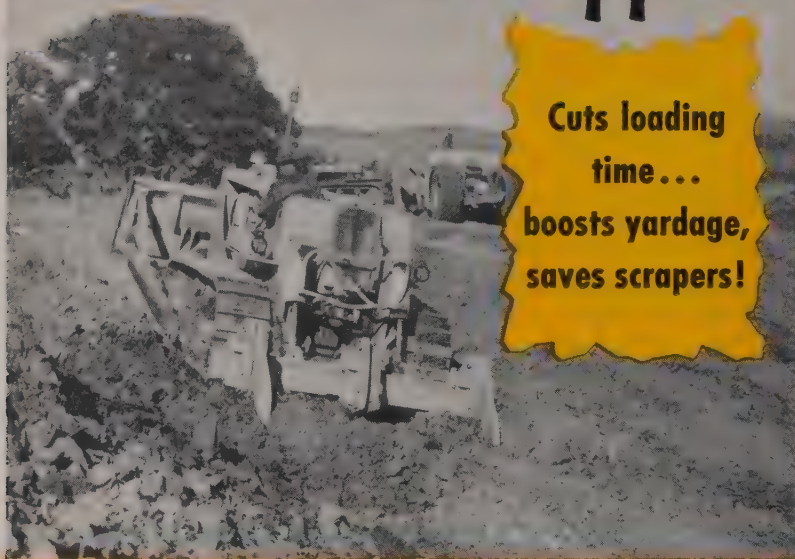
and maintained under the terms of construction contracts.

The work will be broken up into pieces of varying dollar size, to present bidding opportunities to a broad

range of contractors. Lengths will be adjusted too, on the general basis of "long" in the country and "short" in the cities where structures and grading requirements are more elaborate.



Rock Ripper



**Cuts loading
time...
boosts yardage,
saves scrapers!**

Cat D8 with ATECO ripper and Cat dozer handles ripping, push-loading and dozing on Guy F. Atkinson Co.'s Waldo approach job, Marin County, Calif.

Really shatters rock for easy loading

Underground "quiver" of special curved standards with their replaceable rock-splitting points reduces rock, shale, cemented gravel and other tough materials to easy-loading condition, fast!

Works anywhere tractor can go

Compact, tractor-mounted; easy to handle in narrow cuts and tight spots. Swivel-mounted standards pivot on turns for effortless steering.

Multiplies workpower of your tractor

With an ATECO ripper behind and Cat dozer in front, your tractor is complete master of the cut—ready to rip, pushload or bulldoze any time, anywhere. Ripper balances dozer weight for better traction, easier handling.

Get bigger loads faster, save wear and tear on your scrapers... equip your tractor now with an ATECO Rock Ripper. Call your Caterpillar distributor today for demonstration, or write us.



NOW AVAILABLE FOR CAT D8,
NEW D8, D7, D6 TRACTORS

Extra heavy-duty construction; designed so drawbar takes the pull, no strain on tractor case. Rips to 24" depth with 9" head frame clearance.

29

AMERICAN TRACTOR EQUIPMENT CORPORATION

Designers and manufacturers
since 1920

Max Woodruff
PRESIDENT

9131 San Leandro Blvd.
Oakland 3, California

BULLDOZERS • ROADBUILDERS • RIPPERS • SCRAPERS • LOADERS

A 4-mi. contract length in open country seems a good bet.

It is important to note that planning at this point contemplates packaging all work within a given stretch under one contract. This gives the contractor the greatest freedom and control. It should work to hold prices down, and speed the work as well.

Schedules and seasons

All in all, it sounds like a tight schedule. Actually, the biggest burden for speed will lie on the engineers and right-of-way agents in the early months. The right-of-way problem in Washington has been made tighter in recent months by a court decision there: work may not proceed while any suit or condemnation proceeding is pending.

For the contractors, a maximum of three seasons, or parts thereof, will be available. And it should be plenty. Here is how Greiner-Tudor have matched their schedule to the weather:

Grading and paving volume has been figured against the periods between May 1 and November 1 of each year, while structures and other work have been planned for longer seasons, roughly between February 15 and December 15. And the program allows for reasonable delays due to usual rains even within these dates.

Tolls: "Pay as you go"

When all is done, there will be a 65-mi. high-standard tour available from Tacoma to Everett at a cost of just 90 cents, according to Coverdale and Colpitts. Needed access and flexibility is provided by a total of 30 interchange and ramp connection points, four of them within Tacoma and 13 within Seattle.

Toll plazas will total seven; and these will be the only stops for the through traveler. Most traffic will pass only two or three barriers. Base toll will be a dime, except near the Lake Washington ship canal bridge (15 cents) and between Tacoma and Seattle (25 cents). For trucks the corresponding rates will be:

VEHICLE	UNIT	
	RATE, CENTS	FULL TRIP
3-ax. single unit	15, 20, 40	\$1.35
3-ax. semitrailer	20, 30, 50	1.80
4-ax. and up	25, 40, 60	2.05

Three out of four

The Tacoma-Everett toll project has reached the present stage in just 12 short months. February 1954 was when Coverdale & Colpitts submitted its first preliminary report to the Toll Bridge Authority. Four steps were then suggested: (1) engagement of financial consultants to review that study; (2) completion of engineering work; (3) completion of detailed traffic surveys, and (4) sale of bonds and prosecution of construction. The project is virtually at Step Four right now.

Special bulkhead aids in dam repair

- Unusual design
- Reservoir full
- Money saved

EXTENSIVE REPAIRS, begun October 10, 1954, on the penstocks and other equipment at Horse Mesa Dam of the Salt River Power District, involving numerous novel engineering techniques, are now complete. Costing about \$80,000 the repair job handled by crews of the Power District, Vinson Construction Co., and Rust-Proofing, Inc., included replacement of rivets in the penstocks, installation of new penstock screens, sandblasting and coating, revamping of plant water systems penstock takeoffs and other repairs. Today the dam is like new.

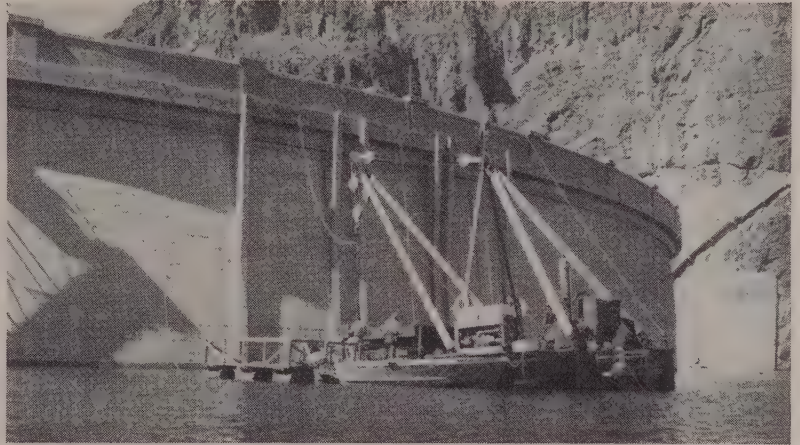
Located about 65 mi. northeast of Phoenix, Horse Mesa Dam's penstocks had been the prime concern of Power District engineers for some time. Rivets were leaking in the short exposed section of the penstocks in the powerhouse, but the condition didn't warrant immediate action until early 1954 when it was discovered that unless action was taken the leaks could cause serious trouble.

Three different plans were formulated by the Power District engineering department under the guidance of T. M. Morong, chief engineer, and C. T. Eyring, assistant chief engineer. One plan suggested that the lake be drained on a schedule—but this was ruled out because of the cost, the loss of water and the loss of electricity generation. Another plan suggested that dowel pins be placed around the back of the dam through the use of reinforcing bars. Around these would be poured a sort of concrete kimono. This idea was refused because it would not stop all of the leaks nor could workmen get inside to do any coating.

Bulkhead fabrication

After considerable analysis, the third and accepted plan conceived by A. W. Tesmer, supervisor of mechanical engineering, and coordinated by T. W. Bent, resident engineer on job site, called for the withdrawal of the penstock screens, the lowering of bulkheads over the penstocks on the upstream face of dam, shutting off the water of Apache Lake, thus providing a waterproof interior.

So that this application of bulkheads to the face of the dam could be effected at reasonable cost and with the greatest amount of safety, the civil engineering staff of the Power District spearheaded by Clarence Whalin, designed a bulkhead, two of which were fabricated. Twelve-inch wide-flange beams were welded together, the ends of which were sealed



REPAIRS WERE MADE with a near full lake of water (210-ft. depth). Barge was used to raise old penstock trash screens and to then lower special bulkheads to seal openings. Weight of 17,000-lb. bulkheads was no problem for barge made up of individual pontoon sections.



BULKHEADS, 12x14 ft. in size, were constructed of 12-in. wide-flange sections welded together to form airtight compartments. Each compartment was pumped to 100-psi. pressure from air bottles to counteract water pressure of 86 psi. at depth of opening.

off with plates, forming an airtight bulkhead 12x14 ft.

However, in the Acme Steel shop the bulkheads were fabricated in two sections in order to allow their transportation to the Apache Lake Boat Landing. Here these sections were welded together and air tested by District personnel. These bulkheads had large runners on each side to prevent harm to the rubber seals around the bulkheads as they were glided down the face of the dam between trash screen guides. The runners resembled a sled in operation and prevented the rubbing off of the rubber seal designed to effect a watertight fit for the bulkheads against the entrance to penstocks. Each bulkhead weighed approximately 8 tons.

Because of a recent job Vinson Construction Co. had performed on the Colorado River, using a section-alized steel barge together with

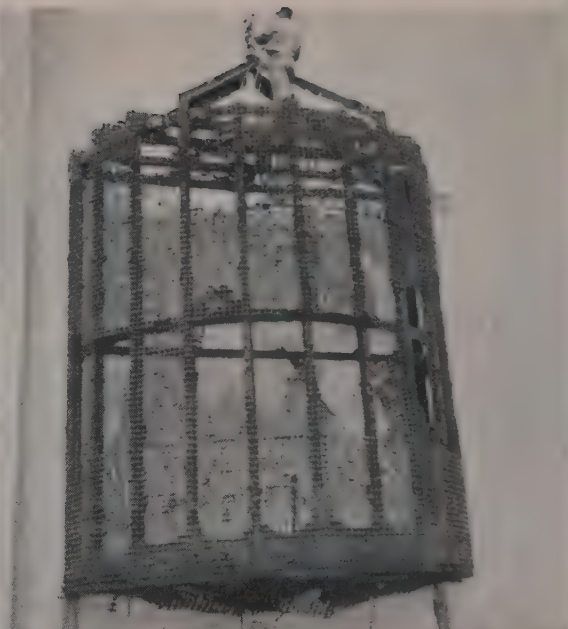
equipment necessary to perform our task, they were engaged to assist the District in the repair program.

Before the bulkheads could be lowered into place each respective 18 ft. wide by 24 ft. long penstock trash screen had to be removed. The screens, buried in 2 ft. of mud at the bottom of the lake, were removed by means of cables attached to the screen and to the boom lifting cable of the barge. Lacking at first a special clamp, the workmen required about 4 hr. to lift the first screen. Upon receipt of the special clamp, the time required to perform the same operation was slashed to 1 hr. each for the second and third screens.

Once removed, the screens were hung from the parapet wall of the dam and repaired by the river crews of the Power District under the leadership of L. H. Mayes, and Pat Winsor. The crews worked from, in



HOT RIVET is going in to replace one of the old faulty ones. Original construction misalignment of penstock plates caused the water leakage problem that necessitated the entire repair program.



OLD TRASH SCREEN has been serving for 20 yr. and will have new $\frac{1}{4}$ x2-in. screen covering. Original inspection to determine extent of repairs was made by diver in 255 ft. of water.

addition to the steel barge, two barges constructed of barrels and planking. A $\frac{1}{4}$ x2-in. wire galvanized mesh screen was spread over the original framework; this screening is expected to last approximately 20 yr.

Placing of bulkheads

As soon as the corroded penstock screens were lifted from the murky water, the Vinson Construction Co. crewmen lowered the bulkheads. Sliding them slowly into position along the face of the dam, the 8 tons of steel were dropped approximately 200 ft. to the penstock opening which forms a lip near the base of the dam. With the bulkheads securely in place on Nos. 1 and 2 penstocks, butterfly valves were opened just beyond the penstock, releasing water into the scroll case, thence to the tailrace. When instrumentation in the powerhouse indicated no lake pressure within the penstock, a scroll case manhole-cover was removed.

Interior inspection was then made of the bulkhead position as to whether the bulkhead was properly sealing against the face of the dam. This inspection revealed no evidence of leakage around rubber seals. Tesmer, who made this first inspection, stated that he had a tense feeling of insecurity when first approaching the bulkhead, flashlight in hand and wading in knee deep water, realizing that only 12 in. of fabricated steel work stood between him and a water force of approximately 2,000,000 lb. (86 psi.).

To equalize stresses set up by this force on the bulkhead and also make certain that no lake water would ac-

cumulate therein, high pressure air bottles were manifolded together and 100-psi. air pressure was maintained within the bulkheads during the entire sealing operation.

Two penstocks were worked on simultaneously so that in the event of a big run-off, the water could be passed through No. 3 machine. Also, No. 3 machine was used for peaking purposes or boosting of voltage. The situation was reversed when Nos. 1 and 2 penstocks were repaired and No. 3 was closed down.

As soon as all water was drained from the penstock, workmen quickly shoveled out heavy quantities of mud and debris and allowed the interior to dry. To speed up the dryout process in the penstock electric heaters were installed. A 14x16-in. manhole cut out just ahead of the butterfly valve provided easier access to the penstock repair work and an emergency escape hatch. An area 45 ft. long was minutely inspected for faulty joints, seams and rivets. About 165 rivets were removed and replaced in each penstock, together with approximately 400 ft. of repair welding.

Cause of penstock leakage

A well lighted penstock interior enabled workmen to thoroughly repair any damage done over the years. Seams were welded when needed and a close watch was maintained over the possible development of stresses. When old rivets were ejected, it was discovered that poor plate alignment was the original cause of corrosion. Water had seeped past the rivets and corrosion resulted. Riveters had to ream all defective holes from the original $1\frac{1}{8}$ -in. opening to a $1\frac{1}{4}$ - or

$1\frac{3}{8}$ -in. size, depending upon amount of misalignment, in order to procure clean holes for new rivets.

The final corrosion repair was performed by Rust-Proofing, Inc., of Phoenix which sandblasted and coated the entire interior and exterior of the penstock and scroll cases. This was done in accordance with regulations of the Bureau of Reclamation and the American Waterworks Association.

Removal of bulkheads

When work was completed on penstocks No. 1 and 2, pressures were equalized on both sides of the penstock area by releasing water into the penstock area by the newly installed piping system. The bulkheads were removed quickly by the barge crew located 200 feet above on the surface of Apache Lake. The same repair procedure was followed for penstock No. 3.

In addition to work in the penstock proper, 8-in. cooling water takeoffs on the tops of penstocks Nos. 2 and 3 were relocated to the bottom of the penstocks. Formerly, when the generators were started, air would rush in and cause a hammering sound. The change eliminated the water hammering.

Other repair work included the replacement of guides on the gates and 5/16x6-in. rubber seals on the 9 radial and one 40x45-ft. spillway gates. This work was completed by the Power District's river crews after the lake level was lowered 50 ft. Rust on the big gate was removed after considerable sandblasting. The surfaces were then corrosion protected by metal spay and bitumastic coating.

Moorman builds Buford Dam with "Eucs"



J. W. Moorman and Son, well known Texas contractor, is using 31 Euclids to move about 4 million cu. yds. of earth and rock at Buford Dam 35 miles northeast of Atlanta, Georgia. This rolled earth fill dam, being built under supervision of the U. S. Army Corps of Engineers, will rise about 200 ft. above the river bed and will be 1,630 ft. long. It's a multi-purpose project that will provide improved navigation in the Apalachicola River during lowflow periods, as well as flood control, water storage for Atlanta and production of hydro-electric power.

Work on the main dam was started in June of 1954 and by January of this year was about 80% completed. In addition to the big yardage of earth fill, over a half million yards of rock must be moved so Moorman is using "Euc" Rear-Dumps and Bottom-Dumps as well as Scrapers.

Two Euclid water wagons play an important part, too, in providing the moisture necessary for proper compaction of the fill. A fleet of 16 "Euc" Scrapers with top extensions move loads averaging 16 bank yards on hauls of about 4,000 ft. The Bottom-Dumps and Rear-Dumps are loaded by shovels and draglines in an upstream borrow pit and from stockpiles placed by "Eucs" that worked on earlier contracts for saddle dikes, tailrace and powerhouse excavation.

Yes, Buford Dam is another 100% Euclid earth moving job . . . evidence that leading contractors like J. W. Moorman and Son depend on "Eucs" for their toughest jobs. Your nearby Euclid dealer will be glad to give you facts and figures on the complete line of Euclid equipment and help with your earth moving problems . . . see him soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



Euclid Equipment



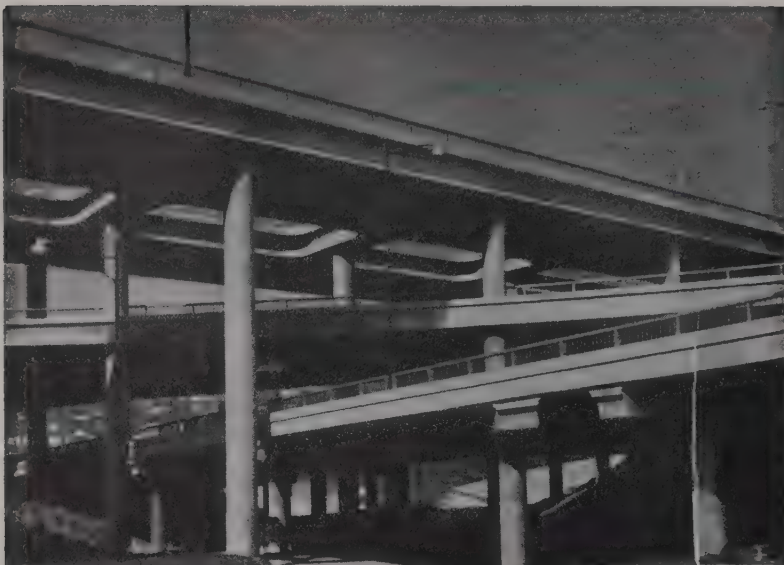


PHOTO COURTESY OF CALIFORNIA
STATE DIVISION OF HIGHWAYS

Concrete Evidence...

The planning and building of our vast freeway systems with their multi-level cloverleaves, their miles of paving, their complicated approach ramps are "concrete evidence" of the ingenuity and skill of the engineers who are designing them and the men who are building them.

The skill and ingenuity of the Utility design engineers is also playing an important part in their construction—the specially designed gondolas for hauling cement, the low beds being used for transporting the large earth moving equipment, the flat beds used to carry steel reinforcing are helping the contractor to complete the job on schedule and at the bid price.

Before you buy your next trailer, consult the Utility representative in your area for "concrete evidence" of their superiority.

Agents in all principal western cities

UTILITY

UTILITY TRAILER MFG. CO.
Los Angeles 54, California



Bolts on Golden Gate Bridge— Bottom lateral bracing

SUSTAINED WINDS of 69 mph. in December 1951 caused extreme mid-span oscillation of San Francisco's Golden Gate Bridge. These vibrations caused some damage and bridge authorities decided that the bridge should be stiffened against a future storm. Clifford E. Paine, consulting engineer for the bridge and one of its original designers, was called upon to handle this engineering problem. His solution was the addition of a bottom lateral bracing system which would, in effect, stiffen the bridge.

Specifications were submitted for bid in May of 1953, and Judson Pacific-Murphy Corp. was awarded the contract for the work.

Four carloads—190 tons—of high-strength bolts, the largest single order ever placed in the West, were furnished by Bethlehem Pacific to fasten together more than 4,700 tons of fabricated structural steel members. All told, about 200,000 1-in. diameter bolts were used.

High-strength bolts were specified by the design engineers for two reasons. From a design viewpoint greater friction is developed between plates using high-strength bolts rather than rivets. Also, they eliminate bulky riveting equipment which cannot be used during high winds. The result is a cost saving through speed-up in erection time.

Six bolting gangs

Judson Pacific-Murphy's erection plan involved two operations which were conducted simultaneously—each working from opposite ends of the bridge toward the center. Each operation employed approximately six bolting-up gangs. Each gang tightened 350 bolts per day, making a total of 4,200 bolts. Bolts were tightened to a specified tension of 42,500 lb.

Erection of the bottom lateral system on the Golden Gate Bridge was Judson Pacific-Murphy's first job of high-strength bolting on such a large scale. They report that this type fastener is extremely adaptable to their normal steel erection operations.

Turnpike Builders

THREE MARION 111-M SHOVELS SPEED MAINE PROJECT

Nearly 5 million yards of excavating, including a half million yards of rock, is the job of 3 MARION 111-M machines owned by The Nello L. Teer Company of Durham, North Carolina.

Extending the Maine Turnpike, their 4 cu. yd. dippers chew through rock, shale and borrow pits to keep a fleet of trucks on the move. One of the machines also works regularly as a 5½ cu. yd. dragline.

Get the facts about the production of 111-M machines where BIG yardage is needed and the digging is tough.



INQUIRE FOR SALES AND SERVICE INFORMATION:

LOS ANGELES 7, CALIFORNIA
Calavar Corporation
2700 S. Broadway
Phone: Richmond 6292

SOUTH SAN FRANCISCO, CALIFORNIA
Marion Power Shovel Co.
W. D. Calland, District Manager
326 Shaw Road
Phone: Juno 8-10250

SEATTLE, WASHINGTON
Star Machinery Company
241 Lander Street

SPOKANE 8, WASHINGTON
Star Machinery Company
E. 415 Sprague Avenue
Phone: Sprigside 6121

MEDFORD, OREGON
Haupt Tractor Company
Phone: 2-5278

BOISE, IDAHO
Burt Equipment Company
P. O. Box 1191
Phone: 7619-W

OAKLAND, CALIFORNIA
Buran Equipment Company
777 100th Avenue
Phone: Trinidad 2-5335

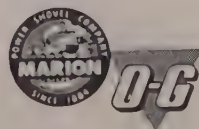
SANTA CLARA, CALIFORNIA
Buran Equipment Company
2380 Lafayette
Phone Cherry 3-0323

MARION • OSGOOD • GENERAL

Marion Power Shovel Co. • Marion, Ohio, U. S. A.

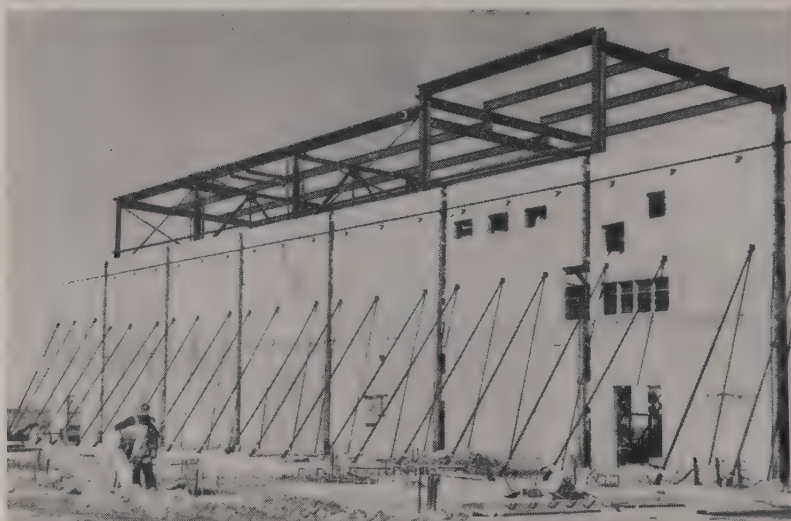
PHOENIX, ARIZONA
Marion Power Shovel Company
E. J. Riggs, Jr., District Manager
1017 N. 22nd Avenue
Phone: Alpine 2-5371

PORTLAND, OREGON
Marion Power Shovel Co.
Wm. F. Lanus, District Manager
3133 N. E. 87th Place
Phone: Kenwood 8-550

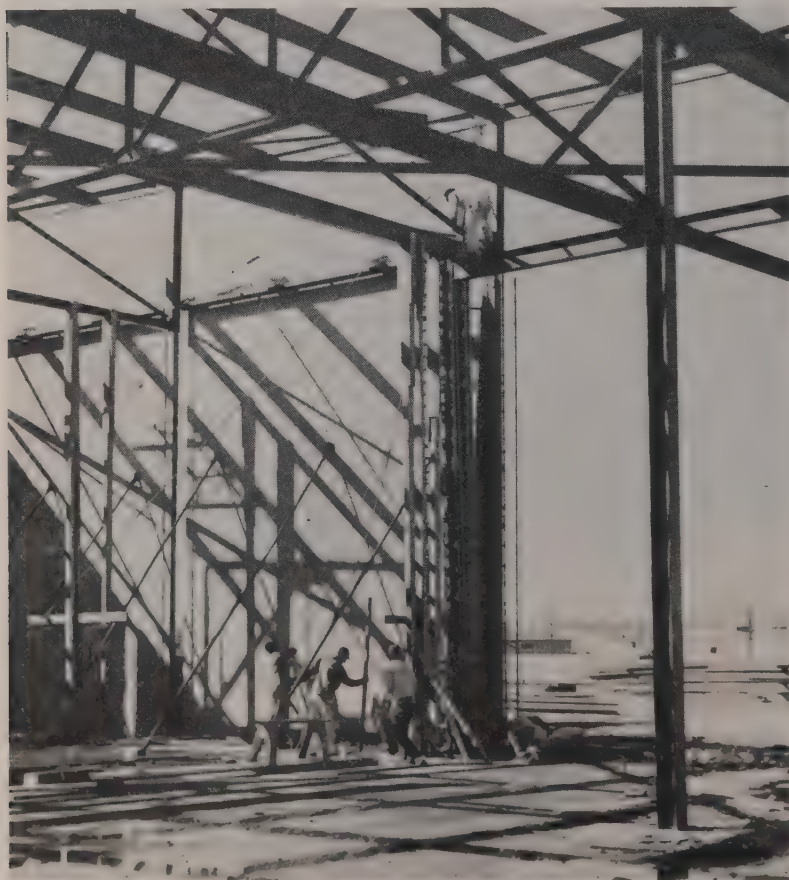


A Subsidiary of
MERRITT-CHAPMAN & SCOTT CORP.

Building in reverse: structural steel roof up before tilt-up walls



PIPE BRACES HOLD UP these 25-ft. wide by 27-ft. high tilt-up walls that were precast in the foreground area. Reverse erection procedure used on this job resulted from rapid schedule involved.



PILASTER FORM next to door opening is being erected by carpenters. Temporary shores of 8x8 timber can be seen beneath the ends of trusses next to the tilt-up walls.

WHEN YOU ARE faced with a tight schedule such as confronted the Vinnell Co., Inc., of Los Angeles you sometimes do things backwards as compared to ordinary construction procedure. Such was the case at the Air Force Flight Test Center, Edwards Air Force Base, when the tilt-up walls of a 300x600-ft. maintenance shopbuilding were erected after the interior structural steel columns and trusses.

Conventional methods

Normal procedure would have been to pour the floors, cast the tilt-up walls on the floor, and then erect them before the steel. The advantages in following this procedure are two fold: (1) the floor slab can be utilized as a casting slab, and (2) after the pilasters have been poured connecting wall units, the anchor bolts are ready to provide a seat for the structural steel trusses.

Reasons for the reverse construction were closely tied in with the large amount of work required to be done on the foundation of the large hangar located adjacent to the shop and described in **Western Construction**, March 1955, p. 53. As a result of the time required in the field to pour both concrete footings and slabs, the steel division of Vinnell Co. had completed the fabrication of structural steel for the maintenance shop.

Solution is found

Schyler Walker, general superintendent for the project, told the steel erection gang to go ahead with their work. He very satisfactorily handled the steel trusses that would tie into the tilt-up walls by having them shored up with 8x8 posts. The 300 tons of steel for the shop went up in only 30 days and allowed the steel erection gang free to go on with the larger hangar erection.

Tilt-up wall units which measured 25 ft. wide, 27 ft. long, and 6 in. thick were poured on casting pads adjacent to their intended position and lifted into place by truck cranes using pickup points that had been cast into the slabs. Average weight of the units cast was 25 tons.

The Air Force Flight Test Center, commanded by Brigadier General J. S. Holtner, is one of 10 centers of the Air Research and Development Command. George Davis is project engineer representing the Los Angeles District, U. S. Army Corps of Engineers. Col. A. H. Frye, Jr. is the Los Angeles District Engineer.



The Truck Mixer that Fits Western Needs

The Cal-Rex Adjusta-Wate

Western ready-mix operations *are* different . . . different in over-all operating conditions!

To serve these specific needs better, Chain Belt Company designed the Cal-Rex Adjusta-wate Moto-Mixer®...and builds it in our Los Angeles Plant. The Cal-Rex is *right* for all Western ready-mix operations...fits the *operating* needs of any Western ready-mix concrete producer.

With the Cal-Rex, you get all the exclusive Adjusta-Wate advantages that add up to more yardage per day

and per season . . . more profit for you . . . better concrete delivered to your customers' forms . . . the way *your* customers want it. You get faster charging and discharging . . . thorough mixing . . . greater legal pay loads . . . lower cost . . . greater customer satisfaction.

Your Rex Distributor will be happy to demonstrate why you get more . . . make more with the Cal-Rex Adjusta-Wate. CHAIN Belt Company, 7601 Telegraph Road, Los Angeles 22, California.



CHAIN BELT COMPANY

For maximum capacity, strength and durability, specify CONCRETE PIPE



For culverts that really last under the loads and the impacts of modern traffic, there's nothing quite so durable and efficient as concrete pipe that has been properly designed, bedded and backfilled.

Concrete pipe for culverts, storm drains and sanitary sewers is made Right in your own district.

For specific information and address of your nearest association manufacturer-member, write to Western Concrete Pipe Association, Department

Western CONCRETE PIPE Association

P.O. BOX 152 FRESNO CALIFORNIA

Six 250-ton freezers for Gorge Dam cutoff walls

GORGE HIGH DAM contractors, Merritt-Chapman & Scott Corp. of New York City, and the Savin Construction Corp., East Hartford, Conn., have started clearing the right-of-way for the new section of the Newhalem-DuBois Highway from Seattle Creek to Ferry Bar and widening of the present road from Devil's Elbow downstream to Newhalem. Shovels already have been moved in to begin excavation as soon as the clearing is completed.

The following is an outline of the process which will be undertaken in freezing the Gorge High Dam cofferdam. The refrigerating equipment, furnished by The York Corp., consists of six completely self-contained brine and/or water cooling systems. Two of these units are equipped with larger condensers and chillers for handling the maximum high temperature water cooling load.

All six units will be operated on maximum brine cooling load (250 tons) when freezing each cutoff wall. Capacity of each unit, cooling 167 gpm. calcium chloride brine to -10 deg. F., is 42 tons. Total brine flow is 1,000 gpm. Three units, capacity 126 tons, will be used for holding duty on each frozen cutoff wall. The two units with the larger condensers and chillers will be operated on water or high temperature brine for the concrete cooling load. Total capacity is 150 tons, 750 gpm. at +25 deg. F.

Points to 250 ft.

The brine freezing points will be spaced at 4-ft. intervals across the river bed. Approximately 80 of the freezing points will be required for each phase of the freezing program. The depth of these holes will vary from a few feet to 250 ft. The holes will be cased with 6-in. casing and the freezing pipes will be concentric with the casing and will extend to within 6 in. of the bottom of the holes. The freezing pipes will consist of a 1½-in. steel pipe inside a 3-in. steel pipe, the latter being capped on the bottom end, with brine flowing down the inside pipe and up the annular space between the two pipes. The brine supply and return headers are 8-in. steel pipes. All freezing coils will be connected in parallel and each coil will be single pass with immediate return of the brine to the chiller. Because of the varying depth of the freeze holes, each coil will require a throttling valve to regulate the quantity of brine and thus the freezing rate. Each coil will also require cut-off valves for isolation in case of a coil rupture.

Reason for the elaborate stabilization program is proximity upstream of existing diversion dam. Riverbed material is likely to wash away if usual cofferdam methods, including continued pumping, were used.



Pasadena Pioneers Bridge. California Department of Public Works, Division of Highways. Guy F. Atkinson Company, Builders.

High, wide and handsome

"High, wide and handsome" aptly describes the Pasadena Pioneers Bridge. It equally describes today's bolder and more imaginative approach to concrete design by architects and engineers.

Use of this strong, fireproof and enduring material is further encouraged by its ready and dependable supply. Few growing communities now fail to provide ready mixed concrete, produced to rigid specifications and delivered in truck mixers of certified design, capacity, mixing speed and accuracy of water control.

You have a right to insist on this Rating Plate. It certifies compliance with high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.



These manufacturers comply with Bureau standards:

BLAW-KNOX EQUIPMENT DIVISION
Pittsburgh, Pa.

CHAIN BELT COMPANY
Milwaukee, Wis.

CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.

CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

IMPERIAL CONSTRUCTION EQUIPMENT CO.
Melrose Park, Ill.

THE JAEGER MACHINE COMPANY
Columbus, Ohio

THE T. L. SMITH COMPANY
Milwaukee, Wis.

WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.

WORTHINGTON CORPORATION
Plainfield, N. J.

ARIZONA

DESIGN OF 500 family units, estimated to cost \$4,000,000, is now under way for Fort Huachuca, according to Col. J. A. Graf, San Francisco District Engineer for the Corps of Engineers. Architects Blanton and Cole of Tucson are in charge of the design work which should be finished this April. Advertising for bids and subsequent award by the FHA in May or June should follow. This is a rush project being done under Public Law 211 which authorized the Wherry Housing Projects and is due to expire June 30. Further information is available from Col. Graf's office at 180 New Montgomery Street, San Francisco.

NEGOTIATIONS AFFECTING 16,000 construction workers are under way to provide a new 5-year agreement between the Associated General Contractors, Arizona Building Contractors, and six AFL building crafts. The new agreement is to replace the 5-year agreement signed in 1950 which expires May 31. Cov-

ered by the agreement are about 1,400 contractors, some members of both groups, and the six basic crafts: laborers, carpenters, teamsters, operative engineers, cement finishers, and reinforcing ironworkers. The present agreement gave each of the six crafts a 12½¢ an hour increase in 1950 with further regularly-scheduled increases amounting to 40¢ an hour in the next five years. Machinery for settlement of grievances worked well with two levels of arbitration provided. Only one case in the past five years had to go beyond the two-board level.

ANOTHER 4-LANE highway section will be added to the Arizona Highway System between Phoenix and Mesa. A \$158,976 contract was awarded to Tanner Brothers Construction Co. for paving the 4.6-mi. long section.

RECENT MAJOR CONTRACT AWARDS and low bids in Arizona include a low bid of \$427,535 submitted by W. J. Henson of Prescott for 7.2 mi. of grading and surfacing on Route 69 beginning at its junction with Route 79. Isbell Construction

Co. of Phoenix submitted a low bid of \$283,148 for grading, draining, and base-mix surfacing on three separate sections of US 60 about 43 mi. northeast of Globe. **Kitchell-Phillips Contractors, Inc.**, of Phoenix received a \$240,575 award for the installation of new water mains and fire hydrants on the east side of Phoenix.

Dale F. Payne of Phoenix submitted a low bid of \$276,799 for grading and surfacing 6.3 mi. of the Salt River Valley-Hardt Creek Highway in Maricopa County. **Pioneer Constructors** of Tucson submitted a low bid of \$207,224 for the grading and draining of 9.4 mi. of new alignment of the Bush highway 19 mi. northeast of Mesa. **Tanner Brothers Contracting Co.** of Phoenix submitted a low bid of \$272,247 for 4.2 mi. of grading, draining, and surfacing on US 77 near Ashfork. **Western Constructors, Inc.**, of Phoenix submitted a low bid of \$112,629 for construction of two bridges on Route 92.

CALIFORNIA

NEWS ON FREEWAYS — Right-of-way acquisition is to be stepped up on the San Diego freeway through Orange County. A speed-up in federal aid will enable this and other freeways to be completed in 2 or 3 years instead of the scheduled 10 years. A large bid of \$2,210,076 was recently awarded to Winston Brothers Construction Co. for a 5-mi. stretch of the San Bernardino freeway. This section will run from West Covina to the west city limits of Pomona and will connect with a 13-mi. stretch of freeway completed last November. In the San Francisco area, a low bid of \$5,213,162 was submitted by MacDonald, Young & Nelson, Inc., and Morrison-Knudsen Co. of San Francisco. Their bid was for construction of the first unit of the Embarcadero freeway which will be a multi-level terminal separation between the San Francisco-Oakland Bay Bridge approach near Third Street and Main and Mission Streets.

FIRST TIME USE of pretensioned piles is coming with the award of \$1,313,870 contract to Ben C. Gerwick, Inc., for construction of a wharf connecting piers 15 and 17 on the Embarcadero in San Francisco. An outstanding feature of the project, designed under the supervision of S. S. Gorman, chief engineer for



RAPID HANDLING OF LARGE BLASTED ROCK

At the Cherry Valley Dam in the Sierra Nevadas of central California, blasted rock will soon be moving from the quarries to the dam with the aid of this Bucyrus-Erie 150-B shovel and Euclid end-dump trucks. About 3,400,000 cu. yd. of granite will be deposited in the outer upstream and downstream blankets. This project, about 50% complete, is being handled by Guy F. Atkinson Co. for the Public Utilities Commission of San Francisco.

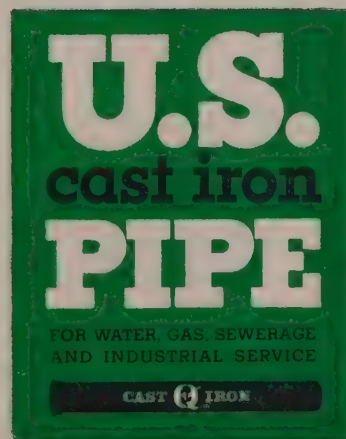


Giant crops of microscopic algae...rich in vital food elements...grown under the sea to help feed a hungry world. Scientists say it will come.

100 years from now...WE'LL "FARM" THE SEA TO FEED A HUNGRY WORLD!

Hard to imagine. But in the fabulous world of tomorrow, there'll be one familiar note: water and gas will still be carried by the dependable, cast iron pipe laid today. Over sixty American cities still use cast iron water and gas mains a century and more old. And today, U.S. Pipe...centrifugally cast and quality-controlled from mines to blast furnaces to finished product...is even tougher, stronger, more durable.

U. S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.



U. S. PIPE AND FOUNDRY CO., General Office: Birmingham, Alabama

A wholly integrated producer from mines and blast furnaces to finished pipe.



How fluid drives help make new General 320 Shovel a "hog" for yardage

Full-crowding power is designed into the new General Model 320 $\frac{3}{4}$ -1 yard Shovel . . . for Osgood-General is offering a choice of Twin Disc *fluid drives*.

For operating conditions presenting extreme load demands, the new Model 320 is available with a Twin Disc 3-Stage Torque Converter, providing controlled torque multiplication.

For moderate load demands, the Twin Disc Fluid Power Take-Off is provided. With *either* drive, owners will have a "hog" for yardage . . . through cushioned power applied through fluid, eliminating mechanical connection. Work cycles are *faster*, productive output is *higher*, *without* engine lugging or cable-snapping. Add Twin Disc Friction Clutches as standard equipment on the Model 320's boom hoist, swing assembly, and for travel—and you have *engineered power linkage, with the right drives in the right places*.

Write Twin Disc today for Complete Line Bulletin No. 305.



Model 320 features Twin Disc Heavy-Duty Friction Clutches for swing and travel, boom hoist and lower, retraction, and power take-off.



Model CF Torque Converter (shown) on diesel-powered Model 320. Fluid Power Take-Off also available.



TWIN DISC

Friction Clutches and Fluid Drives

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Keokuk, Illinois

Branches: 2950 Leonis Blvd., Los Angeles 58, Calif. • 820 1st Ave. S., Seattle 4, Wash.

the Harbor Board, is the use of prestressed, pretensioned concrete piles as an alternate in the specifications as compared to the base design of shotcreted timber and precast concrete piles. Involved are 1,863 composite prestressed concrete-timber piles having an upper 25 to 30 ft. long prestressed top, and 139 prestressed piles each 132 ft. long. Each of the long piles weighs 17 tons—a weight saving of 10 tons per pile over the 27-ton long precast piles of the base design. Robert H. Singer, prestressed representative for Ben C. Gerwick, Inc., states that their Petaluma yard will be augmented by adding three 500-ft. pretensioning beds.

CONSTRUCTION CONTRACTS awarded by the South Pacific Division of the Corps of Engineers amounted to over \$5,000,000 during the month of February according to Col. Paul D. Berrigan, division chief. The largest single contract awarded, \$1,093,779, went to George H. Ball of Danville for strengthening existing apron and apron-parking facilities at George Air Force Base near Victorville. Other contracts awarded included one of \$862,400 to Robert E. McKee for ordnance storage facilities at March Air Force Base, and a \$984,219 contract to Ashton Building Co. of Tucson for ordnance storage at Davis-Monthan AFB.

FOLSOM DAM, last described in *Western Construction* in December 1954, is progressing so steadily that storage of water in the reservoir behind the dam has already started and power production is scheduled to begin this month. Prime contractors on the 350-ft. high concrete dam are Merritt-Chapman & Scott Corp., and the Savin Construction Corp.

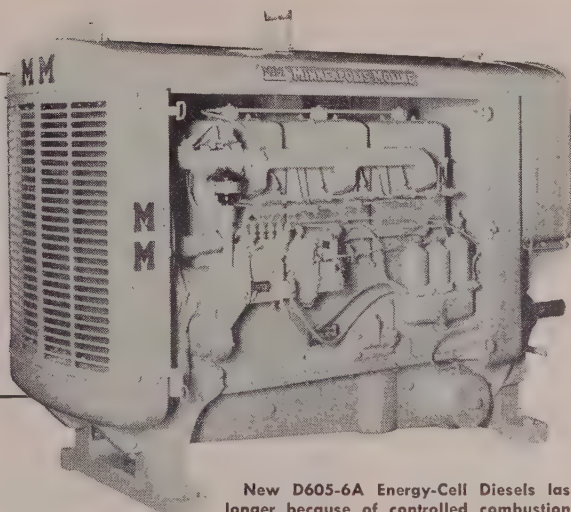
CONTINUING WORK on the Los Angeles Army Engineers Eaton Wash Flood Control Project came with the \$1,454,838 award to the Oberg Brothers Construction Co. The project involves paving and reinforcing 2 mi. of the Eaton Channel below Ramona Boulevard to the Rio Hondo confluence at Encinita Avenue. The job is scheduled for completion February 1, 1956.

BID CALLS were advertised for early in March for construction of the first and second units of a science building at the new Kellogg campus of the California State Polytechnic College, Los Angeles County. The California Division of Architecture announced that funds available for the project amounted to \$1,250,000. Gross floor area of the science building will be 71,725 sq. ft. As soon as funds are available, six other buildings will be designed and constructed—including a cafeteria, gymnasium, agricultural unit, engineering building, library, and agricultural building. The science building will be the first unit of construction.

WHY IT PAYS TO OWN INDUSTRIAL DIESELS WITH REMOVABLE CYLINDER BLOCKS AND HEADS

New MM diesels were developed with *energy-cells* to make them last longer, do more and go farther with less down-time and maintenance.

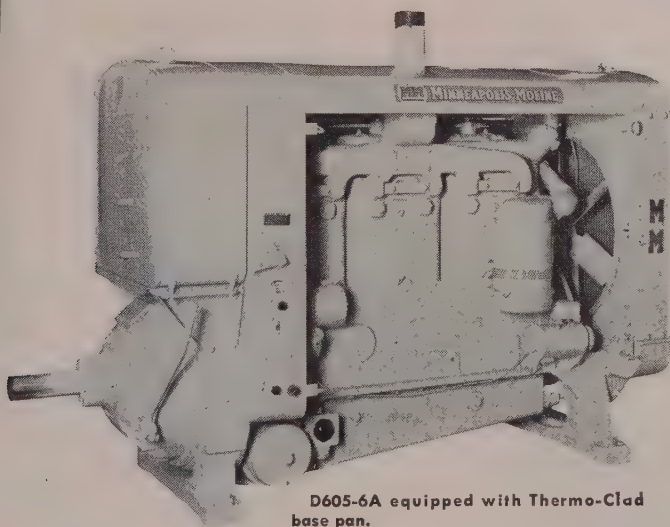
To provide owners with lower cost maintenance when necessary MM diesels are the most advanced and soundly engineered because the cylinder blocks are cast in pairs separate from the crankcase.



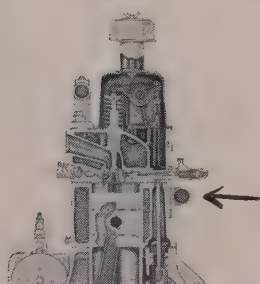
New D605-6A Energy-Cell Diesels last longer because of controlled combustion, patented exclusive fuel filter with gravity and by-pass features, self-cleaning pintle type nozzle, directed cooling of area around combustion chambers.

YOU GET THESE ADDED ADVANTAGES . . .

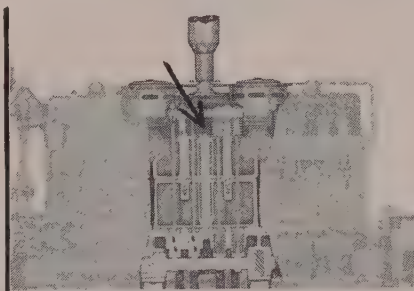
1. Ease of maintenance and low cost emergency service because paired cylinder blocks, pistons, and rods can be removed as a unit by one man.
2. Prolonged time between overhauls by use of close-grain cast iron that provides best cylinder lubrication for reduced wear.
3. Less service due to minimum distortion as MM cylinder heads, cylinder blocks and crankcase are virtually strapped together by full-length steel studs anchored in the main bearing bulkheads. (Transmits combustion pressure to heavy crankcase that has extra depth below center line of crankshaft.)
4. Efficient operation obtained by uniform cylinder expansion . . . the result of controlled cooling and long oil-cooled cylinder wall skirts below ring travel area.
5. "New engine" performance at extremely nominal cost can be obtained right in the field without special tools using factory matched cylinder blocks, pistons, pins, and rings. (Blocks are dowelled to crankcase to assure bore is square with crankshaft and pistons are precision fit to bore . . . equivalent to a factory job.)
6. Lower initial cost stems from high production parts by casting cylinder blocks in pairs separate from the crankcase.



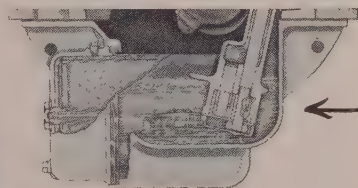
D605-6A equipped with Thermo-Clad base pan.



1. Cylinder head and block assembly shows coolant entrance at hottest point first and extra long skirt wall construction.



2. Close-up of how MM cylinder heads and blocks and crankcase are tied into a single rigid unit with long studs.



3. A D283 feature is extra large oil filter enclosed in base pan, floating-screen oil pump intake, and pump located in bottom of base pan.

Optional Thermo-clad water-blanketed base pans for all units also have oil filter included to give more effective filtering.



MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA



THIS ISN'T A TIBER DAM FOR SIZE, BUT—

A dam a day is about par for the duo of International TD-18A crawler tractors with matched scrapers operated by Tony and Guido Manuella, contractors of Sedgewick, Colorado. Averaging 100 cu. yd. per hr. this team has been able to complete 1,300-cu. yd. earth dams (one shown here) in slightly less than 11 hr.

MAKING A 4-LANE road of U.S. Highway 40 over the Sierra Nevada still appears in the distant future. The project's chances would be greatly enhanced by approval of President Eisenhower's multi-billion dollar highway program. Military and defense authorities agree that prompt steps should be taken to construct the 4-lane route.

LACK OF ADEQUATE sewage disposal facilities has resulted in an emergency situation in Los Angeles. Pending a vote on the April 5 municipal election on a \$60,000,000 sewer bond issue, Mayor Poulson has asked city departments to withhold approval of subdivisions in areas where sewer facilities are lacking. Expansion of the Hyperion Sewage Plant and the installation of many additional miles of sewer pipe will be needed to handle this critical problem.

PROGRESS ON ROAD relocation at Monticello Dam continues at a good clip. On the \$1,663,806 contract held by Stolte-Gallagher & Bert-Stevens seven of the 10 mi. are very heavy cut and fill sections. The 450-day completion time of the contract is up this November. Further road relocation work estimated to cost \$3,786,000 is reported by Napa County Engineer R. P. O'Neill. About 20 mi. of county highway skirting the west and northwest perimeter of the reservoir need to be relocated. A cost breakdown of this figure shows \$2,684,000 for actual construction, \$1,075,000 for bridges, and only \$27,000 for rights-of-way.

DELIVERY of the first rock for the \$300,000 sea wall at Redondo Beach started last month. The sea wall describes an inshore curve extending six blocks along the shoreline and is being constructed by J. B. Stringfellow of Redlands. The project is a

joint city-county, and state undertaking and follows the design of a pilot project installed a year ago.

PLANS of the Sacramento Redevelopment Agency for a 15-block Capital Mall slum clearance project should be well advanced this summer with the recent favorable reaction from San Francisco bonding houses to a proposed sale of \$1,500,000 worth of bonds. These bonds would pay off the required one-third of any loss sustained by the project when the cleared land is sold to private developers. Plans can be completed in the next few months and ready for approval by early summer. A large additional federal grant would be necessary to pay for the actual cost of buying the property and razing the existing buildings.

THE BUREAU of Reclamation has proposed that Congress authorize construction of the first unit of the 30-mi. long Folsom South Canal in southern Sacramento County. The canal, utilizing water from the currently being constructed Folsom Dam, would take off at Nimbus Dam (7 mi. below Folsom Dam), skirt Mather Air Force Base on the east, cross the Consumnes River, and extend to Dry Creek on the San Joaquin County line. Estimated cost of the canal is \$17,812,000 while estimated facilities to distribute the water from the canal to farmlands would cost an additional \$26,159,000. Cost of the distribution and drainage features of the unit would be repaid to the government in 40 annual installments by the water users. Ground water level in the area to be covered by the canal has dropped an average of 1.3 ft. a year between 1946-1953.

POTENTIALLY THE LARGEST single water project ever undertaken, the Feather River Project, has been

outlined by State Engineer A. D. Edmonston in a 190-page report now before the State Legislature. The report recommends an immediate \$16,000,000 appropriation to cover costs of rights-of-way, surveys, plans, and negotiations for water rights. State Public Works Director Frank B. Durkee, Water Projects Authority Chairman, has called for speedy action.

Financing of the undertaking which dwarfs even the Federal Government's Central Valley Project would be by issuance of general obligation bonds backed by the State Treasury. The bonds would be repaid over a 71-year period by water and power sales. Highlights of the project are the Oroville Dam which would be 730 ft. high (concrete) and would be the world's highest. Water taken from this dam would follow a circuitous route down the west side of the San Joaquin Valley, up over the Tehachapi Mountains by a series of pumps and then into the Los Angeles distribution system. Some of the potential stumbling blocks in the execution of this plan are as follows: (1) The State Attorney General has ruled that the counties of water origin have first claim on the water source, (2), the pending Colorado River water suit with Arizona, (3) the similarity of this project with the Federal Government's proposed Trinity-San Luis Project. The State Legislature must consider these problems and would need to enact certain basic law changes before the project could be undertaken.

RECENT MAJOR CONTRACT AWARDS and low bids in California include a low bid of \$1,620,049 submitted by Guy F. Atkinson Co. of Long Beach for grading and surfacing to provide a six-lane divided section of the San Diego County freeway. Gordon H. Ball of Danville submitted a low bid of \$1,093,778 for strengthening of the operational apron at George Air Force Base at Victorville. Daley Corp. of San Diego submitted a low bid of \$609,849 for 3.5 mi. of grading and surfacing between Alvarado Canyon and Brockton Street in San Diego County.

Griffith Co. of Los Angeles submitted a low bid of \$2,817,519 for 2.7 mi. of grading and surfacing and construction of bridges on the Santa Ana freeway between Lewis Street and Broadway in Orange County.

George A. Fuller Co. of Los Angeles received a \$3,000,000 award for construction of a propulsion center at Canoga Park. Match Brothers & Match Bros. Paving Co. of Colton submitted a low bid of \$748,257 for 5.2 mi. of grading and paving on Route 26 in Riverside County.

Oberg Bros. Construction Co. of Inglewood submitted a low bid of \$219,721 for excavation, drainage, and construction of a railroad underpass near Slauson Ave. in Los An-

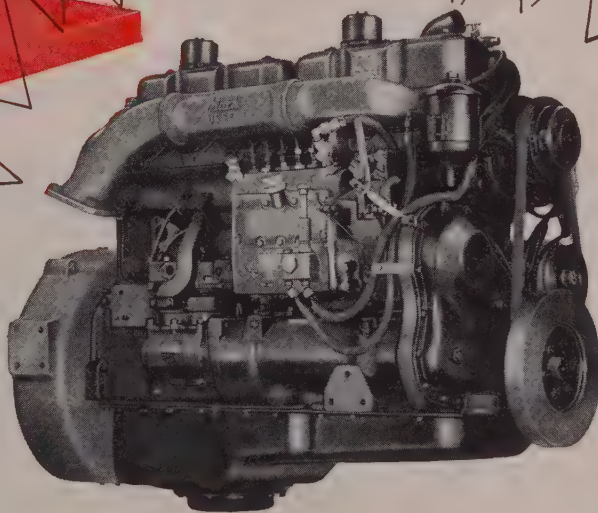
STILL

1

... IN DIESEL TRUCK SALES MACK

FAMOUS MACK THERMODYNE® DIESEL

—renowned among leading fleet operators for its amazing fuel economy, powerful performance, and freedom from down-time.



During 1954 operators again bought more Mack diesel-powered trucks than any other make.

What's more—for '54 Mack earned an even larger share of the market—30.74% of all diesel truck sales—every year a greater share than the year before.

The reasons for Mack's increasing diesel sales and continued top-ranking position are not hard to find. Throughout the nation, operators—large and small—hail the unrivalled fuel economy, reliability and efficiency of the Mack Thermodyne Diesel engine.

No other engine introduced in recent years has met with such enthusiastic owner preference. No

other engine gives such big savings in more miles per gallon, less down-time and stand-out performance. A worthy inheritor of the famous Thermodyne name, this great diesel has surpassed even the highest expectations of its manufacturer.

Ask any user of the Mack Thermodyne Diesel. His experience explains why, more and more, the swing is to Mack.

MACK TRUCKS . . . Los Angeles • Denver • San Francisco • Seattle • Portland • Salt Lake City 3044

geles County. **J. A. Thompson & Son, Inc.**, of Inglewood submitted a low bid of \$1,328,738 for 1.2 mi. of grading, surfacing, and construction of an undercrossing and retaining wall for the City of Los Angeles. **Winston Brothers Co.** of Monrovia submitted a low bid of \$2,210,075 for 5.2 mi. of grading, paving, and construction of a reinforced bridge and two undercrossings east of Citrus Ave. in Los Angeles County.

COLORADO

WATER IS NOW RUNNING into the new \$1,000,000 Boulder Reservoir. The earthfill dam which is 48 ft. high, maximum base width of 265 ft., and 1.2 mi. long was just recently completed by Colorado Constructors, Inc. for \$773,861. Normal storage capacity will be 6,100 ac. ft. with a maximum capacity of 13,100 ac. ft. for flood storage between October one year and May of the next. The new dam, 9 mi. northwest of Boulder, is the third of three water projects constructed under a \$2,000,000 bond issue handled by the city.

READY-MIX CONCRETE was difficult to obtain in Denver recently when 500 yardmen and drivers affect-

ing 25 sand and gravel firms walked out after seeking a 10¢ hourly pay raise. Some of the smaller firms (and not members of the Denver Sand and Gravel and Ready-Mix Concrete Association) signed contracts that raised the teamsters' pay from \$1.72 to \$1.92 an hour. The Association had offered a 5¢ hourly raise.

THE COURT HOUSE SQUARE development being undertaken by Webb and Knapp is well under way with relocation of a storm sewer running through the square now being constructed. Foundation excavation for the \$35,000,000 building will extend to 60 ft. below street level in places. One Denver contractor recently demanded that the city cause the work to be halted, charging that excavation in the square might run into pockets of quicksand and cause danger to adjacent buildings. The work continues on since the Webb and Knapp officials have the project well covered by accident and property damage insurance and will be using adequate construction methods using sheet piling and cofferdams to prevent any cave-in, settling or other possible disturbance of underground strata that would affect adjacent structures.

TWO THINGS are holding up the toll highway tunnel under the Con-

tinental Divide. One of these is to select a suitable site. Several have been considered but no choice has been made. For financing the tunnel, Governor Johnson has proposed that funds be borrowed from the \$35,000,000 Highway Anticipation Warrant Issue recently passed. Funds would be repaid with full receipts from the tunnel. Choosing a tunnel route that will be designated as part of the Federal Interstate Highway System is important if federal participating funds are to be obtained for its finish.

THE GROWING PAINS of Denver call for some urgently needed Public Works Projects. A possible bond issue to be submitted to Denver voters at the May 17 municipal election could aid in the construction of such important items as expansion of sewage treatment facilities, extension of mains to newly developed areas of the city, establishment of a one-way street in downtown Denver, viaduct repair, additional bridges and other items that bring the total cost of needed projects to \$10,000,000.

RECENT MAJOR CONTRACT AWARDS and low bids in Colorado include a \$399,714 award to **Lowdermilk Brothers** of Englewood for 4.5 mi. of grading and surfacing in

BITUMULS® assures high-quality in-place mixes ...

RESEARCH is the REASON



WHEN you're working with in-place or native material and you get a thoroughly-coated mix like

this rolling off the blade, it's no accident. There's a reason for it, and that reason is *Research*.

Today, we maintain the most extensive Research Program in the industry. Over the years have come such developments as Bitumuls for use with "hard-to-coat" native aggregates; Bitumuls for use with damp or wet aggregates; Bitumuls for use in damp or inclement weather.

Full technical information on all grades is available from Bitumuls Engineers who work out of offices from coast to coast. Also, free illustrated booklets are yours on request.



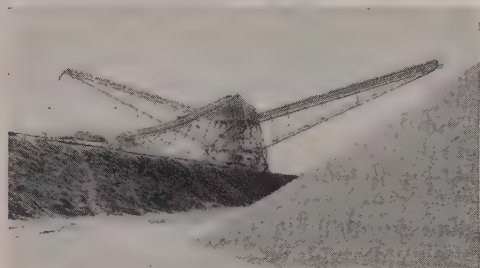
**AMERICAN
Bitumuls & Asphalt
COMPANY**

200 BUSH STREET • SAN FRANCISCO 4, CALIFORNIA

Oakland 1, California • Seattle, Washington • Portland 7, Ore.
Inglewood, California • Tucson, Arizona



Stockpiles Phosphate Rock 7 Stories High — and Keeps Handling Costs at Rock Bottom



Stacker discharges 1088 foot center trunk line belt conveyor to either side. Rock is piled at a rate of 635 long tons per hour.

This giant traveling stacker has a "wingspread" of 220 feet and stands taller than a 7 story building. Engineered by S-A for the Virginia-Carolina Chemical Company's plant at Nichols, Florida, it stockpiles huge quantities of phosphate rock for drying prior to final moisture removal in a huge kiln. Rock moves from storage to the kiln via a tunnel belt conveyor system.

The phosphate rock is fed to the stacker wing conveyors by a 36-inch trunk line belt conveyor running on 1088 foot centers along the storage area. Rock flows to either of the two wing conveyors extending from the stacker tower at a rate of 635 long tons per hour. Rail clamps permit stationary operation of the stacker which forms piles about 90 feet high.

S-A "Simplex" carriers with spun end rollers turning on roller bearings protected by labyrinth seals are used on both trunk and boom belts. Other design features include S-A Hold-Backs which prevent belt reversal in case of power failure and Spring Type Belt Wipers which insure a clean belt surface in contact with the return rollers.

While a stacker piling rock 90 feet high may be beyond your needs, the same S-A engineering and manufacturing skill is available for your own specific problems—to help you handle your product at lowest cost per ton, using whatever type of bulk material handling equipment is best for you. Write, without obligation, for a free survey.



STEPHENS-ADAMSON MFG. CO.

Factories at Aurora, Illinois • Los Angeles, California • Belleville, Ontario

2227 E. 37th Street
Los Angeles 58, Calif.

1007 E. Burnside St.
Portland 14, Ore.

151 Mission Street
San Francisco 5, Calif.

714 Joseph Vance Bldg.
Seattle 1, Wash.

why gamble
on point performance?

insist on **ESCO**

TESTED POINTS

for... DRAGLINES
DIPPERS
HOE DIPPERS
CLAMSHELLS
FRONT END LOADERS
DOZER ROOTER
RIPPERS



look for
this mark
of uniform
high quality
on every **ESCO** point.

Self-Sharpening ESCO Points are individually Brinell tested to be sure they have exactly the correct degree of abrasion resisting hardness for faster digging and longer life.

ESCO

ELECTRIC STEEL FOUNDRY CO.

2144 N. W. 25TH AVE., PORTLAND 10, OREGON

712 PORTER ST., DANVILLE, ILL.

Offices and Warehouses: Honolulu, Hawaii; Houston, Texas; New York, New York; Los Angeles, San Francisco, California; Seattle, Spokane, Washington; Centralia, Pennsylvania; Eugene, Oregon; Salt Lake City, Utah. In Canada: Vancouver, B. C., and Toronto, Ontario.

Roosevelt National Forest in Boulder County.

IDAHO

CONSTRUCTION WORK on the long bridge over Lake Pend Oreille at Sandpoint is well under way again. Equipment has been pulled out of winter storage and precasting of the concrete slabs forming the deck is going on. Work on the structure is a little over 50% completed. Hauling of fill for the north end of the bridge is continuing by subcontractor H. G. Palmberg.

A NEW PHYSICAL EDUCATION building is going up at the Boise Junior College. The Jordan-Wilcomb Company submitted a net bid of \$450,148 for the 172x151-ft. building which will seat 3,500 people. The exterior of the building will be red brick to match other buildings on the campus.

19,000 PAGES of testimony were given during the past year on the controversial Hells Canyon development. A recent act by the Idaho Power Co., which proposes to build three dams in the Snake River where the federal project has been proposed, places the decision before the Federal Power Commission examiner for decision. Within the next month, the FPC should make its final decision on whether or not the private power dams should be licensed. An authorization bill has already been introduced in this session of Congress for the Hells Canyon Project.

RECENT MAJOR CONTRACT AWARDS and low bids in Idaho include a \$250,708 award to MacGregor Triangle Co. of Boise for 8.5 mi. of grading and surfacing on the Murphy-Bruneau Road in Owyhee County. Duffy Reed Construction Co. of Twin Falls received a \$979,907 award for 13.7 mi. of grading, surfacing, and construction of a bridge on state highway 15 in Valley County.

MONTANA

TWO LARGE BUILDING projects in Montana may be made possible if two bond issues totaling \$3,500,000 are issued by the Montana Board of Examiners. One \$2,000,000 issue will finance work at the Montana State Hospital for the Insane, and a \$1,500,000 issue is for building at the Montana State Training School.

THE FIRST STRUCTURES to be built on the Carroll Campus in 30 years will come in the near future. A

BUILD TO ENDURE WITH CONCRETE

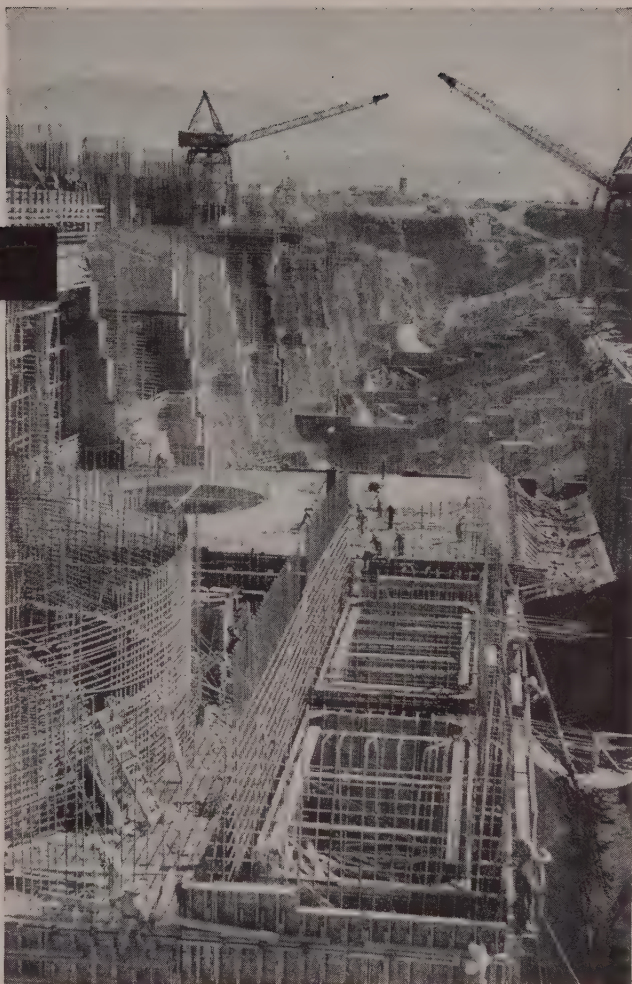
When the ancient Romans invented concrete—by mixing sand and crushed rock aggregates with a crude cement made of lime with an admixture of Pozzolanic earth—they created a construction material, which for strength, versatility, durability and economy, has no rival in the building field.

The invention of Portland cement, in 1824, which solved many technical problems in the use of concrete for construction, has made concrete the building stone of the Atomic age.

A constantly growing list of new uses for concrete has also resulted in many improved variations in the basic portland cement formula, as the need for special purpose concretes increases each year. PERMANENTE STANDARD AND SPECIAL TYPE CEMENTS are manufactured in 13 different types—to provide a cement for every construction purpose.

Write for booklet: "Cement Types and Uses," describing Permanente's Standard and special types of cement—with recommended uses.

Address: Permanente Cement Company, Kaiser Building, Oakland 12, Calif.



The Dalles Dam, latest unit in the great Columbia Valley complex. Permanente special type cements are being used in its construction.

University of Washington Men's Dormitory. Permanente standard portland cement was used in its construction.



Overpasses on East Shore Freeway, Oakland, Calif., built with Permanente Standard and Modified portland cements.



California's Delta Mendota Canal. Alkaline soil required Permanente Type 2, Low Alkali cement throughout.



PERMANENTE CEMENT COMPANY

PERMANENTE, SANTA CLARA, YOSEMITE AND KAISER BRANDS OF PORTLAND CEMENT AND PERMANENTE LIME PRODUCTS

* SERVICE MARK

OAKLAND • PORTLAND • SEATTLE • EAST PASCO
ANCHORAGE • FAIRBANKS • HONOLULU



CHIEF JOSEPH DAM, a 220-ft. high concrete structure with 922-ft. long spillway across the Columbia River near Bridgeport, Wash., is one of four Pacific Northwest public projects being scheduled for dedication this summer. The

main dam of this great power project is nearly 100% complete, well ahead of construction schedule, according to the Seattle District, Corps of Engineers, U. S. Army. The reservoir behind the dam, Rufus Woods Lake, has raised

residence hall and a science-library-auditorium building, estimated to cost \$1,000,000, are being designed by architect Vincent H. Walsh of Helena.

RECENT MAJOR CONTRACT AWARDS and low bids in Montana include a low bid of \$184,556 submitted by **E. C. Powell** of Great Falls for earthwork, structures, and surfacing for relocation of county roads in the Tiber Reservoir area.

NEVADA

A BIG FIGURE, and an interesting one, is that the total expenditures for

the combined departments of Army, Navy, and Airforce will amount to \$53,000,000 in military construction during fiscal 1956, the greatest single federal expenditure in the state.

NEVADA HAS ITS SHARE of 4-lane highways. Wells-Cargo, Inc., of Las Vegas recently submitted a \$772,081 bid for widening and paving of 3 mi. of Fifth Street in Las Vegas. Construction started Feb. 9 and is to be completed in 160 days.

AT SPARKS, G. E. Schilling Co. not only had to pay \$50 a day damages for not completing the sewage disposal plant by February 1, but

they also had to pay the exact costs of operating the system for the months of February and March. The company said cold weather had prevented completion of the plant.

SIXTY NEW JOB openings were available in the Nevada State Highway Department as a result of a 50% increase in construction funds for 1955. Applications are being received for the next 60 days. Experienced applicants are urged to apply to the Nevada State Personnel Department at Carson City.

Highway construction inspectors may receive \$382 to \$364 monthly. Some of the other job openings and

TIBER DAM, about 15 mi. southwest of Chester, on the Marias River in Montana, will again be the scene of extensive

earthmoving operations as the spring warm-up comes. This Bureau of Reclamation project is part of the Missouri River





to full height in the forebay and gradually is stretching out to size along the 50 mi. of channel to the tailrace of Grand Coulee Dam. Powerhouse construction for the first 16 generating units is nearing completion. The first three units

will be producing power by next September 1. Each generator has a rated capacity of 64,000 kw. The four dams to be dedicated this summer: Chief Joseph, Lookout Point, Albeni Falls, and Lucky Peak, will produce 500,000 kw.

their salaries are as follows: instrument men, \$347 to \$421; senior engineering aid, \$316-\$364; engineering aid, \$288-\$331. Most jobs will be in the field and carry an additional subsistence allowance. These are permanent State Civil Service positions.

RECENT MAJOR CONTRACT AWARDS and low bids in Nevada include a \$440,660 award to **Isbell Construction Co.** of Reno for roadwork on part of the state highway system near Reno. **Silver State Construction Co.** of Fallon received a \$173,473 award for 6.2 mi. of roadwork located 8 mi. south of Fallon in Churchill County.

NEW MEXICO

A CONTROVERSIAL BILL before the New Mexico State Legislature would allow issuance of an engineering license to any person who has had two years of engineering training in a recognized college, has had 8 years of active practice and surveying, and holds a certificate of registration as a land surveyor. No examination would be required and issuance of the license would be automatic if the applicant met these qualifications.

Various engineering societies are strongly on record against the bill.

They point out that a person who obtains a license under this provision would not be automatically classified as to type of engineering. He could obtain a license on the basis of surveying experience, and then hold himself up as a chemical or mechanical engineer.

WORK IS JUST NOW starting on a \$593,174 contract awarded to O. D. Cowart of Albuquerque for a new 4-lane alignment of U.S. 80 & 85 near the Texas State Line. This state highway, between Anthony and Las Cruces, consists of the first stage of grading and drainage only. Multiple opening box culverts comprise the major drainage structures. The con-

Basin development. When work had shut down last December 17, the dam contained 5,375,000 cu. yd. of earth fill of

the approximately 7,000,000 cu. yd. that will be in the finished structure. The dam is 205 ft. high; 4,300 ft. long.





NEW... FOR YOU!

STANDARD ASPHALT PLANT CATALOG

16 money saving, idea-packed pages.

"See the latest and best in asphalt plants. Yours for the asking!"

Find out why hundreds of users throughout the nation say, "STANDARD is best—for production—for quality—for low operating and maintenance costs!" Write for your copy today.



STANDARD STEEL CORPORATION

5049 Boyle Ave., Los Angeles 58 • 15 Park Row, New York 49



tract covers 12½ mi. and future projects will be needed to continue the work all the way to Las Cruces. Max T. Burke is the resident engineer on the work.

A NEW 96,000-HP. steam electric plant is being planned by the Southwestern Public Service Co. of Amarillo. The first unit will be largest single unit in the state. Construction cost is estimated at \$8,000,000 and is scheduled to start in the fall. Completion is set for early 1957.

A \$10,000,000 SHOPPING CENTER is planned for Albuquerque by the Tijeras Place Improvement Co. The center would cover a 16-square block tract and would require closing many of the streets in the city bordering on the tract.

RECENT MAJOR CONTRACT AWARDS and low bids in New Mexico include a \$588,277 award to **O. D. Cowart** of Albuquerque for 12.6 mi. of grading and surfacing on highway 46 in Dona Ana County. **Floyd Haake** of Santa Fe submitted a low bid of \$317,000 for 6.8 mi. of grading and surfacing in the Apache National Forest, Catron County. **E. M. Silver** of Albuquerque received a \$192,915 award for 0.4 mi. of grading and surfacing on US 85 in Colfax County. **D. D. Skousen & Son** of Albuquerque received two contract awards—one of \$248,084 for 19.1 mi. of grading and surfacing on highway 81 in Grant County, and another of \$131,278 for 5.9 mi. of grading and surfacing on highway 58 on the Springer-Cimarron road. **Wylie Bros. Contracting Co.** of Albuquerque received a \$305,944 award for 24 mi. of grading and surfacing on highway 256 in Lea County.

OREGON

ERECTION OF THE STEEL superstructure for the new Umatilla Bridge across the Columbia River just below McNary Dam has been completed by U. S. Steel's American Bridge Division. Workmen are now putting the finishing touches on the new span. Over 3,500 tons of structural steel were erected for the 3,400-ft. toll bridge. Bridge design, for which Tudor Engineering Co. of San Francisco were consultants, is a double-cantilever type with two 600-ft. center spans and girder-type approach spans. Major work yet to be completed on the project is the pouring of the concrete deck. This sub-contract is being handled by Parker-Johnson Co. of Portland. Charles O. Edmonds was erecting superintendent, and Oral I. Conyers was resident engineer.

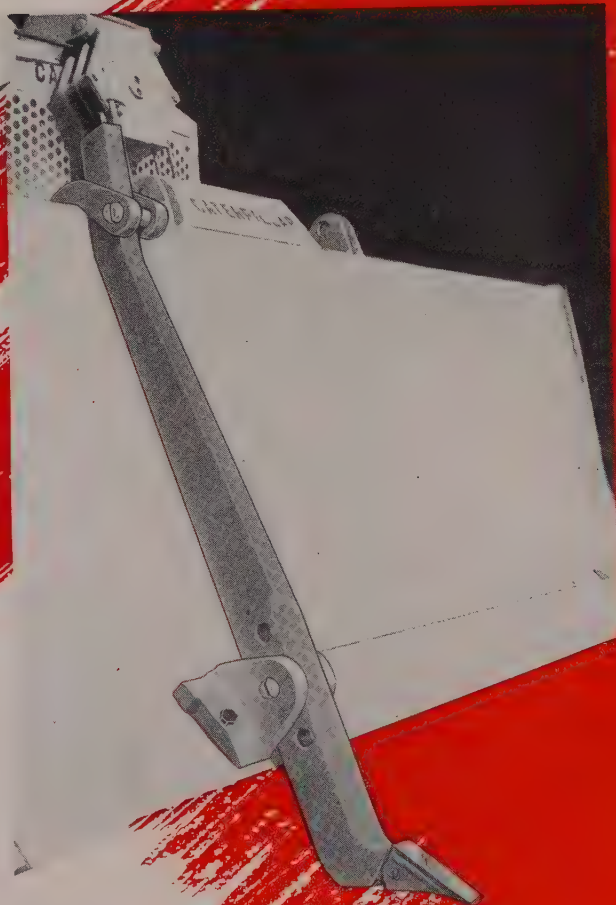
A \$1,700,000 HOSPITAL is scheduled for Medford. A 20-acre tract was recently obtained for the site. The Medford Hospital Association

H&L

Rapid Ripper

PATENT PENDING

*Teeth that
really dig*



FOR ALL MAKES
OF BULLDOZERS

- LIGHT WEIGHT
- EASY TO
HANDLE
- RUGGED
CONSTRUCTION

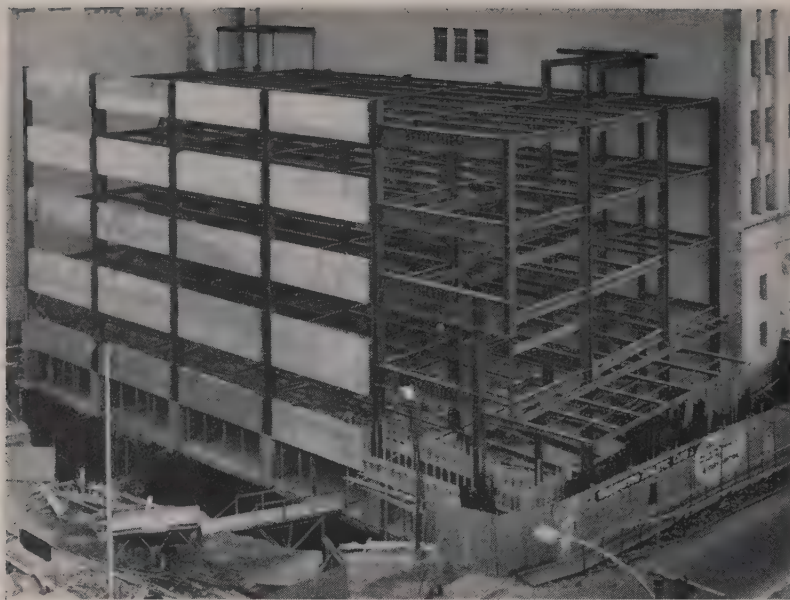
H&L

TOOTH COMPANY

(Pioneer Manufacturers of Two-Part Teeth)

1540 SOUTH GREENWOOD AVE.

MONTEBELLO, CALIFORNIA



CONCRETE PRECAST ON THE SPANDREL BEAMS

A considerably expanded Washington Athletic Club in Seattle is nearer reality with the recent completion of steel erection for the club's new four-story addition. Bethlehem Pacific's erection crews completed the steel framework on schedule, and reinforced concrete floor slabs, shown above, are now going into place. The general contractor incased the steel spandrel trusses in concrete prior to erection. This procedure resulted in considerable savings as the concrete work was done in the contractor's yard, then moved to the job site. There, the Bethlehem Pacific erection crews lifted each of the 12-ton concrete covered trusses into place.

William J. Bain and Harrison Overturf are the architects. Howard S. Wright & Co. is the general contractor and W. H. Witt & Co., the structural engineer. Bethlehem Pacific fabricated as well as erected the structural steel.

is handling the transaction and has employed Rogers and Butler, architectural firm of New York City, to design the hospital. Private contributions will finance the project.

NEW CONSTRUCTION amounting to \$2,400,000 will be spent by the California-Pacific Utilities Co. during 1955. The long range construction forecast shows that another \$3,000,000 will be spent in eastern Oregon during the years 1956-1959.

EAST APPROACH construction for the new Morrison Bridge and the east side approach to the Hawthorne Bridge, both at Portland, will start this summer if preconstruction progress moves on schedule. Bonds to finance the project are scheduled to be sold by April 19. Test drillings for pier locations of the Morrison Bridge were started last month and properties needed for rights-of-way are being appraised.

CONSTRUCTION OF 150 MI. of electric power line will be getting under way in Lake County. The Mid-state Electric Cooperative awarded a \$309,735 contract to Northern Construction Co. of Montana for this work. Bids for this 14.4/24-kv. line are being financed through a loan from the REA.

THE CALIFORNIA - OREGON POWER CO. has been granted a 1-year time extension to complete con-

ditions imposed by the Federal Power Commission for a license to construct the proposed Big Bend No. 2 power project on the Klamath River below Keno, 12 mi. west of Klamath Falls. The timely extension is necessary to reach a satisfactory agreement with the Department of Interior.

THE STATE LEGISLATURE is being asked to appropriate an additional \$1,250,000, to match that appropriated in 1953, to continue with a \$4,800,000 construction program outlined for the Oregon State Correctional Institution. The first work would not be done by inmate labor, and would include installation of sewer lines, sewage disposal plant, fence, administration building, first unit of the boiler plant, and other units. The new institution, 1,000 person capacity, was approved by the voters in the 1954 general election.

A MAJOR DIKING PROJECT along the Columbia River will be constructed for Multnomah Drainage District No. 1 as soon as \$22,000 can be raised by the district. The Portland District, Corps of Engineers, has \$1,508,000 in federal funds available to match the district funds for this construction. The project would include strengthening of the main dike along the Columbia River, installation of drains to carry away seepage water, and two big cross dikes.

RECENT MAJOR CONTRACT AWARDS and low bids in Oregon include a \$771,756 award to George H. Buckler Co. of Portland for construction of a five-story addition to the Holladay Park Hospital in Portland. Peter Kiewit Sons' Co. of Longview submitted a low bid of \$152,792 for grading and surfacing on the Klamath Falls-Midland highway. Tom Lillebo of Reedsport submitted a low bid of \$149,014 for construction of two bridges on the Oregon Coast highway in Curry County. C. C. Meisel of McMinnville submitted a low bid of \$146,040 for grading and paving on the Yamhill-Newberg highway in Yamhill County.

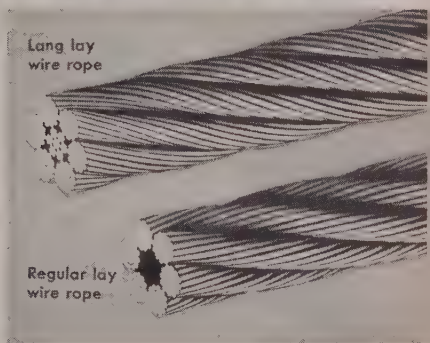
Pacific Bridge Co. of San Francisco submitted a low bid of \$752,000 for repairs to the north jetty at the entrance to Yaquina Bay. W. H. Shields Construction Co. of Eugene submitted a low bid of \$140,107 for construction of three bridges on the Pacific highway in Lane County. Warren Northwest, Inc., of Portland submitted a low bid of \$219,741 for grading and paving on the Pacific highway in Douglas County. Western Electric Construction Co. of Portland submitted a low bid of \$417,560 for construction of a switchyard addition, tunnel, relay house, and spur track at McNary Dam.

UTAH

COST AND LOCATION certainly enter into the feasibility of any project. Recommendations for new water treatment plants of Salt Lake City have been made by representatives of Headman, Ferguson and Carollo of Phoenix. They have recommended the erection of two plants—one to cost an estimated \$7,000,000 to be built for the combined flow of Little Cottonwood and Deer Creek, and one costing \$1,800,000 for the waters of Big Cottonwood. This will be a good size construction project when a final decision has been reached by the Water District.

FEDERAL AID for Utah highway construction in the coming year is going to put a severe strain on the State Treasury to provide additional matching funds. The Federal Government will provide an additional \$3,000,000 bringing the total to \$8,500,000 for Utah roads. Utah will have to put up an additional \$3,000,000 which at the present time would be at the expense of other state road construction.

ANOTHER DIVIDED 4-lane highway is scheduled for the 10½-mi. stretch between Salt Lake Municipal Airport and Saltair resort on U.S. 40. This road section has been rapidly establishing itself as the most dangerous section of highway in Utah on



What extra good will Leschen Lang lay wire rope do for you?

Look at a length of Lang lay wire rope. Compare it with regular lay. Notice that the *wires* in Lang lay rope twist in the *same* direction as the *strands*. In regular lay rope these directions are opposite.

What does that do? It makes the exposed length of the outer wires in Lang lay rope about twice as long as in regular lay rope. It has extra bearing surface to withstand wear from scuffing, rubbing and other abrasive action. Also, because Lang lay wires and strands are laid in the same direction, the rope has greater flexibility.

What's the result? Simply this—on some types of duty, where abrasion and bending stresses are abnormal, Leschen Lang lay rope definitely lasts longer than regular lay. Replacements are fewer. Costs are lower. And, with Leschen you are assured of *higher-than-rated quality for longer-than-expected wire rope service.*

Can you use these benefits? To make sure, ask your Leschen man. Leschen makes all types of Red-Strand wire rope for all types of jobs, and can help select the best one for you. Perhaps you *should* use Lang lay. Talk to him soon.

Depend on Leschen's higher-than-rated quality for longer-than-expected service.

LESCHEN

HERCULES Red-Strand® WIRE ROPE



LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri



GOODALL Waterproof CLOTHING...FOOTWEAR

*For Reliable,
Economical
Head-to-Toe
Protection*



COATS • JACKETS • OVERALLS

Durable, full-cut garments, in rubber, oiled and latex constructions, for every kind of wet-weather work. Made of selected materials, with exacting craftsmanship, they are guaranteed waterproof, assuring complete protection from the elements. Reinforced where extra strength is needed, without impairing comfort and full freedom of movement.

Available in a variety of styles, in all sizes. No. 338 Coat is an old-time favorite — double back; corduroy-lined collar; 49" long.

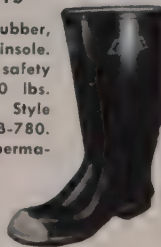
SUITS—Style 80 Jacket with Style 81 Overall makes the ideal shaft suit. Other jacket-and-overall suit combinations to meet every preference or job requirement.

SAFETY HATS

"Hardboiled" Safety Hats in fibreglas or aluminum. Light weight and comfortable, yet providing greatest possible head protection. Exceed highest established requirements for strength, heat and moisture resistance, and dielectric tests.

"TOE-SAVER" (R) BOOTS

Smooth, tough, flexible black rubber, heavy duck lined. Cushion insole. White cap over reinforced steel safety toe tested to withstand 2,000 lbs. pressure. Treaded soles. Hip, Style MB-346. Storm King, Style MB-780. Short, Style MB-946. Now with permanently marked size numbers. The "Toe-Saver" feature is also available on a variety of work shoes, and on our "Contractors" Mucker Boot.



Contact Our Nearest Branch for Further Details and Prices



GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia • New York • Boston • Pittsburgh • Indianapolis • Chicago • Detroit • St. Paul
Los Angeles • San Francisco • Seattle • Spokane • Portland • Salt Lake City • Denver
Houston • Goodall Rubber Company of Canada, Ltd., Toronto • Distributors in Other Principal Cities

the basis of fatal accidents over the past 12 months.

RECENT MAJOR CONTRACT AWARDS and low bids in Utah include three low bids submitted by W. W. Clyde & Co. of Springville as follows: \$148,824 for 1.9 mi. of grading and surfacing and construction of two concrete bridges on route 53 in Carbon County; \$306,056 for 6.0 mi. of grading and surfacing and construction of one concrete bridge on route 10 in Emery County; \$454,565 for 3.7 mi. of grading and surfacing and construction of a concrete and steel overpass on US 6 and 50 in Utah County.

WASHINGTON

THE FIRST PRESTRESSED bridge to be built by the Washington State Highway Commission has been awarded to Joe Lundberg Construction Co. of Seattle for \$42,852. It is over the Sammamish River in King County.

ON LAST MARCH 1, McNary Dam Powerhouse scheduling reached the half-way point with unit 7 of the ultimate 14 units to make up McNary's power output going on the line. Unit 7 brings on schedule the electrical unit work and the Corps of Engineers has hopes of maintaining its one unit every 90 days perspective from here on out. This would bring McNary to 100% output by midsummer of 1956. Each generator at full capacity produces 70,000 kw. The first 7 units will bring the total output of McNary to nearly 500,000 kw.

CONTRACT CONSTRUCTION work scheduled by the Bonneville Power Administration for 1955 is estimated at \$6,487,000. Contractors of the Pacific Northwest will be invited to bid on 182 mi. of right-of-way clearing at an estimated cost of \$1,485,000; 200 mi. of transmission line construction at \$2,499,000; 24 substation additions at \$2,082,000; six new substations at \$405,000. Completion of the 345,000-volt lines from Chief Joseph and McNary dams will be two of the more important projects this year.

Important projects awarded last year and well under way are the 133-mi. Chief Joseph-Snohomish 345,000-volt transmission lines to bring scheduled generation from Chief Joseph to the Puget Sound and Olympic Peninsula load centers. The McNary-J. D. Ross transmission line, 345,000 volt, 176 mi. long, is under contract. Also contracted last year was the 105-mi. long section of the total 227-mi., 237,000-volt McNary-Maupin-Detroit-Santiam-Albany line to carry power from McNary Dam to lower Willamette Valley facilities.



MUSCLES OF STEEL

put the mules out of business

Oldtimers in coal mining can remember when mule-power was the only means of transportation in the mines.

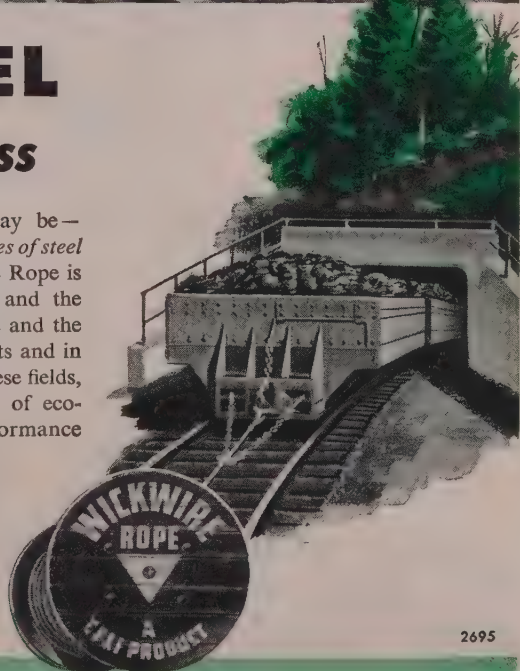
Today's efficient coal mining demands big-capacity mechanized equipment. In modern underground mines, wire rope serves as *muscles of steel*—pulling cars from the loader to discharge point. In strip mining, also, wire rope provides the muscle for huge stripping shovels.

No matter what the job may be—wherever there's need for *muscles of steel*—it's a safe bet that Wickwire Rope is busy at work. In the mines and the quarries. In the logging camps and the oil fields. With the fishing fleets and in materials handling. In all of these fields, Wickwire Rope has a record of economical and dependable performance that can't be beat.

every industry benefits from wire rope

WICKWIRE ROPE

CFI PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



2695

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

get 4 BIG ADVANTAGES with UNIVERSAL SPIROLOC® FORM TIES!

1. Greater tie strength for less money
2. Lower material and labor cost
3. Faster . . . simpler heavy duty tying
4. More forming flexibility . . . handle any forming condition

STANDARD SPIROLOC ASSEMBLY



SPIROLOC WORKING LOADS

6750# Tie with 3/4" Rod
13000# Tie with 1/2" Rod
17000# Tie with 3/8" Rod
29000# Tie with 1/4" Rod

- Consists of two nut washers, two Stud Rods and a "HI-TEN" threaded Tie Rod
- Permanent, re-usable equipment...only tie rod is expended
- Provide positive break-backs up to 2"
- RENTED . . . SOLD . . . Rented with purchase option.

SPIROLOCS are furnished with either Handle or Nut Washers



SPIROLOC CONE NUT ASSEMBLY

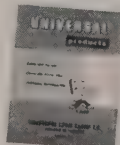
The **ONLY** Form Tie with an absolutely positive inter-

nal spreader . . . Eliminates wood spreaders.



Just Out! Get your copy of the NEW Universal complete line catalog.

Write today.



SEE YOUR LOCAL DISTRIBUTOR

K. C. CONSTR. SUPPLY CO. . .
UNIVERSAL FORM CLAMP CO. . .
UNIVERSAL FORM CLAMP CO.

. . . Denver, Colo.
San Leandro, Calif.
. . . Los Angeles, Calif.



MANUFACTURED BY
UNIVERSAL FORM CLAMP CO.
GENERAL OFFICES AND FACTORY: 1238 N. Kostner • Chicago 51, Illinois

Copyright 1954 by UNIVERSAL FORM CLAMP CO., Chicago 51, Ill.

PROGRESS AT BOX CANYON DAM last covered in *Western Construction* in October 1954 goes ahead with the installation of generating equipment. A 150-ton rotator and shaft, some of the heaviest machinery to be installed, was recently completed.

THE CITY OF SEATTLE'S construction program for 1955 is an estimated, whopping \$10,232,235. A breakdown of this figure shows the following: paving work—\$5,796,765; grading—\$233,717; concrete walks—\$322,600; sewer—\$2,547,149; water mains—\$609,805; alley paving—\$393,860.

AN EMERGENCY ORDINANCE has authorized the City of Bremerton to issue \$2,000,000 in water revenue bonds to finance construction of the city's \$1,000,000 Union River Dam west of the city. A contract for clearing the reservoir site has already been awarded.

BIDS WERE EXPECTED to have been called during the past month for Spokane's \$1,500,000 sewage treatment plant according to City Engineer B. J. Garnett. Consulting engineers on the project are Greeley & Hansen of Chicago.

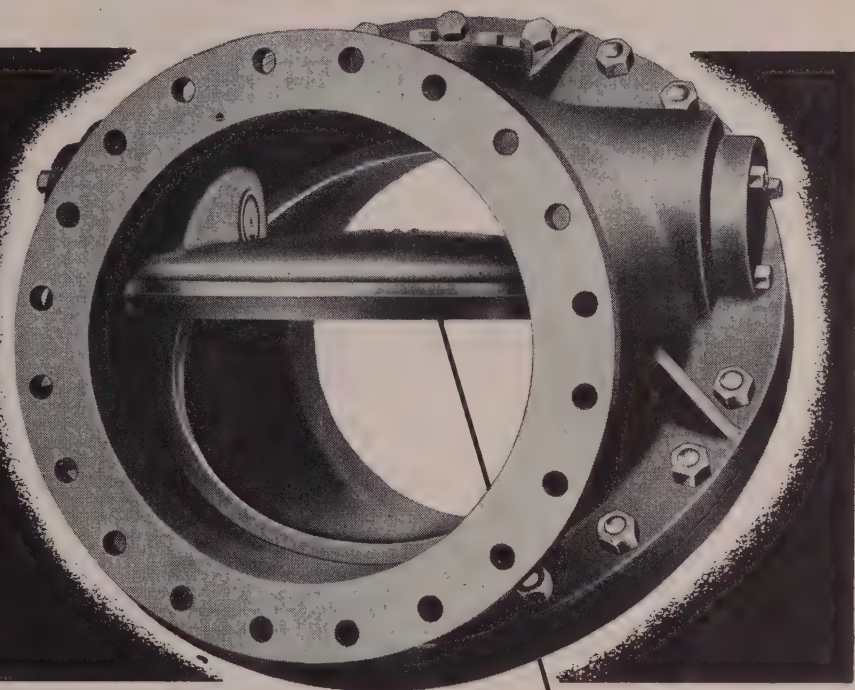
CONSTRUCTION ON THE \$146-000,000 Mayfield Dam, the first of two scheduled Cowlitz River dams in the City of Tacoma's power development project is now under way. This is the beginning work on the dam which will reach 850 ft. across the Cowlitz and have a 185-ft. height. Contractor on this first work is Elmer Gustafson of Randle.

TWO VERY LARGE BIDS have been recently handled by the Seattle District, Army Corps of Engineers. One of these was 800 units of permanent family housing at Fort Lewis which was bid at \$7,647,422 by two Texas firms—I. W. Bateson of Dallas, and C. H. Leavell of El Paso. Construction here involves 117 concrete and concrete-block structures. The other large contract was a bid of \$5,460,361 by English Electric Export & Trading Co., Ltd., of London, England, for furnishing six 67,368-kva. generators for Chief Joseph Dam.

OPERATION OF CERTAIN construction plants such as asphalt plants and sand and gravel plants can be a problem in modern population centers. A current dust problem in Spokane concerned the Acme Sand and Gravel Co. Owners and operators of the company attempted to prove to Spokane Valley residents that the operation of a plant in their area would be dustless. Home owners in the area are attempting to obtain a permanent restraining order from the court.

Chapman's Tilting Disc Check Valve

*Closes
on a
Cushion*

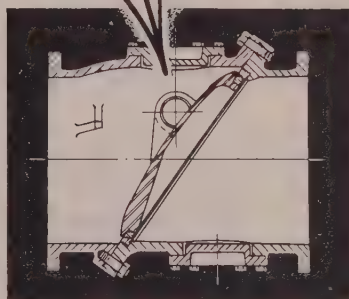


...for low cost, slam-free operation

Balanced pressures *cushion* the movement of the disc in Chapman's Tilting Disc Check Valve. The valve closes quickly but quietly, in all but unusual piping arrangements. There's no slamming to damage pipe-line joints or the valve itself. And *drop-tight* closure eliminates sliding wear on the disc and seat.

In the open position, the "airfoil" designed disc rides firmly against stops, without swinging or fluttering. That's why the hardened extra-large hinge pins give extremely long wear. And the absence of turbulence is one reason why head loss through Chapman's Tilting Disc Check Valve is lower than through any other type of check valve.

Low head loss, increased wear resistance and freedom from destructive slamming make Chapman's Tilting Disc Check Valves unbeatable for almost every installation. Write for Catalog No. 30 today.



Here's why CHAPMAN Tilting Disc Check Valves Keep Quiet All Their Lives

This specially designed "airfoil" disc balances perfectly in open position . . . then drops easily to closed position (cushioned by the flow). No jarring or slamming, in usual pipe-layouts. Write for bulletin.

THE CHAPMAN VALVE MANUFACTURING COMPANY
INDIAN ORCHARD, MASSACHUSETTS

AN EXTRA HEAVY DYNAMITE blast on a Spokane sewer project brought the contractor, Guthrie Investments, Inc. and a powderman to court. A blast set off for the sewer excavation hurled rocks over a two-block area near Fairview and Belt. One 10-in. rock went through the roof of a home nearby narrowly missing the occupant.

ANOTHER EXAMPLE of modern bridge design is evident in the bids called for last month for structures in Jefferson County across the Little Quilcene River and Chimacum Creek. Only spans of 64 ft. and 32 ft. long were involved but these two interesting alternates were provided. Design A involved 16 prestressed concrete piles, four precast roadway beams, one precast sidewalk beam, five precast roadway units, and two precast roadway and curb units. Design B called for 14 prestressed concrete piles, seven prestressed concrete girders with curbs 64 ft. long and seven 32 ft. long, and eight precast concrete sidewalk sections.

RECENT MAJOR CONTRACT AWARDS and low bids in Washington include a low bid of \$1,297,367 submitted by Cherf Brothers, Inc., and Sandkay Contractors, Inc., of Ephrata for earthwork, pipelines, concrete lining, and structures for block 19 laterals of the Columbia Basin Project. Lige Dickson Co. of

Tacoma received a \$144,744 award for 0.9 mi. of grading and surfacing of state highway in Tacoma. **N. Fiorito Co.** of Seattle received a \$422,114 award for 1.0 mi. of grading and surfacing, and Humptulips River Bridge and approaches in Grays Harbor County. **F. R. Hewett Co.** of Spokane received a \$242,877 award for 8.0 mi. of grading and surfacing in Adams County.

Lewis Hopkins Co. of Pasco submitted a low bid of \$773,313 for earthwork, canal lining, and structures on the Kennewick Division of the Yakima Project. **Scarsella Brothers** of Seattle received a \$378,603 award for 5.7 mi. of grading and surfacing on state highway 1 in Whatcom County. **Fred H. Slate Co., Oregon Ltd.,** and **E. C. Hall Co.** of Portland received a \$524,648 award for 2.5 mi. of grading and surfacing in Wahkiakum County. **Werner, Lewis & Charneski** of Eugene submitted low bid of \$366,042 for earthwork and structures on west canal laterals, block 89, of the Columbia Basin Project.

WYOMING

THE FIRST HIGHWAY relocation project in Wyoming resulting from the construction of Pallsades Dam will soon be under way. Bids are being received until April 14, ac-

cording to the Bureau of Reclamation, for the construction of about 4.2 mi. of U. S. 26 and 89 beginning at the Idaho State Line and extending east. About 142,000 cu. yd. of common excavation will be required.

CHEYENNE sees a bright building future if building continues on at the present record-breaking rate. Construction in 1954 reached over the \$15,000,000 mark and was greater than any postwar building year volume. Residents recently approved a \$2,500,000 school bond issue and construction on this project will get under way in the spring. Several new supermarkets and religious buildings will get under way, weather permitting.

RECENT MAJOR CONTRACT AWARD and low bids in Wyoming include a \$170,400 award to **Etlin E. Peterson** of Casper for draining, surface treatment, one bridge, and miscellaneous work on 1.5 mi. of road in Carbon County. **Charles M. Smith** of Thermopolis received a \$113,097 award for construction of one continuous plate girder, eight-span bridge over the Big Horn River in Big Horn County. **Lichty Construction Co.** of Casper received a \$154,873 award for 5.3 mi. of grading, draining, and surfacing, and construction of one treated timber bridge in Natrona County.

**Want to keep dealers
at your finger tips?**



You'll find it fast in the . . .

 **Pacific Telephone**

The answer's in the YELLOW PAGES!



Frankly, we can't put dealers, wholesalers, distributors at your finger tips. But we can and do put them as close as your telephone—which is at your finger tips. And to make them still easier to find, we try to make sure that what you want to know about them appears in the Yellow Pages. There you will find names, addresses, telephone numbers and, very often, the names of the brands they carry, hours of business and other helpful information. As we said, the answer to many of your problems is at your finger tips.

'YELLOW PAGES'





Checked from the ground up!

IN ORDER to meet your quality requirements, the production of Kaiser Steel continuous weld pipe involves tests from the ground up.

These tests begin during raw materials mining and continue through the manufacture of finished pipe by precision equipment.

As a result, Kaiser Steel continuous weld pipe meets *all* your specifications for on-the-job workability and durability.

In addition, our customers are assured of fast delivery. Our experienced technical and metallurgical staffs are always ready to give personal attention to your problems.



Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • tinplate • hot rolled strip • hot rolled sheet • alloy bars • carbon bars • structural shapes • special bar sections • semi-finished steels • cold rolled strip • pig iron • ingot molds • coke oven by-products • ferro-manganese • silico-manganese
For details and specifications, write: KAISER STEEL CORPORATION • LOS ANGELES • OAKLAND • SEATTLE • PORTLAND • PHOENIX • DENVER • TULSA • NEW YORK

ALASKA Newsletter

By CLIFFORD S. CERNICK. Anchorage

DEWLINE JOB—The nation's big radar network in northern Canada and Alaska is in the far North job spotlight. The exact number of jobs at these radar sites and the nature of these jobs is classified. It is no secret, however, that several hundred construction workers in virtually all construction categories will be needed for the work. I made a thorough check of employment possibilities to provide information requested by Newsletter readers. I've talked with employment officials, contractors' representatives, and men who have been hired to work on the projects. If you're a construction worker with hopes for a job at these radar sites the following information may answer some of your questions. It might be well to point out at the outset that the information I've obtained is both optimistic and pessimistic. From your point of view, unfortunately, it's mostly pessimistic.

THE OPTIMISTIC—Hiring for the Dewline radar network is now in progress and scheduled to increase, reaching a peak this summer. Most hiring is being done by the territorial employment offices in Fairbanks and Anchorage and by one of the contractors — Drake-Puget Sound — in Seattle. The hiring is also going on in Canada. Northern Construction Co. and J. W. Stewart Co., Ltd., Vancouver, B. C., have the central line section. Foundation Co. of Canada, Ltd., Montreal, has the eastern section. All of these firms are subcontractors under the prime contractor, Western Electric Co., Inc.

From letters I have received directly from workers on these jobs they are tops for both salary and hours of work. It is perhaps one of the last chances for construction workers to pull down wages in the four- and five-hundred-dollar-a-week bracket. One report I've received is to the effect there is plenty of overtime and the jobs have the advantage of providing a great deal of "take home" money. Mainly because at these remote sites there is no place to spend the money. Many of the construction workers are having their checks sent directly to their banks.

THE PESSIMISTIC — Before you drop everything and rush off to the North to obtain a high pay radar construction job give careful consideration to the following. Employment officials tell me that at the present time, there is a surplus of available workers in every construction category in both Anchorage and Fair-

banks. It is not anticipated that there will be any shortage of these workers even at the peak volume of hiring. It's also emphasized that when all the personnel requirements have been met there will be a surplus of several hundred men in Alaska seeking construction jobs. Inasmuch as these workers are being hired on a first-come, first-served basis and through the labor unions, the ones who already are on the books of these Alaskan locals will be the first to be hired.

Your chances of obtaining employment by coming to Alaska and taking your place in line are so small as to be well nigh non-existent. Your best bet in this connection is to stay put, play it cool, and send inquiries by way of correspondence to the territorial employment offices or to Drake-Puget Sound. (2929 16th Ave. S.W., Seattle 4.) You might also inquire through union locals in your vicinity as to whether or not there is any chances of employment in your particular category of work or craft. It is impossible for me to provide employment information to individuals by letters. Readers can be assured that all available information will appear in the Newsletter. Individual inquiries cannot be answered for obvious reasons.

EMPLOYMENT IN GENERAL—To get back to a bit of optimistic information, hiring will begin in earnest in April and May on the regular run of construction projects in Alaska. During the 1955 construction season about \$97,000,000 will be spent by the military on defense projects. This represents a drop from \$131,000,000 last year. However, in terms of jobs the 1955 figure represents a lot of work. The bulk of the 1955 construction will be in the Fairbanks area. Colonel Carl Y. Farrell, Alaska District Engineer, reports that the tendency now in military spending is towards projects in remote areas. Most of the 1955 construction will be for the Air Force. In the Anchorage area about \$26,000,000 will be spent by the military on construction. Next year a further drop in construction expenditures is anticipated. Colonel Farrell said that no more than \$50,000,000 will be spent during the 1956 construction season.

BIG JOBS AT LADD FIELD — Alaska's focal point for construction during the 1955 season is Ladd Field where more than \$35,000,000 in defense work will be in progress by July. The district engineer reports that work will go forward at Ladd as soon as the spring breakup permits. Many of the biggest contracts at

Ladd are slated for completion before the winter of 1955-56. Ladd Field is located next door to Fairbanks.

ECONOMY MOVE — Under a new streamlining policy, the Alaska District will make disbursements direct to contractors rather than through the Army Finance officer as has been the case in the past. Disbursements have averaged about \$100,000,000 a year in Alaska. Under the new plan checks can be issued faster and with less expense for paper work. The first check issued under the plan went to Birch-Lytle-Green. It was for \$110,000 as partial payment on a contract now in progress.

ENGINEERING GEOLOGY — Of interest to contractors is the recently initiated engineering geology program of the U. S. Geological Survey in Fairbanks. Under the supervision of Troy L. Pewe the program will provide and interpret geological information that is directly applicable to engineering design and construction. One of the objectives of the program is the publication of geologic maps designed to be of assistance to engineers in solving construction problems. These problems include availability of construction materials, foundation and excavation conditions, underground and surface water conditions, soils and land utilization, and problems raised by permafrost and intense seasonal frost actions.

CONSTRUCTION CAPSULES — Anchorage led all Alaskan cities in construction during the 5-year period from 1949 to 1953 according to the Alaska Development Board. Alaska's biggest city chalked up the impressive total of \$29,000,000 in building permits . . . A congressional subcommittee has approved legislation authorizing up to \$250,000 annually for water power development surveys in Alaska. Alaska has tremendous hydroelectric potential and the construction of power dams in the future is expected to take up the slack in employment which will result as defense construction tapers off . . . Voters in Seward have approved a \$5,000,000 utility bond issue for the construction of a power dam at Crescent Lake and also for transmission lines from the power site to Seward. Work will begin this summer . . . Oil lease applications have been filed on more than 70,000 acres on the Kenai Peninsula. So far however, there have been no gushers even though virtually all the major oil companies are carrying on explorations in the territory . . . The last 15% of work on the Haines-Fairbanks pipeline depends on the weather. Testing will begin in June, and oil transmission is scheduled for early August . . . A new railroad pier at Seward will be started this year. Job is estimated at \$4,400,000, is really two 500-ft. gravel-fill quays.



High-quality, low-cost

WELDED STEEL PIPE

for more efficient water supply lines

When planning your next permanent water supply project, be sure to consider the quality and money-saving features of American's welded steel pipe. Many cities throughout the Northwest have found it to be the answer to their problems.

Manufactured to buyer's specifications in accordance with A.W.W.A. standards, it is available in 12" to 144" diameters in nominal lengths of 40 feet with plate thicknesses ranging from 3/16" to 1 1/2". Coal tar enamel lining and coating (asbestos

felt wrapping where required) protects against corrosion. The pipe is fabricated with one longitudinal tension seam only on *all* diameters. Longitudinal and girth seams are automatically welded.

This outstanding pipe can be advantageous to you in initial economy and trouble-free performance. We'd like to plan with you on your next project... our services include both manufacture and installation where desired. Call us for estimates and further information.



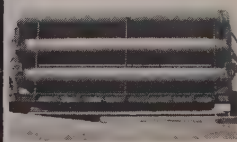
Automatic welding Steel grit blasting



PIPE AND CONSTRUCTION CO.

NORTHWEST DIVISION

518 N. E. Columbia Blvd., (Near Union Ave.)
 Portland 11, Oregon UKiah 2581
 Los Angeles Hayward San Diego



Completed pipe

ENGINEERS on the move

Warren Hunter, who has been chief engineer for Fisher Contracting Co. of Phoenix, Ariz., for the past five years, was recently promoted to construction division manager. Carleton Robb succeeds to Hunter's previous duties.

* * *

C. J. Haglund recently assumed duties as vice president and manager of the West Coast operations of The H. K. Ferguson Co., making his headquarters in San Francisco. For the past two years he has been in charge of construction operations in Alaska for Morrison-Knudsen Co., Inc., parent company of the Ferguson organization.

* * *

Charles S. Bradley was recently elected to succeed Mons Benson as president of Southern Idaho Section, American Society of Civil Engineers. Other new officers are John Graff, 1st vice president; Henry C. Eagle, 2nd vice president; David Crandall, secretary; and F. C. Hart, treasurer.

* * *

Col. John P. Buehler, formerly Seattle District Engineer for the U. S. Army Corps of Engineers and last working at the Chief's office in Washington, D. C., on Air Force construction, retired at the end of February to accept a position with Bechtel Corp. in San Francisco.

* * *

Henry Layne is the newly elected president of the Structural Engineers Association of Southern California, succeeding William Wright. Layne is in private practice as a consulting structural engineer. William Wheeler will serve during 1955 as vice president, and Donald Moran as secretary-treasurer.

* * *

C. M. Herd, chief construction engineer of the California Division of Architecture, has been elected president of the Structural Engineers Association of Central California. L. F. Greene was elected vice president.

* * *

Gayle F. Rucker is now located at the San Francisco district office of the California Division of Highways, where he is working as assistant engineer, engaged in the design of highways.

* * *

Russel Avery, manager of the municipal airport at Klamath Falls, Ore., resigned to take a position with the consulting engineering firm of



MAJ. GEN. JOHN G. VAN HOUTEN, Commander of Fort Carson, Colorado Springs, breaking ground which signaled the start of a \$2,777,308 construction program which will add six new permanent barracks to the Fort by June 1956. Supervising construction of the new barracks is Lt. Col. Robert W. Dalrymple of the Corps of Engineers' Denver area office. All construction activities of the Corps in the Rocky Mountain area are headed by Col. Thomas J. Hayes, Omaha District Engineer.

Porter, Urquhart & Beavin, which is working on plans for activation of a jet base at the airport for the Air Force.

* * *

Major Edward C. Bruce has been assigned to the Walla Walla District, Corps of Engineers, as executive officer.

* * *

Ralph Main recently replaced Richard C. Hulseman as county engineer of Garfield County, Wash. Main was formerly Ferry County engineer.

* * *

R. H. Baldock, Oregon State Highway Engineer since 1932, was recently honored by the Professional Engineers of Oregon and presented with the "Engineer of the Year" award. A member of the Oregon department since 1915, he was 1948 president of the American Association of State Highway Officials, and is a member of the executive and legislative committee. He has been active on the highway research board

of the National Research Council, currently serving on the executive committee, and in 1953 as chairman.

* * *

John R. Erickson, state engineer of New Mexico, recently resigned the post to enter into private business.

* * *

L. Sterling Hedgpeth has been appointed chief of the specifications and materials section of the Construction Branch of the Bureau of Public Road's office in Washington, D. C. Between 1930 and 1941, Hedgpeth was employed by the BPR in the San Francisco and Phoenix offices, and just recently returned from Turkey where he was a member of an advisory group of the Aid-to-Turkey Mission.

* * *

William L. Stephens recently resigned as hydraulic engineer for the Snake River Development Office of the Bureau of Reclamation in Idaho to accept a position with the Foreign Operations Administration as an engineer consultant for the government of Panama. Carl Huish was appointed to take over Stephens' former duties.

* * *

Newly appointed members of the highway commission of the state of New Mexico are the following: J. T. Heimann, chairman; G. D. Hatfield, vice-chairman; George Lavender, secretary; Ralph Jones, and E. D. McKinley.

* * *

Michael Yoder, Phoenix, has been named president of the Student Chapter of the American Society of Civil Engineers at the University of Arizona.

* * *

James A. Wade, for five years superintendent of construction for the Utah Building Board, recently resigned to take a position with Lucky Mc Uranium Co. of Riverton, Wyo.

* * *

Dan E. Garvey, former Arizona governor, has been appointed deputy state registrar of contractors for the district of northeastern and northern Arizona. He replaces Ray Langham, previously holding the post for the northeastern section, and Frank Whiting, who had the eastern section.

* * *

George C. Hester, Jr., administrative assistant to the Oregon state highway engineer, recently resigned to become research engineer for the Association of Western Railroads, with headquarters in Chicago.

* * *

Newman B. Smith was appointed city engineer of San Mateo, Calif., effective Feb. 7, 1955. A member of the American Society of Civil Engineers, he has been director of public works for the city of South Gate, Calif.

* * *

Jack Berry is now supervising engineer, and Joe McLellan, engineer, at Chief Joseph Dam, installing ten

GLOBAL APPROVAL

ALGERIA

CANADA

CONGO

ENGLAND

FINLAND

FRANCE

INDO-CHINA

MOROCCO

PHILIPPINES

RHODESIA

UNITED STATES

VENEZUELA

**BUCYRUS
ERIE**

110-B 4½ cu. yds.

150-B ..6-cu. yds.

190-B ..8-cu. yds.

Scores of these outstanding excavators have proven their worth in varied quarrying, mining, and heavy-duty construction projects all over the world.

Remember, FOR THAT EXTRA MARGIN — in design, in construction, in all round performance, and, above all, in output — it's BUCYRUS-ERIE Ward Leonard electric excavators.

46L55C

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

BOTH AC and DC WELDING CURRENT FROM ONE WELDER

New Lincoln Idealarc has soft arc and forceful arc with arc-booster starting on both AC and DC

With Lincoln's new Idealarc welder, you have complete freedom of choice in selecting the best type of arc for any job. You can choose AC or DC, whichever gives the best results. Then you can select a soft arc or forceful arc depending on position, type of electrode and weld appearance.

For the first time, shops that do not have 3 phase power can now use DC welding. Idealarc operates from single phase power.

Arc-booster starting is provided on DC as well as AC. This assures non-sticking operation, easier intermittent welding, complete penetration at the start of each weld.



LINCOLN IDEALARC

In One Machine—AC and DC
Soft arc and forceful arc in both AC and DC
Arc Booster Starting in both AC and DC

**SEND FOR
BULLETIN 1343
ON LINCOLN
IDEALARC**
Write:



THE LINCOLN ELECTRIC COMPANY

Dept. 4301
Cleveland 17, Ohio

**THE WORLD'S LARGEST MANUFACTURER OF
ARC WELDING EQUIPMENT**

Westinghouse 66,667-kva. generators. Before coming to this job, they were employed on the recently completed Ross powerhouse built by Seattle City Light.

* * *

Gilbert M. Schuster has been appointed by the Portland Cement Association to the position of state paying engineer for the association in the state of Washington. A graduate in engineering from Washington State College, he spent over six years with the engineering department of Tacoma before joining PCA.



G. M. Schuster
appointed



W. E. Blomgren
retired

Walter E. Blomgren, assistant chief engineer of the Bureau of Reclamation at Denver, Colo., as of Jan. 31 retired after nearly 43 years in government work. In 1944, Blomgren was appointed regional engineer of Region 7 in Denver, and in 1947 was named assistant regional director and held that post until his promotion to assistant chief engineer in 1949. He will open a consulting office in Denver, specializing in irrigation and drainage developments in this country and abroad.

* * *

Carl H. Wittenberg has been elected president of the Southern California Chapter of Associated General Contractors. He is a partner



**Carl H.
Wittenberg**
elected

and general manager of Ford J. Twaits Co. Other newly elected officers include Walter F. Maxwell, J. V. Quinn and George Thwing, Jr., vice presidents; W. E. Irish, treasurer, and W. D. Shaw, general manager.

* * *

Crosby G. Holden recently replaced N. C. "Kelly" Moore (resigned) as chief right-of-way agent in the Arizona State Highway Department. Another important promotion in the department is that of William E. Willey who was elevated from engineer, economics and statistics, to assistant deputy state engineer, office

and planning. H. H. Brown is now assistant deputy state engineer, field and maintenance. Charles I. Smith, Jr., formerly administrative assistant, economics and statistics, has been named manager, economics and statistics.

DEATHS

Albert LaDue, 69, a drafting employee of the Washington Department of Highways since 1945, died recently.

* * *

James N. Gladding, 70, died in Fontana, Calif., Feb. 2. For a number of years after World War I he had been city manager of Albuquerque, New Mex. He moved to Fontana in 1948 where he was engaged in the construction business.

* * *

Percy H. Budd, 69, Orange County (Calif.) flood control engineer, died Feb. 8 of a heart attack.

* * *

Albert E. Walker, 54, construction engineer for the Santa Fe Ry., died Feb. 5 at Los Angeles.

* * *

Tanor Black, 61, Grants Pass, Ore., was killed in a traffic accident Feb. 13 near Crescent City, Calif. He was en route to Eureka where he was employed as a civil engineer by Humboldt County.

* * *

Svend C. Larsen, 100, died Feb. 21 in Salt Lake City, Utah. He was a former contractor who had helped build the Brooklyn Bridge and other noteworthy structures.

* * *

Charles F. Buxton, 47, assistant traffic engineer for the Colorado State Highway Department, died Feb. 20 after a week's illness.

* * *

Paul V. Hodges, 71, graduate civil engineer of Denver, Colo., died Feb. 24 after a brief illness. A member of the American Society of Civil Engineers, he retired in January 1954 after 40 years of government service.

* * *

Albert E. Cartwright, 65, Los Angeles, California state building inspector, died recently.

* * *

Alfred S. Wheeler, 63, Sacramento, Calif., died Feb. 13. A resident of Sacramento for 31 years, he was a civil engineer with the State Division of Water Resources for most of that time. Previously he had his own engineering business in San Francisco.

* * *

Robert B. Patterson, long time employee of the Utah State Road Commission, died recently. He held the position of chief construction engineer for the northern half of Utah at the time of his death.

SUPERVISING the jobs

Donald Byrne is general superintendent for George A. Fuller Co., which recently won the award for construction of the propulsion center at Canoga Park, Calif., on a \$3,000,000 bid. Malvern John is superintending the job. B. H. Fitzgerald is coordinator, and Ernie Broudy is job accountant.

* * *

T. E. O'Melveny, superintendent, with the aid of Ray Bailey, assistant superintendent, is directing the \$1,900,000 construction of the Freemont Hotel under way in Las Vegas, Nev. R. W. Downey is field engineer.

* * *

H. W. Andrews is superintending a \$231,500 contract for Ace S. Raymond, a 250-day job just starting at Bear River, Utah. Contract is for construction of an addition to a classroom building at the local high school. Foremen on the job are Bert Crawl and Dave Nielsen. Lou Watts is office manager.

* * *

In addition to those whose names appeared in **Western Construction** last month—working for Vinnell on Edwards AFB project near Los Angeles, under the supervision of Schyler Walker, general superintendent; Neal Lange, steel erection superintendent; and Robert Walling, hangar superintendent, are the following key men: Bob Hardin, building superintendent; Bud Cooper, general foreman; and Bob Sims and Mel Simpson, carpenter foremen. Also Carl Nelson, labor foreman, and the following steel foremen: Pete Frandsen, Dean McKim, W. Koonce, Phil Wozy and Dave Bean. Another key man is a guy called Stickle. The job office is in charge of Saul Carranza.

* * *

T. W. White, grade superintendent; George Clawson, labor foreman; and Pat Dourty, master mechanic, are key men working for White Brothers Co. on a \$91,074 grading and paving job on the Ritter-Rush Creek section of road in Grant County, Ore. Work started the first of January and is expected to be completed by May 1.

* * *

R. D. Chase, project manager; A. O. Melcher, superintendent; A. R. Lermusiaux, project engineer; and R. H. Windle, are important person-

nel for Lembke-Clough & King Construction Co. on construction of supersonic air research track at Virgin City, Utah. This \$1,023,616 contract started working Dec. 22 and will probably take 155 days for completion.

* * *

Ray A. Myers, senior partner in the firm of Myers Brothers, will be in overall charge of this firm's contract for the construction of buildings approximating 280,000 sq. ft. to be erected at La Mirada by the Bible Institute of Los Angeles, Inc. Other important personnel for this \$2,500,000 campus construction which is

scheduled to start in September are Arthur Farley, general manager; Walt Whittaker, in charge of purchasing; Ed Neville, general superintendent, and M. M. Carr, chief accountant.

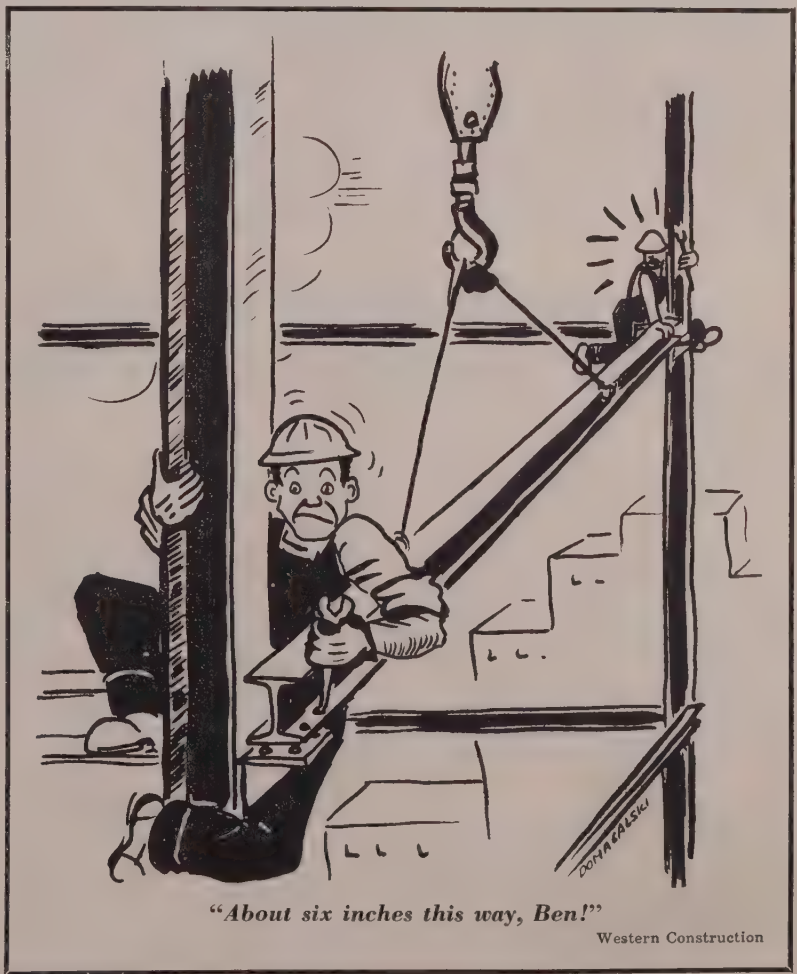
* * *

George Bell is project superintendent on the Lake Mead transmission mains and the Las Vegas feeder mains which have been under construction since last Dec. 1. This is another Fisher Contracting Co. job being done for the Las Vegas Water District. Lon McDermott is engineer on the project, and William C. Huie is in charge of the field office. General foremen are: Pat Hopkins, Ed Metz, Les Harris, W. M. Copeland, and R. J. Lugo. John Gokovich is master mechanic. Anticipated completion date is Sept. 1.

* * *

Don Weaver, project manager; John Ford, general superintendent, and his assistant Bill Goss, will soon be winding up the substructures work on the Richmond-San Rafael bridge being constructed by the California Division of San Francisco Bay Toll Crossings. Other important per-

Down-time By Domagalski



"About six inches this way, Ben!"

Western Construction



**Ace
Miller**

**Clint
Miller**

Garcia

Kniep

Stapp

Jensen

Ace Miller, general superintendent, and **John Dean**, project engineer, head the job personnel working on the \$1,200,000, 4-lane bridge being constructed by **Fred J. Early, Jr.**, on Highway 80 at Yuma, Ariz. Other key men are **Lafe Stapp**, field engi-

sonnel on this \$14,300,000 contract of Gerwick-Kiewit are: **Bill Talbot**, project engineer; **Tom Collins**, survey chief; **Harry Larsen**, concrete superintendent; **Bob Harvey**, carpenter superintendent; **Jack Rozich**, tugmaster; **Lars Worre**, master mechanic, and **Norman Barnes**, **Bill Hirvella**, **Hans Feibush**, **Dave Harrington**, **Herb Brauner** and **John Macoun**, all assistant superintendents. **Sam Hurey** is cost engineer and **John Hay** is office manager on the job, which will probably finish this August.

* * *

Peter A. Wahlin, Jr., project superintendent; **John F. Lovejoy**, engineer, and **A. N. Talbot**, field office manager, are employed on the Whitney pumping station, BMI No. 2 reservoir, being built for the Las Vegas Water District at Whitney, Nev., by the Fisher Contracting Co. which expects to finish the job Aug. 1.

* * *

Mack J. Kinsey, project manager; **S. D. Fraser**, construction superintendent; **Ed Brenheiser**, chief engineer, and **Richard Soyster**, office engineer and manager, compose L. E. Dixon Co.'s top personnel on the construction of a cement plant at Mojave, Calif., a \$4,238,193 structure under way since last December and taking 240 days to complete.

* * *

Carl G. Marrs, project manager and superintendent, is head man on construction of a new building going up in Santa Fe, N. Mex., for the State Highway Department. This is a 400-day contract which started Feb. 2, on which the following are also important men: **Owen Sellers**, assist-

neer; **Clint Miller**, master mechanic, and the following foremen: **Armin Kniep**, carpenter; **Roy Jensen**, pile-driver, and **Abe Garcia**, labor. This Arizona-California state contract started in February and will probably run to August 1956.

ant superintendent; **Jose Trujillo**, project engineer, and **D. C. Roderick**, labor foreman. C. H. Leavell won the award on a bid of \$1,093,077.

* * *

Bert Norris, superintendent, is in charge of a grading and surfacing job for Peter Kiewit Sons' Co. on Midland highway in the vicinity of Klamath Falls, Ore., a \$152,792 contract which started March 15 and is expected to take 180 days for completion. **Ed Ross** is crushing foreman.

* * *

Joe Nesbit is superintending another one of Peter Kiewit's recent contracts. This is a \$694,914 award for construction of South Bay bridge and approaches near Westport, Grays Harbor County, Wash. **John Carroll** is assistant superintendent, and "**Red**" **Solt** is job office manager.

* * *

Al Hyde, general superintendent for Alton V. Phillips, has been named to head a \$1,272,990 contract at Seattle, Wash., for 0.1 mi. of grading, bridge, and approaches. Phillips expected to get this 360-day job under way in February, but will probably not start till August due to contractors working on other portions of the overall project. Office manager is **Art Sauder**.

* * *

Charles Johnston, superintendent, with the assistance of **Charles J. Rounds, Jr.**, foreman, is supervising construction of the Alhambra-Monterey Park storm drain at Alhambra, Calif., for Charles J. Rounds Co. which started work on this \$1,143,101 job the first of March and expects to complete it in 300 days.

* * *

Arthur W. Rogers, superintendent; **Evans Tanner**, foreman, and

Raymond Hershner, office manager, are principal personnel for Tanner Bros. Contracting Co. which is doing 4.2 mi. of grading, draining, and surfacing west of Ashfork on U.S. Route 77 in Arizona. This 120-day, \$272,247 contract started Mar. 1.

* * *

Henry B. Isbell, superintendent, assisted by **Ed Dempsey**, is handling a \$440,660 award of Isbell Construction Co. for construction of a portion of state highway at Reno, Nev. **John Gent** is cost engineer. A 150-day job, work got under way Mar. 9.

* * *

John Seawall, superintendent—dirt work, and **Paul Spletzer**, superintendent—concrete, are key men working for Otis Williams & Co. on a \$526,731 contract for earthwork, canal lining, and structures on the Kennewick Division of the Yakima Project, Wash. Another key man on the work is **Elmer Rada**, head mechanic. Work started in mid-January and is expected to take 470 days for completion.

* * *

R. H. Wattson, joint venture sponsor (R. A. Wattson Co.), and **Aubrey Horn**, joint venture co-sponsor (Kier Co.) are in over-all charge of construction of the second storm drain in Alhambra, Calif., to connect with the Alhambra-Monterey Park Storm drain under construction by Charles J. Rounds Co. Project manager on this \$305,000 joint venture contract is **Don Lawson**; project engineer is **Keith Center**; timekeeper is **L. Fiore**. **A. Payton** is pipe foreman and **L. Knott** is master mechanic. Bulk of job is concrete box involving about 240 days' work.

* * *

Earl Barnard is supervising for John Delphia on a 2.9-mi. grading and surfacing, and a welded steel girder contract in San Luis Obispo County, Calif., located 1 mi. west and 2 mi. east of Estrella River. A \$476,821 job, work started Feb. 1 and will probably come to a close about June. **W. S. Kimble** is in the assistant superintendent spot. **James Briggs** is shifter; **Al Luttrell** is labor foreman, and **Woody LeCount** is engineer.

* * *

Ed Hansen is structure superintendent under **C. M. Hanes** who is directing the work of grading, structures and surfacing 0.6 mi. on Project SO119 of the Colorado State Highway Department, a \$122,312 award which recently went to C. M. Hanes Construction Co. **George** and **Orville Goodell** are in charge of excavation. **Robert Frandsen** is resident engineer for the State. Starting date, Mar. 1; length of job, 180 days.

* * *

A. H. Cranmer, superintendent, assisted by **Grant Palfreyman**, foreman, is directing a \$146,993 contract which got under way Mar. 1 and is expected to run 120 days. Work is being done by Whiting & Haymond



DUMPING CLAY & SHOT ROCK "ON THE GO," two MOVALLS on 1,000 foot haul keep 3 yard Manitowoc shovel busy on this highway job near Roseburg, Oregon. MOVALLS dumped their sticky loads clean as they turned at end of fill without stopping. Specifications required dumping on top, dozing over edge as shown. D & H Construction Co. and M. H. Hasler Construction Co., contractors.

C & D MOVALL GIVES YOU POSITIVE EJECTION, CONTROLLED DUMP OR SPREAD

End-dump wagon for Caterpillar DW20 or DW21 tractors handles rock, clay, mud. Capacity 31 tons, 25 yards heaped

C & D MOVALL's exclusive cable-powered ejector gives whistle-clean, fast dumping of any material—even wet, sticky clay or frozen ore. Discharge rate is controlled by operator; he can spread at any desired depth on the go, dump at controlled rate into a hopper, or eject full load in 12-14 seconds over the edge of a fill. Center of gravity stays low when dumping, and all wheels can be braked for added safety.

MOVALL has 11'x19' target area, 8' height, (10'4" at front) for easy spotting, faster loading with shovel, dragline or belt-type loader.

The power and speed range of Caterpillar DW20 and DW21 prime movers, plus the MOVALL's exceptional stability, assures maximum speed and safety on long or short hauls and grades. Maneuverability is excellent;

MOVALL DW20 unit turns in 30 foot width.

Yoke design makes it easy to interchange DW20 or DW21 tractors, switch from MOVALL to No. 20 scraper or vice versa; MOVALL uses standard Caterpillar cable PCU.

If you own a shovel, dragline or belt-type loader, add a Caterpillar-powered MOVALL and you're equipped for the widest possible range of work—moving rock, earth, mud, ore, spreading sub-base and surfacing materials for airport and highway construction. Why limit yourself to a "single-purpose" haul unit—get an all-purpose MOVALL. Investigate—see your Caterpillar distributor or write us now for specifications, prices, demonstration on your job. C & D MANUFACTURING COMPANY, Perkins, California (Suburb of Sacramento), Phone Hillcrest 5-8592.

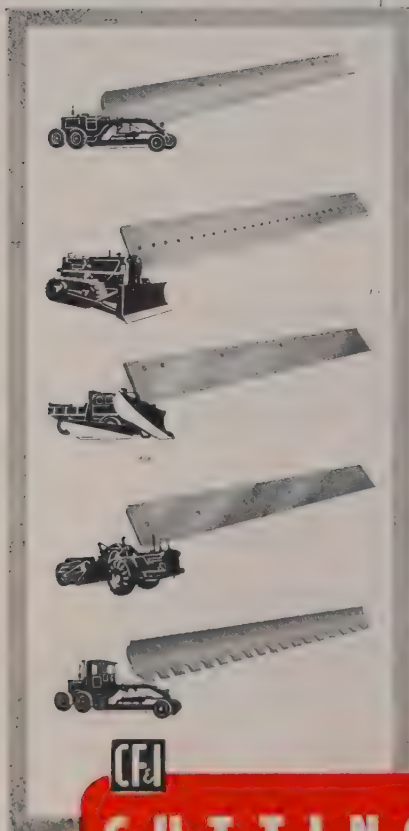
what blade do you use when you're scraping the face of the earth?



That's when you need a cutting edge that's extra rugged and long-wearing. And that's what you get when you specify CF&I Cutting Edges for your scrapers, graders, dozers, snowplows and allied equipment.

Every cutting edge produced by CF&I is hot-rolled from special analysis steel selected for toughness and abrasion resistance.

CF&I Cutting Edges are available in a wide variety of lengths, widths, thicknesses and hole spacings; flat or curved, with beveled or square ends; and in different finishes. All are the product of quality control that's complete from ore through every stage of processing.



CUTTING EDGES
THE COLORADO FUEL AND IRON CORPORATION

Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth
Houston • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland
Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Wichita

and consists of 6.4 mi. of grading and surfacing on Highway 54 at Escalante, Utah.

* * *

B. F. Smith, superintendent for Floyd Haake, is supervising a \$317,000 job in Apache National Forest, N. Mex. Work involves 6.8 mi. of grading and surfacing on Datil-Reserve-Dry Creek route. Smith is being assisted by T. J. Serna, foreman. A 150-day job, work started Feb. 21.



SPLASHING ALONG here are J. P. Williams, general superintendent (left), and Joe DeMilita, south portal foreman, who have just completed work on the boring through of a 3-mi. tunnel in the Hollywood hills of Los Angeles. See page 43 for a description of this interesting job.

Kenneth DeWitt is superintending a \$276,799 contract recently awarded Dale F. Payne for grading and surfacing 6.3 mi. of Salt River Valley-Hardt Creek highway in Maricopa County, Ariz. Work started Feb. 28 and will last 300 days.

* * *

Bill Viar is foreman on a Tom Lillebo job of constructing 2 bridges on the Oregon Coast Highway about 17 mi. south of Port Orford, a \$149,014 project which will run about 180 days.

* * *

J. H. Matich, project manager; Harry Hicks, project superintendent; John Root, grade foreman; and F. V. Garcia, paving foreman, comprise the top supervisors of Matich Brothers & Matich Brothers Paving

2652

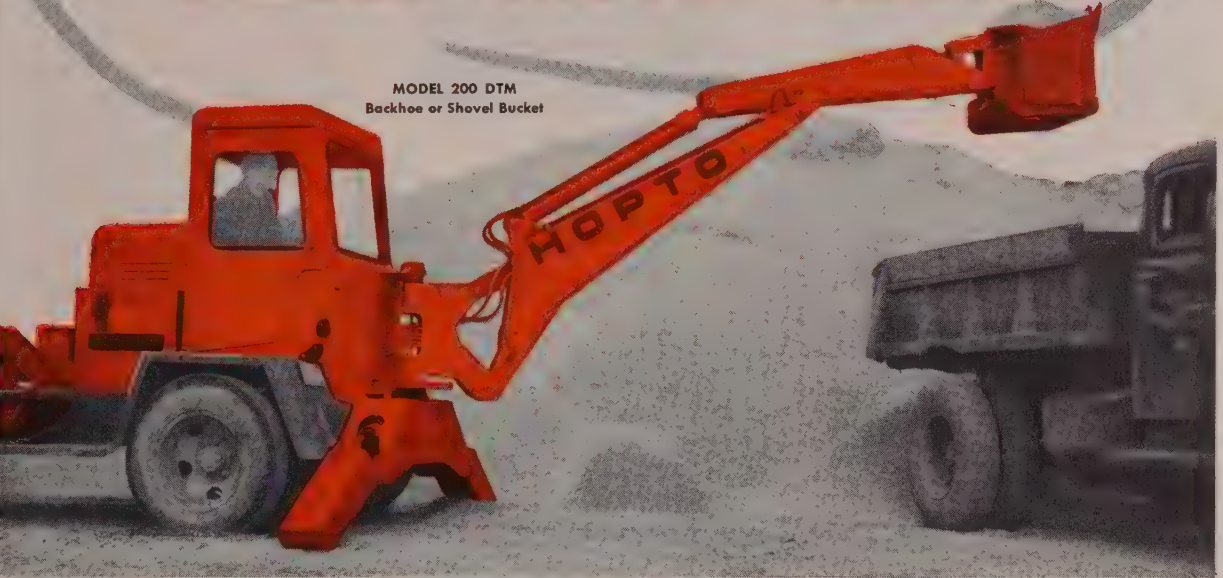
get set for more work with lower equipment investment

HOPTO

DIGGER • SHOVEL • CRANE



MODEL 200 DTM
Backhoe or Shovel Bucket



FAST CYCLING . . . HYDRAULICALLY OPERATED . . . EASILY MASTERED!

HOPTO Model 200 DTM illustrated above mounts on any 1½ ton or larger truck. This low-cost, big-capacity, versatile unit gives you a power shovel, crane and backhoe at low equipment investment!

HOPTO is completely hydraulic. Four levers give fatigue-free operation of this fast-cycling, 200° swing unit. The dipper stick extension mounting on the bucket

gives 135° tilt. HOPTO digs 11½ feet below surface; lifts 13½ feet high with shovel bucket, more than 9 feet high with backhoe.

Alloyed steel hardened pins and self-aligning bearings at all pivot points, magnetically filtered oil, double wire braided hydraulic hoses and the elimination of all cables, sheaves and pulleys assure longer life, lower maintenance!



MODELS FOR EVERY NEED!



Badger manufactures a complete line of earth digging equipment from the large capacity, continuous Badger Trencher to the following models of the HOPTO Digger: Power take-off operated and self-powered trailer-type models, two models for mounting directly on any 1½ ton or larger truck, models for rear mounting on track-type of wheel-type tractors, a complete self-propelled track-type unit and the complete Model SPR unit shown below. All HOPTO units incorporate the com-

pletely hydraulic operation and the heavy-duty engineered features that make HOPTO the standard of comparison!

A wide variety of attaching equipment adapts HOPTO for any shovel or backhoe work. Half shell and skeleton type buckets and backhoes are available in a variety of widths for every application. Buckets are equipped with HL teeth.

Get all the facts and you'll get HOPTO!

BADGER MACHINE CO.

DEPT. T, WINONA, MINN

WRITE FOR FREE FOLDER
GIVING COMPLETE
INFORMATION



MODEL 185 SPR
Backhoe or Shovel Bucket





Rains

Bassette

Morrow

Roberts

"Pete" Bassette is supervising Morrison-Knudsen's contract at Edwards AFB in Southern California. Among others assisting in the work are Jack Narramore, operating engineer; Mel

Kelso, grade foreman, and Louis Faure, truck driver.

At M-K's yard at South Gate, Ike Rains is shop foreman, Otto Morrow, mechanical, Hollis Roberts, labor.

Co. which have a \$748,257 contract for 5.2 mi. of grading and surfacing near Moreno, Riverside County, Calif. Work started in mid-February and will continue for about 200 days.

* * *

Wayne Lowdermilk, superintendent, heads the job personnel working for Lowdermilk Brothers on two recent contracts awarded the company in Colorado. On a \$214,570 grading and surfacing job consisting of 3.9 mi. of State Highway 7, Lyons-Boulder, Dan Handy is excavation superintendent; R. G. McGillivray, structure superintendent; and Robert H. Marks, crusher foreman. On the other \$399,714 stretch of 4.5 mi., grading and surfacing in Roosevelt National Forest, Boulder County, Handy and McGillivray are superintending also, with John T. Guthrie as powder foreman. Lloyd C. Smith is timekeeper for both jobs.

* * *

O. K. Kringlen is project manager for Oberg Brothers Construction Co. on a \$219,721 contract recently awarded this contractor. He is being assisted by Carl Oberg, job foreman. Located in Los Angeles County, work got under way Feb. 21, and consists of portions of highway between Slauson Ave. and 0.3 mi. south of Atlantic Blvd., about 9.5 mi. in net length, a "glory hole" to be excavated; construction of a railroad underpass, and installation of drainage facilities. About 175 working days are required for completion of the work.

* * *

Bob Middaugh is superintending construction of a Safeway Store at Watsonville, Calif., for MacDonald, Young & Nelson, Inc.

* * *

C. R. Jurgensen and W. C. Gott, superintendents for O. D. Cowart,

are presently supervising a road job in Dona Ana County, N. Mex., consisting of grading and structures on 12.6 mi. of Highway SR-46 on the Anthony-North Road, a \$588,277 project which started the middle of February and will continue for 250 working days. Assisting on the job are Clyde R. Fulton and Cecil Raley, foremen.

* * *

J. K. Riggle, general superintendent; Frank Kunze, superintendent; "Red" Rogers, general foreman, together with Charles Harman, job engineer, and Tom Tarbill, office engineer, are key men working for Lewis Hopkins Co. on the Kennewick Division of the Yakima Project, Washington. This \$773,313 project is for earthwork, canal lining, structures, etc. A 360-day contract, work started Feb. 24.

* * *

Ferris E. Sainsbury, superintendent, and Tom Howard, foreman, are directing work which started last November 20 consisting of sub-surface exploration core drilling for foundation of proposed Priest Rapids Dam, Grant County, Wash. This is a \$207,050 project which Boyles Brothers Drilling Co. is handling and expecting to have finished by June 1.

* * *

J. E. Ricker, project manager, and L. N. Spencer, project engineer, are top men on a recent award to Morrison-Knudsen Co., Inc., for concrete lateral lining and structures, Dome and Wellton-Mohawk distribution system, Arizona, an \$816,744 project which started Feb. 1 and will probably end by mid-December. Other key men are C. S. VanLandingham, master mechanic; Bud Snowball, excavation superintendent; William Burns, structures superintendent,

and the following foremen: Pete Beall, carpenter; Max Ware, excavation; Fred Scales, canal lining; Bob Harper, pipe; and Les Bishop and Harold Daigh, labor. Field engineer is "Chuck" Kincaid. M-K are currently working on two other sections of the same project, i.e. Wellton-Unit II, \$1,168,000, started September 1954, to be completed by July 1955, and Mohawk-Unit IV, \$634,000, started in February, to be completed in mid-December. These jobs are being supervised by the same personnel listed above.

* * *

Paul Patchin, superintendent; J. K. Pilcher, general superintendent; and Ted Varey, engineer, are key men on construction of Secondary State Highway 1-K and First Ave. south bridge and approaches, King County, Wash., a year-long contract being executed by Roy T. Early Co. at a cost of \$1,008,944. Work started at the site on Dec. 1, 1954. Another of the important personnel is Harry Doremus, the carpenter foreman.

* * *

Julio Tomei, general manager of Tomei Construction Co., is directing the execution of a recent award to his company covering 3.7 mi. of grading and paving on Palos Verdes Drive between city limits of Palos Verdes and Narcissa Dr. in Los Angeles County, Calif. Perry Tomei is supervising construction with the aid of Jimmy Blackledge, foreman. Bid price was \$354,040. Work started in January and is expected to be completed in July.

* * *

Jerome Niefeldt, general superintendent; Joe Haak, superintendent, and H. C. Strohm, concrete superintendent, are top supervisors on the Platte Valley Construction Co. contract for grading, draining, and surfacing, 3 reinforced concrete culverts and miscellaneous work on 6.9 mi., in connection with diversion dam, on Dubois Road in Fremont County, Wyo. The \$300,992 contract got under way last Nov. 28 and is expected to close the middle of May.

* * *

J. C. Henson, C. Cleveland and Richard O'Donnell are general superintendent, job superintendent and concrete foreman respectively on a \$226,480 contract held by W. J. Henson, contractor. Work consists of grading, draining, and seal coat on Kingman-Ashford highway in Arizona, beginning at Ashford Junction and extending westerly through Ashford for about 1.9 mi. Job started Dec. 1, and will end probably May 30.

* * *

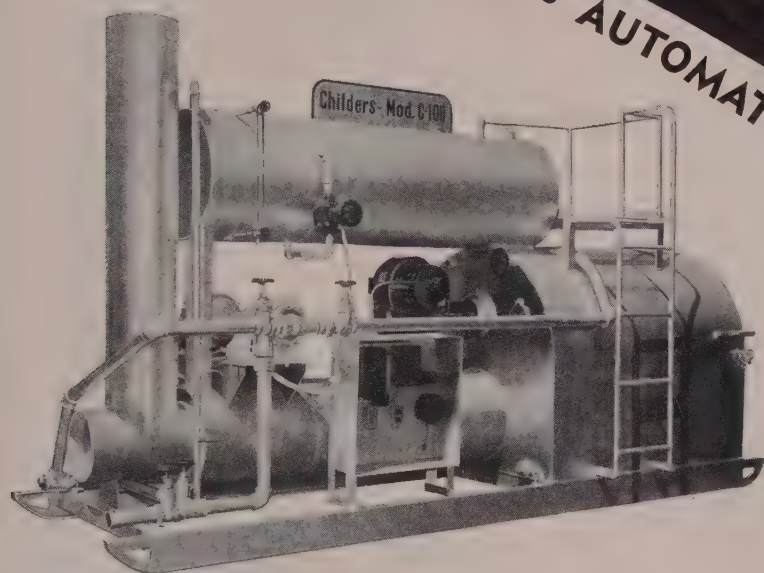
J. C. Henson is general superintendent on another of W. J. Henson's contracts in Arizona. This work which begins about 23 mi. southeast of Tucson on the Tucson-Benson highway, extending over a recently graded new alignment of Route 8 for about 8 mi., consists of draining and

CIRCULATING HOT OIL HEAT

EFFICIENT .

• AUTOMATIC

4
MODELS



Especially designed for use in applications where steam or hot water is presently being used for heat transfer.

Circulating hot oil is far superior to steam and much easier to operate and maintain.

Model C-100 Childers Automatic Circulating Heater

FOR ASPHALT PLANTS, BULK STORAGE AND TANK CAR HEATING

Distributed By:

Arizona	Neil B. McGinnis Equipment Company, Phoenix	PH. Alpin 8-5391
California	Coast Equipment Company, San Francisco	PH. Market 1-5740
Colorado	Ray Corson Machinery Company, Denver	PH. Main 3-0165
Montana	Montana Power & Equipment Company, Helena	PH. 2784
Oregon	Columbia Equipment Company, Portland	PH. East 7148
Utah	H. H. Neilsen Company, Salt Lake City	PH. 7-5461
Washington	Columbia Equipment Company, Seattle	PH. Lander 1530
Wyoming	Keremi Tractor & Equipment Co., Cheyenne Casper	PH. 8-8922 PH. 3-6631

Also Available From Asphalt Plant Manufacturers

W. L. CHILDERS MFG. CO.

605 Euclid Ave. NW ALBUQUERQUE, N. M. Phone 3-7538



Pool

Anderson

McMurray

Johnson
Wells

Zinmeister
Hakala

Robb. Johnson is project manager for Taylor Construction Co.'s \$5,500,000 contract covering erection of the Riviera Hotel at Las Vegas, Nev. Superintending the job, which is just about finished, is Clifford R. "Whitey" Anderson, assisted by Ben Pool. Carpenter foremen are Bob McMurray, Bob Zinmeister, Larry Hakala, and Crayton Johnson. "Pete" Peterson is plaster foreman, and Bill

Wells, general labor. Subcontracting on plumbing and heating is A. R. Ruppert, with J. "Buddy" Sulawski as general foreman, assisted by "Chick" Wara, S. Englebreton (plumbing), and "Bud" Holley, (heating). W. A. Scott is supervising subcontract for Utah Crane & Rigging Co., with W. R. Welker and Ted Bell, general steel foremen. Structure is 9-story, plus basement.

plant-mix base, a \$212,977 job which is just about closing. Charlie Joy is job superintendent and Harvey Harden, plant superintendent.

* * *

W. N. Dahlstrom is supervising construction for Somers & Stacy who have a contract for earthwork and structures for Corning Canal, Sacramento Canals Unit of Central Valley Project, Calif. Work has been going on since last May and is expected to finish Aug. 1.

* * *

R. N. Moseman, superintendent; assisted by C. VanderLinden, grading superintendent, and Henry De Santos, carpenter foreman, is directing a \$370,218 contract held by C. K. Moseman for 5.5 mi. of grading and surfacing, including 3 reinforced bridges in Fresno County, Calif. Work started Feb. 2 and will run to Sept. 1.

* * *

Francis Bradley, superintendent, assisted by Lawrence "Plug" Clark, is supervising construction of 9 mi. of highway southwest of Mesquite, Nev., for Thorn Construction Co., which started work on the job last November and expects to finish in July this year. Arch Cameron is service manager and Milt Wood is office manager. Bid price was \$1,158,539.

* * *

Nels Carlson, Sr., and Nels Carlson, Jr., partners in the construction firm of Nels E. Carlson & Son, are directing their own contract in the amount of \$1,000,000 for the construction of 80 homes at Orinda, Calif. Work at this subdivision started last Oct. 1 and Carlson expects to finish the job by Oct. 1, 1957. The senior member of the Carlson firm, in former years,

was connected with such well known San Francisco Bay area contractors as C. Dudley DeVelbiss, A. T. Beckett, Sam Shapero, J. M. Walker and William Beckett, having done work at the 1946 Oakland Garden Show and the 1939-1940 World's Fair on Treasure Island.

* * *

T. W. White is acting as superintendent for his company, White Brothers Construction Co., on a \$504,150 contract recently received for construction of roads and bridges in the vicinity of Smith River and Esmond Creek, Douglas County, Ore. When the work gets under way early in May, George Clawson will be foreman on grade, and L. L. Sutherland, master mechanic.

* * *

J. W. Powell and R. E. Buckingham, superintendents, and J. W. Cornwell, office manager, are principal personnel for the contractor, E. C. Powell, on his current \$184,556 contract for earthwork, structures, and surfacing on county roads in the Tiber reservoir area of the Missouri River Project, Montana. Just started, the job will run 300 days.

* * *

Johnny Nord, bridge superintendent; Jerry Cabe, bridge foreman; and Art Bechtel, grading superintendent, form the supervisory trio of N. Fiorito Co. which recently won a 300-day contract at \$422,114 to grade, surface, and construct bridge approaches near Hoquiam in Grays Harbor County, Wash. They started work at the site Feb. 28.

* * *

James V. Cole and Thomas O. Paddock, partners in the contracting firm of Cole & Paddock, are prepared

to start work on their contract for reconstruction of the Coast Guard wharf at Ketchikan, Alaska, as soon as materials are delivered to the site (after Mar. 21). Everret Kirchhofer has been named chief engineer. Other key men selected for the job are Herman Haffner and Martin Johnson. Contractor has a time limit of Dec. 17, but places the approximate completion date in mid-October.

* * *

Charles McInroe, project manager for Rogers Construction Co., is in charge of three recent awards to this contractor. All are in Oregon. One is a \$268,466 grading and surfacing job on the Warm Springs highway, Wasco county line-Warm Springs section, Jefferson County, which started early in December and is expected to be finished by Aug. 31. Alvin Haman is superintending the crushing, and Claude Cousins, the grading. These two men hold similar spots on grading, paving, and structures contract on the Tigard-Newberg section of Pacific Highway west, in Washington County, a \$501,931 job which has been going since mid-December and is scheduled for completion by next December 1. C. E. Blakley is structure superintending here. The third job is being supervised by Homer Paxton and consists of paving the Emigrant Hill section of Old Oregon Trail highway, Umatilla County. Rogers won this award on a bid of \$432,215, started work Jan. 24 and expects to finish by mid-September.

* * *

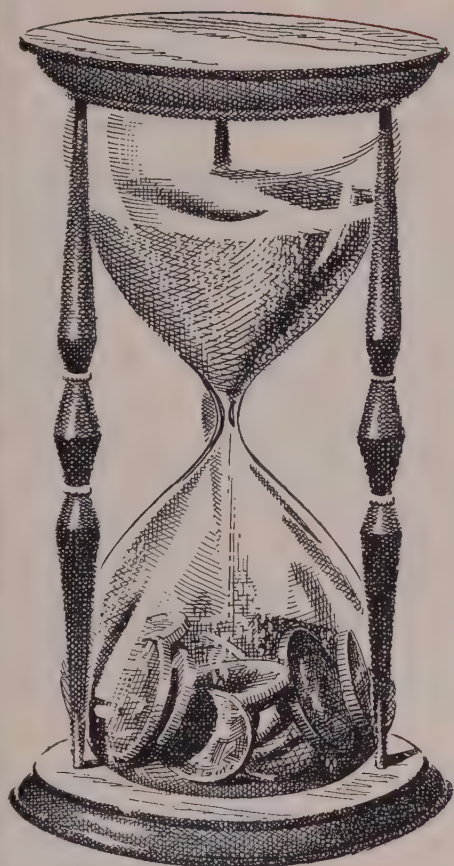
R. A. Millard is foreman working under Hubert E. Roth and D. F. England, principals in the firm of England & Roth Construction Co., which recently received a \$208,208 award to grade, drain, surface, and perform miscellaneous work on 8 mi. of Gillette-Boards road in Campbell County, Wyo.

* * *

Jack Budd, project superintendent; Ken Cater, field superintendent, and Dean Jonston, engineer, are key men on a project which R. A. Heintz Construction Co. has been working since Oct. 15. The contract entails 6.1 mi. of single track of U. P. railroad and about 5.4 mi. of U. S. Highway 30 in connection with The Dalles Dam Project in Sherman County, Ore. Scheduled for completion July 1, Heintz is doing the job at a cost of \$849,861.

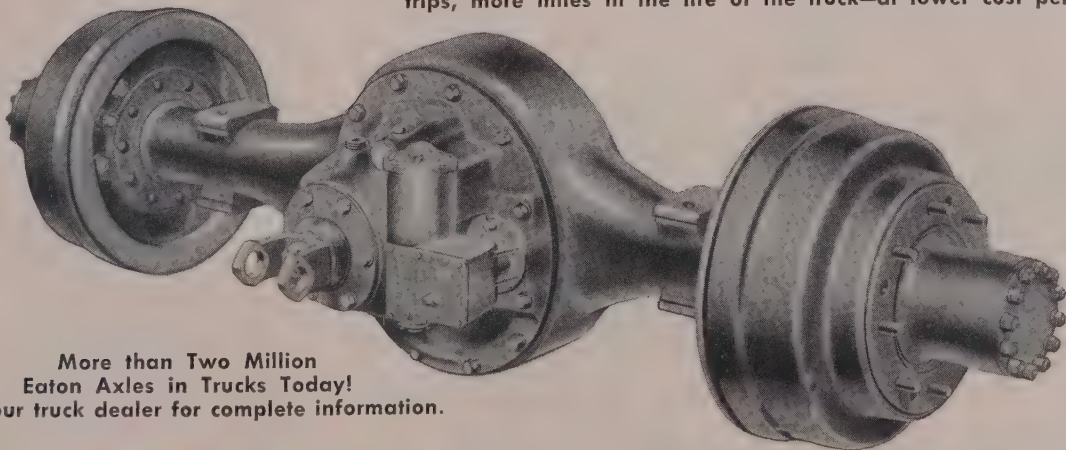
* * *

John Kelly, project manager, and Fred Nelson, job superintendent, are key men working on the Union Oil Co. tower and office addition at San Francisco, under Sid Davis, who is general superintendent for all jobs in the San Francisco area for Engineers, Ltd., contractor. General carpenter foreman is Ernie Billings, assisted by Fred Jensen, foreman. Leo Neihous is labor foreman. Les Carlson is office manager.



Eaton 2-speed Axles Turn Time into Money for Truck Operators

Eaton 2-Speed Axles may be the difference between profit and loss for those hauling jobs where time is a critical factor. They give trucks full pulling power for off-the-highway operation, plus the speed to make time on the open road. Because Eaton 2-Speeds reduce strain and wear on engines and power transmitting parts, and permit engines to run in their most efficient operating range, trucks are on the job—not in the shop. Eaton 2-Speeds give trucks greater maneuverability—an important factor in maintaining schedules in today's traffic. Eaton's exclusive features provide axles with greater stamina, hold maintenance to a minimum, assure maximum earning ability. Specifically: by supplying the right gear ratio for every road and load, Eaton 2-Speed Axles mean more and faster trips, more miles in the life of the truck—at lower cost per mile.



More than Two Million
Eaton Axles in Trucks Today!
Ask your truck dealer for complete information.

EATON

AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO



PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers



Brigrance

Carver

Jennings

Lindquist

Digby

Others among the key personnel working on Healy Tibbetts Construction Co.'s outfall sewer job near San Pedro, Calif., besides **Robert R. Helen**, project manager; **Richard H. Smith**, engineer; and **Norman Jennings**, superintendent, whose names

were listed last month are: **Earl Carver**, rigger foreman; **Ray Brigrance**, pile-driver foreman, as well as **C. N. Lindquist**, diver, and **H. C. Digby**, pile butt. **Edna Groth** is office manager. Job will probably end by September.

Stephen A. Birch, Great Falls, is the newly elected president of the Montana Contractors' Assn. Other new officers are **Frank Fly**, vice president and **Elmer Schye**, treasurer.

The 1955 president elected to head the Montana Building Chapter is **E. R. Mitchell**. Elected to serve with him are **L. G. Hardy**, vice president, and **Charles H. Pew, Jr.** Manager of both organizations is **J. W. Marlow**.

* * *

Four officers of Tacoma Chapter, Associated General Contractors' were recently chosen to comparable posts directing the Pacific Northwest Branch of AGC. The branch includes nine chapters of the national organization. Elected president of the Pacific Northwest Branch is **James W. Purvis**, head of Construction Engineers & Contractors; **R. H. Hartman**, president of Standard Construction Co., elected vice president;

J. D. Shotwell, president of the company bearing his name, chosen treasurer of the branch. And **C. W. Todd**, manager of the chapter becomes secretary of the Northwest Branch.

* * *

James W. Purvis of Construction Engineers & Contractors was chosen to succeed **P. F. Stevens** as 1955 president of Tacoma Chapter, Associated General Contractors. New officers elected to serve with him are **Roy Hartman**, vice president, and **J. D. Shotwell**, treasurer. **C. W. Todd** is manager of the Chapter.

* * *

George C. Koss, president of Koss Construction Co., succeeds **John MacLeod** as 1955 president of The Associated General Contractors of America. **Frank J. Rooney** was elected vice president. **W. C. Foss** of J. A. Terteling & Sons, Boise, Idaho,



Lofland Winger
Hauser Carnes

Wallace



Newcomb Shipman
McGarrah Laudenslager Foster

L. H. Gemmill is project manager, and **W. W. Winger** is general superintendent for Stearns-Roger on a steam generating plant going up at Whitney, Nev., for the Southern Nevada Power Co. **R. W. Lofland** is job engineer, and **J. L. Wallace** is assistant superintendent on this contract which got under way last Nov. 1 and is expected to end about next December. **C. W. Hartman** is in charge of the office. The following are fore-

men: **G. R. Foster**, steel; **Oran Shipman**, carpenter; **Bernie Laudenslager**, labor; **Oscar Newcomb**, pipe; **George McGarrah**, equipment; and **Jerry Coombs**, boiler maker.

H. P. Foley is doing the electric work, with **S. K. Carnes**, superintending. Boiler installation is by **Riley-Stoker, Corp.**, with **Maupin** in the supervising spot. **F. L. Hauser** is plant superintendent for Southern Nevada Power Co.

was elected to a three-year term as director to fill a vacancy in District 1.

* * *

Nicholas R. Petry, head of N. G. Petry Construction Co., is the new president of Associated Building Contractors of Colorado, Inc. Other officers are: **Keppel Brierly**, vice president; **Walter L. Meyer**, treasurer; and **David A. Olson**, secretary.

* * *

John H. C. Roberts, new president of Nevada Chapter of Associated General Contractors, has the assistance of **C. V. Isbell** serving as treasurer and **Edward L. Pine**, secretary-manager for the 1955 term of office.

* * *

C. E. Babbitt, head of the Babbitt Construction Co. of Boise, Idaho, was recently elected president of the Idaho Branch, Associated General Contractors, succeeding **N. L. Terteling**.

* * *

Elmer R. Coats was recently elected president of the Seattle Construction Council, an affiliate of Seattle Chapter, AGC. Those elected to serve with him during 1955 are **E. W. Waldal** and **Fred S. Nobmann**, vice presidents; **P. F. Del Missier**, secretary; and **George W. Porter**, treasurer.

Job accidents take their toll

THESE were the accidents that resulted in death or serious injury on the West's construction jobs during the last reported month.

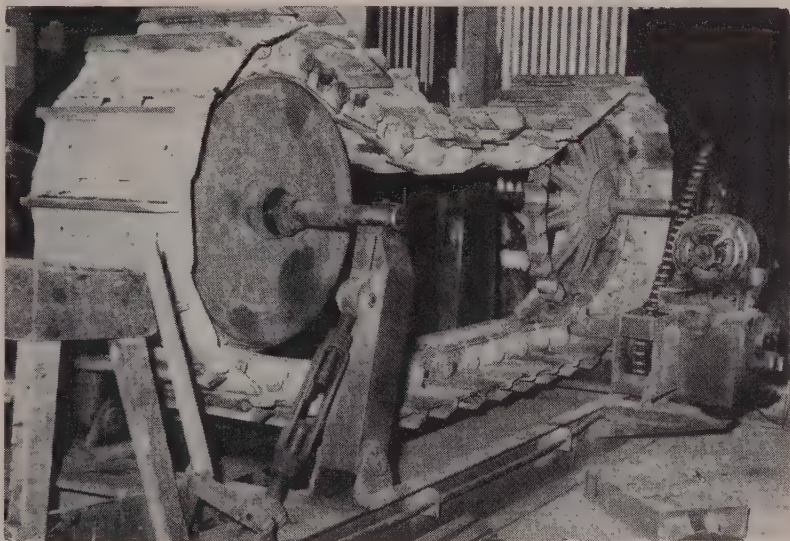
Stanton H. Wilkes, Sr., 51, Hebo, Ore., released a safety rope to clear a cable, lost his balance, and fell two stories to his death. The accident occurred at Longview, Wash., where he was employed on a building construction.

Joe Salveggio, 28, a gravel-pit worker, was killed when he and a supervisor at the Chandler Sand & Gravel Co. pit at Los Angeles exploded a dynamite charge which brought down a greater amount of sand than was expected. Fellow workers struggled to free Salveggio who was completely buried, but he was pronounced dead on arrival at the hospital.

Andrew R. Sutherland, 52, an ironworker on a telephone company building under construction in Santa Monica, Calif., fell to his death on his first day on the job. He was handling steel on the first floor of the structure when he fell into the sub-basement excavation.

Jack Selby, 18, was recently killed, being buried under many tons of earth when a sewer excavation in Denver, Colo., in which he was working, caved in.

TRICKS of the TRADES



Picture and information from Stoodly Co.

Grouser rebuilding jig cuts downtime

MAINTAINING CRAWLER gear is a routine job in a contractor's welding shop. Such parts as idler rolls, track rolls, and rail links are regularly rebuilt by automatic electric welding. But Isbell Construction Co., of Reno, Nevada, rebuilds worn track pad grousers with the aid of the novel fixture shown in the illustration.

Steel bar stock of $\frac{1}{2} \times 1\frac{1}{4}$ -in. section is torch-cut to length and welded to worn grousers with high-tensile low-hydrogen electrodes. During this operation, an entire track is set up in the fixture as shown. Welders are stationed at each end to permit down-hand welding on either side of the bars. With this arrangement welding time is cut in half and handling is simplified. After new bars have been welded to worn grousers, they are "topped" with a single heavy stringer bead of coated Stoodly Self-Hardening.

The jig itself simulates an actual installation. An idler supports one end of the track and the opposite end is carried on a driven sprocket. Large turnbuckles are used to adjust the position of the idler for track of varying lengths.

Renewing of grousers obviously could be accomplished on the tractor but at a sacrifice of valuable production time. Isbell has ample spare

parts to bridge this gap and welding is done during slack periods.

Howard Keele is welding superintendent for Isbell.

200-page book on portable power tools

"HOW TO USE PORTABLE POWER TOOLS" is the title of a new 200-page book by Maurice Reid. In view of the recent rapid trend toward mechanization of all hand labor, the book is designed as an up-to-the-minute manual for the building and construction trades, maintenance crews, industrial production, wood and metal working shops. It describes all types of standard portable electric tools, newly developed machines, and numerous attachments for specialized jobs.

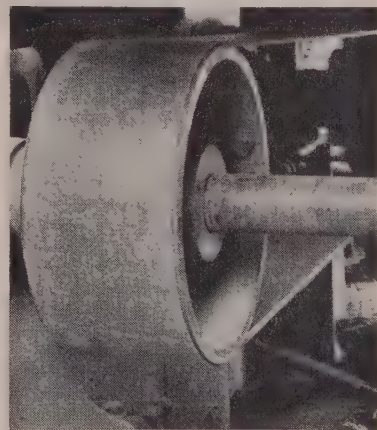
Step-by-step instructions on uses and "tricks of the trades" show the craftsman how to turn out more skillful work faster and with less fatigue than by old hand methods. 180 instructive photographs make this a practical basic guide for all manual workers. Library edition published by Thomas Y. Crowell Company, New York City, at \$2.95. Unabridged special editions available at \$1.50 each by writing Porter-Cable Company, 55 Exchange Street, Syracuse 8, N. Y.

New crusher drive takes shock loads

RAYBESTOS-MANHATTAN has developed a belt drive, the Poly-V, which should find many applications for belt-power transmission in the construction field. Now being field tested on several cone crushers, the belt—a series of V-shaped rubber ribs molded lengthwise around the inside of a common backing—has solved belt matching problems and has permitted the use of narrower and smaller diameter sheaves on the drive.

Because the Poly-V sheave is V-grooved around the outside surface, it mates precisely with the belt ribs and the grooves are filled completely. The belt ribs are unable to sink further into the sheave grooves when the crusher transmits a sudden load back to the drive. The single belt concept also has meant reduced inventory of both belts and sheaves.

Partly responsible for the longer wear, apparently, is the fact that face pressure is cut in half and the thin-



HERE IS THE POLY-V drive installed on a 250-ton-per-day secondary cone crusher. The belt has eliminated matching problems and has made narrower sheaves possible. The drive has been running over 2,000 hr., shows no signs of wear.

ness of the belt allows greater area to be exposed to the air for cooling. The Poly-V belt derives its pulling power from the greater area of contact between belt and sheave.

Little ones from big ones

As an added maintenance feature, the belt can also be cut lengthwise along the grooves with a sharp knife. This makes it possible to trim a wide belt in the field to fit a narrower sheave.

Higher speeds and power demands are outdistancing the capacity of some standard belt drives. Intention of the new drive is to combine the best features of both flat and V-belt drives by molding a ribbed traction surface onto a flat belt. Internal reinforcing is supplied by synthetic fiber cords across the full width of the belt.



Colorado sandstone sawed into perfect squares

SHARP BROTHERS Contracting Co., of Kansas City, Mo., recently faced a tough problem in their Union Cemetery improvement job, which lies in the heart of Kansas City. Part of the plan called for a patio to be paved with 12-in. squares of Colorado red sandstone. The problem was how to cut the material to size.

The trick is the track

The solution that Sharp came up with was to saw the squares. A Clipper Model C-75 concrete saw was mounted on steel track, which held the saw rigidly in its course. Sides of the squares were sawed rapidly, with precision, and without breakage. The picture above shows the saw cutting the fourth sides in assembly-line fashion. That's a Clipper wet-cutting

diamond blade in the saw pictured.

On another part of the same job, Sharp used the concrete saw to trim special shapes of brick. Brick were placed in an improvised wood mitre box, which guided the saw cuts to the exact specification desired. For these cuts, Sharp used a "CBR" blade, a dry-cutting reinforced abrasive normally mounted on masonry saws.

Cut 'em any size

Model C-75 is one of a complete line of Clipper saws, ranging from the 1½-hp. Model C-15 (electric powered) up to the big self-propelled Model C-250, powered by a 25-hp. gasoline engine. Headquarters for the Clipper Manufacturing Co. is in Kansas City, Missouri.

Caterpillar increases engine power ratings

RECENT ENGINEERING developments at Caterpillar Tractor Co. have resulted in an increase of horsepower ratings for the company's D397, D386, D375 and D364 diesel engines. The continuous ratings of these engines will be up to and including 1,200 rpm. The intermittent curve is now extended to 1,300 rpm.

The continuous and intermittent horsepower ratings of the four sizes of engines offered as diesel industrial engines are as follows:

	With radiator fan	Without radiator fan
1,200 rpm. (continuous)		
D397	430 hp.	450 hp.
D386	340	360
D375	284	302
D364	220	328
1,300 rpm. (intermittent)		
D397	493	520
D386	388	415
D375	328	350
D364	253	275

The "continuous" ratings of these engines offered as diesel electric sets are:

	With radiator fan	Without radiator fan
1,200 rpm.		
D397	295 kw.	315 kw.
D386	230	250
D375	200	210
D364	155	165
1,000 rpm.		
D397	265	275
D386	205	215
D375	173	173
D364	135	140

The company also announced that marine gears for the new increased horsepower diesel marine engines are available.

Phoenix hot plant gets clean air with "snorkel"

POWER UNITS are often called upon to operate under adverse conditions as is demonstrated in this photo of a portable Barber-Greene asphalt plant. It is shown working for the Arizona Sand and Rock Co. of Phoenix, Ariz. The power unit, a General Motors 6-71 diesel engine, was installed as replacement power on the mixer over a year ago.

Despite the operating conditions shown, the engine has worked consistently 9 hr. a day since that time and has reduced mixer operating costs more than 25%, according to the owners. To alleviate the worst effects of the dust, air for the engine is taken through an air-intake connected to engine filters by a 30-ft. flexible hose. (See arrows).



SURE!

the DUO-MIX (DOUBLE DRUM) MULTIFOOTE

will
give
you

80 batches
per hour

● If you are planning to use your single drum paver on those paving contracts coming up you are not going to be in as good a position for bidding competitively nor will your profits from the job be as high.

The MultiFoote DuoMix (Dual Drum) Paver has delivered over 80 batches an hour—almost twice that of the Single Drum 34-E.

The MultiFoote DuoMix brings you a combination of features found on no other Dual Drum concrete paver. Shovel type crawlers with self-cleaning action stand up under miles of travel. They are an unusual and outstanding feature on a big machine like this. You have a simple, *mechanical*, automatic mixing cycle—no air, no valves, no pumps to get out of order—and it's quickly shifted to manual control. The MultiFoote High Operating Platform gives a full view of both Bucket and Skip and good vision lets the operator clip seconds off the cycle. Simple design, anti-friction bearings, single line Skip Hoist free from extra sheaves and cable, plenty of water, fast, simple Rotary Discharge and Transfer combine to assure easier upkeep and high output.

Give consideration to replacing your single drum machines before spring work opens up—and if you are planning on new equipment let a MultiFoote Man tell you more about this record making paver.

● A MultiFoote DuoMix establishing the Pennsylvania Turnpike record of a mile of 9 in., 12 ft. lane in 13 hours on the eastern extension.

BLAW-KNOX COMPANY

CONSTRUCTION
EQUIPMENT DIVISION

1940 State Street
Nunda, New York

BLAW-KNOX

MULTIFOOTE CONCRETE PAVERS • BLAW-KNOX AND ADNUN BLACKTOP PAVERS

TOOLS of the TRADES

Use the addresses listed for further information on any of these items

THE FIRST PORTABLE hydraulic bending tool for bending both pipe and tubing, using only one bender, has been brought on the market by **Tal Bender, Inc.**, Milwaukee 2, Wisconsin. This company's present One Shot pipe



SEND AS TUBE BENDER

bender has been equipped with a newly developed frame which enables the operator to bend pipe, rigid conduit, thin-wall conduit (EMT), hard and soft copper, aluminum, steel, and any other tubing in bends of 90 and 180 deg.

An advantage will be found by the contractor in having one piece of equipment do what used to require two. For a small charge, the manufacturer will convert existing equipment to the new form.

ARCAIR COMPANY, 423 South Mt. Pleasant Ave., Lancaster, Ohio, has announced the publication of a new case history booklet, which shows many detailed on-the-job reports on the use of their Arcair cutting and gouging torch. This booklet is offered free to any company or individual interested in learning more about the Arcair process of metal removal, using only an electric arc and compressed air.

A NEW ENGINE WEAR METER has been announced by **The Gerin Corporation** of Avon, N. J. It is an instrument attached to any engine which will warn the operator when there is fuel dilution, water or antifreeze leakage, running on dead filters, wrong grade make-up oil and the like. The meter responds to any fluctuation in

viscosity—a sensitive indicator for crankcase oil changes. Unlike previous instruments this meter does not respond to the normal thickening or thinning of the oil incidental to varying operating temperatures. The indicator records only permanent changes. Installation takes only 30 min.

A COMBINATION power feed rip unit and 12-in. tilting arbor saw designed to permit faster production in the woodworking industry has been developed by **Delta Power Tool Division** of **Rockwell Mfg. Co.**, 441 N. Lexington Ave., Pittsburgh 8, Pa. A selective dial control on the feed unit allows a speed choice from 20 to 90 ft. per min. If only the tilting arbor saw is required for a specific cutting operation, the power feed unit can be swung out of the way, permitting the saw to be used individually. The price is \$1260, FOB factory, and includes all basic accessories.

THE "WHAT" AND "WHY" of cylinder manifolds is now available from **National Welding Equipment Co.**, Dept. 140, 218 Fremont St., San Francisco 5, Calif. The material is an extract of 10 pages from the company's "National Notes." Covered are problems met in the designing of manifolds as well as discussion on relief valves, pigtails, adapters, regulators, master control valves, and fittings.

HEFTY HOLER, a compact tool attachment for portable electric drills, has been announced by **Little Beaver Industries, Inc.**, Willoughby, Ohio. It fits any electric drill and weighs only 1¾ lb. Made with shielded ball and



needle bearings prelubricated for life, the attachment will saw wood, plastic, or plasterboard. It cuts all metals in pipe, bar, tube, rod, or sheet form without a starting hole. Accessory tools available include files, chisels, gouges, and jig saw blades. Price: \$19.95.

A NEW SELF-VULCANIZING rubber repair material, Rema, has been marketed by **Flexible Steel Lacing Co.**, 4607 Lexington St., Chicago 44, Ill. It is designed for repairing and extending the life of covered electrical cables and conveyor belts. Rema contains abrasive-resistant cover stock and a rubber filler which self-vulcanize by a chemical process. Repairs can be made quickly as no heat or heavy equipment is necessary.

Keep your tires up, and they'll not let you down

EARTHMOVING CON-TRACTORS using rubber-tired equipment are constantly alert to the necessity for developing new economies as other costs in their business increase.

A rigid inspection and maintenance schedule on off-the-road tires has for some operators resulted in savings so substantial as to be almost spectacular. A recent tire maintenance survey conducted by a tire manufacturer on an earthmoving project which totaled 5,000,000 tire miles per year dramatically emphasized the importance of attention to tire maintenance.

It can be done

During the survey a rigid inspection and maintenance schedule was kept in effect and haul roads were carefully maintained. The results showed increased tire life and decreased down-time. Previously, tire inflation pressures were erratic. In fact, only 48% of all the tires operated at recommended pressures. Variation from recommended pressures of from 20 to 25 lb. was common. Cuts or minor damage had also been overlooked.

With the strict maintenance schedule, 90% of all tires continually operated within 5 psi. of recommended pressure. Minor tire damage was quickly repaired, preventing further damage. Over-all tire life increased 46% and on one size tire an increase of 86% was recorded.

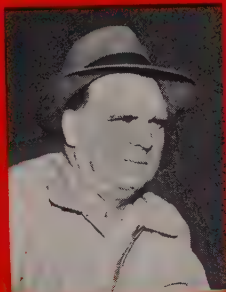
Proper inflation is one of the most important factors in tire care and requires little time or equipment. Each tire is designed and built to permit a definite percentage of deflation (flattening) in a particular type of service.

Pressure to match load

As loads decrease or increase, inflation pressures must follow in order to maintain the deflection rate which has been calculated to provide maximum cushioning and tire life. Over-inflation results in high cord stress and reduces resistance to blow-outs from impacts. Under-inflated tires are subject to increased deflection and excessive flexing. Operation of under-inflated tires results in uneven or spotty tread wear, side-wall radial cracks, ply separation, and loose or broken cords inside the tire.

When tires are operated in soft soil or sand, tire inflation pressures can be appreciably lower than those recommended for pavement or hard gravel surfaces. The reason for this is that the tire makes a full impression in the soft surface and thus the tire is cradled—preventing extreme deflection.

A daily inspection for cuts, breaks, and sharp objects which might work into the casing is good preventive maintenance practice. Such inspections could be performed at the same



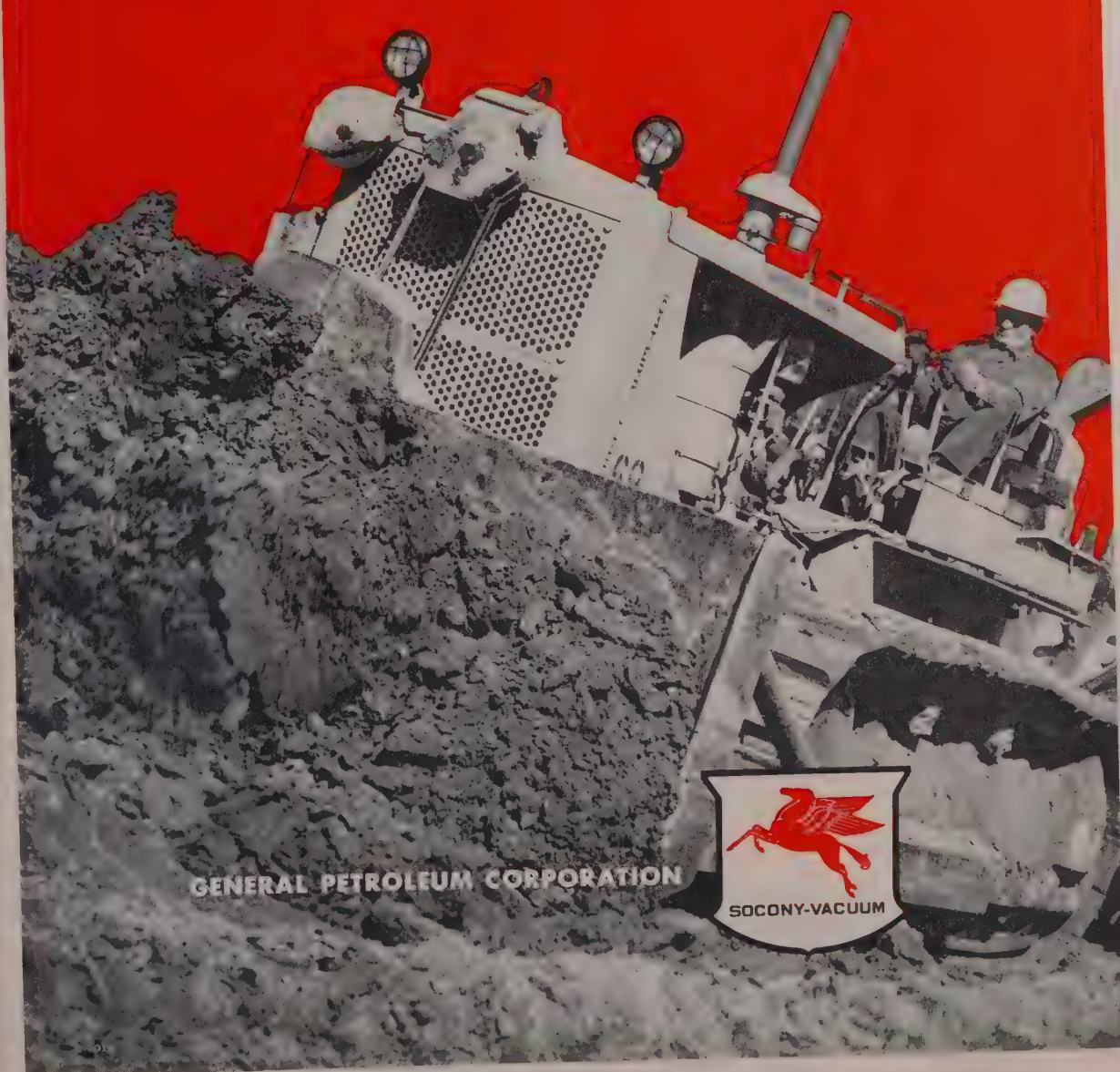
J. P. Cagle

November 1955 will complete the moving of 4,640,000 cubic yards of earth by A. Teichert & Son, Inc. and M. J. Bevanda, joint venture contractors on the Whittier Narrows Dam project, near Whittier, California.

A much-needed flood control project by the U.S. Corps of Engineers, the dam will protect the lower San Gabriel Valley from future floods, allowing an orderly flow of rain water to the ocean by the San Gabriel River.

Joint venture project manager J. P. Cagle says, "We have used G.P. products for three years on this project, and by following the recommendations of their lube engineers in product selection, have had a minimum of equipment down time."

General Petroleum has a lube program that's tailor-made for *you*... call your nearest G.P. office today for the tops in products and service.



GENERAL PETROLEUM CORPORATION



KOHLER ENGINES

4-CYCLE • AIR-COOLED

K90.....2.5 to 3.6 H.P.

K160.....3.6 to 6.6 H.P.

K330.....7 to 12 H.P.

K660.....12 to 26 H.P.

Modern design, air-cooled Kohler Engines in sizes from 2.5 to 26 H.P. offer a power range to fit all applications requiring a reliable and economical power source.

Kohler branch offices are located in sixteen principal cities. Sales and service distributors, throughout the country, have parts available and are ready to assist in selecting a Kohler Engine best suited for your requirements. Write for information.

KOHLER BRANCH OFFICES:

CALIFORNIA

Kohler Co., 3458 Wilshire Boulevard, Los Angeles 5
Kohler Co., 505 Post Street, San Francisco 2

WASHINGTON

Kohler Co., 209 Heurich Building,
1627 K Street, N.W.

KOHLER DISTRIBUTORS:

ARIZONA

Nelson Electric Co., Phoenix

CALIFORNIA

West Coast Engine & Equipment Co., Berkeley
Generator Equipment Co., Los Angeles
Langner & Rifkin, Sacramento

COLORADO

Snodgrass & Smith Co., Denver
Waukesha Engine & Equipment Co., Denver

MONTANA

H. B. Mann & Co., Billings
Ferris-Killion Implement & Hardware Co.,
Great Falls

NEVADA

Gardner Automotive Parts, Reno

NEW MEXICO

Hill's Auto Electric Service, Albuquerque
Waukesha Sales & Service, Inc., Hobbs

OREGON

Truck & Industrial Equipment Co., Portland

UTAH

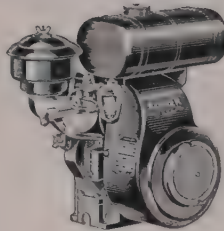
Diesel Electric Service & Supply Co., Salt Lake City

WASHINGTON

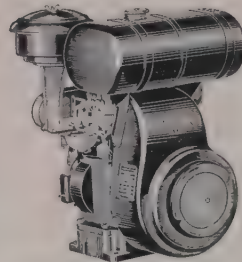
Northwest Industrial Equipment Co., Seattle
Equipment Sales & Service, Spokane

WYOMING

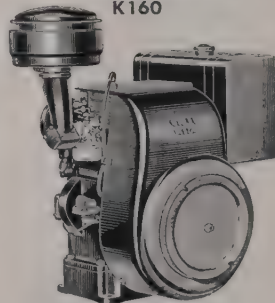
Van's Supply, Cody



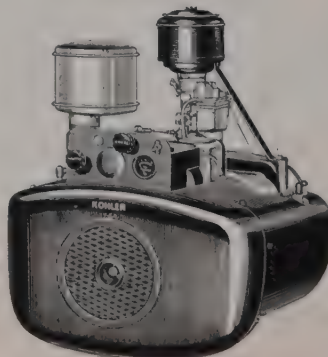
K90



K160



K330



K660

time the inflation is checked.

Failure to make regular inspections and to perform repairs when they are needed can result in unnecessary damage to tires. Small rocks and dirt can get into shallow cuts and, if neglected, may gradually be pounded through the cord body. One simple method of preventing extensive damage is to clean out small cuts with a knife or with a bull-nosed rasp so a pocket cannot be formed which will catch rocks and allow them to work into the cord.

If the tire has at least one deep cut that requires repair, then all smaller



SELF CLEANING lugs are an aid to long life if the tire is properly installed. Here, the left rear should be turned around.

cuts may be quickly and cheaply repaired at the same time the major cut is fixed. Large breaks should not be repaired unless the tire is to be used only for light service work.

Another need for maintenance is evident on most "haul roads." In most "off the road" projects, the "haul road" may only be the tracks of a preceding dozer or scraper. In any event, the surface is mighty important as far as the service life of the tires is concerned. Unnecessarily steep grades, or sharp turns, will increase tire slippage and result in fast abrasive wear. Imbedded or loose rocks increase the cutting and impact break hazards, and decrease the speed for operating. Maintaining a good haul road will usually pay a big dividend in the form of increased tire and vehicle life.

An operator who is constantly aware of the cost of replacement tires can be a big help in reducing replacement costs. He can do this in two ways. One, by following the maintenance practices suggested here and, two, by operating wheel equipment in such a manner as to achieve "better than average" tire life. Tire life can be extended. It takes a little work, but it's worth it!

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

NEW EQUIPMENT

For your convenience in obtaining more information quickly, the manufacturer's address is provided with each review.

New crawler is Allis-Chalmers' biggest

The biggest and most powerful crawler tractor ever put into regular production is coming off assembly lines at Allis-Chalmers. The new unit, HD-21, weighs 44,000 lb., develops 204 hp. at the flywheel and has the torque



converter as standard equipment. It features a high-capacity cooling system, new clutch, transmission and engine, and a wrap-around radiator guard. The one-piece radiator handles coolant water only and has an independent mounting to provide maximum protection from external damage.

Many operator benefits are included: foam-rubber seats and arm rests, hydraulic steering, and unobstructed visibility. For complete information write Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

"Speed-o-Matic" controls for ¾-yd. shovel-crane

For the first time "Speed-o-Matic" controls are available on ¾-yd. machines with the introduction of the LS-88 shovel-crane by Link-Belt Speeder Corp., 1201 Sixth St. S. W., Cedar Rapids, Ia. With power controls extra speed is assured. Because of its all-welded, stress-relieved construction the LS-88 emphasizes more earning weight in proportion to counterweight than is

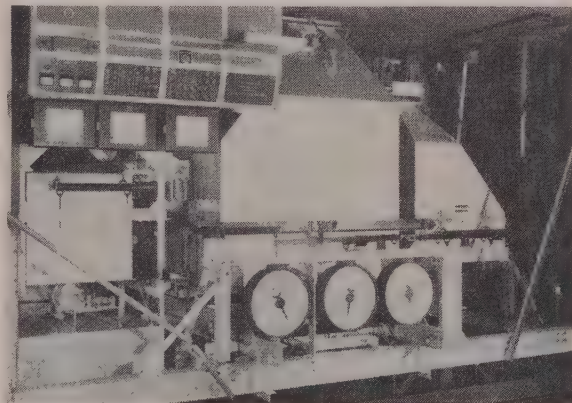


found on many other rigs. This advantage permits the use of up to 91 net, usable, horsepower at the power take-off.

Standard features on the LS-88 include self-adjusting, internal expanding clutches with alloy cast iron shells, complete clutch interchangeability and independent rapid boom hoist with power control up and down. Self-cleaning crawler tracks simplify the machine's maneuverability under difficult conditions. Ask for Bulletin 2520 for specifications and further description.

Punched card operates electronic batcher

The chance for human error in batching is entirely eliminated in a new electronic concrete batcher manufactured by Butler Bin Co., 945 Blackstone Ave., Waukesha, Wis. A punched card actuates electronic controls



which select, proportion, fill, weigh, and discharge any of 6 aggregates, 3 cements and water. Varying moisture content is automatically compensated for.

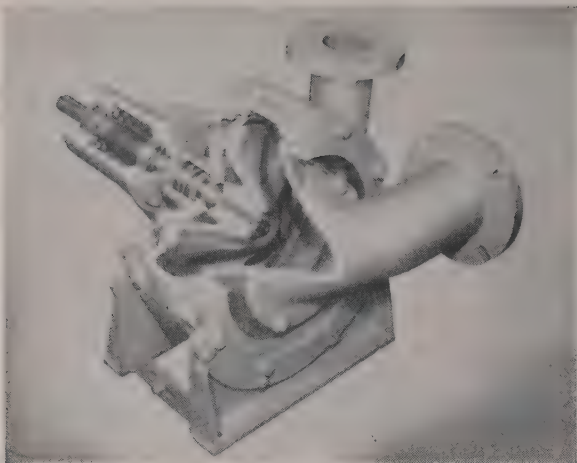
An almost infinite number of batching combinations are instantly available and any batch can be repeated immediately or at any time in the future. The punched cards are a permanent, legal, tamper-proof record of each batch. With the proper equipment the cards could be used to actuate business machines to make bookkeeping entries, to price, and to invoice.

One pump for goldfish . . . or concrete!

Concrete is a more likely use for the Wemco torque-flow solids pump. But the fish story is true, and proof of the unique operation of this piece of machinery.

The torque-flow pump operates somewhat like a fluid drive. Its impeller is entirely out of the flow pattern of the material being pumped, but it induces a vortex, or swirl, that does the work. And the rotating fluid mass acts as a buffer between the impeller and the flow pattern, so that solids carried through the pump seldom touch the impeller.

The pump has been tested in applications that are both delicate and rugged. Along the rugged side are such things as pumping concrete or crushed ore pulp. Surges in the flow of a wet grinding operation at a lead-zinc ore processing plant increased the solids content from a nor-



mal 65% up to 80%. The pump passed that test. In a sewage pumping test the new pump ran for nearly a year without ever clogging with rags, ordinarily a weekly (or oftener) problem with conventional pumps.

Western Machinery Co., 760 Folsom Street, San Francisco, developed the pump. Literature is available on its known applications and performance. But Wemco is also looking for new fields. What's your pumping problem?

The hot-mix batch plant goes automatic

"With proportions preset, the operator locks the 'cycle' button in place when a truck drives into receiving position. The plant then automatically goes through the complete cycle of measuring and mixing, including discharge

into the truck." In a nutshell, that is what the new Barber-Greene Model 890 plant does.

How the plant works is another story, with just one important point for potential users to know: the plant operates on simple 110-volt AC circuits, with motor-driven timers, mercury switches and push-button switches. No electronic devices, requiring special knowledge for maintenance, are used.

What are the features of the new plant? Barber-Greene lists seven, all important to the hot-mix user or producer:

- (1) It eliminates the human element in achieving either accuracy or capacity.
- (2) It can be converted instantly from automatic to manual operation, or the other way around.
- (3) It records preset proportions for repetitive cycle use. But these proportions can quickly be disengaged and then reset.
- (4) It weighs aggregate by means of a positive strike-off. No relays operated by a moving scale pointer. No anticipation necessary to compensate for time lag in bin shutoff.
- (5) It has a new pugmill principle, good for a faster mixing cycle and increased overall production.
- (6) Its cycle is automatically interrupted if there is any variation from preset batch proportions.
- (7) It permits instant and positive inspection of grading and weight, either of ingredients or of the entire batch. It is "kind to inspectors."

The 890 plant includes four aggregate measuring bins, and a separate mineral filler bin. All are filled simultaneously from an equal number of supply bins, during automatic operation. All sizes are weighed at once and discharged into the pugmill through a common gate.

Bitumen supply to a steam-jacketed weigh bucket is controlled by an overflow arrangement and a float switch. The proper batch requirement is then tapped by a suction pipe. Depth of the pipe is calibrated according to bitumen quantity.

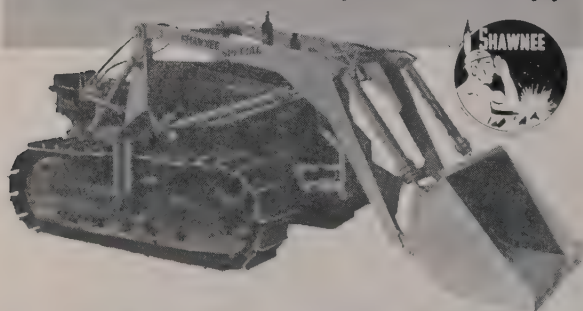
Eight bitumen spray bars in the pugmill are claimed to give a high degree of initial coating to the aggregate. After that, the quick mixing time is a function of the pugmill design: short, wide, and deep, with the whole batch lying below centerline of the paddle shafts.

Detailed information on the Model 890 series of batch plants can be obtained from Barber-Greene Co., 400 North Highland Avenue, Aurora, Illinois.

Eimco adds a blade to the 105

The Eimco 105, introduced a year ago as a completely redesigned and bigger version of the familiar 104 rocker shovel, is going into a new line of work. It comes with its

Now! a Shawnee Heavy Duty LOADER FOR THE ROUGHEST KIND OF WORK!



Here's a powerful loader for rugged work in rough country. All welded box girder construction. Twin bucket cylinders (extreme down pressure) optional for more powerful tractors, such as Ferguson TO-35, Ford 800, and John Deere Crawler (pictured). Has a 66-in. bucket. Loading height sufficient to clear oversize truck bodies with sideboards. A 66-in. bulldozer blade is available to replace bucket.

Industrial Type LOADMASTER for Fordson Major Diesel

A heavy duty industrial-type loader with double acting, oversize hydraulic system. Raising height to clear average dump trucks with sideboards. Down pressure. Bucket capacity $\frac{3}{4}$ cu. yd. Two-pin hookup for quick installation.

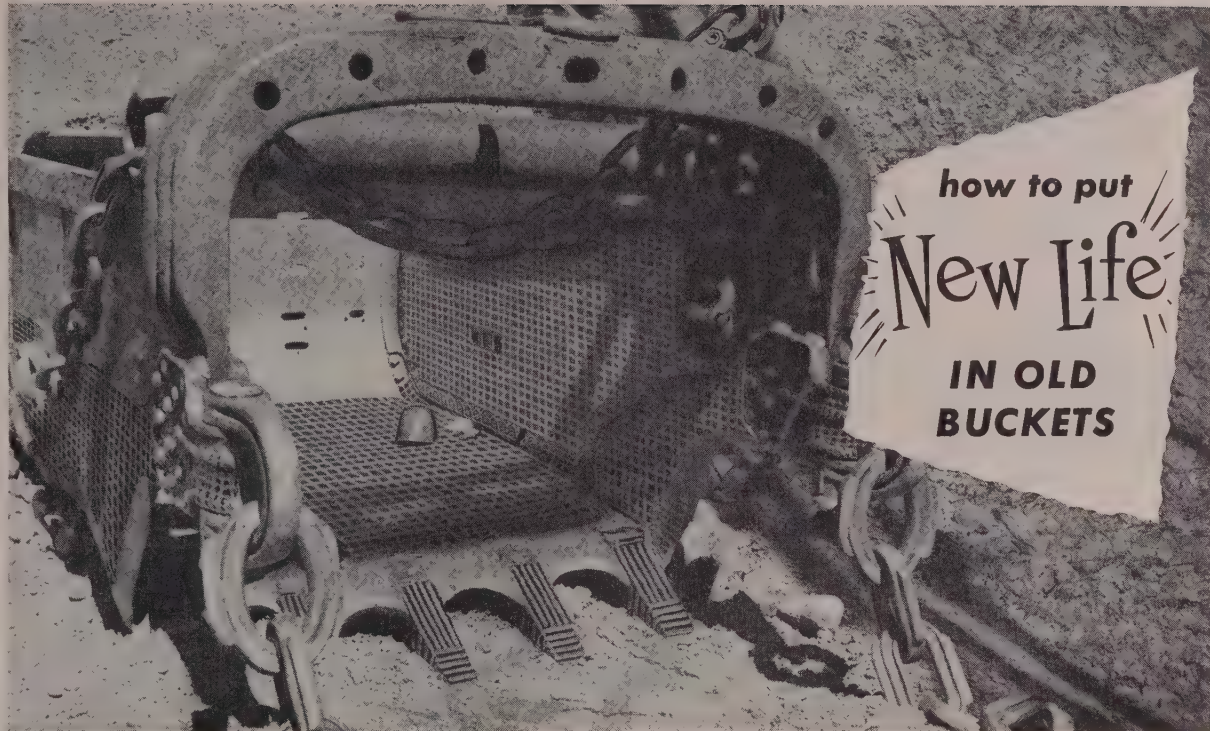
Distributed by

H.B. EQUIPMENT CO.
18912 S. Normandie
Los Angeles, California

FARM AID EQUIPMENT CO.
2932 E. Trent
Spokane, Washington
Throughout the Northwest

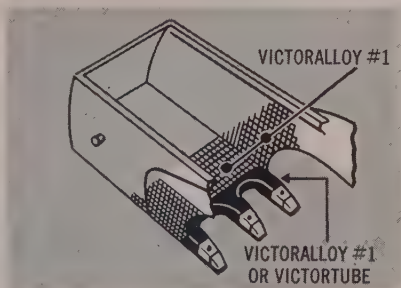
Manufactured by SHAWNEE MFG. CO., INC., 1949 Y Topeka Ave., Topeka, Kan.



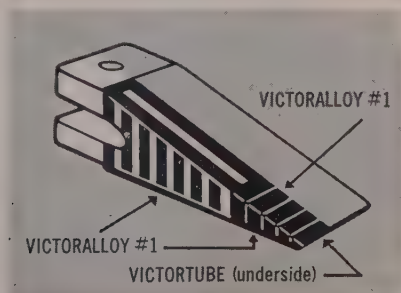


how to put
New Life
IN OLD
BUCKETS

USE VICTOR HARDFACING



Buckets . . . Apply VICTORALLOY #1 to top and bottom of bucket lips in overlapping beads. Protect other parts or areas showing wear with stringer beads of VICTORALLOY #1. Use 3/16" coated VICTORALLOY #1 at 170 to 190 amperes, a.c. or d.c., or 1/4" at 200 to 225 amperes. If wear is unusually severe, substitute VICTORTUBE on bucket lips; use 3/16" coated at 120 to 150 amperes, a.c. or reverse-polarity d.c.



Teeth . . . Apply VICTORTUBE to underside from point upward about 2", and VICTORALLOY #1 to upper side of tooth same distance. Use stringer beads of VICTORALLOY #1 on balance of upper and lower surfaces, and on edges. Use 3/16" coated VICTORTUBE at 130 to 160 amperes, a.c. or reverse-polarity d.c., and 3/16" coated VICTORALLOY at 170 to 190 amperes, a.c. or d.c.

Why guess? . . . Select the right alloy from VICTOR's complete hardfacing line, made for both gas and manual or automatic arc application. New VICTOR illustrated hardfacing manual tells which alloys to use, how to apply. Ask your VICTOR dealer or write us today for your free copy.

VICTOR

for hardfacing

VICTOR EQUIPMENT COMPANY

ALLOY ROD & METAL DIVISION

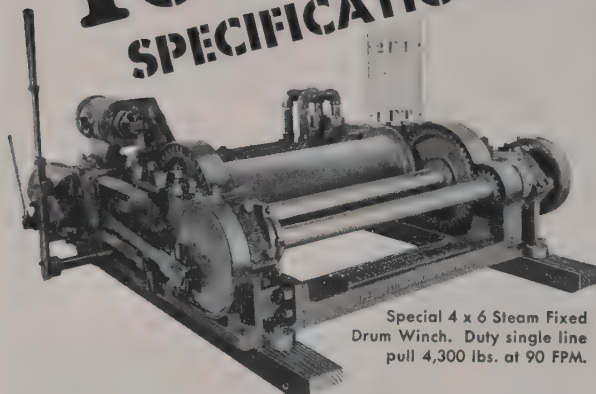
Mfrs. of welding & cutting equipment;
hardfacing rods; blasting nozzles.

19-H

Profitable dealerships
open;
inquire now!

11440 So. Alameda St. • Los Angeles 59

You SET THE SPECIFICATIONS



Special 4 x 6 Steam Fixed Drum Winch. Duty single line pull 4,300 lbs. at 90 FPM.

Superior-Lidgerwood-Mundy has the facilities and experience to meet them . . . either from an all-inclusive line of standard hoisting equipment or with equipment engineered to your specific requirements.

WRITE FOR BULLETINS AND CATALOGS

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION

Main Office and Works: SUPERIOR, WISCONSIN, U.S.A.

New York Office, 7 Dey Street, New York 7, N. Y.

BUY BARNES PUMPS

Barnes Self-Priming Centrifugals Give You More Pump, More Profit, Three Ways

- 1 ECONOMY** — 33,000 gallons of water for 1 gallon of gasoline!
- 2 SELF-PRIMING** — patented principle for quick, dependable priming with as little as ½ normal water level in pump body!
- 3 SIMPLE FIELD SERVICING** — direct flow suction, non-clogging trash type impeller, self-lubricating Super-Seal for quick, economical field servicing!

**BARNES
MANUFACTURING
COMPANY**
MANSFIELD, OHIO
OAKLAND 21, CALIF.

Buy the best . . .
buy BARNES



See your BARNES DEALER or write for Catalog S2



Barnes Manufacturing Co., Oakland, California; Central Equipment Co., Berkeley, California; The C. H. Jones Equipment Co., Salt Lake City, Utah; Larson Equipment Co., Los Angeles, California; The Rix Company, Inc., San Francisco, California; Universal Equipment Co., Seattle, Wash.

own bulldozer blade now (or other attachments). And the big Eimco operating feature remains: the Skinner is right up front along with the working tool.

Equipped with a bulldozer the machine weighs about 18 tons. Track widths up to 24-in. are available for use in soft ground. Tractor with bulldozer develops 32,300-lb. drawbar pull, with a maximum of 45,000 lb. for zero track slippage. Eimco Corporation, Box 300, Salt Lake City.

Universal re-designs the "Traveler"

"For crush-and-travel operations where production requirements are moderate." That's the new TS-Traveler, a gravel screening, crushing and loading plant introduced by Universal Engineering Corp., Cedar Rapids, Iowa.

The machine consists of a 1½-yd. shovel loading hopper with trap gate, reciprocating 19-in. plate feeder, 2x4-



ft. inclined gyrating screen, a 1024 roller bearing jaw crusher, and a 24-in. folding front delivery conveyor. Together with power and clutch control, it's all mounted on a rubber-tired gooseneck truck.

With a low feeding height, the Traveler can be fed by shovel or dragline, or by trucks from a ramp set-up. This is a single-pass machine. (Other Traveler models cover closed-circuit operation.) The TS-Traveler may be equipped with a two-deck screen and a side delivery conveyor for producing sand, however.

General utility marks the Speed Swing

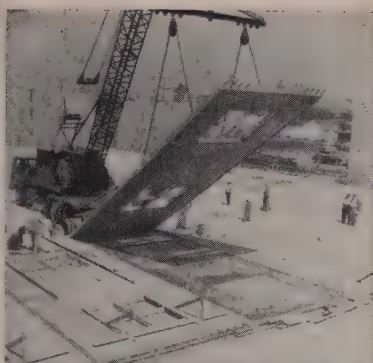
A handy yard rig for contractors is the Pettibone Speed Swing loader. Attachments include fork, tote hook, back-filler blade, and 4-yd. snow bucket—in addition to standard ¾-yd. and 1-yd. buckets.

The machine has 180 deg. of boom swing and a maxi-



mum dumping height of 9 ft. 8 in. (at 3-ft. 3-in. reach). A bucket tilt-up of 30 deg. speeds its shovel action.

The Speed Swing is available with 2- or 4-wheel drive and optional 4-wheel steering. Write to Pettibone Mulliken Corp., 4700 West Division St., Chicago, Illinois.



PRECAST PANEL 32' high, 18½' wide with two large window areas.



TRUSS has 60' span at top.



114,000 LB. SLAB being positioned



PANEL with door and two window areas

SUPERIOR

Complete Accessories

Plus Experience

on Tilt-Up Jobs!

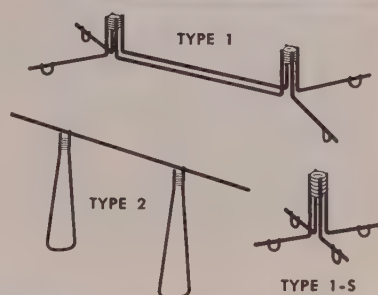
On every Tilt-Up job the proper type of Pick-Up Inserts and Brace Anchors as well as their location in the slab or precast structural member are of prime importance in order to withstand the stresses occurring when *tilting, lifting, and positioning*. As pioneers in this field, SUPERIOR has developed various types of accessories and correct procedures resulting from the experience of thousands of job applications.

SUPERIOR accessories are designed for fast and efficient handling of all types of precast panels and structural members. The Pick-Up Insert provides dependable anchorage for bolts which secure a lifting angle to which slings are attached when the panel is raised. Brace Anchors secure the temporary bolts by which the Braces are attached. The exclusive pivoting action of the adjustable Braces permits quick positioning and alignment of panels. Braces are assembled with 2 x 4's or pipe of lengths to fit job conditions.

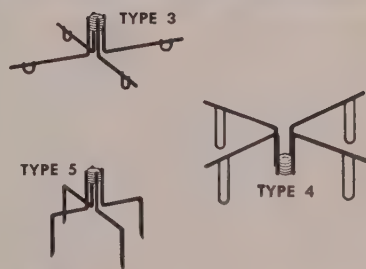
The many types of SUPERIOR Inserts, Anchors, and Braces for every job condition together with complete layout service provide a combination which offers safe and efficient handling of precast panels and structural members.

For complete details request a copy of BULLETIN TU-2.

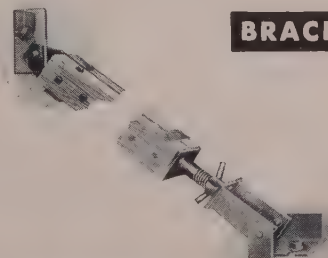
PICK-UP INSERTS



ANCHORS for BRACES



BRACES



SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office

1775 Broadway, New York 19, N. Y.

Pacific Coast Plant

2100 Williams St., San Leandro, Calif.

New Triplex backfill tamper

Designed to mount or "gang" three tampers on a frame for one-man operation, The Davey DT-132 backfill tamper is now available. The unit utilizes three Model DT-32 tampers of the medium weight class—the most popular for construction work. Tampers weigh 35 lb., the Triplex



mounting 42 lb., giving a total weight of 147 lb. Butt diameter of each of the tampers is 5 7/8 in. Average air consumption per breaker is 32 cfm. at 85-psi. pressure. The Triplex can be easily operated by a 105-cfm. compressor. The tampers are recommended for use in all types of compaction work. They are reputed to save up to 70% on backfill compaction costs, reduce air consumption by 50%, and cut man-hours per job by 80%. Write for bulletins No. E-527 and E-528 from the Davey Compressor Co., Kent, Ohio.

New rotary pump

The Lindquist positive displacement rotary pump incorporates radical new design that makes for greater efficiency and economy at approximately half the cost of comparable pumps. Made in a range of sizes to handle all types of liquid solutions with capacities up to 2,200 gpm. and pressures up to 1,000 psi., they will pump water or high viscosity fluids, and solids up to 78%. The pumps are fully reversible.

The design provides quietness and compactness with the means for handling a wider range of viscosities at standard motor speeds. Built for tough, heavy-duty service, the only parts subject to wear are the impellers. Replacement can be made in a matter of minutes without breaking lines. The pumps are self-priming and

will not cavitate or vapor lock. For further information write to Lindquist Pump Corp., 10001 W. Jefferson Blvd., Culver City 12, Calif.

Heavy-duty hydraulic jack

A new 60-ton hydraulic jack and puller with a separate motor-powered pumping unit is here. Designed for heavy-duty jobs, the jack's hydraulic ram can be both raised and lowered by power. This permits faster retraction so that the ram may be position-



tioned more quickly. The jack, which has a 10-in. travel, is equipped with the Simplex "center-hole" which permits pulling without the necessity for using elaborate back-up devices to eliminate off-center torque. The pump is powered by a 1/2-hp. universal motor and operated by 115-volt AC or DC. A remote hydraulic hand pump is available instead of the motorized unit. For further information which is described in Form R-6010, write to Templeton, Kenly & Co., 2525 Gardner Road, Broadview, Illinois.

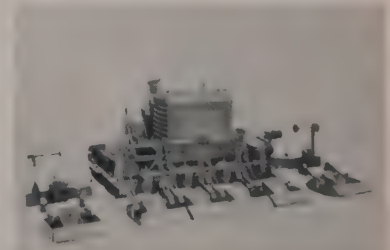
Mir-O-Col No. 2 for hard-facing

The Miro-O-Col No. 2 can be used as a general hard-facing rod and is best applied to large sections by the electric process. According to Mir-O-Col Alloy Co., Inc., 312 North Avenue 21, Los Angeles 31, features of the electrode are improved flux coating, more rapid burn-off rate, porosity-free deposits, and smoother flowing characteristics.

The deposit is forgeable at red heat, but not machinable.

Tamper tracks are closer

The Model VT 6-4 Vibro-Tamper has been redesigned, with crawler tracks spaced 8 ft. apart, instead of



12 ft. Operable with either 4, 5, or 6 compaction shoes, the machine is more versatile now, according to In-

GATES FORM TIES

Used in 13-Story Concrete Job!

Time, materials and labor saved by the use of Gates Break-back Form Ties in this 13-story parking garage built in Dallas by the O'Rourke Construction Company.

GATES STANDARD FORM TIES

(Rod type and 2"x 4" type)

GATES STRAP TIES

They'll cut costs...save time and money on your job! Use attached form to request detailed information.

Gates Break-back Ties

(Rod type and 2"x 4" type)

- Positive break-back because of Gates patented coating. Small holes easily filled, to give architectural finish.
- Zinc coated and twisted to form leak-proof chemical and mechanical bond.
- Versatile! Use for foundation, retaining walls, bridge abutments and high wall construction, and with sheathing, plywood or metal panels.

GATES & SONS, INC.
80 South Galapago Street
Denver 23, Colorado

Gentlemen:
Please send descriptive literature on Gates Form Ties immediately.

Name.....

Address.....

City.....State.....

WC 4-55

GATES & SONS, INC.
DENVER • SPOKANE

FOR IRRIGATION & DRAINAGE WATERWAYS

↓ BRISCOE DITCHERS ↓

BRISCOE DITCHERS Dig New Ditches and
Clean Old Ones for new lows in Time & Cost

BRISCOE DITCHER Makes new ditch at rate of 26,874 yards in 15 hours time!

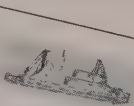


The photo to left shows the latest BRISCOE DITCHER, the Model #68, under actual field conditions, forming a new ditch in heavy loam. Ditch had 8-ft. flat bottom, slope better than 1 1/2:1 for a total depth below grade of 5 1/2 feet, with spoil bank adding another two feet. Total yardage was 26,874 in 15 hours, averaging 1,792 per hour, for average cuts of 6 1/2 inches for each of the ten passes required to make a perfect, finished ditch. Various combinations of power used averaged 355 HP.

↓ BRISCOE SLOPERS ↓

Briscoe Slopers for Low Cost Weed-Control & Maintenance

"WELL PLEASSED WITH SLOPER," says CONTRACTOR
"OPERATING COST IS ABOUT \$20 PER MILE . . ."
"DRAGLINE \$350 . . . SEE THE SAVING"
"USE IT VERY SUCCESSFULLY FOR DE-MOSSING"



OSCAR STRAIGHT CONTRACTOR
ALL KINDS OF EARTH MOVING
Ditch—Drainage—Dredging
Land Filling—Sloping
Billings, Montana
Phone 8-4528

E. V. Briscoe & Son
Route 2 Box 118
Kerman, California

Dear Mr. Briscoe:

August 31-1954

I have wanted to write to you to tell you what a good job the Briscoe sloper is doing for me.
It is mounted on a T.D. 13, with a T.D. 9 towing to take the side draft. I have cut 2 and 3 foot berms in one pass reaching down for some approximately 14 feet. These are tough wire-grass berms that are cut and rolled on top without a break for hundreds of feet.
Besides cleaning and shaping and weed control, I use it very successfully for de-mossing. Have cleaned ditches completely choked with moss. It doesn't seem to matter what size the ditch is as we have cleaned from the largest canals to the smallest laterals and waste ditches—some full of water and some not. Have also used it for leveling b-mes.
In places we have traveled 3 and 4 miles per hour, by operating cost is about \$20.00 per mile. It would be impossible for a dragline to do it for \$300.00 per mile, so you see the saving.
We cleaned 200 miles of ditch in 20 days. This work was done for the Bureau of Reclamation Huntley Irrigation project at Billings, Montana.
I am well pleased with the Briscoe sloper and wanted to let you know.

Very Truly Yours,

Oscar Straight Construction

By *Oscar Straight*
Owner

BRISCOE Manufacturers

OF CALIFORNIA
Rt. 1, Box 118 - Kerman, Calif. 93638 - Phone 8-1110



Above photo shows general condition of ditches worked by Mr. Straight, referred to in letter at left. Note that the ditch bank was reshaped, eliminating all weeds, berms and cave-ins. Costly, time-killing water shut-downs not necessary, making maintenance possible at any time. There is no better, faster or cheaper way than the BRISCOE way.

Write or Phone for Details

BRISCOE Manufacturers
OF CALIFORNIA

Rt. 1, Box 118

Kerman, Calif.

Phone 8-1110

"THIS LUBRICANT CUT BEARING REPLACEMENTS OVER 40%"

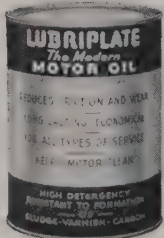


says—HANOVER BUILDING
SUPPLY CO. of Hanover, Pa.

"Before using LUBRIPLATE, we replaced the wheel bearings in over 50% of our trucks each year. Since using it, bearing replacements have dropped to less than 10%. We have also been able to increase periods between chassis lubrications from 500 to 2000 miles. We are very happy over our change to LUBRIPLATE, and heartily recommend it to fleet operators interested in saving money."

HANOVER BUILDING SUPPLY CO.
C. O. Albright, Pres.

**REGARDLESS OF THE SIZE AND
TYPE OF YOUR MACHINERY,
LUBRIPLATE GREASE AND
FLUID TYPE LUBRICANTS WILL
IMPROVE ITS OPERATION AND
REDUCE MAINTENANCE COSTS.**



LUBRIPLATE is available in grease and fluid densities for every lubricating need.

LUBRIPLATE H.D.S. MOTOR OIL meets every requirement for gasoline and diesel engines.

LUBRIPLATE DIVISION, Fiske Brothers Refining Co.
Newark 5, N. J. or Toledo 5, Ohio.

DISTRIBUTED BY

Campbell Industrial Supply Co., Seattle, Wash.
Nott-Atwater Company, Spokane, Wash.
Goodyear Rubber & Asbestos Co., Portland, Ore.
Maty & Van Dyke, Inc., Klamath Falls, Ore.
Hendrie & Bolthoff Co., Denver, Colo.
Garlinghouse Brothers, Los Angeles, Calif.
Industrial Supply Co., Billings, Mont.
Fleck Brothers, Ltd., Vancouver, B. C., Canada
Campbell Industrial Supply Co., Tacoma, Wash.
Dodge-Yakima Supply Co., Yakima, Wash.
Industrial Lubrication Supply Co., Eugene, Ore.
Miller & Stern Supply Co., San Francisco, Calif.
Degen-Fiege Co., Los Angeles, Calif.
Hudson Equipment Co., San Diego, California
Sawtooth Company, Boise, Ida.
Wilkinson & McClean, Ltd., Calgary, Alberta, Can.
Barr-Sayer Co., El Centro, Calif.

ternational Vibration Co., 16702
Waterloo Road, Cleveland 10, Ohio.

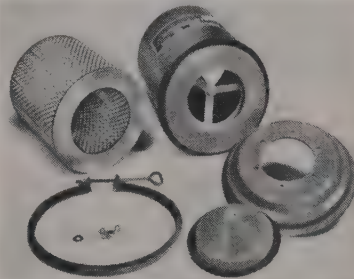
With 6 vibrating shoes, the tamper will cover a course 13 ft. 2 in. wide. Removing one shoe from each side (a 2-man-hr. job) brings the machine down to an 8½-ft. width. Total contact area of the full-size machine is 19.8 sq. ft., with a gross weight of 10,000 lb.

Spectacular efficiency is claimed for the machine: sub-base spread to a depth of 12 to 15 in. can be compacted to three-fourths of its original volume in two passes. Depending on base material, the compaction ranges from 96 to 99.78 Proctor Density. A 24-page illustrated manual on the Vibro-Tamper is available.

Dry-type air filter

Removing airborne particles down to 1 micron (0.00004) in diameter gives this filter its name. It's the Micronic air filter, by Purolator Products, Inc., Rahway, N. J.

The filter is claimed to have a higher degree of filtration than pre-



viously thought possible—efficiency is over 99%. Combined with low resistance to air flow, this feature means longer engine life and reduced fuel consumption.

Maintenance cost with the Micronic filter is said to be less also, with much less time required for servicing.

The new filter is smaller, lighter in weight, and less expensive than comparable conventional filters. Designed for truck, tractor, and stationary engine use, the Micronic air filter comes in several basic types. Detailed information is available from the manufacturer.

Pneumatic sump pump

This new Schramm sump pump can be operated by any 105- or 125-cfm. compressor. It is a handy and often used item for anyone who digs a hole in the ground—and has to work in it later.

This pump is designed to handle mud and raw sewage if necessary. Capacity ranges from 234 gal. per min. at 10 ft. of head with 57 cfm. (60 psi.), to 37 gal. per min. at 80 ft. of head with 100 cfm. (100 psi.). The unit is 20 in. long and can be worked through an opening measuring only 9x11 in. It weighs 55 lb.

More information and literature is

available from Schramm, Inc., West Chester, Penn.

9,000 vibrations per min.

This is the Model BU electric vibrator, by Stow Manufacturing Co., 56 Shear St., Binghamton, N.Y. Designed to beat the problem of slow-



ing down under load, this tool is said to run at 9,000 vibrations per min. while developing 2 hp.

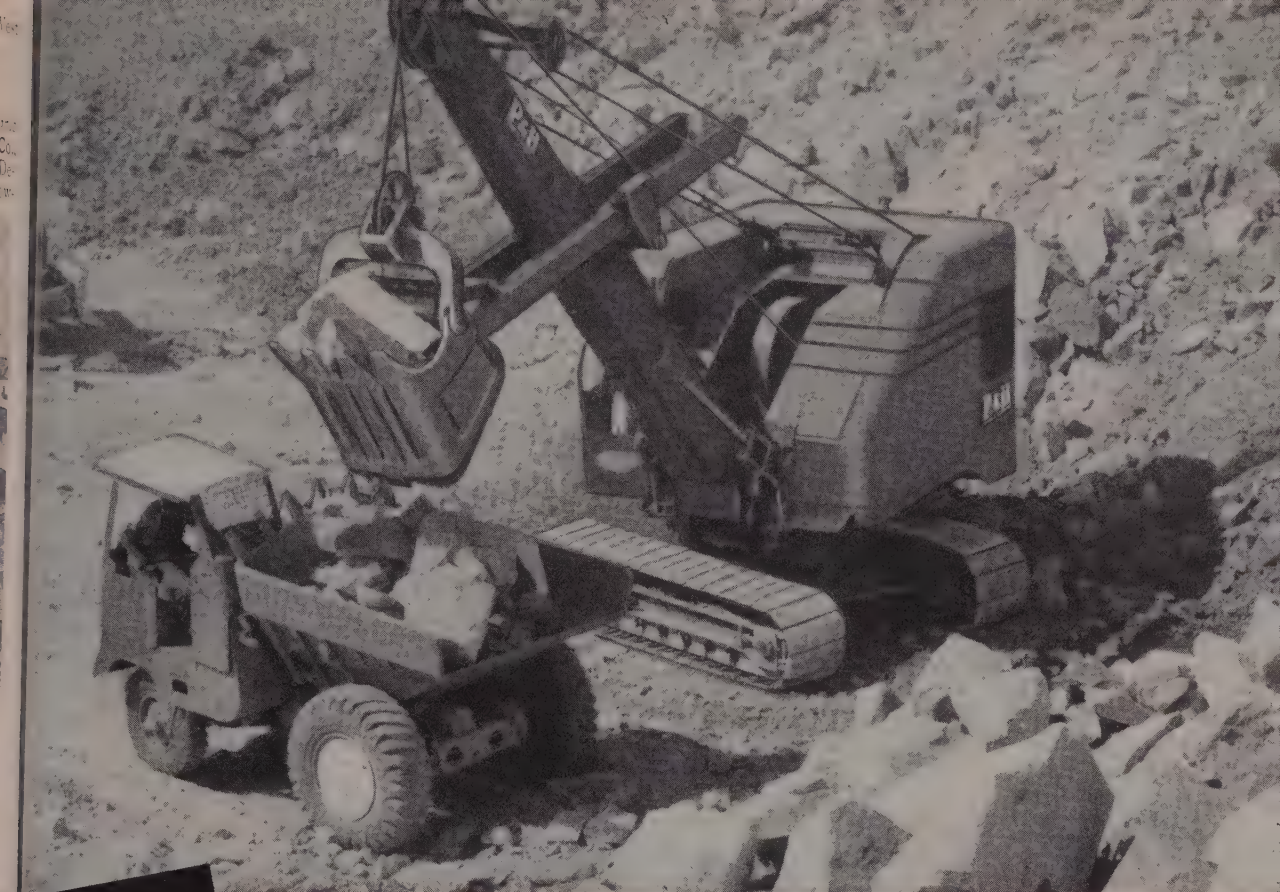
The reinforced, ¾-in. flexible shaft is available in lengths of 7, 14, or 21 ft. Lengths of shaft can be combined up to a total of 35 ft. The standard vibrator head is a 2½-in. Model 2500, with either a steel or rubber tip. It is interchangeable with Stow's Model 1600 and Model 2000 heads.

Low-cost steam cleaning

The Economy steam cleaner has been simplified in construction, and one control regulates pressure and steam saturation at the same time. These are the features announced by Ker-O-Kil Manufacturing Co., 582 Market St., San Francisco.

The Economy cleaner is designed for either butane or natural gas fuel. The machine will produce 80 psi. of





P&H Model 655-B; 1 1/2-yd. capacity. P&H builds the world's most complete line of Power Cranes and Shovel



...20 YEARS AHEAD with welded construction!

... of it! ... 20 years ago P&H threw out the old pat-
... to give you a new and better kind of power shovel —
... letely welded of rolled alloy steels!

... many successful years in the field have proved beyond
... doubt the advantages you gain through greater
... ngth and the elimination of dead weight. Today's
... l machines give you faster cycles, still more depend-
... service — still lower yardage costs. Behind today's

machines is P&H's long experience in welded design and
construction — still 20 years ahead of the field.

All-welded construction is only one of many major im-
provements originated by P&H. There are others that will
earn you more money than is possible with older style
machines you may now be using. Get the facts from your
nearest P&H dealer. P&H Pacific Division, Harnischfeger
Corporation, Milwaukee 46, Wisconsin.

HARNISCHFEGER

See your P&H dealer

- PHOENIX, Arizona.....Arizona Equipment Sales, Inc., 2750 Grand Ave.
- CRESCENT CITY, California.....Riley Logging Supply Co., Highway "Y"
- EL CENTRO, California.....Purdy-Halmquist Co., 1275 Main Street
- ESCONDIDO, California.....Southern Equipment & Supply Co., 301 W. Grand
- EUREKA, California.....Riley Logging Supply Co., 1034 Broadway
- LOS ANGELES 22, Calif.....Shaw Sales & Service Company, 5100 Telegraph Rd
- OAKLAND, California.....Cook Bros. Equipment Co., 416 East Eighth St.
- SACRAMENTO, California.....Sacramento Valley Tractor Co., 1901 Broadway
- SALINAS, California.....Farmers Mercantile Company, 15 W. Alisal Street
- SAN DIEGO 13, Calif.....Southern Equipment & Supply Co., 2025 E. Harbor Dr.
- SANTA MARIA, California.....Hanson Equipment Company, Main St. at Blosser Rd.

- FRESNO, California.....Allied Equipment Co., 1824 Santa Clara Street
- DENVER, Colorado.....Liberty Trucks & Parts Co., 690 Lincoln Street
- BOISE, Idaho.....Starline Equipment Co., 503 South 16th St.
- ALBUQUERQUE, New Mexico.....Leonard Motor Company, 1211 North 4th Street
- RENO, Nevada.....Pioneer Equipment of Nevada, 525 Kietzke Lane
- EUGENE, Ore.....Loggers & Contractors Machinery Co., 540 Filmore St.
- PORTLAND 14, Oregon.....Loggers & Contractors Machinery Co., 240 S.E. Clay St.
- SALT LAKE CITY 13, Utah.....Western Machinery Company, 2300 S. Main St.
- SEATTLE 8, Washington.....Bow Lake Equipment Co., Inc., 300 Michigan Ave.
- SEATTLE 4, Washington.....Glenn Carrington & Co., 91 Columbia St.
- SPOKANE 1, Washington.....Construction Equipment Company, E. 3823 Trent Ave.

HARNISCHFEGER CORPORATION—Pacific Division: LOS ANGELES 59, Calif., 2400 East Imperial Highway. Branch Offices: SAN FRANCISCO, Calif., 100 Bush St.
DENVER, Colorado, Rm. 415, Central Bank Bldg., 1108 15th Street. SEATTLE 4, Washington, 2909 First Avenue, South. LOS ANGELES 59, California, 2400 East
Imperial Highway.

steam pressure in less than 2 min. from a cold start. Water for the cleaner is preheated in a jacket before it enters the coil. This helps to produce a greater volume of steam from the circulating water, and also reduces fuel consumption.

Heavy duty concrete saw

This is the Model E-25-PD, equipped with a 25-hp. air-cooled gasoline engine that drives the saw under full load at speeds up to 12 ft. per min. It is announced by **Eveready Brikshaw Co.**, 1509 South Michigan Blvd., Dept. 294, Chicago 5, Ill.

The unit is self-propelled, with two abrasive-coated wheels providing

positive friction drive to both rear wheels. This feature is said to eliminate slippage, jerking, and bumping or twisting of the saw blade. The self-propelling feature may be engaged or disengaged by foot pedals. Cutting speed is adjusted by a control lever on the variable-speed transmission.

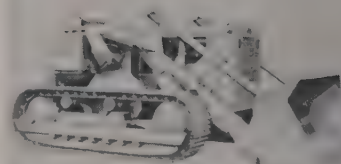
Operational features of the saw are said to include: 4-wheel mounting to assure straight cutting and easy steering, hydraulic control of blade depth, dual mounting of blade guard and blade to permit cutting on either side of saw, and convertibility—the "Power-Drive" self-propelling mechanism can be removed and used with other Eveready saws.

New design for the HD-9G

The model HD-9G, a 2-yd. tractor shovel, has been revamped by **Allis-Chalmers Manufacturing Co.**, Tractor Div., Milwaukee, Wisc., to achieve more rugged construction and greater productivity.

The machine now has 82 drawbar horsepower and a simplified hydraulic system which practically eliminates external hoses and fittings.

The 2-yd. bucket has been redesigned for more effective digging and dumping. Also, a deeper box section and replaceable wear plates have been incorporated to lengthen bucket life. A new attachment is also available for this shovel model. It is a tip-



back bucket for handling loose materials. The bucket will roll back about 25 deg. at ground level.

For underwater burning

Pacific Welding Alloys Manufacturing Co., 310 North Avenue 21, Los Angeles 31, Calif., announces two new electrodes for underwater work.

The Pacific UC electrode is for cutting. It is a steel tube 14 in. long with a 5/16-in. OD. An extruded flux coating makes it completely waterproof. Oxygen is delivered through a 0.112-in. internal bore. The new rod is claimed to be exceptionally easy to use. Also, not subject to breakage.

The Pacific UW rod is for cutting. It is available in diameters of 1/8-in., 5/32-in., and 3/16-in. Its particular features are a stable arc even at great depths, and an extruded coating that permits a minimum of clouding while welding.

Pick-up power for post holes

A rear power source for light trucks, and a companion line of power tools, is announced by **H. S. Watson Co.**, 1316 67th St., Emeryville, Calif. The rear power source



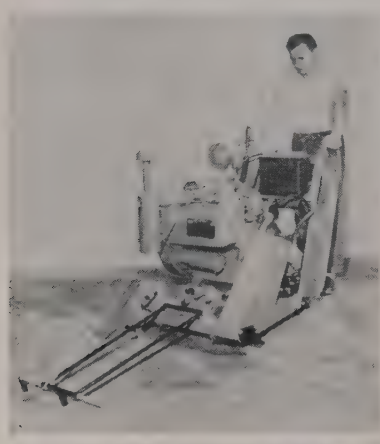
comes in kit form, and is adaptable to most light- and medium-duty trucks.

A light-weight post hole digger is the main companion item. It's a one-man tool with a telescoping drive shaft and universal joints connecting to a standard spline on the power source. According to Watson, the digger can be used anywhere in a 4 x 8-ft. area without spotting the truck. You can dig holes up to 10 in. in diameter and 40 in. deep.

Light when you need it

A portable, battery-powered Sentry-Lite, the Model 200X, is offered by **Hobby & Brown Electronic Corp.**, 55 Front St., Rockville Centre, N.Y.

The unit includes an automatic re-



CUT COSTS WITH A...

GREASLESS MECHANICAL SEAL

CARVER PUMPS

... the only Contractors Self Priming Pump with Greaseless Mechanical Seal ... are your best guarantee for maximum performance at minimum operating cost.

No expensive time or material required to service this pump. Trouble-free and maintenance-free, a CARVER PUMP is "Your Best Buy for Better Performance."

Write the factory or see your CARVER Distributor for complete information.

Western Region Warehouse
1530 W. 12th St.
Long Beach 13, Calif.

CARVER PUMP CO.

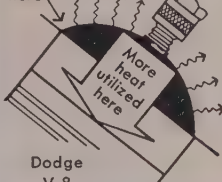
1416 Hershey Ave., Muscatine, Iowa



The quality name in pumps



Less heat waste here

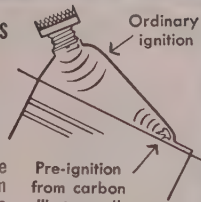


Dodge V-8

Less surface area, less heat lost

Rounded exclusive Power-Dome combustion chamber has less surface area than irregular chambers. Thus less heat is dissipated into cooling system, more heat is utilized within the chamber to expand gases more fully, give greater thrust to piston.

Dodge avoids power-stealing hot spots



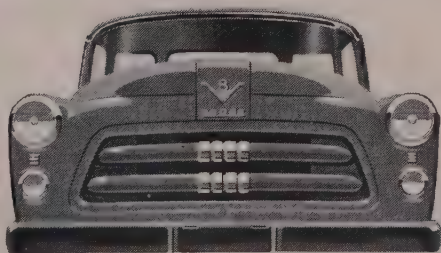
Power-Dome combustion chambers are rounded, have no corners or pockets in which carbon deposits can build up. Such deposits become red-hot, pre-ignite the fuel-air mixture, cause engine knock and loss of power, lead to costly repairs.

Short flame travel, better valving



With Power-Dome combustion chambers, the spark plugs are located at or near the center. Thus the flame has a shorter distance to travel, combustion is more even. Large unrestricted valves mean better "breathing" and greater efficiency.

How you get more power, use less gas with POWER-DOME V-8 truck engines!



Truck owners everywhere report more power and less fuel consumption with new Dodge Truck Power-Dome V-8 engines. AAA-supervised tests *proved* the power of Dodge Truck V-8's in a history-making Pikes Peak climb... proved the economy of Dodge Truck V-8's in a sensational 22-mile-per-gallon Economy Run.

Look at the pictures and captions shown on this page—then, for further details and an eye-opening road test, see your dependable Dodge Truck dealer!

DODGE "Job-Rated" TRUCKS

A PRODUCT OF CHRYSLER CORPORATION

A REAL HELP GETTING PILING FROM FOSTER

"By servicing our Piling needs with *on-time* shipments, Foster enabled us to use two rigs and meet a fast production schedule. Foster furnished specified sections of Steel-Sheet Piling in the exact lengths—helped us complete driving, without interruption, and *on time*."



ARTHUR J. NICHOLSON, Vice President
EQUIPMENT & SUPPLIES INC., Pittsburgh
Pile Driving Sub-Contractors to:

THE H. K. FERGUSON COMPANY



MELLON SQUARE GARAGE

Pittsburgh's new \$3.5 million, six level, underground parking facility.

Design and construction by:
THE H. K. FERGUSON CO., Cleveland

FOSTER RENTAL PILING

Contractors everywhere depend on L. B. Foster Company for exacting, prompt service on all sections and lengths of piling for *every* job.

You'll Save with Foster's Rental Plan that gives you a low, fixed expense—provides an extra advantage in bidding.

Write for Catalog W-4

PIPE FOR FOUNDATION PILE
H-BEARING PILE
H-S LIGHT-WEIGHT PILING

RAILS • TRACK EQUIPMENT • PIPE FABRICATION

L.B. FOSTER CO.

3460 Wilshire Blvd.
Los Angeles 5, Calif.

charger to keep the battery at peak capacity all the time. It plugs into standard AC power to perform this function.

Standard lamps are two 5,000-candle-power sealed beam units. More may be added, or there is a choice of floodlights or spotlights. The unit measures 8x13x16 in., weighs 50 lb., and is good for more than 12 hr. of continuous illumination.

15-cu. yd. scraper added to line

A new motor scraper, the TS-360, is now in production at Allis-Chalmers Mfg. Co., Tractor Division, Milwaukee 1, Wis. The TS-360 weighs



49,000 lb., has a 15-cu. yd. struck capacity, 20-cu. yd. heaped capacity, and a new 180-hp. Allis-Chalmers diesel engine. The entire power train has been completely re-engineered. Design features include the curved bowl bottom with offset cutting edge, positive forward forced ejection and high apron lift, and equal weight distribution when loaded.

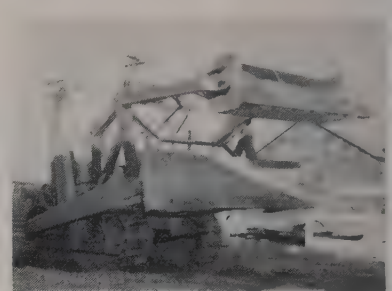
Portable sandblaster

A versatile, portable Cyclone sandblaster has been marketed which can be used for every abrasive blast cleaning need in addition to painted traffic line removal. Instant control over the blasting is afforded by a shut-off valve located under the op-

erator's hand. A screen is provided to allow abrasive re-use. Abrasive can be loaded directly into the hopper at any time. For further information write to Saffee Products Co., 173 14th St., San Francisco.

Loader attachment for dozer unit

A new loader attachment, the Rumac, can be attached to either hydraulic or cable-operated dozers, and with the hydraulic dozer com-



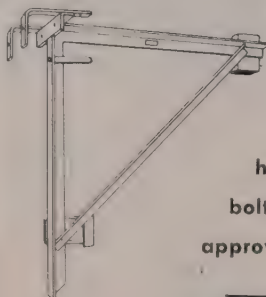
plete control for digging or dumping is maintained. It is designed to fit all sizes and makes of tractor equipment and dozer units. The struck size of the bucket for the sizes comparable to a D4 Caterpillar is 3/4 yd. Write to Rumac Manufacturing Co., P. O. Box 655, Pueblo, Colo.

Submersible sump pump marketed

Trouble-free performance is offered by Carver Pump Co. of Muscatine, Ia., in a new submersible sump pump which will handle up to 3,250 gal. per hr. The pump has no outside floats or rods; the motor housing is the float and is adjustable to operating range desired. Will operate in water up to 15 ft. in depth. Motor, 1/3 hp., and switch are completely enclosed.

**SUPERIOR
WALER
JACKS**

**ON
A MUST
CONCRETE JOB**



Fast . . . safe . . . no sway!

Low cost, ruggedly built Waler Jack

provides solid scaffolding on bridges, dams, abutments—all concrete construction jobs using

horizontal walers. Use on 2 x 4 or 2 x 6 waler—or

bolt to wall. Also use on bottom waler. State

approved, light weight—a real moneymaker!

FREE TRIAL ON YOUR JOB!

Write for
Descriptive
Literature

Dealer Inquiries Invited

SUPERIOR SCAFFOLD COMPANY Dept. WC

5624 Bankfield Avenue, Culver City, California



"Tire costs below a mill-per-mile"

says Guy Cooper, Cooper-Jarrett, Motor Freight, Chicago

"In a multi-million mile operation like ours, a fraction of a mill-per-mile means real savings. Our most recent records show that U. S. Royal Fleetways have enabled us to keep our tire costs below a mill-per-mile..."

Far Lower Cost Per Mile!

tracking. Special ROYAL CORD processing pre-stretches the Nylon or Rayon, reducing "tire growth" while maintaining the cord's natural shock absorbing strength. Exclusive PYRAMIN bonding solution surrounds each individual cord—fortifies it against heat and friction.

Today—no matter what your trucking job—there is a U. S. Royal Truck Tire capable of doing it better and at lower cost. And wherever you go, there is a U. S. Royal Dealer to give you expert tire service. Ask him to show you *why* truckers report they're well ahead with U. S. Royal!



ROYAL TRUCK TIRES

News of DISTRIBUTORS

Twin Disc Clutch Co. appointment

Diesel Electric Service & Supply Co., 60 East Thirteenth So., Salt Lake City, has recently been appointed an authorized parts station for Twin Disc Clutch Co. for the state of Utah. Stanley W. Stevens is manager.

Superior news

Superior Concrete Accessories, Inc., announces that Dick Nelson of 4622 Harrison, Fresno, Calif., has been appointed a distributor for southern San Joaquin Valley and that a stock of snap ties and wedges is being maintained at 2825 Espee in Fresno.

CB&I transfer

Edward E. Riggins has been transferred from the Chicago general sales office of the Chicago Bridge & Iron Co. to the Los Angeles sales office, located at 612 So. Flower St. A graduate civil engineer, Riggins joined the CB&I organization in 1950. In his newest position he will assist D. E. Stephan, district sales manager, and T. H. Tredwell and R. A. Johrde, contracting engineers.

Floyd Baker new Western sales mgr.

Appointment of Floyd Baker as Western regional sales manager of the Austin Division, Central Ohio Steel Products Co., is announced. Before joining Austin as a sales engineer 18 months ago, Baker was an independent contractor specializing in dam, highway, and large building construction. In his new position, he is responsible for sales of Austin

overshot loaders in the states west of the Mississippi. His headquarters are at 2 Santa Fe Dr., Denver, Colo.

Mead Logan joins Air-Mac

Mead Logan, formerly sales manager for the Seattle branch of Clyde Equipment Co., has joined the Construction Equipment Division of Air-Mac, Inc., Seattle. The company recently added to its line the new Hopto digger and back hoe.

Northwest distributor

Recently appointed distributor for the complete line of contractors and loggers equipment manufactured by Ingersoll-Rand is Andrews Machinery Co. of Washington. A comprehensive stock of portable rotary compressors and various jackhammers, paving breakers, tools, and accessories will be maintained in Seattle.

Hensley moves

Hensley Equipment Co., Inc. recently took possession of their new plant at 800 Peralta Ave., San Leandro, Calif., where they have five times the space and facilities.

Peterbilt distributor changes

Peterbilt Motors Co. announces a new distributorship for the state of Oregon and the Columbia River counties of southern Washington. The new firm, to be known as Peterbilt Sales, Inc., will be located at 906 N. E. Third Ave., Portland, the same location as the former Peterbilt distributor, G. R. Stevenson, Inc. Glenn E. Stevenson will be in charge of

sales in this new organization. Also announced is the appointment of Automotive Equipment Co., Portland as parts and service representative for the above territory. This operation will be in charge of Roger N. Olsen.

Great Western adds Multi-Matic

Great Western Equipment Co. North Hollywood, Calif. has been appointed a distributor for Multi-Matic products. A newly formed distributing company, Great Western distributes nationally accepted tools and equipment for contractors, industrial firms and public utilities companies. James J. Delvin is general manager.

Caterpillar transfers district reps

W. A. Spitzer has been named Caterpillar Tractor Co. district representative in Salt Lake City and vicinity to work with dealers in Utah



W. A.
Spitzer

and southern Idaho. He succeeds C. K. Hedges who was recently transferred to the Portland, Ore. territory to take over from R. H. Johnson who moved to the company's plains division as a district representative.

Crook Co. made distributor

Appointed exclusive distributor of Hensley Equipment Co., Inc. in Kern County, Calif., is Crook Company, Bakersfield.

Servicised names Calif. reps

Servicised Products Corp., recently announced the appointment of Rhodes and Jamieson, Ltd. of Oakland, Calif. and F. Geremia & Son,



LE ROI DIVISION, Westinghouse Air Brake Co., recently named the sales force which will cover the newly created Western sales region. With headquarters in San Carlos, Calif., the group is headed by Emmett Simmons, San Carlos. Pictured here, left to right, are: Simmons; James Graham, San Gabriel; James H. Crawford, Redondo Beach; (upper) W. Howard Winheim, Berkeley; M. F. Morris, San Carlos; and R. E. Marler, Seattle, Wash.



A TRAVELING SCHOOL brings latest product information to Harnischfeger Corporation dealers in the West, doubling as an interesting exhibit for power shovel and truck crane users. The road-going classroom stops for 2-day visits at all P&H dealers. A representative from the Milwaukee office is on hand, as well as a serviceman, and local managers also join the school for meetings in their territory. April stops will be made at dealerships in Montana, Idaho, Oregon.

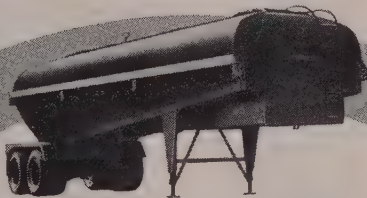
EARN TOP PROFITS IN YOUR CONSTRUCTION BUSINESS!

*The Finest Specialized Hauling
Equipment Can Add Speed And
Profits To Your Operation*

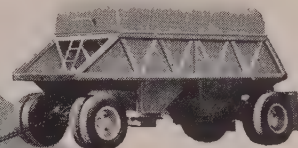
IT'S A GREAT YEAR for the construction industry — and you can make it *more* profitable for your company by having the newest, highest-capacity specialized hauling equipment. Handle bigger jobs *faster*, and earn top profits. Fruehauf's 1954 line of Trailers includes many entirely new, high-capacity units, all geared to your business. Write now for full details.



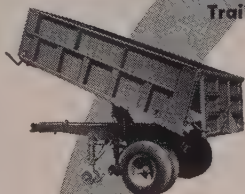
Twin-Screw Bulk Cement Trailers



Air-Slide Bulk Cement Trailers



Western Hopper Dump Trailers



Hoist-Type Dump Trailers



Corrugated Steel Open Top Trailers



Insulated Hot Asphalt Trailers



Western Tilt-Deck Trailers



Hopper-Type Dump Trailers



Trailer Chassis



Western Machinery Trailers



Stake and Rack Trailers



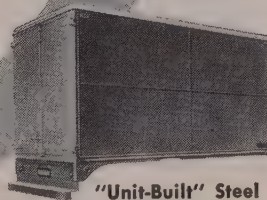
Deep-Frame Steel and Aluminum Platform Trailers



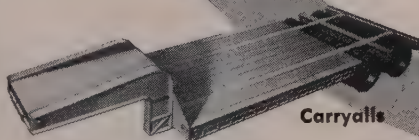
Oil Field Floats



Trussed Steel Platform Trailers



"Unit-Built" Steel Truck Bodies



Carryalls

FRUEHAUF TRAILER COMPANY, 5137 South Boyle, Los Angeles 58, California

☐ Please send me the newest, completely illustrated free literature on Fruehauf's specialized construction units.

☐ Please have a Fruehauf salesman call at my office with a list of Fruehauf specifications.

Name _____ Company _____

Address _____

City _____ State _____

"ENGINEERED TRANSPORTATION"

FRUEHAUF
TRAILER COMPANY

World's Largest Builder of Truck-Trailers
LOS ANGELES 58, CALIF.

FRUEHAUF BUILDS THE WORLD'S GREATEST LINE OF CONSTRUCTION TRAILERS

Sacramento, Calif. as distributors for the Northern California area. Both these dealers will carry the complete line of Serviced products, as well as specialty items.

Pacific Hoist & Derrick Co.

Pacific Hoist & Derrick Co. recently took on the handling of the Columbia Tractor & Imp. Co. line in the Seattle territory.

Adds lines; increases sales dept.

Dick Hansen, formerly with Tractomotive Corp., recently became assistant sales manager for Harry Cornelius Co., Albuquerque, New Mex. Two other changes in the sales force are the appointment of Bill Andrews, formerly with Border Machinery Co., to cover the northwest New Mexico territory, and the promotion of Joe Stoker to city salesman in Albuquerque. The company recently took on the distributorship for Pettibone-Wood Corp. and Universal crushers.

Tricoach handles Heil equipment

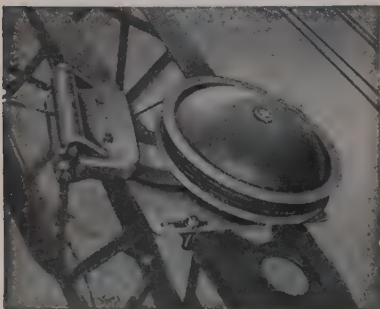
The Tricoach Company was recently appointed to handle the complete Heil line of equipment. At a new location at 3407 Airport Way, Seattle, Wash., Tricoach is headed by Pat Sullivan, manager.

Rod Livermore joins Empire

Empire Machinery Co. announces that Rod Livermore has joined its or-

GREATER BUCKET CONTROL WITH

UNIFORM TENSION at any pay-out



WESTFALL CENTER-PULL AUTOMATIC TAGLINE AND MAGNET CONTROL REELS

- FAIRLEAD ROLLERS** — Save needless line wear.
- MOVING PARTS** — Ball-bearing mounted.
- AMPLE PAY-OUT** — Big reserve for all jobs.
- SMALL, COMPACT** — No bulky projections.
- BETTER SIGHT** — Does not obstruct operator's vision.
- QUICK INSTALLATION** — 4 "J" bolts — No drilling.
- 5 SIZES** for any tagline requirement.

WRITE FOR FREE FOLDER!

WESTFALL AUTOMATIC TAGLINE

345 E. Second St. Los Angeles 12, Calif.
Phone MUtual 4694



COMPRESSOR SALES DEPT. ("GEE WHIZ" DIVISION)

Western Traction Co. of San Francisco really has "wind in its sales" these days, as witness seven new Chicago Pneumatic Model 125 rotary compressors all lined up for delivery to the City of Oakland. Just think how many more Oakland residents will hear the joyous and constructive chatter of jackhammers now!

ganization as industrial salesman. Livermore has had many years of experience in the Caterpillar "family" and is well versed in all phases of the equipment business.

Utility Trailer Mfg. Co.

Utility Trailer Manufacturing Co. of Los Angeles recently completed an agreement whereby it acquires exclusive distribution of Hobbs Schonrock cable dump trailers through its 11 sales outlets in the Pacific states, Arizona, Utah, and Hawaii.

FWD sales and dealership news

Four Wheel Drive Auto Co. announces the expansion of three Western sales areas. Territories affected are: Jack Kelly of Pomona, Calif. adds New Mexico and Colorado to his Southern California territory. Ronald Gehrke, headquartering

at Burlingame, Calif., with Northern California and most of Nevada, enlarges his area to include Utah and Wyoming. Les Berndt, working out of Portland, Ore. with the states of Washington, Oregon, Idaho and Alaska, adds Montana to his list.

FWD also announces the appointment of Macdonald Equipment Co., Inc., Denver, Colo. as authorized sales, parts, and service dealer for Colorado. The company is headed by J. A. Macdonald and A. M. Dahm, partners. They are being assisted in field sales by M. C. Chambers, who has been with Macdonald for the past 10 years.

Chain Belt appoints Western rep

Thomas N. Gilpin has been appointed Western sales representative, Construction Machinery Division, Chain Belt Co., in Los Angeles.

PREFERRED by CONTRACTORS

Less initial cost—Lower upkeep

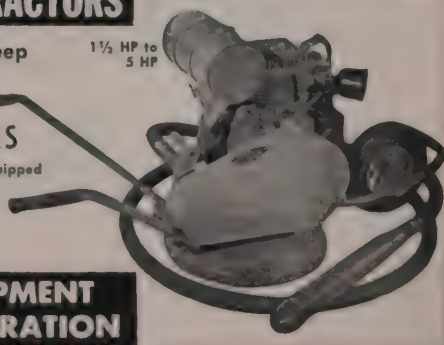
1½ HP to 5 HP

MARVEL CONCRETE VIBRATORS

GV-1, GV-2 & GV-3 Models Now Equipped with Automatic Centrifugal Clutch as Standard Equipment. Interchangeable Flexible Shafts.

Write for full information

MARVEL EQUIPMENT CORPORATION
215-217 EAGLE ST. • B'KLYN 22, N. Y.



MANUFACTURERS

Marion-Osgood-General sales

Establishment of a consolidated sales and service department for the entire line of Marion-Osgood-General equipment recently went into effect, with D. E. Rizor heading the program as vice president. Kenneth O. Williamson, sales manager, small machines, is concentrating his activities on the sale of equipment in sizes of 4 cu. yd. and under, through a distributor organization throughout the U. S. and Canada.

Le-Tourneau-Westinghouse to buy J. D. Adams

According to recent announcement, LeTourneau-Westinghouse Co. is negotiating an agreement to purchase the plant and assets of J. D. Adams Manufacturing Co., pioneer manufacturer of roadbuilding and earthmoving equipment since 1885. This is in line with LeTourneau-Westinghouse's program toward providing its customers with a stepped-up product line, as well as a more complete earthmoving "package."

Nichols appointed C&D sales mgr.

Appointment of R. P. Nichols as general sales manager for C & D Manufacturing Co., Perkins, Calif., makers of Movall rock and earthmov-



HOMELITE CORPORATION recently held its annual district sales meeting in San Francisco, attended by 50 of the company's chain saw dealers in the area. Vice President *Nelson Thompson* made a special trip from New York for the meeting, which was conducted by *Robert C. Glidden*, San Francisco district sales manager. Reading from left to right: *Jim Walsh*, field engineer; *Thompson*; *Glidden*, and *Ken Snyder*, production engineer.

ing wagons, is announced. Nichols has been active in the construction field since 1936. His experience includes eight years with Caterpillar, and over five years with R. G. Le-Tourneau, Inc. before going into general contracting work, as well as other assignments in Latin America, and overseas during the war.

U. S. Steel Western divisions

Appointment of Ralph W. Seeley as vice president—sales of Columbia-Geneva Steel Division and of Charles W. Lee to succeed him as vice president and general manager of Consoli-

dated Western Steel Division is announced by Alden G. Roach, president of these two Western divisions of U. S. Steel Corp. Seeley succeeds at San Francisco M. J. Aurelius who goes to the Pittsburgh headquarters. Lee has been vice president-production for the Los Angeles, Arizona, and Texas districts since 1952. He will headquarter at the Maywood plant in Los Angeles.

Permar named field sales mgr.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee, has named Don S. Permar to the newly created

BUY of the YEAR

in loading equipment



The KOLMAN "Junior" Conveyor is designed to meet the demand for a LOW COST portable conveyor rugged enough to support a Loading Trap and large Vibrating Screen. The "Junior," or Model 202, will take the kind of punishment that is dished out to a portable outfit—and will cost you less money to own.

The rugged "box type" construction of the "Junior" gives you unusual strength and rigidity for such low prices. The sides are of fabricated 3/16" steel plate formed into a channel 16" deep with 2" legs. A steel belt cover completely covers the top, giving additional rigidity and completely encasing the return belt so as to prevent material from working in to cause belt damage.

The under-slung power unit provides easy access for operation and servicing. Self-cleaning tail pulley, bar type head pulley, ball

bearings throughout and heavy duty truck axles and tires are included to give it the biggest combination of fine features to be found anywhere in the low price field.

—MONTANA DISTRIBUTOR—

WESTATE MACHINERY CO.

3017 Lincoln Lane

Billings, Mont.



Model 202

SEND for FREE literature

KOLMAN Manufacturing Co.

5670 W. 12th St., Sioux Falls, S. D.

Please send literature on—

() Conveyors () Feeders

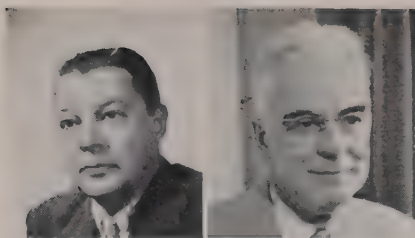
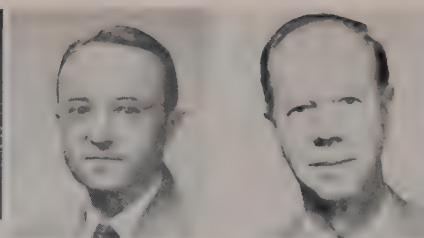
() Screens () Traps

Quote _____ size or _____ capacity

Name _____

Address _____

City _____

**Erlin****Osborne****Kullmer****Peterson****Brady****Woodard****Kaiser appoints**

Kaiser Steel Corporation recently announced two new appointments. B. J. "Barney" Osborne was made assistant to the vice president and general manager of the corporation and placed in charge of the new fabricating division which will operate the plant and facilities recently acquired from Union Steel Co. in Los Angeles. Richard L. Erlin was named manager of engineering

sales for Kaiser Steel in Oakland.

Two new execs.

Soule' Steel Co., San Francisco, announces the appointment of a new vice president, Frank Kullmer, formerly chief engineer. C. H. Peterson simultaneously became chief engineer.

Joy's new distributor sales mgr.

Joy Manufacturing Co. has announced the appointment of William

F. Brady as manager, distributor sales. He will be based at the Pittsburgh home office.

Rucker Co. promotes Woodard

Clarence J. Woodard, formerly sales manager of the Rucker Co., Oakland, Calif., manufacturer and distributor of fluid-power components, has been appointed vice president in charge of sales and engineering.

post of field sales manager, with overall responsibility in managing the Le Roi field sales organization responsible for the marketing of Westinghouse industrial compressors, Le Roi portable mixers, and heavy duty gasoline engines.

Meiter becomes genl. sales mgr.

William A. Meiter, central sales manager of Worthington Corporation, has been promoted to general sales manager, succeeding Thomas J. Kehane, who had previously been appointed vice president in charge of sales. Meiter has been a member of the Worthington organization for 28 years.

R. L. McKinley named field mgr.

Russell L. McKinley, formerly service manager of Browning Crane & Shovel Co., was recently appointed as field service manager of the Construction Machinery Division of Clark Equipment Co.

McKiernan-Terry news

McKiernan-Terry Corp. announces that the headquarters of its pile hammer division, formerly located at 15 Park Row, New York City, has been moved to its plant at 100 Richards Ave., Dover, N. J. All business pertaining to pile equipment is being handled at the new address under the direction of G. Robert Compton, Jr. who succeeds Earle R. Evans (deceased), as sales and service manager of the division.

Blaw-Knox promotions

H. P. (Pete) Cerutti, who joined Blaw-Knox in 1945, has been named sales manager and chief product engineer of the steel forms department of the Equipment Division. A. Francis Sarosdy was promoted to assistant chief product engineer.

Copco adds to plant

Building by Copco Pacific of new plant facilities is under way at San

Carlos, Calif. to add further office space and double the present warehouse facilities. Headed by Charles E. Burton, general manager, Copco distributes its line of Swedish manufactured pneumatic construction, mining and industrial equipment in the eleven Western states.

Atlas Powder opens new offices

Atlas Powder Co. announces the opening of its new general offices located at Concord Pike and New Murphy Road, Wilmington 99, Dela.

Irwin Abrams becomes gen. mgr.

Irwin Abrams was recently appointed general manager of Aeroil Products Co., Inc., manufacturer of portable flame fired equipment.

Allis-Chalmers buys Baker Mfg.

Allis-Chalmers Manufacturing Co. recently purchased the Baker Manufacturing Co., one of the oldest manufacturers of road building equipment in the United States, and as of April 1 will begin operating the Baker plants at Springfield and Beardstown, Ill.

Frank Hunter named v.p./sales

Frank A. Hunter was recently appointed vice president in charge of sales of The Chapman Valve Manufacturing Co.

Johns-Manville appointment

Garland B. Childers, staff engineer for Johns-Manville in the San Francisco District, has been appointed to the newly established position of general construction superintendent of the company's industrial products division with headquarters at New York City.

Geo. Becker joins Lippmann

George D. Becker, recently associated with Allis-Chalmers Manufacturing Co., has joined the engineering staff of Lippmann Engineering Works to head that company's de-

partment in engineering development. Becker will be available, along with others on the company staff, for consultation on the application and use of Lippmann conveyors, crushers, screens and associated processing equipment for pit, quarry and mining operations.

K. O. Duncan moves

K. O. Duncan Co., demolition equipment, expands and moves its manufacturing facilities to new quarters at 10713 West Pico Blvd., West Los Angeles 64, Calif.

Rumac enters loader field

Mark J. McDonnell, general manager, announces the formation of a new firm, known as Rumac Manufacturing Co., Pueblo, Colo., for the manufacture of dozer loader attachments. The Western states will get special emphasis in the company's sales program and dealer territories are now being set up.

Duff-Norton buys Cofing Hoist Co.

Duff-Norton Manufacturing Co. has purchased the Cofing Hoist Co. and will operate the firm as the Cofing Hoist Division of Duff-Norton Co. Duff-Norton said it was changing its name from Duff-Norton Manufacturing Co. to Duff-Norton Co. in the interest of brevity and clarity. J. R. Cofing, who has been vice president-sales for Cofing Hoist, will continue in the affairs of the new division as one member of a management committee.

American Bridge names new v.p.

A. A. Porter, who worked as a field engineer on the erection of the San Francisco-Oakland Bay Bridge for American Bridge Division of U. S. Steel, has been appointed vice president in charge of erecting for this Division. He succeeds C. William Doerr who is retiring after over 42 years of service with American Bridge.

ADVERTISERS in this issue

A

Adams Division, LeTourneau-
Westinghouse121
Allis-Chalmers Manufacturing
Co.55 through 62
American Bitumuls and Asphalt Co. 78
American Pipe and Construction
Co., Northwest Division..... 95
American Tractor Equipment Corp. 54
Austin-Western Company, Div. of
Baldwin-Lima-Hamilton Corp... 20

B

Badger Machine Company.....105
Baldwin-Lima-Hamilton Corp....141
Barnes Manufacturing Co.....132
Blaw-Knox Company, Foote
Construction Equipment Div...115
Briscoe Manufacturers of Calif...135
Broderick & Bascom Rope Co.... 51
Bucyrus-Erie Company 97

C

C & D Manufacturing Co.....103
Carver Pump Co.138
Caterpillar Tractor Co.. 35, 36, 37, 38
Chain Belt Company..... 69
Chapman Valve Mfg. Company... 91
Chicago Bridge & Iron Company.. 18
Childers, W. L., Mfg. Co.....107
Chrysler Corporation,
Dodge Truck Division.....139
Cleveland Trencher Company...122
Colorado Fuel & Iron Corporation,
Wickwire Rope 89
Industrial Wire 33
Grader Blades104
Columbia-Geneva Steel Div., United
States Steel Corporation... 47 & 99

E

Eaton Mfg. Co., Axle Division...109
Electric Steel Foundry Company.. 80
Euclid Division,
General Motors Corporation... 65

F

Fiske Brothers Refining Co.,
Lubriplate Division136
Foster, L. B., Company140
Fruehauf Trailer Company.....145

G

Gardner-Denver Company...16 & 17
Gates & Sons, Inc.....134
General Motors Corporation,
Chevrolet Motor Division...12 & 13
General Motors Corporation,
Truck & Coach Division..... 6 & 7
General Petroleum Corporation...117
Goodall Rubber Co. 88
Goodrich, B. F., Company, The,
Tire & Equipment Division... 5
Goodyear Tire & Rubber Co., Inc.,
TheCover 4

H

H & L Tooth Company..... 85
Harnischfeger Corporation.126 & 137
Hyster Company14 & 15

I

International Harvester Co.,
Industrial Power8 & 9
Motor Truck Division123

J

Johnston, A. P., Company, Inc....151

K

Kaiser Steel Corporation..... 93
Keasbey and Mattison Company..119
Koehring and Subsidiary
Companies100
Kohler Co.118
Kolman Manufacturing Co.....147

L

Le Roi Division, Westinghouse Air
Brake Co. 41
Leschen Wire Rope Division,
H. K. Porter Company, Inc.... 87
Lincoln Electric Company, The... 98
Link-Belt Speeder Corporation... 10
Lubriplate Division,
Fiske Brothers Refining Co....136

M

Mack Motor Truck Corp..... 77
Madsen Iron Works, Inc., Baldwin-
Lima-Hamilton Corporation... 45
Marion-Osgood-General,
Marion Power Shovel Company. 67
Marvel Equipment Co.146

Minneapolis-Moline Co. 75
Moffett Engineering Co.....122
Murphy Diesel Company...111

N

National Surety Corporation....124
Northwest Engineering Co..... 3

P

Pacific Telephone and Telegraph
Company 92
Page Engineering Co.Cover 3
Permanente Cement Co. 81
Pettibone Mulliken Corp., Pettibone
Wood Mfg. Co., Subsidiary.... 42

S

Shawnee Manufacturing Co.....130
Standard Oil Company of Calif... 29
Standard Steel Corp. 84
Stephens-Adamson Mfg. Company 79
Superior Concrete Accessories,
Inc.133
Superior-Lidgerwood-Mundy
Corporation132
Superior Scaffold Company.....140

T

Texas Company, The.....Cover 2
Thermoid Co.112
Timken Roller Bearing Company,
The, Rock Bit Div..... 11
Truck Mixer Manufacturers
Bureau 71
Twin Disc Clutch Company..... 74

U

U. S. Pipe & Foundry Company.. 73
United States Rubber Company,
Truck Tire Division....142 & 143
United States Steel Corporation,
Columbia-Geneva Steel Div..47 & 99
Universal Form Clamp Company.. 90
Utility Trailer Mfg. Co. 66

V

Victor Equipment Co.131

W

Western Concrete Pipe Association 70
Western Construction125
Westfall Automatic Taglines....146

Y

Yuba Manufacturing Company...126

Johnston Stainless Welding Rods

Practical, Down-to-Earth Welding Rods
Alloys as they are supposed to be

Corrosion Resistant—
Clean metal

Strong—
Low in cracking

A. P. JOHNSTON CO., INC.
1845 E. 57th St., Los Angeles 58

BACKFILL, uncompacted

It takes one to know one

In February we outlined a couple of stories explaining where the S.I.'s got that cryptic title. One version blames it all on poor spelling: they are Sivil Engineers. The other goes back to the days of railroad surveys, when Searles & Ives handbook was a well-thumbed item in every surveyor's kit, and the surveyor was known as an "S. & I." engineer.

Now we've heard from A. H. Brownfield of Sacramento, a long-time structural engineer with California's Division of Architecture, and before that an S.I. himself: "The interpretations vary somewhat from the version told to me by my antecedents in the professional field of surveying.

"As I recall it we were somewhat proud of the term 'S.I.'ing,' as it distinguished us from the office staff. And we were the do'ers. That is, we made preliminary surveys, made recommendations, and controlled the field layout for actual structures.

"The version I heard, about S.I.'s, was that a survey party was once working through a certain area, and one of the farmers wrote to his brother that 'the Sivil Engineers are here,' etc. He was probably sending his teen-age daughter to visit her aunt and uncle while the 'seerveyors' were in town. This seems to have been the custom in the early 1900's. But I cannot vouch for its truth."

Allan Brownfield thus defines the origin of "S.I.", as well as the professional and non-professional talents of this colorful and essential figure in the civil engineering scene. Volunteering that he was an S.I. himself, he emphasizes the justifiable pride that goes with S.I.'ing.

Going! Going! GONE!

We've heard a lot of pros and cons about construction equipment auctions. It must depend which side of the fence you're on. As an example, here's a story no contractor would ever tell on himself. But Ross & Ross Auctioneers, Inc., doesn't care who hears it. This is from the firm's "news release" on its auction of Navy surplus equipment at Davisville, Rhode Island, last December:

"Three old LeTourneau Model LP scrapers were offered . . . The first scraper was Lot 771, 1944, Serial S13504-LPD, and tires in fair condition . . .

"The bidding opened at \$1,000 . . . When a price of \$4,000 was reached, the crowd sat stone silent in amazement . . .

"'Are there any more bids?' From the left rear of the hall a contractor from New Mexico raised his paddle

and indicated a \$4,100 bid . . . A contractor from Florida who felt certain he had already purchased it for \$4,000, raised his paddle to indicate a bid of \$4,200.

"By this time one of the Ross & Ross floor men had run over to the side of the contractor from New Mexico and urged him to bid \$4,300. This would have closed the bidding except that . . . Ross & Ross floor men coaxed the Florida contractor into another bid of \$4,400 . . .

"The bidding went to \$5,000 by the New Mexico contractor, \$5,500 and then \$6,000, \$6,100 from his opponent, \$6,200 again by the New Mexico contractor, \$6,300 from the same competitor, . . . \$6,400 came from the Ross & Ross floor man, indicating he had a final last bid from the Florida contractor.

"'Going once, going twice, SOLD for \$6,400! . . . It is your privilege to

Twenty-five years ago in Western Construction

"Utah Construction Co., Ogden, sublet its contract for **Deadwood Dam** to Morrison-Knudsen Co., Boise. This dam is a concrete arch structure, 160 ft. high and 700 ft. long on crest, and is on the Boise River east of Cascade."

* * *

"Hinman Bros. Construction Co., Denver, is making good progress on 10 mi. of grading and graveling on State Road No. 4 through the Colorado River canyon to connect DeBeque and the present road to Palisade on the west end of Plateau canyon."

* * *

"The payment of large bonuses to contractors for speedy and efficient construction—on the increase—is good business when properly safeguarded. The completion of Pardee Dam nearly two years ahead of schedule saved the East Bay cities from a serious water famine. The bonus paid **The Atkinson Construction Co.** was a sound investment."

* * *

"The **Ball wagon grader** combines five dirt moving requirements in one piece of equipment—it digs, loads, transports, dumps, and spreads. Its manufacturer, the Blaw-Knox Co., claims that 8-, 10-, 12-, and 14-cent dirt moving costs are not unusual."

take Lot 772 and Lot 773 at the same price if you want them."

"At this moment three of the Ross & Ross floor men had hurriedly huddled around the Florida contractor . . . and after a moment of complete silence . . . 'He'll take them all!'"

"The crowd took their seats, bewildered and stunned (Acquisition cost of these three scrapers 11 years ago was \$5,800 each.) . . .

"The unsuccessful bidder from New Mexico was asked why he bid up to \$6,300 and he stated . . . 'I really don't know. I had it marked in my catalog to pay only up to \$3,500 . . . That Ross & Ross floor man got me excited.'"

When is a bid call?

Perhaps there used to be more good poker players among construction men. At least, there wasn't any argument about what it meant to "call" bids. It was just like poker: lay 'em down, men, and let's see who takes the pot.

But nowadays the word is being used a little more loosely. And we fear we may have slipped into error ourselves. Too often someone talks about a bid call when he really means the advertising or invitation date.

Even using the word "for" doesn't always clear up the situation. A man says he'll call for bids on such-and-such a date. Is that when he will invite them, or open them?

For ourselves, we'll take the long way around, just to be sure. We'll never call for bids. We'll issue an invitation for them. Then we'll open them. Nobody will call anything. Unless it's what the high man says to the low man!

NEXT MONTH

BUILD-UP FOR A BRIDGE

—Down at Albuquerque the contractor played it smart on a job of bridging the Rio Grande. To keep his feet dry and get some extra reach for his equipment, he threw a fill across the channel first. An article next month will review some other kinks too, from Sharp & Fellows' work on the first prestressed block bridge in New Mexico.

SEAMED SANDSTONE

—What do you do with it when you can't blast? Charles Harney had the answer on approach work for the Richmond-San Rafael Bridge. And he worked his method successfully to depths of 25 ft. in spots. A mighty businesslike approach to a unique 50,000-yd. job is covered in **Western Construction** next month.

... The Editors

Heavy construction with a capital H

On a million-dollar highway project, **Western Construction** readers spend every dime—for design, for supervision, for materials, equipment, and labor. And **Western Construction** can logically follow that job from start to finish.

On a million-dollar building project, chances are that **Western Construction** readers spend only half the total. The rest goes for acoustical matters, heating and ventilating, plumbing, electrical equipment, fenestration, insulation, special finishes, paints, hardware, and fixtures.

The civil and structural engineers design a shell, and the building trades erect it. After they're finished, so are we. Adaptation of the structure to use as a retail store, a foundry, an office, a powerhouse, or a laboratory is out of our field.

But sometimes we leave too soon. For instance, we've been leaving hydro projects too soon. We've talked about tunnels and penstocks and powerhouse concrete. But we've never talked about the installation of hydro machinery.

The handling and setting of heavy weights—valves, generators, turbines, regulators—is a practical science of the construction field. Here's a business where millwrights and riggers, carpenters and operating engineers, team up to do the utmost in ingenuity and precision.

P.G.&E.'s Pit 4 Project is a good example. Machinery suppliers and contractors faced fancy problems of access, scheduling, handling, and installation. How it was done is the basis of a 3-page article starting on page 32 this month.

What is your opinion worth?

You read an article in a magazine, or see a story in the newspaper, and it really rubs you the wrong way. It has to do with action at some level of government, or a proposal for action—a new law or policy.

At best you're offended. (You may be angry as well!) And yet, likely as not, no one has tried to offend you. It's simply a case of ignorance. Or perhaps extra positive expression of a viewpoint that contradicts your own.

What to do about it? Letter to an editor? Since it's a matter of governmental function, maybe a letter to your congressman (or your supervisor, or councilman) would be better.

These seem like pretty good ideas, but then you realize how often you've laughed at the letters in newspaper forums. Only cranks seem to write in. So, despite the fierce conviction that has aroused you, and despite the calm certainty that you're being reasonably objective in your view, you decide not to write a letter to the editor.

This doesn't say much for the value of your opinion, but let's see about that letter to your congressman (or supervisor or councilman).

Well, that letter wouldn't be published! And it would be going to the man who can do something. But, on the other hand, he probably gets so many letters from the organized opposition that he wouldn't see yours. Besides, he votes the way the big interests want him to.

So, another issue isn't faced. Maybe it's several issues all rolled into one—like the recommendations of the Hoover Commission now going before Congress.

These reports and recommendations represent more than a year of work by several committees appointed by the Hoover Commission. Each "task force" is composed of executives from American business and industry. These men are specialists in the activities examined by their respective committees. They have examined business management aspects of our federal government. And they have made recommendations intended to save money. Each recommendation is, in itself, evidence of a choice between bureaucracy and business methods.

You are business men, especially in the sense that the dollar is the measure of performance. The economic choice between alternatives is old stuff to you, in your personal life and in your business.

But congressmen will ultimately decide—and in your behalf—what is to be done with the Hoover report recommendations. And they are not certain to be motivated as you are, by business sense alone.

You'll not get your business management in government, and its resultant possible savings, unless you ask for it. And ask for it in writing.



AND NOW

the addition of

TORQUE CONVERTER

**MAKES THE AUSTIN-WESTERN SUPER 88
THE HOTTEST MOTOR GRADER ON WHEELS**

By adding the Torque Converter to the already famous A-W All-Wheel Drive and Steer (Controlled Traction) Power Graders, the A-W engineers have developed the most revolutionary machines in motor grader history—the most remarkable machines to ever “hit” the dirt—Austin-Western Power Graders.

MULTIPLIES torque hydraulically.

HOLDS the load to the power source.

APPLIES power to the load smoothly.

FITS the power to the load more efficiently.

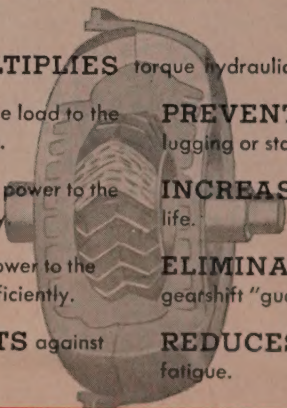
PROTECTS against shock-load.

PREVENTS engine lugging or stalling.

INCREASES engine life.

ELIMINATES gearshift “guess.”

REDUCES operator fatigue.



AUSTIN-WESTERN COMPANY

Construction Equipment Division
Baldwin-Lima-Hamilton Corporation

AURORA, ILLINOIS, U.S.A.

ARIZONA—SHRIVER MACHINERY COMPANY.....Phoenix
CALIFORNIA—EDWARD R. BACON COMPANY.....San Francisco 10
CALIFORNIA—SMITH BOOTH USHER COMPANY.....Los Angeles 54
COLORADO—LIBERTY TRUCKS & PARTS COMPANY.....Denver 1
IDAHO—ENGINEERING SALES SERVICE, INC.Boise
MONTANA—WESTERN CONSTRUCTION EQUIPMENT CO.....Billings
WYOMING—KEREMI TRACTOR AND EQUIPMENT CO.....Cheyenne

NEVADA—WESTERN CONSTRUCTION EQUIPMENT CO.....Missoula
NEVADA—C. D. ROEDER EQUIPMENT COMPANY.....Reno
NEW MEXICO—N. C. RIBBLE COMPANY.....Albuquerque
OREGON—COLUMBIA EQUIPMENT COMPANY.....Portland 14
UTAH—WESTERN MACHINERY COMPANY.....Salt Lake City 15
WASHINGTON—COLUMBIA EQUIPMENT COMPANY.....Seattle