WESTERN CONSTRUCTION

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PORTLAND CEMENT ASSN.
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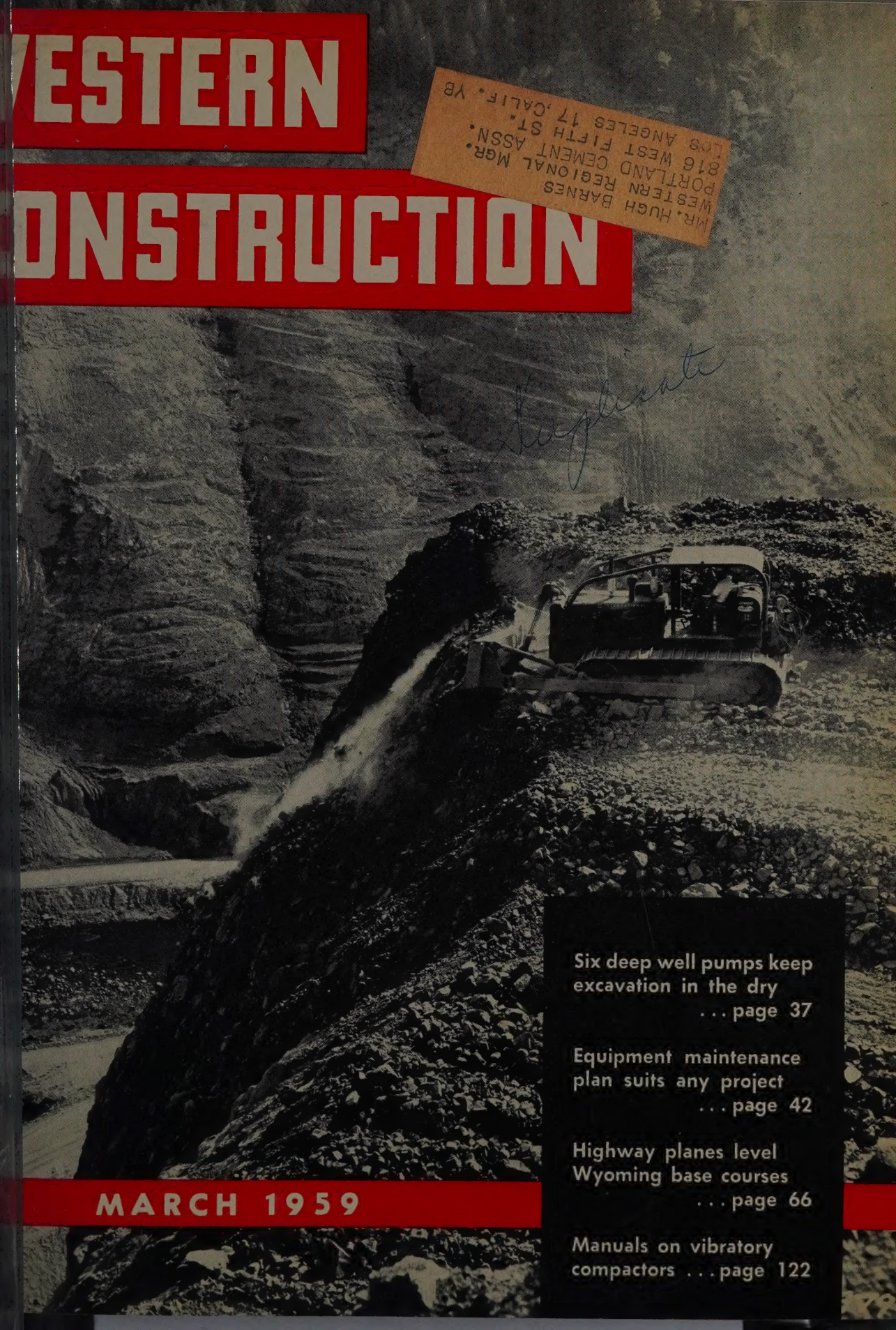
LOS ANGELES 17, CALIF. YB



MARCH 1959

NORTHWEST

MODEL 2

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① A new 25-D handling steel on a Southern bridg

② Another of the many 25-D Pullshovels now in

③ The 25-D is fast and smooth on clamshell

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A STILL FINER 3/4 YARD MACHINE

25-D

In keeping with Northwest's program of constant refinement Northwest announces a still finer tool —the 25-D, an advanced ¾-yd. machine as a Shovel, Crane, Dragline or Pullshovel supplemented by the Northwest 25-D, 18-ton Lifting Crane. This Northwest will make many new features available.

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- Longer, wider crawlers
- Larger Drums—greater cable capacity
- Larger Drum Brakes and Clutches
- Larger Uniform Pressure Swing Clutches
- Improved "Feather-Touch" Clutch Control for still easier operation
- Grouped Lubrication

These are just a part of the new advances in the design of this workhorse of the ¾-yd. field that you can add to the many exclusive features always available on Northwest machines.

Don't buy a ¾-yd. machine without getting the whole story on the 25-D.

NORTHWEST ENGINEERING COMPANY
135 South LaSalle Street, Chicago 3, Illinois

se rock jobs the 25-D
even greater output.

ASK for complete details on this still finer NORTHWEST!

for more details, circle No. 1

WESTERN CONSTRUCTION

KING PUBLICATION

March
1959
Vol. 34 No. 3

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FRONT COVER—An International TD-24 'dozes shot rock over a 350-ft. cliff at the Corps of Engineers Cougar Dam project on the McKenzie River near Eugene, Ore. Work shown as part of relocation of 10½ mi. of road, underway by Briggs Construction Co.

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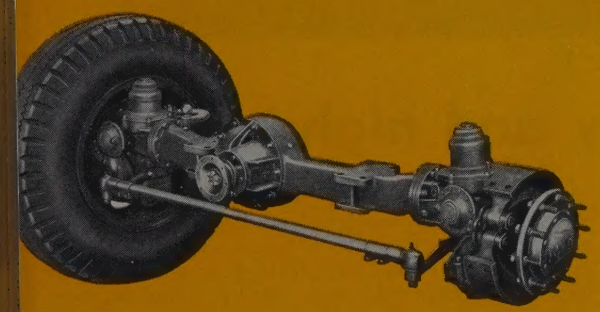
Mack builds every major component in a wide range of capacities ranging through super-duty. So—

Whatever kind of operation you have . . . whatever loads you haul . . . whatever problems you face by way of terrain, climate or grades . . . we can select the interchangeable, Mack-built components that meet these conditions and custom assemble them into the most efficient truck you can buy. (Stock models available too, of course.)

And only Mack offers quality features like these—

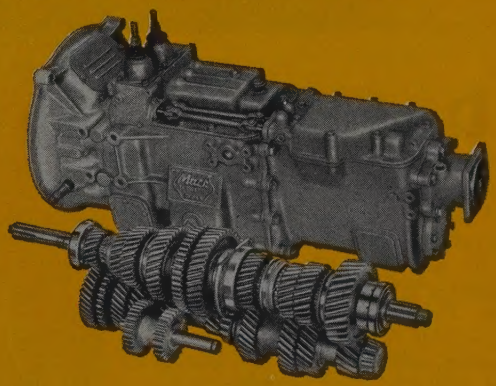
THE STRENGTH OF MACK-BUILT FRONT AXLES

ack's drop-forged I-beam front axles are made super strong : long, trouble-free service. Extensive use of heat-treated els for crucial parts means minimum maintenance. And ack's exclusive *front-drive axle* for all-wheel-drive trucks er the greatest ground clearance and strength of any made— th all parts fully enclosed.



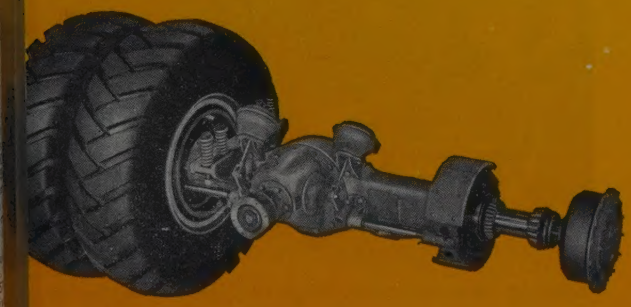
THE LONG LIFE OF MACK-BUILT TRANSMISSIONS

Service records prove that Mack transmissions—like this 20-speed Quadruplex—stand up to heavy-duty hauling far longer and need less attention than any others—thanks to the use of the finest gear metals known . . . to painstaking precision manufacture . . . and to exclusive Tetrapoid gear design that gives maximum strength, longer life and smoother action. Five- to twenty-speed units, each with ideal ratio steps.



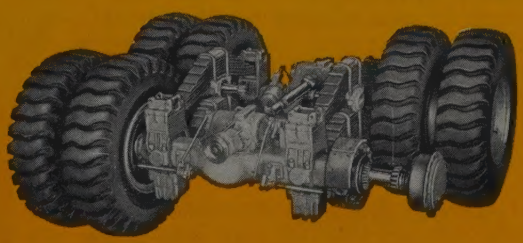
THE DURABILITY OF MACK-BUILT 2-WHEEL REAR AXLES

ck's two-wheel, rear-axle assemblies have an unmatched ntation for service under strenuous conditions. Dual Re- tion, gear-type differential and Mack's famous planetary : reduction at the wheel hubs (Planidrive) provide the oth distribution of power vital to top truck performance.



THE TRACTION OF MACK-BUILT BALANCED BOGIES

Macks perform where other trucks bog down—in mud, loose gravel or sand—thanks to Mack's exclusive Balanced Bogie with Power Divider. It's a 4-wheel-drive, tandem rear-axle assembly with an inter-axle differential that directs the most power to the wheels having greater traction. Planidrive final reduction in all four hubs eliminates the need for bulky carriers, differentials or axle shafts. Clearance is increased, weight is reduced, maintenance is fast and simple.

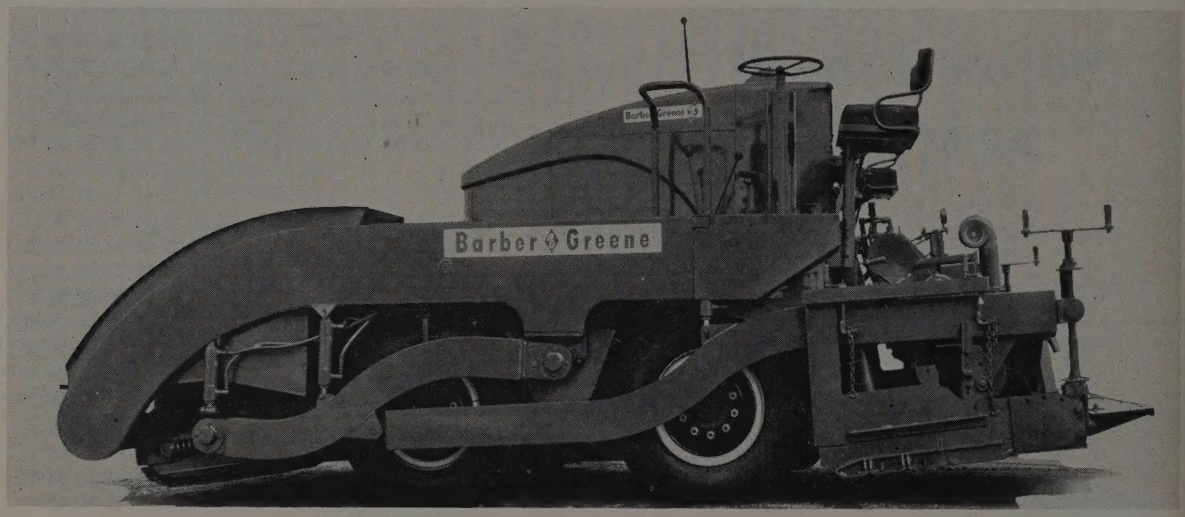


MACK *first name for* **TRUCKS**

Mack Trucks, Inc., Los Angeles, Denver, San Francisco, Seattle, Portland, Salt Lake City, Albuquerque

NEW EQUIPMENT

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



Design for heavy duty and high capacity

Blending operating principles proven over the years and new concepts in asphalt finisher engineering, **Barber-Greene** is announcing two new units: Model SA-60 mounted on special, high-speed tractor-type crawlers, and Model SB-60 mounted on pneumatic tires. Design objective in the new models has been to provide heavy-duty, high capacity and low maintenance operation—to lay more miles per day at less cost per ton. Both models feature a fleetness indicated by a selection of speed from 14 ft. per min. to 12 mph. both forward and reverse. A spring-loaded balance stabilizer helps to solve the usual problem in finishers where the center of gravity shifts constantly under various loading and operating conditions. In both models the wheels or crawlers are set inside the machine's normal lane width to facilitate matching joints or working next to curbs. Power steering on both models is available during paving or traveling. Light pressure on the steering wheel provides increasing speed on one side and proportionate decrease in speed on the opposite side.

To keep pace with the paving speed of the unit the hopper design has been modified to use the entire length of the chassis (13 ft.) to take care of the load of mix with maximum speed. Control gates located at the rear of the chassis can be operated by the screed man without interrupting the machine operations.

Feeders are independently controlled and spreading screws are provided for each side of the machine. The high speed, hydraulically driven tampers of both machines operate on the proven Barber-Greene principle. The system presses material into base depressions prior to strike-off and also compensates for varying density in the mix.

These new heavy-duty units—the SA-60 and the SB-60—have been designed primarily for contractors who recognize that by a larger capital investment operating costs may be reduced as well as maintenance and down-time with corresponding increase in daily or seasonal production.

. . . Circle No. 151

Patching plant with bonus features

A complete mobile asphalt plant built on a 2-wheel trailer, describes Model PM 310 Patch-Mix by **Wylie Manufacturing Co., Inc.** The machine is small and compact for easy handling on the road but has design and operating features to produce hot-mix material

equal to large stationary asphalt plants. For example, the unit is equipped with a rotary dryer which dries aggregate for a full batch, while the pugmill is mixing the previous batch. The large asphalt tank and volumetric measuring system assures the proper amount of asphalt for each batch. The machine handles all

(Continued on page 25)

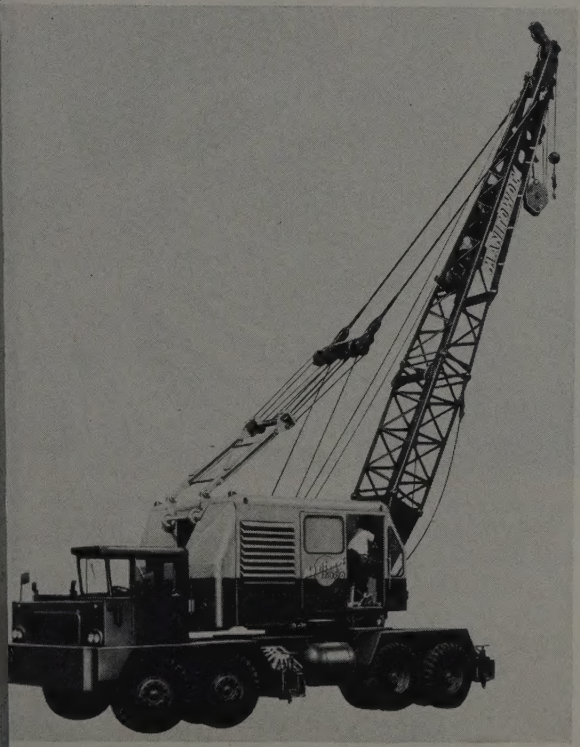
NEW EQUIPMENT

(Continued from page 18)

aggregates up to ¾ in. size. All controls including the thermometer are grouped at an operator's position which reduces the traffic hazards during operation. A normal crew would include an operator and a man feeding aggregate to the machine, with additional men as required to handle the mixed asphalt and get it into position. Plant capacity is up to 5 tons per hour depending upon moisture content in the aggregate. Cold mix capacity is up to 8 tons per hour. *. . . Circle No. 152*

Manitowoc adds 60-ton capacity crane

Adding to its line of truck cranes and excavating equipment, **Manitowoc Engineering Corp.** has announced a new 60-ton Model 2900 truck crane. The unit converts easily and quickly into a clamshell or dragline. Both carrier and crane, in this model, operate as one integrated unit with mobility and stability in the carrier matching the lifting power and reach of the crane. Separate engines provide ample



ower for heavy lifts and rugged travel. Weight distribution is designed to meet legal load limits. Stability is increased by sturdy outriggers, removable umper counter weights and a solid front axle. Other atures include air brakes on all wheels, fulltime ower steering, highway speeds up to 35 mph., large ll-vision cab and a choice of gasoline or diesel gines. *. . . Circle No. 153*

(Turn to page 134 for more New Equipment. New Literature can be found on page 129.)

ADDITIONS and CORRECTIONS

to be added to your 1959

WESTERN CONSTRUCTION EQUIPMENT DIRECTORY

Please clip out the following additions and corrections and attach to the sections and pages indicated.

Page 7
Manufacturers Section

BEATTY SCAFFOLD, INC.
Tunnel Ave. & Beatty Rd.
San Francisco, Calif.
PRODUCTS: Yard Cranes; Scaffolding; Shores

Distributors

ARIZONA
Phoenix ..... Baker-Thomas Lime & Cement Co.
NO. CALIFORNIA
Sacramento ..... Beatty Scaffolds
San Francisco ..... Beatty Scaffold, Inc.
San Jose ..... Beatty Scaffold of San Jose
SO. CALIFORNIA
Covina ..... Beatty Scaffolds of So. Calif., Inc.
HAWAII
Honolulu ..... Islands Welding & Supply Co. Ltd.
IDAHO
Boise ..... Beatty Scaffolds & Power Tool Co.
NEW MEXICO
(El Paso) ..... Booker-Walker Supply Co.
OREGON
Portland ..... Beatty Scaffolds Co. of Oregon
UTAH
Salt Lake City ..... Lynn Hansen Co.
WASHINGTON
Seattle ..... Beatty Scaffolds, Inc.
Spokane ..... Safway Scaffolds, Inc. of Spokane

Page 2
Products Section

CRANES, Yard
American Hoist & Derrick Co.
Austin-Western Construction Eqpt. Div., Baldwin-Lima-Hamilton Corp.
Beatty Scaffold, Inc.
The Hanson Clutch and Machinery Co.
Harnischfeger Corp.
Hughes-Keenan Div. U. S. Air Conditioning Corp.
Hyster Co.
Insley Manufacturing Corp.
Koehring Div. of Koehring Co.
Kolman Manufacturing Co.
Link-Belt Speeder Corp.
Northwest Engineering Co.
Thew Shovel Co.

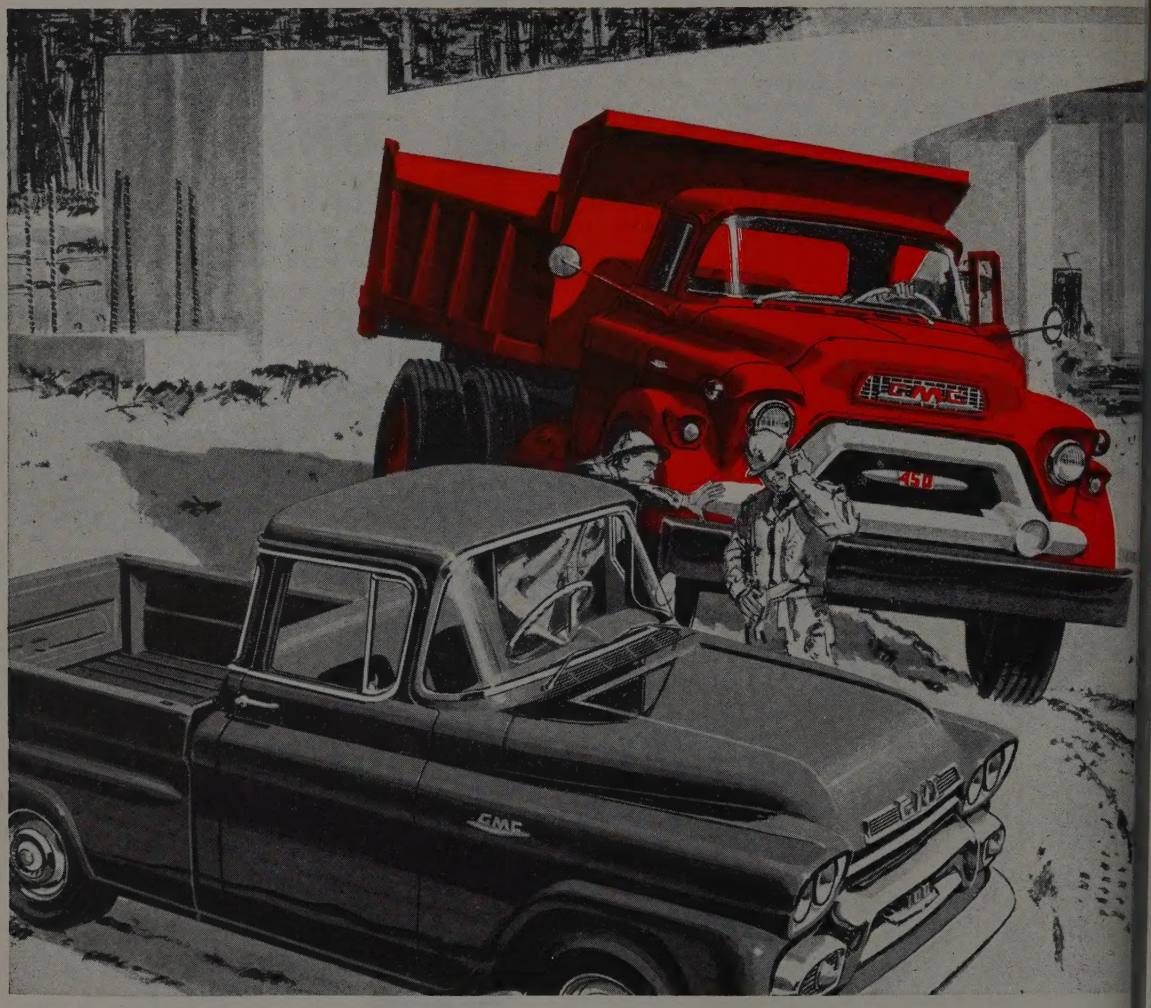
Page 4
Products Section

SCAFFOLDING
Acrow California, Inc.
Beatty Scaffold, Inc.
Morgen Manufacturing Co.
The Patent Scaffolding Co.
Safway Steel Products, Inc.
Superior Scaffold Co.
Symons Clamp & Mfg. Co.
Universal Manufacturing Corp.

Page 5
Products Section

SHORES
Acrow California, Inc.
Beatty Scaffold, Inc.
Dayton Sure-Grip & Shore Co.
The Patent Scaffolding Co., Inc.
Safway Steel Products, Inc.
Superior Scaffold Co.
Symons Clamp & Mfg. Co.
Universal Manufacturing Corp.

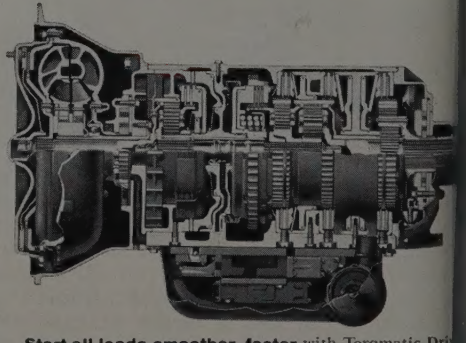
GMC OPERATION "HIGH



1 **50% more carrying capacity** with GMC's new Wide-Side pickup! And it's all *truck* — from the tread up! Longer-lasting wood body floor with steel skid strips; double-walled steel construction; heaviest front cross-member—the same used in bigger GMC's!

2 **Low-cost, dependable POWER** under every You get a wide choice of high-torque, low rpm —*truck* built for long, trouble-free performance! bearings with 7 times longer life plus over quality features are standard on GMC Trucks.

WHATEVER the job, there's a GMC to do it! Now, from Operation "High Gear", comes the widest selection of cabs, engines, axles, transmissions, frames and wheelbases ever offered! Models from sturdy light-duty pickups to big 45-ton workhorses! They're all new, and all part of the greatest design and engineering program in truck history! Stop in at your GMC Dealer's today and see how new money-saving, money-making advances can pay off for *you!*



Start all loads smoother, faster with Torqmatic Dri put torque and speed are automatically adjusted to t thus preventing engine lugging and stalling. And becau line shock is absorbed by hydraulic fluid, damage to components is virtually eliminated. For maximum fuel e an automatic lockup clutch is provided.

The ARBA and the West

CONTINUING expansion of highway building places emphasis on the position of the American Road Builder's Association as the spokesman for all interests in this broad field. Its voice represents segments far beyond those engaged directly in the engineering and construction of highways to include such diverse groups as those concerned with finance and education, not to mention the producers of equipment and materials. Over the years ARBA has been accepted as the one organization that speaks for all of these interests. It is far removed from being a trade association.

The breadth of its foundation is the strength of ARBA. By representing these many large and loosely related groups it secures an attentive audience when it voices opinions and recommendations to the Federal government both at the administrative and Congressional level.

Overlap is a common problem for an organization as broad as ARBA. Practically each group within the association as well as every individual belongs to other organizations, either professional or business. However, this is a further element of strength for ARBA since it becomes a group expressing opinions that derive from other groups.

The ARBA has successfully extended coverage to all of these segments of the broad industry. On the other hand it has not extended its geographical contacts and representation to the point where it can be considered truly national. Outside of a few individual members and some minor affiliations it represents the East and Midwest. From our Western point of view, this is a weakness. There has been no occasion to quarrel with its sound recommendations on the national highway program, but it remains rather non-Western.

This cannot logically result from imagined differences between the ARBA and any other group representing a segment of the broad highway picture. Such groups have different objectives and functions directed toward their own welfare and growth. They should be affiliated with the ARBA and add their weight to the voice which speaks for all without sponsoring any particular segment.

If the ARBA is to attain complete national representation of the entire highway industry, it needs to develop more contact with, and more active participation from the elements of the highway industry of these Western states. This is the ARBA responsibility and its selling job. Any possible conflicts in interest could be resolved with a clear understanding of its function.

"West of Denver" highway problems and highway building are different. These are the public-land states, where half the area is administered by Federal agencies, with resulting problems in jurisdiction and responsibility. The West is the region of National Parks, with additional problems of access routes serving national rather than local needs. Construction characteristics and materials are different. Unit costs per mile of highway are higher in the West. These several factors are not mentioned to imply any idea of special treatment, but to indicate they are aspects in any truly national highway program. The ARBA must extend its representation to bring these Western factors into its national highway planning and recommendations.

Jim Ballard

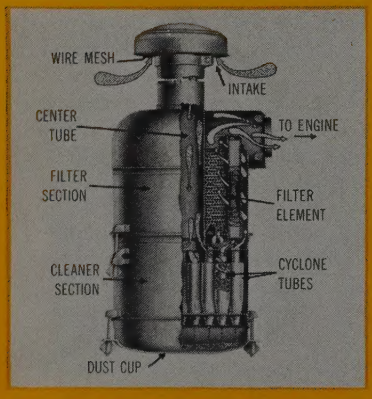
SPECIAL REPORT TO CATERPILLAR OWNERS:

CAT CATERPILLAR

Parts you can trust. Dependable round-the-clock service

New Caterpillar dry-type air cleaner: CUTS SERVICING TIME 75% AVAILABLE FOR FIELD INSTALLATION on D8, D9, DW20, DW21 and No. 583

AIR-BORNE DUST is the deadly enemy of your engine's vital parts. Now, the new Cat dry-type cleaner gives positive protection against the entrance of harmful dirt—and its simplified servicing requires only about 5 minutes instead of 20 as with the oil-bath type!



THE NEW CATERPILLAR DRY-TYPE AIR CLEANER removes 99.8% of the air-borne dust from the intake air, even under the most severe conditions. Air enters through the stack cap where wire mesh screens out leaves and similar trash. Then the air passes down the center tube and swirls down the cyclone tubes. Centrifugal action throws the dirt against the sides of the tubes. From here 95% of the dirt falls through the funnel section into the dust cup, and the relatively clean air passes on to the resin-impregnated, cellulose filter. This element removes the rest of dirt and allows only clean air to enter the intake manifold. Filter elements can be cleaned and have lasted 3,000 hours without loss of efficiency.

SERVICE COSTS ARE SLASHED! Here is the experience of WEGCO Equipment Rental, Inc. of Cleveland, N. C., as told by the Superintendent of Maintenance, Mr. George R. Bell, "The dry-type cleaner saves us money. We have to clean our air cleaners daily because of dusty conditions. The oil-bath cleaners take about 20 minutes to clean and 5 quarts of oil. That's 60 cents in labor and $1.28 worth of oil, a total of $1.88 per machine. This dry-type cleaner takes only 5 minutes to service—about 15 cents labor. It saves us $1.73 on each machine every day."

SERVICE TIP: To empty dry-type cleaner dust cup, simply loosen wing nuts, remove cup, empty and replace. Occasionally the filter element will need cleaning. Merely remove it, blow off dust or wash in water, then replace.

YOUR CATERPILLAR DEALER has the full story on how much *you* can save by changing to the new and efficient Cat dry-type air cleaner. Remember, he stands behind every part he sells. See him today!

Caterpillar Tractor Co., San Francisco, Calif.; Peoria, Ill., U.S.A. **CATERPILLAR**

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KING PUBLICATIONS

WESTERN CONSTRUCTION

MARCH 1959

Six deep wells dewater excavation

Removing water from ship channel excavation poses tough problem for contractor. The answer is a combination of six deep well turbine pumps which keep wet job dry. Corps of Engineers overall plan will make inland city an ocean port.

A SPECTACULAR demonstration of how to keep a wet job dry is being given daily on a project in West Sacramento, California. A huge excavation measuring 350 ft. wide by 1,000 ft. long by 47 ft. deep is being kept completely dewatered by six strategically placed deep well turbine pumps.

The specifications are quite clear: "Unless otherwise specified, all operations in connection with construction of permanent parts of the work shall be carried on in the dry." Because of the size and depth of the excavation, and because it is located only a few hundred feet from the Sacramento River, the bids on the first item of the schedule, "Care of Water," ranged from $350,000 to $705,000. Skepticism was shown by some when the contractor's bold plan for keeping the 3-year job dry with only six pumps was revealed. But the almost perfect results achieved so far show that his appraisal of the sub-surface conditions was perfectly sound.

The project involves construction of a large lock and a bascule bridge in connection with the Sacramento deep water channel. Holder of the $6,500,527 contract is a joint venture called Lock-Bridge Constructors, composed of Rothschild, Raffin & Weirick, sponsor; Yuba Consolidated Industries, Inc., and George Pollock Co. Lock-Bridge Constructors received the award on July 14, 1958.

The deep water channel, a Corps of Engineers project, is designed to connect the Port of Sacramento with ocean-going vessels from San Francisco Bay. In the next three years under a number of contracts a 43-mi. canal will be built roughly paralleling the Sacramento River. Most of the work will be done by hydraulic dredging and one $7,000,000 contract is already under way by McCammon-Wunderlich Co., & Wunderlich Contracting Co. Three more dredging contracts to be awarded in the coming months will bring the combined cost of the project to near $50,000,000.

The cross-country channel is 20 mi. shorter than the river. The lock, which will be the only one in California and the highest lift sector gate ever built (21 ft.), are located where the channel rejoins the river in West Sacramento.

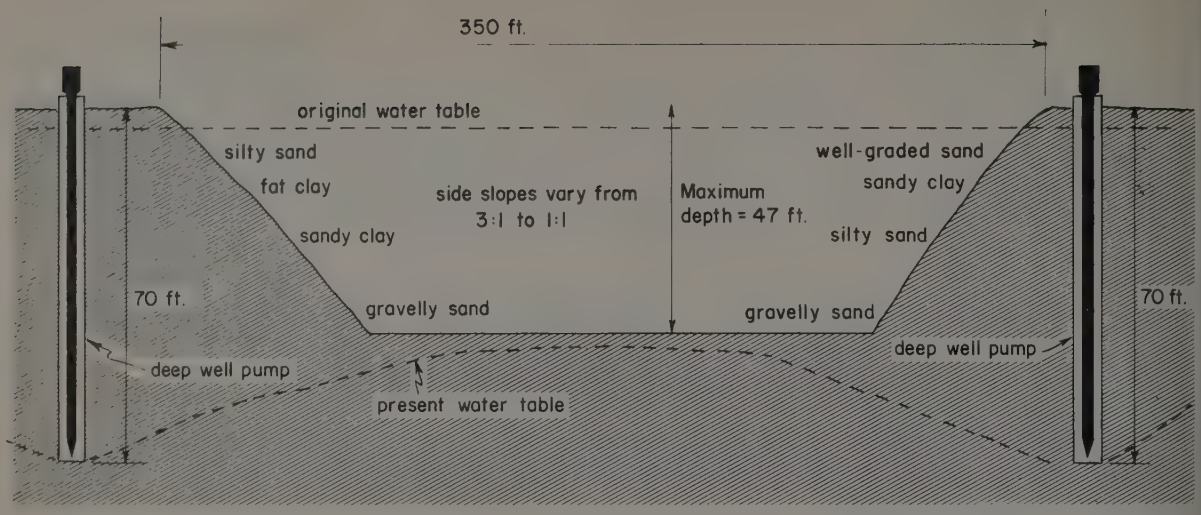
The sector-gate lock will be able to accommodate a reverse head, which is a possibility under certain tidal conditions. Because the channel is shorter than the river a flood tide from the Pacific Ocean would pass up the channel faster.

One of the first steps Lock-Bridge Constructors took upon receiving the contract was to consult with Pacific Pumping Co., a firm with more than fifty years' experience in handling water. Alex Ruxton, president of the firm, worked closely with Lock-Bridge on designing the dewatering system.

The water-table during the early stages of the job varied from between 5 and 10 ft. below ground surface. During high river flows the water-table sometimes rises all the way to the surface. The material to be excavated was composed of many different types, ranging from coarse river gravels to dense fatty clays.

To get further information on the underground situation a 70-ft. deep well was constructed on the edge of the area to be excavated. This well eventually became pump No. 2. Pumping from this

ELECTRIC-POWERED pump, one of six, runs continuously to keep deep excavation in the dry. The pumps removed water at rate of 16,000 gpm. during early phase of earthmoving operation.



SCHEMATIC CROSS-SECTION OF EXCAVATION

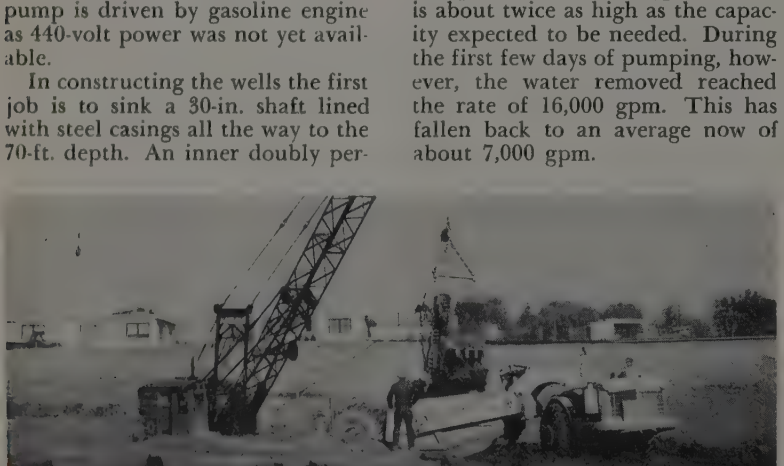
well showed that the water-table dropped quickly for a considerable distance away. For instance, 24 hours after pumping started the water-table 150 ft. away, as shown by a test hole, had dropped 5 ft. Based on further testing and discussion, the dewatering system which was finally decided upon involved six deep well turbine pumps located as shown in the accompanying drawing.

Each pump is 70 ft. long, driven by a General Electric 50-hp. electric motor.

The electric control panels at each pump are also provided by General Electric. The first test pump is driven by gasoline engine as 440-volt power was not yet available.

In constructing the wells the first job is to sink a 30-in. shaft lined with steel casings all the way to the 70-ft. depth. An inner doubly perforated casing, 18 in. in diameter, is placed in the center of the 30-in. casing. Next washed gravel is poured in the annular space between the two casings, after which the outer casing is removed. Finally, the turbine pumps are lowered down the center perforated casing. The pumps, a product of Pacific Pumping Co., are completely automatic and will very likely run continuously for the 3-year life of the job. This is well within their capacity, for in other applications they are sometimes called upon to run for 15 years without stopping.

The total capacity of the six pumps is about 20,000 gpm., which is about twice as high as the capacity expected to be needed. During the first few days of pumping, however, the water removed reached the rate of 16,000 gpm. This has fallen back to an average now of about 7,000 gpm.



LAYER OF BLUE CLAY was encountered which was very difficult to excavate. Scrapers lost traction and tended to bog down. Draglines were used. Above, Northwest loads a Euclid scraper.

Later on in the project, when the footings and foundations for the bridge have been placed and backfilling has commenced, some experimenting will be done to see if one or more of the pumps can be taken off the line.

Earthmoving

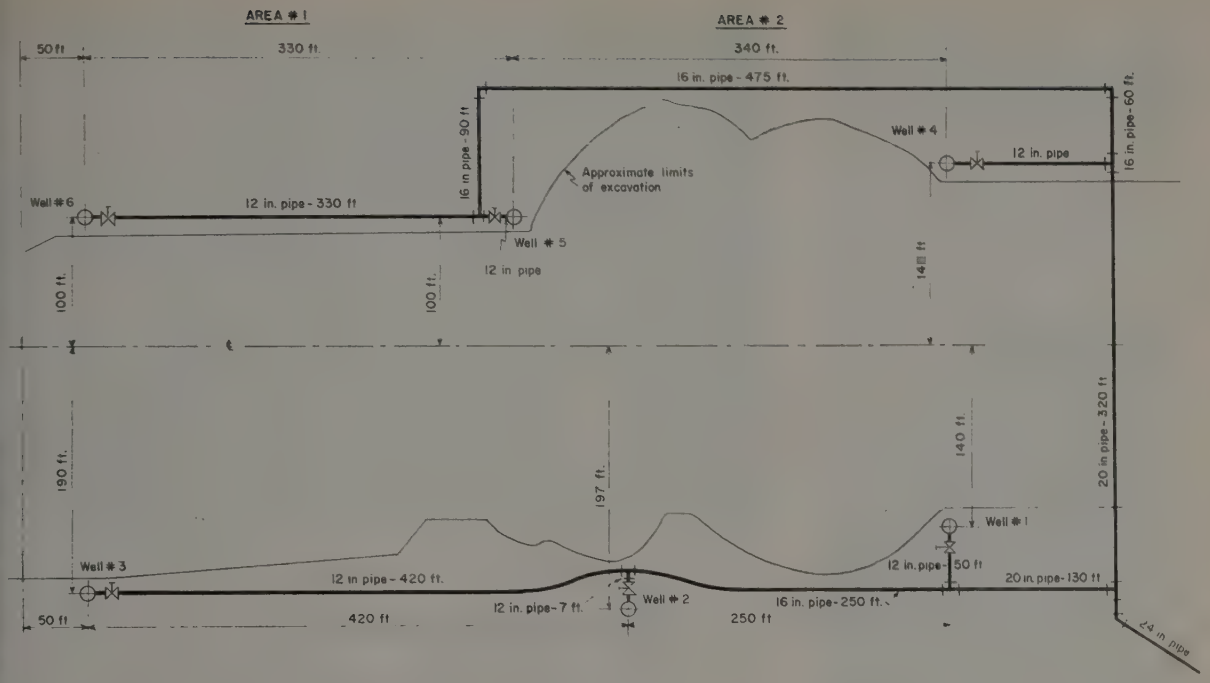
Earthmoving started on September 22, a day or two before pumping. The pumps were started as soon as they were installed even though the water-table was 5 to 10 ft. below the surface because it was necessary to lower the water-table as quickly as possible to keep it below the excavation.

The earth-moving fleet consisted of 3 Caterpillar DW21s, 5 D8 pushers, 3 Euclid S12 scrapers, 2 Caterpillar No. 12 graders, two LeTourneau-Westinghouse Models C Tournapulls and a Euclid water truck for dust control.

The maximum production this fleet reached on a 10-hr. shift was over 6,000 yd. The hauls are rather short, less than ½ mi., and most of the material is waste. Of the 297,000 cu. yd. excavated so far, only 61,000 yd. has been placed in a compacted fill. The total amount of common excavation is 498,000 cu. yd.

Earthmoving must be broken into two phases due to a problem of maintaining service on a railroad which crosses through the project site.

The only difficulty in excavation so far was a layer of blue clay in which the equipment tended to



PLAN VIEW OF EXCAVATION SHOWING PUMPS AND PIPELINES

lose traction and bog down. At one point three D8s would help each scraper load, one pushing and two pulling. However, this was found to be uneconomical and the clay was finally removed by using a Northwest 6 dragline with a 2-yd. bucket and a Northwest 80 with a 2½-yd. bucket loading the scrapers. The draglines removed about 40,000 cu. yd. of material.

The draglines were also used at the very bottom of the excavation where a tough cemented gravel was encountered.

For a time it appeared that excavation was proceeding so rapidly that the water-table would be met. Fortunately, although the water-table dropped slightly slower than predicted, it always remained a few feet below the excavation.

The side slopes of the excavation are 1½ to 1 where backfilling will be done, and 3 to 1 on slopes where riprap will be placed. At the harbor guide wall the slope is 1 to 1. Paylines are generally at 1½ to 1.

Placing concrete

First concrete was placed during the last week of January for the north foundation of the bascule bridge. First lift was 8 ft. The second lift will be 10 ft. 9 in. and the third will be 18 ft. Concrete is brought to the job in transit-mix trucks from a nearby batch plant and placed in the forms by crane-handled buckets. Total amount of concrete for both the locks and the bridge is 37,000 cu. yd.

All forms used will be job-built, and a carpentry shop has been set up to manufacture them. Most of the forms will be made of ⅝-in. plywood, along with 1 x 6 ship lap. Plywood will be reduced to ⅜ in. thick on certain curved surfaces. For the control buildings, No. 1 tongue and groove lumber is required, sanded if necessary. The contractor's carpenters are making a considerable number of standard panels intended for multiple use. Tie rods are threaded on the job.

Because the project is located so close to Sacramento no elaborate maintenance facilities are necessary on the job site.

Personnel

Col. A. E. McCollum is district engineer of the Sacramento District, Corps of Engineers. W. K. South is supervising engineer. William Clark is project engineer over the Deep Water Channel project. Resident engineer on the lock and bridge work is Ralph Irving.

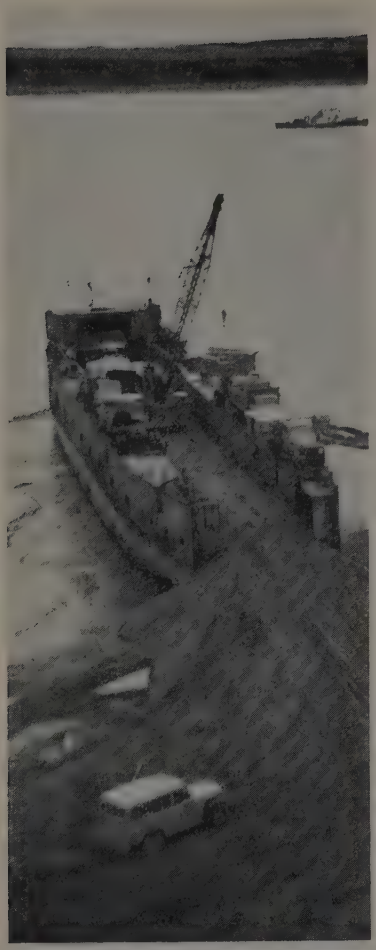
Director of the Sacramento-Yolo Port District is William Stone.

For Lock-Bridge Constructors, Bob Walker is project superintendent, assisted by Charles Cobb. Russ Potts is project engineer, Jeff McQueen is field engineer, Leonard Anderson is grading superintendent, Roy Anderson is form work detailer, and W. Cox is labor foreman. Accountant is Jack Vedder.

DIRECTING the work on the Sacramento Ship Channel for Lock-Bridge Constructors is Russ Potts (left), project engineer, and Bob Walker, project superintendent.

Construction's tough, but "fishing's fine"

Modifying hangar doors for Delta Daggers at King Salmon has multiple headaches, typical of Alaskan jobs, but the job is near the best salmon and trout fishing area in the world.



TYPICAL of transportation problems, this barge has been run up on the Naknek beach shingle at high tide for unloading.

WHEN the F-102 jet fighter planes of the U. S. Air Force replaced the F-89 squadrons in Alaska, these new supersonic Delta Daggers caused a construction problem of ulcer-breeding proportions. The alert hangars, built for the F-89s were too narrow to take the slim panatella flying triangles without cropping their tails or bobbing their noses. Designers came up with a quick solution—add blisters, or bubbles, as they came to be called, to the huge front and rear canopy doors to house the rapier-nose stinger and the high tail section.

One of the bases with these growing pains is King Salmon Airport, Alaska—a vital defense installation southwest across the Aleutian Range from Anchorage and up river from the salmon cannery town of Naknek. The airport squats in the tundra at the strategic air crossroads of Bristol Bay as it is the jumping-off place for the Aleutian Chain.

This King Salmon area is also famed for its rod and reel sport, for here run the tackle-smashing king salmon, the 36-in. rainbow monsters above the rapids, the summer runs of slashing silver salmon, the fierce fall steelheads, bright from salt water and still covered with sea lice. Sixty miles away are the famous fishing camps of Northern Consolidated Airlines near Katmai National Park and the now nearly extinct volcanic valley of the Land of Ten Thousand Smokes, which was triggered into violent activity in 1912 when Mt. Katmai blew its top.

King Salmon is just a dot on the map, but its name is well known to fishermen. This is the spot where, it is said, Arthur Godfrey landed the finned giants several years ago and got quite a reaction when he quipped during his stage show that the rotation-sweating-out military personnel should pay Uncle Sam for duty at this base with such fabulous fishing in the backyard. Fishing fanatics among the construction men pull strings to work here. The contractor brought up his key personnel to sample the angling at the start of the present door bubble project. But let's get back to the job in hand and postpone tall tales of fishing until after quitting time.

The birth of King Salmon Airport as a modern U. S. Air Force fighter base began in 1955 when a $10,000,000 build-up program converted the remnants of the old World War II installation into a jet age interceptor facility.

Morrison-Knudsen Co., Inc., started the program with a contract involving utilities, an airmen's dormitory, crash station, automotive repair shop, and the Alert Hangar with concrete aprons. Other contracts followed with M-K building a ready-rocket building, a power plant, a White Alice microwave communications station, an addition to the operations building, taxiway and apron paving. Macri Construction Co., Seattle, constructed a 75,000-bbl. underground tank farm for jet fuel. Walsh & Co., Anchorage, erected a Tacan facility. Chris Berg, Inc., Seattle, modified a radar tower of the existing Aircraft Control & Warning station which had been built by Gaasland Co., Bellingham, in 1951-53. S. S. Mullen, Inc., Seattle, has now under way a $1,866,000 contract rehabilitating the primary runway and the pipeline from the tank farm on the Naknek River bank to the base.

The alert hangar, built by Morrison-Knudsen under the first contract, was completed in the fall of 1956 and housed a squadron of F-89 jet fighters that winter. This 67 x 576-ft. structure has four operational pockets and four maintenance ones with large overhead canopy doors, 24 ft. high and 65 ft. wide. The framework is structural steel covered with insulated bituminous-coated steel siding skin. As it was designed for the F-89s, it stabled them with only minor headaches.

THIS DELTA DAGGER (F-102) jet fighter has a nose and high tail that required the modifications in the hangar doors. Operation of the doors with the added weight of the "bubbles" produced the construction problems.

"BUBBLES" were framed with structural aluminum to reduce weight, but still represented an added load on the opening mechanism that had to meet exact specifications for opening time.

It was soon found out that the huge doors could not be left open too long in 20-degree-below-zero weather as the oil in the dashpots would get thick as lard and make the doors inoperative. The designer evidently did not realize that doors would remain unclosed for long periods. Aircraft hydraulic fluid, good for —70-deg. frigidity, was substituted for the specified oil.

The usual growing pains were experienced as the building progressed. Then came the dilemma of the Delta Daggers when it was learned that they would replace the F-89s at King Salmon and Galena.

A squadron of the F-102s shattered the wintry dusk at King Salmon one day in December 1957. Have you ever seen these flying triangles land? They seem to squat down in the rear like ducks on a pond as they touch down at terrific speed. Their braking chutes then pop out like champagne corks. The planes were stabled in the too-narrow hangar by parking them on the diagonal.

In January 1958, a $249,500 contract was awarded Premier Gear & Machine Works to add blister bubbles to the overhead doors at both King Salmon and Galena air bases so that the F-102s could be parked straightway in the pockets. The design called for a bubble, 10 ft., 7 in. long, 10 ft., 5 in. wide, 8 ft., 3 in. high at the door tie-in, and 6 ft. high at the outside end, on the bottom of the front doors to take the stinger sticking out of the plane's nose. The rear door bubble, 4 ft., 2 in. high, 5 ft., 2 in. wide, and projecting out 4 ft., 4 in. was installed near the top of the door to provide clearance for the high tail section when the canopy door moved up and into its position at the top of the hangar.

The work included designing the modification as well as doing the construction. The following description will be based on the King Salmon job. The contractor selected structural aluminum for the bubbles and the wind truss on the front doors to lessen the added weight so that the existing 3-hp. motors could still handle the load. Parked in the hangar, planes are ever on the alert and every second counts in a scramble.

Door specifications called for the following operating characteristics: normal opening of the door shall be effected by gravity and door shall open fully from the closed position to the fully open position in one-half minute or less, but last 12 in. of door travel shall require not less than 5 sec.; emergency opening of the door in winds up to 30 lb. per sq. ft., perpendicular to a vertical plane shall be effected by combined gravity and motor operation, and the door shall open from the fully closed position to the fully open position in 1½ min. or less; normal closing of door shall be effected by motor operation and the door shall close in 2 min. or less; doors shall be arranged for simultaneous or individual front and rear operation in each hangar pocket; means shall be provided for closing of the doors by manual operation in event of electrical failure, manual closing shall be devised so that doors shall fully close in 30 min. or less with one portable mechanism per site acceptable. This last requirement was met by special dashpot valving and a portable hand pump to lift the counterweights and pump the door down. Premier Gear & Machine Works designed the door modification and furnished all the materials. S & D Construction Co., also of Portland, subcontracted erection and installation.

On June 17, 1958, S & D started moving in equipment, and on the 19th the crew's jackhammers were knocking out 17½ x 16-ft. sections of 10-in. concrete pavement so that the existing glycol piping for snow-melting under the doors could be extended out under the bubbles.

Then the work had to be suspended as a logistics headache, so common to the isolated "busn jobs", occurred. The stateside shop did not get the bubbles prefabricated in time to catch the first June boat into the Bering sea.

The missing materials arrived July 25 and were lightered 15 mi. from the roadstead out in the bay to the beach where barges are run up on the shingle at high tide. Bottleneck Bristol Bay has tides as high as 23 ft. The S & D crew returned from Galena and trucked the materials to the job site. By August 10, the bubbles, extra weights on the dashpot counterweights, and the new hydraulic dashpots had been installed.

Next came counter-balancing and adjusting the doors for operation. Weights of 200 lb. were rigged through sheaves to the top of the front doors to offset the weight of the big overhanging bubble. But problems still presented themselves.

First it was the dashpots that posed a problem as the doors did not operate by gravity. Larger orifices were drilled in the dashpot vents, helping the door operation but not correcting it entirely. It was also found during the testing that the rear doors needed a boost in closing. It was decided that a 200-lb. counterweight rigged to the top of the door and pulling out would furnish the solution. These extra counterweights on both the front and rear doors were proven in the field before installation by using a sheaved line with a 200-lb. man standing in the bight. Work was suspended on Aug. 20 for additional materials to smooth out the door operation. The contractor was learning the hard way about isolated "bush" jobs.

Work was resumed Sept. 7 when new cylinder heads for the small

(Continued on page 54)

UNIT HISTORY

Make _____ MP Number _____
Capacity _____ Type _____
Body S/N _____ Weight _____
Body Model _____ Engine S/N _____
Year _____ Engine Model _____
Vendor _____ Year _____
Date Purchased _____

TRANSFER RECORD

Date		Contract				Total Operating Hours	Hour Meter	
From	To	Number	Title	Location	District		In	Out

MAJOR REPAIR SUMMARY

Repair Date	Operating Hours to Date	Description of Repair and Replaced Parts

PERFORMANCE RECORD SUMMARY

Month	Year	Working Hours Possible	Working Hours Actual	Availability	Fuel		Oil		Tires	Cable
					Gals.	Gals./Hr.	Qts.	Qts./Hr.		

DAILY OPERATIONS SHEET

Month _____

Date	Possible Working Hours	Actual Operating Hours	Standby & Idle Hours	P. M. Check Hours	Repair Hours	Wait For Repairs Hours	Cables Replaced Each	Fuel Gallons	Parts Cost
1									
2									
3									
29									
30									
31									
Total									

$$\text{Availability} = \frac{\text{Hours Worked} \times 100}{\text{Possible Working Hours Less Standby Hours}} = \boxed{\%}$$

Planning preventive maintenance

An unusually thorough preventive maintenance program is being used at Mammoth Pool Dam, a Southern California Edison project being built by Bechtel Corp. Here is a close look at how it works and why the extra bookkeeping is worth it.

AS THE BIG earthmoving rig rumbled down the Mammoth Pool Dam haul road, the superintendent pointed and said, "See that tire? It's costing us 56 cents per hour." When a remark like that is made you know the project is one where unusual attention is being paid to equipment management and preventive maintenance. A properly planned and executed preventive maintenance program serves not only to reduce down-time but to provide up-to-date and accurate figures on the costs of equipment operation.

Such a program is being carried out by the Bechtel Corporation at Mammoth Pool Dam, a Southern California Edison project being built in the mountains 50 mi. east of Fresno, Calif. (For an overall description of this project see *Western Construction,* September 1958.) Equipment maintenance is always important on a project located so far from a population center, but at Mammoth Pool a system of unusual thoroughness has been developed. Not only is down-time held to a minimum, but cost figures are being accumulated which will be invaluable in future bidding. One of the many useful by-products of the system is that it provides the supervisors with a means of quickly estimating the cost of any construction task that comes up in the course of the work, enabling them to make the best choice among alternative methods.

Systematic and detailed equipment maintenance has always been a feature of Bechtel projects. The program at Mammoth Pool was developed largely by dam superintendent H. V. "Art" Borba. Before the Mammoth Pool job got under way last year, Art was a master mechanic for Bechtel. For several years he accumulated anything he could get his hands on pertaining to equipment maintenance and cost keeping. He gave particular attention to check lists and maintenance recommendations provided by the many manufacturers of construction equipment. The system which he finally developed is an attempt to bring together in a unified plan data from these many sources combined with ideas of his own and other experienced equipment men in the Bechtel organization.

Mammoth Pool is, of course, a big project, involving dozens of pieces of large equipment. However, the preventive maintenance system in use is flexible enough to be used on a job of nearly any size. The key feature of the system, the preventive maintenance booklet, is designed to be used on large jobs and small, with one unit or an entire fleet, by a single mechanic or full maintenance crew.

The booklet is started when a new or used piece of equipment is purchased, and becomes a permanent record, transferred with the unit until it is eventually sold.

In addition to some explanatory text, the booklet consists of a number of record-keeping sheets, most of which are illustrated in this article. The booklet is divided generally into two major parts, the first consisting primarily of the permanent records, of immediate interest to the receiving party, and the second containing those sheets necessary to operate the program on a daily basis. If the program is to be successful it must be practiced day by day, hour by hour. It must be practiced not only in the maintenance shops by the mechanics, but also in the front offices by management, on the job by super-

REPAIR DETAIL

Month _____

Date		Time		Repair Hours	P. M. Check Hours	Bad Order Hours	Standby Hours	Describe Repairs and Replaced Parts
In	Out	In	Out					

RECORD OF P. M. CHECKS

Type of Check	Date Made	Date Due	Total Operating Hours	Mechanic's Name	Remarks

ROUGH GOING causes breakdowns occasionally, but a good maintenance system keeps resulting down-time to a minimum. When repairs are made in the field, as shown above, a special form is used by mechanics to record the nature of the repair, parts used, man-hours, and down-time.

intendents and foremen, and on the equipment by the operators.

Following is a brief description of each of the various sheets:

Unit history and transfer record—A readily available source of information giving all pertinent technical data as to capacity, serial numbers, etc. This page also shows all jobs the unit has previously worked on and the number of hours operated.

Major repair summary – A record of all major repairs and replaced parts that could be of interest to a receiving party. The recorded data and operator hours at the time of repair make it possible to determine the effectiveness of repairs of a similar nature.

Performance record—This page is a monthly summary sheet of the unit's performance during its lifetime. The form includes columns for summarizing actual and possible working hours of the unit, amounts of fuel and oil consumed, and the quantity of tires or cable replaced. This sheet is an accurate gauge of the unit's operating condition.

Operator's daily memo—The operator's daily memo forms are contained in a small pad separate from the booklet. The success or failure of the entire preventive maintenance program rests on the proper execution of these forms. The project must be organized so that each piece of equipment is assigned to a responsible supervisor or foreman. Each supervisor must see that an operator's daily memo is turned in daily on each unit under his jurisdiction.

The memo is normally made out by the equipment operator. However, if the unit is idle, the supervisor makes out the memo, indicating hours and reasons for the unit's not operating.

The operator's daily memo serves as communication between the field and the shop. The indicated hours are duly recorded in the corresponding sheet in the preventive maintenance booklet, and the operator's complaints are entered on the shop list of equipment to be repaired.

Daily operations sheet—This form serves as a daily record of the unit's operations. The possible, actual, repair and idle hours are entered from the operator's daily memo. Fuel and oil consumption is turned in daily to the PM clerk by the oiler foreman. Tires or cables replaced are recorded in the correct column.

At the end of each month the individual columns are tallied up and the "availability" computed. This information is then transferred to a "performance record summary" toward the front of the booklet.

It should be noted that oil is quoted here in gallons and on the summary sheet in quarts. It is desirable to break the oil down as to type, using the appropriate abbreviations. At Mammoth Pool, the types are: motor oil, air cleaner oil, hoist oil, gear oil, torque converter oil, and compressor oil.

Also, because most greasing and oiling equipment does not record accurately the amount dispensed, it may be a better plan to simply record the total oil or grease used in a week and then approximately prorate it to each piece of equipment.

Repair detail—Here the preventive maintenance clerk keeps an accurate record of all repairs made to the unit. The time and the date, in and out, is carefully noted. The intervening hours are accounted for in the appropriate columns. All major work, or repairs that may be of interest to the master mechanic on the following job are transferred to "major repair summary sheet."

Some repair work is conducted entirely in the field. This information is transmitted to the clerk by the mechanic on a separate form.

Record of PM checks—A successful program must maintain a system for periodic checking of equipment by shop mechanics. The interval may be set at any amount but it is normally established to be 100 operated hours. This page serves as a record of the equipment's maintenance checks and indicates when each check is due. The information as to when a check is due is obtained from the "Daily Operations Sheet."

A blackboard in the shop area showing equipment number, type of check due, and hours before next check can be used very profitably. The blackboard indicates to the shop mechanic which equipment is now due and serves as a gauge of the program's effectiveness.

Check lists—The check lists for the mechanics give all the maintenance and inspection operations required for the equipment at the proper time interval. It is suggested that a dash be placed to the right of each item as it is completed satisfactorily, and an X if a repair or adjustment is required.

Project manager's summary – The information contained in the booklet will be of special interest to the project manager. At the end of each month a valuable summary by similar units can be compiled. This summary sheet would include: unit number and type, possible operating hours, actual operating hours, repair hours, idle hours, availability, fuel consumption in gallons and gallons per hour, oil consumption in quarts and quarts per hour, cable or tire replacements, major repairs and utilization.

The availability is computed by dividing the number of hours worked by the possible working hours less the standby hours. Util-

ization is determined by dividing the hours worked by the total possible working hours.

How many man-hours does it take to keep such a system up? This is a tough question to answer because of the extent to which construction jobs vary. A rough rule of thumb would be that it will take one man, one hour per day to keep the necessary records for ten pieces of equipment. The Bechtel Corporation and the Southern California Edison Co., are convinced that the effort is well worth it.

Bechtel's superintendent on the job is G. W. Saul. Resident engineer for the Southern California Edison Co. is Neville S. Long. O. N. Kulberg, chief construction engineer, Southern California Edison Co., is responsible for all of Edison's construction equipment including that at Mammoth Pool. Assisting him on record keeping in Edison's Los Angeles office is W. B. Tayler. A complete list of personnel appears on page 30 of the September 1958 issue, and on page 90 of the October 1958 issue.

Maintenance check lists

Following in condensed form are the check lists used by the mechanics and maintenance men at Mammoth Pool. Each group is on a separate sheet and each item is followed by a space for making a check mark as each operation is performed. Each item in the first group, for example, is followed by four spaces, for 100, 200, 300, and 400 hours. Space is also provided on each sheet for the date and the mechanics' initials.

100-400 hr.

ENGINE
- Tighten engine mounting bolts
- Tighten crankshaft nut

LUBE OIL AND FUEL SYSTEMS
- Check lines, fittings & filters for leaks
- Clean crankcase breather
- Check pan bolts for tightness

AIR CLEANER
- Service and check hoses & pipes

BELTS
- Check all belts for tension & wear

COOLING SYSTEM
- Check hoses & components for leaks
- Check anti-freeze, if used

CLUTCH
- Check linkage for tightness
- Pedal clearance 1-in. free travel

CONVERTER AND TRANSMISSION
- Check all lines and seals for leaks
- Tighten mounting bolts & shift linkage
- Check engine synchronization & stall speed

DRIVE LINES
- Check universal for looseness
- Tighten flange and universal bearing bolts

WHEELS AND TIRES
- Tighten lug and wheel nuts
- Check tire condition & inflation

SPRINGS AND TORQUE RODS
- Check for broken spring leaves
- Check for loose or broken spring pads
- Check for bent torque rods
- Check hold down bolt tightness

BRAKES
- Adjust brakes

AIR SYSTEM
- Check all lines for leaks
- Test adjustment of components

EMERGENCY BRAKE
- Check brake adjustment and operation
- Check air assist

STEERING SYSTEM
- Check for bent tie rod or draglink
- Check booster, pump & lines for leaks

ELECTRICAL SYSTEM
- Test operation of all lights

BATTERIES
- Check specific gravity of each cell
- Check cable connections

CAB
- Check all glass
- Door latch operation

INSTRUMENT PANEL
- Check operation of all gages

HYDRAULIC SYSTEM
- Check operation of system
- Inspect all lines & components for leaks

ACCESSORIES
- Check operation of all accessories

WELDING
- Check body and frame for cracks

DRIVERS COMPLAINTS
- Check with P.M. clerk for list

LUBRICATION AND SERVICING
- Perform lubrication & servicing

ROAD TEST UNIT

RECORDS are kept up-to-date by Jack Curtis, who spends part of his day dispatching equipment by radio. The preventive maintenance booklets, one for each piece of equipment as described in this article, can be seen in a file on the desk.

500 hr.

Same as 100-400 hr. with the addition of the following:

CLEANING
- Wash unit
- Steam clean unit

ENGINE (GMC)
- Adjust valves and time injectors
- Check governor cap
- Position injector control rack
- Tighten cylinder head nuts and clean air box drains

ENGINES (Cummins)
- Clean fuel pump screen
- Adjust valves and injectors
- Tighten cylinder head and manifold
- Check blow-by
- Inspect supercharger for leaks

TRANSMISSION
- Tighten mounting bolts, tower bolts, and power-take-off bolts

DRIVE AXLE & DIFFERENTIAL
- Tighten companion flange nut, carrier nuts & axle mounting bolts

FRONT AXLE
- Check king pins, bushings & toe-in spindle to axle clearance

1,000 hr.

Same as 500 hr. with the addition of:

ENGINE (GMC)
- Inspect intake ports and piston rings
- Check pressure of compression, crankcase, back exhaust, and air box
- Inspect blower and clean blower screen
- Check fuel oil ret. rate
- Check crankshaft end play
- Check engine synchronization (twin-engine units)

ENGINE (Cummins)
- Check crankshaft end play
- Grease water pump and fan hub

HYDRAULIC SYSTEM
- Check adjustment of hydraulic relief valve and steering booster relief valve

1,100-1,400 hr.

Same as 100-400 hr.

1,500 hr.

Same as 500 hr.

1,600-1,900 hr.

Same as 100-400 hr. plus:

TRANSMISSION
- Tighten mounting bolts, tower bolts, and power-take-off bolts

2,000 hr.

Very similar to 1,000 hr. check with addition of:

FUEL SYSTEM
- Check all lines, fittings and filters for leaks

2,100-2,400 hr.

Same as 100-400 hr.

2,500 hr.

Same as 500 hr.

2,600-2,900 hr.

Same as 100-400 hr.

3,000 hr.

Same as 1,000 hr.

How to help the young inspector

The article below is a condensation by the editors of a paper given at the eleventh annual Street and Highway Conference, which is sponsored by the Institute of Transportation and Traffic Engineering and the University Extension of the University of California.

The author, who began his construction career as a paving inspector, is Vaughn Marker, Division Paving Engineer, Pacific Coast Division, The Asphalt Institute. He has appeared before in these pages, writing on the hows and whys of inspecting asphalt paving and asphalt plants (July and Aug. 1957, March and April 1958). His present remarks are of a more general nature, applicable to all types of construction. Editor.

THERE HAS BEEN such an expansion in construction in recent years that the experience level of inspector personnel has been considerably lowered. Field engineers and inspectors of experience have been elevated to supervisory positions while new and younger men have been hired to perform the inspection. There has been a noticeable deterioration in the quality of inspection, primarily because of the relative inexperience of these newer men. Engineering administrators and supervisors have noticed more and more work being accepted by inspectors that was of borderline or even inadequate quality.

In all fairness to the new inspectors, it must be said that the tempo and productivity of construction has also greatly increased, making inspection more difficult to perform. In addition, contractors have been finding it more difficult to hire experienced crews, which has resulted in greater effort being necessary to maintain the quality of workmanship. This, of course, requires more experience and ability on the part of the inspector.

The engineering administrator and, in most cases, the engineering supervisor look upon the job of inspection as routine. They are usually aware of its importance but prone to accept the quality of inspection that exists. Quite frequently, they feel that they are unable to do otherwise because of the press of their many duties. They instruct the inspector to go out and inspect a specific item of work and then accept the results turned in. In some cases, if the inspector has never been exposed to the particular item of work, the supervisor will give him a short verbal lesson on what to do or turn the new man over to the tender mercies of an "old timer" with one or two jobs under his belt for training. Supervisory personnel, in general, will bewail the need for inspector training while at the same time producing innumerable excuses why such a program cannot be instituted in their particular organization.

The contractor and his supervisory personnel have two distinct viewpoints concerning the inspector and his work. They either wish they didn't have to put up with him at all or try to inveigle him into assuming superintendence of the work. In the first instance, they may be able to slight some of the specification requirements, in the interests of job economy, while in the second instance the inspector is almost forced to accept whatever work they have done since he directed a portion of it. In any event, their cry is loud and clear that they need better inspection and that current inspectors do not know their business. This cry, of course, is muted if they actually have a good, fair inspector on their job or if the inspector has accidentally overlooked some mistake they have made.

The new inspector arrives

At the opposite extreme is the new inspector who, for the first time in his young life, is thrust into a position with a certain amount of authority. This occasionally results in an individual who is greatly over-impressed with his own importance and position and who begins to throw his weight around unnecessarily. I believe that, in doing so, this new inspector thinks he is behaving in the manner that an inspector should and, at the same time, he is sincerely trying to do his job. The trouble with this approach, however, is that there are probably several things concerning the work that this inspector doesn't know which makes him ludicrous, and at the same time, his demeanor is such that the people he is dealing with get the impression of supreme arrogance on his part. This man also makes the mistake frequently of behaving in such a manner that he assumes superintendence of the work, which puts him in the untenable position of judging the quality of results of procedures that he dictated. It is this type of inspector who draws the most fire from the contractor.

A good inspector

How can we help this poor, much maligned inspector? We should perhaps decide what some of the fundamental requirements for a good inspector are.

In the first place, it is of paramount importance that the inspector have knowledge of the item of work he is inspecting. This knowledge should include information concerning the materials that are being incorporated in the work as well as a considerable acquaintanceship with the equipment and procedures being used. The more knowledge the inspector has, the better prepared he will be to discharge his duties.

The inspector must perform his function by observation of what is going on about him. This leads us to another basic requirement, namely, the ability to see what he looks at. In this connotation, the act of seeing includes observation with the eyes as well as considered thought about the image observed. It is amazing how an inspector can observe an incorrect condition and not realize it as such. This situation is contributed to by lack of knowledge or employment of common sense but most seriously by mental laziness. Too many inspectors just don't bother to think about what they are looking at.

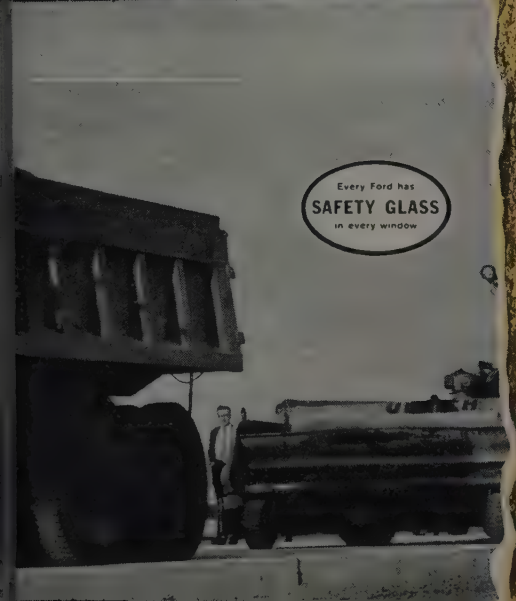
Besides the requirements for the inspector himself, there are the tools he must use to perform his function. These include the general run of measuring devices of various types as well as necessary testing equipment. Perhaps one of the most important tools, however, is a notebook and pencil.

The inspector's notebook

I believe that the importance of job records warrants our taking a

(Continued on page 50)

esale value!



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COST LESS

All tests conducted and results
CERTIFIED
by America's foremost independent automotive research organization*
*NAME AVAILABLE ON REQUEST
Send inquiry to: P.O. Box 2687 Ford Division, Ford Motor Co. Detroit 31, Michigan

'59 Ford Pickups Win Economy Showdown U.S.A.

—average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's ½-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested—by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE						
'59 FORD SIXES GIVE	25.2% more miles per gallon than Make "C"	31.1% more miles per gallon than Make "I"	9.6% more miles per gallon than Make "G"	42.6% more miles per gallon than Make "D"	22.0% more miles per gallon than Make "S"	25.2% more miles per gallon than the average of all makes

The '59 Ford Sixes, *in every test,* averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low- and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's *Economy Carburetor is standard at no extra cost.*

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?

INSPECTORS

(Continued from page 46)

little time to discuss the inspector's notebook. The importance of this record cannot be over-emphasized. It may be that the information recorded will never be needed and never be reviewed, but, if it is ever needed, it will be needed badly. The notebook should contain every bit of information possible concerning the work being inspected. Such related information as weather conditions, the time and place any incident occurred, breakdown of equipment, length of work stoppages, number of men and type of equipment affected by work stoppage, any unusual incident or condition, even such as a change in color of a material, etc. If the item seems unusually important, it should be recorded and analyzed in sufficient detail to make it fully understandable at some later date.

The information in this notebook will become a reference for future performance of the work, a certain reference in the event of legal action or litigation by any interested party, and possibly most important, it may contain a clue for a future investigator, in the event the job fails. There is nothing too trivial to be included in the inspector's notebook, and the very act of writing things down helps him learn and remember.

A little common courtesy

In performing his function, the inspector comes into daily contact with the contractor, his supervisory personnel and the work crews. A major part of the job is to inform the contractor when unsatisfactory conditions exist or when the specifications are not being met. This is accepted and expected by the contractor, yet it is the source of most of the poor relations that can develop on the job between the contractor and the inspector. Since the valid criticism or objections by the inspector are expected by the contractor, it cannot be this that strains the relations so it must be the manner in which the information is conveyed. In other words, frequently it is not what is said so much as the way it is said. Of course, an aggravating manner of speech is not limited to inspectors — contractors can have it, too — so the source of irritation is twofold. When poor relations develop between the inspector and the contractor, the work suffers as well as everyone connected with it. In this respect, a little common courtesy will go a long way.

What can be done

What can be done to improve the work of the inspector? Many of the things that might need improvement depend entirely on the individual. While some assistance may be possible with such things as the employment of common sense, the ability to observe, and personality, the main effort must come from the inspector himself. The main areas of assistance, then, are in the matter of increased knowledge, which means education, providing better specifications, and training in the use of the tools of inspection.

In the matter of plans and specifications, simple, concise wording minimizes the amount of interpretation that the inspector must do. The designer should have in mind some of the problems of construction when the plans are made so that the lines that are drawn on the paper can readily be transposed into the desired structure on the ground. These two things alone can greatly simplify the inspectors' work, providing they do not become so sparse that the inspector must make design decisions in the field that should have been settled long before.

The primary assistance that can be given the inspector is by increasing his knowledge. This education must be a continuous thing in the field of inspection because new people are constantly entering the field and, secondly, new developments are coming along all the time. In many items of inspection, the individual will have contact with the item only infrequently and as such needs a periodic refreshing of his knowledge. Furthermore, there has never been a formal training program for inspectors, to my knowledge, and those that started twenty or thirty years ago learned the hard way — through experience. Unfortunately, some of the things learned by these "old timers" may have been learned wrong in the first place and these incorrect procedures have been perpetuated through their influence. Even the "old timers" may be able to learn something.

There are several ways for inspectors to increase their knowledge and many of them can be taken advantage of concurrently. For technical education concerning materials, theory, etc., there are school courses offered by various colleges. These courses give the inspector a better background of information regarding the materials and theories he is dealing with and allow him to perform his function more intelligently. Formal schooling alone, however, is not enough and it must be used with other methods of education.

Probably the best way for inspectors to increase their knowledge is on the job. Here the very things he is trying to learn about are happening. It is the ideal place to learn. Here, by the same token, it is of great importance to have some qualified individual available to turn to for explanations concerning the things that are to be learned. Only in this manner can the new or inexperienced inspector learn and, at the same time, evade the pitfalls of inexperience. It is true he can probably learn without a tutor, but it will take much longer and he will be making the very mistakes that it is desired to avoid. Furthermore, with explanation as to why certain things occur or why it is best to do a certain thing in a certain way, the lesson is retained better and the reasoning can be adapted and applied in future instances.

On-the-job training

This on-the-job training can be set up in many ways, from a completely informal, hit-or-miss method to a carefully planned and integrated program. Unfortunately, if anything prevails, it is the former, while the latter is practically non-existent. If training and education are desired for inspectors by any engineering supervisor, then that supervisor is going to have to instigate it.

A very important source of knowledge is through the literature. For many years, technical papers have been presented on a wide variety of subjects all dealing with highway engineering or construction. In addition, most construction trade magazines make a continuing practice of printing articles concerning the right way of doing things. Articles such as these can be invaluable to the inspector as well as the contractor's crew as a reference source for any particular item of work. Supplementing these sources are many of the manufacturers of materials and equipment who publish literature dealing with their particular line

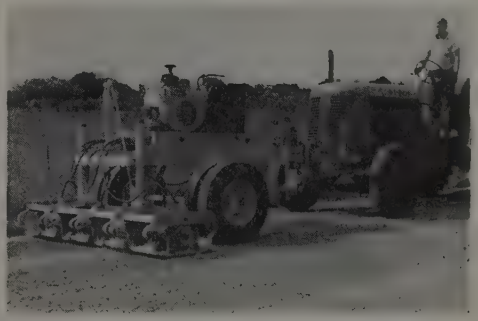
(Continued on page 54)

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

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

NEWLY DESIGNED COMPACTOR BASES PERMIT OPERATION OF BOTH THE MULTIPLE AND TRAILER COMPACTORS IN EITHER DIRECTION — NO DEADHEADING OR TURNING REQUIRED.

Used on nearly all of the nation's major highway projects, including the AASHO Test Road, the JACKSON MULTIPLE COMPACTOR has thoroughly demonstrated the outstanding advantages of this method of compaction. With the advent of the JACKSON TRAILER COMPACTOR it is conveniently adaptable to paving projects of nearly every type and size.



JACKSON TRAILER COMPACTOR — May be pushed or pulled by any prime mover capable of working speeds as low as 50 F.P.M. Towed to location at any road speed . . . operated in either direction . . . controlled by operator of prime mover. Power plant supplies both single and 3-phase 110-150 volt, 60-80 cycle A.C. and has many uses.

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. . . for more details, circle No. 22 on Reader Service Postcard

Good haul roads will pay dividends in added output

By JOHN RADOMSKY
Supervisor, General Construction Section
Sales Development Division
Caterpillar Tractor Company

TO HANDLE today's earthmoving jobs contractors demand machines capable of high production. Scrapers must have fast travel speeds and large capacity. Pusher tractors must have the power to load scrapers in less than a minute. High production per unit has become the byword in the struggle for profits.

Although this attention has been focused on the haul units, corresponding attention has not been given the haul roads. Heavy loads at high speeds tax haul roads, demanding solid footing, shallow grades, gradual curves and good traction. Contrary to many guesses, such roads are not an expensive luxury, available only to permanent operations. They can be profitable on short-time jobs, and can pay for themselves many times over with their contributions to economical high production.

Underfoot conditions are measured in terms of rolling resistance, or the drag on machine from the inability of the road to support the weight. With today's high axle loadings, it is becoming a serious problem to keep rolling resistance down to acceptable levels. This problem becomes acute in sandy and swampy areas.

Under most conditions, rolling resistance can be reduced by mechanical compaction or the use of calcium chloride or cement. It becomes increasingly more difficult and expensive to further reduce rolling resistance as it approaches the 40 lb. resistance per ton of weight value. Normally, experience and common sense can be used to judge the rolling resistance desired for particular job conditions.

Many haul roads have soft spots, caused by poor drainage. Culverts and fill material can be a good investment, particularly if a storm causes some spots to soften and bog down machines while the rest of the road is firm.

Modern diesel engines can speed heavy loads over the haul roads, but their performance is reduced by grades of any magnitude. Long, steep grades can slow high-speed machines to a crawl. Frequently production gains will warrant cutting through or building a new road around such hills.

Sharp curves in the haul road can cause as much interruption in travel as narrow passages and crossing traffic (even with flag men for protection). Operators slow down for such areas, and time is lost in deceleration and acceleration. These bottlenecks may be profitably removed, or at least eased.

Good traction is a must, particularly when heavy machines negotiate adverse grades. This problem is compounded by rains or running water. Ditches, crowning and culverts all can help keep dirt roads firm. A non-skid surface, such as gravel, may well be worth the expense to permit movement immediately after or during rains. All-weather roads may be worthwhile, particularly if dampness doesn't affect the material being moved.

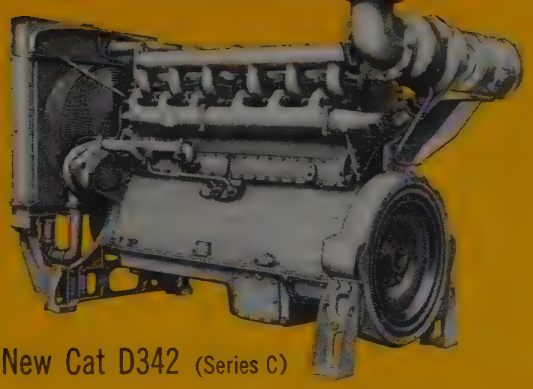
Agreed that good haul roads can prove to be money-savers, the question remains: How much can be spent to bring these roads up to desired standards? An approximation can be arrived at quickly and easily, using (1) a simple rule, (2) machine specifications, and (3) the bid price of the material being moved. For the sake of illustration, assume five 20-yd. scrapers, 33-cent dirt, 1,000-ft. haul, and 12-20-mph speeds.

The rule is simple: cycle time = fixed time + variable time. Fixed time, including loading, dumping, acceleration and deceleration is about 3 min. when operating in top gears. Variable time can be found by dividing the haul and return distance (2,000 ft.) by travel speed in feet per minute (1 mph equals 88 ft. per min.). So, for 1,000 ft. haul and 13 mph.:

Cycle Time = 3 min. $+\frac{2000}{1144} = 4.$ min. In this 12 to 20-mph. range each mile per hour gained in travel speed by the 20-yd. scraper will result in about 5 yd. more material moved per hour, considering the machines will work about 45 min. out of an hour.

With the five-unit fleet described above, a gain of 3 mph. will yield

engine power
BY CATERPILLAR



The New Cat D342 (Series C)

BRAND-NEW ENGINE WITH A 27-YEAR PERFORMANCE RECORD!

Can an engine with 27 years of hard and profitable contract work behind it be called new? Not with any degree of accuracy. This is especially true of the D342 (Series C). Yet, it is an engine made up of hundreds of newly engineered parts, compounded to provide an increased work range.

But there's far more to offering this new engine to meet the realistic needs of contractors than just knitting metals into horsepower at the drive shaft.

In 1931 Caterpillar introduced the first diesel engine in a track-type tractor. You've probably heard this before, but did you know that the four-cycle design employed in that engine is still found in every Cat Diesel? It was the best then; it's the best now.

Our original fuel system principle was so simple, easily maintained and economical that it has only been necessary to improve the parts.

Diesel engines have always required sizeable capital investments. This has led to highly competitive pricing. Cat Engine quality standards are never lowered to gain an initial price advantage. Cat owners realize increased performance and profit that far exceed any difference in initial price that might exist between Cat engines and competitive diesels.

The former Cat D342 Engine has been redesigned, reshaped and improved in *all* of its many parts. These improvements help the contractor produce more with excavators, crushers, batch plants and other machines on the job. And this design progress will continue.

If this sounds like the kind of diesel engine that could fill a need on your job, then specify the D342 (Series C) for your next appropriate construction machine, or see your Caterpillar Dealer. Also write us for the more detailed D342 (Series C) brochure, *Form No. 20151-1.*

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

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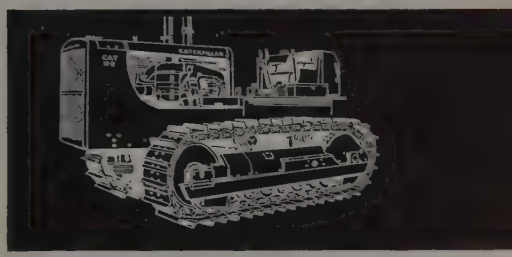
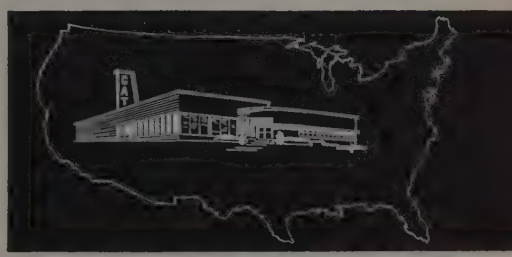
Taking the gamble out of buying a new engine.



PERFORMANCE. D8 Tractors have long been made the standard for tractors by contractors. The predecessor configurations of the D342 have contributed mightily to this acceptance.



SERVICE. The new D342 (Series C) is backed with 24-hour availability of parts and service. The outstanding unified Cat Dealer organization gives a big plus-benefit to buyers of every Cat Engine.

IMPROVEMENTS. Important advances include: (1) increased HP in all D342 (Series C) configurations; (2) turbocharging produces greater power capacity and fuel economy; (3) a new efficient air cleaner now has 99 plus per cent dust removal.

OTHER QUALITY FEATURES include valve rotators to provide prolonged and uniform valve seating, cast-in iron top ring band for longer piston and ring life, and crankshafts induction hardened and shot peened for greatest toughness and strength.

an extra 75 yd. per hour, without additional equipment and adding, free, additional road safety and machine life. Moving 33-cent dirt, the contractor could spend up to $25 additional on the haul road for each hour the machines roll over it. On a 100,000-yd. cut, a 3-mph. gain would justify up to $2,400 more expenditure on the road.

With the extra money available for improving the haul road, where should it be invested to do the most good? Too many contractors with a haul road problem merely assign another grader to patrol the road. The operator's instructions are to keep the road smooth and stay out of the scraper's way. Such attention rarely produces the desired results.

Frequently the haul road is simply a bulldozer trail slicked up with a few passes of a motor grader. Chuck holes are filled with loose dirt, soft spots are capped by some dry dirt and a few rocks. The first pass of a heavy scraper reopens the chuckholes, and the dry material packs down into the soft spots. Succeeding sweeps of the big haul units deepen the ruts. The road becomes rough, and the operators slow down their scrapers to stay in their seats, if not to keep from tearing up their machines. Poor drainage and flying dust add to the problems. A grader in knocking dust into the ruts adds to the confusion. Some contractors have tried larger graders to speed this grading, but the basic condition still exists—the road is inadequate.

Instead, the contractor would do better to re-evaluate the haul road. Holes and soft spots should be filled and compacted. Ditches and drain pipe should be installed to carry away water. Chemical agents might be added to reduce dust if this is a hazard. The work can be accomplished with the equipment already on the job. Scrapers and bulldozers can supply the fill. A few passes of the compactor can firm up the road. A motor grader can crown the road and cut drainage ditches. After the road has been put in good shape, only occasional passes of the motor grader will be necessary to remove bumps and spilled material.

Haul roads are a good investment, and are not the luxury of long-term operations. They can more than return their value in increased production, greater safety and less costs for operation and maintenance.

ALASKA

(Continued from page 41)

snubbing dashpots and new machined turn-buckle assemblies for the cables to provide more adjustment arrived by air. After more adjusting and balancing, the doors were tested for operation Sept. 17 but they still did not work properly by gravity. Construction had to be suspended again. On Oct. 3, new appurtenances arrived and installation was started on the rear door 200-lb. extra counterweights, new flexible couplings on the drive motors, and ball-bearing pistons in the dashpots. Final adjustments were completed Oct. 14 and the doors tested satisfactorily for the specified operation.

William B. Porter, manager, contracting department, was in charge for Premier Gear & Machine Works. The two partners, Jack Sowles and Don Dubois, directed the installation for S & D Construction Co. The dashpots were manufactured by Hydraulic Air Equipment Co., Los Angeles, and this firm sent up Charles Walton to aid in solving the dashpot problems.

Administration and inspection were by the U. S. Army Engineer District, Alaska, with Col. William C. Gribble, Jr., District Engineer; at King Salmon George W. Avery, resident engineer, Ronald T. Adams, project engineer, Alex Bobiak, inspector; at Galena W. A. Parry, resident engineer, George S. Herning, project engineer. Donald A. Clapper, projects engineer, and 1st Lt. David Waldron, base installations engineer, represented the U. S. Air Force.

INSPECTORS

(Continued from page 50)

The appearance of many trade associations in recent years has also increased the availability of technical literature since each association publishes information dealing with its product. All of these sources should be drawn upon for information in any training program. Since it is difficult for the individual to determine what to read and where to find it, maybe a real contribution toward solving the problem would be a list of suggested reading for inspectors, published yearly and kept current.

Available training aids

Many of the larger contracting organizations have produced various training aids such as movies, film strips and models. All of these can be put to good use in any training program whether it be formal or merely a part of on-the-job training. For example, the California Division of Highways has produced several film strips dealing with different types of construction and aimed at informing the inspector. Many trade associations have also produced movies dealing with their product that can be of great help to the new inspector. Most of these organizations are willing to make available any training aids they may have to any agency desiring to use them. The initiative is with the one interested in conducting the training.

The people who are most in contact with the inspector are contractor personnel. They do much to influence and mold the inspector, especially the new one. Likewise, it is true that most contractors' supervisory personnel will do their best to please the inspector even though to do so might require a slight change in operation for them. Unfortunately, there are few contractors who try to help the inspector in any way, yet it would seem that some assistance by the contractor might be in order. This might take the form of explaining the reasons for doing certain items of work in a particular way with discussions both pro and con.

Possibly the greatest assistance to the inspector by the contractor will result if the contractor makes a deliberate effort to appreciate the function and the problems of the inspector. At the same time, the inspector will assist himself as well as the contractor if he will try to understand the problems of the contractor. The inspector is primarily interested in quality while the contractor is primarily interested in quantity. Under no conditions should the contractor expect nor the inspector permit a reduction in quality in the interest of quantity, although within specified limits of quality all efforts for maximum quantity should be encouraged. In that statement lies the crux of the understanding that is needed by both parties.

Honest effort along the lines discussed will be necessary not only to aid the inexperienced inspector but to elevate his position to a level commensurate with its importance.

. . . for more details, adv. pgs. 55, 56, 57 and 58, circle No. 24 on Reader Service Postcar

Westerner is president of AGC

James Cawdrey of Seattle elected national head at annual convention. Two authorities review the federal highway program and predict financing problems. Bureau of Reclamation outlines changes in payment procedure for delays caused by the government.

OPPOSITION to the Administration's proposal for increasing Federal gasoline taxes to finance the Interstate program was expressed by Senator Gore, former chairman of the Senate Sub-committee on Public Roads, at the 40th Annual Convention of The Associated General Contractors. He called instead for a thorough-going re-examination of the federal tax structure to eliminate loopholes, inequities and favoritism in the tax laws.

At the same time, the senator expressed opposition to proposals to stretch out the period of time set by Congress for completion of the interstate highway program. The Highway Act of 1956 provided that the construction program should be completed in 13 years, and Senator Gore said he believed Congress "meant exactly what it said" when it set this deadline.

On the proposal to finance the highway program through increasing gasoline taxes, Senator Gore asserted that every segment of the nation's economy benefits from improved highway facilities. "Everyone is affected either directly or indirectly," he said. "Why, then, should we expect the entire cost of highway construction to be defrayed by direct highway user taxes?"

Existing tax law, he said, is filled with special benefits for certain classes of taxpayers and special treatment for selected types of income. Senator Gore suggested a re-examination of tax credits for foreign taxes, accelerated depletion allowances, tax credits on dividend income and loose provisions governing the administration of the law, particularly with reference to expense accounts.

"I realize that such suggestions will be unpopular with those affected by them," he said. "But there is much to be done toward making the existing tax burden more equitable before we start increasing the burden on those who have no means of avoiding the full impact of the tax levied."

Senator Gore expressed dissatisfaction with the rate at which "statistics released by the Bureau of Public Roads are translated into completed highways open to the public."

He conceded that complicated engineering problems must be solved before actual construction can start, but he pointed out that the highway program depends on public support. The best way of ensuring such support, he added, is "tangible evidence in the form of highways that people can enter upon and use."

He also expressed concern that so much emphasis is being given in the early stages of the program to segments of the interstate system lying within and near metropolitan areas. He agreed that these segments will account for the largest share of the total cost of the system, but warned against giving people the idea that all this money is going to be spent in the cities.

President from the West

James W. Cawdrey of Seattle, Wash., was installed as 1959 president. He served as vice president in 1958 and in accordance with custom was elevated to the top AGC post. He succeeds Fred W. Heldenfels, Jr., highway contractor of Corpus Christi, Tex.

Cawdrey is a member of the building firm of Cawdrey & Vemo, which has constructed many buildings in the Seattle area. He has been active in AGC affairs both on the national and local level for many years. He was president of the Seattle Chapter of AGC in 1949 and was chairman of the Building Contractors' Divisison of AGC in 1955.

New officers of the three AGC occupational divisions include: Highway Contractors' Division: J. P. Gibbons of Gibbons & Reed, Salt Lake City, chairman, and H. L. Royden of the Royden Construction Co., Phoenix, Ariz., vice chairman. Heavy Construction and Railroad Contractors' Division: Howard H. Sturdy of Dravo Corporation was elected chairman, succeeding Charles L. Harney of Chas. L. Harney, Inc., San Francisco, Calif.

Highway closedown threat

Any slowdown or cutback of the federal-aid highway program could have a serious impact on the country's recovery from the 1958 recession, according to President Bartelsmeyer, president of the American Association of State Highway Officials. He warned that Congress must find additional financing for the highway program in the first half of this year if the present pace of highway construction is to continue.

Bartelsmeyer said the extra $400,000,000 authorized by Congress last year "created a stabilizing effect" on the national economy which was then in the midst of a recession. He estimated that the Highway Trust Fund, which was set up to finance the highway program, would run out of money sometime this year, and said that Congress would have to change existing laws to keep the program on the schedule contemplated when it was established in 1956.

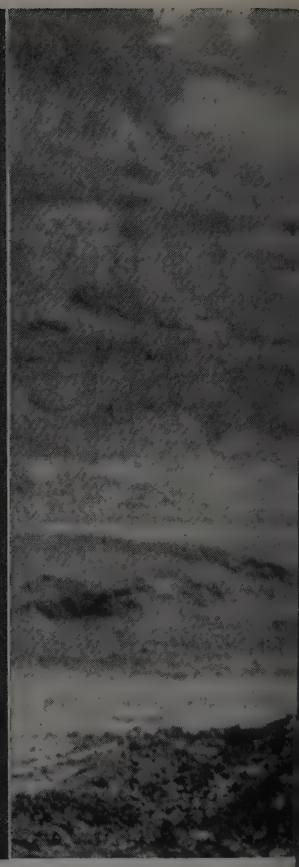
Highway planning agencies and the construction industry "would immediately be subject to a period of extreme curtailment and deceleration of their present normal activities if the highway program is not continued as established," Bartelsmeyer said.

He said 1958 was the most important year for highway builders since the era of modern highway construction began some 40 years ago. It proved that it is possible to plan and place under contract a federal-aid highway program in excess of $3,000,000,000 in one year. He expressed AASHO's opposition to use of funds from the Highway Trust Fund for any purpose other than for building highways or the operating expenses of the Bureau of Public Roads.

(Continued on page 72)

Chevy power is tough—

and proves it on bruising off-the-road hauls!



That Series 100 Chevy tandem above takes a terrific pounding as it hauls huge loads of gravel or fill dirt into the heart of California's redwood country. It goes miles off the road, makes up to 24 trips a day through rocky forest land. Yet owner Bernard Conti, of the Conti Sand & Gravel Company, reports only one hour of downtime in 20,000 miles on this truck-killing road construction job. And Chevy's tough power gets the truck through faster, Mr. Conti says; assures more trips—more profits—per day.

Hauling outsized loads of fill dirt through California's forests calls for a heavy-duty truck that's rock-rugged and powerful as they come; one that's soundly built down to the last bolt. And the Conti Sand & Gravel Company bears witness to the fact that Chevrolet is just such a truck. They're completely satisfied with their Series 100 model, from the dependable pulling power of the big 230-h.p. Workmaster V8 to the work-whipping qualities of the tough-built chassis components. And you'll be equally satisfied with whichever Chevy heavyweight or middleweight *your* work requires.

Mr. Conti indicates that Chevrolet's Powermatic transmission is of special importance in this rugge service. It helps him to bull through the tough spo with exceptional ease. This fully automatic 6-spee transmission virtually eliminates manual gearshiftin It also provides a Hydraulic Retarder that helps yo control truck speed and saves wear on the service brake

**Optional at extra cost, Series 5 60, 70, 80, 90 and 100 model*

No job's too tough for a

hevy's powered to cut osts and keep going on your ough off-the-road hauls!

at's for *sure,* whether you use mighty middleweights high-capacity heavyweights—whether you prefer 's or 6's.

Take Chevrolet's 1959 big-truck V8's, for example. indicated by that tough truck job pictured above, ese modern engines are out to whip any work that mes their way. They've got what it takes to do it. e *shortest piston stroke* of any comparable truck V8's: ure sign of more work on less fuel. Compact design that cuts down on truck weight and helps assure the biggest possible payloads. Scores of up-to-the-minute features that know how to trim overhead: full-flow oil filter, hydraulic valve lifters, hard-faced exhaust valves and hardened valve seats, extreme-duty Moraine 400 bearings, rotor-controlled governor, overspeed warning light and many more.

And with a *complete* lineup of modern V8 powerplants —including 160-h.p. Trademaster, 160-h.p. HD Taskmaster, 175-h.p. HD Super Taskmaster, 185-h.p. Workmaster Special and 230-h.p. Workmaster—Chevy can match the engine to your work, ideally.

Or if you prefer 6's, Chevy's *still* your best bet. Standard in Series 40 models is the 135-h.p. Thriftmaster 6, better than ever for '59 with a new Economy-Contoured camshaft that improves gas economy by 10%! And in Series 60 there's a new edition of the 150-h.p. Jobmaster 6. It offers new durability stemming from new tougher built pistons and Stellite-faced exhaust valves. Both of these famous 6's provide plenty of hard-pulling torque.

Six or V8, you'll go a long way before you see the likes of this '59 Chevy engine lineup. Actually, there's only one *best place* to go for all your trucking needs —and that's to your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Chevrolet truck!

CHEVROLET

. . . for more details, circle No. 25 on Reader Service Postcard

Completing the Carquinez project

Small field tricks in concrete removal and concrete placing cut construction time.

A VARIETY of small tricks are speeding construction work on the last phase of the celebrated Carquinez project. The contractor is Rothschild, Raffin & Weirick, which has been at work on the $1,053,000 contract since February 1958. The work involves grading and surfacing approaches to the old Carquinez Bridge, modifying the bridge, and making connections with the newly constructed interchange and freeway. When the project is completed in May of this year, the traffic, all of which is now being carried on the new bridge, will be divided so that each bridge carries traffic in only one direction.

The major connection to be made involves carrying forward a 4-lane approach, 110 ft. off the ground across spans of 150 ft., 180 ft., 45 ft. and 200 ft. The work passes directly over the main line of the Southern Pacific, which means that no debris can be dropped to the ground.

The load-carrying members for these spans are welded steel plate girders and one 200-ft. high strength bolted truss provided and erected by subcontractor Yuba Consolidated Industries. The girders and truss were assembled on the ground and lifted into place by two gin poles working in unison.

The specifications called for pavement consisting of a 6¼-in. thick slab of light-weight concrete covered by ½-in. layer of natural sand-cement grout (3 to 1) as a wearing surface. The concrete being used is a 6-sack mix containing no natural sand or aggregate and weighing about 105 lb. per cu. ft. The aggregate used for this light-weight concrete is Basalt expanded shale.

To strike-off the concrete, Superintendent Bill Hodges chose a 28-ft. long Clary screed.

Designing rails for the screed t travel on proved to be a bit of problem. Not only did the rail have to be more substantial tha usual to support the Clary screed but a way had to be found to in crease the height quickly by ½ in in order to place and finish th wearing surface. The wearing su face is placed within an hour o two after the light-weight concret in order to make a 6¾-in. mon lithic slab. The problem was solve by using steel flat bar 2 in. wid and ½ in. thick in lengths of 1 ft. Screed chairs were spaced eve 18 in. along the length of the ra and consisted of a combination threaded bolts welded to the fl bar and hardware provided by & H Concrete Accessories. Th screed rails were positioned ov the I-beam stringers and the chai are tack welded to the top flang of the beam for stability.

When the concrete has bee placed and the time has come place the wearing course, anoth

steel bar exactly ½ in. thick is placed over the top of the screed rails. Small studs on the top bar slip into holes in the top of the screed rail, providing a snug and secure fit. When the grout wearing surface has been placed and the Clary machine has brought it to grade, the screed rails can easily be removed for re-use.

The wearing course is placed from manual concrete buggies running on plywood panels (placed on the lightweight concrete to prevent excessive plastic distortion). After the grout is spread by hand and struck-off by the Clary screed, floating passes are made by hand with a Johnson bar float from portable bridges. The final step in finishing is transverse brooming.

The specifications require that the surface be not more than ⅛ in. out of line in every 10 ft. To meet this spec a pass is made with a steel cutting float made up of channels with flanges back to back. This is done within a day after the concrete is poured, thereby removing minor surface irregularities.

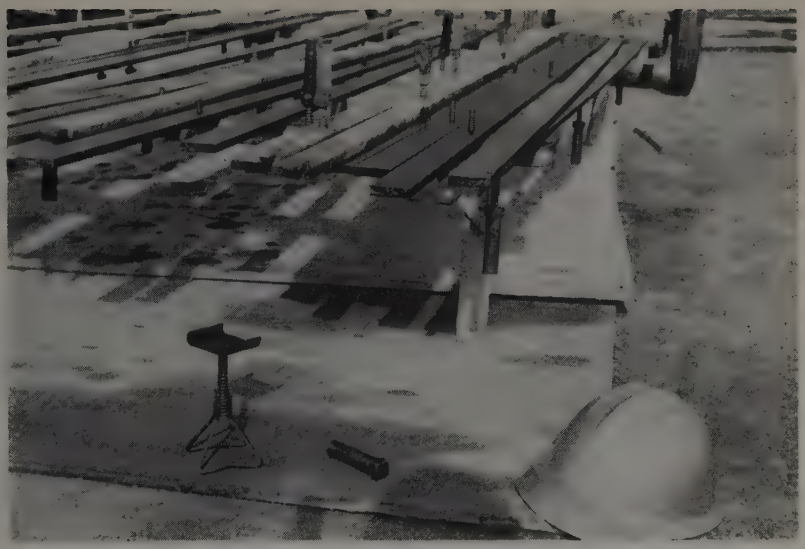
For curing the concrete the contractor is using rug mats and soaker hoses for 7 days. Rugs were found to be better than burlap because they retain water much longer. They are brought to the job in 1,000-lb. bales at a cost of $52 a ton. There was some concern at first that the rugs would leave a color stain on the concrete but it was found that the discoloring soon bleached away under the sun.

The contract also calls for removing sidewalks from the old bridge to add additional width to the traffic lanes. The old bridge had a 30-ft. roadway divided into three lanes. After modifications the three lanes will be divided over 34 ft. 4 in.

Concrete removal was complicated by the specification that nothing be dropped from the bridge. This made it necessary to build a plywood platform under the work to catch falling debris. It was found possible to cut the sidewalk into 10-ft. lengths and lift the sections into a truck as a unit. Workmen used safety belts when placing and stripping forms, and doing other work in precarious positions.

Resident engineer on the Carquinez project is Oscar A. Johnson, assisted by Wallace Ames and Dick Nystrom. Don Pontius is the Division of Highways District X representative.

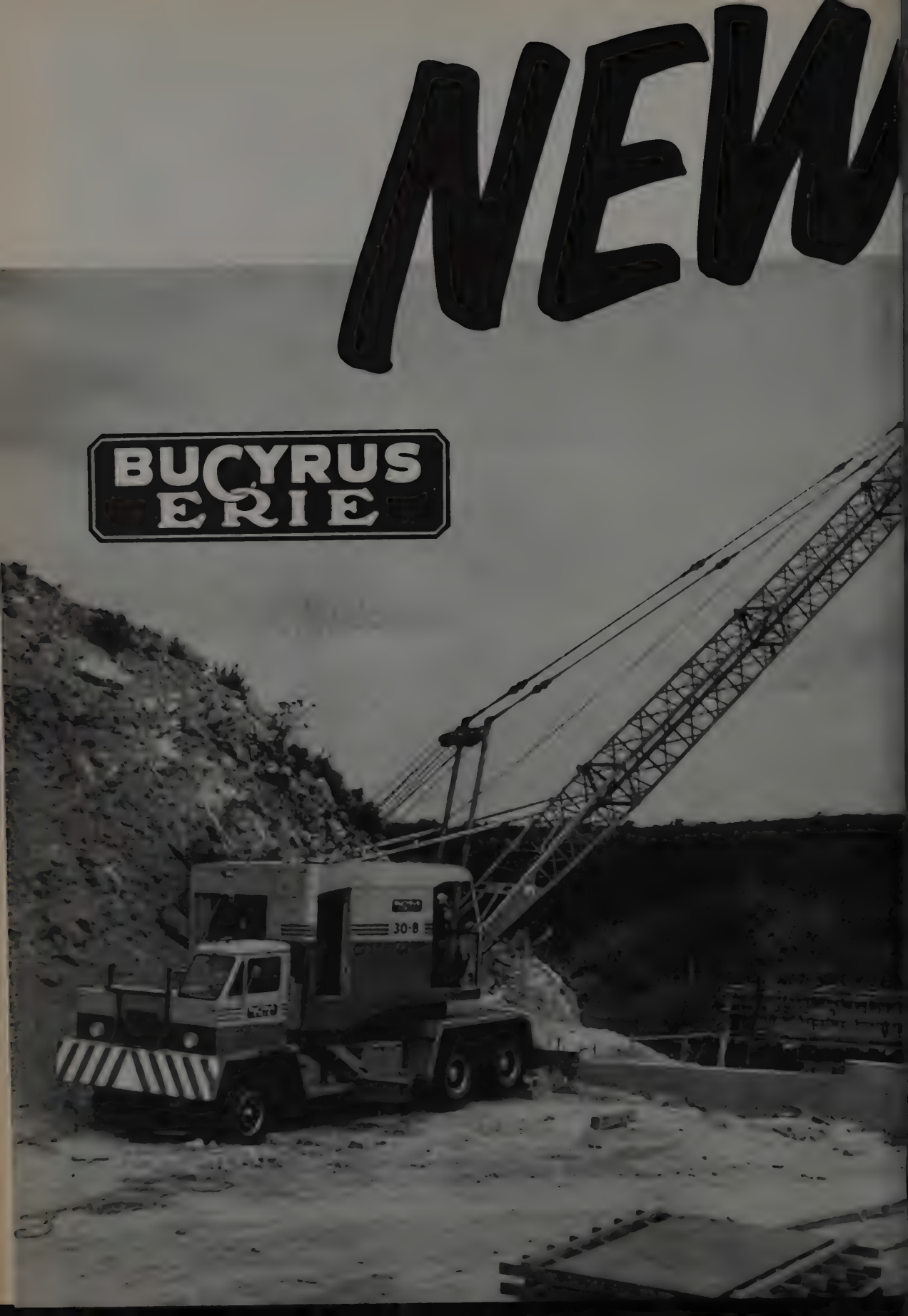
William Hodges is superintendent for Rothschild, Raffin & Weirick. Foremen are Roy Griewe and Guy Smith.



SCREED CHAIR in left foreground is tack welded to stringer flange for stability. In right foreground is internally threaded bolt which gives additional support to screed rail. In background is stockpile of screed rails with several bolts screwed in place.

AWAITING next pour is 28-ft. Clary screed. Controls at far end are protected by job-made box. Mechanical finishing speeded concrete work but required heavy rails shown in top photograph.

FORMS were lowered 125 ft. to ground with this sled-mounted Gardner-Denver hoist supplied by Ingersoll-Rand compressor. Concrete piers in background were constructed by slip-form method (Western Construction, Sept., 1956). Visible on opposite page is the famous "big cut".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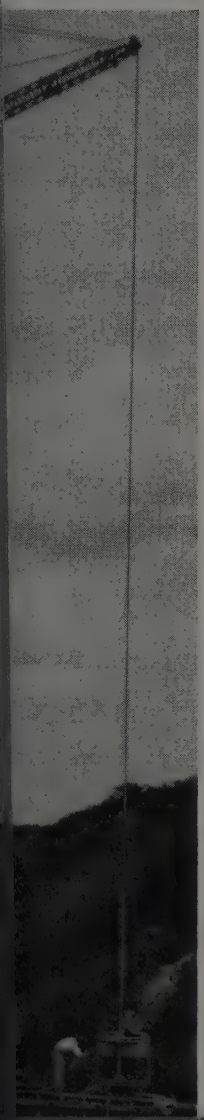

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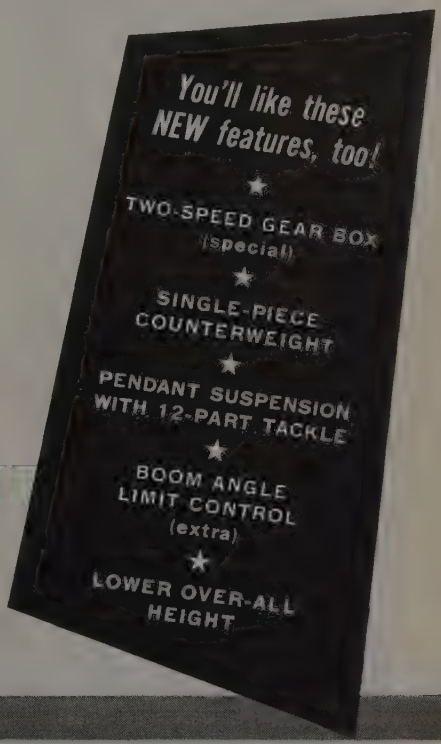

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Highway planes level base courses

With 40-ft. wheel base, units of Eversman Mfg. Co. have been used in Wyoming to secure the smoothness required of modern highways. Contractor's operations speeded and engineering hours are saved.

TO SECURE the smoothness required for modern highways, efforts of engineers and contractors must be combined in establishing precise grades and placing materials to meet these grades. An important development in equipment to spread this field work is the relatively recent use of leveling units with long wheel base to eliminate irregularities. This type of equipment is equally effective in its operation on the subbase, layers of the base course and other material up to the actual surface paving.

This general type of machine had its origin in irrigation agriculture, in various places throughout the Western states, where it is generally called a land plane or land leveler and has proved most effective in producing the surfaces required for modern irrigation practice.

Adapted to highway use, the instrument has been modified in certain respects, although continuing to rely on the important principle of long wheel base. One of the companies pioneering in developing such a machine for the use of highway contractors is the Eversman Manufacturing Co., of Denver. Their machine has been named the "Highway Plane" and the following material and photographs discuss the use of this device in highway construction during the past two seasons in Wyoming.

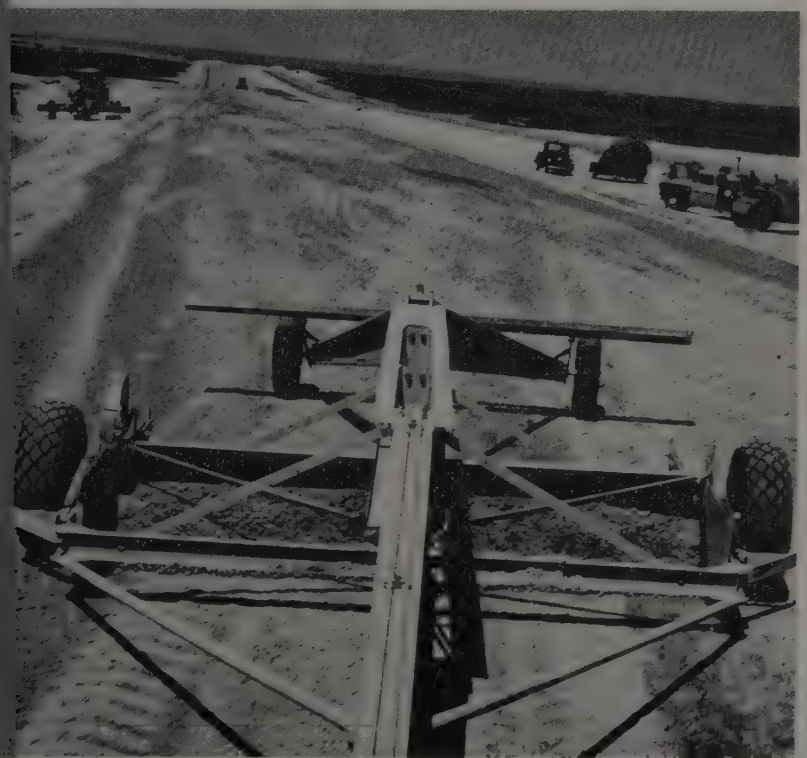
Elimination of surface irregularities in the modern highway, including the recurring depressions, high spots and rippled surface logically begins at the base course and continues progressively upward for all material deposited, worked and rolled.

HINGE in the backbone of the highway plane permits it to be turned with ease on the roadway. This is a design improvement on other makes which used a set of turning wheels to reverse the 40-ft. length of unit for the return trip.

BUCKET of the plane shown running full as it picks off the top of a high spot and moves it forward to fill a depression.

One engineer observed the plane functioned most satisfactorily when operated with the bucket full.

Normal procedure is to deposit such materials by truck followed by spreading with motor patrols or graders. Such spreading must be followed by a considerable amount of staking by the engineering crews of the highway department, usually involving blue-tops at 50-ft. intervals as guides for the patrol operators. This final grading involves the combination of proper staking and skillful operators on the patrols, if the results are to be adequate. The staking requires an unusual amount of engineering time, and the success of the grading is dependent on the skill and ability of the operator. It is generally agreed that skillful operators of motor patrols are few and getting fewer. The usual length of such a machine is about 20 ft. between axles which is a key dimension affecting the final surface it produces.



WEAVING PATTERN used on one job to help secure a level surface of this base course. The plane was towed on this zig-zag across the roadbed with succeeding trips.

At this point the highway plane comes into the picture with its 40 ft. wheel base. Specifications for this particular highway plane, in addition to its 40-ft. length between axles include pneumatic tires, a 10-ft. blade, hydraulic controls and a hinged frame which permits easy turning on the road-bed at the end of a pass. The unit is usually pulled by an industrial tractor of 40 to 45 hp. With a minimum amount of training, unskilled operators are able to use the plane with satisfactory results for contractor and engineer.

Work done by the plane is relatively light, in regard to actual movement of material. The surface has been established by the patrols to general uniformity, leaving the plane only the requirement of cutting the tops off small irregularities and filling corresponding depressions. This eliminates the service of at least one patrol for advancing the laying of foundation and base material more rapidly ahead of the planing.

The following observations and comments were supplied to Eversman Manufacturing Co., by engineers of the Wyoming State Highway Department in charge of projects where the plane was used.

In one case the project was 19 mi. of Interstate route and involved a large amount of painstaking finishing on the gravel prior to oiling. The plane was able to move in after the laying out of the base course gravel by motor patrols and effect a smooth riding surface with the elimination of roughness which would have made the job unacceptable.

At the beginning of the job the plane was pulled down the base course parallel to the center line. This procedure was quite satisfactory, however examination of the base course after planing showed minor defects still remaining, particularly a slight crown in the roadway template. As a result a new method of operation was tried with the plane pulled diagonally across the base course, completing the crossing of the roadway surfacing in about 300 ft. The plane then was pulled back to the original shoulder in about the same distance. This zig-zagging down the highway was repeated with successive laps providing an overlay pattern, until the whole roadway had been planed. Following this procedure (see illustration) the plane went over the entire roadway again running parallel to the shoulders until the entire surface had been covered. Occasionally it would be necessary to use the diagonal pattern several times before finishing with the parallel planing.

Other points which developed during the use of the plane may be of interest. It was found that the plane operated best immediately behind the motor patrols while the base course was still damp and could be worked effectively. Another observation was that the bucket of the highway plane should be kept well loaded at all times to avoid picking up just the coarse material and also to avoid depositing just this coarse material in the depressions.

No cost or time studies were made on this project but it can be pointed out that the plane made it possible to attain a satisfactory riding surface while releasing the patrols for laying out material, speeding up the entire surfacing operation.

An earlier use of the plane in the 1957 season was on another Wyoming project 13 mi. long in Sublette County. On this project the base material had been placed the previous fall but time did not permit it to be finished prior to winter. Ordinarily this work of finishing would have been carried out by patrols working to blue tops set at 50-ft. intervals. When work was resumed in the spring the subcontractor on the finishing offered to bring in a plane. The offer was accepted in the hopes that it would work without the necessity of setting the blue tops.

Before the plane was put on the base, it was shaped up to proper cross section by patrols. A slope meter on one of the patrols saved much time during this shaping operation as it enabled the operator to obtain the required crown without constant checking.

As soon as a section of the road had been shaped it was watered and the plane took over. Although the surface was considered to be in fair condition the longer wheel base and the planing action of the plane was immediately apparent as it cut off the rolls and filled the low spots. One half of the base width was worked with at a time, starting on one shoulder and working to the center line. The plane then started on the other shoulder. This left the base material with the same crown and cross section that had been established by the patrols.

Following the first planing, the base was again watered and then rolled with a pneumatic tired roller. This operation compacted the material that had been placed in the low spots and the addition of the water made it possible for the plane to do an easier job in cutting off the high spots. During this second planing the action was lighter and it was possible to operate the tractor at a higher speed. The base was then watered and rolled again. Finally a third pass was made but the action was so light that it is doubtful if the improvement in the surface was worth this additional effort.

The highway engineer went on to conclude that the work was not necessarily better than could have been obtained by good patrol operators working to blue tops, but there was a saving in both time and costs in the use of the plane. The engineer also pointed out that it is quite probable better results and more savings could have been accomplished if the plane had been available earlier and used on the selected material, and the special embankment material.

A superintendent for a contractor carrying out a highway project in Wyoming on U.S. 30 for about 18 mi. of 4-lane divided highway has the following comments in regard to the use of the plane. He indicates that the surfacing which was placed consisted of 6 in. of crushed stone base and 4 in. of plant mix. The base course was laid in two 3-in. lifts.

After the first lift was laid and compacted with a pneumatic tired roller, the plane was used to eliminate irregularities in the surface. Each pass of the plane was lapped about one-third of its width which helped to eliminate any transverse irregularity. At the end of each pass the material in the bucket of the plane was emptied while the plane was still moving.

On the second lift of this base material, all the passes were made in the same direction toward the unfinished end. This tended to eliminate joints between sections and the work of the plane insured a uniform thickness of the base material. It was pulled at a speed of between 1 and 2 mph., or as fast as was possible without creating a washboard effect due to the bouncing of the tractor or the plane. Very little training was required of the operators. Use of the plane on this base course not only helped to insure a uniform thickness but provided a riding surface of sufficient smoothness to hasten its acceptance by the state highway department.

Utah Construction to build jungle railroad

AN international joint venture co-sponsored by Utah Construction Co. has been named to build a $26,000,000 jungle railroad in French Equatorial Africa. Joining with Utah Construction Co. to construct nearly 200 mi. of single track railway for the transportation of manganese ore will be Compagnie Industrielle de Travaux (CITRA) of Paris, also a co-sponsor of the contracting venture, and Taylor Woodrow Construction, Ltd. of London.

According to C. S. Davis, general vice president of Utah, the railroad will be built for Compagnie Miniere de L'Ogooue (COMILOG), a mining company owned jointly by American and European steel companies. COMILOG is now developing extensive manganese deposits in the Moanda area of French Equatorial Africa near Franceville.

The new railroad will provide a direct rail route for ore transportation from the mine to the seaport of Pointe Noire. With its route lying through heavy jungle, the project involves extensive clearing operations and earth moving totaling nearly 10,000,000 cu. yd. Two major bridges and 30 smaller crossings also will be constructed.

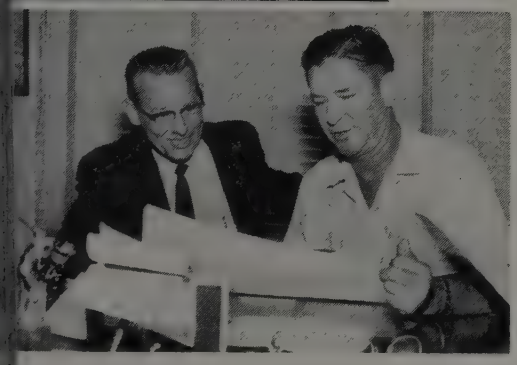
The project will require about three years, Davis said.

. . . for more details, adv. pg. 69, circle No. 27 on Reader Service Postcard

the Levee

C.I.T. Is On The Job, Too!

Assistant General Superintendent Buster Morrison and C.I.T. representative Tom Lynn watch a Cat-powered scraper prepare the river bank for surfacing. Cobblestones had to be hauled 42 miles for the job.



Contractor H. Earl Parker (*right*) and C.I.T.'s Tom Lynn go over plans for the job. Mr. Parker's company has done over 90% of the levee building and repair work on the Sacramento River in recent years.

Working on the levee is serious business for H. Earl Parker on the Sacramento River near Marysville, California. Contractor Parker is handling a $2\frac{1}{4}$ million job of setting back and rebuilding old levees at nine points along the river. Objectives: flood control and water conservation for this rice-growing, water-hungry area.

Heavy-duty, dirt-moving equipment is the key factor in levee work. Mr. Parker favors C.I.T. long term Pay-As-You-Depreciate financing for building his fleet. His reasons: "C.I.T. financing conserves our working capital. The long terms carry the equipment almost completely through the depreciation period and the payments approximately match the allowable depreciation. When short term financing is used, a piece of equipment won't earn the larger payments which means you have to draw on working capital to pay the difference."

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AGC REPORT

(Continued from page 59)

A serious cutback in the Interstate program can be expected in 1961 unless Congress acts to provide additional financing, Federal Highway Administrator Bertram D. Tallamy warned. He mentioned the recommended increase of 1½c in the Federal gasoline tax to keep the highway program at its authorized level, but did not forecast what action Congress will take on this recommendation.

There is some confusion in the public mind, Tallamy said, as to the reason why the highway program is in danger of a cutback, and there has been some talk that it is caused by increased costs. This is a misconception. "The immediate bottleneck," he added, "is the provision of sufficient funds to keep the program in pace with the authorizations which were set forth in the Act of 1956." He predicted that Congress will very soon "come to grips" with the financing problems of the highway program.

The highway administrator reported there was a balance of $663,000,000 in the Highway Trust Fund on Dec. 1, 1958. This balance will be reduced during the year and the 1960 fiscal year, since expenditures are estimated to exceed revenue in each of those years.

"We have now reached the end of what might be compared to the necessary tooling-up period, and the states have gone through a parallel process.

"Now we are into actual production on an unprecedented scale and at a pace which can be maintained over a 13- to 16-year period." Progress up to now has been somewhat better than anticipated, he said. Since July 1, 1956, a total of 1,045 interstate projects have been completed at a total cost of $9,440,000,000. These projects provided for the improvement of 3,159 mi. of the Interstate and construction of 2,087 structures.

Disaster relief plan

A disaster relief plan, with the construction industry making its equipment, personnel and know-how available to local governments in the event of disaster was outlined at the convention.

However, public announcement in a local area will not be made until the plan is ready to operate in that area. The program devised by the national AGC, known as "Plan Bulldozer," provides administrative and organizational guidelines which the local chapters and branches can follow. The contractors' mission in disasters — either natural or man-made — would be to furnish materials, equipment and personnel where, when, and as long as desired by civil or military authority in charge of disaster control, according to the committee.

Basically, the plan calls for general contractors to make known to the local AGC chapter the equipment, material and personnel they have available for use in the event of a disaster. The chapter will keep records of equipment and personnel and furnish these records in highly usable form to agencies of government which may be concerned. The government agency can then call upon this equipment and personnel as need dictates.

The AGC chapter will also set up and maintain a disaster relief administrative staff to help with the proper deployment and use of the construction forces in major disasters. Copies of the plan had been forwarded to federal civil defense officials, as well as agencies of the armed forces, and the response has been enthusiastic.

Water supply problems

Mushrooming growth in population is creating a greater need for more water, and engineers are now concerned with the problem of finding new supplies, Commissioner W. A. Dexheimer, Bureau of Reclamation, reported. With a population of 175,000,000 today, he said, we are using approximately 250,000 mgd. of water a day for all purposes. By 1975, when the population is expected to reach 225,000,000, the water requirements will have more than doubled. "This forecast," he said, "presents a tremendous engineering and construction challenge."

The commissioner reported that contracts totaling $115,000,000 are scheduled for award during this calendar year. In addition, about $4,800,000 will be available in the form of loans to irrigation districts for construction of small projects. The Bureau of Reclamation's total program is larger today than it has been at any time in the past several years.

Dexheimer informed the contractors of a proposed change in government contracting procedures under which the Bureau of Reclamation will be able to reimburse a contractor for his extra costs due to delays caused by the government. In the past, he said, the only action the Bureau could take in such matters was to extend the construction period to compensate, in part, for the delay. The proposed new provision would correct this situation.

Pay revisions by Bur. of Recl.

He also reported on new developments in bonding requirements. At present, the Bureau requires construction contractors to furnish performance bonds of 50% of the contract amount for contracts ranging up to $1,000,000. For larger contracts, the bond requirements are reduced to as little as 20%.

He said the government is giving serious thought to increasing the performance bond on all construction contracts to 100% of the contract amount. He predicted that the bid bond requirements will be standardized at about 20% of the bid amount.

During 1958, construction costs on Bureau of Reclamation work held the line despite increasing wage rates, fringe benefits and rising material and equipment costs. An analysis of construction bids received during the year showed the average low bid was 7% under the engineer's estimates. For 1957, the average was 6%. He said this indicates we have "good competition."

Sound film features Glen Canyon Dam

"TAMING a New Frontier"—a 16-mm., full-color, sound movie of the building of the gigantic Glen Canyon Dam in northern Arizona—has just been released by International Harvester Co. Running 27 min., the film depicts the start of construction in 1956 and the progress recorded up to the present.

It illustrates the birth of a new community and the monumental engineering effort that will affect living standards of millions of Americans when it begins producing 900,000 kw. of electricity and providing water sufficient to irrigate tens of thousands of new acres.

Modern construction techniques form an important part of the movie produced by International Harvester in cooperation with the Bureau of Reclamation and Merritt-Chapman & Scott Corp., prime contractor on the $108,000,000 project.

A giant Eucnik in action—with a 120-ton haul capacity, the world's largest dump truck.

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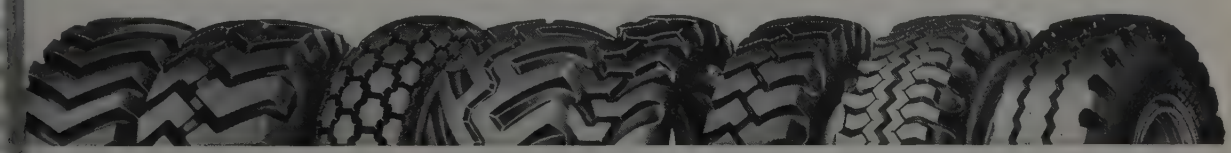

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FOOTINGS for Denver Post Office Terminal Annex are protected by T-shaped wellpoint system. Placement was complicated by existing buildings.

Wellpoints dry Denver excavation

LOCATED close to both the South Platte River and Cherry Creek, the building of the U. S. Post Office Terminal Annex in Denver presented a difficult foundation problem. Water level of the South Platte, which runs only a few hundred feet west of the site, is 25.5 ft. above the deepest subgrade for the building. Cherry Creek runs a few hundred feet north of the site. The coarse sand and gravel soil in the area presented little resistance against inflow from the river and ground-water into the excavation area.

When N. J. Riebe and D. J. Bandy, project manager, of C. H. Leavall & Co. began excavation at the site ground-water was encountered at an elevation which was 16 ft. above subgrade level. The John W. Stang Corp. was called in to assist in solving the problem and the following paragraphs describe the problem at the site and the wellpoint system for taking care of the water.

The site provided a problem in selecting a logical location for the wellpoint system. This was due to the fact that some existing structures had to be removed from a large part of the new building area, although the contract schedule required the beginning of foundation pier construction prior to the removal of these existing structures. This situation is indicated in the photograph which shows the depth of excavation and the footings in place prior to the complete removal of some of the buildings occupying the site.

Calculations of the drawdown curve carried out to check the effectiveness and the influence of pumping on the wellpoint system indicated that most of the area to be excavated could be handled by a T-shaped wellpoint system. Overall dimensions of the site are about 265 x 400 ft. The stem of the T-shaped system extended approximately down the center of the area in the long dimension, and the header was 300 ft. long. It started with 8-in. pipe at the far end increasing to 10 and 12-in. pipe where it joined the head of the T. A Stang wellpoint pump was installed about 100 ft. from the head of the T where the header changed from 10 to 12 in. in diameter. This header was installed at elevation 5 ft. below datum. The end sections of the head of the T consisted of 70 ft. of 8-in. pipe at one end and 30 ft. of 8-in. header at the other. Near the stem the head line represented 100 ft. of 10-in. pipe. The discharge was carried to Cherry Creek.

As a factor of safety, in the event that the drawdown curve as calculated proved to be inaccurate, provision was made for the re-installing of this wellpoint equipment to provide for proper dewatering in the area farthest removed from the original header system. As first installed, a maximum drawdown at the wellpoint line resulted in achieving a dry excavation at a point 170 ft. from the system as originally located. The operation resulted in a considerable saving to the contractor and permitted work to proceed ahead of regular schedule.

Realizing that Denver is located about a mile above sea level, the 23-ft. drawdown below the pump intake was considered a remarkable achievement for a wellpoint installation.

ARBA studies financing problems

Speakers at annual convention stress seriousness of declining federal funds. If Congress does not hike gas tax, other methods will be required to keep program rolling. Prentiss offers financing alternatives.

PROBLEMS of financing the construction of the Interstate Highway System while maintaining a balanced program on the Federal-aid ABC programs held the spotlight at the American Road Builders' Association's 57th annual convention at Dallas, January 19-22. ARBA took a formal stand on the issue in a resolution stating that it will "work diligently" to keep the National Highway Program moving on schedule. The resolution also offered a "sound and workable plan" to keep the program moving, in five steps:

1. Revise authorizations as needed to reflect revised cost estimates and to provide increased authorizations for the primary and secondary systems and their urban extensions in order to maintain a reasonable balance with the authorizations for the Interstate System.

2. Suspend the Byrd Amendment to permit bond financing of the Highway Trust Fund.

3. Suspend the termination date of the Highway Trust Fund.

4. As an interim solution, provide immediate ways and means to finance the anticipated deficits in the Trust Fund, 1960 through 1963.

5. Using the 1961 economic study as a basis, provide adequate revenue to support the Highway Trust Fund to the conclusion of this program.

The convention took this action after Louis W. Prentiss had presented an analysis of the situation, with regard to the Highway Trust Fund.

General Prentiss pointed out that the total income to the Trust Fund through 1972 will be adequate to finance the program by about $12,-00,000,000. He also noted that the Secretary of Commerce was directed by the Federal-Aid Highway Act of 1956, as amended, to make a study and investigation for the purpose of making available to the Congress information on the basis of which it may determine what taxes should be imposed by the United States, and in what amounts, in order to assure an equitable distribution of the tax burden among the various classes of persons using the Federal-Aid Highways or otherwise deriving benefits from such highways.

When this study is in hand, General Prentiss observed, Congress will be in a better position to establish a long-range financing plan for the Highway Trust Fund. Since revenue from this plan would not begin to come into the Trust Fund before fiscal 1963, General Prentiss stated that some interim plan of financing must be established in order to carry the program forward through the intervening years. He outlined such a plan, calling for some borrowing from the general fund or through bonds.

Some of these sentiments were echoed by Federal Highway Administrator B. D. Tallamy when he addressed the convention. "We must have a long-range financing program," Tallamy said, "but we don't have the information on which such a program can be based."

He said that Congress will be in a better position to set up such a program when it has the results of: (1) the economic study of the benefits of the Interstate System, and (2) the AASHO Road Test.

Tallamy reported that the Interstate Program is 7% ahead of schedule for the period July 1, 1956, to Dec. 31, 1958.

Praising the $400,000,000 emergency ABC program of 1958, Tallamy said that "we've demonstrated again that if we ever need a quick stimulus to the economy to overcome a business recession, one way to do it is through construction work, through the normal channels of private enterprise."

The legislative forum, with two senators and two representatives participating in an informal discussion, was one of the most informative such sessions in recent convention history. In the preliminary statements:

Sen. Dennis Chavez (D-N. M.), chairman of the Senate Public Works Committee, discussed progress of the Interstate System and related the Interstate program to the defense program, pointing out the need for highways and bridges capable of carrying heavy military loads and adequate for the evacuation of cities in case of emergency.

Sen. Francis Case (R-S.D.), ranking minority member of the Senate Public Works Committee, reviewed the financial problem, discussed several proposed solutions, and observed that the problem will probably be complicated in the near future by demands from Alaska and Hawaii for grants of Federal 90-10 money.

Rep. George H. Fallon (D-Md.), ranking majority member of the House Public Works Committee and chairman of the Subcommittee on Roads, devoted his time to a strong defense of the needs formula, stating that the requirements of the Interstate System could be met in no other way.

Cramer backs bonds

Rep. William C. Cramer (R-Fla.), took a stand on several issues, notably by his advocacy of bond financing, as opposed to an increase in the Federal gas tax, and his insistence that the question of reimbursing the states for highways incorporated into the Interstate System not be permitted to delay the completion of the System.

In addition to the resolution on highway financing, ARBA adopted some 19 other resolutions dealing with a wide variety of subjects including highway design and specifications, airport construction, labor practices, and cooperative procedures with other organizations in the highway field.

President Julien R. Steelman, completing a two-year period of service at the head of the organization, reported substantial growth in ARBA membership and activities, before turning over the leadership of the Association to the incoming president, Nello L. Teer, Jr., president of the Nello L. Teer Co. of Durham, N. C.

Contractors Division

E. B. Cape, president, Gulf Bitulithic Co. of Houston, Texas, is the new president of the Contractors Division of ARBA.

Cape heads a slate of officers and

directors who were installed at the annual business meeting of the division, held in conjunction with the 57th annual convention of ARBA. Cape has a remarkable 30-year record in highway construction and engineering. Completion of his civil engineering education at Texas A&M in 1929 was followed by long service in the Texas Highway Department, as field construction supervisor, assistant construction engineer in the Austin headquarters office, and materials and tests engineer. He went from the highway department to the position of district engineer for The Asphalt Institute, and then became district paving engineer for the U. S. Corps of Engineers in Dallas.

During World War II, he was in charge of highway construction for the Persian Gulf Command, finishing his service as head of the engineering and construction division of that command. Following completion of military duty, he became general superintendent of Gulf Bitulithic, becoming president of the firm in 1947.

He is also president of the Texas Highway and Heavy Chapter, Associated General Contractors.

Remarks of General Prentiss

The important review of the financial status of the Trust Fund presented by Louis W. Prentiss, executive vice president of ARBA, follows in slightly condensed form.

Ever since the 1956 Highway Act was passed, we have looked forward to the time when construction would get into high gear. Unfortunately, the program will grind to a stop before that happens unless Congress, in this session, increases authorizations and finds ways of providing the necessary additional funds to firm up the financing.

The 1958 Act provided stop-gap assistance through 1960, but we now need more MONEY AND AUTHORIZATIONS.

In approaching the ARBA study of the subject, we found it necessary to assume that Congress will maintain certain attitudes toward the highway program, and will make certain basic decisions. The following assumptions were made as a first step in our study:

1. That Congress still intends that the 41,000-mi. Interstate system be completed by all states to presently approved minimum standards "in the earliest practical time," and is still shooting for a 13-year authorization and 15-year construction program. In other words, we assumed that there will be no stretch-out.

2. That Congress still wants to maintain a balanced program, and hence will continue to increase the ABC Federal authorization at the rate of $25,000,000 a year until it reaches a $1,000,000,000 annual level.

3. That, pending receipt of a new cost estimate not due until January 1961, Congress will accept the 1958 cost estimate as the basis for apportionment of the 1961 Interstate authorization, so that the apportionment can be made on schedule in July 1959.

4. That Congress will again suspend the Byrd Amendment, insofar as it applies to the apportionments for the fiscal year 1961.

5. That if Congress decides to reimburse the states for the 6,000 mi. of toll roads and freeways not built with 90-10 money but which have been incorporated into the Interstate System, it will either delay action until completion of the Interstate System or will take special action to provide for refunding outside of the Highway Trust Fund. By making this assumption, we avoided a complication which would have made the problem of finding a financing plan for the highway construction program a much more difficult one.

6. That Congress will use the four-year economic study by the Bureau of Public Roads of the benefits and beneficiaries of the highway program, due in 1961, as a basis for a review and revision of the base of taxation which supports the program.

Table of cash needs

With these assumptions before us, we then adjusted the future Interstate authorizations to cover the cost of the entire 41,000-mi. system, using the latest official cost estimates, but making no provisions for reimbursing the states for toll roads and freeways. We also increased the ABC authorization for 1962 and yearly thereafter at the rate of $25,000,000 annually.

A careful analysis was then made of the projected status of the Highway Trust Fund, as prepared by the Secretary of the Treasury, and the rate of anticipated cash withdrawals, as forecast by the Bureau of Public Roads. Using these figures and rates as a guide, a new table was developed of the cash needs required to permit the program to proceed at the originally planned rate. This table disclosed these alarming conditions:

1. Based upon the latest official cost estimate the authorizations for the Interstate System for 1962 through 1969, as contained in the 1956 and 1958 Highway Acts totaling $15,725,000,000, are inadequate in an amount of $10,225,000,000.

2. The Highway Trust Fund was born on July 1, 1956, with a zero cash balance, but with an inherited indebtedness of $1,980,000,000 from previous unliquidated authorizations.

3. The Highway Trust Fund will be in the red approximately $923,000,000 by 1960.

4. The deficiency will amount to about $5,000,000,000 by 1963.

5. The total income to the Trust Fund through 1972 will be inadequate to finance the program by about $12,600,000,000.

Avoid Deficiency

The above points raise two logical questions. First: With future fluctuation in cost estimates probable, what should be done to provide authorizations which will insure the building in a given number of years of the 41,000-mi. of highways rather than so many dollars worth of highways? Second: How can the future deficiency in the Highway Trust Fund be avoided, or, stating the question another way, how can the financing of the highway program be put on a sound basis?

There are, of course, several possible solutions, all of which no doubt will be studied by the appropriate committees of Congress. Some possible solutions are:

1. Increase the Interstate authorizations, in recognition of the increased cost estimates, and make provision for automatic future periodic revisions as necessary whenever new cost estimates are approved. Also, make provision in all financing plans for support of the stepped-up ABC authorizations needed to keep the program in balance.

This answer to the first question is really the prerequisite to approaching the second question, since it firms up the cash requirements. Using our previously listed assumptions, the cash requirement appears to be about $1,500,000,000 in new annual income to the Trust Fund. With this new income the surplus, which it would generate between 1960 and 1964, would carry the program through the

(Continued on page 158)

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WESTERN CONSTRUCTION NEWS

Ed. Pine named Nevada highway engineer

EDWARD L. PINE of Reno was appointed State Highway Engineer of Nevada, effective Feb. 2, by the Board of Directors, headed by Governor Grant Sawyer. Taking office the same date as assistant state highway engineer was W. O. Wright, former division engineer for the Las Vegas area.

Pine replaces H. D. Mills who has held the top highway administrative post for the past eight years. Mills is being retained as a special consultant to the highway department for an indefinite period. Wright takes over the office formerly held by W. T. Holcomb who resigned earlier this year to accept a position in private industry.

Pine, 45, comes to the highway department with an extensive engineering background. A native of the state, he holds three degrees from the University of Nevada, the latest being a professional degree in civil engineering earned in 1956. In assuming his new duties in Carson City, Pine leaves his post of Secretary-Manager of the Nevada Chapter of the Associated General Contractors, a position he has held for the past ten years. During the same period, he also served as secretary of the State Contractors Board.

Pine began his career in engineering in 1936 and has been associated with a number of Nevada organizations including the Sierra Pacific Power Co., the City of Reno, Isbell Construction Co., Washoe County and the Sierra Machinery Co. During the war years, he served with the U.S. Army Engineers, completing a number of major construction and engineering assignments in the State of Washington, in the Atlantic theater of operations, and at several bases in Brazil. He left the service with the rank of lieutenant colonel.

Active in Reno civic and fraternal organizations, Pine is a member of the American Society of Civil Engineers, Nevada Reclamation Association, and Sigma Tau. He is presently a colonel in the U. S. Corps of Engineers in command of the 365th Engineering Group.

Wright, 59, and a native of Reno, is a veteran of more than 25 years with the highway department. After completing courses in engineering at the University of Nevada, he began work with the department in 1922 as a chainman, continuing his service up to the present except during the period from 1925 to 1928 when he held positions with a private engineering firm and with the U. S. Bureau of Public Roads. Over the years he worked up through the ranks to become assistant division engineer in Las Vegas in 1941 and division engineer in 1947, a title he has held up to this date. Wright is a registered professional engineer in Nevada and has earned his 25-year award pin from the Western Association of State Highway Officials.

NEW HEAD BEAVER

Ray F. Rasey (left), president of Winston Bros. Co., takes over as president of the Beavers during the current year. He accepts the gavel from retiring president J. M. Sawyer of Macco Construction Co. A report on the annual dinner meeting of the Beavers and the eight recipients of Golden Beavers appeared in the February issue of *Western Construction*.

Kaiser Eng. will design

THE East Bay Municipal Utility District has engaged Kaiser Engineers to prepare design drawings and specifications for the EBMUD Briones Dam and Reservoir.

J. H. Pomeroy buys stock of Ben C. Gerwick, Inc.

J. H. POMEROY & CO., INC., and Ben C. Gerwick, Inc., announces that the Pomeroy company has purchased all of the stock of the Gerwick company. The two are among San Francisco's oldest and largest heavy construction and engineering firms.

The Ben C. Gerwick organization has specialized in marine, waterfront and foundations construction and pioneered in the prestressed concrete industry. It will continue under the Gerwick name as a Pomeroy subsidiary. Ben C. Gerwick, founder of Ben C. Gerwick, Inc., continues as chairman of the board of that company, and Ben C. Gerwick, Jr., as its president. R. N. Pomeroy and William A. Pomeroy, president and executive vice president of the Pomeroy company, will be key figures among the directorate of the newly formed subsidiary.

Acquisition by Pomeroy of this waterfront construction company which has taken such a large part in San Francisco Bay development and has prestressing yards at Petaluma, Richmond and Long Beach, is a natural outgrowth of the many years of friendship between the principals of the two companies and the numerous jobs they have completed in joint venture.

J. H. Pomeroy & Co., Inc. are world constructors with crews currently operating in the Western Pacific, Philippine Islands, the Mid-East, and South America. They have, through another subsidiary, recently constructed and are now operating the world's largest prestressed concrete beds in connection with their operations in the Arabian Gulf.

The acquisition of Ben C. Gerwick, Inc., adds to the parent Pomeroy organization the Gerwick company's years of experience in marine, waterfront and foundations constructions and rounds out the Pomeroy organization and plant in the manufacture and installation of prestressed concrete.

Earthmoving courses started at U. of California

EXTENSION DIVISION of the University of California in Los Angeles is now offering four evening courses for contractors and construction engineers. Two are entitled "Earthmoving Operations," and cover such subjects as site investigation, quantities measurement, factors affecting production of specific types of equipment, tunneling, explosives, and dredging. Instructors are Thomas J. Finnerty, an engineer in the estimating section of the Los Angeles Flood Control District, and Fred Leyhe, chief engineer for J. C. McNeil Construction Co.

The other two courses are called "Construction Costs and Estimating." One covers residential and light commercial, the other industrial and heavy construction. Instructor is James A. ApRoberts, estimating engineer for Oberg Construction Co.

Further information can be obtained by writing University Extension, University of California, Los Angeles 24, Calif.

Colorado judge rules in favor of highway department

A judge in Littleton, Colorado has decided against a claim for $100,000 damages from the State of Colorado because of loss of business occasioned by a department of highways improvement.

"The State of Colorado cannot be required to pay compensation to all the property owners near or adjoining a highway for the loss of income that would be occasioned by an improvement," the Judge declared. "To do so, would render impossible, financially and practically, the construction of much needed highway improvements."

The Belleview Company brought suit, claiming that ingress and egress to a motel, restaurant and cocktail lounge were impaired by the building of an overpass for Interstate US 87. The Court found there was a substantial "circuity of route" caused by the improvement, but found:

"Since there was no taking of property as such, there can be no compensation and the damages, if any, resulting in this particular case are not from a taking, but rather damages from non-compensable police action; i.e. more efficient interchange. It is axiomatic that the State of Colorado may increase, widen, modernize and erect any changes, by-passes, overpasses, underpasses in the interest of highway safety and expeditiousness.

PROGRESS OF THIRTY MONTHS AT PRIEST RAPIDS DAM ON THE COLUMBIA RIVER

Thirty months ago the Columbia River was flowing undisturbed between these sagebrush covered banks. On July 9, 1956, Merritt-Chapman & Scott was awarded the contract to build Priest Rapids Dam for the Public Utility District of Grant County. The dam above is 65% complete and is well ahead of schedule. Starting upper left and coming right: The pozzolan plant which processes volcanic fly ash used in the concrete; the right earth embankment, and gravity dam section. Behind the cofferdam at left, work is proceeding on 11 spillway bays, while the river flows between the piers for 11 other bays. Next, the 1,025-ft. powerhouse which will contain ten generating units with a total rated capacity of 788,500 kw.; fish passage at extreme right.

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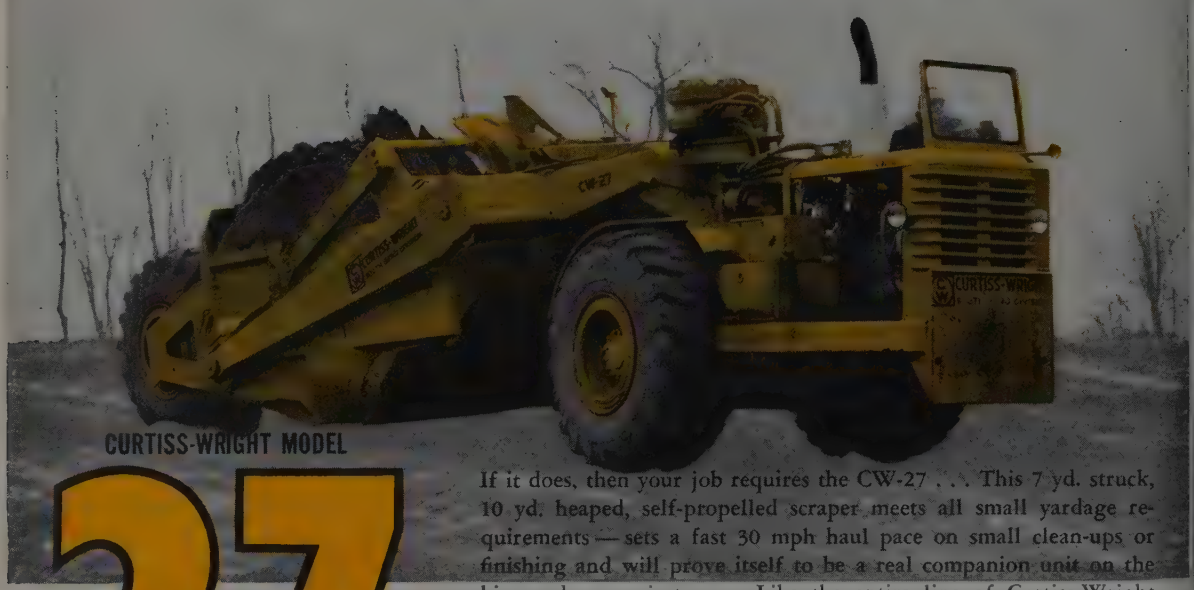

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Bur. of Recl. 1958 work includes large contracts

CONSTRUCTION WORK which is essential to the utilization of the water resources of the Western states was pushed vigorously by the Bureau of Reclamation during 1958 fiscal year. The annual report for the period ending last June 30 showed the award of 561 separate contracts with a face value of about $135,000,000 for construction, materials, and equipment. Construction contracts totaled about $115,000,000 or about 85% of this total.

At the end of the fiscal year the Bureau had in force approximately 158 construction contracts with a total face value of about $391,000,000. Chief among the new construction contracts awarded during the fiscal year were those for the Flaming Gorge Dam on the Green River in Utah and for the Navajo Dam on the San Juan River in New Mexico.

Arch Dam Constructors, a combination of the firms of Peter Kiewit Sons' Company, Omaha; Morrison-Knudsen Company, Inc., Boise, Idaho; Mid Valley Utility Constructors, Inc., Houston, Texas; and Coker Construction, Inc., of Omaha, hold the $29,602,497 contract for Flaming Gorge Dam. A joint venture combination, including Morrison-Knudsen Company, Inc., Henry J. Kaiser, and the F. & S. Contracting Company of Los Angeles, has the $22,822,624 contract for Navajo Dam.

Files for big gas pipeline

APPLICATION for authorization to build the $63,900,000, 296-mi. California section of a 1,300-mi. gas pipeline from Canada to the San Francisco Bay area has been filed by Pacific Gas and Electric Co. before the Public Utilities Commission.

Pacific Gas Transmission Co., a subsidiary, recently filed application with the FPC for authorization covering Idaho, Washington and Oregon. Other applications by Canadian affiliates have been filed with agencies of the Province of Alberta and the Canadian government.

The 36-in. steel pipeline is necessary, said the PG&E petition, to provide gas for steadily increasing demands of customers. Initial deliveries from Canada, at the California-Oregon border near Klamath Falls, Ore., would average 415,000,000 cubic feet daily.

Jellick named consultant by P. C. Info. Bureau

THE Portland Cement Information Bureau with headquarters in San Francisco, has announced the appointment of J. E. Jellick as consulting engineer for the Bureau. A registered professional civil engineer, Jellick is one of the West's leading experts on concrete. He will continue as manager of the Bureau office, which he has headed for the past twelve years. His services will continue to be made available to architects, engineers,

J. E. Jellick

contractors and public officials seeking information about concrete or requesting inspection of jobs on which concrete is being used.

A veteran of 30 years in the cement industry, Jellick was associated with the Portland Cement Association for 16 years prior to becoming manager of the Portland Cement Information Bureau. He served the PCA first as field engineer, then as district engineer in the Los Angeles and San Francisco offices, and finally as Pacific Coast manager. Jellick is a member and former director of the American Concrete Institute. He also belongs to the Structural Engineers Association of Northern California.

The Portland Cement Information Bureau is supported by Calaveras Cement Co., Pacific Cement and Aggregates, Inc., and Permanente Cement Co.

Uranium mill in Wyoming

THE Federal Uranium Corp. has selected Western-Knapp Engineering Co. of San Francisco to design and construct a new uranium processing mill for the Gas Hills area of Wyoming. Western-Knapp will begin construction about April 1, and the mill is scheduled to be completed by December. Final contracts will not be signed until Federal completes negotiations with the Atomic Energy Commission on a concentrate purchase agreement.

The project will cost in excess of $3,000,000.

Glen Canyon Dam bridge is dedicated with ceremony

THE spectacular 700-ft. high bridge at the Glen Canyon damsite, the world's highest steel arch bridge, was opened for public use in a dedication ceremony on February 20. Completion was announced by E. O. Larson, regional director, Region 4, Bureau of Reclamation. A comprehensive article on the construction of the bridge appeared in the December 1958 issue of *Western Construction*.

Gov. Paul Fannin of Arizona and Gov. George D. Clyde of Utah with other state and federal dignitaries were scheduled to participate in the dedication.

The bridge opening ceremony was sponsored by the Chambers of Commerce of Flagstaff, Ariz., and Kanab, Utah, the anchor cities on the new highway route, with the assistance of officials of the Arizona and Utah Highway Commissions and the Bureau of Reclamation.

The $4,100,000 Glen Canyon Bridge will connect newly constructed highways for an alternate route of U. S. Highway 89 completing a new north-south link between the states of Utah and Arizona. Located at the Glen Canyon Dam site, the new bridge will greatly facilitate the building of Glen Canyon Dam.

Arizona highway contracts set record during 1958

THE Arizona Highway Commission, during the calendar year 1958, awarded contracts totaling $32,861,543 for road construction, setting an all-time record in Arizona's accelerated program of highway building.

This total exceeded by almost $6,000,000 the pace set in 1957, when contracts for road building reached $27,111,503, the previous high. Figures for 1958 have just been released by Joe Mertz, engineer in charge of Contracts and Specifications for the Arizona highway department.

On the average, construction jobs awarded in 1958 were larger, too. This is indicated by the fact that the number of contracts let last year was 99, only three more than the 96 awarded during 1957. For example, road projects ranging in cost from $225,000 to $1,000,000 constitute a big majority of the total program.

ALASKA Newsletter

By CLIFFORD S. CERNICK, Fairbanks

SET TO GO—As this is written, there are few signs of spring in Alaska, and a number of northern sourdoughs are showing signs of "cabin fever," the Alaskan malady whose symptoms are restlessness and impatience to take to the outdoors once more. Up to now, weather conditions have kept most of us inside. Only an Eskimo or a polar bear hunt or a grizzled trapper would venture out when it gets 30 and 40 below zero. But there is a new feeling about Alaska these days. There is perceptibly more sunlight each succeeding day and the mercury is making a slow advance in the thermometer. On the streets of Fairbanks I saw a car with a Texas license plate and one from West Virginia. At the Sportland Cafe I noticed two or three fellows hanging around—obviously unemployed construction workers from the states. The first hopeful job hunters have arrived. Around the corner lies the 1959 construction season. Until deep freeze conditions are transformed into thaw, however, this writer's thoughts turn not so much to construction but to a warm beach in the 50th State-To-Be, Hawaii. And I look forward to the day when I can wander out to a construction job again and chew the fat with the foreman to get first-hand data for this newsletter.

ONLY IN ALASKA—An example of the type of winter-season woe a construction man in Alaska encounters if he insists on pushing outside work in the winter is the trouble encountered by Paul Elbert who owns a 40-ton D9 Cat. As one of Elbert's employes, Wayne Gibson, was driving the Cat toward an acreage-clearing job, it plunged through ice over a shallow water hole. Gibson managed to scramble to safety, but the Cat was firmly wedged in the icy muck. Dislodging the piece of equipment required the use of four boxes of dynamite to blast away surrounding ice, installation of a log ramp and finally the use of heavy lifting equipment. The ice and muck which encrusted the Cat ran its weight up to an estimated 100 tons. Several cables which were supposed to have a "breaking strength" of 100 tons snapped during one unsuccessful lifting attempt. "That attempt to drive across some ice was a $10,000 to $12,000 'mistake' as far as I'm concerned," Elbert said. But his unfortunate mishap was no worse than similar mishaps which take place frequently during Alaska's relentless winter.

JOB QUERIES PILE UP—In the offices of the Employment Service in Alaska, at Chambers of Commerce and in newspaper offices, the inquiries about construction jobs continue to pile up. The Fairbanks Chamber of Commerce for example gets up to 100 job inquiries a week. Employment Service offices in Fairbanks and Anchorage get several hundred. Now that Alaska is a state, interest in Alaska opportunities has increased tremendously.

TOUGH COMPETITION—With such spirited competition for construction jobs in Alaska—and with no real increase in the total number of jobs available, it will be tough sledding for the majority of these applicants. In Fairbanks, for instance, the local labor supply is at present more than sufficient to fill all normal demands. The only shortages of personnel are in the clerical and professional fields. Construction workers and culinary employes are the most numerous among the unemployed. Activity in Alaska's fledgling oil industry has not absorbed any significant number of workers. Only one oil firm added to its work force. About the same employment picture was reported in Juneau, Petersburg and Ketchikan. In Juneau, 499 persons were registered for work out of a labor force of 4,080. In Petersburg, 200 were unemployed. In general, the unemployment rate in Alaska stood at about 200 workers out of every 1,000. These are figures to consider seriously before popping into the jallopy and heading for Alaska.

THE GRAPES OF WRATH—Harrowing conditions, comparable to those depicted in the book "The Grapes of Wrath," except that the climate is much colder, are beginning to be reported here because

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of the annual job hunt. A minister called me the other day and told me about the two construction workers who piled their two families in one car—seven small children in all—and arrived at his doorstep here in Fairbanks penniless, jobless and hopeless. One's first impulse in cases of this kind is sympathetic. A later reaction is more critical; why on earth would anyone do so foolhardy a thing? In this case, the minister was able to arrange part-time work for the two families—but he hopes more won't show up.

BIG YEAR, BIG TOWN—Construction-wise, Anchorage—the new state's biggest city—expects its biggest year so far in 1959. "We expect the greatest number and largest valuation of building permits in the history of the city" said City Manager George Shannon. He said road and street construction in Anchorage will be heavy during 1959. Plans of the Bureau of Public Roads and those of the City of Anchorage already are in the hopper. Construction of the Anchorage municipal port will be in full swing this year as will a huge telephone expansion program. Sewer and water line construction to the tune of $750,000 also is scheduled. Preliminary plans for a public safety building to house the Anchorage police and fire departments are expected to be finalized by the architect in 1959. About $130,000 in work will be done at the city-owned Merrill Field under the Federal Airport Aid program. The Methodist University plans to begin construction on college buildings in the Anchorage area this year. City Manager Shannon sums up the outlook for 1959 for Anchorage in this way: "The City of Anchorage will have one of the busiest years in its history, mostly supervising its own construction projects, being concerned with zoning, subdivision regulations, building codes and the like."

CONTRACTOR FIGHTS BACK—Labor unions are coming to realize that contractors are not completely helpless when a strike is called. One Alaska contractor, the firm of Marwell, Foster-Saunders, went to court and filed a damage action against the International Brotherhood of Electrical Workers, charging that a dispute over work assignments on the job led to a shutdown and damaged the contractor to the extent of $1,700 a day. Although the suit hasn't been settled at this writing, it could cost the union some money.

ROADLESS CAPITAL—Few Americans realize that Alaska's state capital is the only one in America which cannot be reached by highway. Although a ferry system carries some traffic from Haines to Juneau, no through highway route has ever been built, mainly because of cost and construction difficulties. Senator Warren G. Magnuson of Washington hopes to remedy this by putting the support of the Alaska International Rail and Highway Commission behind the move to build the first road into Juneau.

Magnuson also favors blacktopping the unpaved Canadian portion of the Alaska Highway and extending the existing main highway beyond Fairbanks to Nome on the Bering Sea. Building the first highway to Juneau will pose some serious engineering problems. For one thing, it may be necessary for the route of the highway to go across a large glacier which lies inland from the capital. Alaska glaciers so far have not proved to be suitable for roadbeds.

CONSTRUCTION NEWS NUGGETS—George Heinsen, assistant city engineer at Anchorage, estimates that about 11 mi. of city streets there will be torn up this year for paving, sewer and other projects . . . The Air Force has requested the withdrawal of four tracts totalling 1,500 ac. near Anchorage which may be missile launching or detection stations. Three of the sites have already been designated as "missile annexes" . . . Extension of the White Alice communications network at a cost of about $30,000,000 is being considered by the Air Force for Alaska . . . Major construction at the missile detector base at Clear on the Alaska Railroad will get an early start this spring.

HAWAII Report

By ALAN GOODFADER, Honolulu

NEW BOSS—Tim Ho has been named by Governor William Quinn as the first Hawaiian resident of Oriental ancestry to be Territorial superintendent of public works. Ho is a native of Honolulu and a veteran of 18 years with the department. He formerly was deputy public works engineer. As public works chief, Ho also serves as Territorial highway engineer, chairman of the Board of Harbor Commissioners for the Territory and a member of the Honolulu Board of Water Supply. He received his engineering degree from the University of Hawaii in 1938, worked with the U. S. Engineers and joined the public works department of the Territory in 1941. He was with the department's highway division for six years before becoming departmental airport engineer. Ho succeeds William M. Wachter to the $13,500 post. Wachter resigned to return to his job as dean of the University of Hawaii's College of Applied Sciences.

ENGINEERS ELECT—The newly organized Hawaii Society of Professional Engineers has elected J. Roberts Britton as its first president. It will affiliate with the National Association of Professional Engineers. Other new officers are Ray M. Fuhrmann, president-elect; Fred H. Kohloss and Ray M. Allen, vice presidents; Elwood L. Bartz, secretary; Ken K. Sato, treasurer; William A. Melarkey and Donald T. K. Ho, directors, and A. C. Bullen, national director.

BIG THINGS BREWING—The year 1959 is going to mean big things for the Territory's booming construction industry, even if statehood hasn't become a reality yet. The Territorial Highway Department expects to let contracts totaling more than the record $11,000,000 of 1958. On Oahu, two major sections of the Nuuanu Highway will get under way. One bid will cover construction of the Kuakini-to-Beretania section of the highway, the Nuuanu Stream-to-Pele St. section of the Lunalilo Freeway and Hawaii's first 3-level traffic separation structure. Another contract will cover the last remaining section of the leeward approach to the highway. A contract will be granted soon to finish the Likelike Highway between School St. and Kamehameha Highway. Three por-

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tions of the Lunalilo Freeway across Honolulu will be contracted for.

ROADS FOR NEIGHBORS—Neighbor Island road construction also is in the works. On Hawaii, contracts to be let this year include two units of the proposed new Papa-to-Honuapo highway, the Holualoa-Kaunau section of the Belt Road and an improvement of the harbor road through Kawaihae town. Maui projects set this year include a new Lower Kula Road, a section of the Hana Belt Road and reconstruction of Ukumehame Bridge. Contracts scheduled on Kauai include a section of that Island's Belt Road, a new Kalihiwai Bridge and approaches, and one or more sections of the Kalihiwa-Wainiha road. Lanai is expected to get its first federal aid project, a road from Lanai City to Kaumalapau Harbor.

HARBORS, TOO—Harbor construction also is expected to be a big factor in local construction this year. Hawaiian Dredging & Construction was low bidder, with an offer of $259,650 for the first phase of construction on a second entrance to Honolulu Harbor between Kapalama Basin and Keehi Lagoon. The bid was far below the government's estimate of $949,226. Work to be done includes dredging of a 400-ft. wide, 35-ft.-deep channel 4,375 ft. long. The contractor gets to keep the dredged coral, an estimated 1,170,000 cu. yd. of important fill material here. Work is to start in mid-April. The dredging also will create a small emergency turning basin. Second phase of the project will be dredging of an outer entrance. Third phase will be construction of a bridge. In addition to this work, the Territorial Board of Harbor Commissioners has face-lifting plans in mind for Honolulu harbor. Announced by the commission for immediate construction is an 860-ft. pier with a 100,000-ft. shed at Pier 6.

HOTELS IN THE AIR—Arrival of the jet age here this year is expected to give a spurt to hotel construction which leveled off here last year after three years of heavy building. Hilton Hotels has signed an agreement with the Dillingham interests here under which Hilton will operate a beach hotel that will cost an estimated $10,000,000 to build and the chain is dickering with Loyalty Enterprises of Honolulu to operate a proposed $1,500,000 hotel near Honolulu International Airport. The Sheraton Corporation, which recently bought Matson Navigation Co.'s four hotels here, has tentative plans for $10,000,000 worth of expansion over the next 10 years here. And industrialist Henry J. Kaiser is talking of adding four new hotels to his Hawaiian Village property at Waikiki. The additions, still in the planning stage, would include 1,000 to 1,200 rooms.

WATER WORKS—The Honolulu Board of Water Supply expects to have the first section of a proposed Ewa-Waianae pipeline complete by November 1960. Contracts for four wells costing $60,000 and producing 5,000,000 gallons of water a day above Pearl Harbor were to be let Feb. 8. A $1,180,000 contract to lay 6 miles of 30-in. pipe from the wells to Barber's Point will be let May 1. When these projects are finished, the water board will extend the pipeline to Nanakuli at a cost of $1,000,000 and will build a $315,000, 4,000,000-gal. reservoir at Barber's Point before extending the line to Mikilua in Wainae. The project is part of a $7,000,000 five-year construction program announced by the water board. Water system construction scheduled in the program includes: Ewa-Waianae, $2,650,000; Kailua-Kaneohe, $2,260,000; Wahiawa, $870,000; Waialua, $530,000; Waimanalo, $125,000; Kaaawa, $90,000, and Sunset Beach, $75,000. The water board recently took over the City's Suburban Water System after Honolulu's Board of Supervisors voted to merge Oahu's two municipal water utilities. Part of the work will be financed by $4,500,000 in bond issues.

WANTS MORE—Yoshio Kunimoto City chief engineer, has recommended that a secondary approach road to the Wilson Tunnel through the Koolaus be built on the Windward side of Oahu to serve new homes there. Both bores of the tunnel and primary approach roads to it will be finished this year. Kunimoto wants to hire Park & Park, Honolulu engineers, to plan the secondary road at a cost of $31,100.

NAVY AWARDS—The Navy has announced four contract awards for construction here. Hawaiian Bitumuls & Paving received a $15,930 contract to pave a coral area at the Navy's Keehi Lagoon seadrome facility. Hawaii Fence & Iron got a $6,434 contract to erect a chain link fence at Keehi. Cable Construction Co. received a $14,527 contract to rehabilitate the telephone distribution system at the West Loch Branch of the Naval Ammunition Depot. A. W. Yee got a $10,642 contract to replace doors at the Barber's Point mess hall and galley.

Low bids and contract awards

ARIZONA

Craftsmen Construction Co. of Denver, Colo. received a $3,178,412 contract for construction of the Leupp Community School in city of Leupp. A low bid of $493,583 was submitted by **The Ashton Co., Inc.** of Tucson for construction of 2 interchange structures, 2 overpass structures and related work in city of Phoenix, Maricopa County. **M. A. Dunlap,** Phoenix, submitted a low bid of $262,487 for 5.3 mi. of grading and surfacing on the Sonoita - Mountain View highway north of Sonoita, on State Route 83 in Pima County. Two low bids for highway work were submitted by **Heiskell Construction Co.** of Phoenix: $101,392 for grading, draining and surfacing on 6 mi. of the Hassayampa - Salome highway near Salome in Maricopa County, and $160,109 for 7.2 mi. of grading and surfacing on the Payson-Colcord Mountain highway in Tonto National Forest in Gila County. A low bid of $147,749 was submitted by **San Xavier Rock & Sand Co.,** Tucson, for grading, surfacing and related work for a future divided highway in the east city limits of Tucson, Pima County.

CALIFORNIA

A. Teichert & Son, Inc. of Sacramento submitted a low bid of $4,787,742 for grading and surfacing on 7.8 mi. of 4-lane divided highway, together with ramps, connections, frontage roads and construction of three bridges near Emigrant Gap in Placer County. **Gordon H. Ball, Gordon H. Ball, Inc.** and **Ball & Simpson** and **Lew Jones Construction Co.,** Berkeley, received a $3,870,609 contract for 4.1 mi. of grading and paving to con-

struct a 4-lane freeway north of Bayshore Highway on Nimitz Freeway, and construction of 10 major structures in and near San Jose, Santa Clara County. A $3,226,722 contract was received by **L. C. Smith Co.** and **Concar Ranch & Enterprises,** San Mateo, for grading and paving to construct 4.4 mi. of 6-lane freeway on U. S. 101 Bypass and construction of 5 bridges and related work near Mountain View in San Mateo and Santa Clara counties. **Huntington Bros.** of Napa submitted a low bid of $389,694 for roadway repairs, drainage facilities and related work between Longvale and Dos Rios in Mendocino County. **Rice Bros., Inc.** of Fresno submitted a low bid of $427,989 for grading and surfacing 2.3 mi. on Olive Highway in Butte County. **Carvers Construction Co., Inc.,** Stockton, received a $1,298,500 contract for construction of reception-guidance center at Deuel Vocational Institution, Tracy, in San Joaquin County. A $1,472,000 contract was received by **Price McNemar** of Van Nuys for construction of Environmental Simulation Facility, Naval Missile Center, Point Mugu. Work will consist of a concrete building, including water, sewer, gas, electrical services, drainage, fencing and paving. **Manderbach Construction Co.** of Glendale received a $1,380,000 contract for construction of a maintenance hangar at the Naval Missile Center, Point Mugu. A low bid of $173,332 was submitted by **Fresno Paving Co.** of Fresno for grading and surfacing between El Portal and Yosemite National Park boundary in Mariposa County.

COLORADO

A $2,227,317 contract was received by **A. S. Horner Construction, Inc.** of Denver for grading, surfacing and structures on 12.7 mi. in Watkins, Strasburg, Adams and Arapahoe counties. **C. L. Hubner Co.,** Denver, submitted a low bid of $1,056,885 for grading and structures on 6.2 mi. on State Highway 185 in Adams and Weld counties. A low bid of $989,660 was submitted by **Domenic Leone Construction Co.,** Trinidad, for 1.4 mi. of grading, surfacing and related work on Trinidad Freeway in Las Animas County. **L. H. Kilgroe Construction Co.,** Denver, submitted a low bid of $928,259 for 1.8 mi. of grading, structures and surfacing on the Colorado Springs Freeway in El Paso County. A low bid of $559,908 was submitted by **E. J. Rippy & Sons,** New Castle, for 4.8

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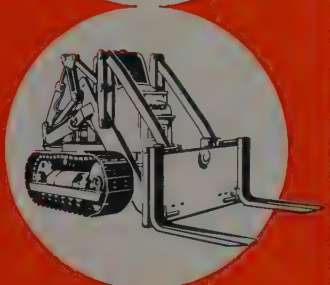

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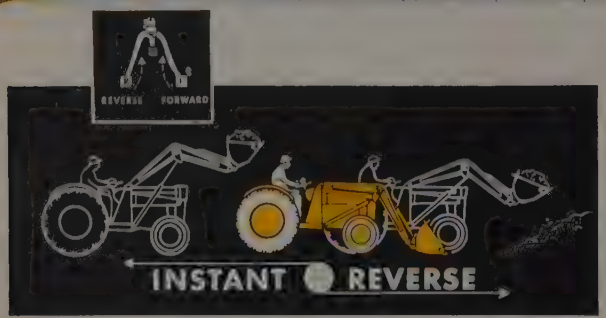

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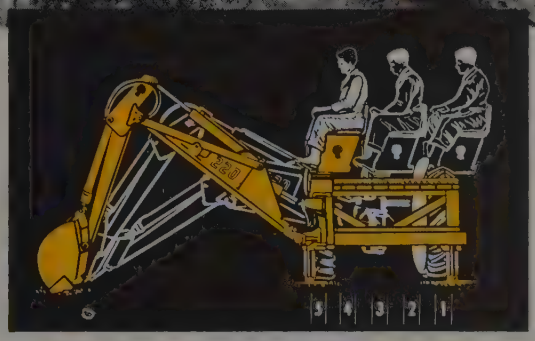

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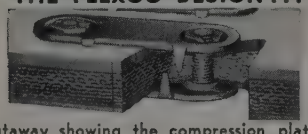

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mi. of grading, structures and surfacing on State Highway 4, between De Beque and Palisade, Mesa County. **McMillon Construction Co.,** Englewood, submitted a low bid of $478,888 for grading, structures and surfacing on 4.5 mi. north of Ft. Lyon on State Highway 6 in Bent County. **Lawrence Construction Co.** of Littleton submitted two low bids for roadwork in Adams County: $307,739 for grading, structures and surfacing on State Highway 1, between Denver and Westminster, and $262,906 for grading, structures and surfacing on State Highway 185. A low bid of $303,441 was submitted by **Herren-Strong** of Platteville for 5.6 mi. of grading, structures and surfacing on Highway 141 in Mesa County. **Brannan Sand & Gravel Co.,** Denver, submitted a low bid of $253,348 for 1.2 mi. of grading, draining and surfacing in city and county of Denver. A low bid of $224,380 was submitted by **Pioneer Construction Co.** of Pueblo for 9.2 mi. of grading, stabilizing and surfacing on Chivington-Sheridan Lake road in Kiowa County. **Colorado Constructors, Inc.** of Denver submitted a low bid of $156,236 for stabilization, structures and surfacing on 6 mi. between North Avondale and Boone on State Highway 96 in Pueblo County.

NEVADA

Whiting Bros. Construction Co., Inc., Industrial Construction Co. and **General Contractors** of Las Vegas received a $1,946,948 contract for the construction of a portion of the State Highway System in Clark County northeast of Jean. **Wells Cargo, Inc.** of Las Vegas received a $364,296 contract for 4.7 mi. of grading and surfacing in city of Las Vegas, Clark County. A $335,723 contract was received by **Willis Brothers** of Winnemucca for grading and surfacing on 10.9 mi. between Oregon-Nevada state line, west of Denio in Humboldt County.

NEW MEXICO

Skousen-Hise Contracting Co. of Albuquerque received two contracts for roadwork in Valencia, Bernalillo and Socorro counties: a $1,327,700 contract for grading, surfacing and structures on 9.4 mi. of the east-of-Laguna-easterly and signing road in Valencia and Bernalillo counties, and $395,960 for 3.7 mi. of grading, surfacing and structures on U. S. 60 in Socorro County. A $442,581 contract was received by **Wayne A. Lowdermilk, Inc.** of Espanola for grading, surfacing and structures on 6.1 mi. near Mescalero in Otero County. **O. D. Cowart** of Albuquerque received two contracts for roadwork in Catron and Luna counties: a $351,248 contract for 14.8 mi. of grading and surfacing north of Quemado-north in Catron County, and $151,172 for 8.4 mi. of grading and surfacing on Waterloo and Sunshine-South road in Luna County. **Haake Construction Co.,** Santa Fe, received a $325,095 contract for 7.4 mi. of grading, surfacing and related work on the Des Moines-Folsom road in Union County. A $240,857 contract was received by **Floyd Haake** and **H. C. Jones** of Santa Fe for construction of Canadian River Bridge and approaches in Mora and Harding counties.

OREGON

Morrison-Knudsen Co., Inc. of Boise, Idaho, received a $1,329,641 contract for grading, surfacing and related work on the Grants Pass-Jackson county line section of the Pacific Highway in Josephine County. A $506,487 contract was received by **Gibbons & Reed Co.,** Portland, for grading and surfacing the Hood River-Shogren section on the Columbia River Highway in Hood River and Wasco counties. **C. M. Corkum Co., Inc.** of Portland received a $218,709 contract for construction of overpass on the Columbia River Highway in Multnomah County. A $143,333 contract was received by **Pacific Concrete Co.,** Portland, for construction of the Votaw undercrossing on Pacific Highway-west in Washington County.

UTAH

Olsen Construction & Engineering Co. of Ogden, submitted a low bid of $586,646 for earthwork, pipe lines and structures including pumping plants, Weber Basin Project. A low bid of $343,608 was submitted by **Enoch Smith Sons Co.,** Salt Lake City, for 1.3 mi. of grading and surfacing on F. A. S. Highway 140 in Salt Lake County. **L. C. Stevenson Construction Co.,** Roosevelt, submitted a low bid of $152,490 for grading, surfacing and structures on 2.5 mi. of State Highway 262 in San Juan County.

WASHINGTON

Allied Structural Steel Co. of Chicago, Ill. received a $6,943,568 contract for construction of steel

uperstructure with concrete roadways for the Lake Washington Ship Canal bridge on the Seattle Freeway in King County. A $840,273 ontract was received by **Dorman Construction Co.** of Vancouver for rading and surfacing 6.4 mi. on he Ritzville bypass in Adams County. **Asphalt Paving & Engineering Co.**, Tacoma, received a 530,671 contract for 4.9 mi. of rading and surfacing, Dryden to Cashmere in Chelan County. A 337,558 contract was received by **Materne Bros. Co.**, Spokane, for mproving roads northwest of Mesa n Franklin County. **Anderson & toen** of Seattle received a $334,-95 contract for 1.2 mi. of grading nd surfacing, Howey road to Sedro Wooley in Skagit County. **Everett IcKellar** of Chelan received a 251,979 contract for construction f Euclid bridge in Yakima Coun-. A $230,131 contract was re-eived by **Dale M. Madden Conruction Co.** of Seattle for conruction of overcrossing on PSH in King County.

WYOMING

Tiago Construction Co., Salt ake City, submitted two low bids r roadwork in Sweetwater Coun-: $626,284 for grading, surfacing d 2 structures on 5.6 mi. of the ock Springs-Rawlins road between oint of Rocks and Table Rock, d $565,656 for grading, surfacg and 3 spans on 5.7 mi. of 4-lane ghway on the Rock Springs-Rawns road. **Reidesel-Lowe Co.**, Cheyne, received a $520,400 contract r 1.4 mi. of grading and surfacg and 3 spans over the Shoshoni ver on the Yellowstone Parkdy road in Park County. A $443,-8 contract was received by **N. A. lson Construction Co.**, Sheridan, grading, surfacing and strucres on Sheridan-Ranchester road Sheridan County. **Studer Conuction Co.**, Billings, Mont., reved a $359,352 contract for 9.5 . of grading, surfacing and strucres on the Cody-Clark's Fork road Park County. A $229,602 conct was received by **Roth Conuction Co.**, Rapid City, S. Dak., grading, surfacing and one ucture near Gillette in Campbell unty. **Flora Construction Co.**, nver, Colo. received a $181,392 ntract for 3 structures, grading l surfacing in Campbell County. $183,267 contract was received **Arthur Damrow**, Torrington, grading, surfacing and strucres on 2.1 mi. of the Guernsey-t Laramie road in Platte and shen counties.

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ENGINEERS and CONTRACTORS

Retirement of **William P. Hughes** as urban engineer for the State Highway Department of Idaho terminates 43 years of engineering service. Prior to joining the department in 1952, he had been city engineer at Lewiston for nearly 30 years. Hughes' post with the highway department has been filled by **Norman Crossley** who had been city engineer of Twin Falls.

* * *

Vincent J. Applegate, 79, retired president of the Northwest contracting firm of Clifton & Applegate Co., died recently at Los Angeles where he lived since his retirement from business twelve years ago.

* * *

Several chapters of the Engineering & Grading Contractors Association in California have announced the names of the men who will head their groups during 1959. New EGCA presidents are: Los Angeles Chapter, **William H. Stecker;** Kern-Sierra Chapter, **B. Willis Weekes,** relected; Central Valley Chapter, **B. E. "Britt" Turner;** Peninsula Chapter, **Angelo Bragato;** Superior Chapter, **F. Gunner Gramatky;** North Bay Chapter, **Harold Peletz,** and Tri-County Chapter, **A. J. Diani.**

* * *

J. Frank Barrett, 70, died in San Francisco Jan. 11. He was president of Barrett Construction Co., of which his sons, **John F. Barrett, Jr.,** and **Richard H. Barrett** are partners. His death marked the end of a long and productive career in construction which started when he and **Harry H. Hilp** teamed up in 1912 to form the heavy contracting firm of Barrett & Hilp. Among the numerous large Western projects carried out by this firm were the anchorages for the Golden Gate Bridge. The partners split the business into two companies in 1953. A 600-home development in Richmond, Calif., and the Downtown Airlines Terminal in San Francisco are two of several recently completed contracts by the Barrett organization.

* * *

Raymond Evanson, a civil engineer with the Portland District, Corps of Engineers, with more than 40 years of government service, and **William M. MacGibbon,** civil engineer likewise with over 23 years of service, retired the end of January.

* * *

Lt. Col. Roland A. Brandt is newly appointed assistant district engineer for the U. S. Army Engineer District, Alaska. His office is at District headquarters in Anchorage, where he will be assistant to **Col. W. C. Gribble, Jr.**

* * *

Charles W. Humme, financial vice president of Hawaiian Dredging & Construction Co., has retired after 46 years with the offshore building and dredging concern. He joined the firm in 1913 as a junior engineer. His tenure as vice president reflects a lifetime as a successful engineer, contractor, and businessman.

CALENDAR

Mar. 3-4—Annual Highway Conference, University of Utah, Salt Lake City, Utah.

Mar. 3-5 — Annual Highway Conference, College of the Pacific, Stockton, Calif.

Mar. 5-6—Annual Highway Engineering Conference, University of Colorado, Boulder, Colo.

Mar. 18-20—Annual Road Builders Clinic, Washington State Institute of Technology, Pullman, Wash.

Mar. 23-25—Motor Vehicle Maintenance Conference, Civil Engineering Department, University of Washington, Seattle.

Mar. 23-25—Annual Western Safety Congress and Exhibits, Ambassador Hotel, Los Angeles, Calif.

May 4-7—American Society of Civil Engineers, annual convention, Cleveland, Ohio.

JOHN B. BONNY of Boise, Idaho, recipient of The Moles 1959 Non-Member award, is shown here between two former award winners, *L. P. Perini* who was the 1957 member-winner, and *Harry W. Morrison,* non-member winner the same year. Bonny is vice president and general manager of Morrison-Knudsen Co., Inc., of which Harry Morrison is the head. *James F. Armstrong,* New York, is the other 1959 Mole awardee.

. . . for more details, adv. opp. pg. 99, circle No. 42 on Reader Service Postcard

Pneumatic-tired SB-60 in travel position. Screed, feeder and idler crawlers under hopper hydraulically raise for travel.

Pneumatic-tired SB-60 (shown). Model SA-60 has crawlers 3 ft. high.

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R DIFFERENT FINISHERS. Only Barber-Greene offers a line of finishers: the new 873, which paves on crawlers and travels ubber; the new heavy-duty SA-60 and SB-60, shown above; and amous 879-B unmatched for all types and sizes of jobs.

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ONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

SUPERVISING the jobs

Pierre H. Haumont, Jr., head of Haumont Contracting Co., is superintending a recent award to his company for grading, draining and surfacing on the Wickenburg-Kingman highway in Arizona. The $379,960 contract covers a 3.3-mi. stretch of road and also a 1.8-mi. stretch. In the picture Superintendent Haumont (right) discusses the job with his grade foreman **Leon Felton. James A. McGee** is project engineer for the State. The project is earmarked for May finish.

* * *

Clarence Nelson, superintendent, **Bill Hart,** superintendent, **Earl Rada,** foreman, and **Ed Faucett,** master mechanic, are principal personnel employed by Dack Construction Co. on a $224,994 job of grading and surfacing the Birch Creek bridge-Pearson Creek section of road in Oregon, a stretch of 5.9 mi. Under construction since Dec. 11, the job will be finished about Mar. 20.

* * *

Dan Handy is supervising a $158,996 job of H. E. Lowdermilk Co. consisting of 1.2 mi. of grading and surfacing in Estes Park, Colo. Timekeeper is **William Kling.**

* * *

Steven H. Smith and **Orville Ennis** are acting as superintendents for Charles M. Smith, general contractor doing a $152,004 job of grading, surfacing on 1.3 mi. of road and constructing a steel and concrete bridge across the Big Horn River, in Hot Springs County, Wyo. Start of the job was in November, with scheduled completion May 31.

* * *

Raymond Burns is superintending Gardner Construction Co.'s recent award for construction of concrete and steel stringer bridge across the Pecos River and approaches on U. S. 60 in New Mexico. Labor foreman on the $383,483 project is **George Monks.** Work started in January and will be finished in April.

* * *

Bus Abshire, superintendent, assisted by **Lyle Call,** grade foreman, and **Richard Cuny,** labor foreman, is in charge of 5.2 mi. of grading and structures west of Saguache, Colo. for Gardner Construction Co. This $419,848 job got under way in December, earmarked for May completion.

* * *

Cliff Gray is to superintend a Gardner Construction Co. award near Villa Grove, Colo., consisting of 11 mi. of grading and surfacing. This $285,800 job is scheduled to start in March with the following men as foremen: **Don Withrow,** crusher; **Turk Wilson,** hot plant; and **Roy Morrison,** laydown. Work will finish about May.

* * *

Keith T. Karns is supervising a $294,000 contract for Northwestern Engineering Co. covering construction of access road at Lowry Air Force Base, Denver, Colo. Gravel superintendent is **Robert K. Houston.** Work is now in the finishing stage.

* * *

Earl R. Anderson, superintendent, assisted by **Jake Sipila** and **Roy McFarland,** foremen, is in charge of constructing twin prestressed concrete beam bridges at Bellevue in Washington, a contract which went to Allen R. Anderson on a low bid of $164,406. Scheduled for completion in April, work has been going since December.

* * *

W. R. "Bill" Brown, superintendent for E. J. Rippy & Sons is in charge of a recent award to this firm for 2.7 mi. of grading and surfacing and structures on S.H. 145 north of Ophir, Colo. The $157,945 job has **Jim Miller** as mechanic and **Jim Gant** as labor foreman. Work started in October and will probably end in May.

* * *

Ernie Puryear, superintendent, **Ray Clark,** foreman, and **Jim Holes,** master mechanic, are key men on 3.6 mi. of grading and surfacing on Route 67 in San Diego County, Calif., a $293,365 contract awarded recently to Ralph B. Slaughter.

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BEST BUYS IN NEW AND USED EQUIPMENT

. . . for more details, circle No. 44

UNDER a $3,167,176 contract awarded by the Bureau of Reclamation to Bud King Construction Co., work is getting under way on Paonia Dam, a part of the Colorado River Storage Project. Picture shows equipment aboard trucks at Missoula, Mont., ready to start for the construction site at Paonia, Colo. Included in the contract is relocation of a 4.5-mi. section of State highway. Key personnel for King are *Roy D. Washington*, project manager, *George Morris*, project engineer, and *Mirl Harsell* and *Bud Sivils*, foremen. Work is expected to be finished in two years.

Slaughter expects to have the work complete before June.

* * *

Richard Smith, superintendent for Nelson Bros. Construction Co., is in charge of constructing 1 mi. of road: grading, surfacing, multiplate structure and culverts on State Road 47 in Utah. According to **Oren A. Nelson,** partner, the job will be finished in May.

* * *

Don J. Westbrook is acting as general superintendent for R. A. Westbrook, Inc., and Morrison-Knudsen Co., Inc. on an award at $596,757 for 3.7 mi. of grading, surfacing and two bridges on the Alfred Harrell Highway, Kern County, Calif. Other key men working on this project are **Jack Wisler,** structure superintendent, **D. O. Hoyt,** excavation superintendent, **Bill Taylor,** master mechanic, and **Tom Hopper,** office manager. Under way since December, construction is scheduled for May completion.

* * *

M. J. Ruddy, Jr., project manager for the contracting firm of M. J. Ruddy & Son, is in over-all charge of a recent award covering 9.8 mi. of grading and surfacing and one bridge over the San Joaquin River in Merced County, Calif. **Fred H. Sattler** is chief engineer and **John Lawrence** is general superintendent. Foremen are **D. McKelvie** and **C. B. Thompson.** With Mar. 15 the target, work has been under way on the $598,003 project since November.

Ben Lowdermilk is superintending a $345,105 job for H. E. Lowdermilk Co., consisting of 2.5 mi. of grading, structures and surfacing between Evergreen and Kittredge, Colo. Other key men on the project, soon to be completed, are **James L. Guilliams,** timekeeper, **R. G. McGillivray,** structure superintendent, and **Wesley Behil,** labor foreman.

* * *

Standley L. Singleton is supervising the construction of a bridge over Weber River west of Ogden, Utah. Estimator and expeditor is **Alfred Hansen.** Mark B. Garff, Ryberg & Garff is doing the work, having won the award on a low bid of $232,753, started construction in October and will be finished about April.

* * *

Russell Wise, general superintendent, **John Rugh,** manager, **Meredith L. Burgess,** office manager, together with Superintendent **Orval Cluff,** comprise the key personnel of Heuser & Garnett who successfully bid 1.6 mi. of grading, draining and surfacing on the Gadsen-Yuma highway in Arizona at $320,664. Job has been going since October and will be finished in May.

* * *

Henry Eberhardt, general superintendent, and **B. H. Pebley,** job superintendent, are in charge of a $439,469 contract under way by Northwest Engineering Co. in Archuleta County, Colo. Work consists of structures, stabilization and surfacing on 17 mi. of S. H. 10 be-

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And the new No. 933 retains the superior design features that have made Traxcavators first choice on jobs throughout the world. The exclusive oil clutch, automatic bucket controls, 40° tilt-back, heavy-duty undercarriage, unit design and construction — to name just a few. And the exclusive Side Dump Bucket is available to add versatility.

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BORN OF RESEARCH PROVED IN THE FIELD

WHEN Roth Construction Co. starts work in April on a $572,121 highway contract in Montana, here are some of the top men who will be on the job. From left, Superintendent *R. J. Schurger;* an unidentified helper to *J. T. Dugan,* grade foreman; *Dugan; J. R. Jackson,* also grade foreman; *A. L. "Shorty" Martins,* pipe foreman, and *"Tex" Cason,* dozer operator. Contract calls for 9.6 mi. of grading, draining and surfacing on the road between Circle and Sidney. Job will be finished in August.

tween Pagosa Springs and Durango. **Don Harrison** is field clerk. Under construction since last October, the job is earmarked for June completion.

* * *

Bill Hodges is superintending a job currently under way by Rothschild, Raffin & Weirick in Contra Costa County, Calif. The $1,053,446 contract covers new approach spans to the Carquinez Bridge and extensive remodeling of the old Carquinez Bridge. Carpenter foreman on the project, which started last August, is **Roy Grieve.** Job will close in May.

Gournard Kellar, superintendent, and **William Shaw,** foreman, are key men working for Bennett Murray, contractor on a county road job near Somerset, Calif. Job entails 1.5 mi. of grading and surfacing for 2-lane highway, with 50,000 cu. yd. rock, and 100,000 cu. yd. decomposed granite, plus culverts. Murray's bid was $179,310. Scheduled to finish in June, work has been going since December.

* * *

Thiel Wamsley is job superintendent on 18.8 mi. of grading, surfacing and related work south of Lund, Nev. for Wangsgaard-Peterson Construction Co. which got the job on a low bid of $392,830. Work has been under way since December, and will be complete in June.

* * *

William S. Vian is the superintendent on two recent awards in Oregon to Tom Lillebo Construction Co.: $334,099 construction of three overcrossings on the Klamath Falls section of The Dalles-California highway, and $199,720 for construction of a bridge on the California Avenue section of the same highway. Both jobs will be finished about July 1.

* * *

Lee R. Clements of the contracting firm of Tom Lillebo Construction Co. is acting as superintendent on two bridge awards to his company. The first one is for construction of five drainage structures on relocated Pacific Highway south of Albany, Ore., a $312,193 job which will be finished in July. The second one, on which Clements is being assisted by **William R. Gordon** as foreman, is a $152,613 contract for widening two bridges, also on Pacific Highway in Douglas County. This one will be finished in June.

* * *

Roy Wilson, superintendent, and

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George Slater, general foreman, two key men of Alton V. Phillips Co., head the crew working for this contractor in Seattle in building the reinforced concrete and timber Spokane Street on-and-off ramp to the Alaskan Way viaduct. This is a $550,711 project which started in December, scheduled for June completion.

* * *

Elmo Campbell, project manager, and **N. G. Hamnes,** superintendent, head the job personnel on 2.7 mi. of 2-lane high construction through Yountville and one bridge and facilities, in Napa County, Calif. On a low bid of $564,447, McCammon-Wunderlich Co. and Wunderlich Contracting Co., received the contract, started work in October, and expects to finish the job about June.

* * *

R. H. Heitman, project manager for John Delphia and Fred J. Early, Jr. Co., Inc., has charge of a recent award to the joint venture in the amount of $186,663 for grading and surfacing approach roadways to future San Joaquin River bridge in Stanislaus County, Calif. Other key men on this bridge approach job are **M. E. Setzekorn,** engineer, **Dave Soden,** foreman, and **Cliff Faulkner,** labor foreman. Work is expected to be finished in June.

* * *

O. E. Neukirch is superintendent, and **Paul Higdon** is general foreman on a $256,444 award to Neukirch Bros. for construction of two 110-ft. plate girders and a 220-ft. truss bridge across Sauk River below Darrington, Wash. Work has been under way since last November and will be finished in June.

* * *

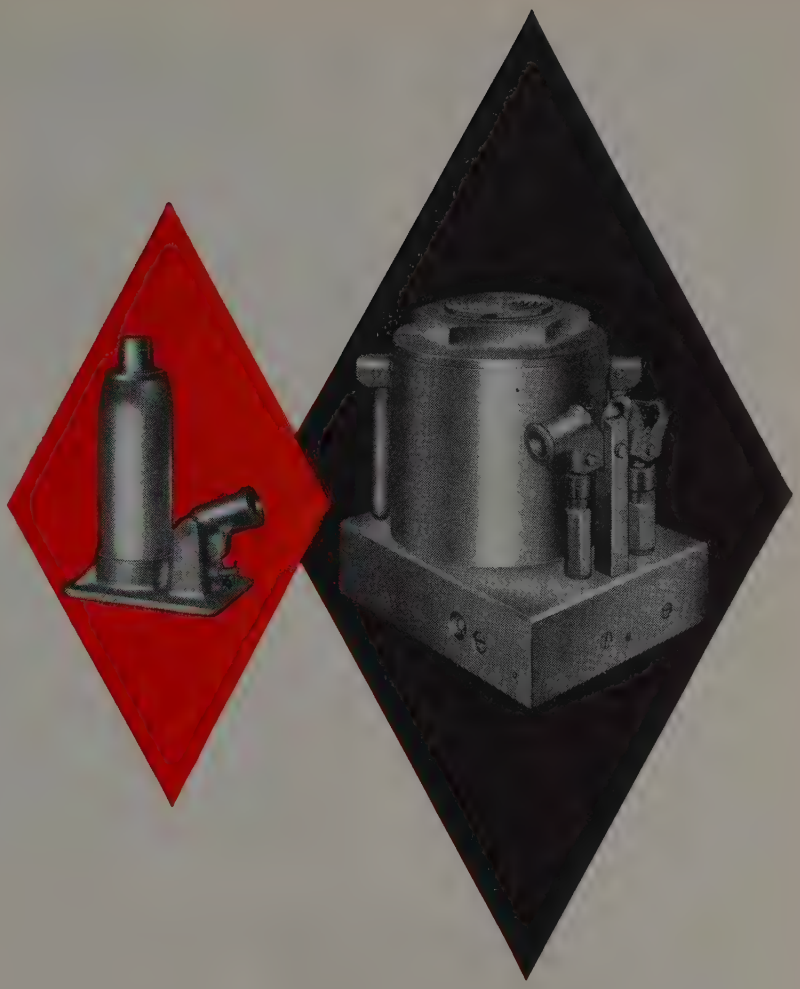
Melvin Beach, Lawrence Arneson, and **John Montgomery** are key superintendents working for the O'Neil Construction Co., recently awarded a grade, gravel and drain job on 3.9-mi. stretch in Glacier County, Mont. Scheduled to start the end of March, the job is expected to take three months.

* * *

"Chuck" Loser is superintending job for C. L. Hubner Co. near Longmont, Colo., and is being assisted by **George Aldredge** and **Art Lokish,** foremen. Costing $881,613, the contract is for 8 mi. of grading, structures and surfacing on Highway 185. Scheduled for July closing, the work has been going on since October.

* * *

Wendell McNeil, job sponsor, and **Jes "Sully" Willis,** superintendent, head the list of job personnel



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on a $1,025,253 contract for grading and surfacing and related work on 4.8 mi. of 4-lane Interstate highway on the Laramie-Cheyenne road in Wyoming. Grading, etc., which has been continuing all winter, entails 1,160,000 cu. yd., 500,000 of which is solid granite. Other key men for the contractor, Big Horn Construction Co. are **Garold Acton,** acting superintendent, **C. L. "Louie" Tippets,** grade foreman, **Dave Cavender,** drill foreman, and **K. N. "Ken" Andrews,** engineer. Job will be finished about Aug. 1.

* * *

Dean Straw, project manager, **George Andersen,** drill and powder superintendent, and **Charles Pittman,** office manager, are key personnel on a $972,011 contract awarded to Morrison-Knudsen Co., Inc. for work near Morgan, Utah. Under way since October, the 2.6 mi. of grading, surfacing and a structure on Highway 80 N., will be finished this July.

* * *

Lee Alexander is project manager, and **Gene Hill,** general superintendent on construction of a bridge, road reconditioning and asphalt paving on 11.9 mi. of U.S. 59 in Bonner County, Idaho. **L. W. Vail** was the successful bidder at

BILL COLE, master mechanic, is key man for Roy L. Houck Sons' Co. in his role as chief of rolling stock, machinery, and equipment on the contractor's concrete paving job on U. S. 99 just south of Albany, Ore. Cole, with a maintenance crew of fifteen, heads a big shop operation.

$269,952. Carpenter superintendent here is **Rod Tyler,** while **O. C. Haney** is paving superintendent. Started in December, the work is scheduled for completion in July.

* * *

Melvin A. Johnson, with **Norman F. Meyers, W. Jay Grant,** and **Pearl Crable,** superintendents, has charge of Grant Construction Co.'s recent award covering 8.1 mi. of grading and surfacing on State Highway 53, Kootenai County, Idaho. The $268,451 contract got under way in November, and Grant expects to close the job on July 1.

* * *

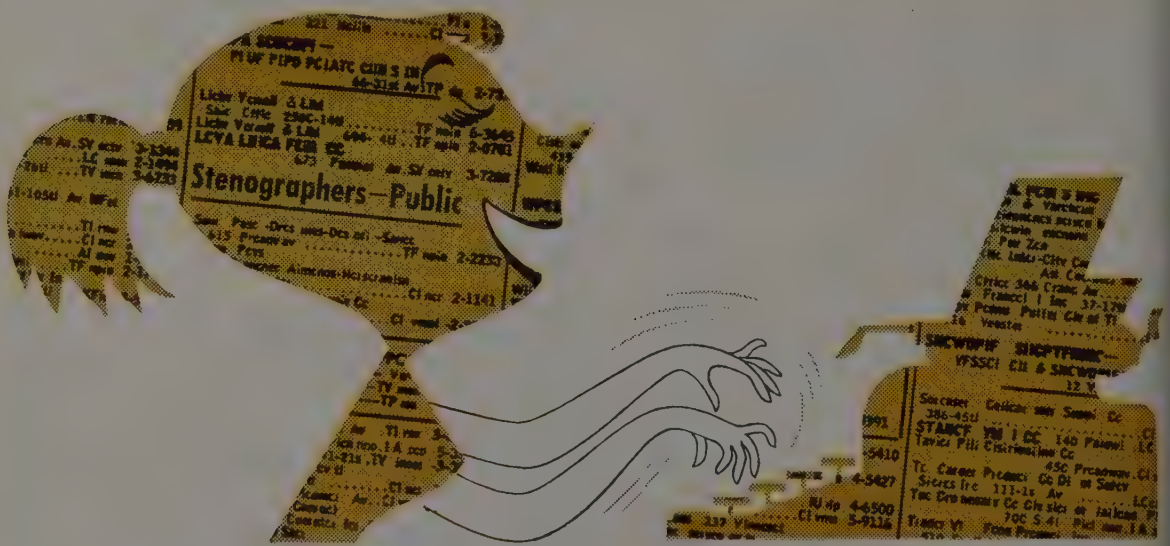
C. Emerson, superintendent, with the assistance of **O. Shehorn,** foreman, will be in charge of grading and surfacing on 7.6 mi. of State Highway 10 in Huerfano County, Colo., when Blanchard Construction Co. starts working here in April. Costing $183,550, the job will be finished in July.

* * *

Norm Westling is job superintendent for Peter Kiewit Sons' Co. on construction of two sets of twin bridges crossing over the Southern Pacific railway tracks near Albany, Ore. Contract price for these overcrossings for new Highway 99 was $311,314. Job office engineer is **Dick Geary.** Kiewit started the job last September, expects to have it complete in July.

* * *

Ken Rose, superintendent, **Melvin George,** general foreman, **Harold Watt,** plant foreman, and **Bill Huey,** timekeeper, comprise the chief personnel on Isbell Construction Co.'s 16.3-mi. grading and surfacing contract on the Cordes Junction-Flagstaff highway in Arizona.



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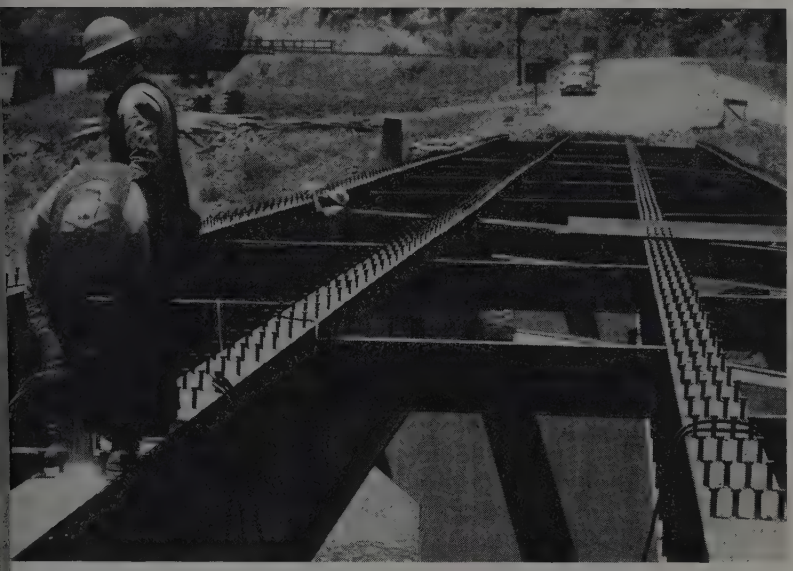
CONSTRUCTION BRIEFS



Portable stud welding saves field time

Steel, material and manhours saved on bridge job by use of portable welding equipment.

PORTABLE stud welding equipment enabled Moore Dry Dock Co. Oakland to save field time and labor costs in erecting a highway bridge in a remote mountain area in Mendocino County.

The wooden bridge crossing over Outlet Creek on County Road 317 east of Longvale, Calif., was washed out in the 1955 flood and again in 1956. Mendocino County officials decided the next replacement for this important county road would be a composite steel and concrete bridge.

By the winter of 1957, the general contractors, Clifford & Bodenhamer of Redwood City, had put up the concrete piers for the crossing. With rains again threatening to halt completion of the structure, it was decided to build a temporary bridge over the piers and return in the spring to complete the job.

Moore Dry Dock erected the two outer girders of the newly designed bridge, and these were covered with planking as a temporary deck. Returning in the spring, the fabricator erected the two outside girders which had been shop equipped with stud shear connectors.

With a portable Nelson Stud welding gun and Moore power source, Moore was then able to field weld the 7/8 x 4-in. shear connectors to the upper flanges of the two interior girders.

A Nelson heavy-duty NS9 stud welding gun was used, with a Moore 2,000-amp. battery pack and a small generator to recharge the battery. With this apparatus, a two-man crew was able to install 700 of these studs per day.

The studs were installed four to a row on 18-in. centers along the 96-ft. length of the girders. The width of the flanges was 18 in. The girders were composed of welded plate, varying from 7/8 to 1 1/2 in. thick in the flanges and 3/8-in. thick web.

K. R. Van Every, field superintendent for Moore Dry Dock, said "This system resulted in savings in steel and material as well as big savings in man hours." Under the old method, each angle or clip used as a shear lug would have had to be hand welded. This would have posed greater difficulties in the field and created greater possibilities of warpage in the girders as well as accounting for more shop time. The portable apparatus enabled the two interior girders to be used as a temporary bridge since planking could be installed easily without encumbering projections.

The stud also permits concrete to be compacted more satisfactorily so that interaction between the concrete slab and steel is assured.

Blanks for the Nelson Stud are manufactured by Bethlehem Steel Corp.

SELF-POWERED SHEEPSFOOT TAMPER

Designed by engineers of *Mittry Construction Co.*, Santa Maria, Calif., this 100,000-lb. fill-compactor has a speed of 8 mi. per hour; easily keeps pace with 22 eighteen-yard bottom-dump earthmovers at a dam site near Santa Maria. Equipped with 4 sheepsfoot drums, it is powered by two 6-cylinder GM diesels delivering 200 hp. each through Allison transmissions. Diesels were supplied by *Anderson-O'Brien Co.*, Los Angeles, through their dealer, *Gem Equipment Co.*, of Ventura. The big self-powered tamper replaces three ordinary tractor-drawn units.

Tunnel pipe hung by rock bolting

DRILLS ARE inching their way through the solid granite formation of Cherry Valley on the first large contracts for the $54,000,000 bond financed hydroelectric power project for the City and County of San Francisco.

The farsighted project to power up and supplement the Hetch Hetchy system for the city's future needs was authorized by the electorate in 1955 and embraces two new power plant additions.

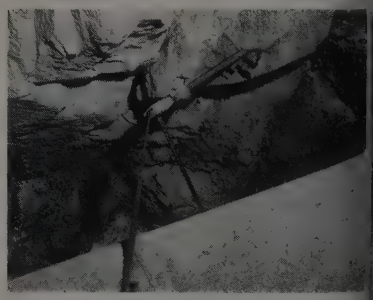
The contractor for the Cherry Power tunnel is Cherry Tunnel Contractors, a joint venture comprised of Guy F. Atkinson Co., Arundel Corp., and L. E. Dixon Co. Atkinson is the managing partner. Earl Walsh is project manager for the contractor with headquarters at the intake portal to the power tunnel located on the Cherry River below Lake Lloyd.

The 6-mi. tunnel swings like a serpent through the granite formation making two left, then two right and finally two left turns in its 29,350 ft. course.

The tunnel follows an almost solid granite formation, the bore of the tunnel measuring 12½ ft. vertical and 12 ft. wide. Rock control is only necessary where fractured blocky formations of granite are encountered. The contractor is using 1-in. diameter rock anchor bolts for rock control in these areas. The bolts supplied through Bethlehem Pacific Coast Steel Corporation are fitted to one end with 6-in. slot to accommodate a steel wedge.

The roof bolts are installed with a stopper and the bolt is driven in against the wedge at the back of the hole, expanding the slot. A spud wrench is used to tighten the plate and cinch at the threaded end, thus controlling the rock slippage.

The contractor has devised a unique system for hanging the 30-in. diameter ventilating line in the power tunnel. Using Bethlehem Pacific type expanding shells for rock anchor bolts and a 2½-ft. length of ½-in. diameter eye rod threaded on one end, the rods are inserted in drill holes every 20 ft. along roof center line and tightened into the expanding shells at the back



of the hole. A sling of steel wire strand is then used to hold the ventilating pipe hanging from the rod. Shims are railroad track spikes.

The 6-mi. long pressure tunnel takes the water from Lake Lloyd stored behind Cherry Valley Dam to a point on the Cherry River near its confluence with the Tuolumne River. The 2,400-ft. drop will develop a peak capacity of 135,000 kw. The new Cherry Powerhouse will be located about 1½ mi. north of the present Early Intake Powerhouse. The Cherry plant is scheduled for operation by July 1960.

The project will also include construction of a double circuit 230,000-volt steel tower line from Intake Switchyard to a point of connection with the Pacific Gas & Electric system near Oakdale.

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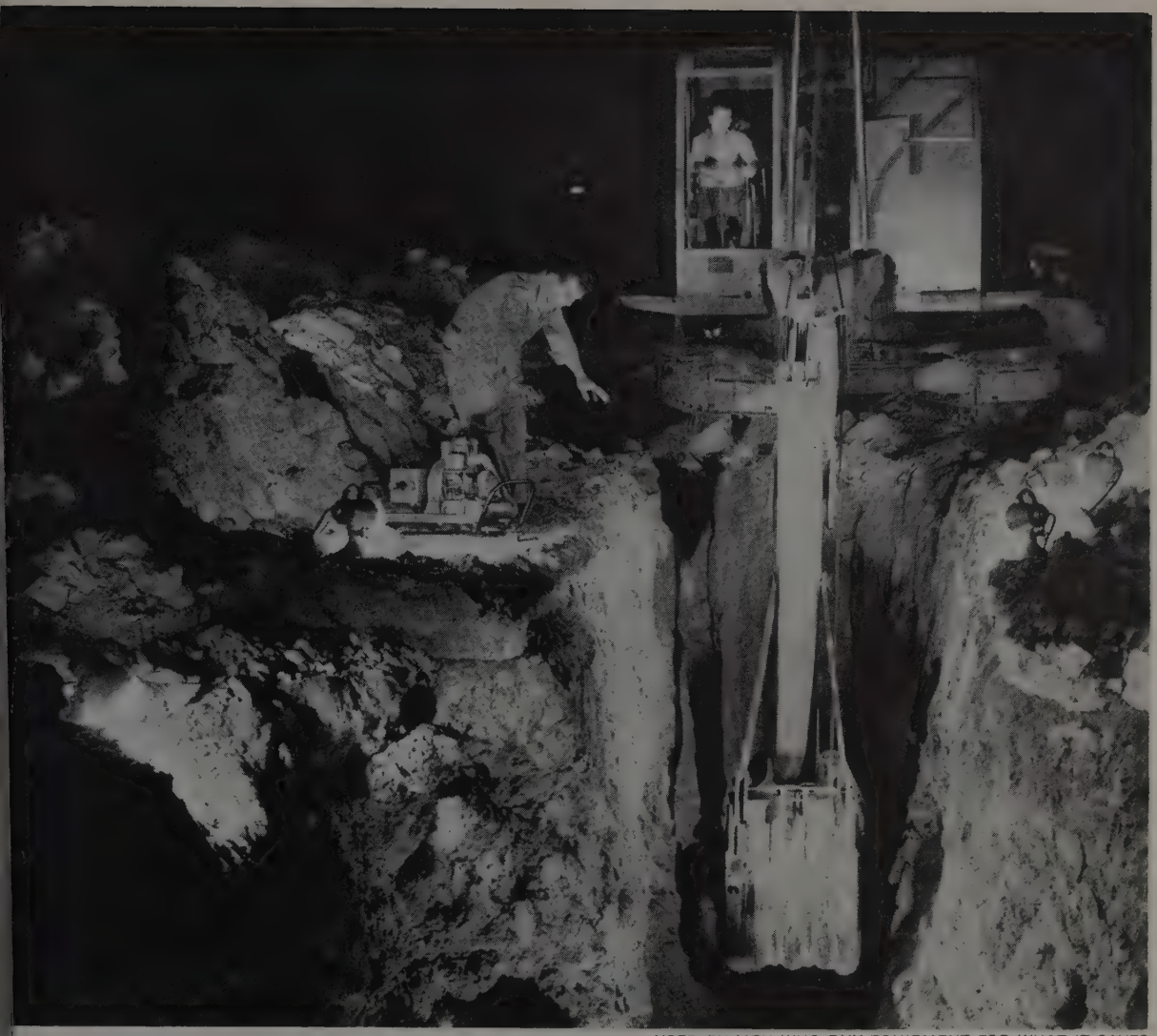

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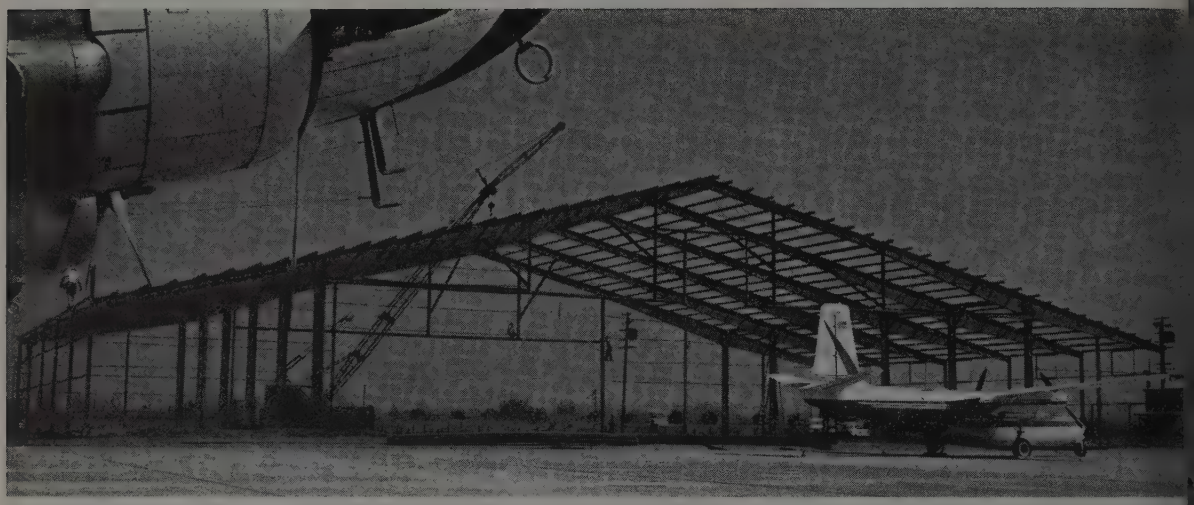
Shop-welded studs ease erection



SHOP fabrication techniques in prefabricated building construction can do a lot to cut down field time. There is no better illustration of this than the recent record set by San Jose Steel Co. in the construction of a hangar in San Jose, California.

In just three days, a five-man crew had the steel skeleton of the 100 x 180-ft. hangar erected, and in three more days, the same crew had covered the structure with over 36,000 sq. ft. of Bethcon 26-gage galvanized steel sheets.

By shop welding studs to the purlins and girts of the structure, San Jose Steel Co. not only speeded the coverage of the building, but also greatly simplified the field work.

In their prefabricated steel buildings, San Jose Steel uses 5-in. channels for purlins and 4-in. channels for girts. These are cut to a uniform length of 20 ft. (the module of their standard building). They are uniformly punched with a 13/16-in. hole at each end where they are fastened to the columns or roof girders. These holes also

serve to line-up the purlins and girts in a special jig, where they are equipped with studs.

The jig accommodates 14 channels. A wooden template is laid

over the channels to guide placement of the studs on 8-in. centers. The studs are Nelson 5/16 x 11/16 Setlok studs applied with a Nelson Stud Welder hooked up to a standard welding machine.

The channels are nested to protect the projecting studs during field shipment. In the field, standard 27½-in. galvanized sheets are installed by laying them over the studs and tapping with a rubber

(Continued on page 116)

PLASTIC LINERS STOP LEAKAGE IN TEMPORARY CANAL

Polyethelene sheets were used to line this temporary ditch dozed out to carry off pump discharge water from extensive dewatering project at Sacramento ship channel excavation. Six-mil thickness sheets are held in place by sand, and leakage is negligible. (For details of project see article beginning on page 37.)

ORMS GIVE LOWEST
N ELEVATED HIGHWAY

In carefully planned sequence of operations, prefabricated shoring towers were positioned, screw-jacked to required height. Deck form sections were then crane lifted into position.

High density overlaid plywood concrete form panels give over 50 re-uses, cost less than .007¢ per sq. ft. of form per pour.

"THE EXTRA RE-USES we got from overlaid plywood more than offset its greater initial cost," says George Krenkel, project manager for Johnson, Drake & Piper, Inc., contractors for this 1.55-mile long 8-lane elevated highway.

"Even after giving upwards of 50 re-uses, a large percentage of the panels were salvaged for additional use on other jobs," Mr. Krenkel reports. "Besides being more economical in terms of cost per use, overlaid plywood creates much smoother concrete and is easier to strip and clean."

On the job over 50,000 sq. ft. of 5/8" overlaid plywood was used for deck slabs, columns and guard rails. Prebuilt 8' x 20' and 8' x 22' deck forms were supported by ingenious prefabricated shoring towers which were leap-frogged as pouring progressed. Screw jacks were used to raise towers to required heights. Stripping was accomplished simply by lowering jacks until the forms came free.

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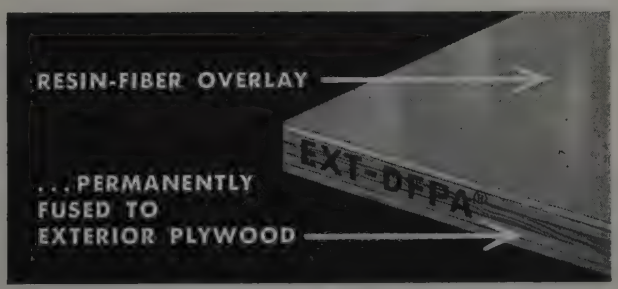
HIGH DENSITY OVERLAID FIR PLYWOOD is a premium concrete form panel intended for jobs that require ultra-smooth concrete surfaces and/or many re-uses (up to 200 re-uses may be obtained with properly designed and constructed forms). Base panel is EXT-DFPA® Exterior plywood.

Standard plywood concrete form grades are: *Interior PlyForm®* made with water-resistant glue for multiple (10-12) re-uses; *Exterior Plyform®* (waterproof glue) for 25 or more re-uses.



. . . for more details, circle No. 55 on Reader Service Postcard

SHOP STUDS

(Continued from page 112)

mallet at every point where the stud backs up the sheet.

The stud penetrates the sheet at the high point of the corrugation or every 8 in. The stud shoulder is high enough, 11/16 in. to prevent deformation of the sheet when it is capped. The aluminum self-sealing cap is applied to the 3/16 x ⅜ stud extension which has annular grooves. It is held in a special tool which swedges the cap

onto the stud when it is struck with a hammer.

George Pinard, manager of San Jose Steel Co.'s prefabricated steel building division, cites the advantages of this system over using a high speed drill to tap through the sheets and purlins and then fasten with a self-tapping screw. In the first place, drilling the thickness of a steel channel would be time consuming as well as requiring replacement of a countless number of drills. Sidewall installation would also be extremely difficult since the drill operator would need a good deal of body pressure to push the drill through the steel channel. Pinard is even using this system in prefabricated designs, using Z shaped purlins and girts made from 14-gage sheet.

The recently completed hangar is the first one designed for airport use by the prefabricated steel building division of San Jose Steel. It was built for the Wright Brothers at San Jose airport and will house light aircraft, offices and shops.

The 100 x 180-ft. building is designed with 120 ft. of clear span in the center, and bays spanning 30 ft. on either side of the long span which will house offices and shops.

Erected over a slab floor, the central bays consist of 16WF40 columns, connecting with a tapered plate girder which joins to an 18WF50 to the center line of the apex. Outside columns are composed of 6H20s. The tapered girders are connected to the wide flange sections with splice plates and ⅞-in. high strength bolts. All other field connections are with ¾-in. machine bolts.

Steel products used in the hangar design, including the Bethcon sheets, structurals and high strength bolts, were supplied through Bethlehem Pacific Coast Steel Corporation.

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN WELDER/POWER PLANTS

FIREBALL AMPERAGE RANGES	
METALLIC	INERT GAS
35-100 AC	35-75 AC
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110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

All models offered with skids or trailers. Complete specifications and prices sent promptly.

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miller WELDERS

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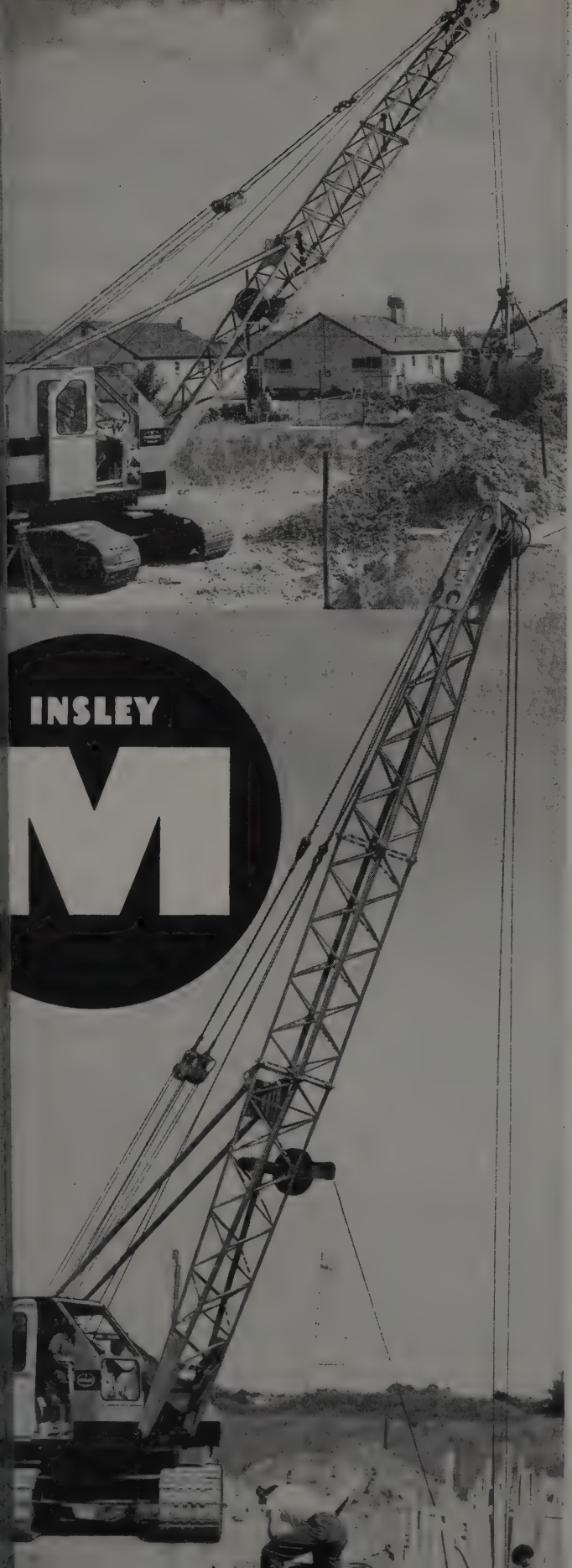
Maintenance Conference

The eighth annual Motor Vehicle Maintenance Conference will open March 23 for three days at the University of Washington in Seattle. Every aspect of truck maintenance will be covered, with special attention given to off-highway vehicles. Enrollment applications may be obtained from Fred H. Rhodes, Civil Engineering Dept., U. of Washington, Seattle 5, Wash. The $26 enrollment fee includes breakfast the first day, three luncheons and three dinners.



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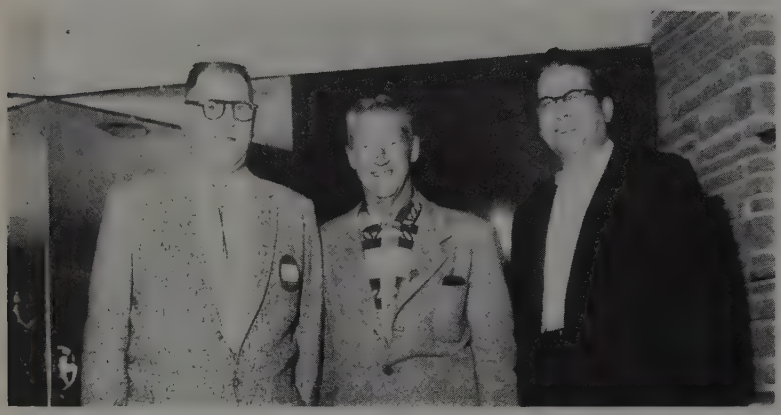
MASTER MECHANIC



NEW AND IMPROVED methods of paving was the subject of discussion at a recent meeting of the Los Angeles Chapter of the Equipment Maintenance Supervisors Association. Shown above are (l. to r.) *Jim Bonner*, Morrison-Knudsen Co., Inc., *Sam Weatherbie*, program chairman, and *Bob Kuhnmuench*, Chain Belt Co.

Truck diesel repair tips

BREAKAGE of rings usually is due to one of four common causes: 1. Ether in starting or gasoline in fuel; 2. Failure to remove liner ridge at rebuild; 3. Excessive groove clearance, or 4. Improper gap clearance.

Wrong rings are frequently installed at overhaul, resulting in blow-by, high oil consumption, loss of power, scoring, etc. Cummins present recommendation for NH Series engines is BM38700 ring set which includes a steel chrome plated top ring. The BM35080 ring set with a chrome plated cast iron top ring may be used on the NH 210 hp. or lower hp. 5⅛-in. bore engines. If oil consumption is a problem, use the BM44110 ring set which includes a chrome plated steel top ring and an expander under the oil ring. The new HF 180 hp. engine uses NH 4-valve heads and NH camshaft and rotates at 2,100 rpm., but has a 4⅞-in. bore and will, therefore, not use either of the above ring sets.

Crankshaft

Most crankshaft failures are due to the operator freewheeling down a grade and suddenly letting out the clutch.

Engine vibration and crankshaft failure may be due to not servicing the vibration dampener, or damage to it. Thin walls of the vibration dampener can be crushed by a careless mechanic with a wrench or pinch bar, and the dampener will not function. Older vibration dampeners were filled with viscous fluid which may have leaked out.

If a crank fails soon after a transmission repair, be sure the crank has adequate end play. A generator, pump or other machine bolted directly to the crankshaft flange may cause bearing failure or a broken crank due to harmonic vibration or improper alignment.

Main and rod bearings

Main and rod bearing failures are frequently blamed on the lubricant, which is almost never responsible for bearing failure. Some rod bearing failures have been observed in exchange rods. The distance from center of crank pin to piston pin in NH Series is generally maintained at 12 in., but often too much metal is removed from the cap, allowing the lower shell to protrude too high. The crush causes mating edges to squeeze together, thereby wiping oil from the crank. Overheating and failure occurs. The distance from the machined lower cap surface to the machined rod bolt surface is 2.250 in., plus or minus .007 in. If this distance is machined to 2.225 in. or less, the rod should be replaced.

Also, some bronze piston pin bushings on reconditioned rods have been noted to be bored off-center to get 12 in. center line distance, and an early failure may result.

Some other frequent causes of bearing failure are: 1. Clogged screen in the sump; 2. Too little oil in the crankcase; 3. Oil operated too long between draining; 4. Mechanical malfunction of the engine, such as stuck or broken rings, etc.; 5. Oil contaminated with extraneous material; 6. Too high crankcase temperature.

A section out of the fan belt may sound like a burned out bearing.

Improper transmission repair may put thrust on crank and wipe out rear main.

Factory rejected bearings frequently find their way into competitive parts stocks and premature failure experienced.

Crankcase oil

Always inspect lube oil filter surface for extraneous material, particularly metal flakes. Metal flakes are an indication of impending bearing failure, and it is desirable to dismantle bearings before the complete failure occurs and possible damage to the crankshaft.

Bearing failures have been caused by the use of competitive filters that offer a different resistance to oil flow than the filter supplied by engine manufacturer. Low oil pressure may be noted, or the oil pressure may be normal and the bearing starved for oil.

Crankcase oil temperature should be 180 deg. F. for best operation, minimum wear, and long oil life. Oil temperatures of over 225 deg. are to be avoided for bearing protection. Main bearing temperatures run 50 deg. to 75 deg. above the crankcase temperature, and rod bearing temperatures some 50 deg. to 75 deg. above main bearing temperature. It is, therefore, important to keep crankcase oil temperature below 225 deg. F.

The oil cooler really acts more as an oil heater, since heat more frequently flows from the water to the oil to build up crankcase temperature. Only on heavy loads maintained for prolonged periods does heat flow from the oil to the water. Oil coolers should be dismantled and thoroughly cleaned every 50,000 to 75,000 mi. depending on load and other factors.

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Manuals on vibratory compactors

The last 5 years have seen a tremendous increase in the number and kinds of equipment for compacting earth and bituminous pavements by surface vibration. Here is a roundup of the latest literature available without charge from the manufacturers.

Tampo

A 4-page 2-color folder is available from the **Tampo Manufacturing Co.**, describing its line of tow type and self-propelled vibratory rollers. Model VC-40 has variable vibration frequency controlled by throttle setting from operator seat. Gross weight is 7,000 lb. but compacting power ranges up to 40 tons. The model VP-4 weighs 6,500 lb. and has up to 20 tons of self-propelled compacting power. The roller can be operated without vibration as a 3¼-ton finishing roller. The Tampo machines have a floating frame construction which prevents vibration to the engine, operator or towing tractor.

The folder describing these machines is illustrated and contains full specifications and lists of optional equipment.

. . . Circle No. 159

Galion

A glossary of construction terms, a history of the compaction of soils, and an explanation of vibratory compaction are a few of the features given in an interesting manual published by **Galion Iron Works & Mfg. Co.** The manual explains with a combination of pictures and drawings the differences between compaction by static weight, vibration and a combination of the two. Folders are also available which describe electric vibratory compactors which can be mounted behind the firm's standard 3-wheel rollers or motor graders. The folders include complete specifications.

. . . Circle No. 160

Iowa

A 16-page booklet available from the **Iowa Manufacturing Co.** contains full details, not only on the company's line of vibratory compactors but on the theory and principles of vibratory compaction. Particularly valuable is a table showing the estimated cost of operating the company's Cedarapids compactor and another table which shows the estimated performance of the machine on either pervious or impervious soils.

The Cedarapids compactor combines vibration with a heavy, rubber-tired roller, which results in densities between 3 and 10% over conventional methods. The manual includes detailed analyses of specific jobs where the machine was used including tabulated summaries of the soils compaction tests. The last page of the manual is a questionnaire which can be mailed to the company when assistance is desired in planning to meet the compaction specifications on any project.

. . . Circle No. 161

Austin-Western

A series of folders and articles thoroughly describes the vibratory compactor manufactured by **Austin-Western**, Division of Baldwin-Lima-Hamilton Corp. In addition to specifications, photographs, and drawings, the literature includes detailed case histories of several

jobs where the equipment was used. The machine, shown in the photograph, can be used as both a vibratory compactor and a static roller for stone, gravel, and soil sub-bases. The vibratory unit consists of a 3-shoe vibrator assembly, an independent hydraulic system and a separate 61-hp. gasoline engine. It can be used only with the Austin-Western Model 102, 10-12 ton variable weight roller. The literature available from this company also describes a vibratory attachment for use in highway widening projects. Also available is a repair parts catalog with operating and service instructions for the vibratory attachments.

. . . Circle No. 162

International

A new attachment is available for owners of wheel tractors, the Vibro-Tamper made by the **International Vibration Co.** The photograph shows the unit mounted on a front-end loading attachment,

but it can also be mounted behind the tractor. Literature available from the manufacturer includes a breakdown of investment and operational costs per hour on the machine. A number of case histories from specific construction projects are also included. Full specifications are given.

. . . Circle No. 163

Browning

Variable amplitude which makes possible a wide range of vibrating force is one of the important features of the model V-60 vibrating roller manufactured by **Browning Mfg. Co.**, and described in a new bulletin. The machine is 80 in. wide and weighs 3,660 lb. The bulletin includes full specifications.

. . . Circle No. 164

Rolcor

A line of vibratory rollers is described in literature available from **Rosco Mfg. Co.**, Rolcor Division. The Vibrapac is self-propelled, weighs a net of 2,400 lb., loaded 3,650 lb., and has as its source of vibration two 36-in. shafts weighted eccentrically and driven by an engine through separate clutch. They rotate at 1,340 rpm. at 2,500-rpm. engine speed. The Hydrapac is a tractor-drawn machine which is operated by the rear-end power take

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Records in hundreds of pits, quarries, construction jobs, prove that Diamond Jaw Crusher is a top performer. Its ability to take rough punishment and to produce greater tonnage per square foot of jaw area make it a profitable investment. If it's your responsibility to produce continuous tonnages and see that aggregate production costs are kept down, you'll want complete details on Diamond Jaw Crushers. Write for Catalog D-116 . . . no obligation.

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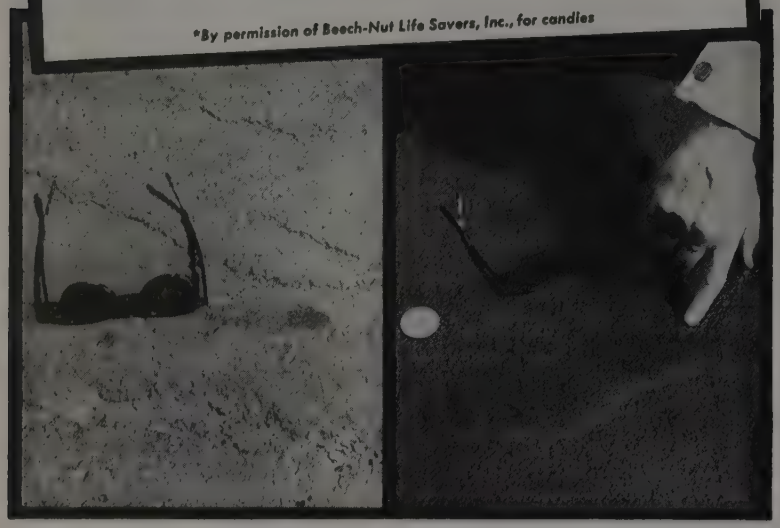


These photos tell the "before and after" story of Bitumuls Slurry Sealing. Notice in the photo, right, how the large crack in foreground has been filled and sealed.

The City of Rochester, New York, was faced with a situation common to many communities today. The Problem: keep all streets maintained in serviceable condition; yet do it at a cost that will permit the complete replacement (out of Maintenance Department funds) of many miles of streets that are over-aged. The Answer: Bitumuls Slurry Sealing . . . a "life saving" technique for keeping distressed pavements in good serviceable condition!

The Bitumuls® emulsified asphalt slurry provided a holding action against wear and weather at extremely low cost, with important savings over former methods. Very-costly winter patching of chuck-holes was completely eliminated. As a result, expenditures for repair and control of winter damage were **reduced by almost seventy percent!** And savings were diverted to reconstruction of streets that were beyond maintenance or repair.

Bitumuls Slurry Sealing should be regarded as only a **temporary treatment** for distressed pavements. Adequate repairs or pavement-replacement must eventually be made. Yet, it is truly a "Life Saver", since it seals, protects and preserves any basically sound pavement against further deterioration pending major repairs or complete replacement.

Your community, too, can benefit from the use of Bitumuls Slurry Seals. For further information on Slurry Sealing . . . or for the complete Bitumuls/Life Saver story . . . call our nearest office.

American Bitumuls & Asphalt Company

320 Market St., San Francisco 20, Calif.

Perth Amboy, N.J.		Baltimore 3, Md.
Cincinnati 38, Ohio	St. Louis 17, Mo.	Oakland 1, Calif.
Atlanta 8, Ga.	Tucson, Ariz.	Inglewood, Calif.
Mobile, Ala.	Portland 8, Ore.	San Juan 23, P. R.

. . . *for more details, circle No. 61 on Reader Service Postcard*

off shaft of any tractor, thereby eliminating the need for a separate gasoline engine. The rotation of the PTO is transferred to the vibrating mechanism of the roller through a special hydraulic transmission. An independent 5-hp. engine is available as optional equipment. Both their Vibrapac and Hydrapac are described in the folders by photographs, text and specifications.

. . . *Circle No. 165*

ABG

Vibratory compaction equipment manufactured by the German firm of ABG is available from the **Combined Agencies Corp., Importers.** The German firm makes a complete line of vibratory equipment from light-weight sled-type rigs operated by a walking man, to self-propelled steel wheel rollers weighing close to 4 tons. The heavy rig, Model SW, has a frequency of vibration variable from 2,400 to 3,400 rpm. The engine is an 18-hp. air-cooled Deutz-diesel. In addition to informational folders describing the products, the firm also has available several articles discussing the principles of vibratory compaction and how it can best be done for various types of soil. The Model SW is shown in the photograph.

. . . *Circle No. 166*

Essick

Reprints of magazine articles describing projects on which Essick equipment was used, as well as 2-color folders describing the machines, are available from the **Essick Mfg. Co.** The company manufactures many models of vibratory compaction equipment including a 28-in. wide, 900-lb. model and a 72-in. wide, 8,100-lb. model. The small models are operated by a man on foot while the larger units are pulled by a tractor. Photographs show how a tractor can pull

. . . *for more details, adv. opp. pg. 125, circle No. 62 on Reader Service Postcard*

OLIVER

VERSATILE OLIVER 770—a high-income earner at any job you give it throughout its vast work range. 50-plus h.p. gas or diesel. Mounts ¾-yd. loader and big choice of other attachments. Also, "Reverse-O-Torc" transmission with torque converter and clutch-free reversing for high-speed loading.

BIGGEST PROFIT MULTIPLIERS ON WHEELS

Versatility! That's the big thing about these new Olivers. They have the most highly developed, richest rewarding versatility yet achieved. They're the *surest thing* on wheels for stepping up your job speed, job range and job earnings!

In every department you'll see important new Oliver advancements—in engine efficiency... work-hustling traction... easy, instant control response... fast-action work attachments for any and all your jobs!

See the *big* jump ahead in tractor performance and earning power! Check the all-new Oliver fleet at your Oliver distributor's.

OLIVER **THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

VERSATILE OLIVER 550—has handy, compact size, yet handles surprising range of digging, loading, lifting, clearing, materials-handling assignments. Gas or diesel, independent PTO, oversized hydraulic system.

VERSATILE OLIVER 880—ablest of its class with ½-yd. trencher and 1-yd. loader. Clean, modern design—high-torque, 64 h.p. gas or 61 h.p. diesel...six forward speeds...rapid travel... simplified controls. Big-production loader has torque converter and finger-tip reversing.

VERSATILE OLIVER 900's—highest combination of power and performance. Three models for the work-matching power you want—Oliver 70 h.p. gas or diesel engine... GM 88 h.p. diesel and torque converter.

for . . .
CONTRACTORS
ENGINEERS
OPERATORS
in the field

the **NEW**
telescoping
WIDE-WIDE
MOBILE HOME

← 15 feet Wide →

15 ft. Wide at the Site . . . *yet only*
8 ft. Wide on the Highway

TRAILORAMA

Here is the ideal mobile home that gives you twice the room—that eliminates the cramped quarters of old, conventional units. A simple flick of a switch and TRAILORAMA is automatically converted from a legal 8-foot-wide hauling size to a large, roomy, 15-foot-wide home or office. Fully insulated to withstand any climate, TRAILORAMA is ruggedly built to exacting specifications yet detailed both inside and out to suit the most discriminating owner or buyer.

AS A HOME
Custom designed to specifications
450 to 720 sq. ft.
1 - 3 bedrooms
Completely furnished
Wall - to - wall carpeting
Full bath with 60 in. tub
Optional features include:
Automatic washer and dryer
Garbage disposal
Air conditioning
And many others

AS AN OFFICE
Custom designed to specifications
450 to 720 sq. ft.
Large entrance office
Two entrances
Available equipment includes:
Air conditioning
Special lighting
Combination office & living quarters
Electric refrigeration
Electric or gas ranges
And other features

GO CAL Inc.

1832 El Camino Real, Mountain View, Calif.

For further information, write or call collect

YOrkshire 8-1624

or fill in reader service card ➧

. . . for more details, circle No. 63 on Reader Service Postcard

as many as 3 vibratory rollers at once. The literature available includes thorough specifications on all models. . . . *Circle No. 167*

Maginniss

Folders are available describing the 250-lb. vibratory compactor manufactured by the **Maginniss Power Tool Co.** The self-propelled rig, controlled by a walking man, travels up to 50 ft. per minute and has instantly variable vibrating frequency to suit the conditions. The literature includes condensed specifications. . . . *Circle No. 168*

Bros

An excellent 54-page manual entitled "Modern Compaction Methods and Equipment" is available from the Road Machinery Division of **Bros, Inc.** The manual contains information which has appeared in recent years in the technical press plus new information developed by engineers on the Bros staff. In addition to a chapter on vibratory compaction, there is a glossary of terms used in compaction work as well as a brief summary of major soil classifications. The firm also has available folders describing its vibratory rollers. The model VP-9 has a vibration varying from 1,100 rpm. to 1,300 rpm., with an amplitude of ¼ in. Total weight is 9,040 lb. . . . *Circle No. 169*

Jay

Now available from the **Jay Co.** is a 4-page, 3-color folder describing the company's line of portable vibratory compactors. . . . *Circle No. 170*

Vibro-Plus

Five 2-color bulletins describing vibratory compaction machines varying in weight from 242 lb. to 3½ tons are available from **Vibro-Plus Products, Inc.** The two small models are sled-type and are operated by a walking man. The two largest are pulled by a tractor, while the intermediate size is a self-propelled compactor weighing 1½ tons which can do the work of a 10-ton static roller. Each bulletin contains dimensional specifications, photographs and drawings. . . . *Circle No. 171*

NEW LITERATURE

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

Bulletin on asphalt plant burner

A bulletin describing a low pressure, air atomizing burner is available from **Standard Steel Corp.** The burners assure a long, uninterrupted, high velocity flame producing a penetration and equalization of heat in the dryers not usually possible with a low-pressure burner. The bulletin points out that the burner consumes heavy fuel oil, gas, or both and is furnished completely assembled on a common base. An air-atomizing igniter burner is included for faster, start-up. Specifications are included.

. . . Circle No. 177

Automatic materials hoist

A bulletin is available for the Asking which describes a completely automatic heavy-duty hoistower manufactured by the **Buck Equipment Corp.** The hoist is powered by 25-hp. gasoline engine and is independent of any outside source for power. The hoist can be controlled from any floor or height by simply pressing a button. Preset by adjusting the limit switch, the machine will raise and lower endlessly and accurately with no supervision other than its original adjustment. Safety cut-offs assure that no miscalculation can cause it to over run the limits of the tower. The bulletin includes full specifications. The hoist capacity of the tower is 2,500 lb. and can be used in the 150-ft. range. It is self-erecting by one man in minutes to a 45-ft. working height.

. . . Circle No. 178

Erecting a Truscon building

An 8-page brochure provides a detailed picture story on how to quickly erect a new Standard Steel building manufactured by the Truscon Division of **Republic Steel.** The procedure is broken down into 11 steps and shows not only the erection sequence but the tools and equipment required to put up the building. The brochure explains how the pre-fabricated sections provide for a choice of many sizes and describes the Standard Building as a "package" with all siding, roofing, windows, doors and hardware included.

. . . Circle No. 179

Soils testing report

Soils engineering, its purpose and its scope, is the subject of a 16-page report issued by **Mobile Drilling, Inc.** Entitled "Men Build Highways—Drills Make it Possible", the report explains how this relatively new science is providing road building contractors and state highway departments with much valuable soil information. The reader is taken step by step through a typical sub-surface exploration project including drilling, sampling, and testing. How the soil data thus obtained are used by the contractor as a guide to sound bidding and job planning is covered in detail. The article is illustrated with charts and graphs as well as on-the-job photos.

Construction specialties catalog

A new catalog covering their expanded line has been issued by the **Dayton Sure Grip & Shore Co.** A feature of the catalog is the simplified, compact way in which the various construction specialties are covered. Information on products and applications have been condensed to simplify ordering.

. . . Circle No. 180

Concreting airport pavements

A 20-page publication just released discusses problems encountered in concreting of airport pavements and structures. Job story reports cover nine projects. Text and photographs illustrate the importance of quality control and workmanship in meeting increasingly higher requirements now specified for this type of work.

The discussion includes the problem of pavement cracking under hot weather placing conditions, 900-psi. flexural strength concrete for special test center, and the concreting of banked turnoffs for increased runway capacity. The stories cite the role played by Pozzolith in high quality concrete. The booklet is available from **The Master Builders Co.**

. . . Circle No. 181

Bulletin on base paver attachment

Features and specifications for a new base paver attachment for individual tractors are given in a new bulletin available from **Blaw-Knox.** The paver features an oscillating screed, simple depth, width and crown adjustments, and an easy loading hopper that permits spreading stone, slag, gravel, and soil for pugmill mix aggregates over 400 tons per hour.

. . . Circle No. 182

Snap-on-and-off backhoe

A booklet has been issued by the Badger Division of the **Warner & Swasey Co.,** describing its snap-on-and-off Hopto backhoe. Photographs show how the attachment can be installed in 30 sec. to either crawler or rubber tired tractors. Other photographs show the machine at work on a variety of jobs. Full specifications and working ranges are given.

. . . Circle No. 183

Brochure on Pioneer paver

A colorful 16-page brochure describing the 1959 model Vibromatic bituminous paver has been announced by **Pioneer Engineering,** Division of Poor & Company, Inc. Over two dozen large photos, with easy-to-read captions, show new design improvements and clearly illustrate the features contributing to ease of operation and reduced maintenance. Special attention is given to such improvements as air-operated clutches, simplified controls, conveyor design and crawler pads. Complete specifications and data are included.

. . . Circle No. 184

Blasting Record Book

Publication of the first uniform record book for blasting operations in construction has been announced by the **Associated General Contractors of America.** The 50-page book-

How 2 cu. yd. Trojan handles all loading operations for Midland, Texas Plant.

Replacing another tractor shovel, this Trojan 154 gives a production boost to the ready-mix plant of West Texas Concrete Products, Inc. The precision control, fast travel speed and high capacity allow it to keep the batcher loaded and still handle truck loading, stockpile maintenance and other chores around the plant.

Trojan 154 digs in, moves material and charges batcher on a fast, continuous cycle.

Your TROJAN distributor can help you with the many advantages of YALE Financing plans, the most complete ever offered to equipment buyers . . . TIME PAYMENTS, LEASING PLANS (with or without OPTION TO PURCHASE) . . . exactly what you need to finance your new TROJAN machines.

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

TROJAN 154 BETTERS RATED CAPACITY—PROVES "INDISPENSABLE" IN READY-MIX PLANT OPERATION

High capacity and precision control were the features that sold West Texas Concrete Products, Inc. on the Trojan 154. They needed a fast operating machine with the ability to dump exact amounts of material into the batcher. This was no problem for the Trojan 154. . . . But they required a machine with a 2½ cu. yd. capacity. A trial of the 2 cu. yd. model 154 proved that the Trojan could better its rated capacity by ½ yd. load after load, day after day, and still maintain work cycles fast enough to allow it to handle other jobs around the plant area. "The Trojan 154 is a fast loading, fast travelling machine." says Mr. John Marlow, Plant Superintendent of the Midland, Texas Plant. "Its part in boosting the speed of our operation has meant considerable savings for us."

A loading operation for the Trojan tractor shovel involves carrying 6,000 lbs. of rock, 8,000 lbs. of regular sand and one load of fine sand — dumping the correct amounts into the batcher and returning the surplus to the stockpile. The batcher, in turn, dumps the mixture into the ready-mix truck. The fast loading cycles of the Trojan 154 help to complete this entire operation in six minutes.

TROJAN DIVISION, THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

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

YOUR TROJAN DISTRIBUTORS FOR SALES, PARTS AND SERVICE

INLAND DIESEL & MACHINERY CO.
Spokane, Washington

COOK BROS. TRUCK & EQUIPMENT CO.
Oakland, California

GARLINGHOUSE, FREMON & COMPANY
Los Angeles, California
BRANCH
San Diego

INTERMOUNTAIN EQUIPMENT CO.
Pocatello, Idaho

INLAND SERVICE & SUPPLY CORP.
Las Vegas, Nevada

SIERRA MACHINERY COMPANY, INC.
Reno, Nevada

WESTERN MACHINERY COMPANY
Salt Lake City, Utah

SUPERIOR EQUIPMENT COMPANY
Phoenix, Arizona
BRANCH
Tucson

NORMONT EQUIPMENT COMPANY
Great Falls, Montana

TUDOR EQUIPMENT COMPANY
Denver, Colorado

CONTRACTORS' EQUIPMENT & SUPPLY COMPANY
Albuquerque, New Mexico

. . . for more details, circle No. 67

let serves as a permanent record of each blasting operation. In the event of claims resulting from blasts, the contractor can use the log as a reference in connection with any seismographic records that may be available. There are spaces for such information as: type of material blasted, depth of holes, type and quantity of explosives, number and type of delays used, weather conditions, geographic location, and time. Copies of the blasting log can be obtained by writing to the national headquarters of the AGC at 1957 E Street, N. W. Washington 6, D. C. They are 20 cents for each copy, $2.25 per dozen and $15.00 per hundred.

. . . Circle No. 185

Folder on graders and rollers

A folder on the complete line of motor graders and road rollers has been published by **Huber-Warco Co.** The folder outlines the features of the nine motor grader models ranging from 75 to 195 hp., tandem and 3-wheel rollers, and the versatile M-52 Maintainer that performs nine maintenance jobs.

. . . Circle No. 186

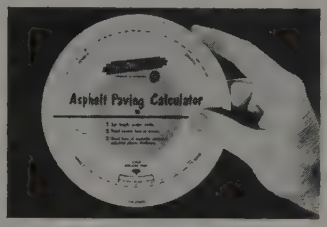
Cedarapids paver manual

A 20-page 2-color manual now available describes in detail the new Cedarapids bituminous paver. The manual is fully illustrated with photographs, cutaways, exploded views, and keyed drawings. The text is factual and tells its story in a straightforward manner. The paver's many features are clearly described. The manual states that the most important feature of the paver is the principle of using an electric vibrating screed which irons the bituminous material to a uniform high density mat. This permits higher paving speeds since the screed reduces the chance of tearing the mat or of causing voids. The paver has been tested at speeds of up to 202 ft. per min. The manual presents full dimensional and operational specifications on the tractor unit, paver unit, and optional equipment. **Iowa Mfg. Co.**

. . . Circle No. 187

Handy paving calculator

By circling the appropriate number you can receive a new circular asphalt calculator, designed to cut down figuring time on asphalt paving requirements. The pocket-size calculator simplifies calcula-



tions of square footage and the number of tons of paving materials needed. It is large enough (5¾ in. in diameter) to give wide coverage and good accuracy.

The calculator was originated by E. J. Woodward, Jr., chief engineer of **Industrial Asphalt**, Beverly Hills, Calif.

. . . Circle No. 188

Sky Climber

A new brochure describes a device which makes it possible to safely and quickly raise and lower hanging scaffolds, Bosun's chairs, etc. Called "Sky Climber", it has a safe working load of 1,000 lb. and can be powered manually, electrically, or by air. There is no restriction on the length of wire to which the device is attached, and there is no build-up of wire on the drum. The 30-lb. hoist has a design which eliminates the possibility of wire cross-over or pile-up. The lifting capacity can be doubled by reeving the wire over a fair lead block, and securing back to the unit itself. The descriptive brochure is available from **Western Gear Corp.**

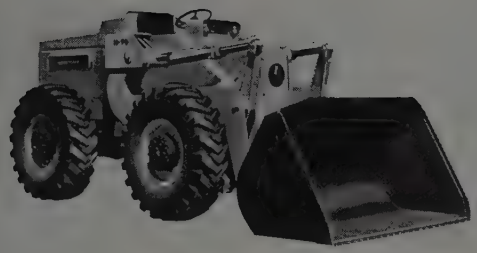
. . . Circle No. 189

Hydraulic cylinder catalog

A 12-page catalog describing 14 types of hydraulic cylinders, with over 350 strokes and diameters has been published by the **Turlock Iron & Machine Works.** The catalog contains details, dimensional and capacity specifications, and cutaway drawings of every model. The advantages of Turlock cylinders are explained and illustrated.

. . . Circle No. 190


H-90
PAYLOADER®



It COSTS LESS To BUY the BEST

NEW MODEL H-90

GIVES YOU MORE VALUE FOR YOUR MONEY...MORE CARRY CAPACITY...MORE PERFORMANCE...MORE DEPENDABILITY

When it comes to investing money in equipment which must earn money, you can't afford anything but the best. Thousands of owners have found this to be true of the famous HO "PAYLOADER"... thousands more will find it even more so in the new, improved Model H-90.

Full 9,000-lb. Carry Capacity

You can lift loads up to 15,000-lbs., but you can CARRY LOADS up to 9,000-lbs. which means you can use buckets ranging up to almost 4 cu. yds., depending on the weight of the material. Because the bucket tips back 44° at ground level, you can carry 9,000-lb. loads closer to the machine and lower with better balance, stability, speed and less spillage. All excess "dead weight" has been eliminated and through balanced design, the H-90 can carry more pounds in the bucket than comparable machines weighing as much as 3,000-lbs. more.

More Powerful Breakout

A breakout force of 21,000-lbs., almost the entire weight of the machine, can be applied to the cutting edge of the bucket through unique pry-out pads. This enables you to get full bucket loads in the toughest digging.

Choice of Four Engines

The new H-90 gives you a choice of two gasoline engines and two diesel engines: either the 125 H.P. Hercules WXLC-3 or the 134 H.P. I-H U-450 in the gasoline, and the 122 H.P. Cummins JN-6-B1 or the 126 H.P. G.M.C. 4-71 in the diesel.

Extra Heavy-Duty Planetary Axles

Because tractor-shovels of this size and capacity are subjected to greater than average stresses and strains, the H-90 "PAYLOADER" planetary axles are special, extra heavy-duty type with power transfer differentials.

Full Protection for Long Life

The brakes of the front wheels are sealed to prevent scoring and glazing by foreign matter. Large oil-bath air filters and cartridge-type oil filter protect the engine. Two cartridge-type oil filters protect the hydraulic system oil and the transmission-torque converter oil.

Easy, Full-Power Operation

Power-shift transmission with three speeds forward and reverse, plus twin-cylinder power-steer and 4-wheel power brakes, assure fast operation with minimum operator effort... promote a high production rate the full shift.

More Attachments...More Uses

The widest choice of attachments are available, including these exclusive ones: Drott 4-in-1 bucket, Superior side-boom, Galion vibratory compactor, Ram black-top spreader... also blower, "V" and blade plows, angling back filler, scarifier, winch and others.

RANK G. HOUGH CO. 1-8-1
side Ave., Libertyville, Ill.
on new Model H-90 PAYLOADER

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HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

. . . for more details, circle No. 68 on Reader Service Postcard

NEW EQUIPMENT

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

New design for Trojan tractor shovel

Featuring a completely new functional design, Model 304 of the Trojan line of tractor shovels has been introduced by that division of **Yale & Towne Manufacturing Co.** The model was shown for the first time at the AED meeting in Chicago in January. The unit is rated at 3-yd. capacity, has a 4-wheel drive, and weighs 27,400 lb. It is engineered to handle all types of bulk materials and has a maximum lifting

capacity of 18,000 lb. The changes in functional design were made to afford maximum operating efficiency, excellent service accessibility, full circle visibility as well as maximum personal safety for the operator. The new Trojan has an instrument panel designed for convenience of the operator with gauges to indicate the functioning of the shovel at all times. An hour meter is standard equipment. The front bumper is an integral part of the frame to protect the shovel from bumping into a truck while dumping. Two new features have been introduced for the comfort of the operator, with shift levers placed within easy reach and a foam rubber bucket seat.

. . . Circle No. 193

A-C adds "No Greasing"

No greasing is required on the new type of positive seal truck wheels, front idlers, and rollers for the line of tractors of **Allis Chalmers.** These wheels are now

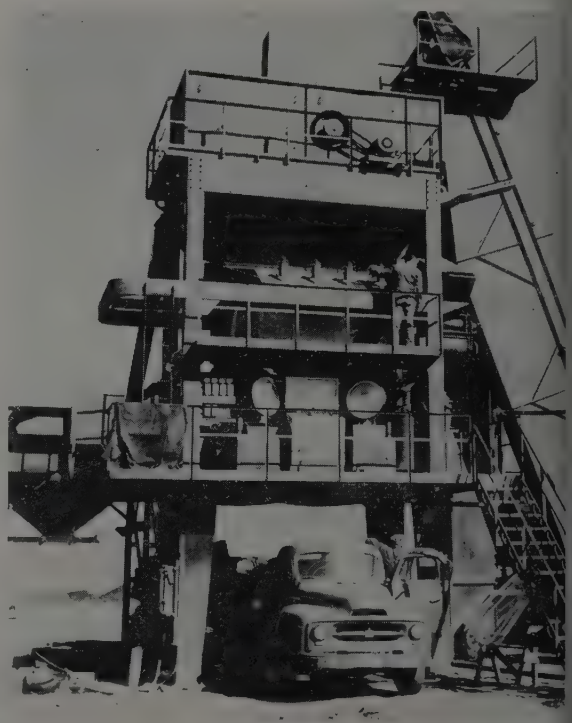
lubricated at time of assembly and require no further attention in the greasing of the tractor undercarriage regardless of mud or water and other adverse operating conditions.

Several of the many advantages for this new type of undercarriage permanent lubrication as reported by Allis Chalmers are: more production hours due to the elimination of greasing time; reduction in the amount of grease used and the special greasing equipment; extended life for these units as a result of the elimination of dirt and other materials which might enter during the greasing operation; and no further dependence on possible human error in lubrication.

. . . Circle No. 194

Bituminous plant line expanded

With a new 4,000 to 5,000-lb. plant, **Pioneer Engineering** has added to its line of AUTO-batch bituminous plants. Designated model 5-B it is identical to model 6-B announced earlier, but smaller. Among the outstanding features of the larger plant design which will be retained in 5-B are fully automatic controls with interlocking timer that provides greater output

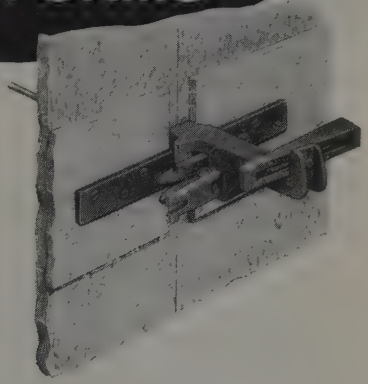


and quick acting twin discharge gates which open lengthwise. The drier-dust collector unit is rated up to 150 tph. The drier drum is 72 in. x 24 ft. long. The plant has a 4 x 12-ft. 3½-deck, vibrating screen mounted over a 4-compartment hot bin of 30 ton capacity. The plant is designed for operation by electric motors with all wiring done at the factory.

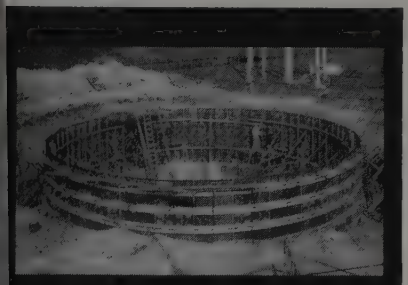
. . . Circle No. 195

SUPERIOR ALL-PLY Patented PANEL FORMS

READY FOR USE



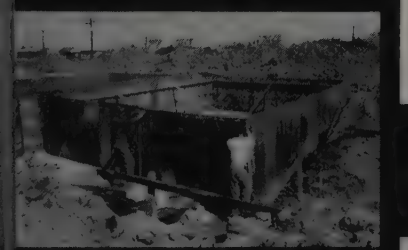
Only ONE Working Part, the Combination Clamp Aligns and Locks Form, Receives Tie Rod, Holds Liner, and Provides Shelf.



CIRCULAR forming job with All-Ply Panel Forms

BATTERED WALLS demonstrate All-Ply versatility

SIMPLICITY of All-Ply System speeds forming

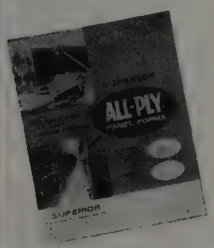


ORDINARY FOUNDATION JOB — Minimum alignment and bracing needed

SUPERIOR All-Ply Panels are used in all types of construction—for forming ordinary residential foundations to intricate high walls.

The great strength and rigidity of All-Ply Panel Forms are provided by exterior grade 1⅛" plywood, backed at strategic areas with ½" plywood. There are no cumbersome metal or wooden frames. Forms weigh less than 5 lbs. per sq. ft. and are easily handled by one man. A special sealer on all surfaces and edges assures long life. Standard sizes are 2 x 4, 2 x 6, and 2 x 8 ft.

The basis of All-Ply superiority and speed is ONE working part (the unique Combination Clamp) which does four separate jobs. A hammer is the *only* tool required for erection and stripping. The absence of frames permit easy stacking and transporting in minimum space. Long life and many re-uses are assured.



NOW READY!

New 8-Page Bulletin AP-59

FEATURES

- ✓ **ERECTS FAST — STRIPS FAST**
- ✓ **SIMPLICITY — any crew with minimum experience will be able to make fast progress.**
- ✓ **ONE WORKING PART — does 4 separate jobs.**
- ✓ **ONLY ONE TOOL NEEDED — a hammer.**
- ✓ **STRENGTH — 1⅛" plywood with ½" plywood backing has 8 times the strength of ¾" plywood.**

On your next forming job, discover the convenience and labor-saving possibilities of SUPERIOR ALL-PLYS . . . Our experienced staff is available to prepare suggested layouts, complete estimates and quotations . . . No obligation. *Call, phone, or write to the nearest address shown below. . . .*

SUPERIOR CONCRETE ACCESSORIES, INC.

2100 Williams St., San Leandro, Calif.
(Pacific Coast Office and Plant)

Main Office and Plant	*New York Office*	*Houston Office*
9301 King Street Franklin Park, Illinois *(A Suburb of Chicago)*	1775 Broadway New York 19 New York	4101 San Jacinto Houston 4 Texas

. . . for more details, circle No. 69 on Reader Service Postcard

FLYGT PUMPS SAVE OVER $55,000 ON DIFFICULT CALIFORNIA AIRPORT JOB

In the extension of runways for the Long Beach Municipal Airport, contractors built traffic underpasses for two main arteries in the City's roadway system. While under construction one underpass — Spring Street — presented some interesting and difficult de-watering problems. FLYGT SUBMERSIBLE ELECTRIC PUMPS proved a cost-saving solution to these problems.

The Contractor's first impulse was to install a well-point system for de-watering. Investigation revealed that such a system would have cost approxirately $60,000. Then the contractor observed a demonstration of FLYGT SUBMERSIBLE ELECTRIC PUMPS. A short time later, three FLYGT Model B-80L Pumps were put on the job. Total investment in FLYGT PUMPS: only $3,000.

With funds from a Municipal Bond issue, runways were extended to 10,000 feet over the two roads, so as to accommodate the largest jet transports. The Spring St. underpass was designed to be 1083' long, 64'4" wide, and 31' high. Excavation for the 31-foot height revealed a "joker." After the dirt moving had been completed, the contractor moved in a crane to excavate foundation areas for the structure. This work required earth removal 12-feet below the 22-foot ground water level. Water intrusion was immediate.

The job superintendent tells the story from that point in his own words: "We needed submersible pumps, each with a minimum 6000 gallon per hour capacity, that would reach a 35-foot head and move water at least 30-feet horizontally. Since the pumps would be working in both sand and clay, we had to have centrifugals which would move a heavy amount of solids. FLYGT met all those specifications, so we purchased three, 3" model B-80Ls. The nice thing about the electrically powered FLYGTS is that they can be put to work and ignored. They ran 24 hours a day on this job, and the only time we touched them was to lift and lower them with the water level, by a rope suspension. The FLYGTS easily managed to keep ahead of our water intrusion. We figure FLYGT PUMPS saved us over $55,000 on this one job, so we adopted the FLYGT Pumping Method."

Pump operators find FLYGT PUMPS tops in performance. Users particularly like their foolproof features, the advantage that they work in any position, and the fact that they do not clog up. They can take a lot of solid stuff like mud and sand without hurting them in any way. The rubberized pump casing and hard chrome alloy impellers combine to make FLYGT PUMPS rugged equipment.

FLYGT centrifugal pumps range in size from 1½"-85 GPM capacity to 8"-3,000 GPM capacity. Head capacities range up to 210 feet. Weights range from 80 to 1200 pounds.

CHECK THESE FLYGT FEATURES

- ✓ Electric
- ✓ Resistant to Salt Water
- ✓ Submersible
- ✓ Easy to Handle
- ✓ Low Maintenance Costs
- ✓ Will Pump High Amount of Solids
- ✓ Heavy Duty
- ✓ Operates Unattended
- ✓ Runs Dry Without Damage
- ✓ Quick and Easy to Service
- ✓ No Installation Costs
- ✓ No Priming Needed

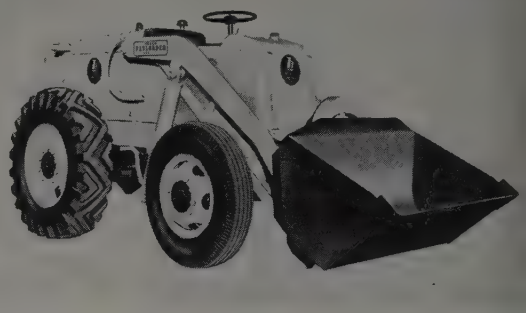
Stanco
MFGS. & SALES INC.

1666 Ninth St. (Corner of Olympic & Ninth)
Santa Monica, California

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

New model Payloader of Hough

With a carrying capacity of 3,000 lb. at average operating speeds, a new model HF Payloader has been introduced by the **Frank G. Hough Co.** The model is rear-wheel drive and front-wheel steer and is offered with bucket sizes from 2/3 to 2 cu. yd., depending on the material handled. Bucket action



provides a full 40-deg. tipback enabling the operator to obtain larger loads than with the old model. Also, the new model has a new torque converter. The Payloader is powered by a 6-cylinder Hercules gasoline engine developing 66.5 hp. Various attachments are available and optional equipment includes double cylinders for down pressure and steering booster attachments.

. . . Circle No. 196

Sherman digger for Ford tractors

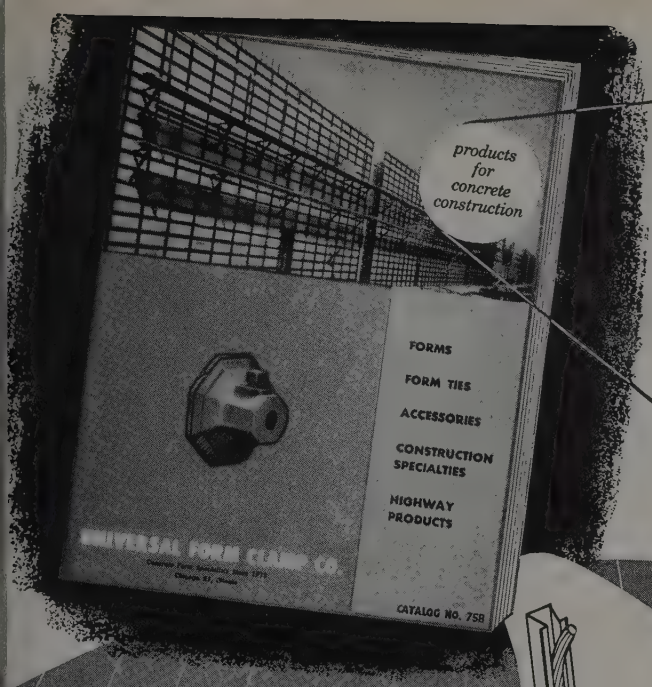
With a new feature of a fan-cooled heat exchanger serving the hydraulic system, **Sherman Products, Inc.,** announces its F-8 Panther Power Digger. Designated Model 1128, it is available for mounting on Ford

Industrial Tractors, Models 1821 and 1841. The cooler on the hydraulic system is an aid in hard digging high temperatures and in desert conditions. The Ford-Sherman matched unit is rugged and is intended to provide sustained digging action under difficult conditions. The heat exchanger has a fan powered by a 6-volt motor.

. . . Circle No. 19

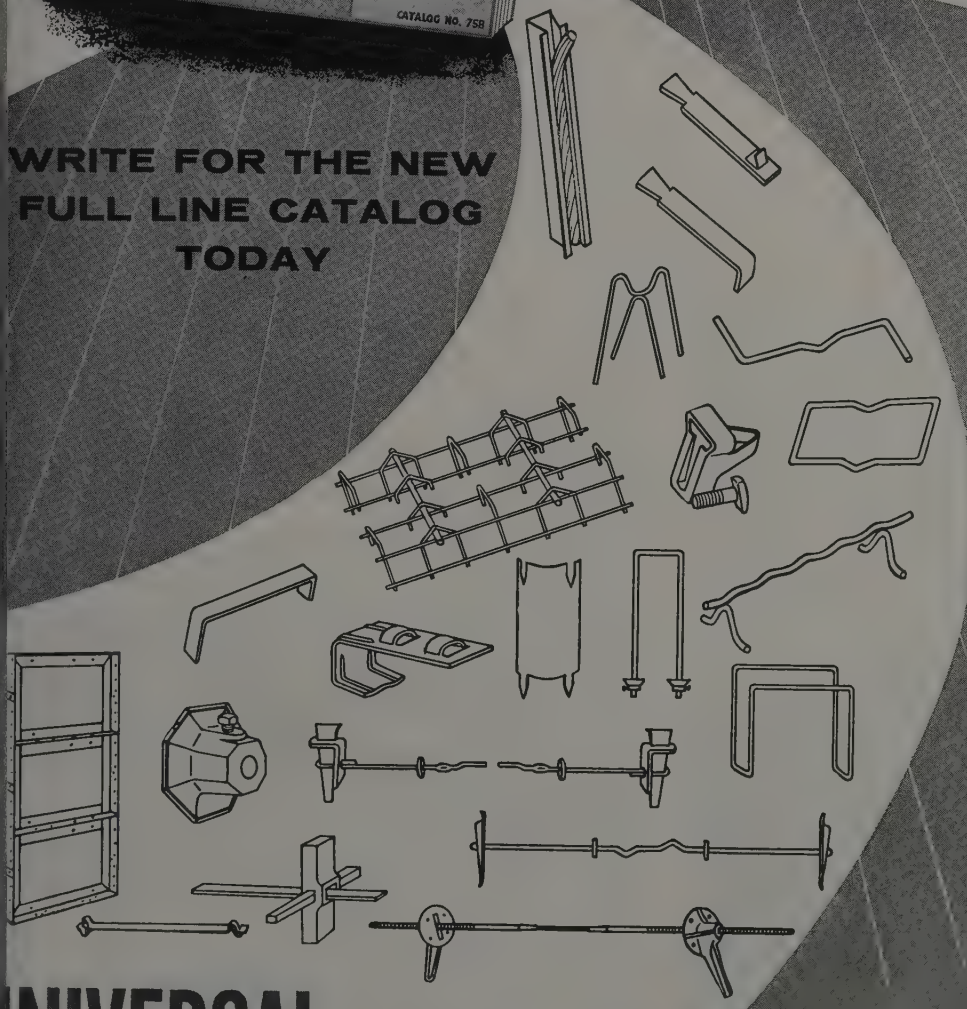
New Noble batching plants

Designed to meet requirements at locations far removed from permanent ready-mix installations, the **Noble Company** has developed a concrete batching plant to produce up to 60 cu. yd. per hour. The unit



products for concrete construction

WRITE FOR THE NEW FULL LINE CATALOG TODAY



FORM CLAMPS
SNAP TIES
TWISTYES
SPIROLOCS
BAND CLAMPS
BEAM CLAMPS
BAND IRON
SOFFIT SPACERS
CONE NUTS
INSERTS
ANCHOR SLOT
ANCHORS
CONSTRUCTION STAKES
REINFORCING BAR SUPPORTS
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SAN LEANDRO, CALIFORNIA

. . . for more details, circle No. 71 on Reader Service Postcard

is easily transported, readily assembled and has been designed especially for scattered and small scale concrete operations. It has storage capacity for 40 tons of aggregate in three sizes, and 950 cu. ft. of bulk

cement. This cement is batched automatically and the aggregates are batched manually. The current installation is supplying building construction within a radius of 20 mi., having been established in the vicinity of the Edwards Air Force Base. . . . *Circle No. 198*

Fiberglas curing blankets

Concrete can now be cured under felt-like blankets of fibrous glass using a new product just announced by **Owens-Corning Fiberglas Corp.** Referred to as Fiberglas Concrete Curing Blankets, this product carries out all the functions required for protecting concrete during the hours following placement. This includes not only the preserving of the moisture content but also a protection against freezing temperatures. These curing mats are flexible, resilient and the glass is bonded by a thermo-setting resin, and completely enclosed in a tough plastic film. The blankets

are designed for repeated use and rough service. Rips or tears can be easily repaired with plastic tape. The blankets are available in two thicknesses, the standard is 1 in. thick and the heavy-duty is 2-in. They have a width of 72 in. and a length of 50 ft.

. . . *Circle No. 199*

A water stop of plastic

An improved water stop with exceptional characteristics and resistance to acids and alkali water is announced by **W. R. Meadows, Inc.** Known as "Hydro-

R. E. HAZARD, SR., pioneer road builder of San Diego and founder of R. E. Hazard Contracting Company, Mission Valley Brick Company and Pioneer Truck Company, tells about

TWENTY YEARS OF QUALITY INSURANCE PROTECTION

"Industrial Indemnity has written our workmen's compensation insurance for more than twenty years. Over that period they have given us the highest quality insurance at the lowest possible net-cost. From the time when we were only a modest road building firm, through the years of our development, our comp rate has decreased steadily thanks to Industrial's advice on accident prevention techniques. We now depend on Industrial for all our insurance needs including comp, fire, liability, surety and inland marine coverages."

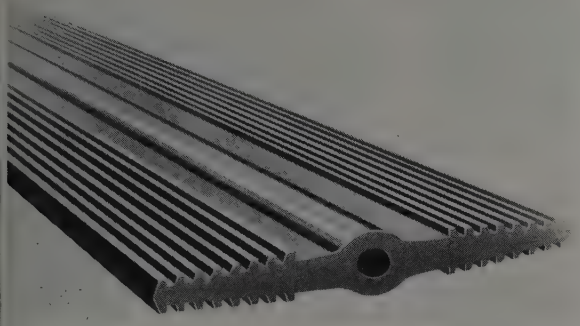
modern INDUSTRIAL INDEMNITY COMPANY insurance

FIRE · CASUALTY · BONDS
WORKMEN'S COMPENSATION
HOME OFFICE: SAN FRANCISCO

Industrial Indemnity writes exclusively through insurance agents and brokers.

. . . for more details, circle No. 72 on Reader Service Postcard

joint" it is extruded from a special compound of polyvinylchloride with other compounds to improve characteristics. Its cross section (see illustration) is an improved design to provide tenacious holding power and the center bulb has ability to withstand pressures



caused by movement in the concrete. The material has a wide temperature range and is light weight and easy to handle, supplied in 50-ft. coils. Field splicing is easy and consists merely of applying heat to the two ends until melting occurs and then pressing them together during cooling.

. . . Circle No. 200

For low-cost aggregate production

Operating in a closed system between the crusher and the screen, **Pioneer Engineering Co.**, a Division of Poor & Co., Inc., has a new "in-line" plant for low cost production of specification material. Model 8C consists of a mechanical feeder with loading hopper, a 3 x 6-ft., single deck screen, a jaw crusher, bucket wheel and 18-in. conveyors, all mounted on a portable rubber-tired chassis. The closed system operates through a revolving bucket wheel and return con-

veyor arrangement. This cycle of operation assures all of the material will be accurately sized crusher run. The oversize which is returned from the screen also fills voids between the crusher jaws and speeds its operations. The plant is designed for 1-man operation and all units are driven by the same power unit with production controlled from the operator's platform. Set-up and knock-down time are minimized. Weight of the standard plant is 22,000 lb. and power requirement is 40-60 hp.

. . . Circle No. 201

TECHKOTE

. . . products for Concrete

CONCRETE CURING COMPOUNDS
Clear — Pigmented — Black

•

TILT-UP COMPOUNDS
Wax Base — Non-Wax Base

•

LIFT SLAB COMPOUNDS
(YOUTZ-SLICK METHOD)
Wax Base — Non-Wax Base

•

SPRAY EQUIPMENT
Hand and Power Operated

JOINT SEALING COMPOUNDS
(COLD APPLIED IN 3 TYPES)
Ready Mixed Rubber Base Mastic,
Rubber Base Emulsion and 2 Component Mastic

•

SEALING COMPOUND APPLICATORS

AIR ENTRAINING AGENT

•

AIR ENTRAINING AGENT DISPENSERS

•

AIR METERS FOR CONCRETE ENGINEERING

- *Comply with all leading specifications*
- *Distributed and stocked in principal cities*

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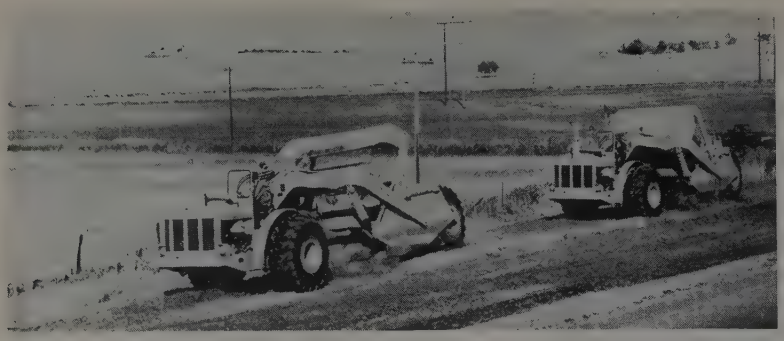


Medium sized motor scraper announced by Allis-Chalmers

Powered by a new Allis-Chalmers, 230-hp. diesel engine, a new medium sized motor scraper—the TS-260 — has been announced by **Allis-Chalmers Manufacturing Co.** The unit is rated at 12.5 cu. yd. struck and 17 cu. yd. heaped, and the 6-cylinder engine at 2,000 rpm. maintains a favorable ratio between horsepower and struck yardage of 18.4 to 1. The scraper is hydraulically operated from power applied by a gear type pump driven from the rear of the engine crank shaft. A patented heavy-duty torque proportioning differential controls power to the drive wheels assuring maximum pulling under adverse conditions. The scraper bowl is wide and low, being 116 in. wide and 53 in. high for fast easy loading. It also featured positive forced ejection of material with an apron that provides maximum spreading efficiency. The bottom of the scraper is formed with a drop center section which allows a greater portion of the earth to flow over the middle of the cutting edge increasing the boiling action which contributes to faster loading. Operator comfort and safety features include large capacity air brakes, easy to operate scraper controls and an adjustable foam rubber bucket seat. The steering system permits a 180-deg. turn in about 29 ft., making the TS-260 a unit particularly suited to operate where space is relatively limited.

. . . Circle No. 202

New engine on A-C Motor Grader

A new 4-cylinder gasoline engine providing 58 hp. at 1,650 rpm., has been provided on the Model D Motor Grader of **Allis-Chalmers.** This gives a top horsepower rating to graders in the 8,800-lb. classification.

. . . Circle No. 203

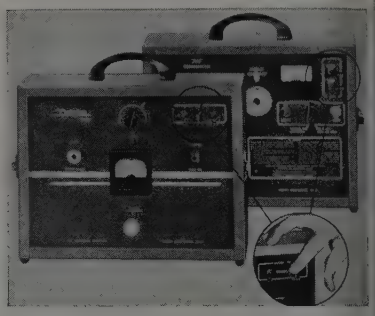
Joining fresh to cured concrete

A new compound composed of a combination of synthetic resins and called Uniweld is now available for joining fresh, wet concrete to cured concrete. The product has been announced by **Permagile Corp.** and forms a permanent joint and water and vapor barrier.

. . . Circle No. 204

More efficient pipe detector

Producing a signal of much sharper cutoff and the accurate determination of the exact number of pipes, a new pipe detector has been made available by **Computer-**



Measurements Corp. By improving the circuit design and construction of the instrument, greater accuracy reduces the possibility of cutting unknown pipes, since two closely paralleled pipes can now be detected.

. . . Circle No. 205

All purpose contractors pumps

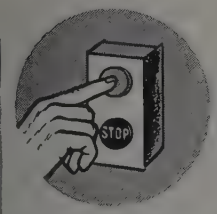
New in engine and pump design, **Homelite,** a division of Textron, Inc., has announced its "300" series, designed for dependable service and economical operation. The new 3-in. self-priming centrifugal pumps have capacities of 18,000 gph. The Model 8 engine is of rugged 2-cycle design with fewer moving parts. The ceramic-coated seal, which is standard equipment on these pumps, lasts five times longer than the common cast-iron bronze seals and 15 to 20 times longer when operating in highly abrasive material. All three models are guaranteed to pump and prime at 28 ft. above water level. The high volume, high pressure pump in the series is Model 8S3-1P which will deliver 102 gpm. at 60 psi. with a total head of 185 ft. Pumps weigh 103 lb. each and a manual control allows the pump output to be matched to the job requirement.

. . . Circle No. 206

STANDARD
"THE WORLD'S FINEST"

ANNOUNCES . . .

revolutionary NEW self-erecting* asphalt plant



featuring:

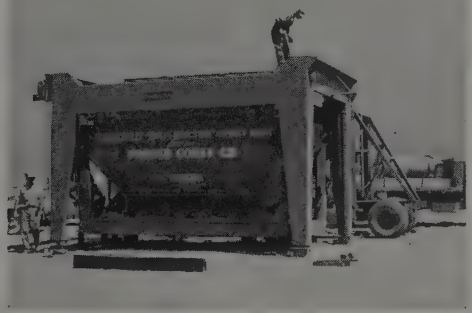
"PUSH BUTTON ERECTION"

*PATENT APPLIED FOR

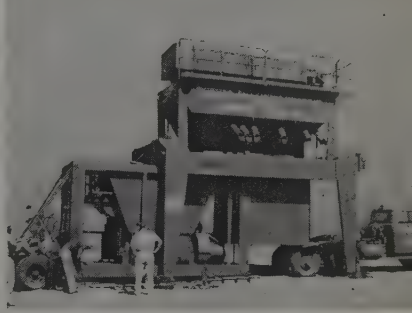
STANDARD presents a big, really portable batch type, self-contained Asphalt Plant that produces the same high tonnages as conventional "stack-up" plants.

Exclusive "push button erection" mechanically erects this STANDARD Model S-E Self-Erecting Asphalt Plant — no expensive cumbersome crane is needed to "stack up" the plant.

MOBILE HOIST-AND-BIN SECTION IS MOVING INTO PLACE.



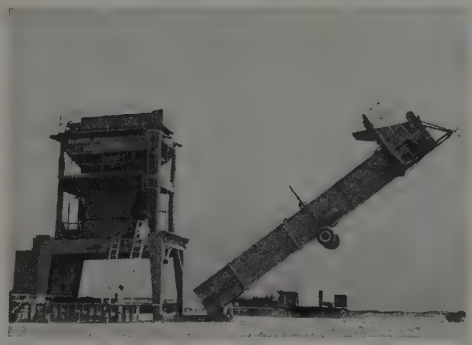
2 TRUCK HAS BEEN DETACHED. HOIST IS RAISING BIN SECTION.



3 MIX-AND-WEIGH SECTION IS MOVING INTO PLACE.

Entire plant is fully portable with each section mounted on its own wheels and axles — "a complete package on wheels."

This new STANDARD Model S-E self-erecting Asphalt Plant incorporates the same self-erecting principle and rugged design as is found in the well known STANDARD Model T-M trailer-mounted Asphalt Plants.



4 HOIST HAS RAISED BIN SECTION AND MIXING SECTION INTO FINAL POSITION. HOT ELEVATOR IS BEING RAISED.

5 MOBILE DRYER AND DUST COLLECTOR HAVE BEEN MOVED INTO PLACE. PLANT IS IN OPERATION.

E MODEL SE PORTABLE SELF-ERECTING ASPHALT PLANT.

NUFACTURED IN 4000, 5000, AND 6000 POUND BATCH CAPACITIES.

STANDARD STEEL CORPORATION

General Offices and Plant, 5049 Boyle Ave., Los Angeles 58, Calif.
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. . . built to do a better job!

PARTS WAREHOUSES IN LOS ANGELES AND DECATUR, ILLINOIS

STANDARD
ASPHALT PLANTS

Attention Contractors!

The New *STANDARD* Portable T. M. Plant offers top production. A *complete* self-contained batch type Asphalt Plant...on wheels. One man operates! Has exclusive "SELF-LIFT" erecting device. RUGGED—ECONOMICAL—SIMPLE. Mixes up to 80 tons per hour!

Scraper for small jobs or clean-up

A new 4-wheel scraper has been introduced to the Michigan line of **Clark Equipment Co.**, designed for smaller projects and for clean-up, or finishing work. Model 110 has a capacity of 8 cu. yd. struck and 10½ heaped. When teamed with a Model 180 tractor or equivalent hauling unit the scraper offers all hydraulic controls. From the tractor seat the operator uses short-throw levers to actuate hydraulic cylinders for hoist, apron and ejector. The unit operates on four wide-base tubeless tires and can travel at speeds up to 27 mph. Empty weight is 14,450 lb.

. . . Circle No. 207

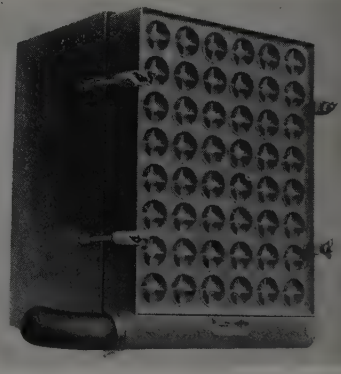
Testing earth without digging

Providing highly accurate moisture and density measurements directly on the surface of any earth fill, **Nuclear-Chicago** has announced two new probes. Models P21 and P22 are the newest members in their "d/m-Gauge" system. Use of these instruments eliminates the necessity of removing, weighing and replacing a sample for testing. No field laboratory, scales or drying ovens are required. A single non-technical person can perform tests and determine moisture and density within a space of 2 min. Results have indicated that the density probe is accurate to within 2 lb. per cu. ft. of wet density.

. . . Circle No. 208

Drycleaner for air

A type air cleaner to operate under dust conditions common to construction jobs in the Western states, known as Roto-Pamic, is offered by **Farr Co.** It provides efficient service without attention. The unit is a 2-stage device with the first stage removing nearly all of the material and returning it to the atmosphere, while the second step is a cartridge type paper element which traps the remaining light, fine particles.



. . . Circle No. 209

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TROUBLE FREE!

IDEAL TIE WIRE REELS

Bonus-Plus Features Makes Them **First Choice** on Any Tying Job.

Exclusive Design—versatile Right or Left hand use . . no belt loops to move, no screws to lose.

New Improved Knob—re-winds un-used wire portion out of the way . . . in split seconds. Saves time, ends excessively clipped wire.

Easy-Opening Cover—speeds loading time . . . no nuts or bolts to loosen . . . ideally secured by left-hand threads.

Highest Quality Aluminum—plus brass and steel components cut friction, give extra-long wear, will not freeze.

Extra Wire Capacity—3½ to 4 pounds . . . twice as much as coil-over-shoulder method. Handles 14 through 20 gauge wire—coils available everywhere.

Materials and Workmanship Guaranteed—easy to replace interchangeable parts available if accidental damage occurs.

Ask your local dealer for full data and demonstration . . . or just mail coupon.

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TIE WIRE REELS

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Please send me facts on Ideal Tie Wire Reels, and address of nearest dealer.

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Company_____

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City_____ Zone____ State____

IDEAL REEL COMPANY, PADUCAH, KENTUCKY

. . . for more details, circle No. 75 on Reader Service Postcard

. . . for more details, adv. pg. 145, circle No. 76 on Reader Service Postcard

Another EUCLID product improvement!

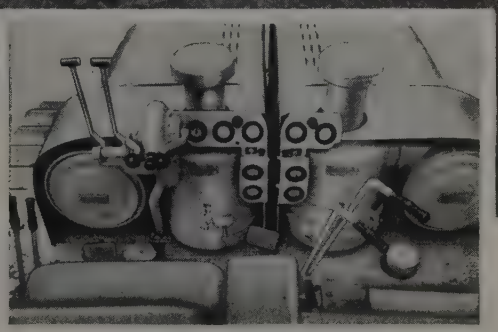
Donaldson dry-type air cleaner in TC-12 Crawler

One of the reasons the new series Euclid TC-12 Crawler provides more work-ability with less down-time is the unequalled accessibility of all major components for quick, easy servicing.

As shown in the photograph, the two Donaldson dry-type air cleaners, one for each engine, are conveniently located for easy access. Both pre-cleaner and secondary filter can be serviced in a fraction of the time required for oil bath cleaners and there's no mess—just empty the pre-cleaner dust cup, clean and replace a paper element in the secondary cleaner.

HIGH EFFICIENCY CLEANER INCREASES ENGINE LIFE

The Euclid TC-12 Crawler is now being built with the Donaclone dry-type air cleaner as standard equipment. This 99.9% efficient cleaner reduces engine wear caused by dust—increases the service life of the engine and helps maintain top operating efficiency. Engine manufacturers say that 8 ounces of



abrasive dust can ruin an engine in a short time. Because of the tremendous volume of air that passes through an engine in a single shift, the importance of air cleaner efficiency is obvious. That's why Euclid uses this Donaldson cleaner on the new series TC-12 . . . it's another example of constant product improvement that makes Euclid your best investment.

EUCLID Division of General Motors, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

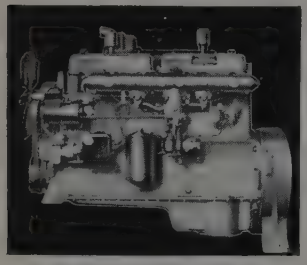
FOR MOVING EARTH, ROCK, COAL AND ORE

WAUKESHA *powered*
MARION Truck Crane

lifts lock gates when largest artificial waterway in U.S. is enlarged

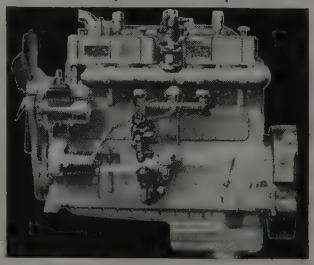
● To handle the huge gates for locks in the New York Barge Canal expansion project—R. D. Golden Co. used this Waukesha-powered 40-ton Marion type 43-M mobile truck crane. With its Waukesha engine powering the 40-ft. boom, at 64° and at a 22-ft. radius—the 30 x 45 x 2 ft., 32-ton gates were lifted with ease, swung and lowered into position. This mobile Marion unit is mounted on a Hendrickson Carrier powered by a Waukesha 145-GK Engine. The upper frame has a Waukesha 140-GK Engine and Twin Disc torque converter.

Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displacement.



Send for Engine Bulletins 1548 1551

Powering the Carrier—145-GK Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displacement.



A12

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories—Waukesha, Wisconsin, and Clinton, Iowa

. . . for more details, circle No. 77 on Reader Service Postcard

Paving breaker by Davey

With a high power-to-weigh ratio, **Davey Compressor Co.** an nounces a new paving breake (Model SS-32) suitable for all bu the heaviest jobs. An outstandin design feature is the complete hous

ing of the entire valve mechanism by the cylinder. With the main valve assembly held rigidly in the cylinder by a rubber buffer, much of the usual vibration in air tool operation has been eliminated.

. . . Circle No. 210

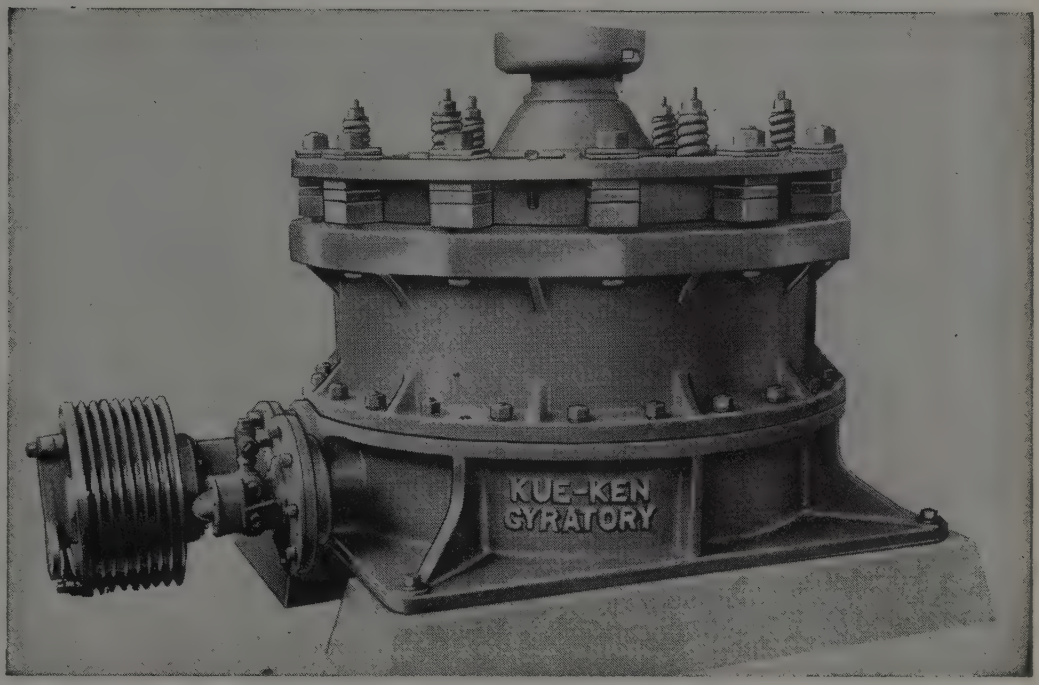
Handling bulk cement

A fast and dependable method for pneumatically handling bulk cement will be available from **Engineered Equipment, Inc.** By a new method, a 125-bbl. truck can be unloaded in 30 to 35 min., depending on the height the cement

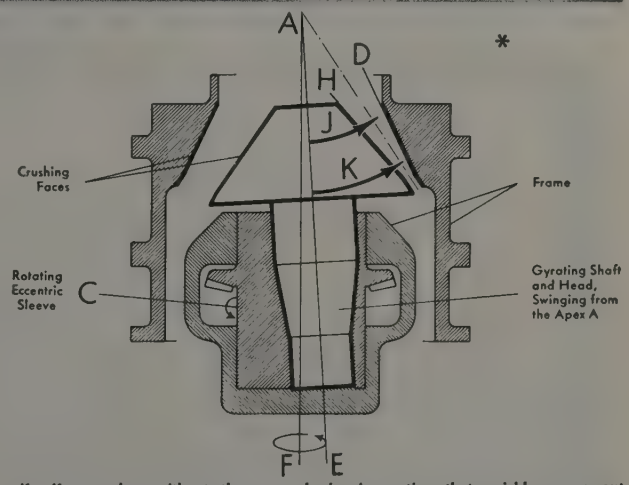
must be raised. The method eliminates the usual maintenance problems that are common to elevators and screw conveyors. The truck body, as illustrated, is fitted with complete accessories for handling the bulk cement pneumatically by a new system.

. . . Circle No. 211

Compact KUE-KEN® for economical gyratory crushing in any operation



Fitting easily where headroom is limited, Kue-Ken gyratory makes profitable secondary crushing practical in any flowsheet. Compact, strong, without excess weight, choke-fed Kue-Ken is adaptable to either a permanent or portable installation. Designed on the exclusive Kue-Ken "crushing-without-rubbing" principle that practically eliminates the main cause of liner wear, Kue-Ken liners give far longer service under continuing, hard materials crushing. For lowest cost-per-ton crushing, design your operation around Kue-Ken jaw and gyratory crushers.



Kue-Ken crushes without the upward abrasive action that quickly wears out liners in ordinary crushers. See how crushing faces pass through crushing zone on arcs J and K to crush rock squarely. Only Kue-Ken operates on this principle of "crushing without rubbing."

Write for Catalog

KUE-KEN® CRUSHERS

"CRUSHING WITHOUT RUBBING"

Straub Mfg. Co., Inc., 8382 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens
Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

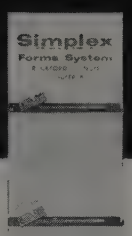
DEALERS:

SEATTLE, WASH. ..... Washington Machinery Co.
VANCOUVER, B. C. ..... Universal Equipment Co.
SALT LAKE CITY, UTAH ..... Lund Machinery Co.
SAN ANTONIO, TEX. ..... Closner Equipment Co.
LOS ANGELES, CALIF. ..... Garlinghouse, Fremon Co.
BERKELEY, CALIF. ..... West Coast Engine Equip. Co.

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

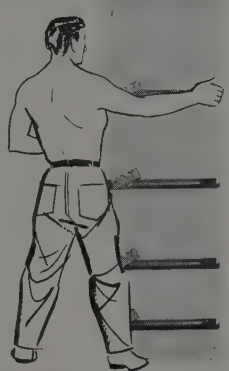
. . . for more details, circle No. 78 on Reader Service Postcard

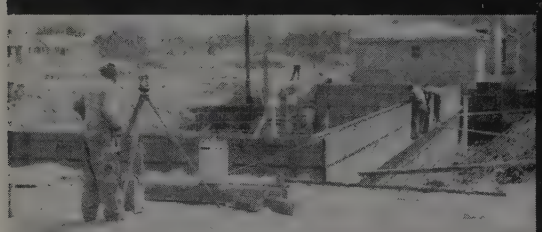
How Simplex 10-Foot Forms Saved 25% on a Shopping Center Project



Like many contractors, a large Chicagoland firm* considered 10-foot forms too large and bulky for light commercial work and preferred to use various stacking methods. That was until the contractor discovered Simplex . . . the rugged, *lightweight*, 10-foot forms that helped him speed erection and lower costs on a recent shopping center project. The 90′ x 44′ x 12″ foundation, required for the job, was set, poured, and stripped (in two stages) in just 72-man hours, employing 4 men. In spite of the 12″ wall thickness and 10 foot height, *no walers were used* . . . just a few braces to prevent deflection and overcome wind conditions. All in all, the contractor reported a saving of over 25% in comparison with other forming methods on similar jobs. You, too, can make bids within reason and still make savings that turn into profit!

*Name on Request.





Shopping Center project in which Simplex Forms "set with ease," and the finished foundation was a "perfect wall" — straight, accurate, and smooth . . . as reported by the Chicago contractor.

A FORM FOR EVERY PURPOSE

PLUS A COMPLETE LINE OF ACCESSORIES

Easiest to Set-Up and Strip . . . No Loose Hardware

- 1⅛″ Plastic Impregnated Plywood with thick outer plys that will not peel. Forms have been used over 200 times and still pour a smooth wall.
- All hardware firmly bolted to panels . . . means no on-the-job assembly. Exclusive, cam action locking levers draw panels tight . . . minimize seam marks and insure accuracy.
- Panels are lightweight. Full 2′ x 10′ panel weighs less than 100 lbs., completely fitted with six backing bars and locking levers.

10′ x 2′
6 Wire

Rugged, heavy-duty forms for 9′ and 10′ commercial foundations. Easy to handle in spite of their size.

8′ x 2′
6 Wire

Highly adaptable for alternate stacking with 4′ forms on 12′ and higher walls. Weighs about 78 lbs.

4′ x 2′
3 Wire

Ideal for slab foundations or for alternate stacking with 8′ forms. Weighs only 39 lbs.

THE WORLD'S FASTEST METHOD
Simplex
FOOT-A-MINUTE
forms
OF CONCRETE FORMING

WRITE TODAY FOR ALL THE FACTS!
SIMPLEX FORMS SYSTEM, INC.
5609 Industrial Ave.
Rockford, Illinois

. . . *for more details, circle No. 79 on Reader Service Postcard*

New 40-ton crane by Unit

Incorporating many new design features, **Unit Crane & Shovel Corp.** announces its new Model 360T truck crane for handling loads up to 40 tons with a 40-ft. boom. The machine will pick up 120 ft. of boom without assistance from horizontal ground level position to operating position. Jib attachments of 15 to 30 ft. in length

are available. For stripping the machine for highway travel an adapter comes as standard equipment and makes possible the use of the crane's own power to remove counterweights, outriggers and other parts. Standard power installations in the upper machinery are either Chrysler gasoline or GM diesel engine. The chassis is powered by an International or Waukesha gasoline engine.

. . . *Circle No. 212*

New wire rope for construction

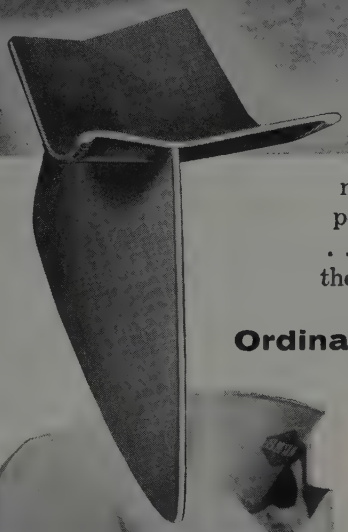
A new wire rope has been put on the market by **Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corp.** designed primarily for use in the construction field. Identified as Double Gray the new extra high-strength rope has been released after several years of rigid testing and refinement in the field. The rope is made of extra improved plow steel and fortified by an independent wire rope core of the same steel, Double Gray rope has a 15% higher breaking strength than the catalog strength of an improved plow steel rope. The rope is designed for long life on equipment and is resistant to abrasion. The outer wires will hold their shape better. Double Gray will last longer with less time required for replacements.

. . . *Circle No. 213*

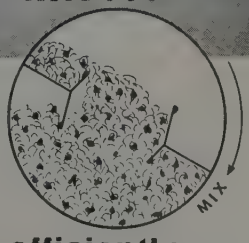
LOW SLUMP CONCRETE

delivered consistently by SMITH truck mixers

SMITH'S exclusive "T" blade lifts...

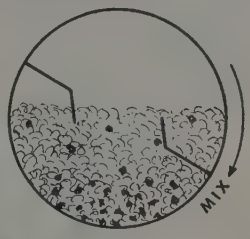


material out of the mass . . . the mixing fin pours material into the center of the drum . . . it's the "T" that mixes to the test . . . there is *no segregation* in the mix.



Ordinary "L" blade can't mix or pour efficiently...

because material slides off the blade as it comes out of the mass . . . there is no mixing fin to lift material into the center of the drum . . . churning instead of mixing action results.



discharges (low slump) concrete faster

than any other truck mixer!

Actual job site data on yardage and discharge times available on request.

Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers

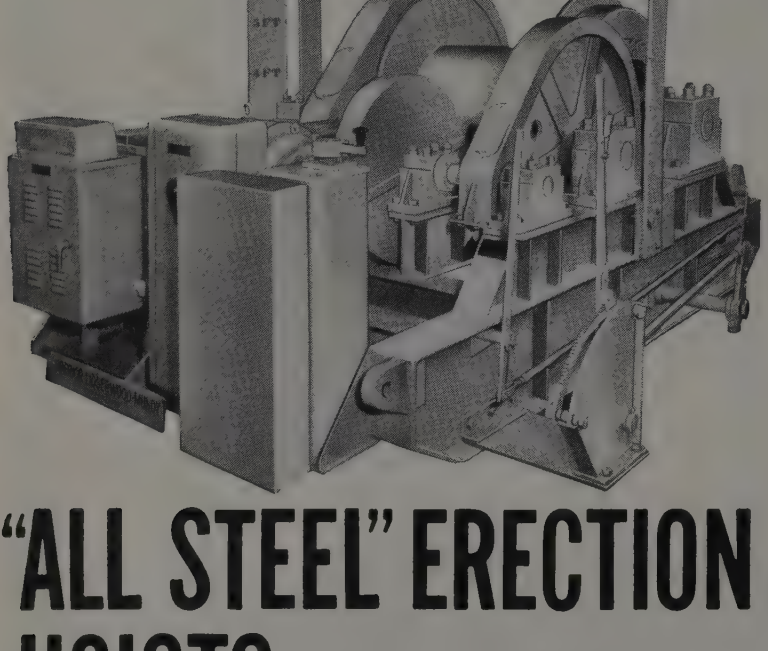
THE T. L. SMITH COMPANY • **Milwaukee, Wisconsin** • **Lufkin, Texas**

Affiliated with Essick Manufacturing Company • *Los Angeles, Calif.*

. . . for more details, circle No. 80 on Reader Service Postcard

Sweeper for all uses

For cleaning prior to paving and for other uses, **Napco Industries, Inc.**, has a new front model sweeper available for its 4-wheel drive Napco Crab Tractor. Designated the model FM-C the unit does not disturb the operating characteristics of the tractor with the boom mounted. Road contractors and municipalities will find this combination useful for all types of sweeping before and after paving. The sweeper is driven by an independent gasoline engine and no power take off has to be attached or removed. Speed of the boom is constant and independent of tractor speed. *. . . Circle No. 214*



"ALL STEEL" ERECTION HOISTS *safe · reliable rugged · dependable*

These combined qualities are all included in the hoist shown and are provided by "All Steel" construction, no clutch, single lever "Deadman" type electrical control, lifting hitch for moving, and husky tie backs for anchoring.

The load is over 200 tons on multiple parts of line requiring a drum capacity of over 3000 ft. of 1¼" cable, the lift must be made with absolute assurance of reliability and the answer is a S-L-M "All Steel" erection hoist. Consult Superior-Lidgerwood-Mundy for your next reliable hoist.

Write for Bulletins and Catalogs

Superior–Lidgerwood–Mundy Corporation

MAIN OFFICE AND WORKS—SUPERIOR, WISCONSIN

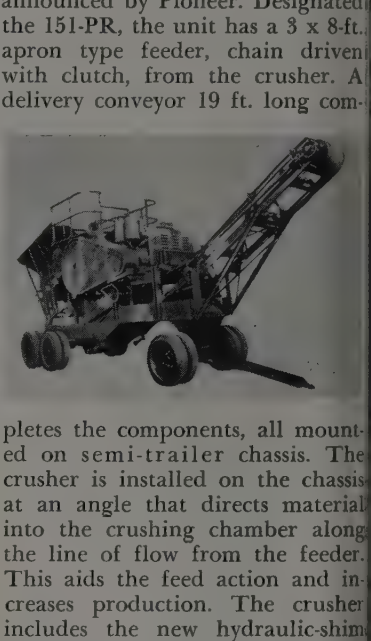
Pacific Coast Representative: GEORGE E. SWETT & COMPANY

100 Howard Street, San Francisco 5, California

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

New crusher by Pioneer

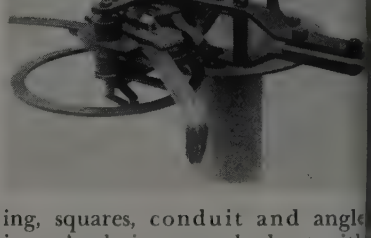
First of a new series of portable primary crushing units is off the production line at **Pioneer Engineering,** division of Poor & Co. The jaw crusher, with its 20-in. opening is of the long-jaw type recently announced by Pioneer. Designated the 151-PR, the unit has a 3 x 8-ft. apron type feeder, chain driven with clutch, from the crusher. A delivery conveyor 19 ft. long com-



pletes the components, all mounted on semi-trailer chassis. The crusher is installed on the chassis at an angle that directs material into the crushing chamber along the line of flow from the feeder. This aids the feed action and increases production. The crusher includes the new hydraulic-shim adjustment which provides a setting range from 2½ or 3 in. up to a maximum of 6. *. . . Circle No. 215*

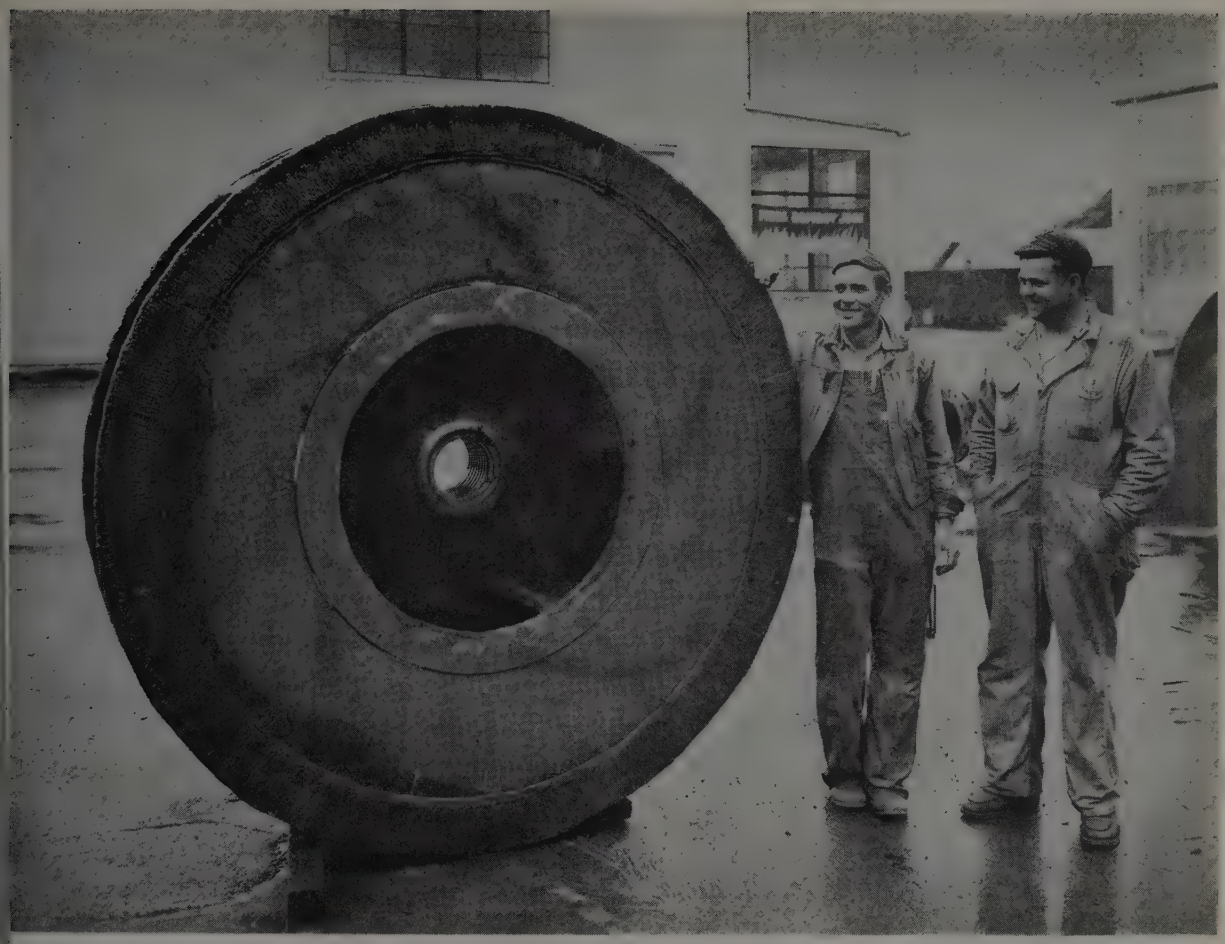
Bender with more versatility

New attachments have been added to the versatility of the **Hossfeld** Universal Pipe, Bar and Angle Iron Bender. Hand rail capping can now be bent into any desirable shape as well as edge bends formed as low as 9 in. inside radius, or as large as desired. The bender will also handle rounds, pipe, flats, tub-



ing, squares, conduit and angle iron. Angle irons can be bent with a flange either in or out and flat stock can be bent either flat or edgeways. All of these bending operations can be carried out without the use of mandrels.

. . . Circle No. 216



Cuts hardfacing time in 1/2 with Victor semi-automatic Wire

When this 84" dredge pump impeller's action became sloppy from 250,000 cu. yds. of abrasive river material, The Corps of Engineers at Portland, Oregon, built it back to proper size and shape with Victor semi-automatic hardfacing wire.

For the multiple build-up required, welder Maynard Berry (left in photo) used Victor VA-4X 7/16" wire. Then he deposited a top pass with VA-0 7/16" wire, especially resistant to abrasion. Photos here show how neatly he and Victor semi-automatic wire did the job.

Reports welding foreman D. L. Brumbaugh:

> "One-half the hard-facing time was saved. We have had exceptionally good quality weld deposit with Victor and we like its running quality."

You, too, will find it pays to renew worn equipment with Victor hardfacing alloys. Complete range of types and sizes for both acetylene and electric AC and DC applications, either automatic or hand. Order from your Victor dealer TODAY

Profitable dealership open; inquire now!

VICTOR for hardfacing

VICTOR EQUIPMENT COMPANY 55

ALLOY ROD AND METAL DIVISION

13808 E. Imperial Highway, Norwalk, Calif. • Wakita, Oklahoma

. . . for more details, circle No. 82 on Reader Service Postcard

Voids Reduce Weight and Maintain Rigidity in Warped Slab

Garage ramp of Pacific Telephone & Telegraph office, Oakland, Calif. Ira Beals, architect; Pregnoff and Mather, engineers; R. F. Royden, contractor.

Form voids in concrete slabs with low-cost SONOCO SONOVOID FIBRE TUBES

Weight became a problem in the design of this concrete garage ramp. To provide required structural rigidity, the warped slab had to be extra thick in depth . . . extra weight was reduced by planning a voided slab system.

Using low-cost 12" O.D. SONOVOID Fibre Tubes to form voids, the dead weight of low-working concrete was eliminated, with slab strength and rigidity maintained.

SONOVOID Fibre Tubes are specifically designed for use in bridge decks, floor and roof slabs, and in concrete piles. For precast, prestressed units or members cast in place. The voided slab system means savings in concrete and reinforcing steel.

Sonoco Fibre Tubes are available in sizes from 2.25" to 36.9" O.D. Order in specified lengths or standard 18' lengths. Can be sawed to your requirements on the job. End closures available.

Write for complete technical information and prices.
See our catalog in Sweet's

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

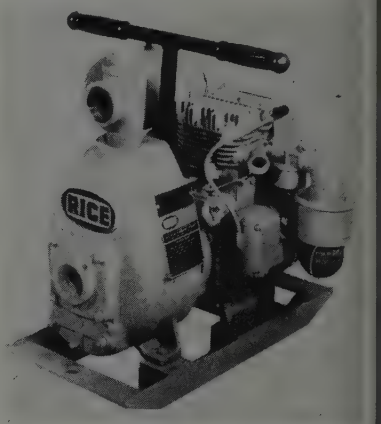
SONOCO
Construction Products

3649 SONOCO PRODUCTS COMPANY

. . . for more details, circle No. 83 on Reader Service Postcard

New line of centrifugal pumps

In sizes from 1½ to 6 in., **Rice Pump & Machine Co.**, has introduced a complete new line of self priming, high head centrifugal pumps. The units will be available with base mounting, pneumatic tires or steel wheels. They can be either belt-driven or provided with flexible couplings or may be direct

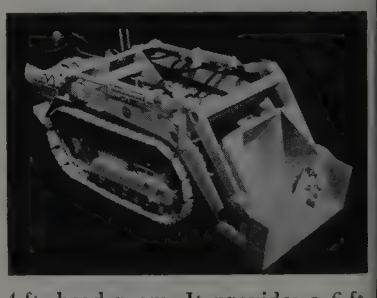


connected to the engine. Up to the 3-in. size the pumps are available with either electric or air cooled gasoline power. Sizes from 4 to 6 in. are available with electric, gasoline or diesel power.

. . . Circle No. 217

Air powered underground loader

A new front end loader and dozer powered by compressed air and designed for either underground or surface work has been announced by **Machinery Center, Inc.** The loader is crawler mounted and will perform with as low as



4-ft. head room. It provides a 6-ft. dumping height. The 15-hp. reversible air motor powers the machine with direct drive, the 3-speed transmission provides travel to 5 mph. Hydraulic steering is provided as well as the same type of power for bucket control.

. . . Circle No. 218

Ask your Allis-Chalmers dealer to show you "**...And a Great Deal More**"

SINGLE-LEVER speed and direction control makes it easy for operator to work fast

If a loader operator has to move one lever for forward and reverse, and another lever to get into a higher working gear, chances are he's going to stay in low gear.

Recognizing these limitations on your achieving faster loading, Tractomotive developed Single-Lever speed and direction control to speed up the work cycle. It's on both the big TL-20 TRACTOLOADER*, and the slightly smaller TL-16.

With Single-Lever control, the operator will naturally choose his fastest possible working gear every time he shifts. He can go into second gear just as easily as first—and get there on the double. Moreover, when there's loading to be done down the road or across the pit, he power-shifts right into high (road speed), and does the job in a hurry.

Let your Allis-Chalmers dealer show you how this exclusive One-Lever control of speed and direction alone will add many extra yards to your daily production.

Other TL-20 and TL-16 working advantages include: Longer Reach; Strong, Pin-Connected Planetary Axles; Extra Stability; Safe Dump Cylinder Location; Extra Hydraulic Protection; Hydraulic Torque Converter Drive; Tip-Back Bucket; "Hi-Traction" Differentials; Power Steering; Ignition Key-Type Starting; 4-Wheel Power Brakes; 6-Way Adjustable Seat; Rear-Axle Disconnect; Bucket Position Indicator.

*TRACTOLOADER is a registered Tractomotive trademark.

ALL TRACTOMOTIVE EQUIPMENT IS SOLD AND SERVICED BY YOUR ALLIS-CHALMERS DEALER

TRACTO—
a sure sign
of modern design

TRACTOMOTIVE
TRACTOMOTIVE CORPORATION • DEERFIELD, ILLINOIS

TRACTOLOADERS • TRACTOSHOVELS • TRACTORIPPERS • TRACTOHOES • TRACTOSIDEBOOMS

. . . for more details, circle No. 84 on Reader Service Postcard

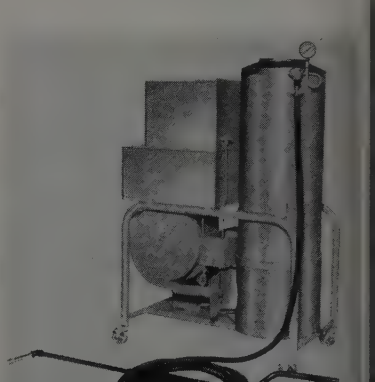
Diamond drill with more power

Recommended for blast hole, coring and grout hole work, a new diamond drill (CP-65) has been announced by **Chicago Pneumatic Tool Co.** This adds a powerful unit to the line of drills available from this company. The new rotary motor packs 60% more power for drilling to depths of 600 ft. The extra motor power and increase in the strength of all drive components increases drilling speed. The motor is reversible for greater speed in blast hole drilling operations. The CP-65 is a fully enclosed, dust proof and oil tight unit, with ball bearings used throughout the drill. The drill works in any position, from column, arm or cross bar. Design efforts have resulted in reducing unnecessary weight and the drill weighs 200 lb.

. . . Circle No. 219

Steam cleaner for small jobs

Designed specifically for use where cleaning operations have seemed too limited for economic use of a steam outfit, a low priced unit called the Handy Dandy steam cleaner has been announced by **Malsbary Manufacturing Co.** This cleaner which is simple in design, and low priced, is equally satisfactory as an auxiliary or standby in a larger shop or yard. The unit delivers 80 gal. of solution hourly at the 60-100 lb. cleaning pressure



standard with the larger Malsbary cleaners. It uses the same type of nozzle to assure a hard hitting stream with a minimum amount of fogging.

. . . Circle No. 220

MAKE BIG MONEY IN PAVING!

NEW LOW COST ALL-PURPOSE ROLLER LETS YOU START WITH SMALL INVESTMENT

Cash in on the tremendous demand in the paving field. The General all-purpose, heavy duty, power operated roller lets you pave asphalt driveways and walks, parking lots, service stations. Roll lawns, tennis courts, playgrounds, parks and municipal properties. The General all-purpose roller is time tested and job proven — built to take a beating and withstand years of rugged service. Features a new automatic transmission with full reverse to give complete maneuverability in tight spaces. Simple, foolproof, adjustable weight control lets you roll anything from blacktop driveways to highways with equal ease. Exclusive fingertip operation of all controls on a single lever — brake, transmission and throttle. High curb clearance allows precision rolling close to buildings and obstructions. Hinged hood permits ready accessibility to automatic transmission and engine for easy service and maintenance. General machines now in use the world over testify to their durability, efficiency, economy, and trouble-free operation. Write or call for full information.

WORKS ALL YEAR 'ROUND ON MANY DIFFERENT JOBS

A roller lets you take jobs all year 'round. Customers are everywhere — home owners, landscapers, municipal governments. Has all the features found in rollers costing twice as much: Oversized water tank with individual controls both with compression and guide roll — with dual scrapers and large cocoa mats. A real professional contractor's roller that enables you to take ANY JOB. Write or call for full information.

DEALERS!
WRITE – WIRE – PHONE
Mr. McCaughey
Choice Territories Still Open
Tilden 5-5401

LOOK AT ALL THESE FEATURES

Rolls full 32". Fully automatic reversing transmission. Ruggedly constructed. Heavy duty front forks made of ½" plate. Main frame ⅜" plate. Maximum weight over 2000 lbs. Oversize water tank at no extra cost. Cocoa mats and scrapers both rolls included.

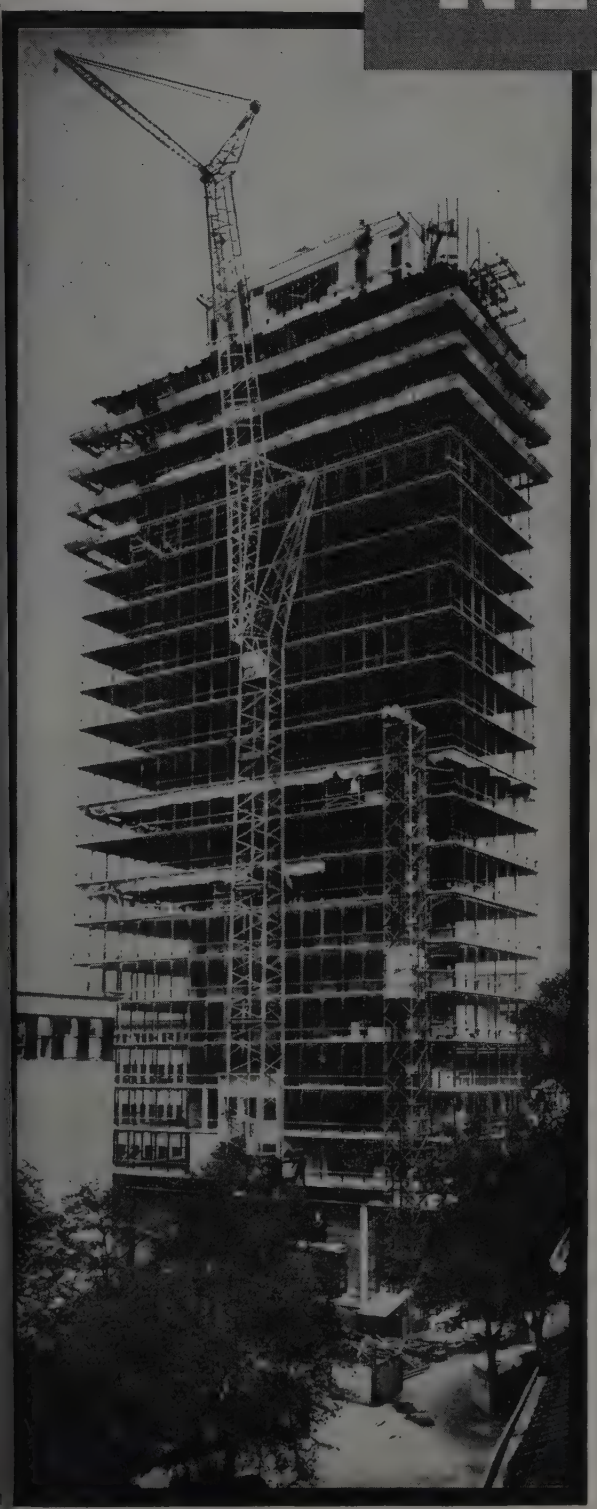
GENERAL ENGINES CO. ROUTE 130, THOROFARE, N. J. • CALL TILDEN 5-5401

. . . for more details, circle No. 85 on Reader Service Postcard

Beatty brings you a...

BEATTY SCAFFOLDS SHORING CRANES GRANDSTANDS Safety First BEATTY SCAFFOLD INC ®

NEW GIANT



to cut construction costs

BEATTY-PECCO CONSTRUCTION CRANES

Like a great giant robot reaching from 50 to over 300 feet in the air to place materials at the point of construction...

- High maneuverability in traffic—travels from site to site without dismantling.
- Electronic remote control.
- Automatic safety factors.
- Practical, adaptable.
- Thousands in use.

Phone, write, or wire...

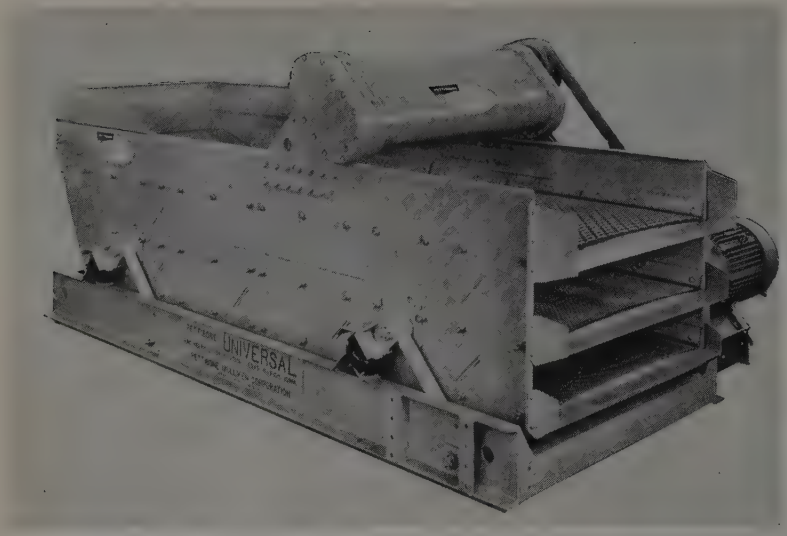
BEATTY SCAFFOLD, INC.

Tunnel Ave. & Beatty Rd. • San Francisco
JUniper 5-0581

or these Beatty Principal Distributors:

BOISE: Beatty Scaffolds & Power Tool Co.
COVINA & SO. CALIF.: Beatty Scaffolds of Southern California, Inc.
EL PASO: Booker-Walker Supply Co.
HONOLULU: Islands Welding & Supply Co., Ltd.
PHOENIX: Baker-Thomas Lime & Cement Co.
PORTLAND: Beatty Scaffolds Co. of Oregon
SACRAMENTO & CENTRAL VALLEY: Beatty Scaffolds
SALT LAKE CITY: Lynn Hansen Co.
SAN JOSE: Beatty Scaffold of San Jose
SEATTLE: Beatty Scaffolds, Inc.
SPOKANE: Safway Scaffolds, Inc. of Spokane

... for more details, circle No. 86 on Reader Service Postcard



A UNIQUE phasing-bar and air springs to replace conventional springs are the special features of the new Screen Master announced by *Universal Engineering Corp.* This horizontal vibrating screen provides aggressive action since all parts act in unison, or phase, preventing the blanketing of material on the screen wire. The units have full screening area to provide greater capacity and an extra-heavy vibrator unit provides power to meet all feed and screening conditions.

. . . Circle No. 221

Thor screeds up to 30 ft. long

Incorporating several new design features **Thor Power Tool Co.**, has expanded its line of vibrating concrete screeds to a maximum of 30 ft. The line is known as the "StraPaction" and combines the functions of strikeoff, vibrating compaction and finishing of the concrete in one pass. The new design features assure efficient performance over the new longer length of screeds. These screeds are now available in standard lengths from 4 to a maximum of 30 ft. in one-foot multiples. The stock lengths are 7, 10, 13, 16 and 21 ft. The basic design includes two wooden beams and cross supports with a series of vibrating steel straps attached parallel to the beams. A high frequency slapping action of these straps forces water and air rapidly out of the concrete as two men draw the light-weight screed across the fresh concrete. Power for the new 16 to 30-ft. screeds is furnished by a gasoline engine attached to the top of the screed frame. Tension cables along the side of each beam assures the screed remaining in plane with no sagging. New aluminum end housing provides easy access for adjusting straps or cables.

. . . Circle No. 222

More power with same weight

A diesel engine with horsepower increase from 300 to 360, with no appreciable increase in bulk, weight or fuel consumption has been announced by **Detroit Diesel Engine Division of General Motors.** The new 360-hp. diesel adds a new high to the horsepower range of GM diesel's line of single engines for industrial applications. An exhaust driven turbine driving an air impeller works with the engine blower to increase the pressure supplied to the cylinders. The result is improved combustion, greater efficiency and better performance at high altitudes.

. . . Circle No. 223

See These BLAW-KNOX Dealers

BLAW-KNOX

ARIZONA

O. S. STAPLEY'S COMPANY
Phoenix, Arizona

CALIFORNIA

CONSTRUCTION MACHINERY COMPANY
San Diego, California

SHAW SALES & SERVICE COMPANY
Los Angeles, California

SUN EQUIPMENT COMPANY
Oakland, California

UTAH

FOULGER EQUIPMENT COMPANY
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WASHINGTON

HATTEN MACHINERY COMPANY
Seattle, Washington

INLAND DIESEL & MACHINERY COMPANY
Spokane, Washington

YUKON EQUIPMENT, Inc.
Seattle, Washington

COLORADO

MacDONALD EQUIPMENT COMPANY
Denver, Colorado

MONTANA

NORMONT EQUIPMENT COMPANY
S. Great Falls, Montana

OREGON

CONTRACTORS EQUIPMENT CORPORATION
Portland, Oregon

TEXAS

LIVELY EQUIPMENT COMPANY
Phoenix, Arizona

WYOMING

STUDER TRACTOR & EQUIPMENT COMPANY

. . . for more details, circle No. 87

AVER resurfacing 15 miles of U. S. Highway 70 south of Huntington, Tennessee. Warren Brothers also used Blaw-Knox Wideners on their portion of the $1,200,0
press Paver is laying upwards of 1,000 tons per day in a 1½ inch layer. Job Superintendent Bragg is shown at left and General Superintendent Duckworth at rig

e're 50% ahead of schedule because of the speed his Blaw-Knox Express Paver"

"Despite the difficulty of this particular mix, our Blaw-Knox unit is laying up to 142½ tons per hour. Although we've had weeks of bad weather, we're 50% ahead of schedule on the maximum 250-day contract time," says R. F. Bragg, Job Superintendent on the Warren Brothers project.

"The quality of roadway is superior to that layed by crawler-mounted equipment. And the Blaw-Knox longer wheelbase reduces waves in the pavement that are sometimes felt when driving over asphalt roads laid by shorter wheelbase pavers. Rubber tires make it possible for us to work faster in completing the major moves that the machine makes, and it paves up to 20% more in the same amount of time," adds Ray Duckworth, General Superintendent.

Here is another instance of proved advantages —faster, better quality paving with freedom of movement—that contractors everywhere are experiencing with the new Blaw-Knox Express Paver. See your nearest Blaw-Knox Distributor for a technical report on this project, or write direct. There's no obligation, of course.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment, 300 Sixth Avenue, Pittsburgh 22, Pennsylvania

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ARBA REPORT

(Continued from page 80)

high expenditure years later in the program.

Examine the various ways in which this money might be raised, keeping in mind that Step No. 1 is to adjust the authorizations.

2. We might increase Federal taxes earmarked for the Trust Fund sufficiently to put the program on a sound cash basis. This solution would require a very substantial increase in these taxes. The administration's proposal to increase the Federal gasoline tax by 1½c from 3 to 4½c would provide initially about $830,000,000, based upon the estimated 1960 income of $1,661,000,000 from the present 3c tax, and presuming that no reduction in gasoline consumption would result from the increased tax. Projecting this increase yearly through 1972 in proportion to the official income forecast for the 3c tax would produce a total new income of $12,700,000,000, which would be adequate in total but not on yearly cash basis. This solution has administration blessing and, if coupled with the rescission of the Byrd Amendment, would provide adequate financing. It would require borrowing from time to time from the General Fund to meet peak cash demands.

The other existing taxes which support the Trust Fund and which also could be increased are:

Type	1960 Estimate
Diesel & Special Fuels	$ 60,000,000
Trucks, Buses and Trailers	106,000,000
Tires and Tubes	280,000,000
Tread Rubber	14,000,000
Vehicle Use	29,000,000
	$489,000,000

The amount of these taxes is relatively small and they would have to be materially increased to make an appreciable contribution to meeting the deficit. One drawback to depending upon any increase in the present Trust Fund taxes is the probable strong opposition to such a proposal by organized highway user groups, affected industries, and numerous states which intend to raise their state gas tax.

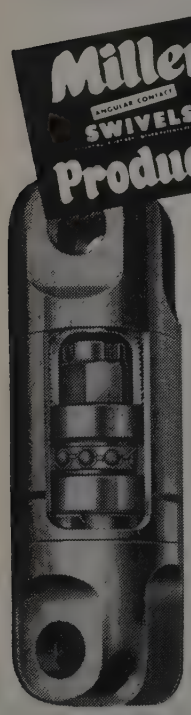
3. We might transfer additional revenue from so-called highway user taxes from the general fund to the Highway Trust Fund.

The following are frequently considered highway user taxes, revenue from which does not go into the Highway Trust Fund. The revenue figures shown are for fiscal 1958:

Auto excise taxes	$1,300,000,000
Truck and bus excise taxes	120,000,000
Spare parts, accessories excise taxes	150,000,000
Tax on lubricating oils	30,000,000
Total	$1,600,000,000

A glance at this total indicates that the problem of financing the highway program could be solved very simply by transferring these revenues to the Highway Trust Fund. However, there are two serious difficulties. First: Administration spokesmen have indicated that they do not consider these excise taxes to be highway user taxes, and probably would oppose any attempt to have them treated in any way differently from other excise taxes on manufactured products. A good case could be developed, however, in support of transferring the tax on lubricating oil and spare parts since the demand

Maximum SAFETY plus SAVINGS



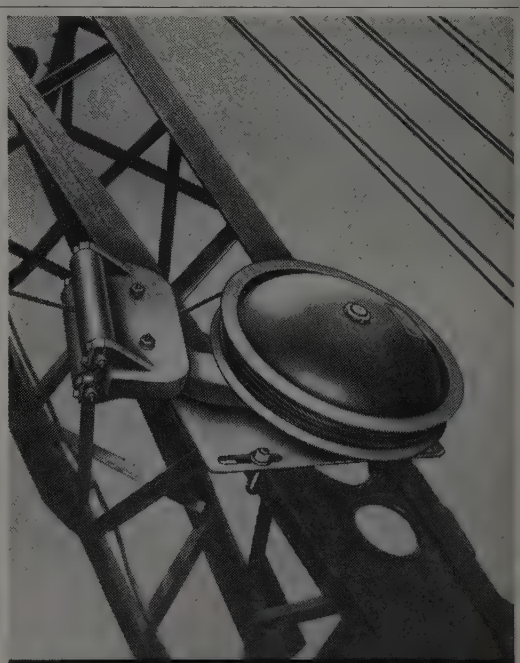
1. Matched set of angular contact bearings.
2. Practically friction free.
3. Seal keeps grease in, foreign matter out.
4. Faster hoisting due to non-spinning loads.
5. Faster load placement due to easy load turning.
6. Faster rigging due to elimination of cranky wire rope performance.
7. Elimination of twists and kinks means longer wire rope life.
8. Safer load placements due to non-spinning loads.

21 standard types available from ½ ton to 250 ton working load

Distributors

John Batchelor, Los Angeles, Calif.; **Weeks Howe Emerson,** San Francisco, Calif.; **Mallory Logging Equipment,** Portland, Ore.; **B & J Equipment,** Seattle, Wash.; **Power Rental,** Denver, Colo.; **Holland Equipment Co.,** Salt Lake City, Utah; **Fresno Wire Rope & Rigging,** Fresno, Calif.; **Western Machinery Co.,** Phoenix, Ariz.; **Mine Supply Co.,** Albuquerque, N.M.

Miller Swivel Products Inc.
P. O. BOX 938 • POMONA, CALIF.



MILLER AUTOMATIC TAGLINE
Features: Fairlead Rollers, Compact, No Operator Vision Obstruction, Ball Bearing Mounted Moving Parts, Uniform Tension, Low Maintenance, No Oil. Available in six sizes, ⅜" to 3½ yds.

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for each is certainly generated by highway use. Second: Such a transfer would create an equivalent deficit in the General Fund.

4. Make a direct appropriation annually from the General Fund to cover the deficiency in the Highway Trust Fund. There are sound reasons why the General Fund should be used to help support the highway program, since many of the benefits are spread well beyond the highway user and can be measured in terms of general welfare, national economic growth, and national defense. The objection to this approach is that, with the Byrd Amendment in effect, apportionments would be controlled by the availability of cash. This would have been the case last year had the Byrd Amendment not been suspended for 1959 and 1960. To complete the program on time the authorizations and apportionments made under them must be controlled by the estimate of money needed to do the job, not by the cash available in an inadequate Trust Fund.

5. Finance the Trust Fund deficiency by borrowing, with future Trust Fund income earmarked to cover repayment.

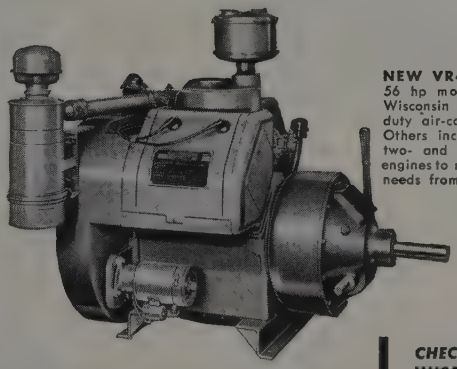
This is an appealing approach and has some sound justification. We are attempting in 15 years to build the roads which should have been built between 1940 and 1956 plus our current road needs, and we are building to standards required for the traffic of 1975. Why should we build roads good for many years of use and pay the whole bill today for yesterday's, today's, and tomorrow's roads? Why not let some of the future beneficiaries pay part of the cost?

The answer to these questions is that while some borrowing authority is probably essential to gaining flexibility in financing the program, no one would want to see construction of roads suddenly and seriously curtailed in 1973 or any other year because most of our highway income at that time would be needed to pay off the bond issue. This, unfortunately, has happened in some states in the past.

6. The method of financing which I will outline next has several steps, and is more complex than the others just mentioned. Step No. 1: Suspend the termination date of the Highway Trust Fund, as well as that of the taxes which feed it. Step No. 2: Grant authority to borrow, either from

Here's why Wisconsin Engines keep your construction jobs

"on schedule"!



NEW VR4D 4-cylinder 56 hp model tops the Wisconsin line of heavy-duty air-cooled engines. Others include single-, two- and V-type 4 cyl. engines to meet *all* power needs from 3 to 56 hp.

"plus" features assure full-time power in any climate!

The overwhelming acceptance by builders and users of Wisconsin-powered construction equipment, backed by cost-cutting field service records, prove that Wisconsin heavy-duty air-cooled engines rate *first* in performance and low-cost maintenance.

These rough-and-ready engines never say "die." They give you load-holding lugging power that slugs through sudden shock loads. Air-cooling design cuts weight and maintenance — delivers the most power per pound of engine weight. Quality construction assures long, trouble-free service — plus fast starts and dependable power round-the-clock in any climate!

Equally important — there's an authorized Wisconsin service station wherever you may be, to help you *if* and *when* you need parts or service. Write for complete service station directory S-198 — and product Bulletin S-237.

CHECK THESE WISCONSIN DESIGN FEATURES:

FORGED STEEL CRANKSHAFT with tapered roller main bearings permits power takeoff direct from the shaft.

LARGE-CAPACITY FAN integrally cast with flywheel provides correct heat dissipation at temperatures from sub-zero to 140°F.

HIGH TENSION OUTSIDE MAGNETO with impulse coupling delivers fast starts at all times.

FULL LUBRICATION is provided by pump-circulated lubrication system, assuring top performance with less care.

SPECIAL EQUIPMENT available includes electric starting, LPG carburetion, etc.

Sales and Service Supplied by these Distributors and their Service Stations:

CENTRAL EQUIP. CO.,
E. 45th at Garfield, Denver, Colo.
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CENTRAL AUTO ELECTRIC CO.
808 2nd St., N. W., Albuquerque, N. Mex.

PRATT-GILBERT HDW. CO.,
Phoenix, Ariz.

ARNOLD MACHY. CO., INC.
Salt Lake City, Utah
Distributor for Utah, Eastern Nev., Eastern Ida. and Western Wyo.

ARNOLD MACHINERY CO., INC.
5024 Gage Street, Boise, Idaho
Distributor for Southern Idaho

STAR MACHY. CO.
241 Lander St., Seattle;
East 415 Sprague Ave., Spokane
Distributor for Washington and North. Idaho

INDEPENDENT DISTRIBUTORS
27 N. E. Broadway, Portland, Ore.

E. E. RICHTER & SON, INC.
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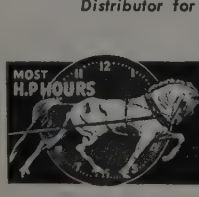

WISCONSIN MOTOR CORPORATION Milwaukee 46, Wisconsin
World's largest builders of Heavy-Duty Air-Cooled Engines

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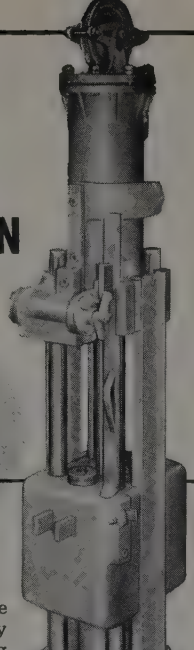
New Modern Design —Sound Engineering

produced this outstanding

WARRINGTON—VULCAN

Single-Acting

STEAM PILE HAMMER



- Heavy ribs give more support to cylinder head . . .
- Shorter channels permit easier insertion of hammer into leaders . . .

Operating at a medium steam pressure this versatile hammer delivers a moderate frequency of low velocity blows from a relatively heavy ram. A favorite for driving piles of all descriptions. Made in 6 sizes with Rated Striking Energy from 825 ft. lbs. to 30,225 ft. lbs.

Ask for full information

VULCAN IRON WORKS INC. 327 North Bell Avenue, Chicago 12, Illinois

Manufacturers of Pile Driving Hammers Since 1852

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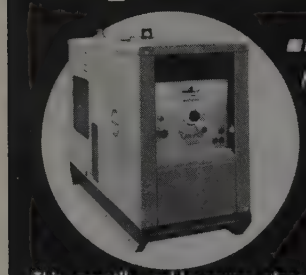
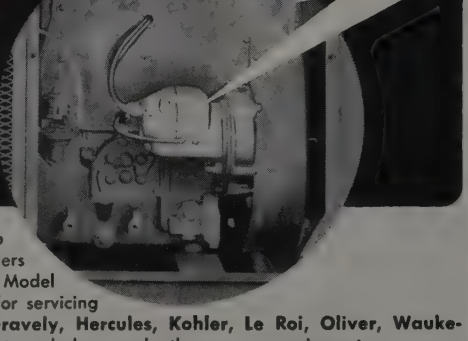
dependable WICO ignition ...Scores Again!

Model XH-2303 magneto used as original equipment on Miller "ROUSTABOUT"



This versatile welder-power plant, made by Miller Electric Co., Inc. of Appleton, Wisc. is driven by the rugged Hercules C2-90D air-cooled (Lycoming design) gasoline engine, equipped with Wico ignition.



DEALERS: Write for Form S-530 to distributors listed below — Wico dealers make over $2.00 extra net profit on Model XH and C series magneto packages for servicing **Buda, Continental, John Deere, Gravely, Hercules, Kohler, Le Roi, Oliver, Waukesha, Wisconsin** engines and on tractors, balers, and other power equipment.

WICO DISTRIBUTORS

Auto Electric Supply Co., San Francisco, Calif.
Automotive Products, Inc., Portland, Ore.
Frank Edwards Co., Salt Lake City, Utah.
Electric Equip. Co., Los Angeles, Calif.
Charles C. Jones Batt. & Elec. Co., Phoenix, Ariz.
Oakley Wholesale, Inc., Boise, Idaho.
Original Equip. Inc., Billings, Mont.
Pacific Mag. & Eng. Co., Seattle, Wash.
Spitzer Elect'l Co., Albuquerque, N.M.
Spitzer Elect'l Co., Denver, Colo.

WICO ELECTRIC COMPANY
A DIVISION OF GLOBE-UNION INC.
West Springfield, Massachusetts, U.S.A.

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the general fund or by the issue of bonds in an amount necessary to meet the deficiency anticipated in 1960 through 1963.

Step No. 3: Congress would have two courses of action open to it:

a. Provide increased taxes to be effective July 1, 1962, adequate to raise sufficient revenue to pay off the 1960-63 deficit financing plus any interest accrued over a 10 to 15-year period, and keep the remainder of the program on a cash basis beginning with 1964. This would require about $1,500,000,000 annually in new tax revenue.

b. Cut the tax increase proposed in "a" above in half—or to $750,000,000 annually—and continue deficit financing at about $1,000,000,000 a year through 1971.

As a result of this study and analysis and taking into consideration the pros and cons of all of the proposed solutions, the following plan is offered as a practical solution:

1. As each new cost estimate is approved increase the authorization in the amount needed to complete the Interstate System on time, while keeping ABC share in balance.

2. Suspend the Byrd Amendment during the interim period 1961-1963.

3. Suspend termination dates of Highway Trust Fund and the increased taxes levied in the 1956 Act so as to have future income assured with which to pay off any deficit financing.

4. Finance the anticipated deficit in 1960-63 by an interim borrowing plan.

5. Review Tax Base after Bureau of Public Roads' economic study is submitted in 1961 and revise it to provide after 1963 all or part of the needed additional annual income to the Trust Fund.

6. Authorize the continuation of supplemental financing after 1963 by borrowing in such amount as might be required each year to insure the flexibility needed to adjust to changing economic conditions.

7. Continue Federal authorizations for Interstate and ABC programs annually, 1970-1978, adequate to meet the country's needs during those years.

In presenting these recommendations it is not intended to imply that ARBA should oppose any workable solution that keeps the program rolling on schedule, and makes provision for a reasonable volume of highway construction after the present accelerated program is completed.

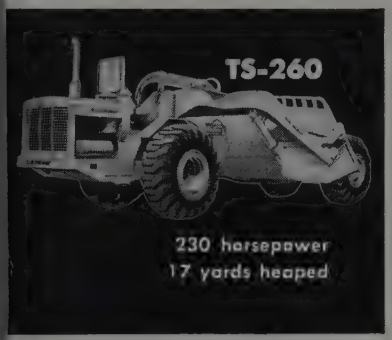
How to look your best — do your best — and feel good all day

WE SAY THE ALL-NEW ALLIS-CHALMERS TS-260 MOTOR SCRAPER HAS MORE "CAN-DO" PERFORMANCE FEATURES — MORE OPERATOR ADVANTAGES THAN ANY OTHER MEDIUM-SIZED SCRAPER!

Check us out! Just ask the nearby Allis-Chalmers dealer for a test ride. He wants to show you this 230-hp, 17-yd (heaped) machine. It's all hydraulic. With double-acting bowl jacks for real down pressure and unmatched rim pull per yard, it's quicker in the cut — faster on the getaway — far easier on the man. Look at the reasons why!

Start with Sitting Down. This deep, foam rubber seat is all-day easy, contoured to protect your ribs from side thrusts—fully adjustable, too.

Turn the Dashboard Key. Listen to the bark of that brand new engine — giving you more hp per struck yard than anything near its size. See how easily she sparks to life with dependable, direct electric, 24-volt, all-weather starting.



Now Put Her in Old "Granny Gear." — And Go! Take her right up through all five forward gears. See how easy you shift with the help of the TS-260's air-actuated inertia brake on the transmission countershaft . . . smooth! Never a grate or growl. You'd never know you were working a big 17-in., ceramic-lined clutch by the feel of the pedal . . . it's so easy. It's air-assist. Try to "high center" a driver wheel. Feel the "260's" new torque proportioning differential transfer power automatically to the wheel having best traction.

Make a Fast Turn. Grab hold of the new TS-260's two-stage hydraulic steering control. Make a full circle turn in less than 30 feet. You'll do it with no more than one-finger effort — and less than a quarter turn of the wheel. Never any "finger busting" whip-back either. There's plenty of "feel" — no over-control problem.

Feel Easy-Working Controls. Scraper bowl, apron and ejector controls are light and positive. No more blistered hands from hard tugging. Lever travel is short — permanently in adjustment. You never bust your knuckles against the seat. Look at the high apron lift—*higher than any other scraper.* Along with positive forced ejection, it means no more fighting to dump chunky clay, gumbo or other gooey material.

These are a few of the reasons why operators say the All-New Allis-Chalmers TS-260 has more "Can-Do" performance features — more operator advantages than any other medium-sized scraper . . . why you'll *look your best . . . do your best . . . and feel your best* — all day long. Operating the new "260" is believing. Do it yourself, soon.

. . . move ahead with **ALLIS-CHALMERS** . . . power for a growing world

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Yukon Equipment, Inc.—Seattle, Anchorage, Fairbanks and Ketchikan

ARIZONA
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NORTHERN CALIFORNIA
Industrial Tractor Sales—North Sacramento
Shasta Truck & Equipment Sales—Redding
West Coast Engine & Equipment Company
Berkeley Branch: San Jose and Ukiah
Trinity Tractor Company—Eureka

SOUTHERN CALIFORNIA
Construction Machinery Co.—San Diego
San Joaquin Tractor Co.—Bakersfield
Shaw Sales & Service Co.—Los Angeles

IDAHO
Southern Idaho Equipment Co.—Idaho Falls and Twin Falls
Southern Idaho Equipment Co. of Boise, Inc.—Boise

MONTANA
Mountain Tractor Company—Missoula and Kalispell
Seitz Machinery Company, Inc.—Billings

NEVADA
A D Machinery Company, Inc.—Elko and Las Vegas
Reno Equipment Sales Co.—Reno

OREGON
Haupert Tractor Company—Medford
Wood Tractor Company—Portland
Timber Tractor Company—Springfield

UTAH
Cate Equipment Company—Salt Lake City

WASHINGTON
Pacific Hoist & Derrick Company—Seattle & Puyallup
American Machine Company—Spokane

WYOMING
Studer Tractor & Equipment Company—Casper

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"LESS DOWN-TIME SINCE USING LUBRIPLATE LUBRICANTS"

says: TREU HOUSE OF MUNCH INC. of Toledo, Ohio.

"The use of LUBRIPLATE Lubricants has enabled us to operate our trucks with minimum down-time for repairs and parts replacement. Furthermore, we use but *one* Motor Oil, *one* grease and *one* gear lubricant, year round, which greatly simplifies our service program."

Richard A. Esser, Vice-President

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

LUBRIPLATE DIVISION, Fiske Brothers Refining Co. Newark 5, N. J. *or* Toledo 5, Ohio

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L. A. Rubber & Asbestos Works	Los Angeles, Calif.
Garlinghouse Brothers	Los Angeles, Calif.
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Yukon Equipment Co.	Seattle, Wash.
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Wilkinson & McClean, Ltd.	Calgary, Alberta, Can.

LUBRIPLATE
THE MODERN LUBRICANT

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News of DISTRIBUTORS

Lively Service appoints assistant service manager

James W. "Jim" Moberg has been named assistant service manager for Lively Service, service arm of Lively Equipment Co., construction equipment firm of Albuquerque, N. Mex. Moberg was formerly with Euclid distributors as service manager in Southern California, and has been a master mechanic with major construction companies. He will work with Charley Jones, service manager.

WEMCO names distributor

Edward R. Bacon Co., San Francisco, has been appointed distributor for the WEMCO line of aggregate processing equipment for the territory of Northern California and western Nevada. WEMCO is a division of Western Machinery Co.

Personnel changes in Phoenix office of Western Machinery

Western Machinery Co., Industrial Sales Division, San Francisco, announces three personnel appointments at their Arizona distributorship. Jack Keller, who has been with Western Machinery for 40 years, will be assistant to General Manager Leigh M. Jones. He will remain in Phoenix where he will be chiefly responsible for the pricing and sale of used construction equipment for the Division's five offices. R. B. George was appointed to Keller's former post as operations manager in Phoenix. He will also supervise the Tucson office.

In addition to these changes, Warren J. Sullivan has joined the Division as field sales manager. Sullivan has had wide experience in the sale of heavy construction equipment. Before joining the Phoenix office, he was Alaska manager for Evans Engine & Equipment Co. of Seattle, Wash.

Fincham handles complete Koehring equipment line

Fincham Equipment Co., Denver, Colo. has been appointed a distributor by the Koehring Division of Koehring Co., Milwaukee, Wis. The Denver firm, headed by John Fincham, will serve territory covering all of Colorado, plus eleven counties in southern Wyo-

NEW FACILITIES of the Construction Equipment Division of Harron, Rickard & McCone Co. of Southern California. Located at 13770 E. Firestone Blvd., Norwalk, the new headquarters provides maximum customer service with convenient access and ample parking. Ground area totals 2½ acres, and a 12,000-sq. ft. building is divided into office and display areas, parts storage, and shop. Additional heavy equipment repair facilities are on the blacktop outside. Sales, service, and parts stocking sections are maintained for Ford tractors; Parsons trenching machines; Koehring cranes, excavators and concrete equipment; Clyde hoists and derricks; Gorman-Rupp pumps, and other construction equipment lines. Key personnel includes *Harley Reese*, vice president and general manager; *George Gibson*, Ford tractor department manager; *Maurice King*, service manager, and *Harvey Juee*, shop foreman.

How to Slash Costs of Gravel Loading and Screening

Loading sand and gravel is easy for the City of Yankton, S. D., with their new Model 202 Kolman Junior conveyor-screen plant, 40 feet long and with a 24" belt, equipped with a Kolman SB-60 vibrating screen, 6" x 36".

omplete plant is compact unit for big production, onvenience of operation, ease of transportation. Rugged nough to carry a loading trap and large vibrating screen ithout additional support.

urdy design permits installation of loading trap on tail ction, portable without disassembly.

ngle-deck vibrating screen folds into towing position r transportation without dismounting screen or remov- g any of the drive assembly.

City Saves with KOLMAN 'Junior' Conveyor

Low cost materials handling was the object when the City of Yankton, South Dakota, set out to locate a loading and screening plant. They discovered, as have many city highway departments, contractors and gravel plant operators, that the KOLMAN 'Junior' portable conveyor-screen plant is the ideal solution.

"Box Type" Construction

The rugged "box-type" construction of the Junior gives you unusual strength and rigidity for an amazing low price. The sides are of fabricated 3/16" steel plate with 2" legs. A steel belt cover completely covers the top, giving additional rigidity and completely encasing the return belt to prevent material from working in to cause belt damage.

The under-slung power unit provides easy access for servicing and operation from the ground. This is an ideal feature for the operator who has to stop and start his plant frequently during the day. The V-belt drive assembly assures positive and efficient transmission of power and the motor mount design provides quick and easy adjustments to maintain proper belt tension through a turnbuckle arrangement.

The Junior is available with the Head Pulley Clutch which stops and starts the belt while the screen remains in operation, thus greatly increasing screening efficiency.

TAKES TOUGH PUNISHMENT

The KOLMAN 'Junior', or Model 202, will take the kind of punishment that is dished out to a portable outfit and will cost you far less money to own and operate. Available in 18" or 24" belt widths, in lengths up to 50".

SEND for FREE literature

KOLMAN Manufacturing Co.
5670 West 12th St.
Sioux Falls, S. D.

Please send free literature on—
- ☐ Model 202 Junior Conveyor
- ☐ Model 101 Heavy Duty Conveyor
- ☐ Screens ☐ Feeders
- ☐ Traps

Quote..... size or .....capacity

Name .....

Address .....

City .....

SEE YOUR NEAREST DEALER NOW

CALIFORNIA
LOS ANGELES, BAKERSFIELD, SAN DIEGO RIVERSIDE, SANTA BARBARA—Brown-Bevis Industrial Equip. Co.
OAKLAND—Spears-Wells Machinery Co.

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IDAHO
BOISE, POCATELLO—Intermountain Equip. Co.

MONTANA
BUTTE, BILLINGS, GREAT FALLS and MISSOULA—Hall-Perry Machinery Co.

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ALBUQUERQUE — Construction Machinery Co.

OREGON
PORTLAND—Balzer Machinery Co.

UTAH
SALT LAKE—Rasmussen Equipment & Supply Co.

WASHINGTON
SEATTLE—Sahlberg Equip., Inc.
SPOKANE—Intermountain Equip. Co.

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Western Representative

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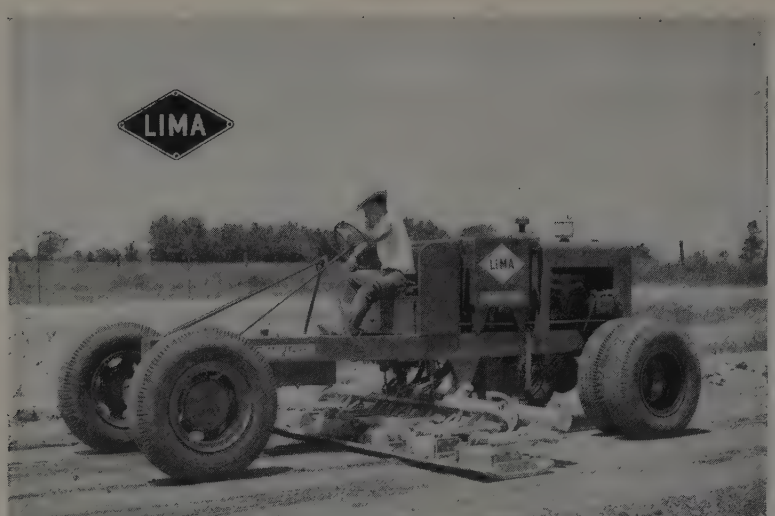

LIMA Roadpacker speeds highway and airport construction across the nation

The LIMA Roadpacker is a big favorite with prominent contractors throughout the country for highway and airport construction. It has no equal for fast, uniform consolidation by the vibratory method of single course macadam bases, gravel subbases and soil-cement bases.

The Roadpacker is equipped with six 420-lb. hydraulically driven shoes for effective vibrating and tamping action. These oscillate approximately ¼ in. at the proper frequency for best consolidation of any base material. The force is applied vertically to prevent shoving the material being consolidated. The sole plate is designed for both forward and backward operation.

Working widths—easily varied by upfolding one or both of the end shoes—range from 8 ft., 9 in., with four shoes, to 13 ft., 1 in., with six shoes. The shoes are raised and lowered hydraulically.

Get the full story on the LIMA Roadpacker today. See your nearby distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

Reno Equipment Sales Company, 1510 W. 4th Street, Reno, Nevada; **Feenaughty Machinery Company,** 112 S.E. Belmont Street, Portland 14, Oregon; **Feenaughty Machinery Company,** 600 Front Street, Boise, Idaho; **Evans Engine & Equipment Company,** 4300 11th Avenue, N.W., Seattle 7, Washington; **Bay Cities Equipment, Inc.,** 2792 Cypress Street, Oakland 7, California; **Bay Cities Equipment, Inc.,** 1178 West San Carlos Street, San Jose, California; **N. C. Ribble Company,** 1304 North Fourth Street, Albuquerque, New Mexico; **Smith Booth Usher Company,** 2001 Santa Fe Avenue, Los Angeles 54, California; **Modern Machinery Company, Inc.,** East 4412 Trent Avenue, Spokane 10, Washington; **Shasta Truck & Equipment Sales,** South 99 Highway, Redding, California; **Western Machinery Company,** 820 North 17th Avenue, Phoenix, Arizona; **Western Machinery Company,** 1111 West St. Mary's Road, Tucson, Arizona; **Evans Engine & Equipment Co., Inc.,** Post Road—Box 894, Anchorage, Alaska; **Faris-Moritz Equipment Company,** 5790 Colorado Blvd., Denver, Colorado; **Western Machinery Company,** 2300 South Main Street, Salt Lake City 15, Utah.

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON 5921

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ming. The new sales and service headquarters will handle a complete line of Koehring trademark products including excavators; the Skooper, a recently introduced speed loader; Twinbatch pavers; finishers; the Dumptor, and similar contractor equipment.

Dick Cochran appointed White Motor Co. distributor in Arizona

R. W. "Dick" Cochran, recent manager of The White Motor Co.'s Denver factory branch, has been appointed White-Autocar distributor for Arizona. He has served White for more than 38 years as

Cochran

Lynch

salesman, territory manager, and in recent years as manager of the Los Angeles and Denver branches. He acquires full interest in the Truck Equipment Co. from Frank Hall and Gene Coombs.

With Cochran's shift to Arizona, Wilson D. Patterson, White's regional vice president, appointed Larry Lynch to succeed as manager of the Denver branch. Most recently Lynch was territory manager for Denver, a post now to be filled by Ralph Wilson. Other White personnel changes in the West include the appointment of Paul Woth, a 20-year White veteran, as territory manager of the Los Angeles branch area, succeeding Herm Mesick, transferred to the home office in Cleveland. Ed Flamme, who headed up sales in the Portland branch, now assumes the duties of used-truck manager there.

Two Western dealers honored

Two of the three Ford Tractor and Sherman Products dealers to draw national recognition as "Dealers of Distinction" in a recent issue of "The Shermanews" hail from the West. Featured dealers for the first quarter of 1959 are L. R. Springmeyer Equipment Co., Reno, Nev. and Universal Tractor Co. of Denver, Colo.

H. J. Mayer elected AED vice president

At the annual meeting of the Associated Equipment Distributors in Chicago recently, H. J. Mayer, executive vice president of Western Machinery Co., San Francisco, was elected vice president of the association. He has previously served as a regional director. Mayer has been active in construction and industrial equipment marketing most of his business life.

Mayer

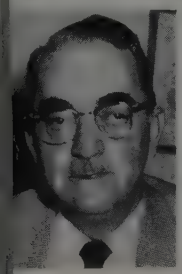
Kirksey

Frank Kirksey named sales manager of Cook Bros. Equipment Co.

J. E. Hall, executive vice president of Cook Bros. Equipment Co., announces the appointment of Frank Kirksey as manager of Truck and Trailer Equipment Sales in Southern California. Kirksey has had wide experience in all phases of truck sales and is well known throughout the Southern California area.

C. W. Terrell joins Lively as sales manager

Lively Equipment Co., construction and mining equipment firm of Albuquerque, N. Mex., announces that Cecil W. Terrell has



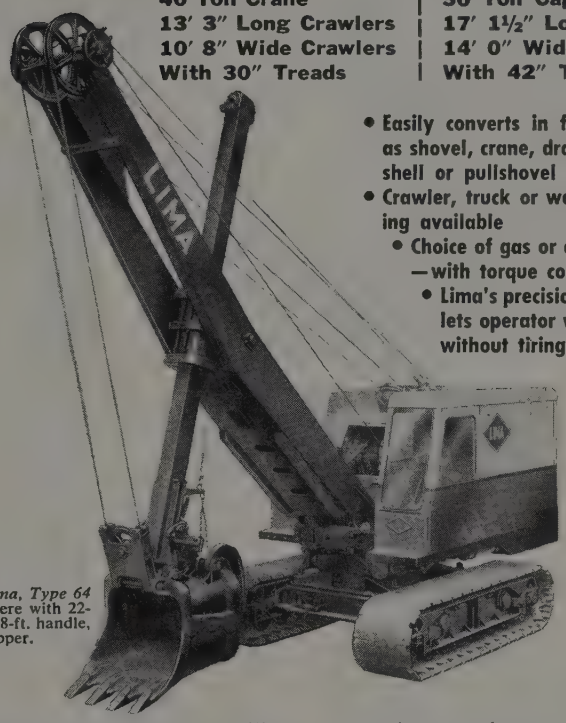
Cecil W. Terrell

joined the firm as sales manager. He has been associated for many years with equipment distributors, manufacturers, and Colorado contractors. Herbert J. "Herb" Vesper, formerly with Lively's Albuquerque operation, has rejoined the company as sales manager for the El Paso, Tex., office.

ANNOUNCING TWO NEW LIMAS

TYPE 64
1¼ Yd. Shovel
40 Ton Crane
13′ 3″ Long Crawlers
10′ 8″ Wide Crawlers
With 30″ Treads

TYPE 64-SC
SPECIAL CRANE
50 Ton Capacity
17′ 1½″ Long Crawlers
14′ 0″ Wide Crawlers
With 42″ Treads



Newest Lima, Type 64 —shown here with 22-ft. boom, 18-ft. handle, 1¼-yd. dipper.

- Easily converts in field for use as shovel, crane, dragline, clamshell or pullshovel
- Crawler, truck or wagon mounting available
- Choice of gas or diesel power —with torque converter
- Lima's precision air control lets operator work all day without tiring

The rugged new Lima Type 64 fills a definite need for a heavy duty 1¼-yd. shovel, 40-ton crane, dragline and 1¼-yd. pullshovel that will combine dependable high performance with low maintenance costs, for maximum profit! The new Type 64-SC with extra long, wide crawlers is designed for special crane service. This new Lima has a capacity of 50 tons on a 40′ boom at 10′ radius.

Lima Quality Features

You get these, and many more, Lima quality features in the 64 and 64-SC; precision-machined teeth on heat-treated alloy steel gears; long-lasting, trouble-free anti-friction roller bearings; safe, sure band brake and jaw clutch power steering; splined shafting; extra-large-diameter hoist, crowd swing and propel clutches; independent planetary boom hoist.

Crawler truck base is strong one-piece alloy steel casting with integral machined ring gear and flame-hardened roller path. Rotating base is one-piece carbon steel casting, built to absorb severest shocks of hard digging. Center pin is relieved of strain by six hook-type conical rollers tapered to revolve naturally around double-flanged roller path.

Like all Limas, the 64 and 64-SC are good travelers. Strips down easily for haulage. Side frame assemblies, complete with treads, are simple to remove. Ledge mounted, one-piece rear counterweight can be easily removed. When equipped for crane service, folding or telescoping gantries can be lowered to cab height for low clearance.

Designed to Outperform

Service is easy, every part readily accessible. Simplicity of power transmission design lessens friction, reduces upkeep, and delivers more power. Torque converter prevents engine stall, cushions shocks to operator and machine, increases performance by building up line pull.

Learn more about the Type 64 and 64-SC, newest members of the Lima family of high-performance construction equipment —The Lima line includes shovels to 6 cu. yd., cranes to 110 tons, draglines variable. See your Lima distributor now or write to us.

Our Seattle Office: 1932 First Avenue South, Seattle 4, Washington; **Our La Mirada Office:** 14120 E. Rosecrans Ave., La Mirada, California; **Feenaughty Machinery Co.,** 112 S.E. Belmont Street, Portland 14, Oregon; **Feenaughty Machinery Co.,** 600 Front Street, Boise, Idaho; **Smith Booth Usher Company,** 2001 Santa Fe Avenue, Los Angeles 54, California; **Modern Machinery Co.,** 4412 Trent Avenue, Spokane 10, Washington; **Acme Iron Works,** 540 Culebra Avenue, San Antonio, Texas; **N. C. Ribble Co.,** 1304 North Fourth Street, Albuquerque, New Mexico; **Bay Cities Equipment, Inc.,** 2792 Cypress Street, Oakland 7, California; **Bay Cities Equipment, Inc.,** 1178 West San Carlos Street, San Jose, California; **McGaraghan Supply Company,** 529 Broadway, Eureka, California; **Evans Engine & Equipment Company,** 4300 - 11th Avenue, Northwest, Seattle, Washington; **Evans Engine & Equipment Co., Inc.,** Post Road—Box 894, Anchorage, Alaska; **Faris-Moritz Equipment Co.,** 5790 Colorado Blvd., Denver, Colorado; **Shasta Truck & Equipment Sales,** South 99 Highway, Redding, California; **Reno Equipment Sales Company,** 1510 West Fourth Street, Reno, Nevada; **Western Machinery Company,** 820 North 17th Avenue, Phoenix, Arizona; **Western Machinery Company,** 1111 West St. Mary's Road, Tucson, Arizona; **Western Machinery Company,** 2300 South Main Street, Salt Lake City 15, Utah.

LIMA Construction Equipment Division, Lima, Ohio
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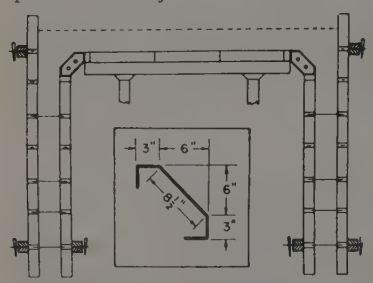
Job Finished 3 Weeks

How to Pour a Tunnel in a Hurry...

Symons Culvert Forms The Answer

When awarded a contract to build a 340 ft. tunnel, Schweiger Construction Company, Kansas City, Mo., faced the problem of how to do it fast and as economically as possible.

Symons Culvert Forms solved the problem. They eliminated the need for any special form or job-built construction.



Schweiger used Symons 1" steel channel filler horizontally on top of 6' vertical panels on the inside of the walls. Culvert Forms were placed on top of this filler. The forms underneath were stripped with no difficulty and the fillers and culvert forms were then removed without disturbing the decking for the slab, which was left in place for an additional curing period. Walls and top slab were poured monolithically in three pours. *Job was completed in three weeks.*

Symons forms, shores and column clamps may be rented with purchase option. Additional information on *Symons Culvert Forms* is available upon request.

Symons

SYMONS CLAMP & MFG. CO.

634 Williams Street, San Leandro, California
Phone LOckhaven 9-9159

MORE **SAVINGS** FROM **SYMONS**

... for more details, circle No. 98

MANUFACTURERS

Ralph Aspeland moves to Case Industrial Division

H. L. Hanson, industrial sales manager of J. I. Case Co., Oakland, Calif., announces the appointment of Ralph V. Aspeland as sales administrator to the Oakland Branch

Ralph V. Aspeland

Industrial Division. Aspeland has been with the Case company since 1949 and up to this time has been with the Agricultural Division.

Koehring names Chandler assistant v.p.; Dickerson sales manager

Promotion of K. R. Chandler from assistant sales manager to the newly created post of assistant vice president of sales for the Koehring Division of Koehring Company is disclosed by J. E. Chadwick, sales vice president. He also announced the appointment of William B. Dickerson as sales manager. Dickerson had worked in field sales in the Nothwest area and on the West Coast for a construction equipment manufacturer before joining the Koehring organization.

Flintkote plans plant at Salt Lake City

The Flintkote Company, a leading building products manufacturer, announces plans for construction of a new plant at Salt Lake City, where it will produce Miracle Lime, well-known and patented lime product used in building construction and already produced at a plant in Henderson, Nev.

Appointed sales manager

Richard R. "Dick" Bains has been appointed sales manager for Turbine Type Mixers, according to William Clayton, vice president and director of sales of the T. L. Smith Co., Milwaukee, Wis. Bains has been with the Smith organization since 1953, coming to the firm as sales promotion manager, a capacity in which he served until his recent appointment.

WARN HUBS on your 4-wheel drive stop front end drag in 2-wheel drive!

APPROVED Jeep EQUIPMENT

Models for all makes of 4 w. ds. to 1½ tons at dealers. Write for literature.

NEW ECONOMY! NEW CONVENIENCE!

Save on repairs, tires, gas... get new pep, handling ease... with Warn Hubs, the original "selective drive." You'll be way ahead with either automatic LOCK-O-MATICS, or fingertip control Warn Locking Hubs. Unconditionally guaranteed.

PROVEN IN OVER A **BILLION MILES** OF USE UNDER ALL CONDITIONS!

WARN MANUFACTURING CO., Inc. Riverton Box 6064-WC3, Seattle 88, Wash.

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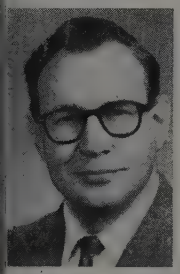
Jack How heads C. of C.

Jack H. How, president of Western Machinery Co. and Western Knapp Engineering Co., has been elected president of the San Francisco Chamber of Commerce for 1959. A managing partner of The Edward R. Bacon Co., he is active in several business, civic, and engineering organizations in the Bay city.

District manager at San Francisco named by Keasbey & Mattison

Keasbey & Mattison Co., Ambler, Pa., announces the appointment of John L. Prechek as district manager of the San Francisco dis-



John L. Prechek

trict sales office at 870 Market St., San Francisco. Prechek's experience and understanding of sales and management assure K & M's customers the same cooperation and assistance they have received in the past.

Top level appointments by Chrysler

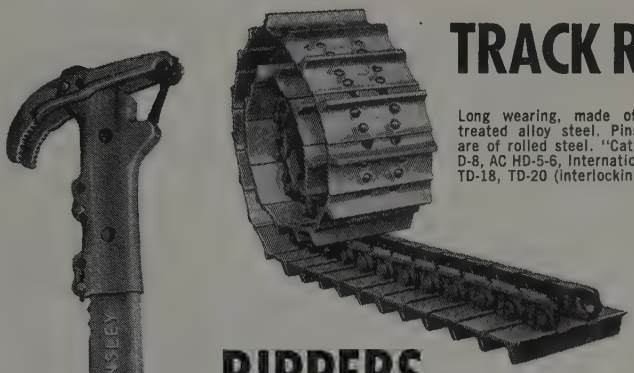
Four appointments are announced by Lawrence E. Nelson, vice president of sales of Chrysler Marine & Industrial Engine Division. The four named and their titles are: Bruce B. Spratling, product sales manager; M. J. Yost, manager of field operations; William M. Vollendorf, advertising and sales promotion manager, and Robert C. Loman, manager of parts and service. All but Spratling, who joined Chrysler in recent months, are veteran employees of the company.

International Harvester promotes Fortney

Kenneth B. Fortney is the new assistant manager of International Harvester Co.'s Tractor Works at Chicago, according to announcement by R. F. Denney, manufacturing manager of the company's Construction Equipment Division.

Here is Your Complete Line of HENSLEY EQUIPMENT

Sold through distributors only . . .



TRACK RAILS

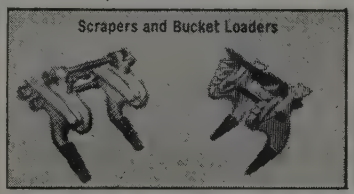
Long wearing, made of forged, heat-treated alloy steel. Pins and bushings are of rolled steel. "Cat" D-4, D-6, D-7. D-8, AC HD-5-6, International TD-9, TD-14. TD-18, TD-20 (interlocking types).

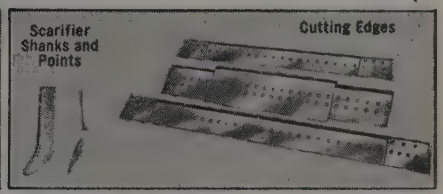
RIPPERS

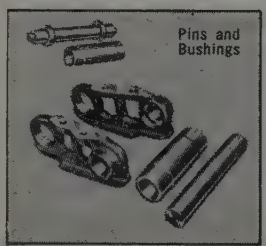
Adjustable - Interchangeable, Lightweight, Heavy Duty Rippers for All Dozers, Scrapers and Bucket Loaders. Fit all small, medium and large dozers. Excellent tool where grade has been lost and for corner cuts.

NEV-A-LUBE ROLLERS

ENDS ROLLER GREASING FOREVER—D-2, D-4, D-6, D-7, D-8 and D-9; HD-5 & 6, HD-9 & 11, HD-15 & 16, HD-19, 20 and 21; TD-6, TD-9, TD-14, TD-18 and TD-24; also Oliver DD and DG Models.







Selected Sales Territories available to qualified distributors. Your inquiry will receive prompt attention. Write or wire today.

HENSLEY EQUIPMENT CO., INC.

800 Peralta Ave., San Leandro, Calif. LO. 9-1806

Detroit Plant and Warehouse • 2240 Bellevue Avenue, Detroit 7, Mich., LOrain 7-4483

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Since 1953 Fortney has been general superintendent of the Tractor Works. He succeeds Homer F. Griffith, newly named manager of the plant.

J. R. Steelman heads IRF

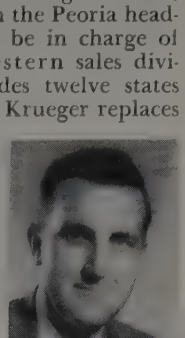
Julien R. Steelman, president of the Koehring Company of Milwaukee, Wis., was recently elected chairman of the board of directors of International Road Federation, Washington, D. C. He succeeds H. S. Merriman who has retired from Socony Mobil Oil Co.

Insley displays new models

Insley Manufacturing Corp. rolled out new models of heavy-duty construction equipment and the red carpet recently for distributors and contractors at its Indianapolis plant. Center of attention at the week-long open house was the new Insley 45-ton truck crane which was mounted on a 4-axle truck manufactured by Insley's West Coast Division, and the "M" and "WT" series of cranes and excavators. The complete line of the 51-year old construction equipment firm was also featured.

Krueger named LeT-WesCo Western sales manager

Appointment of O. A. "Art" Krueger as Western sales manager for LeTourneau-Westinghouse Co., is announced from the Peoria headquarters. He will be in charge of LeT-WesCo's Western sales division which includes twelve states and west Canada. Krueger replaces



O. A. Krueger

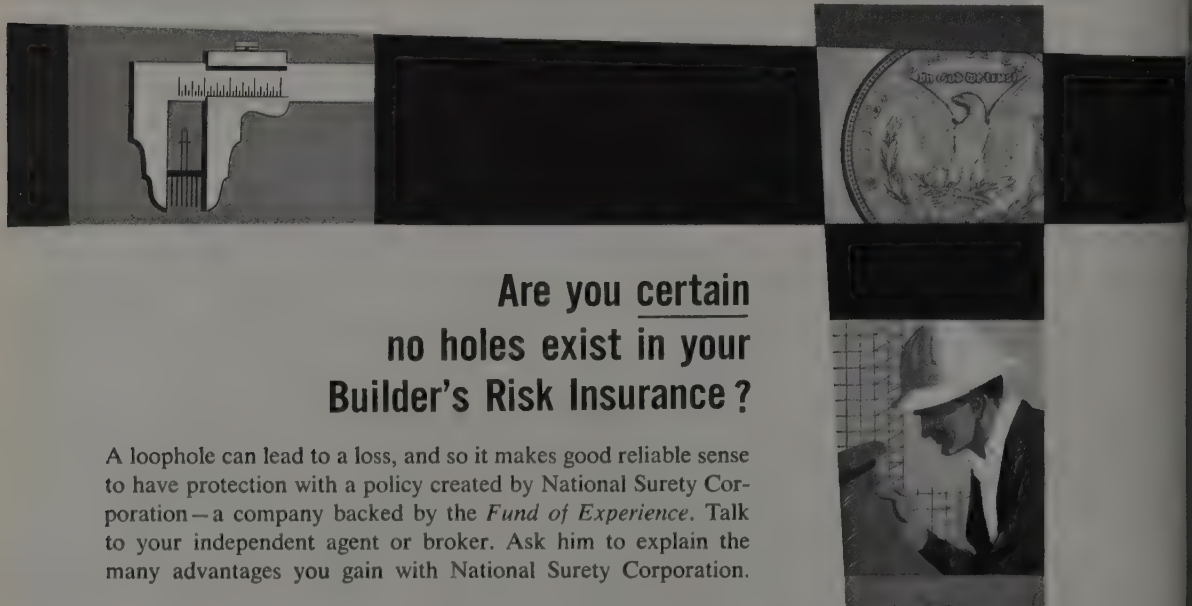
F. W. Duke, who has been transferred to the company's central sales division. W. E. Hendricks, domestic sales manager, reports that Krueger comes to his new position following more than three years as a district representative covering Montana and northern Wyoming, and has an excellent background of field experience. He will move from Billings, Mont., to LeT-WesCo's Peoria office where he will presently headquarter.

Ford top level sales appointment announced

Appointment of Donald F. Ball as manager of Ford Division's Heavy Truck Sales department at Dearborn, Mich. is announced by Walter J. Cooper, division general sales manager. Ball succeeds John F. McLean, Jr., who was named executive assistant to the regional sales manager at Chicago. McLean has been with Ford Motor Co. since 1946 and has held various executive posts with Truck Sales department since 1949.

Allis-Chalmers acquires S. Morgan Smith Co.

Allis-Chalmers Manufacturing Co. has taken over the S. Morgan Smith Co. of York, Pa. The York Works of Allis-Chalmers, as it is to be known, becomes the twentieth plant in the A-C family. In taking over these facilities, W. G. Scholl, executive vice president of Allis-Chalmers, announced the formation of the hydraulic division of the Industries Group, with headquarters at York. Beauchamp E. Smith has been named general manager of the division.



Are you certain no holes exist in your Builder's Risk Insurance?

A loophole can lead to a loss, and so it makes good reliable sense to have protection with a policy created by National Surety Corporation—a company backed by the *Fund of Experience*. Talk to your independent agent or broker. Ask him to explain the many advantages you gain with National Surety Corporation.

NATIONAL SURETY CORPORATION

Central Bonding Offices:
3333 CALIFORNIA STREET, SAN FRANCISCO
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The FUND Insurance Companies

Rely on the Fund of Experience for Builder's Risk Insurance

FIREMAN'S FUND INSURANCE COMPANY • HOME FIRE & MARINE INSURANCE COMPANY • NATIONAL SURETY CORPORATION

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New organization set-up at "Quick Way"

"Quick Way" Truck Shovel Co., Chicago, announces the appointment of Gilbert S. Rigdon as executive vice president, and new board members and officers. Last December, Penn Texas and H&B American Machine Co., Inc., Culver City, Calif., entered into an operating agreement whereby H&B

Gilbert S. Rigdon

combined their financial, engineering production, and sales know-how with "Quick Way's" long experience in the truck shovel field to expand the operations of the company. Rigdon is also executive vice president of H&B but will now reside in Denver.

The new "Quick Way" board is composed of Alfons Landa and Robert C. Finkelstein of Penn Texas, and Gilbert Rigdon and David E. Bright of H&B. Officers are: Robert Finkelstein, president; Gilbert Rigdon, executive vice president; Walter O. Lampl, vice president; Henry L. Heymann, secretary; John E. Corsuch, assistant secretary; and David E. Bright, treasurer.

Yuba buys Southwest Welding

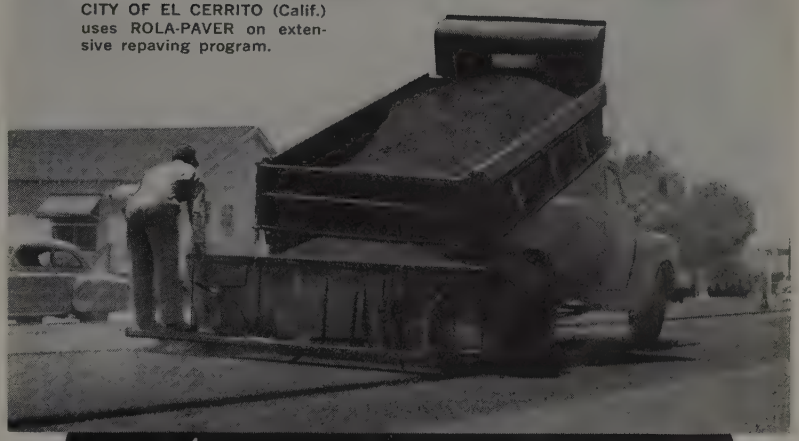
Yuba Consolidated Industries, Inc. has purchased Southwest Welding & Manufacturing Co. of Alhambra, Calif., an event jointly announced by J. L. McGara, president of Yuba, and John W. Lucas, president of Southwest. With plants in Alhambra and Richmond, Calif., Southwest Welding manufactures a broad line of road construction equipment sold under the name "Southwest", and offers a complete service for the engineering, fabrication, and field construction of heavy equipment for the atomic energy, power, hydroelectric, and other industries.

Bay City Shovels announces vice president

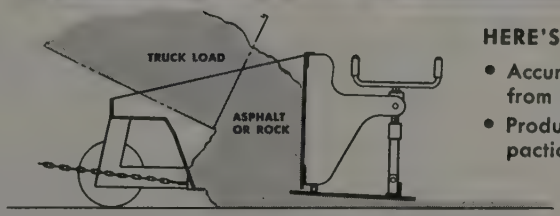
G. L. Sittser has been elected by the Board of Directors of Bay City Shovels, Inc., as executive vice president. Donald E. Hawkins, president of Bay City, emphasized that

REPAVING *on a tight budget?*

CITY OF EL CERRITO (Calif.) uses ROLA-PAVER on extensive repaving program.



-you'll be hours and dollars ahead with a **ROLA PAVER**



HERE'S WHY

- Accurate depth control — from ¼" up!
- Produces up to 25% compaction — cuts rolling time!
- Eliminates wheel and shoe marks, practically no raking required!
- Fast — standard Rola-Paver spreads up to 500 tons per day!
- Versatile — handles street and highway paving, patch work, driveways, parking lots, shoulders, trenches (with attachment)!
- Low investment, negligible maintenance cost!
- 3 basic models — 9'6" Base Paver, 8'6" or 9'3" standard Rola-Paver, and new 8' light weight (950 lb.) model.

FAST BASE SPREADING, TOO!
Spreads base materials in up to 8" depths with exceptionally accurate control, at rates up to 200 tons per hour (crusher-run base).

GET THE FACTS, NOW! Write today for free literature, specifications, prices — please address Dept. W3.

watson metco 13

BETTER EQUIPMENT FOR PLACING AND FINISHING MATERIALS...

DEALER INQUIRIES INVITED

H. S. WATSON COMPANY
1316-67th STREET • EMERYVILLE, CALIFORNIA
TOLEDO, OHIO

Power Buggies • Telescoping and Economy Vibratory Screeds • Rola Pavers and Trench Boxes • Wood and Steel Tilt-Up Hardware • Bull Floats • Hoppers • Elephant Trunks and Chutes • Tampers • Hand Carts

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FISHER Finds it Faster!

All-new 1959 Transistorized
M-SCOPE PIPE FINDER
only
$189.50

- Greatest depth penetration
- Greatest tracing distance
- Pinpoint accuracy
- One year between battery changes
- Built-in battery testers
- 90% less maintenance costs

New, Transistorized
LEAK DETECTOR
- Finds leaks faster, more accurately
- Weighs 80% LESS than ordinary equipment

only **$295.00**

SEND FOR FREE 1959 CATALOG

FISHER Research Lab., Inc.
Dept. WC-1, Palo Alto, Calif.

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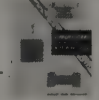
IF YOU POUR CONCRETE

these catalogs are for you...
just check these desired

☐ Catalog featuring EFCO Steel Forms available on a purchase basis.

☐ Catalog featuring Economy Steel Forms available on a rental basis.

☐ Catalog featuring EFCO Steel Forms, Economy Steel Forms and Special Economy Steel Forms.



☐ Folder featuring Economy Steel Forms for precast, prestressed concrete.

Economy Forms Corp.
Box 128-V, H. P. Station
Des Moines, Iowa

Please send literature checked above, and address of nearest sales office (there are 24 coast-to-coast).

Name_____

Firm name_____

Street address_____

City_____ State_____

. . . for more details, circle No. 104

there would be no change in present management personnel and that Sittser's appointment to the newly created post was for the purpose of strengthening the organization for expected company growth.

Waukesha Motor promotes Harvey Wilson

Harvey R. Wilson has been named manager of Waukesha Motor Co.'s service division. He has been a part of Waukesha's service organization since 1927, and served as manager of service in the company's branch at San Francisco from 1932 to 1936. For the past thirteen years Wilson has served as executive assistant service manager at company headquarters in Waukesha with supervision over all operational functions of this department.

IH names Skip Jones head of engine sales

C. E. "Skip" Jones has been appointed manager of engine sales of the Construction Equipment Division of International Harvester Co., as announced by C. A. Hubert, divisional general manager. A member of the IH organization since 1936, he has worked out of the division's Melrose Park, Ill. headquarters since 1952, his most recent assignment being divisional supervisor of sales engineering and sales development.

E. F. Fisher heads Gar Wood sales and marketing

Edward F. Fisher, president, Gar Wood Industries, Inc., announces the appointment of David J. Davis as director of sales and advertising. He assumes his present position after serving as general sales manager, construction machinery. Gar Wood Industries is a major manufacturer of truck equipment and construction machinery, with headquarters at Wayne, Mich.

Pruess made field engineer for Michigan line

Earl D. Pruess has been appointed field engineer for the Construction Machinery Division of Clark Equipment Co., Benton Harbor, Mich., according to A. E. York, sales manager. Before joining Clark, Pruess was a field engineer for LeTourneau-Westinghouse Co.

A. G. Crockett of Mack Trucks named CIMA director

A. G. Crockett, Director, Sales Development Division, Mack Trucks, Inc., Plainfield, N. J., has been elected a director of the Construction Industry Manufacturers Association. CIMA was founded in 1949 by the manufacturers of construction machinery, allied equipment, and components and supplies. Crockett joined Mack Trucks in 1929 and has been associated with the manufacture and sale of motor trucks all of his business life.

Web Ballinger represents Corrugated Metal Pipe Assn.

Web W. Ballinger has been appointed division engineer of the National Corrugated Metal Pipe Association. He will make his headquarters in Denver and represent the association in Colorado, New Mexico, Utah and Wyoming. Widely known in the West, he is a graduate civil engineer who was for several years with Stone & Webster Engineering Co., and served with the Corps of Engineers in World War II. For a few years he was with Armco Drainage & Metal Products, Inc., in Colorado, follow-

(Continued on page 174)

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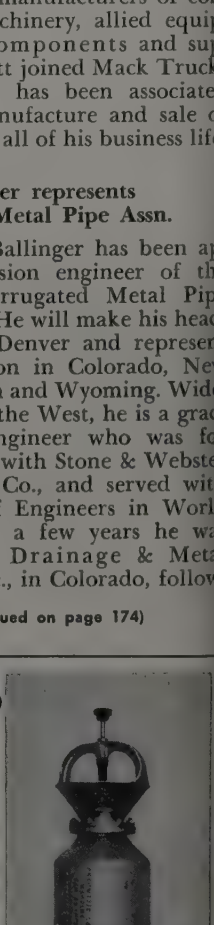

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UNIT PRICES

Selected abstracts for Western projects

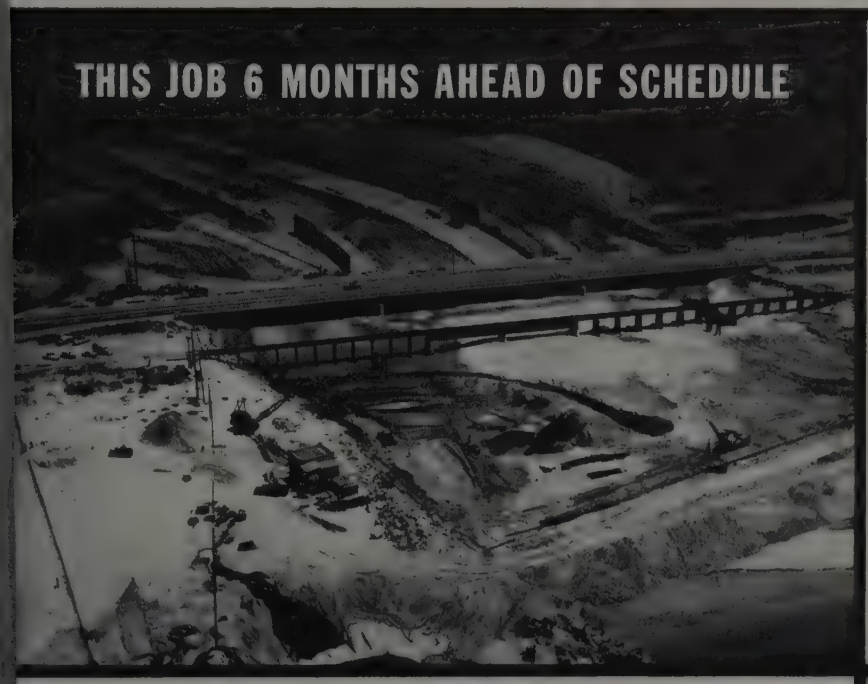
BRIDGE AND LOCK — Barge canal lock and bascule bridge (This project is described on page 37.)

California—Yolo County—Corps of Engineers. Lock-Bridge Constructors, a joint venture consisting of Rothschild, Raffin & Weirick, Inc., Yuba Consolidated Industries, Inc., and George Pollock Co., received in July of 1958 a contract for the construction of a barge canal lock, bascule bridge and power control and lighting system, in connection with the Sacramento River Deep Water Ship Canal Project.

(1) Lock-Bridge Constructors $6,500,527
(2) Fruin-Colnon, E. Luhr, Le Boeuf & Dougherty..... 6,869,895
A. Teichert & Son 6,877,380
M & K Corp..... 7,329,173

Barge Canal Lock

		(1)	(2)
1 job	Care of water.....	$350,000.00	$705,000.00
1 job	Clearing and grubbing.....	100,000.00	50,000.00
478,000 cu. yd.	Excavation, common	.65	.60
24,400 sq. ft.	Piling, stl. sheet, sec. MA-22	4.35	3.65
58,200 sq. ft.	Piling, stl. sheet, sec. S-28	4.35	4.30
37,300 sq. ft.	Piling, stl. sheet, sec. Z-27	4.50	4.50
71,000 sq. ft.	Piling, stl. sheet, sec. Z-32	4.50	5.10
18,500 sq. ft.	Piling, steel sheet, section Z-27, anchor.....	4.25	4.95
787 lin. ft.	Diaphragm connection, river guide wall.....	25.00	40.00
675 lin. ft.	Diaphragm connection, harbor guide wall	35.00	40.00
1 ea.	Pile dolphin, river end.....	3,000.00	2,660.00
2 ea.	Pile dolphin, harbor end....	3,500.00	2,300.00
198,000 cu. yd.	Fill, selected	.65	.70
86,000 cu. yd.	Fill, common	.35	.65
10,000 M gal.	Water for embank. compaction and dust control	1.25	1.00
30 roller hr.	Addl. rolling for compac...	25.00	25.00
16,300 ton	Dumped riprap	6.00	5.00
1,350 cu. yd.	Filter Material No. 1.....	8.00	5.50
2,700 cu. yd.	Filter Material No. 2.....	7.50	5.60
1,350 cu. yd.	Filter Material No. 3.....	8.00	5.30
2,700 cu. yd.	Filter Material No. 4.....	7.50	5.00
47 MFBM	Timber	500.00	350.00
46 cu. yd.	Concrete, class "A".....	50.00	23.65
30,900 cu. yd.	Concrete, class "B".....	24.20	23.65
38,600 bbl.	Portland cement	5.00	5.45
2,450,000 lb.	Steel, reinforcement	.13	.16
25,000 lb.	Metal fabric	.23	.22
134 lin. ft.	Copper waterstops	5.00	5.00
113,000 lb.	Steel, struct., wall armor..	.42	.45
831,000 lb.	Steel, structural, sector gate (non-embedded) ...	.30	.38
1,540,000 lb.	Struct. steel, misc.....	.28	.25
233,000 lb.	Steel, low alloy, sector gate (non-embedded)	.27	.37
536,000 lb.	Steel, low alloy, bulkhead (non-embedded)	.28	.26
749,000 lb.	Steel, low alloy, misc.....	.25	.21
52,500 lb.	Steel, corrosion resisting chromium clad plate	.90	.66
35,200 lb.	Steel, bolt	.30	.56
1,550 lb.	Alloy steel, bolt.....	.70	1.50
2,020 lb.	Steel, stainless, bolt	2.40	2.00
103,200 lb.	Castings, iron and steel (all classes)	.70	.93
72,700 lb.	Forgings iron and steel (all classes)	1.00	.40
11,900 lb.	Non-ferrous metal, misc. ..	2.00	1.85
2,570 sq. ft.	Floor plating	3.30	4.25
2,180 lb.	Seals, rubber, natural	2.00	3.15
6,680 lb.	Seals, rubber, synthetic ...	1.80	2.70
4,710 lin. ft.	Handrail	7.00	6.25
32 sq. ft.	Steel floor grating	5.50	6.00
1 job	Embedded conduit and access. (not including control houses and for utility company power cable facilities) ...	50,000.00	32,000.00
1 job	Utility company power cable facilities, complete	6,000.00	8,800.00
1 job	Embedded grounding system, complete	7,000.00	4,000.00
4 ea.	Operating machine; sector gate, complete including rack..	38,000.00	46,000.00
1 job	Spare parts, operating mach.	9,000.00	13,000.00
1 job	Control house, harbor end..	50,000.00	78,500.00
1 job	Control house, river end..	9,000.00	7,000.00
1 job	Lock bulkhead, pickup, complete	5,500.00	6,000.00



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Project: Santa Ana River Improvement; Orange County, Calif. Flood Control District
General Contractor: MacDonald & Kruse
Dewatering Contractor: Subgrade Engineering

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2 ea.	Pump crossover, complete..	2,500.00	2,400.00
1 job	Pump unwatering, complete.	3,000.00	6,000.00
1 job	Wall drainage system, comp.	5,500.00	4,000.00
1 job	Float well system, complete	6,000.00	4,000.00
1 job	Temporary buildings	75,000.00	85,000.00
1 job	Removing and plugging exist. well casings.....	3,000.00	600.00
1 job	Bit. paving on top of guide wall cells	3,500.00	2,000.00
1 job	Bulkhead handling derrick, hoist and anchorage	70,000.00	75,000.00
1 job	Tower ladder safe climbing device	4,000.00	5,000.00
1 job	Staff gages	3,000.00	1,500.00

Bascule Bridge

		(1)	(2)
5,300 cu. yd.	Concrete in abutments.....	65.00	37.00
18 cu. yd.	Concrete in floor grating..	40.00	120.00
350 cu. yd.	Concrete in counterweight.	100.00	37.00
7,780 bbl.	Portland cement	5.00	5.45
410,000 lb.	Steel reinforcement	.15	.16
257,800 lb.	Steel punchings	.07	.04
361,100 lb.	Structural steel (low alloy)	.33	.32
397,000 lb.	Structural steel (carbon)..	.30	.31
50,600 lb.	Steel castings	.60	.80
3,516 sq. ft.	5 in. roadway grating.....	6.00	6.75
1,310 sq. ft.	4—¼ in. roadway grating..	4.80	5.30
525 sq. ft.	Sidewalk grating	4.00	3.00
1 job	Machinery	95,000.00	159,000.00
63 MFBM	Timberwork	450.00	345.00
1 job	Trackwork	5,000.00	9,500.00
173 lin. ft.	Steel hand railing	14.00	14.00
170 lin. ft.	Pipe hand railing	7.00	5.70
23 lin. ft.	Chain link fence	7.00	20.00
4,750 sq. ft.	Piling, steel sheet	4.00	3.50
1,060 lin. ft.	Copper waterstop	4.00	2.15
54 lin. ft.	8 in. C.M. pipe sleeve.....	10.00	3.50

Power Control and Lighting System

		(1)	(2)
1 job	Incoming power facilities..	3,000.00	2,000.00
1 job	Lock grounding system ...	800.00	1,500.00
1 job	Cable supports	8,000.00	25,250.00
1,700 sq. ft.	Cable shelving	3.50	4.00
710 lb.	Metal conduit and fittings..	1.20	2.00
2,200 lin. ft.	Asbestos cement conduit ..	1.60	2.00
23,400 lb.	Electrical wire and cable..	2.50	1.70
1 job	Standby pwr. generating unit	13,000.00	30,000.00
1 job	Switchboards	42,000.00	70,000.00
2 ea.	Control desk	4,500.00	3,000.00
2 ea.	Control stand	7,600.00	4,000.00
5 ea.	Sector gate limit switches.	1,200.00	3,170.00
1 job	Float well equipment	11,000.00	11,000.00
4 ea.	Sector gate machine-wiring.	1,500.00	900.00
1 job	Lock lighting system	18,000.00	16,000.00
1 job	Lock manhole & cable tunnel lighting & recep. system.	2,700.00	2,450.00
1 job	Navigation & signal system	3,500.00	3,000.00
1 job	Lock communication system	800.00	1,000.00
1 job	Air supply system	2,000.00	1,000.00
1 job	Bascule bridge elec. work, control board, control desk & traffic control equipment.	70,000.00	70,000.00
1 job	Deep well pump	3,500.00	800.00
1 job	Esplanade fire and sprinkler system (including provisions for future extension of sprinkler system)	5,300.00	5,000.00
1 job	Jib crane and hoist unit....	1,000.00	500.00
1 job	Control house heating sys..	2,000.00	1,200.00
1 job	Portable test equipment and lighting units	1,200.00	1,650.00
1 job	Wiring misc. equipment..	1,600.00	2,000.00
1 job	Final acceptance tests	5,000.00	500.00
1 job	Final record data	500.00	1,000.00

BRIDGE—Six bridges and two undercrossings

Oregon—Linn County—State. A low bid of $641,485 for the construction of six bridges and two undercrossings was submitted by Hamilton & Thoms, Inc. of Eugene. Seven bids were received for the Pacific Highway project.

(1)	Hamilton & Thoms, Inc.	$641,485
(2)	Tom Lillebo Const. Co.	643,389
	Lord Bros. Construction Co.	664,063
	Workman & Wilson, Irwin & Frickey	674,706

		(1)	(2)
170 cu. yd.	Structural excavation	$ 3.00	$ 5.00
1 only	Furnish and drive test pile	300.00	200.00
500 lin. ft.	Furnish steel piling	5.00	5.40
10 only	Drive steel piles	60.00	65.00
2,448 lin. ft.	Furnish treated timber piling	1.25	1.30
68 only	Drive timber piles	35.00	40.00
538 cu. yd.	Class A concrete	70.00	65.00
138,300 lb.	Metal reinforcement	.12	.123
240 lin. ft.	8 in. metal drain pipe	3.00	4.00
320 sq. yd.	Concrete slab riprap	7.00	9.00
40 cu. yd.	Structural excavation	3.00	5.00
1 only	Furnish and drive test pile	300.00	200.00
1,920 lin. ft.	Furnish concrete piling	4.20	4.50
60 only	Drive piles	70.00	65.00
300 lin. ft.	Pile extensions	12.00	6.00
355 cu. yd.	Class A concrete	50.00	61.00
87,000 lb.	Metal reinforcement	.12	.123
25 lin. ft.	8 in. metal drain pipe	3.00	4.00
190 cu. yd.	Structural excavation	2.00	5.00
1 only	Furnish and drive test pile	300.00	200.00
1,408 lin. ft.	Furnish concrete piling	4.20	4.50
64 only	Drive piles	70.00	62.00
320 lin. ft.	Pile extensions	12.00	6.00
500 cu. yd.	Class A concrete	61.00	63.00
139,000 lb.	Metal reinforcement	.12	.123
240 cu. yd.	Structural excavation	3.00	5.00
1 only	Furnish and drive test pile	300.00	200.00
600 lin. ft.	Furnish steel piling	5.00	5.40
12 only	Drive steel piles	60.00	65.00
2,604 lin. ft.	Furnish treated timber piling	1.25	1.30
93 only	Drive timber piles	35.00	40.00
745 cu. yd.	Class A concrete	70.00	65.00
186,500 lb.	Metal reinforcement	.12	.123
260 lin. ft.	8 in. metal drain pipe	3.00	4.00
380 sq. yd.	Concrete slab riprap	7.00	9.00
220 cu. yd.	Structural excavation	2.00	5.00
1 only	Furnish and drive test pile	300.00	200.00
2,560 lin. ft.	Furnish concrete piling	4.20	4.50
64 only	Drive piles	70.00	65.00
320 lin. ft.	Pile extensions	12.00	6.00
529 cu. yd.	Class A concrete	61.00	64.00
157,600 lb.	Metal reinforcement	.12	.123
50 lin. ft.	8 in. metal drain pipe	3.00	4.00
90 cu. yd.	Structural excavation	3.00	5.00
1 only	Furnish and drive test pile	300.00	200.00
6,500 lin. ft.	Furnish concrete piling	4.20	4.50
130 only	Drive piles	70.00	65.00
650 lin. ft.	Pile extensions	12.00	6.00
184 cu. yd.	Class A concrete	85.00	65.00
1,085 cu. yd.	Class AA concrete	61.00	67.00
362,000 lb.	Metal reinforcement	.13	.123
30 lin. ft.	8 in. metal drain pipe	3.00	4.00
275 cu. yd.	Structural excavation	2.00	5.00
1 only	Furnish and drive test pile	300.00	200.00
2,240 lin. ft.	Furnish concrete piling	4.20	4.50
64 only	Drive piles	70.00	65.00
320 lin. ft.	Pile extension	12.00	6.00
490 cu. yd.	Class A concrete	61.00	63.00
141,300 lb.	Metal reinforcement	.12	.123
60 lin. ft.	8 in. metal drain pipe	3.00	4.00
275 cu. yd.	Structural excavation	2.00	5.00
1 only	Furnish and drive test pile	300.00	200.00
1,600 lin. ft.	Furnish concrete piling	4.20	4.50
64 only	Drive piles	70.00	62.00
320 lin. ft.	Pile extensions	12.00	6.00
535 cu. yd.	Class A concrete	61.00	63.00
167,000 lb.	Metal reinforcement	.12	.123

HIGHWAY—Grading and paving and a concrete bridge

Oregon—Coos County—State. Coos Bay Dredging Co. submitted the low bid for a grading, paving, and bridge job on the David Slough section of the Oregon Coast Highway. There were four bidders.

(1)	Coos Bay Dredging Co.	$606,722
(2)	Inter City Sand & Gravel Co.	616,153
	Peter Kiewit Sons' Co.	626,831
	Fred H. Slate Co. & E. C. Hall Co.	666,315

		(1)	(2)
1 Lump sum	Clearing and grubbing	$21,125.00	$36,000.00
1,700 sq. yd.	Pavement removal	.60	.90
3,000 cu. yd.	Drainage excav., uncl...	3.00	2.00
334,700 cu. yd.	Gen. excav., unclassified.	.50	.38
1,077,800 yd sta.	Short overhaul	.02	.02
17,000 cu. yd. sta.	Long overhaul	.45	.50
1 Lump sum	Fin. roadbed & slopes..	1,500.00	2,000.00
9,000 lin. ft.	Rounding cutbanks	.20	.20
810 lin. ft.	24-in. asbestos protected corr. metal pipe.....	8.06	8.25
290 lin. ft.	36-in. asbestos protected corr. metal pipe	14.19	15.00
100 lin. ft.	60-in. asbestos protected corr. metal pipe	35.30	35.00
70 lin. ft.	12-in. concrete pipe	1.90	2.00
90 lin.ft.	18-in. concrete pipe	3.80	4.00
120 lin. ft.	6-in. metal drain pipe, uncoated	1.40	1.90
8,900 lin. ft.	8-in. perforated metal drain pipe, uncoated	1.67	2.20
30 lin ft.	Extra for pipe under pavement	6.10	5.00
1,100 cu. yd.	Special backfill in drains.	6.45	6.50
2 only	Concrete inlets type D..	95.00	100.00
7,800 lin. ft.	Metal guard rail	2.54	2.70
50 only	Guide posts one reflector.	4.00	5.00
14 only	Guide posts two reflectors.	4.50	6.00
70 lin. ft.	1 ½-in. elec. conduit....	2.00	1.50
42,400 ton	Coarse crush mat. in base	2.65	2.75
4,900 ton	¾-in. mat. in base.....	3.20	3.00
1,200 M gal.	Sprinkling	2.50	2.50
1 Lump sum	Preparation of base	1,115.58	2,000.00
430 ton	¾-in. O mat. binder course	4.75	5.85
855 ton	Furnishing and placing aggregates	5.06	6.70
46 ton	RC 3 asphalt	51.75	65.00
58 ton	200 300 asphalt	43.14	60.00
	RS 1 asphalt	44.00	100.00
6,100 ton	Asphaltic concrete mixture	7.13	8.75
370 ton	67 70 asphalt in mixture	37.50	42.50
330 lin. ft.	Asphaltic concrete traffic markers	1.10	1.50
12,080 lin. ft.	Furn. treated tbr. piling..	1.50	2.05
151 only	Drive piles	67.50	40.00
763 cu. yd.	Class A concrete	72.00	75.00
196,000 lb.	Metal reinforcement	.13	.13
22 MFBM	Treated lumber	350.00	386.00

HIGHWAY—5.322 mi. of grading and surfacing

Colorado—Montezuma—Bureau of Public Roads. Harrison Construction Co. was recommended for award on the basis of its low bid on a road project at the entrance of Mesa Verde National Park. There were 10 bidders.

1) Harrison Construction Co. $532,583
2) R-W Construction Co. 555,722
Z. H. Lowdermilk, Inc. 562,421
Colorado Constructors, Inc. 571,821

		(1)	(2)
ontingent sum	Misc. force account	$10,000.00	$10,000.00
90,000 cu. yd.	Unclassified excavation	.61	.725
1,500 cu. yd.	Excavation for structures	4.00	3.20
26,000 ton	Special subbase, grading B	1.90	2.10
00,000 sta. yd.	Overhaul	.02	.0125
32,000 yd. mi.	Overhaul	.30	.10
2,600 units	Water	3.00	2.65
ump sum	Prov. & maint. water plant or plants	L.S.	L.S.
600 hr.	Rolling	15.00	12.25
4,000 ton	Crushed aggregate base, grading D	3.00	3.55
20,000 gal.	Asphalt, grade Mc-0 or 1, prime coat	.22	.20
2,000 gal.	Emulsified asphalt, grade SS-1, tack coat	.35	.25
100 ton	Cover aggregrate, gr. D, type 3 seal coat	12.00	9.45
3,000 gal.	Emulsified asphalt, grade SS-1 seal coat	.30	.23
0,700 ton	Plant mixture	5.30	6.05
600 ton	Asphalt cement, 150-200 penetration, plant mix	40.30	41.00
6,600 lin. ft.	Bit. raised shoulders	.40	.45
85 cu. yd.	Class A concrete	110.00	117.00
30 cu. yd.	Cement rubble masonry	110.00	71.00
3,000 lb.	Structural steel-furn., fabricated and erected	.35	.255
526 lin. ft.	8 in. galv. corr. metal pipe	3.50	2.40
754 lin. ft.	18 in. galv. corr. metal pipe	7.00	4.25
714 lin. ft.	24 in. galv. corr. metal pipe	9.10	7.10
46 lin. ft.	30 in. galv. corr. metal pipe	12.00	9.40
78 lin. ft.	36 in. galv. corr. metal pipe	16.00	12.65
163 lin. ft.	Removing, cleaning and stock-piling salvaged culv. pipe	6.00	2.00
2 ea.	Metal end sections for 24 in. pipe culverts	60.00	40.00
1,100 cu. yd.	Hand-laid rock embankment	12.00	12.25
400 lin. ft.	8 in. perf. corr. metal pipe underdrain	6.00	2.55
800 lin. ft.	12 in. perf. corr. metal pipe underdrain	7.00	3.10
200 cu. yd.	Porous backfill material, pipe underdrain	8.00	9.00
2 ea.	Adjusting manholes	50.00	50.00
350 sq. yd.	Concrete & rubble paved waterway	35.00	12.25
1,100 sq. yd.	Bit. paved waterway	3.00	3.50
8,700 lin. ft.	Concrete curb and gutter, 6 in. depth	3.00	2.35
1,400 lin. ft.	Stone curb	1.25	3.30
1,050 sq. yd.	Bituminous sidewalk	1.00	2.00
250 ea.	Guideposts, type 1	6.00	9.00
2,550 lin. ft.	Beam-type guardrail	4.00	4.00
25 units	Turf shoulders	50.00	80.00
1.14 mi.	Repairing existing road	1,500.00	2,600.00

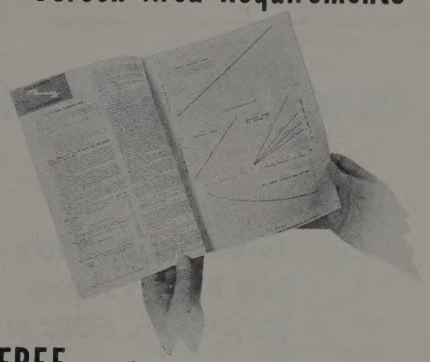
RIDGE—Six prestressed overpass structures in Phoenix

Arizona—City of Phoenix—State. Mardian Construction Co. was low nine bidders for construction of 6 two-span precast, prestressed girder erpass structures on the Phoenix Freeway at the intersection of 19th, h, and 7th Aves.

) Mardian Construction Co. $403,296
) Royden Construction Co. 408,495
Western Constructors, Inc. 412,102
The Ashton Co., Inc. 416,071
Tanner Bros. Contracting Co., Inc. 423,501

		(1)	(2)
600 cu. yd.	Roadway excavation	$ 1.50	$ 1.25
30 cu. yd.	Drainage excavation	1.00	1.25
,625 cu. yd.	Structural excavation	5.00	1.50
,200 ton	Borrow	.50	.70
230 M gal.	Apply water	1.35	3.00
15 hr.	Class I rolling	10.00	11.00
20 hr.	Class II rolling	18.00	17.00
,700 ton	Aggregate base	1.60	1.25
660 ton	Bituminous mix	4.10	4.00
28 ton	Paving asph. for bit. mix	38.00	32.50
,860 lb.	Structural steel	.30	.35
,227 lin. ft.	Aluminum handrail	5.50	6.00
,650 cu. yd.	Class A concrete	35.00	40.00
727 cu. yd.	Class D concrete	48.00	43.00
108 ea.	Prestressed concrete girders (reinforcing steel)	695.00	750.00
,140 sq. yd.	½ in. pneumatically placed conc.	3.15	3.75
,550 lb.	Reinforcing steel (bars)	.11	.13
286 lin. ft.	24 in. reinforced conc. pipe	8.85	14.00
98 lin. ft.	30 in. reinforced conc. pipe	12.00	15.00
,120 lin. ft.	Furnish and deliver steel H-column piles	5.50	3.60
556 ea.	Driving steel H-column piles	35.00	39.00
6 ea.	Splicing piles	15.00	25.00
300 lin. ft.	Road guard	2.90	3.20

A New Method For Estimating Screen Area Requirements



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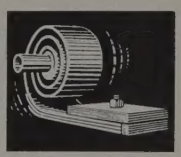

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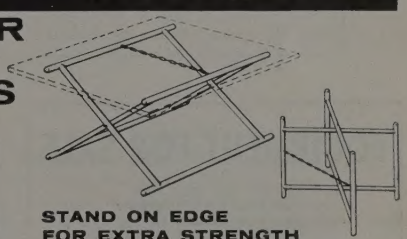

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MANUFACTURERS

(Continued from page 170)

ed by a partnership in a consulting engineering firm in Oregon. Recently he has been employed by the Bridge Division of the Oregon State Highway Department.

Concrete Transport Mixer spreads farther West

Concrete Transport Mixer Co., St. Louis, Mo., announces the broadening of its sales distribution to include the far West. Jack Meister, who has been sales manager of the Materials Handling Division, becomes manager of Distributor Sales for the Western Division, continuing his activity also in the Materials Handling Division. Fred Rechsteiner has heretofore been Distributor Sales manager for the entire U. S., and will carry the same title in the future, except that it will be for the Eastern Division.

New district sales outlet at Denve

L. F. Heckmann, general sale manager of The Union Metal Man ufacturing Co., Canton, Ohio, ha opened a Mountain States distric sales office at Denver, Colo., wit Clyde H. Cozadd as manager. I his new location at 2700 We Evans Ave., Denver, Cozadd wi be responsible for the sale of foun dation piles, materials handlin equipment, etc. in the states o Colorado, Utah, Wyoming, Arizon and New Mexico.

F. E. Attig named district marketing manager

F. E. Attig has been appointe Los Angeles district marketin manager of Tidewater Oil Co., su ceeding Floyd Pratt who becom district marketing manager i Washington, with headquarters i Seattle. Pratt succeeds D. J. Smit who retired at the end of 1958 aft 34 years of service in the Tidewat marketing organization.

ADVERTISERS in this issue

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BACKFILL, uncompacted

How to extend equipment life

A peppery fleet of unpredictable earthmoving rigs is the feature of a highway contract now more or less under way by the Chauncey McVoom Construction Co. The machines were recently purchased by the McVoom firm from its local distributor after 50 years of on-the-job demonstrations. "One job isn't enough to find out if a machine is what the manufacturer says it is," according to McVoom. "You've got to try it under all the various conditions you meet in the field before you can be sure. It takes a while but it's worth it. Actually, I wanted to wait a little longer before buying these particular rigs, but my equipment distributor seemed to be in poor health."

The machines are kept in tippity-tip-top running order by a loving program of preventive maintenance. All moving parts and the operators are kept well-oiled. After the morning coffee break every day the machines are taken to the shop and completely taken apart and overhauled. The parts are laid out on a blanket and the mechanics take turns guessing what they are. The one who scores highest is allowed to go home following the afternoon recess. Care is taken not to make the others feel inferior. After the parts are correctly identified they are rubbed gently with a soft cloth and soaked in milk overnight. If work begins to drag on the project late in the day, the laborers and their foremen join the mechanics in group games.

In the photograph a 5-gal. truck is dumping a little pile of duff on the roadbed. In the background a grader is approaching which will push all the little piles into one long pile. Next day a crew of laborers using pocket combs spread the material evenly across the right-of-way. The grader makes another pass, shaping the material into a long pile again. The laborers then throw their combs at the grader operator and walk off the job. The last step involves shoveling the material into a truck which carries it back to the borrow pit. In this way the work can be extended through all the summer months.

Although the project is being managed in a way that at first sight seems uneconomical, owner McVoom seems quite satisfied. Gasoline and diesel fuel consumption is kept at a minimum, not only because the equipment is soaking in milk most of the time, but because no internal combustion engines are used. Power comes from large rubber bands which are twisted each morning before work starts. Auxiliary power for heavy going is supplied from foot pedals.

When the project is completed a 24-ft. wide highway will run from the Governor's house to the Country Club. In explaining his low bid, McVoom said, "The Governor assured me I could use whatever substandard materials I wanted if I would kick back a fair share of the profits. So you see, it's going to work out fine for everybody. Say, don't print this."

Down-time . . . . . By Domagalski

"Well, so far – so good."

Western Construction

Inspectorphobia

At a recent Western highway conference a group of city and county engineers were discussing inspection and inspectors. One related the following:

One day a contractor called the office and said, "Hey, get an inspector out here, we're making a pour this afternoon." I told him we would, and hung up. But we didn't have any inspectors available, so I turned to a young kid who works in our office and told him to go home and change his clothes and go out and inspect the job. He said he didn't know anything about concrete or construction. He was just an office clerk. I told him it didn't make any difference, that he didn't have to know anything, that he should just stand around and look important and keep his mouth shut. I told him if he kept his mouth shut he'd be all right.

The next day I saw the contractor on the street and I said, "How did you like that inspector we sent out to your job yesterday?"

"We didn't like him," he said, "he was too tough."

. . . The Editors