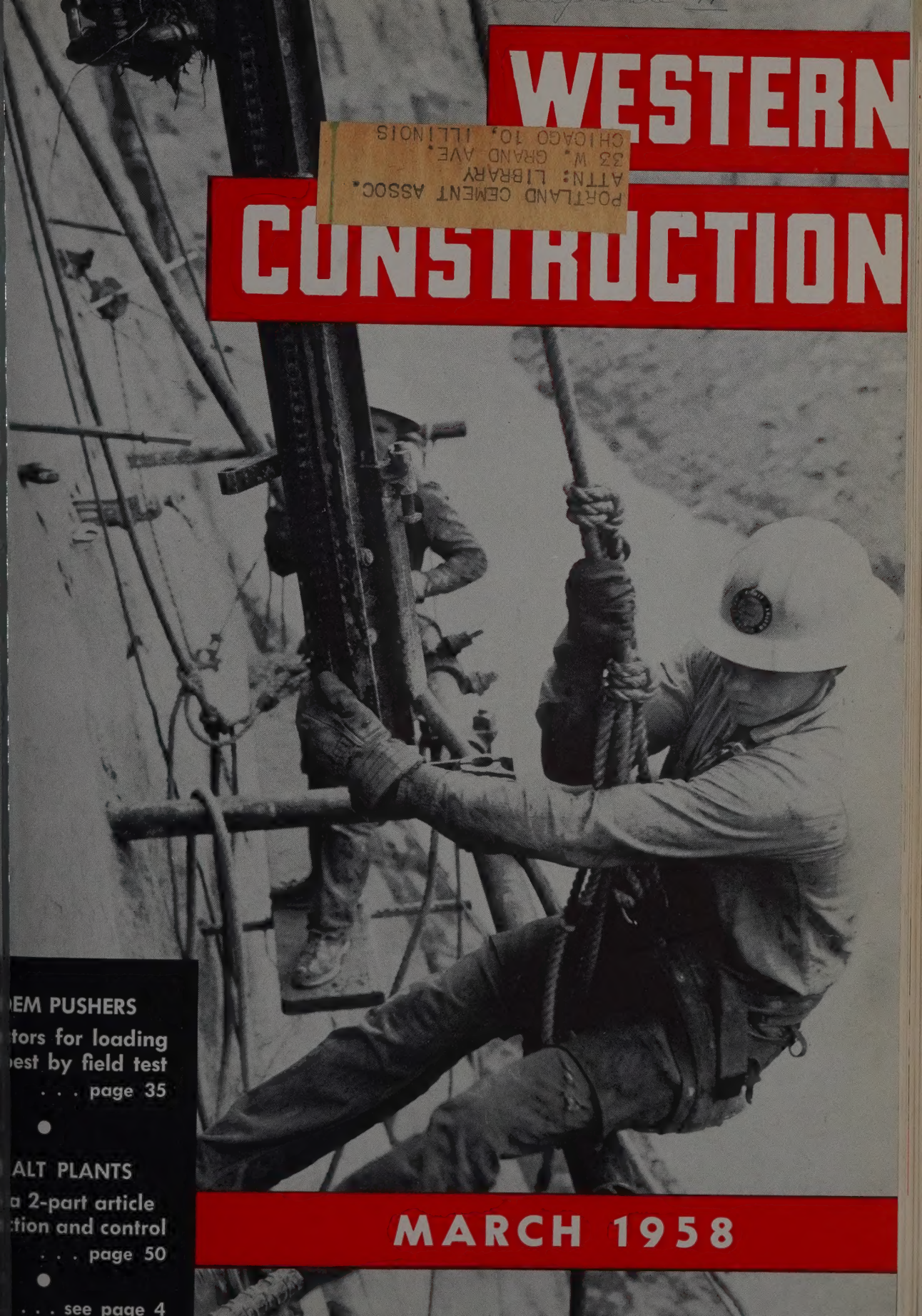




WESTERN CONSTRUCTION

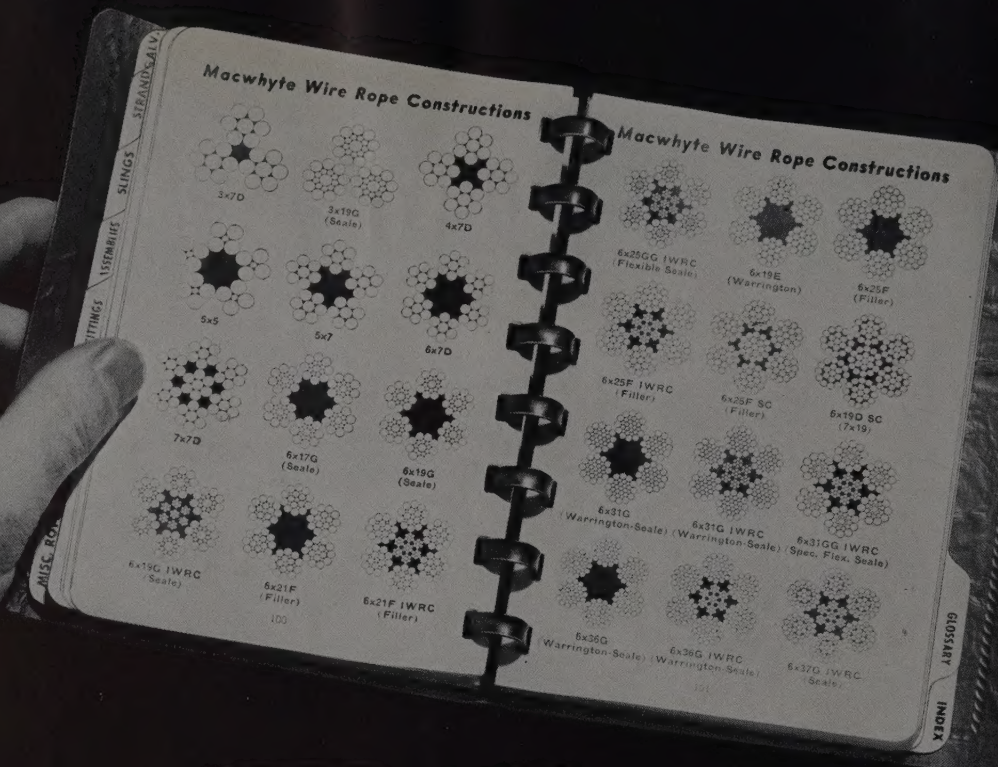
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HEM PUSHERS
ators for loading
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... page 35

ALT PLANTS
a 2-part article
tion and control
... page 50

... see page 4

MARCH 1958



1000 and 1

WHYTE STRAND

WIRE ROPES

Each designed to give you the correct wire rope for your equipment. Whatever your equipment needs, there is a Macwhyte Wire Rope to serve you the sure, dependable way. **WHYTE STRAND** Wire Ropes by Macwhyte are produced to meet every job specification under all conditions, **PRE**formed for flexibility, and **Inter**nally **Lub**ricated for outstanding service. Macwhyte Wire Rope is available in stock for immediate delivery.

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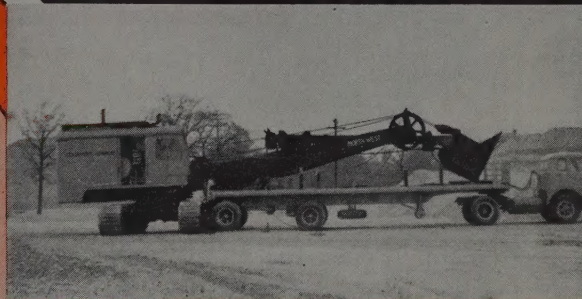
CUT THE COST AND TIME for moving your big rigs!

and Basic
travel to
separate



**ONLY
4 HOURS
FROM
START
TO WORK!**

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work.



Boom is fitted to basic machine.

WHAT is it costing you to move a 2½-yd. Shovel from job to job? How much is lost in time? Some machines in this capacity range, take up to two days and require an extra crane.

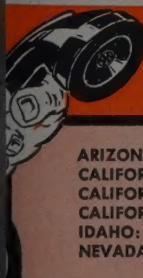
Your Northwest 80-D, 2½-yd. Shovel can be reduced in weight for road travel and be on the job in a matter of hours. Northwest 80-D's have been dismantled, put over the road 20 miles and working on the job in 8 hours. The machine pictured owned by the Consumers Company of Milwaukee, was dismantled, loaded on trailers, erected and on the job in only 4 hours.

Moving your Northwest 80-D is a simple operation. The boom is lowered to the truck or trailer bed and unbolted from the base. Cables and Crowd Drum are part of the boom assembly. Cable are coiled back on the boom. The basic machine backs out and loads itself on another trailer. The procedure is reversed on arriving at the job and the machine goes to work. Further reduction in weight can be had including removable counter weight on your Northwest. No crane is needed. Two men with ordinary tools can do the job! It is quick, easy and a real time and money saver. Another of the many Northwest advantages for making money for you. Ask for details.

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WESTERN

CONSTRUCTION



March
1958

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FRONT COVER—If you enjoy hanging from ropes over 700-ft. cliffs, Glen Canyon Dam is the place for you. The casual fellow shown is preparing to drill another hole during abutment excavation for the Colorado River Bridge. More on page 46.

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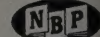
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For 32 years serving the construction needs of the 11 Western States

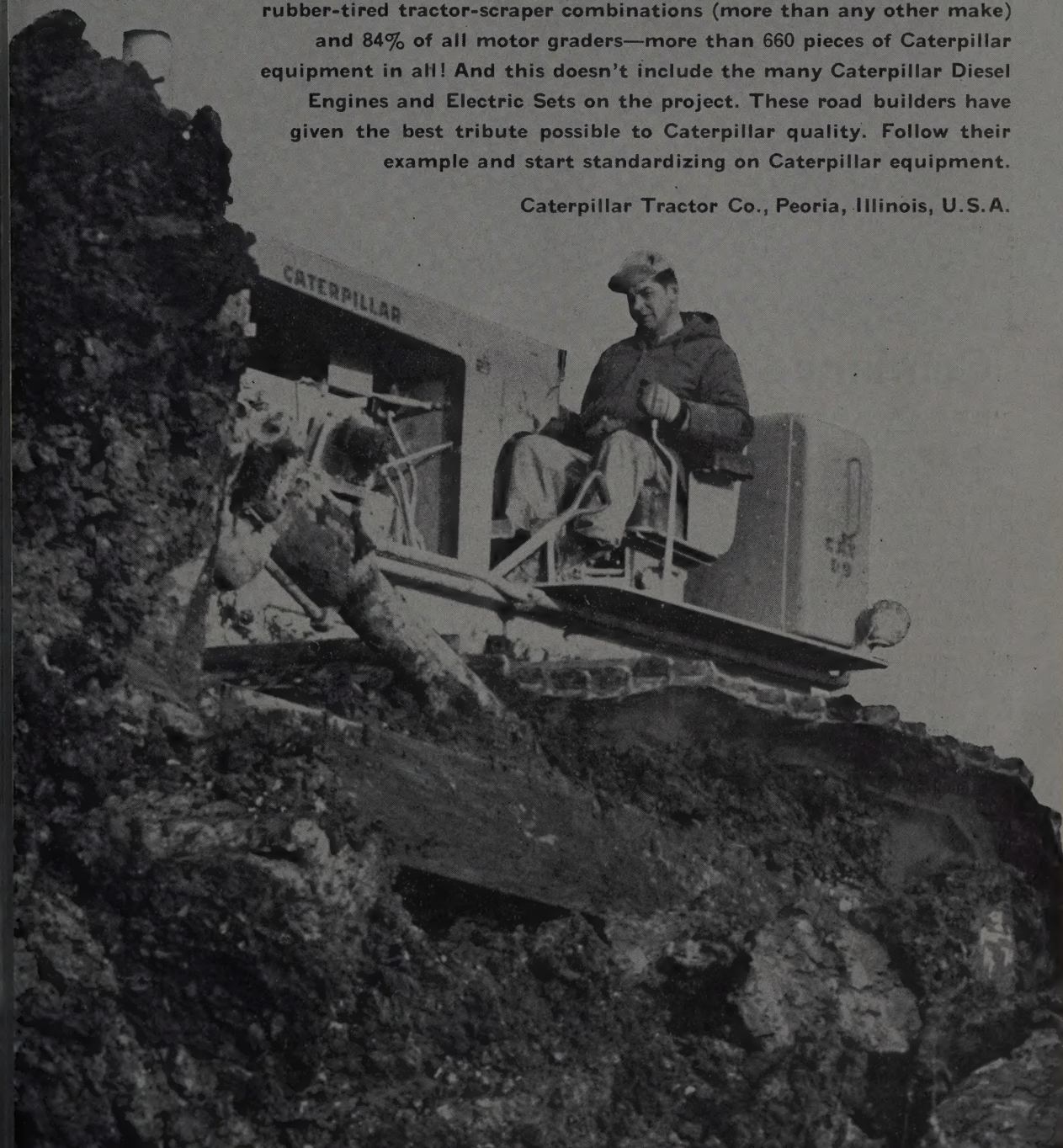
WESTERN CONSTRUCTION—March 1958

n \$415 million road project

e Caterpillar-built equipment is at work on the Illinois Toll Highway than all similar machines of competitive make put together. Contractors agree, and have picked Caterpillar machines for this \$415 million project. At production's peak last fall, the score was:

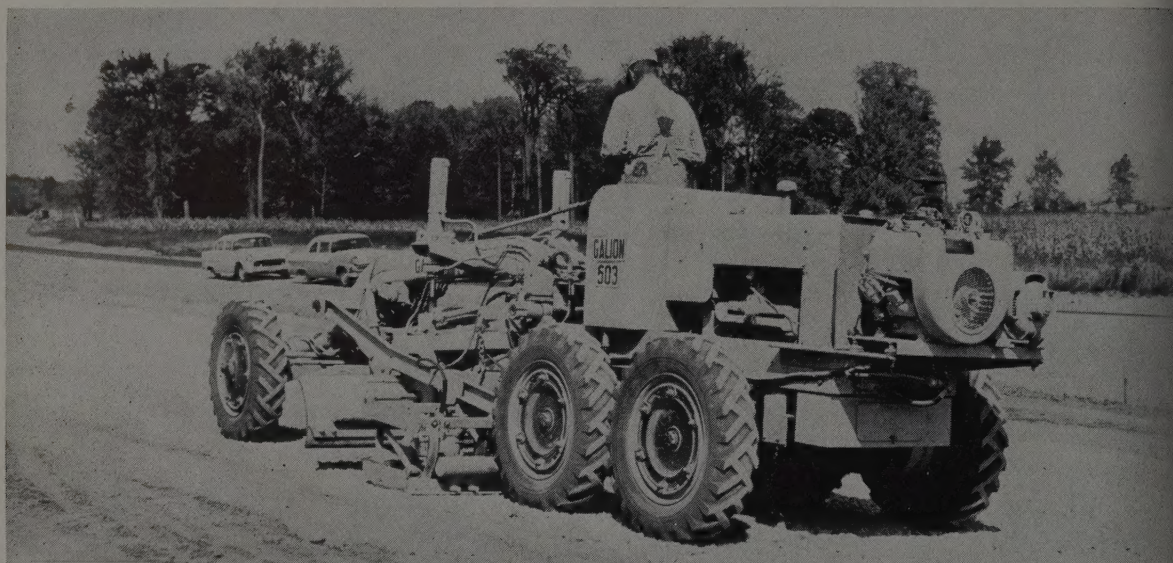
53% of all machines—68% of all track-type tractors, 39% of all rubber-tired tractor-scraper combinations (more than any other make) and 84% of all motor graders—more than 660 pieces of Caterpillar equipment in all! And this doesn't include the many Caterpillar Diesel Engines and Electric Sets on the project. These road builders have given the best tribute possible to Caterpillar quality. Follow their example and start standardizing on Caterpillar equipment.

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



NEW EQUIPMENT

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



Combined grader and vibratory compactor

Soils compaction is receiving more and more attention of the highway engineer as inspection and testing of the compaction job becomes more and more severe. It is a well-known fact that vibratory compactors will do a more efficient job when they are working over even or smoothed surfaces. Thus Galion's model 503 motor grader and a Jackson electric vibratory compactor as a dual purpose unit for maintaining, leveling and compacting is timely. This combination will easily, speedily, and economically accomplish any specified density. Tests made on state highway new projects show densities obtained are equal to or more than required specifications.

The combination grader-compactor is sold only as a complete unit. The 503 tandem drive gives you added traction and smoother results similar to that obtained with a conventional four-wheel tandem drive over a two-wheel drive machine.

The vibratory compactor consists essentially of the proper assembly and suspension of four 26-in. wide electric vibrating compactors. The compactor workhead is connected by drawbars to the head block of the grader. The grader is adequately protected against the vibration of the compactors. Raising and lowering the compactor is done by hydraulic control from the grader operator's platform, permitting high speed mobility on the job and between jobs.

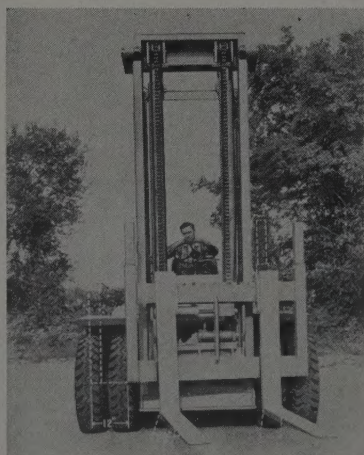
The independent engine and 7½ kva.

generator for supplying power to the vibrators are on the rear end of the grader frame. When the occasion demands, this power unit can be used as a lighting plant or for the operation of small power tools. It is pointed out that there is no interference with ordinary grader operations such as spreading material and surface smoothing. However, the compactor is easily removed for full grader operations.

The compactor delivers 4,200 three-ton deep-penetrating compacting blows per min.; and compactive effort is said to be so effective that specified densities are often obtained in only one pass on granular soil bases, subbases, large fills, and all materials normally used in macadam bases. It is reported that the compacted surface is entirely free of waves and ripples.

... Circle No. 151

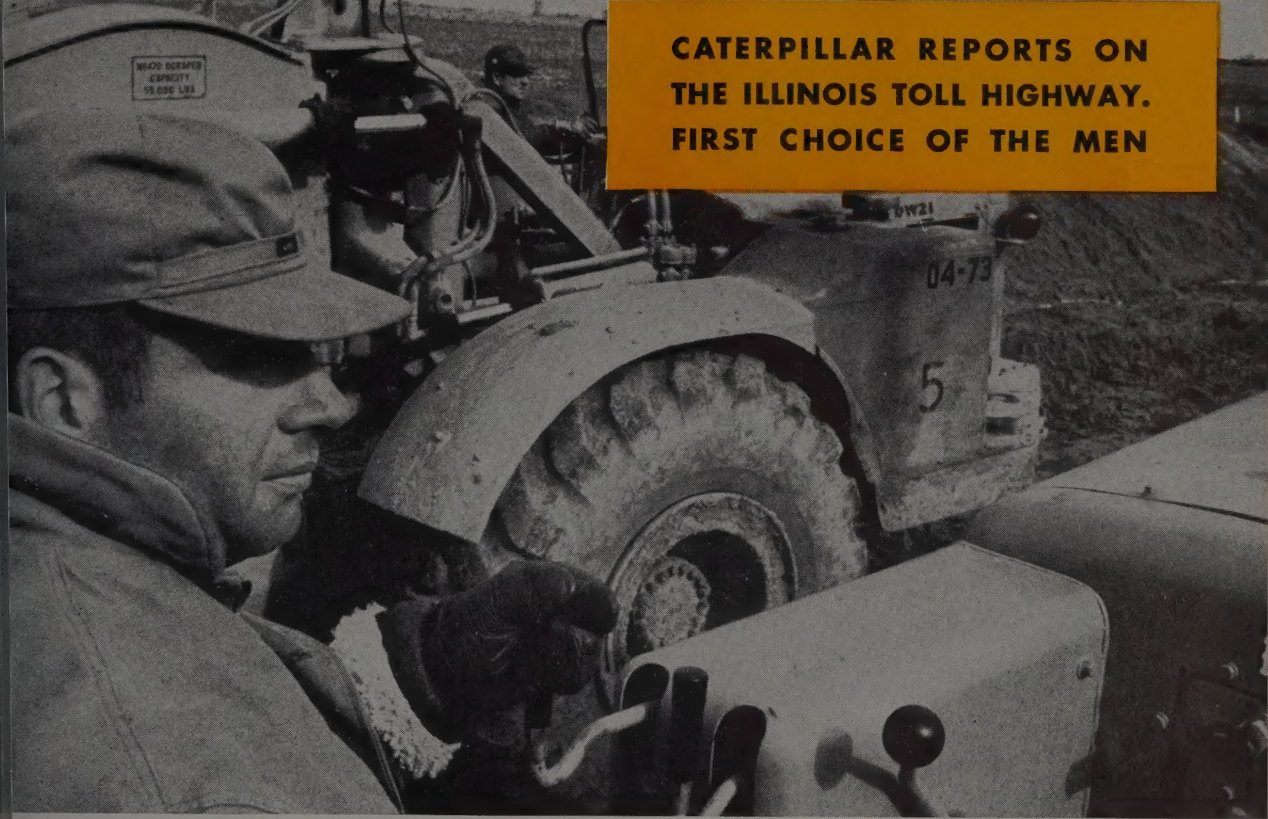
Shifty truck for faster handling



Faster handling of heavy loads through the introduction of a swing shift, side shift attachment for its line of gasoline powered lift trucks, is announced by the Yale Materials Handling Division of The Yale & Towne Manufacturing Co. For trucks of 15,000 to 20,000-lb. capacities, the swing shift, side shift is particularly important in operating large trucks in outdoor areas where loads of varying length and size are handled. By allowing the fork carriage to be shifted to either side of center and rotated on an axis in either direction this attachment greatly lessens the amount of maneuvering necessary to get the truck in proper position to pick up or deposit a load. Both actions are achieved hydraulically. The attachment can shift truck forks and loads 6 in. to either side of center.

... Circle No. 152

**CATERPILLAR REPORTS ON
THE ILLINOIS TOLL HIGHWAY.
FIRST CHOICE OF THE MEN**



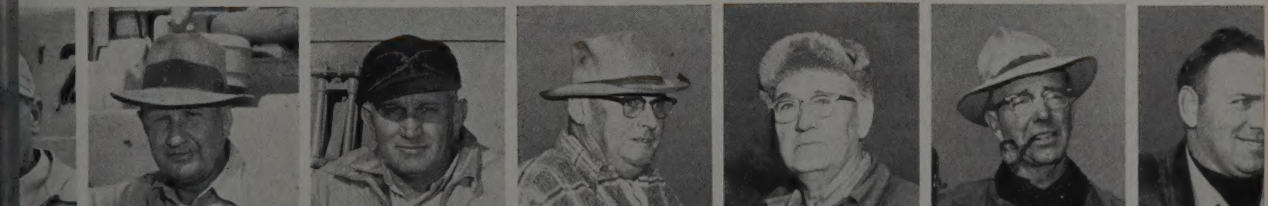
D9 (foreground) and DW21-No. 470 at work for S. J. Groves & Sons Co. on the Illinois Toll Highway.

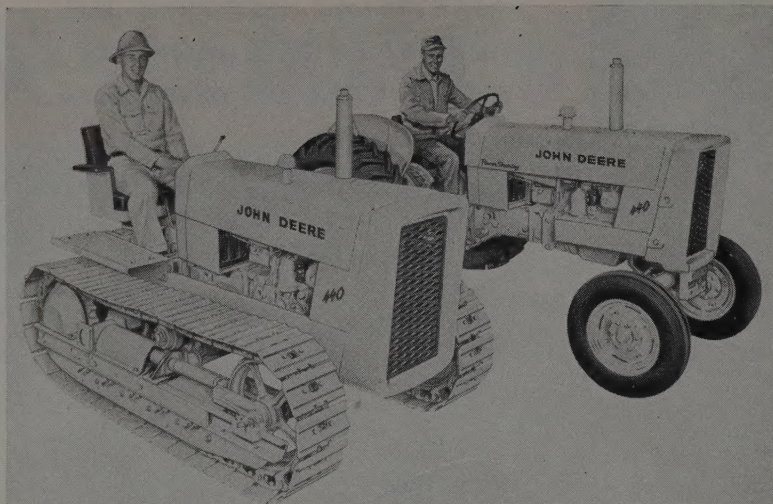
Contractors agree:

- 1** "We looked at them all—then bought Caterpillar."
- 2** "Our DW15s have worked three seasons with no down time."
- 3** "...best service of any earth-movers we've ever had."
- 4** "D9s are powerhouses, maneuverable even in the toughest stuff."
- 5** "Been around Caterpillar equipment for some 32 years—and I really like it."
- 6** "We like the capacity of the LOWBOWLS—they'll go on through."
- 7** "Our No. 12s do a good job of maintaining the hauls."

Caterpillar Tractor Co., San Francisco, Cal.; Peoria, Illinois, U. S. A.

1 Harold Thompson, Central Engineering Co. **2** Emil Strunk, Strunk Bros. **3** Al Ensminger, Orr Construction Co. **4** Glen Roberts of McCarthy, Mass, Dillon **5** Ted Sliger, CKG Associates **6** L. E. Myers, Arcole-Midwest Corp. **7** Claire Hawn, Western Contracting Corporation





New design for the John Deere line

Clean-cut, aggressive lines with new heavy-duty, well-balanced construction throughout describes **John Deere Industrial Division's** new 440 Series crawler and wheel-type tractors. Outstanding eye appeal and ruggedness of construction are quickly evident in the new protective front grille and extra-heavy cast grille frame, which requires no extra guard. Room is provided between the grille and the engine on the new crawler for front-mounted, crankshaft-driven pumps. The streamlined, full-view hood is of heavy steel plate; side frames are of extra-heavy welded steel construction. Final drive housings, too, reflect the clean, but brawny design engineered into all parts of the new models. Highway yellow is the regular color.

The 440 Crawler is mounted on two heavy steel cross members that absorb punishing shocks and stresses from front-mounted equipment such as loaders and bulldozers. New strength and new durability are designed into the power train and track assemblies of the crawler. Single track-tension springs have new ease and accuracy of adjustment.

Other features of the new crawler include a large, protective, adjustable, foam-rubber padded seat, and the popular, time-proved John Deere clutch-brake steering—the latter a time-proved feature which insures a high degree of maneuverability in all working conditions.

The 440 Wheel-Type tractor has a new heavy-duty front axle and support. Built-in power steering for this model is optional. Optional for both tractors is the new clutch-type direction reverser. This simple, yet effective device permits the operator, with a touch of the lever, to go ahead or back up in the same speed without shifting transmission gears, a time-saving feature when loading or bulldozing. The direction reverser is available for both the crawler and the wheel-type tractors equipped with 4- or 5-speed transmission.

Other optional features for the tractors will include 3-point hitch, hydraulic controls for all needs, special mufflers, electric lighting, and many others. The tractors are powered by the John Deere 30-hp. valve-in-head-engine.

... Circle No. 153

Rock body of aluminum

The Heil Co. has just completed at its Milwaukee factory the first of a series of very large rock bodies fabricated from special aluminum alloy plate and extruded sections. These bodies are unusual in that they are made entirely from aluminum rather than steel plate

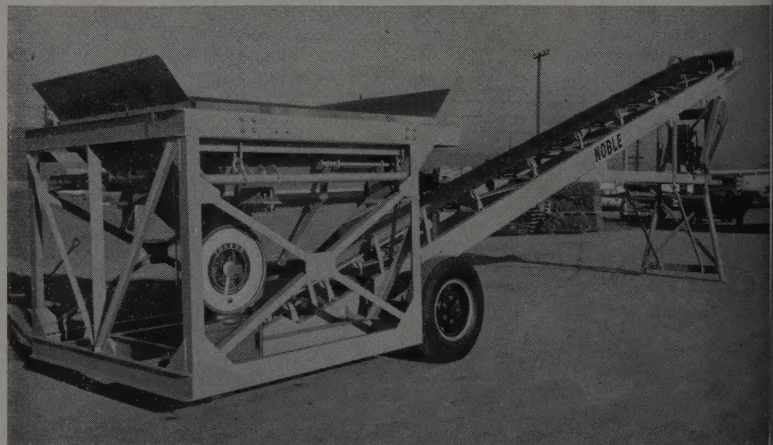
which is usually used for bodies of this type. Other unusual features are: all welded construction, great size (approximately 36 cu. yd. heaped), all interior corners rounded to prevent adhesion of sticky material, and heated floor construction.

These bodies are being mounted on special off-highway trucks, with Heil heavy-duty telescopic hoists designed for off-highway use. The complete units are to be exported to haul bauxite in Caribbean mining operation.

While aluminum plate bodies of this type are somewhat more expensive than



steel bodies, it is expected that they will offer advantages in operation through increasing the amount of payload which



JOB-SITE BATCHING FOR SMALL PROJECTS

Portable Batch-A-Bout is a sturdy, efficient batching plant. It saves long transit-mix hauls by letting you batch economically at the job site on projects too small to warrant a stationary plant. It can be towed to the job by pickup, mixer truck or dump truck and set up in minutes. It meets all highway transport regulations. The heavy duty plant is built to withstand the abuse of repeated hauling over roughest roads and of batching difficult conditions. Features include safety guards on the 9-hp. gasoline engine drives. There is no wheel or axle removal. Retractable legs for quick set-up are provided and no excavation or ramping is required for charging the batcher or transit-mixers. Manufactured by Noble Co.

... Circle No. 154

CATERPILLAR REPORTS ON THE ILLINOIS TOLL HIGHWAY

First choice by count

	CAT %	NEXT HIGHEST %	TOTAL MACHINES*
All machines	53	18	1,239
Track-type tractors	68	21	499
Wheel tractors-scraper	39	30	426
Motor graders	84	6	140

*Based on tally of machines as of October 1, 1957



DW21, owned by McCarthy, Mass, Dillon, is pushloaded by a D9 on a section of the Illinois Toll Highway near Elgin. LOWBOWL design, fast cycle time make DW21-No. 470 rig a favorite on this project.

Caterpillar manufactures a full line of earthmoving equipment—track-type tractors, wheel-type tractors, scrapers, motor graders, Traxcavators.

Each machine is scientifically designed to perform its function profitably and dependably, 24 hours a day, every day. Each machine is manufactured from the finest materials under the most exacting conditions to meet standards of quality that are the best in the industry. Each machine is exhaustively tested under a variety of demanding conditions, perfected before being placed on the market. Each machine is backed by a world-wide dealer organization ready to give you matchless service. Each machine has the safeguard of a complete line of genuine parts, built to the same rigid specifications as the machine itself, and always available instantly at your dealer.

There is a good way to find out what Caterpillar quality and performance can mean to you. Let your Caterpillar Dealer demonstrate the equipment that's best for your job—on your job.

Caterpillar Tractor Co., San Francisco, Cal.; Peoria, Ill., U.S.A.

CATERPILLAR

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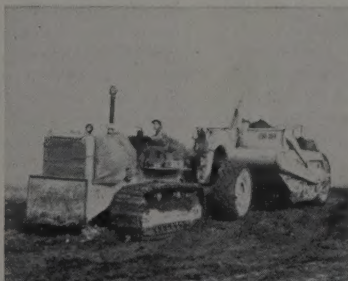
**WORLD'S NO. 1
ROAD BUILDER**

DW20, owned by Central Engineering Co., does in muddy conditions on section of Illinois Highway near Aurora.

DW20, owned by CKG Associates, is pushloaded by one of more than 50 D9s at work on the 187-mile road.

D8-No. 463 combination, owned by Arcole-Midwest Corp., needs its sure-footedness in and out of swamp area.

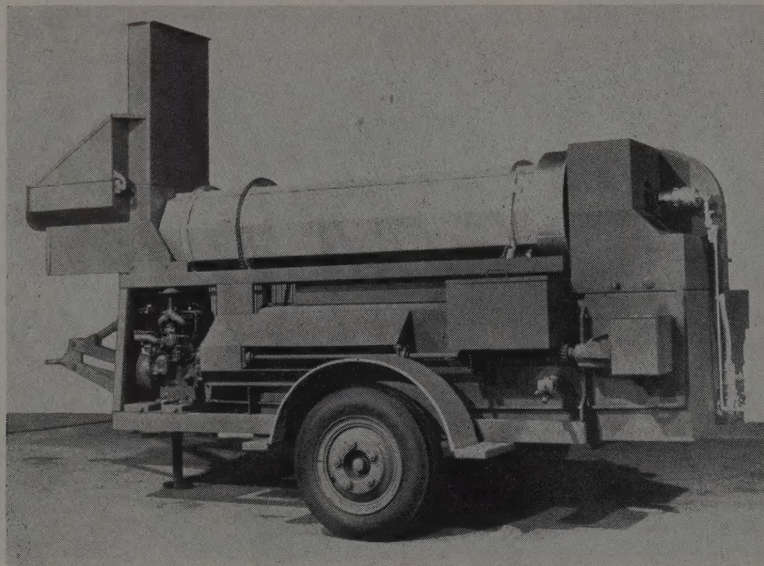
No. 12, owned by S. J. Groves & Sons Co., grades an embankment. Earthmoving phase of road is near completion.



can be carried, reducing tire wear and gasoline consumption, and by increasing speed to give a greater number of round trips each day. The increased tonnage to be hauled by each truck, as a result of this greater speed, will make it possible for fewer units to haul just as much ore as a larger truck fleet using conventional rock bodies.

Although the aluminum rock bodies are conventional in appearance, except for the difference in the metal used, manufacturing techniques employed in fabrication and assembly involved special equipment for cutting, forming, and welding the aluminum plate as well as special skills which had to be developed in using this specialized equipment.

... Circle No. 155



Small asphalt plant with big units

The Model PM-430 Patchmobile is a completely new portable, hot-asphalt plant. The machine is more compact, with greater capacity, lower aggregate charging height, and higher mixed material discharge height. Model PM-430 is versatile in application since it is designed for small paving jobs, paving repair, or maintenance. The basic large plant principle of a rotary dryer for drying aggregate and separate pugmill for mixing aggregate and asphalt, as well as hot asphalt storage are combined in this single trailer unit.

When operating as a mobile unit, the plant is towed by the dump truck hauling the sand and gravel for the mix. Material is shoveled from the truck into the charging hopper. The material is then fed from the charging hopper by the reciprocating feeder into the dryer, and passes through the dryer into the batching hopper. When the machine operator discharges the material in the batching hopper into the pugmill, a pre-set amount of asphalt is automatically sprayed into the mix. The mixed material from the pugmill can be discharged into the shoveling pan, onto the pavement, or into a wheelbarrow, as desired.

When operating as a stationary plant,

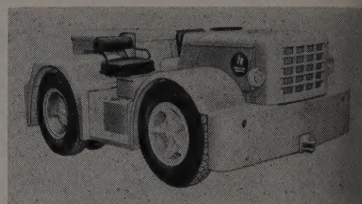
the low charging height of 64 in. eliminates the need for an elevator. Material can readily be shoveled into the charging hopper from the ground.

The plant consists of an aggregate charging hopper with reciprocating feeder, rotary dryer with low-pressure burner heating system, hot aggregate batching hopper, 250-gal. asphalt storage tank, pump-driven asphalt metering system, heated and single-shaft pugmill driven by totally enclosed oil bath gear box. The machine is also available with twin-shaft pugmill. Wylie Mfg. Co.

... Circle No. 156

Big pusher with speed

Moving 250,000 lb. of airplane or its equivalent is no small job. The Model T-150 Paymover tractor, now available from The Frank G. Hough Co., is a compact, highly maneuverable unit ideally suited for such work, and for many other tractor applications as well. With a change of accessory it becomes a snow-plow or a sweeper. This new unit develops 15,000 lb. of drawbar effort and features power-steering, four-wheel-power brakes, power-shifted transmission, dual rear tires, planetary-type final drives and a choice of gasoline, or LPG

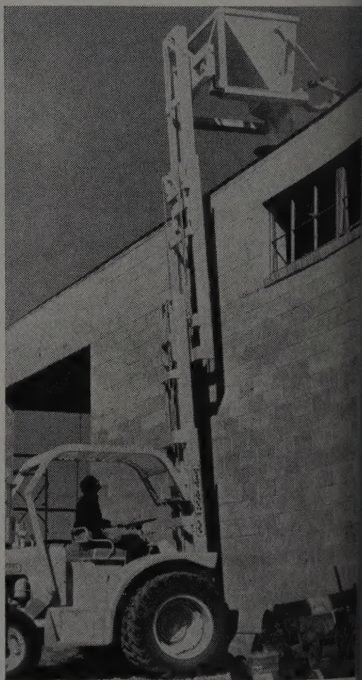


power. It has travel speeds up to 22 mph. Head and tail lights are standard equipment and a wide variety of accessory equipment and attachments are available, including 2-way radio units, aircraft engine starting systems, cabs, snow-plows, sweepers and winches.

... Circle No. 157

21-ft. lift for high scaffolds

A new model Tracto-Lift with 21-ft. lift, has been added to Ottawa Steel's line of outdoor fork lift units, which operate efficiently over rough terrain not accessible to conventional fork trucks. The 21-ft. lift model has been designed



for placing palletized masonry on high scaffolds and hoisting roofing material to the roofs of one-story buildings. A special concrete bucket is available for handling ready-mix concrete, mortar and granular materials used in the building industry. Light steel erection can be accomplished with a boom attachment which is also available. The lift is also available in three standard models, the TL-50, TL-60 and TL-70 (5000-, 6000- and 7000-lb. capacity units respectively).

... Circle No. 158

(Turn to page 114 for more New Equipment. For best manuals on concrete forms see page 110.)

Public Works Engineers Can't Win

ENGINEERS engaged in planning public works projects just can't win. Literally, they work for the "public" and their engineering decisions and designs are subject to the likes and dislikes of every citizen. Their reasoned conclusions must stand the review of lay experts each concerned with his own personal approach to any project.

The frustrations of engineers working for public agencies have been brought into sharper focus with the expanding highway program. Not only is the general public much more conscious of highway engineering, but the accelerating program requires the securing of public approval under pressure. This is not the best atmosphere for explaining and selling public-work projects to the ultimate owner.

No form of public work is closer to the individual citizen than the streets or roads in his immediate area. He is an expert on all of the problems involved and usually has preconceived and rigid opinions on their proper solution. Should the location and design fit into these opinions he considers the engineering as correct and proper. If the plans do not meet his ideas the engineer is arbitrarily damned and the plans are obviously contrary to the best interests of the entire public.

This situation was well illustrated by a governor who pointed out recently that there never has been a road built that was not considered "political." In his definition of a political road he explained that "the road the other fellow wants is political, while the one you're after is badly needed for the public good."

No engineer likes to think that the net result of his logical analysis and straightforward conclusions must take on such political charac-

teristics. The young engineer, unless he is able to develop a flexible reaction, can develop frustrations affecting progress in his profession. He may either decide to forget the public aspect and become so arbitrary as to thwart his own promotion. Or, he may swing in the other direction and design and build to satisfy the public, with a growing disregard for engineering integrity.

Those engineers headed for careers in public service should receive a short, but effective college course in which they have some of these problems explained. Too many young engineers, particularly those who are really dedicated to their careers, are convinced that the exact engineering answer is the only solution and it must not be altered by non-technical considerations. Lecturers from public works organizations (municipal to the federal level) could give a senior class some effective counsel on this point.

There is a tendency to believe that this situation can be taken care of by the magic of giving one administrative engineer the additional title of "... in charge of public relations." However, this does not help the large number of young engineers who see with horror their best technical decisions abandoned for political or public selections. Unless their education is tempered by some straight talk this buffeting may scar their engineering and professional growth.

Jim Ballard



A-W portable tandem roller, owned by Pittsburgh Asphalt Driveway & Paving Co., rolling binder layer of asphalt.

"Our Austin-Western can take the hills and does a great job of finish rolling"

says Mr. Joseph A. Laudato, Owner, Pittsburgh Asphalt Driveway & Paving Co.

Pittsburgh Asphalt Driveway & Paving Co., Pittsburgh, Pa., specializes in driveway construction and maintenance—does anything from private home driveways to supermarket parking lots.

Bought portable tandem roller

Mr. Joseph A. Laudato, owner of the company, bought a new A-W tandem roller in January, 1957. His purchase was based on his previous experience with other A-W rollers, plus his confidence in the local distributor. Mr. Laudato says: "We use the A-W primarily to put the finish layer on asphalt, and it does an excellent job of

giving it a smooth, fine level surface. The machine worked fast, too. On one job, a supermarket driveway, we finish rolled 6,300 yards of asphalt in an 8-hour shift."

Likes climbing ability

"One of the things I like best about the Austin-Western," Mr. Laudato states, "is its climbing ability. This is hilly country and a roller often has to work on a very sharp incline. To do a good job, the roller has to have steady power, otherwise you get an uneven, wavy surface. Driveways always come out smooth when our Austin-Western's on the job."



Moving in reverse, on same job.

Maintenance extremely low

"To date," Mr. Laudato continues, "maintenance costs have been practically zero. You can put me down as a real Austin-Western booster."

The Austin-Western portable tandem roller is variable between 3½ to 6 ton. Tandem rollers are available in 5-8, 8-11, 10-14 ton models; 3-wheel rollers in 8-11, 10-12, 12-14 ton models. All A-W rollers are powered by your choice of gasoline or diesel engines, 4-speed or 2-speed transmissions, and torque converter. See your nearby A-W distributor. Or write us for complete information.

Austin-Western

Construction
Equipment
Division
Aurora, Ill.



ARIZONA—
WESTERN MACHINERY COMPANY.....Phoenix
CALIFORNIA—
EDWARD R. BACON COMPANY.....San Francisco 10
SMITH BOOTH USHER COMPANY.....Los Angeles 54
COLORADO—
MACDONALD EQUIPMENT COMPANY.....Denver 16
IDAHO—
ENGINEERING SALES SERVICE, INC.....Boise
MONTANA—
HALL-PERRY MACHINERY COMPANY.....Butte
HALL-PERRY MACHINERY COMPANY.....Billings
HALL-PERRY MACHINERY COMPANY.....Great Falls
HALL-PERRY MACHINERY COMPANY.....

NEVADA—
GRAID EQUIPMENT COMPANY.....
NEW MEXICO—
N. C. RIBBLE COMPANY.....Albuquerque
OREGON—
COLUMBIA EQUIPMENT COMPANY.....Portland
UTAH—
WESTERN MACHINERY COMPANY.....Salt Lake City
WASHINGTON—
COLUMBIA EQUIPMENT COMPANY.....Spokane
COLUMBIA EQUIPMENT COMPANY.....
WYOMING—
VERMILION TRACTOR AND EQUIPMENT COMPANY.....Cheyenne

MARCH 1958



andem-pushing to cut costs is one of many—

New ideas in scraper loading

Field tests on loads and loading times are reported with detail figures. Single pusher effectiveness evaluated. Big tandem pushers produce lowest costs. Operating procedure with dual units described.

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DAY'S HAULING UNITS have the ability to move quantities, at faster speeds than ever before. These modern tools are easier to load, have more power, are safer and safer for the operator, and they have higher availability (less down-time) than in the past. At the same time, contractors are faced with higher costs, higher job overhead, higher daily production requirements, and a higher investment to own this more productive equipment. Therefore, it is imperative that every piece of profit producing equipment on the job be used as efficiently as possible. In short, productivity is higher, but costs are higher too, so that production equipment must deliver its best if any savings are to be realized in owning modern equipment.

In the cut

Many contractors are finding that the cut or borrow is a key point to analyze their equipment usage with the possibility of getting even more from these new haul-

ing units. Certainly everything must be loaded before it can be hauled, so the cut is a good place to begin improving job efficiency.

For years the pusher loading of hauling equipment has been accepted practice. Any discussion of improving pushing procedures involves the following questions:

- "Rated capacity of the hauling unit?"
- "Scraper design or loadability?"
- "Two- or four-wheeled or track-type scraper tractor?"
- "Grades in the cut?"
- "Loading characteristics of the material?"
- "Traction conditions in the cut?"
- "Underfoot softness or penetration in the cut?"
- "Hauling unit operator's ability and technique?"
- "Working altitude?"

Size and type of pusher required will be determined by the answers to these questions. Conditions change from job to job. This report is presented not as the final, conclusive answer to all pushing problems, but rather as a



THE "STANDARD work-horse," a Caterpillar D8 tractor, labors to load the DW21—No. 470 (18 cu. yd. struck capacity) in extremely heavy



material. In the same, a D9, with more hp. and more weight easily tops off a capacity load to increase the productivity of the haul unit.

guide to those who are, or should be, investigating their pushing practices.

Is yesterday's "Standard Workhorse" big enough?

Is the single pusher in the 190- to 225-engine-hp. range, weighing 40,000 to 60,000 lb., adequate for today's pushing requirements? With a scraper capacity in the 13 to 18-yd. struck size, in favorable conditions, this size pusher is generally quite large enough to keep the load time within reason (below 1 min.), and at the same time assure the haul unit of a near-capacity load every trip.

Many contractors use larger units in conditions that are not always the most favorable. Those who have standardized on the 200-hp. pusher find their load time generally above a minute, even when conditions could be described as "favorable." As cut conditions worsen, the lack of sufficient pushing power shows up in the cut where scrapers spend excessive time obtaining a load and on the fill where less than capacity loads are being placed. Since the "time per trip" (includes load time) and "average payload" are the only two factors involved in PRODUCTION, the cubic yards per hour capacity of the hauling unit is rather adversely affected, to say the least. This shown fact has been graphically illustrated in every corner of the West during the last two years, where more and more contractors have found that more pushing power insures maximum haul unit production.

The following data was obtained recently on a typical Western job where two similarly equipped torque converter pushers of different size were working. All conditions were carefully controlled by using the same haul unit operator on the same day, in the same area of the cut. The scraper was a Caterpillar DW21—No. 470, having a struck capacity of 22 cu. yd. The following facts are not offered as "an average of many jobs," rather, it

is typical of the discoveries made on many jobs by weighing loads and taking complete time studies. Each and every job has its own peculiarities (on this the material was very light), however, the relationships have been found to be the same.

Pusher.....	D8	D9
Flywheel hp.....	191	320
Weight (lb.).....	56,000	85,000
Average of several weighed loads (lb.).....	55,000	57,000
Payload (cu. yd. @ 2400 lb. per yd.).....	22.9	24.0
Average loading time (min.).....	1.60	1.20
Time for 1 complete pushing cycle (min.).....	2.30	1.85
Loads pushed per 55-min. hour.....	23.9	29.7
Cu. yd. removed from pit per hour per pusher.....	550	715

How did the difference in load time and load affect the hauling unit?

	D8 (cont'd)	D9 (cont'd)
Load time (min.).....	1.60	1.20
Haul, dump, and return time (min.).....	4.00	4.00
Total haul unit time per trip (min.).....	5.60	5.20
Trips per 55-min. hour.....	9.8	10.6
Payload per trip (cu. yd.).....	22.9	24.0
Production of one hauling unit (cu. yd. per hr.).....	230	265

What was the production and cost per cu. yd. with a balanced spread?

	D8	D9
Haul units required per pusher.....	2.4	2.8
Hourly cost of haul units and operators @ \$20 ea.....	\$48.00	\$56.00
Hourly cost for haul road maintenance.....	\$12.00	\$12.00
Hourly cost of pusher and operator.....	\$13.00	\$17.50
Total hourly cost for loading and hauling only (the fixed costs of overhead and supervision, etc. are not included).....	\$73.00	\$85.50
Production of spread—cu. yd. per hr.....	550	715
Load and haul cost per cu. yd.....	13.3c	12.0c

These figures show that: (1) larger average load leaving the cut, (2) less hauling unit time lost in the cut in obtaining a load, and (3) more pushes per hour from the pusher are possible only when adequate pushing power is used. A contractor makes full use of time, investment, and manpower to lower his cost per cubic yard by about 10%. That is a comfortable bidding advantage and could mean the difference between profit and loss.

Tandem pushing

If more pushing power is advantageous, then why not tandem push with two machines in the 190- to 225-hp (flywheel) class? What are the advantages and dis-



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advantages when compared with a single big pusher in the 320-hp. (flywheel) class. It is important to note that cost in the cut immediately doubles from the single pusher cost of \$13.00 to \$26.00 per hr. Compare this cost, then, with the cost of using a single large pusher at \$17.50 per hr. A look at some of the advantages and disadvantages of the use of tandems to increase the pushing power, when more power can be purchased in a single larger package, will give an indication of the production and cost attainable with each method.

A pusher equipped for tandem work generally has a front, cable operated "C" frame (or dozer) and a rigid, rear "C" frame. Or, it may be equipped with an engine frame-mounted, rigid plate in front, with a case-mounted, rigid, rear block. Note that these combinations are desirable so that the pushing forces are directed through the track roller frames only, or through the case and engine frame only—not through the axles and final drives. Thus, a tandem tractor cannot easily mount a rear hydraulic ripper, and if it mounts a dozer its speed of maneuvering is somewhat impaired. So the tandem pusher is generally outfitted for performing only that single job.

Two powerful tractors with well coordinated operators working together with no lost motion is, indeed, a sight that provides a thrill for all observers. Generally, however, there are inefficiencies whenever two humans must think and work as one. These inherent inefficiencies are overcome only when two skilled operators develop their own techniques over a period of time, and when both have a strong desire to produce day in and day out. A "bad day" for one is lost production for both.

Congestion is a safety hazard wherever heavy, high speed equipment is used. Haul unit operators naturally slow down when approaching a group of men and machines. Single pushing reduces some congestion in the cut. Hauling unit cycle time may be slightly improved and one less hazard removed.

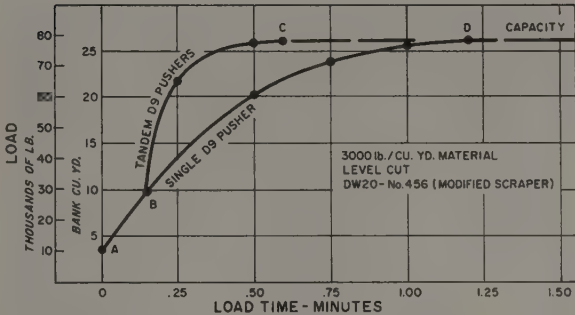
Smaller tractor twosomes do not make the most efficient use of manpower when nearly the same work can be accomplished with a single operator on a large machine. Horsepower is a measure of work. Work accomplished by a tractor is in proportion to the power available at its drawbar. Thus, with all other things equal, the combined drawbar horsepower of the tandems can be compared with the drawbar of the single to determine the work ratio (310 combined drawbar hp. compared to 260). So with tandems, the labor cost is double and the work output is only about 19% better than the larger single tractor.

Tandem tractors can be used singly, but the all important pusher is not the place to procure that extra needed "just for a minute" elsewhere on the job.

With a single large pusher in the cut, down-time of the pusher means down-time for the hauling equipment. However, many cuts require more than one pusher or other tractors for dozing and ripping, so that production can be maintained by reassigning big tractors already in the cut, or by shortening the load time slightly. And today's tractors are operating with availability in the 92% to 98% range, hence pusher unavailability is not the significant factor it was in the past.

Big tandem pushers

What happens when the larger tractors are used in tandem? Will doubling the pushing power up to 520 available drawbar horsepower, to load scrapers, offer



THIS CURVE was established by the normal procedure of weighing many scraper loads and varying the load time. It has been termed "load growth" curve because it pictures how the load "grows" in a particular scraper with a particular pusher for a given set of conditions. Point A—Most haul unit operators use the machine's momentum to self-load 2 to 3 yd. before pusher makes contact. Point B—The single pusher is on the push block .15 min. before second pusher makes contact. Note the effect of the extra power on the growth rate of the load. Point C—Tandem pushers reach the scraper capacity—26.1 bank yards in this material. The Caterpillar No. 456 Scraper had been modified to a 26.5-yd. struck measure. Point D—The single pusher reaches a capacity load at 1.20 min.

enough increase in production to pay for the cost of the second pusher?

The following information was obtained in a very easy loading material, in a level cut, with standard machines and with average operators. True advantage will not develop under good conditions, because a single large tractor can produce capacity loads in a reasonable time. However, the facts are offered because accurate data in extreme conditions has not yet been secured. Furthermore, a look at this data will permit the experienced estimator to predict, with some degree of accuracy, what might be expected to happen in more severe conditions.

By using the load growth data, (see curve), and by analyzing several different hauling circumstances, the effect on production can be examined.

Haul, dump and return time * (min.)	4.20		8.70	
	Single D9	Tandem D9	Single D9	Tandem D9
Pusher				
Load time resulting in best production per hauling unit (min.)	.90	.50	1.20	.60
Total time per trip (min.)	5.10	4.70	9.90	9.30
Trips per 55-min. hour	10.78	11.70	5.56	5.91
Payload (cu. yd.)	24.9	25.7	26.1	26.1
Hourly production per haul unit (pay yd. per hr.)	268	301	145	154
Advantage in production	0%	12%	0%	6%

*The cycle time is the important factor. Although irrelevant, it may be of interest that the times 4.20 and 8.70 shown, are for distances of 1,500 and 4,500 ft. (one way) respectively. The haul and return were assumed to be in 4th gear with .5 min. for dump and 1.5 min. to accelerate and decelerate.

What was the performance of each pusher if only the cut is analyzed in minutes?

Approach time	.10	.10	.10	.10
Load	.90	.50	1.20	.60
Boost	.15	(.15)*	.15	(.15)*
Shift into reverse	.05	.05	.05	.05
Back up	.35	.20	.45	.25
Shift into forward	.05	.05	.05	.05
Total time per push (min.)	1.60	.90	2.00	1.05
Loads per 55-min. operator hour	34.4	61.1	27.5	52.4
Payload each push (cu. yd.)	24.9	25.7	26.1	26.1
Cu. yd. loaded each hour	856	1,570	718	1,368

*In tandem pushing practice, the rear pusher drops off and begins maneuvering to be the first tractor on the next load while the front tractor remains on the scraper to provide a good send-off or boost for the hauling unit, then becomes the

rear tractor on the following load. Thus, the boost of the front pusher cannot be added to the maneuvering time for the rear tractor since both actions occur simultaneously. If the picture is still confusing, keep your eye on one tractor through two complete loads, total the time, and divide by 2 to determine the "total time per push" (a complete pusher cycle) and the "pushes per hour" (loads per 55 min. operator hour) possible with the tandems.

During the tests, the ground speed during loading with the tandem pushers was recorded at 1.73 mph., while the single pusher maintained an average loading speed of 1.57 mph.

The rear tandem pusher made contact .15 min. following contact by the first pusher. Therefore, during the early and easy stages of loading only one tractor is on the push-block. The second tractor makes contact when it is needed most, during final "topping-off". Note that the full power of both pushers was applied to the scraper .15 min. less than the time indicated as "load time."

How many hauling units could each service?

	4.20 (cont'd)		8.70 (cont'd)	
	Single D9	Tandem D9	Single D9	Tandem D9
Pusher cycle per load (min.).....	1.60	.90	2.00	1.05
Haul unit cycle (min.).....	5.10	4.70	9.90	9.30
Haul units per pusher.....	3.19	5.22	4.95	8.86

What is the cost per cu. yd. comparison?

Cost of hauling units @ \$20.00 ea....	\$63.80	\$104.40	\$99.00	\$177.20
Cost of pushers @ \$17.50 ea.....	\$17.50	\$ 35.00	\$17.50	\$ 35.00
Total hourly cost of loading and hauling equipment and operators.....	\$81.30	\$139.40	\$116.50	\$212.20
Production of above spread.....	886	1,670	718	1,388
Cost per cu. yd.....	9.5c	8.8c	16.2c	15.5c
Savings.....	0%	8%	0%	4%

NOTE: Cost of haul road maintenance, water, compaction, and fixed costs of overhead, supervision, etc. are not included

The cost figures used here were approximately by a standard accepted method. You may wish to substitute your own cost figures. Due to many varying conditions and various accounting practices, job figures may be somewhat more or less than those used in this illustration. However, the relationships would be the same.

As would be expected in these excellent loading conditions, where a single D9 pushed a near capacity load in a "reasonable" time, the savings to be had by doubling the loading power is very small indeed.

In this case big tandems did not: (1) push out twice as many loads per hour, (2) double the pit production, or (3) service twice as many haul units.

Big tandems did: (1) reduce the time in the cut for the hauling unit, (2) increase the average load in each hauling unit (3) increase the productivity of each hauling unit, thus reducing time required to complete job, and (4) provide a lower total cost per cu. yd.

As pit conditions worsen

What happens as material and cut conditions worsen? Sand, dry loose dirt, wet gravel, cobbles, conglomerate, hard shales, decomposed granite, caliche, Franciscan sandstone and heavy sticky clay, materials that are heavy, sticky, tough, hard, tight, or "dead," have the effect of flattening out the load growth curve—more time for the same load.

The first thing the job superintendent notices with single pushing is that loading time lengthens. With the reserve available when using 520-drawbar-hp. in the cut, load time increases only slightly, as conditions become more severe. The tandems keep the load growth rate on a steeper incline than does the single pusher.

As conditions worsen further, the close observer finds that a big single pusher simply cannot push a capacity load by extending the load time to 1.50, 1.75, or even 2.00 min. Weight of the material pressing down in the bowl plus the resistance to the cutting edge are simply too great for the force that the single pusher can exert.

With big tandem pushers, the capacity scraper load can still be obtained by lengthening the load time to .75 or 1.00 min. And we see a phenomenon of two pushers together able to push equal or larger loads in *less* than half the time of each separately. Why? Because the tandem pushers operate on the steep part of the load growth curve for most of the load time, whereas the single pusher load has a flatter slope.

Human performance in loading a scraper has an undeniable effect on size and load time. This is most noticeable when pushing power is "just right" or "not quite enough." With sufficient power on the push block, even the most inexperienced operator will carry those maximum capacity loads each trip. This is an important concept if one is to obtain maximum production from the new, high production haul units.

Sand, gravel, cobbles, conglomerate, dry adobe, dry silt, and other "dead" materials must be "pumped" into the scraper. A fast ground speed is desirable in loading. In this case, the big tandem horsepower is converted to speed so that the dead material can be pumped into the bowl rather than be pushed ahead of it.

Contractors, on increasing their pushing power, also find that scraper cable life increases, cable control maintenance is reduced and tire slippage becomes nonexistent as loading speeds increase. Also, the pushers themselves are benefited by the faster and steadier loading speed possible with big tandem power.

When conditions are favorable the big tandems can be used as single pushers quite effectively and profitably. Attachments such as push plates for dozers, engine frame-mounted plates, "C" frame-mounted push plates and inside arm dozers are available for the largest tractors to equip them ideally for single pushing.

Big scrapers

Is the largest scraper a necessity for the user of big tandem pushers? Construction and heavy equipment experience have shown that merely increasing the size of something does not insure that it will be better. Hence the old yardsticks are still valid:

Production ability which depends on usable power, weight, transmission type and speeds, operator comfort, ease and speed of controls, capacity, dimensions, and maneuverability.

Hourly cost of operation which depends on original price, fuel and lubricant consumption, working life, resale value, down-time, parts and labor to keep it on the job.

Each contributes to the rate the machine must earn. Obviously, simply changing a scraper's dimensions to make it lower, longer, higher, or bigger, or merely increasing the fuel input or engine speed to provide more power affects more than productive ability. Too much capacity may result in too long in the cut, or unusable capacity because it cannot be economically loaded. The heavier loads attainable with more capacity may cause slower hauling speeds. Excessive capacity may cause structural and bearing overloads, premature tire failures, and more lost time breakdowns. On the other hand, larger components and larger tires bring an initial purchase price and repair costs that may not be in line with additional productive ability.

The capacity of larger scrapers can be used with big tandem pushers in favorable loading and hauling conditions. In severe loading and adverse hauling conditions, twin pushers can be used with standard scrapers to boost production. Of course a scraper must be able to take-it when two big pushers are on the push block in rocky conditions. And no amount of scraper reinforcement can take the place of adequate ripping. The extra pusher should not be used to eliminate a ripper in the cut or premature scraper failures are a certainty.

Torque converter or direct drive

Two of the track-type tractor manufacturers offer a choice of torque converter and direct drive transmissions. Which is best for pushing?

Briefly, the torque converter's advantages lie in its ability to instantaneously adjust speed with the wide variety of drawbar pull requirements without requiring a change in gear, and over a relatively broad speed range. This enables faster maneuvering, positioning, and contact on the push block. At the end of the load the pusher will rapidly pick up speed, as the bowl is raised, to boost the scraper while the haul unit operator shifts.

The direct drive's advantage is a result of the fact that for any given working speed it will develop a higher drawbar pull. This is a result of the unavoidable loss of horsepower in any torque converter equipped machine. The losses in the converter will be more than the 20% loss that occurs when the converter is working in its most efficient range.

When less experienced operators and soft or muddy

cuts prevail, the torque converter equipped tractor may give better production. On the other hand, when operators are proficient, tractive conditions are good, and little boost is needed for the haul unit, the direct drive will give better production. In practice, the differences are difficult to detect even when closely studied.

Any higher initial investment and higher fuel consumption with the torque converter tractor may equalize with the slightly lower repair costs, resulting from the elimination of some shock loads to gears, shafts, etc., which may occur in the direct drive tractor. In practice, no significant difference in hourly cost in favor of either has been reported.

Large 4-wheel drive rubber-tired type of pusher is best suited to good tractive conditions where there are few tire hazards. Under favorable tractive conditions, such a machine must weigh 120,000 to 130,000 lb. to develop the same usable pull of a crawler weighing 85,000 lb. with the same power plant. A pusher must be highly maneuverable, able to cut into position quickly, and then develop a high usable power. No rubber-tired machine has been developed to date to perform these functions as well as the track-type machine.

Many contractors and governmental agencies are turning to on-the-job-demonstrations, stop watch, and weighed loads to determine actual production potential. These production studies, in addition to complete cost records, down-time records, and an eye on resale value, provide not only a true and complete evaluation for the intelligent purchase of new equipment, but can also result in a sound basis for future estimating. These same measures can determine "What to Push With!"

A SIMPLE TEST TO SHOW THE CORRECT POWERING NEEDED FOR YOUR JOB

To determine if your job is properly powered in the cut, take the following **CUT TEST**: Just place a check in the proper column.

		I	II	III
		0-13	13-18	Over 18
I Rated Struck Capacity of the Scraper (The larger the scraper, the more power required for loading)				
II Scraper design, or Loadability (The cutting edge angle of attack and location, bowl dimensions and shape, speed of scraper controls, etc., all determine the loadability. The height of the sides determines only how high the load must be pushed to give a struck capacity.)				
		Lowbowl Sides 0-5 ft.	Highbowl Over 5 ft.	
III Grades in the Cut?				
		Down	Level	Up
(Downgrades provide assistance. A DW20 No. 456 loaded, with a D8 pusher, has 1700 drawbar lb. of gravity assistance per 1% of grade. On an 18% grade, it is approximately equivalent to the push of a 2nd D8 in tandem loading on the level)				
IV Two or Four Wheel Scraper Tractor?				
		2 Wheel	4 Wheel	
(A 2-wheel prime mover has more weight on the drive wheels, and thus offers more "help" to the pusher. Tire slippage should not be allowed). Approximate help in good tractive conditions is: 2 wheel help (empty) 20,000 lb. rimpull, (65% of a 200 hp. pusher) 4 wheel help (empty) 12,000 lb. rimpull, (40% of a 200 hp. pusher)				
V Loading Characteristics of the Material				
		Good	Average	Heavy, Hard, Dead or Tough
(Sand, dry dirt, cobbles, gravel, and "dead" materials require faster loading speeds. Heavier materials require more hp. to lift the load in the scraper. Hard and tough materials offer more resistance at the cutting edge, thus require more hp. to load)				
VI Traction conditions in the cut				
		Good	Average	Poor
(Firm earth and clay provide good traction for both the prime movers and pusher. Dry dirt and sand provide less traction. Slippery clay, mud, rock, cobbles, etc., generally provide poor traction)				
VII Penetration in the cut				
		Firm 0 in.	Average 0-4 in.	Soft Above 4 in.
(More wheel penetration requires more hp. Penetration robs pushing power)				
VIII Altitude of the job				
		Sea-Level	0-5000 ft.	Above 5000 ft.
(Altitude derates engines. The higher the altitude, the larger the power package must be to provide sufficient available pushing power)				
IX Hauling unit Operator Ability				
		Topnotch	Average	Poor
(The worse he is, the more power he needs behind him)				
How did your job score? How do the jobs you will be estimating score?				
If every check fell in column 1, then a pusher smaller than the 155 drawbar hp. (200 engine hp.) size will probably do your job very economically.				
If more answers were in columns 2 and 1 than in column 3, the 155 drawbar hp. (40,000 to 60,000 lb.) size may do the job; however, chances are a 260 drawbar hp. (320 engine hp.) pusher will do it more economically.				
If most of your checks hit column 3, then tandem 155 drawbar hp. pushers may do the job; but you can be sure that tandem pushers (2 @ 320 engine hp.) will do most every job, and at a lower cost per cu. yd.				

Cutting a church in two and jacking it apart

CUTTING a church in half and jacking one section back 30 ft. was the ingenious method of saving \$50,000 in enlarging its capacity from 222 to 392. This procedure was selected as the most economical method of securing the added seats for the Episcopal Church of St. Matthew in San Mateo, California.

The first plan considered for enlarging the structure, which involved tearing down part of the original building, represented a cost estimate of about \$425,000 according to the figures submitted by contractors. The building committee and the general contractor, Morris Daley Co., in searching for better ideas consulted D. J. & T. Sullivan moving specialists of San Francisco who proposed the idea of opening up the two halves of the church and adding a new section in the middle. A. V. Saph, Jr., consulting engineer of San Francisco, who was retained by Sullivan, estimated that this procedure would save approximately \$50,000. This proposal was adopted and plans drawn to cut the structure and move one section back using hydraulic rams.

The first operation was the actual sawing of the building down the middle followed by thorough bracing of

the two sections preparatory to the move.

A foundation was prepared to support the one half in its new position and steel I-beam tracks were laid to carry the 400 tons of building during the 30-ft. move. Incidentally the portion to be moved included a stained glass window valued at \$80,000 which came through the move undamaged. To make sure that the tracks remained in exact position during the move, they were supported through their length by concrete piers.

The actual move was accomplished by four remote-control hydraulic rams. Each of these Templeton-Kenly & Co. Simplex rams, supplied by C. H. Bull Co. of San Francisco, has a capacity of 100 tons. The rams were placed to thrust horizontally at four points along the base of the half to be moved. Each ram was provided with an individual control valve and pressure gage in case it was necessary to adjust them individually during the shove. The valves and gages were located at the pump which supplied pressure for the four rams, and an overload valve kept the pressure below a safe maximum. During the move a man was stationed at each ram to observe and call out each



RAMS were mounted on each of the four tracks. The total 400-ton rated capacity of the jacks moved the building at a rate of 5 ft. per hour. Rams pushed against cleats clamped to the track beams.

$\frac{1}{4}$ -in. advance of the structure.

Pressure on the rams and the movement of the structure was kept constant for the day and a half required. The entire job went smoothly except for one delay when an obstruction was encountered which had to be removed by a small amount of digging. With the obstruction removed, the shove was resumed and proceeded without further difficulty.

Rate of movement was about 5 ft. per hr. Extension of the rams was 10 in. which required each to be retracted and extended a total of 36 times during the move. Each ram pushed against cleats that were clamped to the track beams. As each pair of rams arrived at its maximum extension they were retracted and the cleats moved forward. To prevent any possibility of slipping the other pair was kept under pressure. The inside rams, for example, were retracted and their cleats moved, with the pressure then built up again on these two. The outer rams were then released, retracted and moved forward to new positions. This allowed half the total force to be maintained against the building at all times.

Following the move, the new 30-ft. section was built between two halves. With the new mid section completed the church building will have a seating capacity of 392 as compared to its original seating of 222.



I-BEAM TRACKS were used to support the 400-ton section of the church during the 30-ft. move. These tracks were supported on concrete piers. Stained glass window was undamaged in move.

Hydro work on San Joaquin River

Project of Southern California Edison Co. features 5,000,000-yd. earth dam and 9-mi. tunnel.

WITH AN OVERALL height of 30 ft. above bedrock and 5,000,000 yd. of fill, the Mammoth Pool dam is ready for active construction work. The dam and the related 40,000-ft. tunnel and powerhouse installation are being designed and constructed by the Bechtel Corporation for the Southern California Edison Co. on the upper San Joaquin River about 80 mi. northeast of Fresno, Calif. Construction is expected to start shortly and the elevation will permit year-round work.

This project is part of an expanding program by the Southern California Edison Co. to utilize the water power potential on the upper San Joaquin River, extending back to its tributaries. Topography in the project area is typical of the Sierra Nevada with steep walled canyons, swift mountain streams and wooded slopes alternating with barren granitic domes.

Planning on this project extends back into the 1890s. Recent history started in 1951 when the company dealt with the Federal Power Commission for a license to construct a 5,000-kw. project. Negotiations for the use of San Joaquin River water for the project have been in process with the U. S. Bureau of Reclamation during the succeeding six years. These negotiations were successfully concluded when a contract was executed with the Bureau last September. The FPC more recently issued construction license for the project. The Mammoth Pool Dam will extend across the San Joaquin River where it forms the boundary between Fresno and Madero counties. This station is about 9 mi. upstream from the company's Big Creek Powerhouse No. 8.

Net height of the dam above stream bed will be about 330 ft. and the height above bedrock will be about 430. Design provides for a rolled earth fill of about 5,000,000 cu. yd. volume. Principal features include the zone of selected material and provision for drainage.

An interesting feature of the structure is the ratio of crest length to thickness of the fill from toe to toe. Crest length will be 820 ft. and the maximum thickness of fill will extend 1,800 ft. up and down stream. The reservoir created by the dam will be 8 mi. in length and will have a gross capacity of 123,000 ac. ft.

From the reservoir the water will be diverted into a tunnel 40,000 ft. long and 21 ft. in diameter. This conduit will be driven principally through granite with a lining provided at points of poor support or insufficient cover. Tunnel invert will be paved.

At two locations the tunnel passes under small creeks which will be diverted into vertical holes that will deliver this supplemental water into the tunnel.

At the downstream end of the tunnel two steel penstocks will extend from a Y-branch, a distance of about 2,060 ft. down the mountain side to the powerhouse. Penstocks will vary in diameter from 105 in. at the upper butterfly valve to about 90 in. at the lower butterfly valve. This reservoir and conduit system will be capable of delivering 1,800 sec. ft. to the powerhouse.

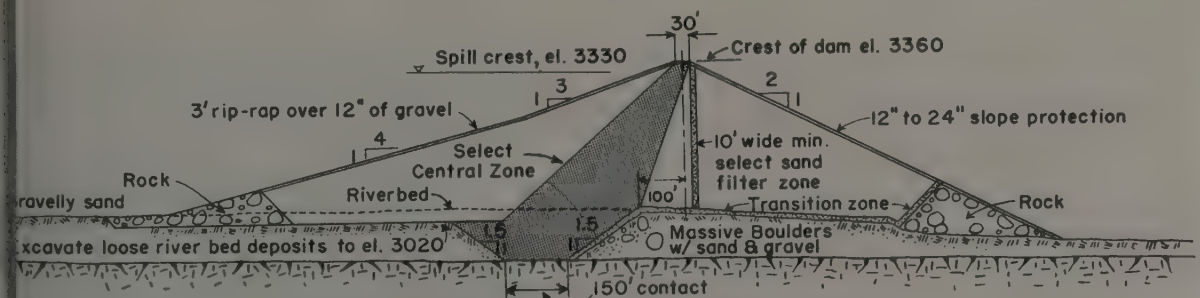
The powerhouse will be located on the San Joaquin River at the upper end of the existing afterbay at the company's Big Creek Powerhouse No. 8. The plant will be of the outdoor type and will contain two gen-

erating units, each having a vertical shaft, multi-jet impulse turbine directly connected to a 63,000-kva. generator. Total name-plate rating of the two units will be 126,000 kw. Operation of the new plant will be by supervisory control from the company's Big Creek Powerhouse No. 3, about 9 mi. downstream.

A sub-station will be provided at the Mammoth Pool Powerhouse and transmission lines constructed to interconnect with the company's existing Big Creek transmission line system. The existing transmission lines from Powerhouse No. 3 to the Los Angeles load centers are capable of carrying the added generation from the new project.

Access to the powerhouse site will require the construction of about 1 mi. of road and a bridge across the river in the vicinity of Big Creek Powerhouse No. 8. The dam site can be reached using existing roads of the U. S. Forest Service, although these existing roads are only partly surfaced. Construction of 15 mi. of road will be required to provide access from the U. S. Forest Service roads to tunnel portals, adits and surge chamber, as well as to the two small diversion dams to be located over the tunnel.

Electric energy generated at the Mammoth Pool Powerhouse will be stepped up from 13,800 volts to a nominal 220,000 volts for transmission. It is estimated that the energy generated will average 550,000,000 kwh. per year and that the additional amounts of water which will be made available by the new project for use at the company's downstream powerhouses No. 3 and 4 will result in an average annual gain of 86,000,000 kwh. from these lower power plants. The aggregate increase in power production, both direct and indirect, from the Mammoth Pool Project will be 636,000,000 kwh.



MAXIMUM SECTION THROUGH MAMMOTH POOL DAM



Re-bars for Ice Harbor

A short review of the Ice Harbor project with emphasis on the reinforcing steel phase. About 200,000 lb. of re-bars are fabricated daily.

CONSTRUCTING A DAM is not all cofferdam building, earth excavating, and concrete replacing. Fabrication of reinforcing steel is as challenging a dam construction task as any. Only the steel workers in the project's steel fabricating yard fully know the problems and manhours that go into the patterning of reinforcing steel to meet the dam's construction specifications.

Up on the level bench above the Snake River at Ice Harbor Dam where the U. S. Army Corps of Engineers has constructed its railroad unloading yard, acres of reinforcing steel lie scattered about in high piles. The colored ends of the reinforcing rods identify the size and weight of the steel, thus enabling identification at a glance.

About 25,000,000 lb. of reinforcing steel may be found stored within the Ice Harbor steel yard on almost any day. The first construction step contract calls for the use of 35,000,000 lb. of reinforcing steel. Steel bars from 1/2 in. to 2 1/2 in. in diameter and 60 ft. to 70 ft. in length are bound together by heavy wires into bundles. Each bundle weighs from 7,500 to 8,000 lb. About 200,000 lb. of reinforcing steel a day must be fabricated into the necessary shapes to meet the demands of the construction schedule at the Ice Harbor Dam site.

In the center of the yard is a small compact machine that periodically gives forth a screeching clatter as it shears through half a dozen steel bars with the ease of a pair of scissors cutting through soda straws. This machine is the alligator jaw trimmer which trims off steel bars up to 2 in. in thickness.

A short distance beyond is the form

bending machine which, with a simple twist of the operator's wrist, bends the heaviest rods to any desired angle. A small mobile gantry crane mounted on tracks that travel the length of the yard loads the processed steel from the fabricating machinery on to a trailer truck for transportation to the construction site.

On the spillway section of the job adjoining the powerhouse foundation and intake portion, three huge gantry Whirley cranes move back and forth on heavy rail trackage. Each crane is more than 85 ft. high and has a 180-ft. boom sweep. Two of these Whirley gantry cranes are on the upstream side of the concrete construction placement work and one on the downstream side.

At work spots inaccessible to these Whirley cranes, such as the fish ladder on the south shore, mobile cranes with 80-ft. booms carry on the work.

As of the first of the year, Ice Harbor Dam schedule calls for the south shore first step construction work to be near the 50% completion mark. Full completion is set for February 10, 1959. This is a revised schedule made necessary by the 40-day jurisdictional strike of the carpenters last summer. The contractors, Montag, Halverson, Montag, and Associates, expect to hold to this new schedule on the near \$30,000,000 first step south shore construction contract job, and if funds continue to be available they believe they will have little trouble in doing so.

Power on the line by 1961 is the goal of the U. S. Army Corps of Engineers' designers and construction supervisors of the dam. The Ice Harbor project powerhouse specifications call for immediate installation of

three generators, each of 90,000-kw capacity, and the building of skeleton installation for three additional generators to ultimately raise the total installed capacity of the Ice Harbor plant to 540,000 kw.

Each generator at Ice Harbor will be powered by a Kaplan-type turbine developing 143,000 hp. The dam itself will have a spillway 600 ft. long with 10 spillway bays controlled by steel gates 50 x 53 ft. in size. The capacity of the combined spillway bays will be 850,000 cfs, greater than any flow of the Snake River present.

Extending toward the south shore from the spillway bays will be the 661-ft. long powerhouse. On the north shore of the spillway will be the single lift navigation lock, 103 ft. high, 675 ft. long, and 86 ft. wide. The lock gate on the downstream side of the lock will be 119 ft. high, higher than the lock at McNary Dam and Lower Columbia River.

Fencing the dam on each shore will be two fish ladders furnishing the facilities for passing of salmon over the dam. This installation will be similar to McNary Dam.

Ice Harbor, when completed, will form a pool of 9,200 ac. and will extend slack water upstream 35 miles to the site of the Lower Monumental Dam near Magallon. Lower Monumental is the number two dam in a series of four multipurpose hydroelectric projects approved for the Snake River between its mouth at Lewiston, Idaho. Completion of the four dams will make navigation possible 140 mi. up the Snake River above Lewiston and bring in waterway facilities from the ocean at Lewiston, Idaho, and above.

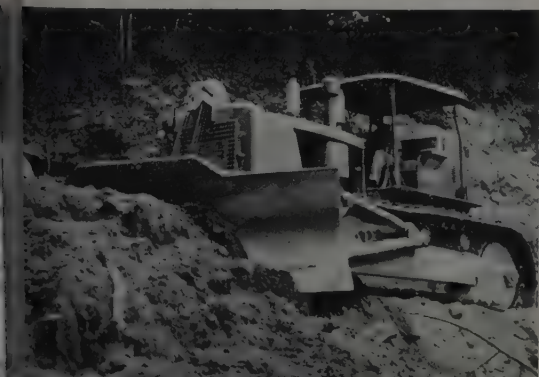
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Bridging the gorge at Glen Canyon

Contractors have erected a wire mesh suspension bridge and are well along with abutment work for the huge steel arch bridge.

IMAGINE walking across a net of chicken wire stretched between the tops of two 70-story buildings and you will know roughly what it is like to use the new foot bridge which now leaps from rim to rim at the Glen Canyon Dam site, in northern Arizona. Looking down between your shoes and through the 2-in. mesh at the river 700 ft. below is a bit upsetting, but the light weight mesh enables the structure to withstand cross winds up to 100 mph.

The \$200,000 foot bridge was subcontracted by Merritt-Chapman & Scott Corp., prime contractor for the \$421,000,000 storage and power project, to Kiewit-Judson Pacific Murphy Co., and John A. Roebling's Sons Corp.

Kiewit-Judson, now at work on the nearby \$4,500,000 Colorado River bridge, also to be described in this article, furnished and fabricated the anchors and towers, and erected the structure.

Roebling made the bridge design and furnished the cables, clamps, pins, and wire mesh.

The foot bridge—located about 1,500 ft. upstream from the site of the Colorado River bridge, the nation's highest and second longest steel arch span—will provide ready access from the town site on Manson Mesa to Merritt & Scott shops and offices on the west side of the canyon. The foot bridge at the present time represents the only crossing of the Colorado River between the Navajo

bridge 16 mi. downstream and Moab Utah, 200 mi. upstream.

The main anchors for the bridge are two concrete deadmen set about 15 ft. into sandstone behind each supporting tower. An estimated 200 yd. of concrete were used in each with the anchor frames tied down by reinforcing steel.

The six main carrier cables used in hanging the bridge were a stock wire of 1¾-in. diameter bridge strand. Also used were eight 1-in. deck cables, four handrail cables and sixty-four ⅝-in. suspender cables. For anchoring the span from the bottom, two 1¾-in. cables, similar to the carrier cables, were bolted to the wall of the canyon.

The 1,280-ft. bridge is hung from two 100-ft. high structural steel towers which were fabricated in Judson-Pacific Murphy's Emeryville, California, shops.

Because the height of the towers is relatively small in comparison with the length of the bridge, each tower is mounted on rockers, held in place by four 2-in. anchor bolts and resting on a 3-in. steel base plate, which permit the towers to tilt slightly as the bridge is loaded and unloaded.

A 3-drum American hoist powered by a General Motors diesel 670 series engine was used in stringing cable across the canyon. The supporting cables for the bridge were brought across on a ¾-in. messenger cable with a sheave block mounted on the towers used for haul line.

Once the carrier cables had been hung, especially built carriages mounted on 6-in. diameter rollers were suspended from them. Each carriage, carrying one man, was equipped with from 3 to 4 floor beams, clamps and suspender cables. The carriages gravitated out toward the center under their own weight and were hauled back in by the hoist.

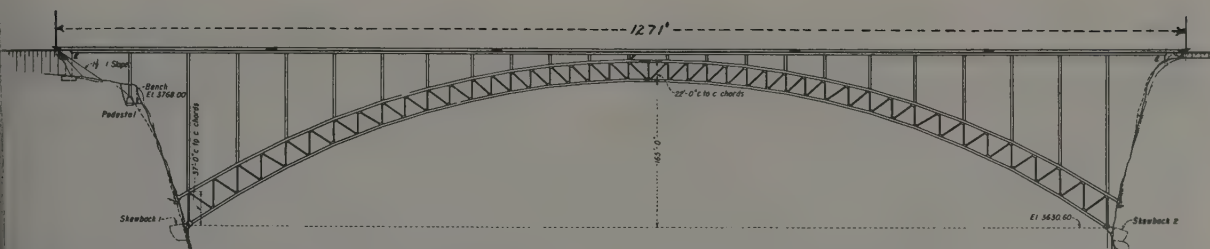
The 7-ft. floor beams used in the deck were made up of two 7-in. channels set back to back on 20-ft. centers. A model 414 Lorain Moto-Crane was used for erecting the towers and handling the cable spools.

Colorado River bridge

With the foot bridge finished Kiewit-Judson has turned its full attention to the construction of the huge Colorado River bridge, located 865 ft. downstream from the axis of the dam. The roadway will be 70



SPECIAL METHODS were devised for rock drilling on the face of the cliff during abutment excavation for the steel arch bridge. A Thor drill was mounted on a vertical bar.



COLORADO RIVER BRIDGE will be 1,028 ft. long and 700 ft. high, spanning the canyon 865 ft. downstream from the dam. Kiewit-Jud-

son's low bid for the project was \$4,139,277. Steel erection was expected to begin in March or April of this year.

t. above the river, making the structure the highest steel arch bridge in the nation. With a length of 1,028 ft. it will be second in length only to the Bayonne bridge in New York City.

Kiewit-Judson were awarded the contract in January of 1957 on their bid of \$4,139,277.

The original schedule set up by the contractor called for construction of the abutment and skewbacks on the west side of the canyon first, using the single massive concrete abutment as an anchor for platforms to be used in drilling out the skewbacks. Although the sites for the concrete foundations for skewbacks had been chosen where geological joints were at a minimum in the soft sandstone formation, first drilling revealed a partition joint 5 ft. inside the canyon wall. Bureau of Reclamation designers were

forced to take another look at the structure.

When the plans came off the drawing board for the second time, 5,000 cu. yd. of rock came with them. Removal of the rock slab left the proposed bridge 12 to 15 ft. away from the canyon wall, necessitating bringing the skewback out on a cantilever and increasing its height from 27 to 47 ft.

Excavation had already started inside a cave at the west skewback sites when the fracture was discovered. The contractors time-table called for setting the first of 4 anchor bolt frames by December of 1957 and hanging the first steel for the arch by March 1, 1958.

On the east side, the skewbacks were completely outlined on the canyon wall with holes on 4 to 5 in. centers drilled to an average depth

of 18 ft., the full depth of the foundations. The technique used was to secure a large bar vertically to the face of the cliff with pins set into the sandstone. A Thor drill was mounted on the bar and operated by high scalers supported by bosun's chairs. When the skewback was completely outlined on the wall, cut holes were drilled and the rock shot with small charges, averaging about 5 lb. per round, using millisecond delays to prevent fracturing an overbreak.

It was found that in drilling to full depth the drill bit would wander off center, producing an uneven break—a mistake that was not repeated on the west side where holes were drilled in 4- to 8-ft. lengths. The cumbersome bar method was also abandoned in favor of a drill platform anchored by cables to the abutment and controlled by hoists from the rim.

The finished skewbacks on the east side of the canyon measured 27 ft. in height, 10 ft. in width, and 18 ft. in depth, curving at the bottom to 9 ft. from the outside wall.

On the west wall they were 47 ft. in height, 10 ft. in width and about 14 ft. in depth. An estimated 800 cu. yd. of concrete will be required for the west foundations compared with about 300 for the left skewbacks.

For tying down the 4 structural steel anchor bolt frames which will support the bridge, 1 1/4-in. dowel bars were sunk a minimum of 30 ft. into the skewback walls. It was found that water introduced into the 4-in. diameter dowel holes was absorbed by the sponge-like porous sandstone. A method of pressure grouting was devised in which the grout was pumped through tubes adjacent to the dowels.

Cableways

A 25-ton Lidgerwood cableway with 160-ft. towers mounted on a ball and socket will be erected by the

(Continued on page 86)



RE MESH footbridge is located 1,500 ft. upstream from the dam. The bridge is 1,280 ft. long and 700 ft. above the water, hung between two 100-ft. high steel towers.



For an asphalt plant to function properly, the crew and inspector must be fully aware of the factors affecting each component.

ASPHALT PLANTS - inspection and control

A detailed, practical discussion of asphalt plants, how to operate them efficiently, what to look for when something goes wrong, how to keep control of the entire operation, and how to achieve the best finished product with a minimum of wasted time and effort. First of two parts.

By VAUGHN MARKER

ASPHALTIC CONCRETE is the most widely used material for the paving of high-type highways, roads and streets. There are many types and varieties of mixtures used throughout the country, but in almost all cases, the measures of control in producing the material are much the same. Asphaltic concrete consists, in general, of a graded aggregate and paving asphalt hot-mixed in a central plant and delivered to the roadbed in trucks ready for placing. Different mixtures are designed for different purposes and are influenced to a large degree by the conditions under which the finished paving will be used. Factors such as available materials, climatic conditions, and other similar matters also influence which mixture should be used and how it should be placed.

The key to the successful construction of a hot-mix asphalt pavement lies with the plant crew and, in particular, with the inspector at the paving plant. Their work must be properly performed before anyone else in the production line can satisfactorily perform theirs.

The jobs of the plant inspector and the plant crew, although of vital importance, are not glamorous ones. In most cases, theirs is a tough assignment for which adequate recognition is rarely given. The only time that the plant inspector or plant crew re-

ceives any attention is when they have made a mistake and when that happens, somebody is invariably on their necks with both feet. In addition, many routine tasks around asphalt paving plants are dirty ones. It is common knowledge that the only way of properly performing the tasks of the plant inspector is to wade in and not be afraid of getting a dirty face. It is, indeed, an assignment for a rugged individual, but one that can also generate a feeling of pride and satisfaction.

It was recently written in an editorial by Jim Ballard of this pub-

lication that the "toughest job in construction is that of inspector. It is the vital link between design and its fulfillment in the field. The inspector is too often underrated in the engineering organization and looked upon as a necessary evil by contracting forces. However, the function is essential in the contract system. Inspectors and their problems deserve more understanding and upgrading from both sides." With this thought, the writer is in hearty agreement.

Functions of the inspector

The over-all function of the plant inspector is to influence and guide the plant operation to produce a mix that will meet the specification requirements of the job at hand. In doing his work, the inspector has a myriad of duties to perform. At the same time, he should assist the plant operator in solving production problems in order to attain the highest production possible commensurate with the required quality of end product. In many instances, a change or a correction that will increase quality will also increase production or make for a more efficient plant operation.

The relationship between the inspector and the contractor's forces should be cooperative at all times because cooperation of both is essential in obtaining a satisfactory end product. Normally the inspector does not have the authority to tell the contractor how to do anything, but he

About the author—

Vaughn Marker, District Engineer with the Asphalt Institute in San Francisco, is no stranger to the pages of WESTERN CONSTRUCTION. His two-part article on asphalt paving which appeared last summer was tremendously well-received, and the requests for extra copies which came in from all over the country necessitated the printing of over 15,000 reprints. With the present article on asphalt plants, which will also appear in two parts, he rounds out the subject of asphaltic concrete construction. You'll find his remarks practical, useful, and clearly expressed.

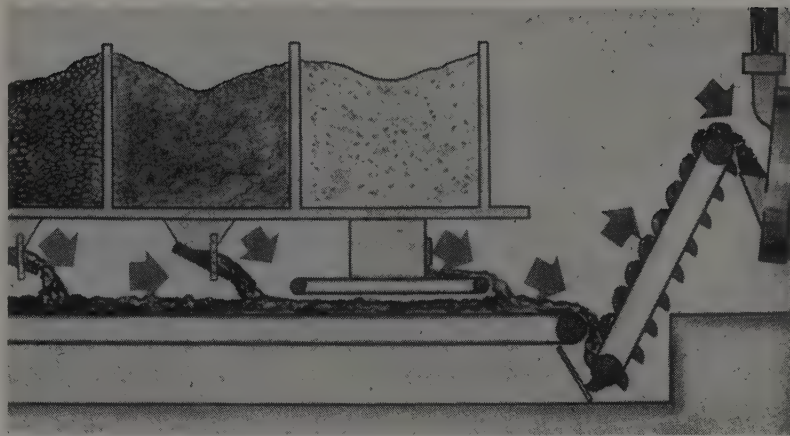
should willingly give his advice in the event that the contractor or his representative requests an opinion or suggestion from the inspector pertaining to changes or adjustments in the plant or in the operating procedures. Under these conditions the inspector should take particular care not to issue any instructions to the contractor's personnel which could be construed as assuming supervision of the work. The inspector's job is to check the materials, equipment, procedures and the end product to see that they meet the specification requirements. Any irregularities that the inspector notes should be brought immediately to the contractor's attention for correction.

Uniformity and balance

There are two principal considerations that must be kept in mind at all times in efficiently producing a high quality asphaltic concrete mixture from an asphalt plant. These two considerations can be summed up with the words "uniformity" and "balance."

Under the heading of uniformity will fall all the categories of procedure and material. Uniformity of the material fed to the plant both as to quality and quantity is essential to the uniformity and continuity of operation. The amount of aggregate being fed to the plant must be maintained in a uniform manner as well as the gradation of the various particle size fractions that are involved. Uniformity must be maintained between the aggregate portion and the asphalt portion of the mix at all times, in order to assure the highest quality. Uniform operation of the various plant components is just as important. An intermittent stop-and-go type of operation tends to penalize the quality of the mix that is produced. It likewise tends to impair the quantity of the contractor's production. The plant that runs continuously without stopping for any reason, *even though it is not producing at its ultimate capacity*, will generally produce the best mixture and usually at the least expense to the contractor.

Balance among all phases of the production is necessary in order to maintain a continuous and uniform operation. By this is meant the balance of the plant components one to the other as well as the balance among the materials that are being fed to it. Every decision of the plant inspector concerning changes or modifications in production should



THE COLD FEED controls the material fed to the plant and consists of the stockpiles, the separators between the stockpiles, and the feeders, which proportion the material. A variety of problems can arise at the cold feed. The inspector and the plant crew must know what they are, how they affect the finished product, and how to correct them.

be made only after careful consideration as to how it will affect the uniformity and balance of the whole operation.

In order to approach the subject of asphalt plant control and inspection systematically, the various phases of producing the material will be discussed starting at the beginning of the flow line of the material at the plant and following it through to its deposit into the truck. The discussion will be based on the batch type plant; however, the principles and reasoning involved are equally true for continuous plants. The differences between the two will be discussed later. In addition, sampling and testing are subjects in themselves and will only be mentioned in passing. This is not to imply that testing is not a basic and important part of the inspector's duties.

Aggregate grading

One of the most important things that contribute to the success of an asphaltic mixture is the control of the aggregate grading. Throughout the flow line of material, the problem of keeping the grading uniform and within specification requirements is an important one. Actually, the problem reaches back to the production of the aggregate before it is stockpiled at the paving plant. This is a subject in itself and will not be discussed here. It suffices to say that the asphalt plant will not make material. It is only capable of mixing the material fed to it. The reason for the importance of aggregation gradation is that the asphalt demand of the mix is, to a large extent, dependent

upon the particle size distribution or "surface area" of the aggregate in the mix. In general, for any given aggregate material the greater the surface area, the more asphalt required. After production of the aggregate, the problems first encountered are at the aggregate stockpiles that feed the plant.

The cold feed

The purpose of the cold feed is to control the material fed to the plant. There are several types of cold feeds that are used today, but basically they are all devised to achieve the same goal, namely, control.

The cold feed actually consists of several parts. First, there are the stockpiles of material that will be used in the production. Next, the separators between the stockpiles. Third, the feeders from the stockpiles through which the material is proportioned to the plant. The feeders themselves consist of the basic unit, the gates and some means of controlling the gates. The aggregate material goes from the feeder to a collecting belt or bucket line of some type by which it is transported to the drier.

Separating stockpiles

It is quite important that the stockpiles be kept separated in some manner so that there is no intermingling of the aggregates. This can be effectively done either by bulkheads between piles or by placing the various sizes of aggregate in separate storage bins. It is quite significant that the majority of the problems that occur in the drier, on the plant screens, or in the plant bins can be

eliminated or at least minimized by control and uniformity at the cold feed. While most of the difficulties in asphalt plant production manifest themselves further along the aggregate flow line, the basic cause for the trouble can usually be traced back to this source. *The cold feed is a very important control point in the production flow line of an asphalt paving plant.*

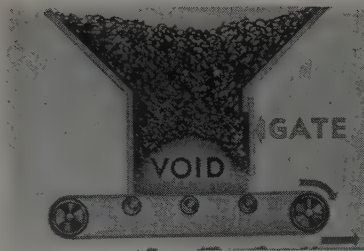
Cold feed problems

Some of the problems that can occur at the cold feed and which the inspector should be constantly on the alert for are: intermingling of the stockpiles; segregation of material within a given stockpile; degradation of the material in the stockpiles due to the handling procedure being used; non-uniform feed from the stockpiles to the feed belt of the plant, and combinations of these problems. For example, segregation of fines in the coarse stockpile can occur at the same time that degradation is occurring in the same stockpile. Frequently the two are very closely related. Non-uniform feed can be related to segregation or possibly to a combination of segregation and stoppage in the feeders for various reasons.

The feeders in the cold feed play a very important part in the proportioning of the aggregate for the final mix. There are several types of feeders in current use depending on the size of aggregate being fed: the gravity, the automatic belt, the reciprocating plate, and the vibratory. Each of these types is capable, under certain conditions, of functioning satisfactorily. In general, the gravity type is limited to use with the coarser sizes of aggregate. It should rarely be used in conjunction with the sand sizes because of certain difficulties.

Sand has a natural tendency to arch in a feed chute, especially when it is damp. In the case of a gravity feeder, it is very simple for a complete feed stoppage to occur with the arching of the sand. There is less of a tendency for the arch to be formed if the material is actually being pulled from the bottom of the chute rather than depending upon gravity for the flow of material. For this reason, it is quite important that some type of mechanical feeder be used on the sand feed.

In addition to the type of feeder for the sand, the shape of the opening from which the material is flowing plays an important part. For example, it is much easier for an



SAND, especially damp sand, has a tendency to arch in the feed chute thus reducing flow. For this reason a mechanical feeder should be used on the sand bin, not simple gravity.

arch in damp sand to occur if the material is flowing through a square opening than if it is flowing through a rectangular opening. There is less chance for sand to arch in one direction than in two which would be the case if a square opening were being used. This then is one thing that the inspector and the contractor can watch for and correct prior to entering production.

Besides the shape of the chute opening, there are other means of insuring a continuous flow of material from the sand feeder. One of these is for a man to stand on top of the stockpile constantly poking a rod through the sand in order to make sure that the arch never forms in the chute. This is not a very practical nor economical means although it is often used. Another way of minimizing the possibility of an arch or flow stoppage in the sand feed is to install a vibrator on the side of the sand chute. In some instances this can be used very effectively. One word of caution when using a vibrator with sand feed, however, is that it should be installed in such a manner that the vibration ceases before the feed ceases. If the feed is stopped before the vibration is stopped, it is quite possible that the sand will be vibrated down into the feeder chute and packed in so tightly that it would be difficult to get it loose.

Consequences of variable feed

Variation in the gradation of aggregate fed to the plant can be troublesome. For instance, layers of variable grading may occur in the fine bin of the plant. This would lead to alternate wet and dry batches of the finished mix because the asphalt demand would vary as the gradation (i.e., surface area) varied. Variation in the amounts of material fed to the asphalt plant also causes problems. This may lead to shortages or over-

ages in the hot bins of the plant, possible carry-over on the screen deck of the plant, or overloading on the screens of a given particle size fraction. In addition to causing trouble in the plant itself, a variation in the feed can cause fluctuation in the aggregate temperature going through the drier and also cause an overload in the dust collection system. An overload in the dust collection system in turn can reduce the draft through the drier which, in turn, affects the aggregate temperature. It can readily be seen that the cold feed is extremely important in the control of an asphaltic concrete plant.

The drier

After leaving the cold feed, the material is carried to the drier of the plant by means of a belt or bucket line or a combination of the two. The purpose of the drier is twofold. The first is to remove the moisture from the aggregates being fed and, second, to heat those aggregates to the desired mixing temperature. There is one general type of drier of varying dimensions in use today. It is essentially a continuously rotating cylinder. Various manufacturers of driers make different sizes, each claiming special advantages. In general, however, the drier can be thought of as a drum in which there are a series of flights of lifters which pick the material up from the bottom of the drier, carry it to the top and discharge it in a veil through the hot gases and flame that pass through. At one end of the drier are the burners, the fire box and the controls for the heating. There are two types of burners in common use, one of which utilizes steam to atomize a fuel oil and introduce it into the drier while the other depends on low pressure air.

In general, the rate at which aggregate passes through the drier is dependent upon the slope at which the drier is set, its diameter, length and the speed of rotation. The number and positioning of the lifter also contribute to the rate of flow. Most driers that have been observed in Western practice are set at a slope somewhere between $\frac{3}{4}$ in. to $1\frac{1}{4}$ in. per ft. The average slope will usually be in the neighborhood of $\frac{7}{8}$ in. to 1 in. per ft. of drier length.

The basic problems which commonly occur in the drier are excessive aggregate temperature, insufficient aggregate temperature, or fluctuation of the same. The main causes for these problems will usually be found



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The compact rotating unit is designed for heavy-duty service. All motions are air-controlled. Deck gears and reversing bevel gears are enclosed and pump-lubricated. Other LIMA Type 84-T features are: oversize brakes and clutches, liberal use of anti-friction bearings on all main shafts and cable drums, large two-shoe type swing clutches, dual boom hoist drums, power-raised and lowered high telescopic type gantry which reduces travel height to 13'-8", one-piece rear counterweight easily removed to meet highway limitations and torque converter power take-off.

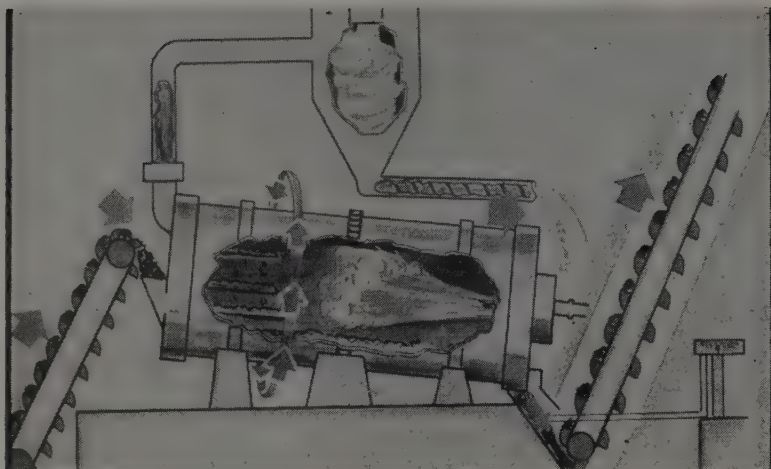
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5823

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THE DRIER removes moisture from the aggregates and heats the aggregates to the proper temperature. It is a large rotating cylinder which drops the aggregate as a curtain through hot gases supplied by the burner at the lower end. Many of the problems which occur in the drier can be traced back to the cold feed.

in the cold feed. Moisture variation in the cold aggregate, variation in the feed, overloading the drier beyond its capacity to dry and heat, or a change in the character of the material being fed are all common. Additional causes which may contribute to the problem are overcontrol of the drier flame by the fireman, insufficient draft, insufficient atomization of the fuel, insufficient air for proper combustion of the fuel, and an inaccurate heat-indicating device at the outlet of the drier. Frequently it will be a combination of causes that creates the problem and invariably the result of an unbalanced condition in the system.

The burner

One of the most important components on the drier is the burner. With the drier using a burner of the low pressure air type, which is the most common today, the operator must think of three types of air. The first is the air introduced through the nozzles of the burner with which the fuel oil is atomized. The air is furnished by a blower on the burner itself. The second air might be considered as that which is necessary for complete combustion of the fuel being burned. The third air might be considered as the air necessary to create the proper draft through the drier. Actually, these three types of air are closely interrelated. There are, however, some definite indications when one or the other of these is not in proper balance with the others. For example, upon occasion there is an intermittent "puff-back" at the

fire box end of the drier. This is caused by a momentary back pressure being created in the drier because the draft air is less than the primary or secondary air being introduced into the drier from the fire box. With the back pressure created, the flame and fire tend to go out the fire box end of the drier because of the unbalanced conditions.

A second indication of improper balance of air is the visibility of black smoke coming out of the stack of the drier. This can occur for two reasons. The first is that the fuel oil is insufficiently atomized because there is not enough air in the nozzle of the burner or, conversely, because more oil is being introduced than the burner nozzle is capable of handling. A second reason for this can be because there is insufficient secondary air with which the fuel oil has to combine in order to be completely burned. The problem of black smoke coming from the drier stack can be solved by either reducing the amount of fuel oil being introduced or increasing the amount of air in the system.

Effect of smoking

When black smoke is coming from the stack of the drier or from the dust collector, it is evident that all of the fuel oil being introduced into the drier is not being burned. This creates an unsatisfactory situation from the standpoint of both the contractor and the inspector. For the contractor, it means that partially burned fuel oil is going out the stack and he is not receiving the full benefit of the heat that is in that fuel oil.

This, of course, is costing him money. From the standpoint of the inspector, the unburned fuel oil going out the stack means that there is also unburned fuel oil in the drier. It can be shown that the unburned fuel oil in the drier is coating the aggregate particles with a substance that will do the mix no good. A small amount of coating on aggregate particles probably does no damage to the mix, but in excessive quantities it can cause difficulties. Fuel oil is a natural solvent to asphalt and if it is on the aggregate particles in excess, it prevents the asphalt from properly coating the particles during the mixing cycle. It behooves both the inspector and the contractor to see that the stack from the drier is kept free of black smoke.

A very common reason for black smoke appearing in the stack of the drier is because the fireman is having difficulty getting the aggregate to the desired mixing temperature. In order to get as much heat as he can in the drier, his natural tendency is to increase the amount of fuel oil being introduced. His reasoning is sound up to the point that the black smoke begins to appear. If, at this point, the aggregate is still not reaching the desired temperature, the only solution is to reduce the amount of cold aggregate being introduced to the drier and to keep the fuel oil going through the burner at maximum but below the appearance of the black smoke.

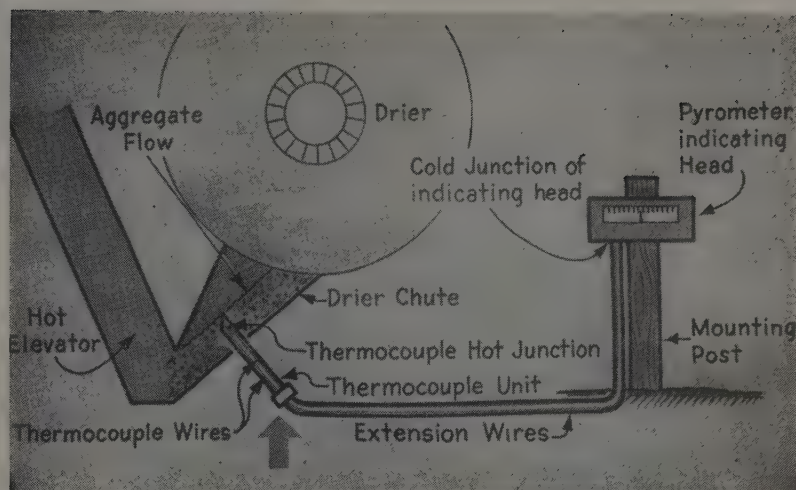
Heat-indicating device

It is highly desirable to hold the temperature of the aggregate in the drier to the minimum which will dry it and allow the individual particles to be uniformly coated with asphalt while at the same time allowing for proper handling on the roadbed. There is considerable evidence to indicate that the service life of asphalt is appreciably reduced when it is mixed with aggregate that has been heated to excessive temperatures. On the other hand, it is difficult to uniformly coat the individual particles if the aggregate temperature is too low. For this reason, it is quite important to have a heat-indicating device at the outlet end of the drier in order to determine what the aggregate temperature is. The importance of an accurate and reliable heat-indicating device cannot be over-emphasized. This device is probably the most important single plant control accessory.

There are some important things to consider in the installation of a satisfactory heat indicator. First, it

must be installed in such a manner that the sensing element truly records or picks up the temperature of the material whose temperature it is desired to measure. Since the aggregate flowing from the drier is highly abrasive, it is natural that the sensing element of the device wears rather rapidly. In order to protect it from abrasion, many plant operators attempt to shield it. This shielding takes the form of hardfacing the casing of the sensing element or, in some instances, placing it inside a pipe which, in turn, is hardfaced, thereby providing ample protection. While the idea is commendable, it provides such a mass of metal around the sensing element that it no longer measures the temperature of the aggregate, but rather the temperature of the mass of metal surrounding it. This causes an excessive time lag to occur in changes of the indicated temperature. As the aggregate temperature changes, so does the temperature of the mass of metal surrounding the sensing element but it occurs at a much slower rate. In some instances, it has been noted that the time lag was as much as 30 min. This renders the heat-indicating device practically useless. The sensing element must be installed in such a manner that the measured temperature can be relied upon both as to accuracy and the time at which it is indicated.

If the heat indicator is a pyrometer, some additional precautions should be taken in the mounting of the indicating head. The indicating head of a pyrometer is a delicate precision instrument. Its moving parts are mounted on jeweled bearings and such cannot stand excessive shock of any type. Since there is a great deal of vibration in most asphalt plants, it is not wise to mount the indicating head of the pyrometer on an integral part of the plant. A recommended installation for the indicating head is on a post that has been set into the ground some distance removed from the plant proper. In this manner, the indicating head is somewhat insulated from the vibration shock of the plant itself. In addition to taking these precautions, the operator should have the indicating head checked occasionally. One simple way of checking the accuracy of the indicating head is to place the sensing element of the pyrometer in a bucket of boiling water while at the same time placing a thermometer in the same bucket. In this manner, the separate devices can be compared to see that their indications are



A HEAT INDICATOR at the outlet end of the drier is essential to determine the temperature of the aggregate, which must be held within certain limits. The sensing element must not be shielded in a way that prevents it from quickly responding to temperature changes. The indicating head should be mounted on a post to free it from the vibration of the plant.

in reasonable agreement with each other.

The dust collection system

In conjunction with the drier, most modern specifications require a dust collection system of some type. The purpose of the dust collection system is twofold. First, it serves to collect the fine aggregate particles floating about in the drier and various parts of the plant and, secondly, the blower for the dust collection system provides the draft in order to help carry the flames through the drier. These two functions are usually of equal importance. The dust collector of an asphalt plant is usually called the cyclone and is essentially a centrifugal separator. Fine material in suspension in the stream of air enters at the upper periphery of the cyclone and goes into a vortical action. The heavy particles suspended in the stream of air go to the cyclone shell and fall to the bottom while the finer material remains in suspension and is carried out the exhaust stack with the air. The size of the material leaving the exhaust stack is governed to a certain degree by the velocity of the draft.

The dust collection system should be so equipped and arranged that the collected fines that have fallen to the bottom of the cyclone can either be returned to the plant in a uniform manner or wasted, as the requirements may be. It is important to note in connection with the dust collector that the draft function of the system at times may determine the amount

of material that the drier is capable of handling and thereby govern the amount of plant production. Some of the things that can cause problems in the dust collection system are insufficient capacity of the blower which reduces draft in the drier as well as creates an insufficient draft of air through the cyclone, holes in the cyclone itself, or in the ducting system, a fouled damper in the cyclone or the ducting system and, in some instances, sweating of the cyclone itself. This sweating consists of condensation on the cyclone walls of the moisture vapor that is in the stream of air going out the stack. It is more common for this to occur with very wet aggregates or in the beginning of plant production for any given day, before the system is entirely warmed up. Sufficient condensation may cause the collected fines to turn to mud which will completely plug the cyclone outlet. Any stoppage of the cyclone will be evident since collected material will cease to flow from the outlet. Continued plant operation will cause the cyclone to fill up which will result in a very undesirable situation (it could be dangerous due to the weight of material). Under sweating conditions, the cold feed should be reduced until there is no more evidence of condensation, after which the cold feed can again be increased gradually.

Inspecting the screens

After the aggregate leaves the drier, it travels up a bucket elevator to the screen deck of the asphalt

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Perhaps the biggest news about Ford's all-new Super Duty V-8's is not their bigness . . . not their tremendous power output. The big story may well be in the many durability advancements, offered in the most rugged, most dependable Ford Truck engines ever built.

For instance, materials developed for the missile program are used in parts such as valve stem oil seals. Oil filters are of the same type used in commercial aircraft. The traditional exhaust-heated intake manifold is replaced by a new water-jacketed induction system. Submerged-type electric fuel pumps virtually banish vapor lock. Head gaskets are of heat-resistant stainless steel. Two compression rings and the oil control ring are chrome-plated for

longer wear. A 50-amp. alternator replaces the generator as standard equipment.

These are but a few of the many advancements you'll find in Ford's thoroughly tested all-truck Super Duty V-8's for 1958. Tested in dynamometer laboratories, tested on the proving grounds, tested in commercial fleets from coast to coast . . . these new Ford V-8's, products of over six years of engineering development, are now ready to serve you.

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NEW! Water-jacketed induction system contributes to maximum power output with excellent economy by providing more positive temperature control of fuel-air mixtures.

NEW! Fully machined combustion chambers and Turbulence-top pistons provide more accurate compression control and greater fuel-air turbulence, for top performance with regular grade fuel.

NEW! Submerged-type electric fuel pump virtually eliminates vapor lock. Pump delivers only solid fuel, always under pressure, operates independently of engine speed.

NEW! Valve seat inserts for intake as well as exhaust valves. Intake valves are hard-faced dished-type. Exhaust valves are sodium-cooled, faced with tungsten-cobalt.

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plant. The screens have but one function and that is to divide the aggregate into the different size fractions that the plant bins should contain. There are three general types of screen decks: the horizontal flat deck, the tilted flat deck, and the rotary or trammel screen. The latter type is more or less a thing of the past as far as asphalt hot plants are concerned.

Of the various parts of the screen deck system, the woven wire cloth used is of the most interest to the inspector. It is this woven wire cloth or screen on which the aggregate is separated. The most important single thing in connection with the screen deck is to make sure that the screens are clean at all times. By this is meant that the clear openings between the wires are not plugged or blinded by aggregate particles. If these openings become blinded, the effective screening area of the deck is considerably reduced. Once the effective screening area is reduced and the quantity of material put over the screen is maintained at the same rate, carry-over occurs.

Carry-over is the condition that arises when material of a smaller size fraction is deposited in the bin that should contain the next larger size fraction. If this occurs, the uniformity of the aggregate gradation that has been stressed so much in asphalt plant production is, to a large degree, destroyed. The inspector suddenly finds that besides having fine material in the sand bins, he also has an undetermined amount in the middle size aggregate bin. Immediately the proportions that he has set up for withdrawal from the bins are incorrect because the material is coming from two separate sources and he has only provided for the withdrawal of that size of material from one source. The indications of carry-over will come from the grading analyses of samples taken from the various bins by the inspector. The screens should be visibly inspected at least once a day to see that they are not blinded and to see that they are cleaned, if necessary. The best time for inspection and cleaning is in the morning before plant operations start.

Carry-over can occur in another manner. If more material is crowded onto the screen deck than the screen is capable of accommodating, the material that should pass through the woven wire cloth never gets a chance to do so. There is such a mass of material underneath some of the particles that they never reach the

screen itself in order to have the opportunity of falling through. As a result, they are crowded along until they have reached the end of that particular screen and fall into the bin of the next larger size material. The net effect of crowding excessive material over the screen or having blinded screens is the same, namely, carry-over. The only solution for carry-over problems, regardless of why they are happening, is either to increase the available screen area or reduce the amount of material being fed to the screens. In some instances the situation can be helped by replacing the smaller screens with screens of slightly larger or different shaped openings. The latitude in this solution, however, is limited, as a slight change in screen size will usually make a considerable difference in the grading of the material passing that screen. With respect to carry-over, incidentally, the variation in the amount of material carried over makes the problem more critical than if the amount remains constant.

Some other things that can affect the efficiency and capacity of a screen deck are worn screens which change the screening characteristics, the gauge of wire in the screen being used, types and sizes of screen openings, the speed and direction of rotation of the fixed throw eccentric shaft that agitates the screens, etc. These items are secondary in nature and will not cause much difficulty under normal conditions.

The aggregate bins

The separated aggregate falls from the screens to the plant bins below. The purpose of the plant bins is to hold the heated and screened aggregate in the various desired size fractions for proportioning into the mixes. The main concern with the bins is to be sure that the overflow vents in each bin are functioning properly so that the material from one bin cannot flow into and contaminate the material in an adjacent bin, and that the bin partitions have no holes in them.

If the level of material in any bin gets higher than the top of the partition between the bins, it can be seen that intermingling or contamination of aggregate from one bin to the other can occur. The function of the overflow vents is to prevent such a situation from developing. All manufacturers position the overflow vents in the plant bins in such a manner that this cannot occur. The only thing that remains for the inspector to check is to make sure that these

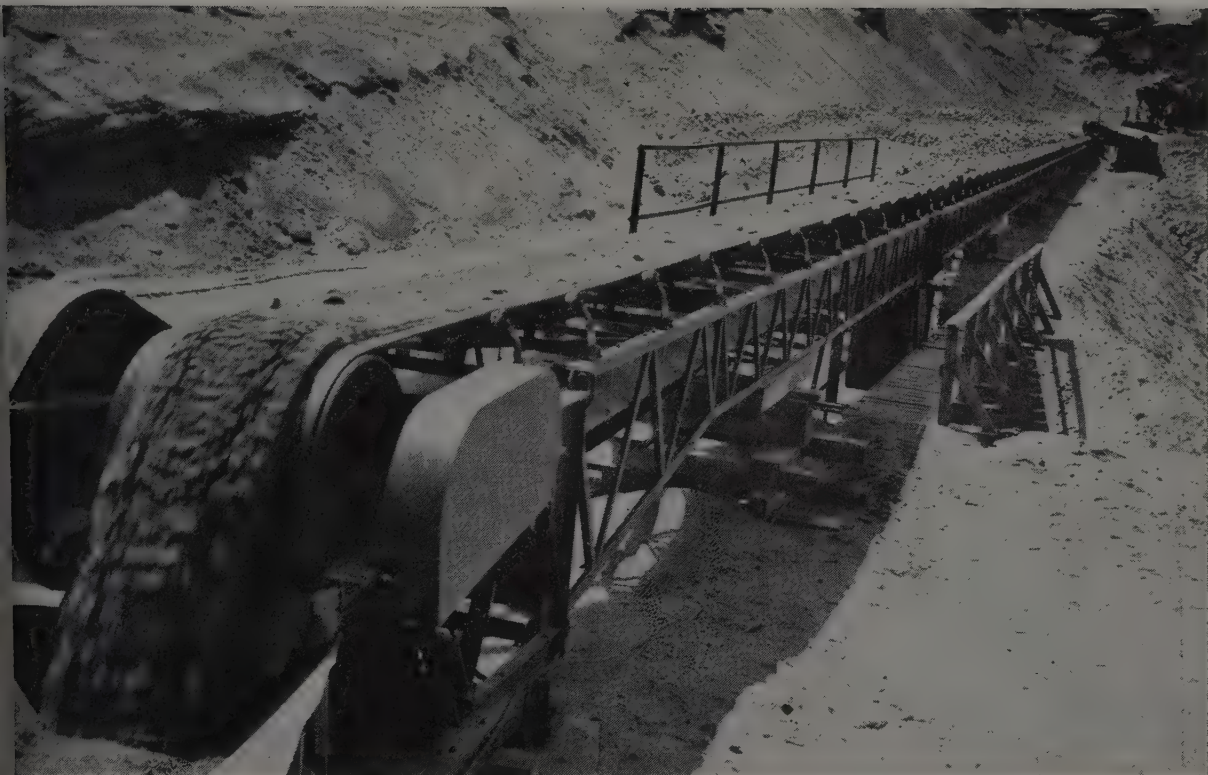
overflow vents are clear. The only way that the writer knows to make sure of this is to throw some material into the top of the vent and then see if it comes out the bottom. To do this, one must usually get under the screen deck and into the bins. If vent pipes are plugged, the net effect will be as if there were no vents.

As far as the bin partitions are concerned, a single inspection of them at the beginning of the job is usually sufficient. The main worry here is to see that there are no holes in the partitions themselves so that contamination can occur between bins. Although unusual, it has been known for the plant operator to climb into the bins at night after a day's operation and cut large holes in the bin partitions with a cutting torch. The object of the operator, of course, was to balance up the material in the bins. Cutting holes in the bin partition does this very effectively; however, all degree of control over the particle size distribution between the bins is lost. Again, if this condition exists in the plant, the inspector should be able to pick it up when making sieve analyses of the material from each bin during the normal course of his daily work.

In some instances, material in the fines bin tends to hang up in the corners of the bin and let go in gobs, thus "slugging" the mix with excessive fines and drying up the mix. The fines that hang up in the corners of the plant bin are usually smaller than the 200-mesh material. The hang-up and the subsequent "slugging" normally occur only when the material in the bin is drawn down to a low level. This condition can be simply remedied to a certain extent by welding fillet plates in the corners of the bins to eliminate 90-degree angles in the corners. The elimination of this angle reduces almost entirely the possibility of a hang-up occurring.

Some other problems that are noted in the bins of the plant are a shortage of material in one bin or the other, an excess of material in one bin or the other, worn gates at the bottom of the bin which allow a leakage of aggregate into the weigh hopper after the desired amount has been withdrawn from the bin, and sweating of the bin walls. Again the sweating of the bin walls occurs because moisture vapor in the aggregate and in the air condenses on the walls.

Vaughn Marker will conclude his discussion of asphalt plants next month.



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WESTERN CONSTRUCTION—March 1958

61

BEAVERS — Third annual meeting

President George H. Atkinson presided at the banquet attended by 1,000 men gathered to honor nine outstanding careers in construction achievement.

AGAIN, THE BEAVERS gathered for their annual dinner. For the third year more than 1,000 men representing the construction industry of the West gathered for a day in Los Angeles to review the events of the past year with old acquaintances and to honor nine outstanding leaders of the industry. The president of The Beavers, George H. Atkinson, president of Guy F. Atkinson Co., presided over the dinner meeting and presented the awards.

The 1958 Awards went to:

Management:	L. S. Corey J. C. Maguire	Supervision:	R. M. Conner A. E. Graham
Engineering:	H. E. Hedger Ross White	Supply:	Guy C. Kiddoo R. G. LeTourneau
	Special: L. N. McClellan		

The annual meeting was held in the Biltmore Hotel, Los Angeles, January 16. Following the plan established at the first meeting three years ago, members and their guests gathered for an informal buffet luncheon at noon. Many spent several hours lingering over the luncheon tables to discuss construction events of 1957 and to exchange ideas on the coming season. The Board of Directors had met previously that morning.

The annual dinner was preceded by a cocktail hour for the more than 1,000 members and guests who attended the dinner. At its conclusion, George Atkinson welcomed the men of the construction industry. The speaker was Ernest G. Swigert, president of Hyster Co., Portland, and Chairman of the Board of the National Association of Manufacturers. Following his short address the Awards were handed to the nine recipients indicated above.

The recipients in the classifications of Management and Supervision were pictured on the front cover of the

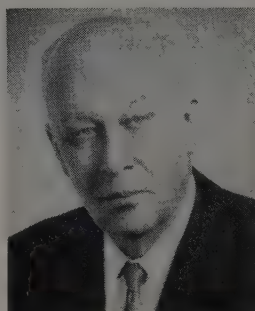
BEAVER OFFICERS FOR 1958

President:	John A. Kier, President, W. E. Kier Construction Co.
Sr. Vice Pres.:	John M. Sawyer, Vice President, Macco Corp.
Vice President:	R. F. Rasey, Vice President, Winston Bros. Co.
Sec.-Treas.:	J. P. Shirley, Jr., President, Gunther and Shirley Co.
Asst. Sec. Treas.:	Jack Watson, J. W. Watson Co.

February issue of WESTERN CONSTRUCTION together with their career biographies. The careers of the other five, as they were reviewed in the official program, appear below.

Ross White

Another career that exemplifies the dedication and fruitfulness of the great leaders of the heavy construction industry is that of Ross White.



He was born in Florida in 1885 and brought up on farms in Illinois and Iowa. After a brief stint of teaching one-room country schools, he enrolled in Iowa State College, at Ames, from which he received his B. S. in Civil Engineering in 1910.

After three years as a cub construction engineer in the Philippine Islands where he met and later married Clara Ervin, his wife for over forty years, he returned to the

states and initiated his long career as a builder of dams.

California was the scene of the first, the Don Pedro Dam, to be followed soon by the Exchequer for the Merced District and then three others for the Feather River Power Co. in Plumas County.

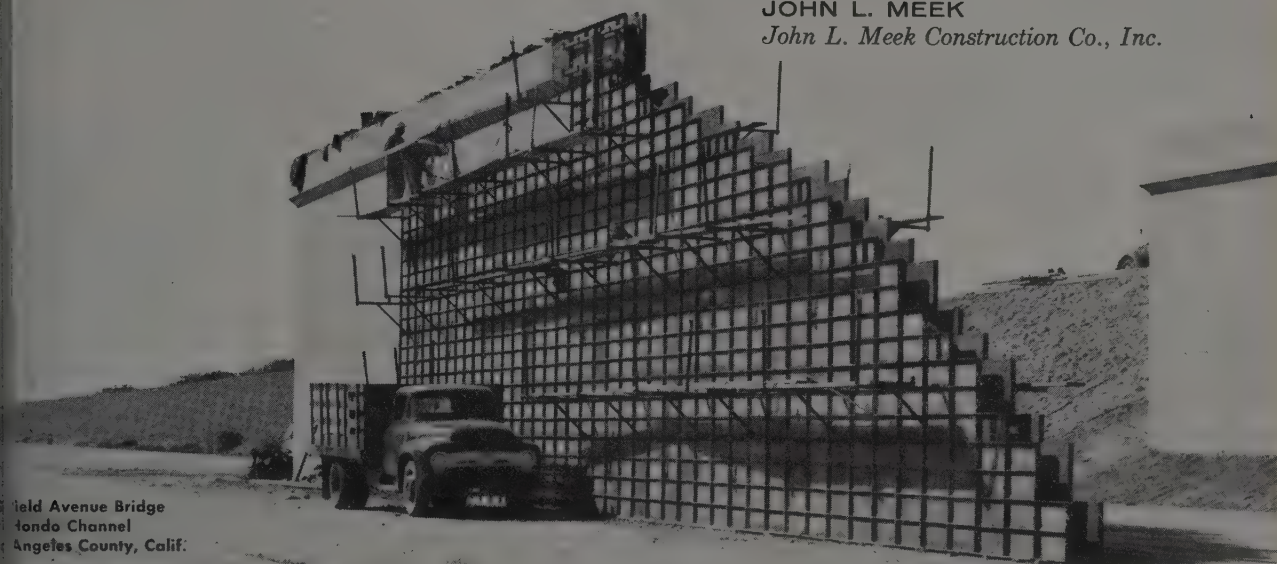


PRESENTED WITH Golden Beaver awards for outstanding contributions to the construction industry were these nine men: front l. to r.—Ross White, L. N. McClellan, J. C. Maguire, and R. G. LeTourneau; standing,

l. to r.—Guy C. Kiddoo, H. E. Hedger, A. E. Graham, L. S. Corey, and R. M. Conner. The careers of Corey, Maguire, Conner, and Graham were given in Western Construction last month.

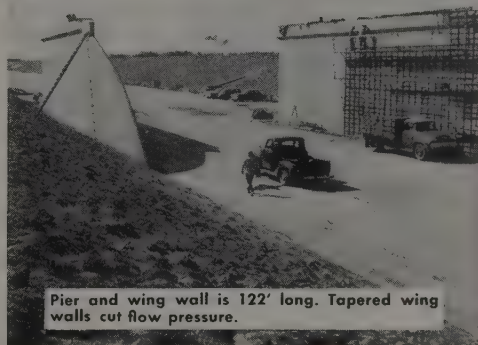
my men were **UNI-FORM EXPERTS**
an hour after they began using them"

JOHN L. MEEK
John L. Meek Construction Co., Inc.



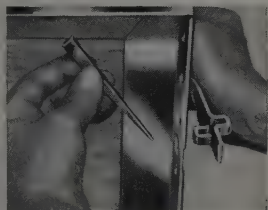
Stripping center of 3 piers. Piers were 26' high, with 40" cap. UNI-FORM Scaffold Brackets attach to steel frame of UNI-FORMS.

Inexperienced crews—men who have never used them before—can become experts in the handling and erection of UNI-FORM Panels in an hour or two, with big savings in time and labor . . . faster job progress and lower all around cost. Simple mechanical assembly of UNI-FORM Panels permits fewer men to do more contact area per hour than is possible with any other job-erected form-system. The John L. Meek Construction Company's experience with UNI-FORM Panels is typical—quick mastery of the simple UNI-FORMING technique, resulting in faster forming with less labor. A good reason why more concrete is being formed every day with UNI-FORM Panels . . . why more contractors are using the UNI-FORM System for all their forming, regardless of type or size of the job. Write for the UNI-FORM Catalog—illustrates and describes the complete UNI-FORM System.

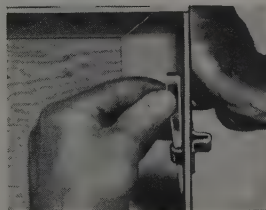


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He then went to Canada as construction superintendent on Chute-a-Caron Dam for Alcoa Power Co., and one on the Abitibi River. Four years as superintendent on an important series of Tennessee River dams for TVA and then a job as project manager on the Marshall Ford Dam in Texas terminated twenty-five years of continuous work done entirely on dams and hydroelectric power plants from Texas to Hudson Bay and from the Pacific Coast to the Atlantic watershed.

Since 1942 he has been vice president of Brown & Root, Inc., in general charge of the heavy engineering construction work performed by his company. This has included a half dozen additional dams as well as bridges, tunnels and defense projects at home and overseas.

His 45 years in the construction industry have brought him distinction and honor as an engineer, admiration and respect as a person and surely qualify him as a most worthy recipient of the Golden Beaver Award.

Harold E. Hedger

Unlike most of the other "greats" of the construction industry whose work is often performed at some distance from the place they call home, Harold E. Hedger has carved a brilliant engineering career in his native state, California.

Born in Riverside in 1898, he is a product of local preparatory school systems and the University of California from which institution he received a Bachelor of Science degree in Civil Engineering in 1924.

His affiliation with the Flood Control District, begun in 1924, has been continuous except for military service and recognition of his ability is evidenced by his steady climb from resident engineer to his present extremely important post as

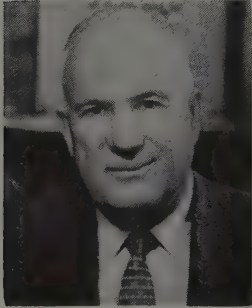
Chief Engineer of the Los Angeles Flood Control District, a position he has held since 1938.

He served with distinction in both world wars, achieved the rank of colonel in World War II, and during the last year of his service was put in command of Troop Facilities Branch, supervising all army construction in the continental United States. His exceptional performance in this assignment won him the Legion of Honor, Award of Merit.

As chief engineer of the District, Mr. Hedger directs the operations of an agency having annual budget of approximately \$40,000,000 for construction and operation of flood control and water conservation projects, the success of which vitally affects the safety and well-being of the people of this entire area. One of his present responsibilities is the administration of the \$179,000,000 Storm Drain Bond Issue program, a major undertaking designed to construct 140 drains in strategic locations throughout Los Angeles County.

He is well-known and highly respected throughout the industry for his knowledge and understanding of flood control and related problems and recently, in his capacity as a consultant to the Minister of Irrigation, made an official trip to India to help that country establish a flood control system.

Harold E. Hedger is known as much for his zeal in promoting the best interests of the industry as for his outstanding engineering accomplishment and on either count has proven himself worthy of special recognition.



R. G. LeTourneau

Mr. LeTourneau has been a leader in the design and development of heavy equipment for the construction industry for more than thirty years. There is hardly any phase of this vast industry that has not benefited and advanced through the products of his inventive genius.

In 1956 he was awarded the coveted Frank P. Brown Medal by the Franklin Institute in Philadelphia for "revolutionary improvements in earthmoving equipment with vast benefit to public works and private building construction."

Recently, in such fields as logging, off-road transportation, heavy materials handling, off-shore drilling, land clearing and other forms of custom engineering, he has made important contributions to the development of more efficient equipment.

When one learns of his many and remarkable achievements, which we are able to only touch on here, one wonders how this man can find the time to accomplish so much. Without any doubt, the wellspring of his tremendous vitality is to be found in his great faith, which has enabled him to give at least as much of himself to religious work.

He has been a tireless worker in the cause of Christ and through The LeTourneau Foundation, of which he is founder and president, has contributed millions of dollars to further the Christian doctrine both in our country and abroad.

An interesting and revealing biographical fact is that Mr. LeTourneau's formal education did not extend beyond his fourteenth year. He is, in truth, a self-made man and one who, guided by the principles of democracy and inspired by the doctrine of Christianity, has achieved the fullest expression of himself and in so doing has contributed largely to the industrial progress of this country and to the betterment of the lives of countless persons throughout the world.

L. N. McClellan

L. N. McClellan's career in the field of heavy construction engineering has been virtually without interruption since the date of his graduation from the University of Southern California in 1911. Armed with his Bachelor of Science degree in electrical engineering and sparked by a keen desire to succeed in his chosen field, he obtained immediate employment as junior engineer and assistant engineer on design, construction and operation of power systems with the U. S. Reclamation Service.

Army service in 1917-18 added to his engineering experience as he served honorably as first lieutenant in both the Corps of Engineers and the Tank Corps.

Following his discharge from the Army he resumed his work with the Reclamation Service, where, as chief electrical engineer, he was responsible for the electrical and mechanical design of the hydro-electric power plants



the Hoover, Grand Coulee and Shasta dams. The size and importance of these and other projects attest to his ready advancement in both knowledge and responsibility and a high point in his career was reached in 1953 when he was named Assistant Commissioner and Chief Engineer of the Bureau of Reclamation, which post he still holds.

His long and illustrious service in the field of engineering has not been without other recognition and honors. A member of numerous honor, scholastic and fraternal societies, and a respected consultant on major engineering projects around the world, he was awarded the Gold Medal for Distinguished Service by the Department of the Interior in 1952.

Born in Middletown, Ohio, in 1888 and reared in the truly American tradition that was the heritage of all youngsters of that era, Leslie N. McCellan has had many brilliant and outstanding successes as an engineer and his success as a human being has earned him the love and respect of a host of loyal friends both in and out of the industry.

Guy C. Kiddoo

Guy C. Kiddoo was born in western Kansas but before he was of school age the family moved to Omaha, Neb., where he attended the public school through high school. When he reached high school age he had his first contact with the construction industry during the summer vacation periods. He had a job wheeling concrete in an ash shay (without ball-bearings or rubber tires) and got his hair and ears full of cement wrestling cement sacks for fifteen cents an hour when concrete paving was replacing the wooden flooring in the Omaha stock yards.

After obtaining A. B. and L. L. B. degrees from the University of Nebraska, he practiced law in Omaha for three years. He left law to become an officer of a mercantile company and following this served as vice president of the Omaha National Bank.

In 1930 he was elected an officer of the First National Bank of Chicago and while in charge of liquidating the assets of a large bank that had failed, which included obligations of some contractors, he acquired a considerable knowledge of various aspects of the construction business.

He then headed the bank's loan division which handled, among others, the accounts of contractors and building material companies, and later assumed a leading position among the country's bankers in extending credit to finance military construction in World War II.

He has been and is one of the staunchest friends to the heavy construction industry and through his fair and friendly attitude earned the name of "Contractors' Banker," and now, as a general vice president of his bank, his counsel and advice are frequently sought on many phases of industry matters.

The construction industry owes a debt of gratitude to such men as Guy C. Kiddoo whose understanding, confidence and vision have played an important part in making possible much of the great construction work that has been done in the last half-century.



New books available

YOU CAN STAY out of legal tangles with a recently published non-technical three-volume library that gives the facts on practically all the construction contracts that established precedents in law courts. The work is entitled, **Practical Legal Library for Contractors, Architects and Engineers**. The author is I. Vernon Werbin, who is both an engineer and a lawyer.

There are 181 articles based on actual important cases, fully and carefully analyzed with abundant notations about supporting and conflicting decisions. Most lawyers are not specialists in construction work. When you go to one for advice or help, he may have to spend hours or days of his valuable and expensive time looking through libraries for the very cases that are conveniently gathered together in these three volumes.

Published by North Castle Books, Department PB, 212 Bedford Road, Greenwich, Connecticut. Price \$14.50.

Foundation construction

THE MCGRAW-HILL Book Co. has published **The Design and Construction of Engineering Foundations**, by F. D. C. Henry, Department of Civil Engineering, University of Leeds, England.

Wide in scope, the book covers geology, soil mechanics, mining subsidence, individual, continuous, and raft roofings, piers, retaining walls, bulkheads, culverts, cofferdams, caissons, underpinning and moving structures.

Special features include the latest information found in research on lateral pressure of concrete on form-work, lateral pressures on bulkheads, the design of cellular cofferdams, and many other topics. Price is \$9.00.

Estimating construction costs

A NEW METHOD for estimating all direct construction costs in earthwork, reinforced concrete work, structural steel work, masonry and carpentry has been published by F. W. Dodge Corp., New York. The author, Louis Dallavia, devised the estimating technique during his 22 years as a specialist in building and heavy construction. This fully revised and simplified second edition, selling at \$8.50, replaces the first edition which was published privately by the author at \$15.00 in 1954.

To render the book more useful to non-professionals and beginners in the estimating field, form sheets and check lists for each type of construction have been included. There are over 160 tables

in the work and a comprehensive 5-page index insures easy reference.

The latest in prestressed concrete

THE PROCEEDINGS of the 1957 World Conference on Prestressed Concrete, Inc., held in San Francisco, are now available at \$10.00 a copy.

The Proceedings contain 64 papers (over 600 pages) from engineers all over the world and represent an up-to-date collection of the knowledge and experience on prestressed concrete. Write to Room 216, 417 Market St., San Francisco, Calif.

Specs for GLU-LAMS

THE WEST COAST Lumbermens Association has issued new and revised standards called **Standard Specifications for Structural Glued Laminated Douglas Fir Lumber**. The new edition, for convenience, has been divided into two publications. The first covers Design and is intended primarily for architects and engineers. The second covers Fabrication and is for the use of timber fabricators and inspection agencies. The new editions incorporate the latest recommendations of the U. S. Forest Products Laboratory.

Copies of the booklets are available without charge from the WCLA, 1410 S. W. Morrison St., Portland 5, Ore.

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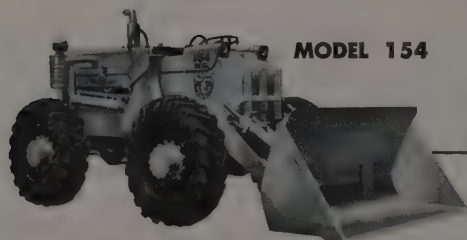
2 cu. yd. cap., 4-wheel drive
with Torqmatic transmission.

MODEL 104

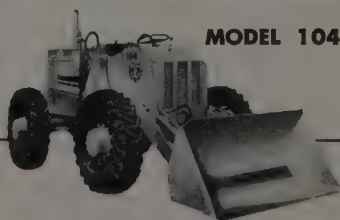
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MODEL LHM-

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UCLA hosts two conferences

A brief review of the main points covered in two recent meetings, the 10th Street and Highway Conference, and the Conference on Construction Operations.

WITH THE STUDENTS away for the between-semester break, engineers and contractors converged on the campus of the University of California at Los Angeles to take advantage of the rarely plentiful classroom and parking space and stage two successful annual get-togethers: The Tenth Street and Highway Conference, and The Third Conference on Construction Operations. The Street and Highway Conference is sponsored by The Institute of Transportation and Traffic Engineering, with the cooperation of many other groups, and was held January 29 through 31. The Conference on Construction Operations is sponsored by the Department of Engineering and the Engineering Extension of the University of California and took place on January 31 through February 1. The conferences alternate each year in location between the Berkeley and Los Angeles campuses of the University of California. Because the dates of the two meetings usually overlap by at least one day, plans are being considered to devote at least one-half day to a joint session next year, when the meetings will be held in Berkeley.

Street and Highway Conference

About 400 were in attendance for the opening session of the Street and Highway Conference, which was conducted by L. M. K. Boelter, dean of the College of Engineering; Lewis E. Arnold, engineer of administration, City of Los Angeles, was scheduled to be the conference chairman but was unable to attend because of illness. Dean Boelter can be counted on to present some stimulating ideas and his opening remarks were no exception. After urging the cooperation and active participation of the audience throughout the conference, he suggested that engineers must learn to expand their view to include the larger problems. For instance, in considering transportation problems, some thought should be given to the question of what is optimum mobility in a society. To handle such broad problems the systems approach must

be utilized, in which "systems engineers" coordinate the work of many specialists.

As an example of what the future holds he pointed to the impending primacy of what he called the Pacific Basin Society, a vast natural geographical area reaching from the Rocky Mountains west to China and Russia. He also asked that the concept of boundaries be re-evaluated. For instance, a county is defined not by its borders but, in a sense, by everything that crosses those borders in both directions.

General Lewis W. Prentiss, executive vice president, American Road Builders Association, was scheduled to deliver the keynote address on the status of the Interstate Highway program. He was unable to attend, however, and his paper was read by C. D. "Cap" Curtiss, commissioner of public roads. (The news of the retirement of Cap Curtiss plus a short biography appeared last month in *WESTERN CONSTRUCTION* on page 64.) The paper was concerned primarily with the raiding of the Highway Trust Fund which would result if President Eisenhower's January budget recommendations are approved. As to whether or not the Interstate Program is on schedule depends mostly on whose schedule you use.

The remainder of the morning session was taken up with legislative views of the California Highway Program presented by Senator Randolph Collier and Assemblyman L. M. Backstrand.

In the afternoon, the subjects under consideration were the legal classifications and the related fund allocation for highways, California's long-term needs (the 210 studies), and the development of a state-wide freeways plan (the 26 study). Participating in the panel discussions were Harmer E. Davis, director of the Institute of Transportation and Traffic Engineering, and Richard Zettel, research economist of the Institute.

The first subject taken up the following morning was area road development through joint local effort. E. A. Fairbairn, city engineer, Sacramento, reported how Sacramento is

forming a technical engineering board in which planners and engineers can work out problems together. This in no sense will be a pressure group, and will be limited to technical personnel only.

Following a recess the conference heard a panel discussion on the role of electronic computers in city and county road work. Robert Breece, California Division of Highways, pointed out that the use of a central computing service means that the engineers must re-schedule their time to take advantage of the lag between the submission of data and the return of the answers. The main advantages are increased accuracy, better design because more alternates can be investigated, speed, increased utilization of lower class personnel, the availability of statistical information, and increased design flexibility.

W. G. Kirkham, senior engineer, City of Oakland, reviewed his experience with computers, which has been very gratifying.

The Inyo situation

The audience was amused when John K. Smith, road commissioner, Inyo County, described the situation in his county. Of all California counties, Inyo is the highest, lowest, driest, second largest, dustiest, rockiest, and has the least percentage of taxable area (4%). It has a population of 13,000 people, yet there is not a single registered civil engineer in the whole county framework. Despite awful mail service they have found it economical to avail themselves of the computing service in the State Highway Department in Sacramento.

John W. Caperon, Service Bureau Corporation, San Francisco, reviewed the number and location of service bureaus in California which provide computing services, and problems you expect to encounter when dealing with them. He pointed out that a drawback of using a library program rather than a program specially designed for your needs is that if something goes wrong you can't work with the author of the program in eliminating the bugs.

Harmer Davis closed the morning session with a review of the research projects the Institute is now engaged in. These include investigation of traffic flow theory, the development of a driver simulator, crash-injury re-

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George E. Steele, Mills' superintendent, describes its performance this way: "The 'PAYLOADER' is doing this job previously handled by an overhead loader and two off-road little trucks. The result is a saving of $\frac{1}{2}$ the equipment and of two operators, also less fuel and maintenance."

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search (physics of crashes), and air transportation problems. He expressed the belief that transportation problems must be solved by teams consisting of specialists in many fields.

In the afternoon, Vaughn Marker, district engineer, The Asphalt Institute, delivered an excellent paper on Problem Areas in Bituminous Concrete Pavement Construction. With the assistance of slides, he presented a series of practical field tips on how to achieve top quality pavements. (Reprints of his 2-part article which appeared last year in *WESTERN CONSTRUCTION* are still available without charge.) Marker closed with this thought: The weakest link in the construction chain, the phase that's lagging furthest behind, the part that is hurting the construction industry most right now, is field inspection and construction control.

Among six other speakers was E. R. Hanna, road commissioner of San Benito County, who spoke on some of the requirements for Federal Aid Secondary Stage Construction. He pointed out that Federal Aid Secondary has accomplished a lot in establishing uniform standards. He also described the importance of informing the public as to the reasons for stage construction.

Probably the most important and worthwhile of the several subjects taken up at the final session on Friday morning was a discussion of how to present matters to local policy-making bodies. The panel was made up of E. J. Guidotti, supervisor, Sonoma County; Keith Jones, county engineer, Pierce County, Washington; John Morin, city engineer, Oakland, California, and Samuel E. Vickers, city manager, Long Beach, California.

Conference on Construction Operations

The Conference on Construction Operations was opened on Friday morning, January 31, by chairman John M. Server, Jr., editor of *Southwest Builder and Contractor*. He reviewed the first two conferences and described briefly Dean Boelter's basic idea in organizing the conferences, which was to explore the possibility of introducing into the construction industry the many scientific tools which have been developed and utilized in other industries. The first scheduled speaker was W. Earle Roche, construction consultant, whose telegram from Venezuela

brought the news of his inability to attend. Mr. Server read Mr. Roche's paper on the types of job information required for successful bidding and how to secure it.

F. B. Tobias, chief design engineer, Kaiser Engineers, delivered a paper on the problems of accurate specification writing.

Mr. Silver, applied science representative of IBM, gave a spirited talk on electronic computers, what they are, how they work, the types which exist, and how they can be applied to engineering problems.

Paul F. Keim, professor of civil engineering, University of California, Berkeley, was chairman of the afternoon session which began with a talk on labor jurisdictional disputes and their settlement by Gerald Christian, executive secretary, Los Angeles Building & Construction Trades Council. This was a lively session, with plenty of vigorous questions and comments from the floor.

The next topic was the problems and solutions in sub-contracts, delivered by Charles A. McMahon, senior civil engineer, Community Redevelopment Agency, City of Los Angeles. He suggested that sub-contractors make up brochures showing their capabilities which could be sent out in advance of bids. One of the problems, of course, dealing with sub-contractors is the difficulty in identifying them as to reliability and capabilities in the last minute rush. Sub-contractors should also send to the general contractor a form before bid date showing the things to be included and excluded in the bid price, which could be phoned in at the last minute.

Another useful suggestion Mr. McMahon made was that contractors should keep a file system on 5 x 8 cards broken down under the various specialties and containing lists of known good sub-contractors. Before bidding, a stenographer could send out post cards inviting bids from the sub-contractors.

The next speaker was John F. Pitman, manager of McGary Insurance Counselors, Los Angeles, whose subject was the relation of construction safety to insurance costs. He gave the surprising statistic that the average accident costs \$500 when all indirect costs are included, of which only \$100 is paid by the insurance company and the rest is paid by the contractor. He suggested that a full-time safety man is deserved when the project is in the 5 to 10 million dollar range, but that the safety man should never replace the foreman on the job,

who has the main responsibility.

On Saturday morning Martin C. Duke, professor of engineering, University of California, Los Angeles was chairman of the first session which opened with a talk on contracts with federal agencies delivered by Robert S. Starke, regional solicitor, United States Bureau of Reclamation.

Glen Behymer, of Behymer & Coffman, attorneys at law, discussed the pitfalls and problems in connection with lien laws and bond laws. At the conclusion of his talk he urged that all sub-contractors be bonded, which was opposed by several members of the audience because it would remove responsibility from materials salesmen for investigating the financial status of their customers.

Who is liable?

An excellent paper on the liability for defects in construction work was delivered by Irvin Grant, Grant & Popovich, attorneys at law, Los Angeles. He made it plain that a contractor is not responsible for work later deemed defective if at the time of its performance it was being inspected by the engineers. If the engineer is not satisfied with the work being done by the contractor, he should tell the contractor so at once. He has no legal footing if he waits several months before complaining.

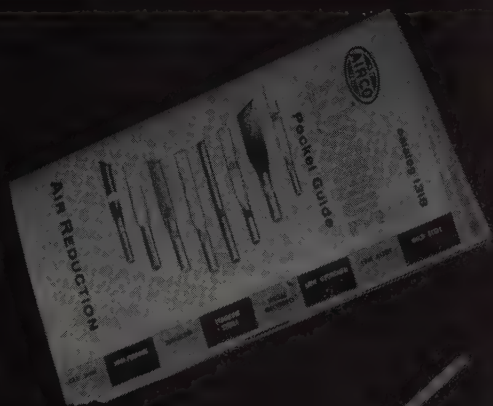
If the contractor is asked to do something he feels is not called for in the specifications he should do it under protest, by writing a letter stating that he intends to start a court action at the completion of the job holding the owner responsible for breach of contract. However, the contractor cannot expect to collect for work done under protest if the work is clearly ridiculous.

The final afternoon was concerned with the subject of research, with Dean Boelter as chairman. Stewart Barradale, manager, Building Research, Southwest Research Institute, San Antonio, Texas, opened with a review of recent advances in construction such as lift-slab, tilt-up, slip-forms and aluminum domes.

Next was O. C. Rollman, consulting civil engineer, Allis-Chalmers Mfg. Co. He discussed some of the laboratory techniques used in developing new machines but was not at liberty to say exactly what new products were in the offing.

The final topic, research and education in construction, was discussed by a 4-member panel with lively participation from the audience.

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Contractor develops asphalt test lab

A Northwest contractor is using a portable testing lab to provide on-the-job control over asphalt-mix production.

A TREND TOWARD the field control of on-the-job asphalt production by the contractor is being exemplified in the West by the Washington Asphalt Co., Seattle, in its highway and airport paving operations. They have developed a mobile screening and extraction laboratory for tests of asphalt mixes and aggregate grades.

The lab unit is housed in a second-hand, 18-ft. trailer house fitted inside with a work counter, cabinets and the relatively simple apparatus needed for the screen testing of aggregate and the extraction of asphalt content from production mix samples. It can be readily moved from job to job hitched behind a passenger car or pickup.

With asphalt jobs where it is necessary to set up mixing plants at or near the job site the matter of accurately controlling the mix proportions to conform to the specifications has always been an important problem. In spite of the modern efficiency of automatic feeders and measuring devices in the plants themselves, many variable factors are present to influence in the mix. Such plants are

almost invariably located too far from established state testing labs to enable prompt checking of production runs. In fact, because the state facilities are constantly running tests on many jobs from many locations, and because of distance involved, it can be days before the results of tests on samples from a given job can be determined. This has often meant that in cases where serious deviation from the specifications was either obvious or suspected, inspectors would have to shut the operation down until tests could be made and the deviations corrected.

Walter W. Kastner, to whom much of the credit for the development and success of the field testing lab is due, went to work for Washington Asphalt Co., ten years ago after graduating from the University of Washington in civil engineering. The portable trailer testing lab developed as a sort of home-made affair of his own, as he used it at first, to satisfy his own interest and curiosity in asphalt plant operations. As a practical contractor he also was quick to recognize the advantages of having a

dependable yardstick right on the job which could be used in setting up production each day and enable periodic checks throughout the run to maintain uniformity.

The lab gave results so close parallel to those of official tests that the inspectors, with whom he worked in close cooperation, gained confidence in it. The Washington Highway Department is itself now doing considerable testing in the field as the result of Kastner's work in cooperation with Paul Rensel of the state testing lab of the Highway Department in Olympia.

Big savings

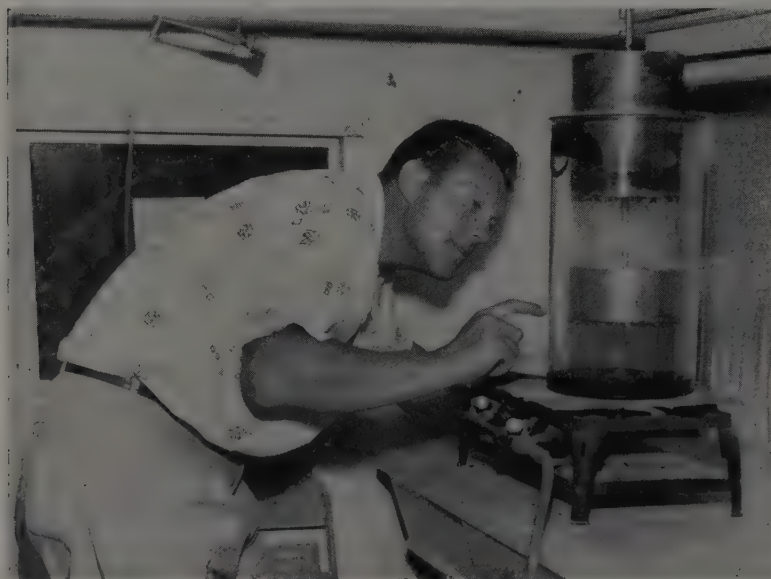
Representing only a few hundred dollars in investment, Washington Asphalt's portable lab has resulted in the saving of thousands of dollars in rejected material; it has raised the standing of the contractor in the estimation of state officials because of the demonstration that he knows what he is doing and wants to do the best job possible; it has served to give the contractor's operating personnel a new familiarity with the terms and significance of specifications and a new consciousness of product quality.

The practical operation of Washington Asphalt's field testing system is well shown at its Plant No. 4 beside U. S. Highway 10 a few miles east of the Snoqualmie Pass summit. Here is a four-bin mixing plant with a capacity of 150 tons per hr. producing Class B mix for the shoulder strips of the new four-lane highway through the pass.

In starting up a day's operation samples of raw aggregate are first taken from the stockpiles and run through the laboratory screens to give a standard of comparison with subsequent mix samples. Upon screening the aggregate and on the basis of percentage of various sizes called for in the specs, feed proportions are set up on the belt. Belt weights are set from the grading chart which is plotted from the aggregate screening.

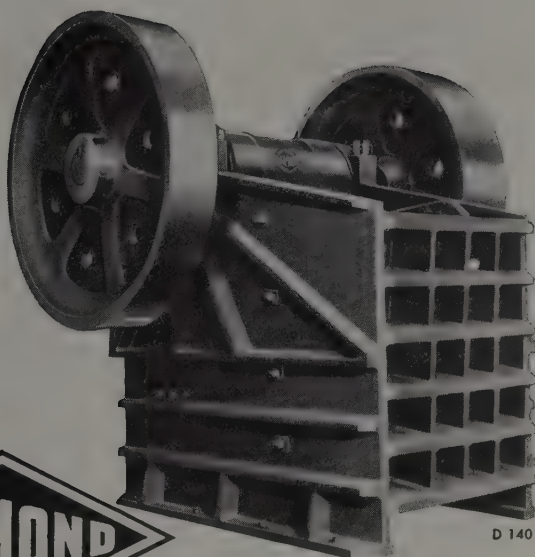
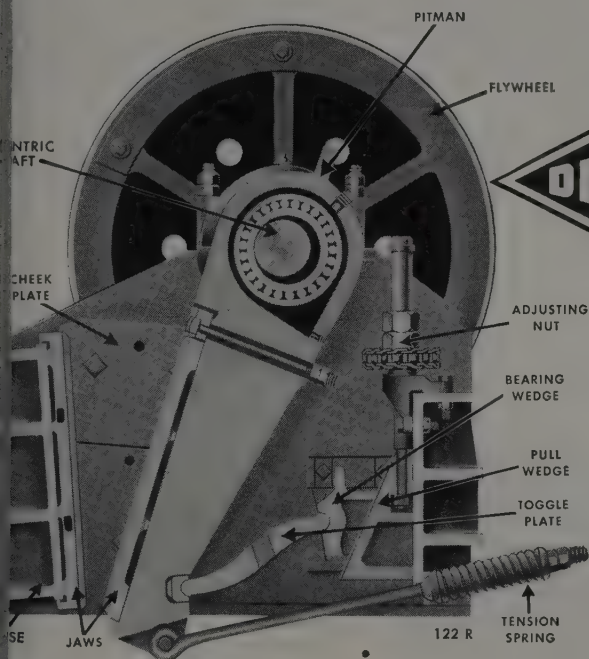
When the plant starts up, samples are immediately taken on the mill. As a rule two samples are taken at this point and a quick analysis is made using a centrifuge to extract

(Continued on page 76)



SUPERINTENDENT for Washington Asphalt Co. on Snoqualmie Pass paving job is Walt Kastner, developer of the portable lab, shown making an extraction of mix with distillation apparatus.

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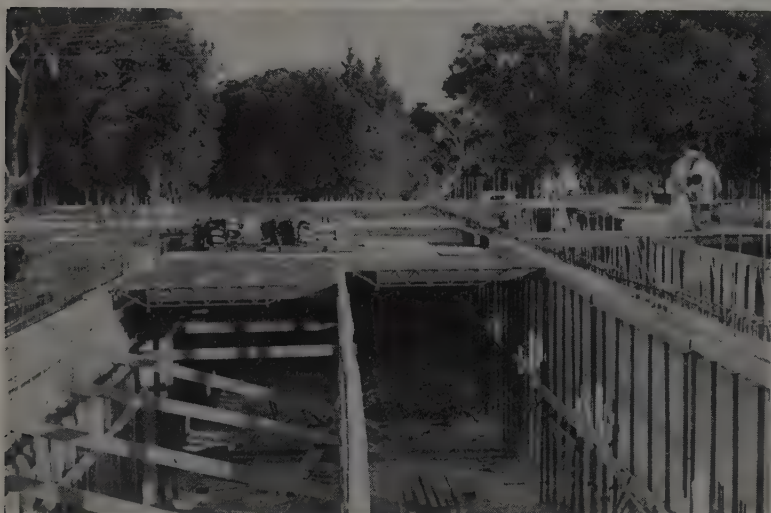
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New horizontal shoring used at medical center



A NEW TYPE of horizontal shoring, called Spanall, was used by the contractor in the construction of the group of large buildings forming the Stanford Medical Center being built at Stanford University.

This horizontal system of supports for the pouring of concrete floors is basically a system of adjustable telescopic steel supports for reinforced concrete construction. They are capable of being adjusted to any desired span up to a maximum of 34 ft. The longest span required on the Stanford job was 12 ft., with the Spanall shoring set at 2-ft. centers.

One of the pictures illustrates the

setting of a Spanall to proper lengths on the job. This adjustment is fast and simple, with a bolt which locks the unit at the proper length and sets the proper camber. The other photograph shows Spanall units in position ready to support the plywood forms for pouring the slab.

In addition to the speed with which this horizontal shoring system can be set up, another important advantage is the unobstructed working area which is available without any delay for crafts such as electrical, plumbing and air conditioning.

This was a particularly important point on the buildings of the Medical

Center which include extensive mechanical and electrical installations. All of the pipes, conduits and sub-slab facilities were facilitated with the clear working space. It is estimated that the use of the Spanall supports saved from 2 to 3 weeks time in the work of these subcontractors.

The total area in the four structures forming the center is 456,000 sq. ft. About 3,100 Spanall assemblies were used on the project, and of course reused as the work advanced.

Contractor for the Stanford Medical Center is Carl N. Swenson Construction Co. The Spanall equipment was provided on a rental basis by Spanall of the Pacific in Oakland, Calif. In addition to being the new headquarters for the Stanford Medical School, the center will serve as a hospital for both the University and the adjoining city of Palo Alto.

ASPHALT LAB

(Continued from page 74)

the asphalt content and give a faster check on the rock grades. The centrifuge extraction takes only a few minutes whereas the distillation extraction which Kastner also uses requires more than an hour.

Before the plant has been in operation very long the tests show almost exactly what mix is being produced. If adjustments are indicated they may then be promptly made to bring the material to the spec requirements.

In both the distillation extraction and the centrifugal process a solvent called Triclene-D is used (tri-chloro-ethylene). It simply washes the aggregate clean of asphalt by centrifugal action in the centrifuge and by cooking or percolating in the distilling method.

Accuracy essential

Accuracy in the weighing of the samples, receptacles, solvent and other factors is essential, of course, and when the extraction has been made a mathematical calculation is used to give the percentage of asphalt extracted with allowance for fine dust which is unavoidably extracted with it.

Once the aggregate is cleaned it is a simple process to put it through the laboratory testing screens, which conform to the standard screens the state uses, and arrive at the various proportions of sizes by weight.



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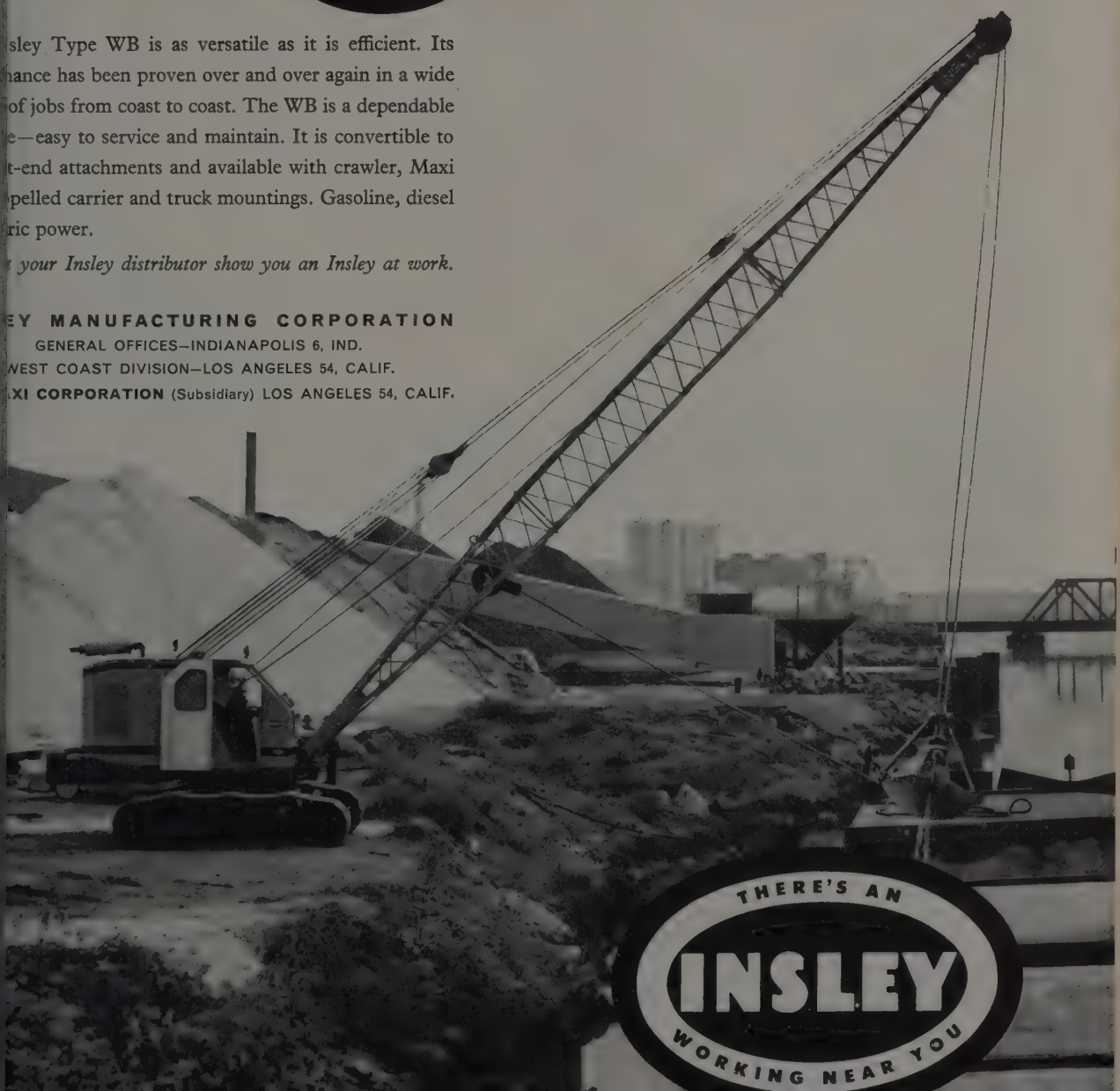
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EBMUD plans construction program

THE EAST BAY Municipal Utility District Board of Directors has moved to place a \$252,000,000 bond issue for water system expansion on the June 3 primary election ballot for approval of Utility District voters.

By passing a resolution of public convenience and necessity calling for further water development on the east side of San Francisco Bay, the EBMUD Directors set in motion their huge water development project which has been in the planning stage for 10 years. Go-ahead on the actual construction of the project will hinge on approval of the proposed bond issue financing.

Plans for the giant construction program described by EBMUD were completed by Utility District engineers in January 1958. Their preliminary planning was completed in August 1957, after which the project was reviewed by Bechtel Corp. consultants in a four-month study and review. The Bechtel staff endorsed both the need for the EBMUD water expansion project and its feasibility from an engineering and

economic standpoint, in their report submitted in December 1957. Since then the few design changes suggested by the Bechtel study have been incorporated into the final plans by district engineers.

Total cost of the entire construction project is set at \$283,008,000. A portion of the cost, \$31,008,000 is planned to be financed from operating revenues, with the balance of \$252,000,000 provided by the proposed bond issue.

The water development program for the East Bay area has been designed to meet the predicted future water consumption requirements of the EBMUD service area. The daily average consumption which in 1940 was only 42,000,000 gallons, and today stands at 130,000,000 gallons, is expected to top 200,000,000 gallons daily by 1967.

Major components of the Utility District project, and their estimated cost include:

1. Mokelumne River Dams—\$42,338,000. New dams for complete development of this source of water.
2. Mokelumne Aqueduct No. 3—\$68,-

233,000. Steel pipeline to augment existing aqueducts transporting water miles from the Sierra reservoirs to East Bay.

3. Terminal Reservoir Storage—\$3,906,000. An additional terminal reservoir in the East Bay to store reserve supply of Mokelumne River water.

4. Filter Plants—\$14,105,000. Six per cent increase in filter plant capacity for purification of water supply.

5. Distribution Reservoirs—\$26,780,000. More than 60% increase in reservoir storage for filtered water supply.

6. Pumping Plants—\$4,279,000. Additional pumping plants and regulators throughout the expanded distribution system.

7. Distribution Mains—\$65,603,000. New pipeline installation totaling 6 miles, an increase of 25% over present 2,560 miles of pipe in ground.

8. Service facilities—\$22,713,000. Additions to the Utility District service facilities, including buildings, service yards, connecting lines and meters.

Wyoming missile base

NEARLY \$26,000,000 has been allocated for the construction of the nation's first ballistic missile launching site. This is the first issue of funds for a project which will require an eventual total of about \$65,000,000. The base will be constructed by the Missouri River Division of the Army Corps of Engineers.

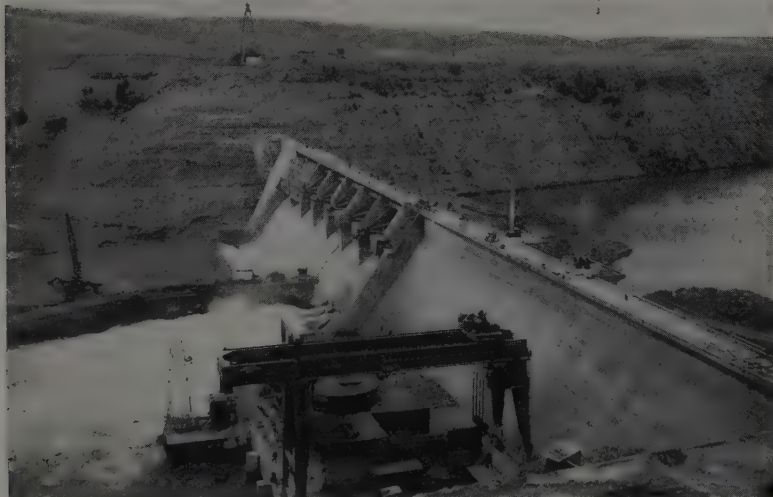
First contracts will be advertised in bids in the spring of 1958. Plans for service facilities are now being drawn up by Holmes and Narver, Los Angeles engineering firm.

Alaska Homebuilding

IN EARLY SPRING the Alaska District Corps of Engineers will invite bids on the construction of more than 200 family housing units. The program calls for construction of units at Ft. Richardson, Ladd and Eielson Airforce Bases and along the Haines-Fairbanks pipeline. Total cost will be \$10,000,000.

Colorado to charge for plans

IN ORDER to adequately supply plans and special provisions to prequalified contractors and suppliers of materials has become necessary for the Colorado Department of Highways to furnish them on a sale basis at a cost of \$5.00 per set, with no credit for their return. Billing will be made on a monthly basis. Single sheets from the plan sets will be available for 25 cents each, directly from the Reproduction Section.



CONCRETE WORK COMPLETED ON NEW MONTANA POWER DAM

Last concrete has been placed in 60,000-kw. Cochrane Dam of The Montana Power Company. Construction workers from Winston-Green Construction Co. now are placing concrete in the powerhouse (lower left) that will encase generators. The dam is 869 ft. long, spanning the busy Missouri River 8½ mi. below Great Falls, where Montana Power already has four power dams in a 16-mi. stretch. When Cochrane begins generating power early in 1958, the company's system capability will rise to 671,000 kw., nearly twice the amount available at the end of World War II. The gantry crane (lower left) has capacity of 135 tons and has been lowering stationary parts for turbines and generators. Tower on far bank is one of two that have supported cables on which a traveling concrete bucket has been suspended during construction of the 103-ft. high dam. Dam is 80 ft. thick at base, 14 ft. wide at top. Seven spillway gates will release surplus water.

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designed so the "hot stuff" will not hang up but instead will flow evenly into the paver. There is no restriction on the dumping angle up to 55°. The shortened wheel-base during paving operations allows the Stabilift to go ahead of the paver on short radius turns.

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Hawaii Report

ALAN GOODFADER

Honolulu, Hawaii

DYNAMITE ARRIVES—The threat of dynamite starvation was lifted from the Territory's contractors last month with the arrival of a 400-ton shipment from the Mainland. It was the first such shipment here since last summer, when the Coast Guard barred explosives-carrying ships from the port of Honolulu. The explosive was brought here by barge and tug, unloaded on Molokai and transhipped in small lots to Sand Island in Honolulu. A couple of tons of blasting caps and about 64 tons of dynamite were left on Molokai for Hawaiian Dredging's \$4,500,000 water tunnel job. The shipment arrived just in time to prevent heavy layoffs in the construction industry. Normally, the shipment would stock the Territory for a year, but several large tunnel jobs are expected to use it up before a year is out. Meanwhile, plans to build a small dynamite factory here have apparently fallen through.

NEW LICENSING BOARD—A new Territorial Contractors License Board began operations the first of the year with a warning to property owners to make sure their contractors are licensed. The seven-member board includes five contractors and two non-contractors and issues three types of licenses. These are general engineering, for commercial-industrial work; general building, for house construction, and specialty contractor. There are about 1,400 licensed contractors in the Territory. Robert Shaw, executive secretary of the board, heads a staff which includes himself, two clerks, four Oahu investigators and one investigator for each of the three major neighbor islands.

CAPEHART HOUSING—Pacific Air Forces headquarters were to call for bids Feb. 5 for the long-delayed 600-unit \$9,900,000 Capehart housing project for Hickam Air Force Base. The job is expected to take about 18 months. It had been held up pending approval of financing. Maximum cost per unit is set at \$16,500. Meanwhile, McKee Construction Co., principal contractor for the \$21,000,000 Schofield Capehart project, was nearing completion of its work after settlement of labor troubles which saw pickets stationed at the job for two weeks late last year.

CONSTRUCTION AT RECORD—The General Contractors Assn. says Hawaiian construction during 1957 was worth \$154,871,726 last year, compared to \$131,051,745 the year before. The figure includes Armed Forces building, Honolulu municipal and Territorial public works, residential and commer-

cial building, federal construction spending and other work. Not included was \$11,200,000 worth of Pacific Division, Naval Bureau of Yards and Docks and Guam school building.

HALF IN CITY—Of the total, a record \$78,303,339 was done in Honolulu, according to City building permit tabulations. This includes \$50,000,000 worth of housing of all types, \$15,000,000 worth of stores and mercantile buildings, and \$13,000,000 worth of other structures.

HONOLULU IS LARGE BUILDER—The City of Honolulu itself completed or started \$21,500,000 worth of construction during the year. This includes \$7,000,000 worth of schools, \$800,000 worth of public parks projects and the rest in other public works projects.

WALKER-MOODY CHOSEN—Walker-Moody Construction Co.'s low bid of \$2,750,000 was accepted by the board of directors of Queen's Hospital for construction of a three-wing addition to the hospital. Other bidders were Pacific Construction Co., \$2,839,000, and E. E. Black, Ltd., \$2,764,000. The construction will house a nursery, emergency units, pharmacy and other facilities. The project originally called for another wing, but this was dropped when the lowest bid was \$1,500,000 more than the hospital's budget for the job.

COSTS TO RISE—Thomas B. Bourne Associates, engineers and architects, have predicted a 3.7% rise in construction costs between the first of the year and the end of February. The prediction is based on the firm's Hawaiian Construction Cost Index. The index measures movement in the cost to contractors of materials and labor and doesn't reflect contractor overhead and profit or bidding competition. Dr. John Loughborough, the firm's chief estimator, prepared the index. Based on 1950-54 costs as 100%, building costs were 126.8% at the end of 1957. The forecast is that they will be at 130.5 by the end of February. The index shows a 46% cost rise between 1947 and 1957.

KAISER TO BUILD—Henry J. Kaiser is building a \$3,000,000 hospital here on the Ala Moana. He received building permits last month for \$680,000 worth of foundation and structural frame construction. The concrete building will be 10 stories high.

SUNN ELECTED—Franklin Y. K. Sunn, director of Honolulu's Bureau of Plans, was elected president of the

Hawaii Section, American Society of Civil Engineers. He succeeded Donald S. Austin. Other new officers are Edward J. Morgan, Board of Water Supply manager, first vice president; Wayne E. Duncan, with the U. S. Engineers, second vice president; Arthur N. L. Chiu, University of Hawaii professor, secretary; Russell L. Smith, Jr., of H. A. R. Austin and Associates, treasurer; and Paul E. S. F. Liu, of Austin and Towill, member representative. The group has 325 members here.

HAWAII COUNTY AWARDS—Two equipment firms received \$44,412 worth of business from the County of Hawaii recently. Hawaiian Equipment Co. was low bidder on \$25,544 worth of dump trucks and a \$2,659 three-ton roller. I. Kitagawa & Co. sold two 28,000-lb. capacity dump trucks at a low bid of \$16,206.

RECEIVES PRIZE—Joel R. Lewis, bridge engineer for the Honolulu Division, Federal Bureau of Roads, received a \$250 award recently for outstanding work during the year ending March 31, 1957. It's the first time such an award went to the Honolulu Bureau of Roads office since 1939.

COMPANY FORMED—Miami Industries, Inc., was capitalized at \$10,000 to deal in paint and resurfacing materials. Akira Misawa of Standard Construction Co. is president. Other director-officers are Alfred M. Amii, vice president, and attorney Masato Doi, secretary.

MADE PARTNER—Donald H. Wolbrink of Honolulu has been named a full partner in Harland Bartholomew and Associates, nationwide planning and engineering organization. He has been in charge of the firm's office here since it opened in 1947 and will continue to head work in Hawaii and the Pacific. In the past 10 years, the firm has handled more than 200 projects in the Pacific area, including government and military projects here.

NEW TECHNIQUE—The Honolulu Board of Water Supply will construct its half-million-gallon and larger reservoirs from prestressed concrete sections from now on instead of the conventional reinforced concrete. A specially designed rubber stop will join the wall and floor slabs.

ARCHITECTS' AWARDS—Kenzo Tange of Tokyo received the first annual Pan-Pacific Architectural Citation of the Hawaii Chapter, American Institute of Architects, at an awards dinner recently. He was lauded for his design of the Children's Library at Hiroshima. Local architects getting honor awards were Richard N. Dennis; Wood, Weed and Kubala; Alfred Preis (two); Philip C. Fisk and Wood, Weed and Associates. Howard L. Cook was installed as new president of the chapter.



L. A. Airport work

GROUND has been broken for a \$46,000,000 improvement program at Los Angeles International Airport. The 2-year, 4-phase construction project is scheduled for completion by 1960. More than 1,500 construction men will be on the job at the height of activities.

Griffith Co. was low bidder at \$2,000,000 for phase 1, construction of a 8,925-ft. runway. Phase 2, with an estimated cost of \$5,500,000, will be mainly an earth moving project, and is scheduled to go to contract in May of 1958 with a completion time of 12 months. In September 1958, the phase 3 contracts will be let. These include the several build-

ings and will total over \$21,000,000. Phase 4, with an estimated cost of \$7,200,000 will be awarded early in 1959.

Choice for surety bond

THAT CONTRACTORS should be left free to secure surety bonds from such companies as they see fit is the core of a policy statement adopted by the Board of Direction of the American Society of Civil Engineers.

The policy, already endorsed by the Associated General Contractors of America, Inc., and the American Institute of Architects, deems as undesirable the practice of requiring such bonds to be purchased locally or through some specified agent or company.

The policy statement, as approved by the ASCE Board, reads:

"Where contractors are required to provide surety bonds they should be left free to secure them from such companies as they see fit and that it is undesirable practice to require such bonds to be purchased locally or through some specified agent or company. It is proper for the owner to reserve the right to approve the surety company and the form of the bond but such approval should be based on the propriety of the form and on the financial soundness of the company and its known administrative policies in handling cases of default and should not be arbitrary for the purpose of forcing the use of any particular company or agent."

SPILLWAY AT BROWNLEE

Stiffleg derrick, its 207-foot-long boom silhouetted against the sky, swings two buckets of concrete into pouring position simultaneously to speed construction of the spillway of Brownlee Dam, Idaho Power Company's big new hydroelectric development in Hells Canyon of the Snake River. Start of the spillway—final major phase of work to get under way—sent Brownlee into the homestretch toward its goal of producing the first of 360,000 kilowatts of electricity for the power-hungry Pacific Northwest by October, 1958. The downstream rock-fill section of the dam's embankment, which will be the world's second-highest such structure, is nearing completion.

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Wherever you see an experienced contractor handling a tougher than usual job, you will also see Caterpillar Engines and Electric Sets used for primary and auxiliary power. It's getting to be standard practice.

CAT Engines are economical to operate. They start easily and stand up under the roughest going. The special metals and superior workmanship which go into their manufacture mean negligible down time, and this in turn means that your other equipment on the job won't be idled because a key machine has to be repaired. That's why you often see reliably rated Cat power units widely used on a single job—powering a combination of cranes, ditchers, cement

batchers, auxiliary lighting—the works. And for the same profit-making reasons, you find a growing preference on the part of the job-wise contractor for Cat Engines to *repower* equipment that's short on day-in day-out guts.

Developed as the first tractor-diesel engine, these same basic characteristics—from smooth lugging without fouling to the ability to idle for long periods—make Cat Engines of today first choice to power and repower the contractor's valuable equipment. Particular attention is always paid to durability, a trouble-free fuel injection system able to handle a wide range of fuel, and to maximum protection for its fuel, air, oil and water.

Take time now to save down time later—call your nearby Caterpillar Dealer and find out what these power packages will do for you.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U. S. A. Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

A dependable Cat D318 Engine furnishes power for the operation of this Parsons trencher, and a pair of D311s work the Insley cranes in the background. The Mainland Construction Co. of Texas City, Texas, is handling this new housing project, and Clyde E. Smith,

partner, says, "We can bid the jobs cheaper when we have good equipment that gets the job done. During the five years we have been in business we have never lost an hour's time due to failure of Cat-built equipment!"



for original power and repowering



J. Langenfelter & Son, Inc., relies on a heavy-duty Cat D397 engine to power this Lima shovel, loading out slag material for use in runway extension and widening job at Middletown Air Depot, Middletown, Pa. Cat DW20s and a Cat D8 Tractor are also on the job. This spread's Equipment Superintendent, LeRoy A. Marquis, says, "You can't beat Caterpillar power — economical to operate, low in down time, dependable to the nth degree!"



Construction is under way on a canal 85 feet wide and 9 miles long through a 1,200-lot subdivision. This pleasure boat waterway is being constructed with 2 Bucyrus-Erie 15-B draglines powered by Cat D315 Engines. Owner Cuyler L. Lanier of Tavares, Florida, says, "Cat Engines and equipment turn out more work and are more economical to operate than similar machines."



Russ Mitchell, Inc., of Houston, Texas, repowered this Austin ditcher with a Cat D13000; and a Koehring clamshell on the job is powered by a D318. Job is trench work for a storm sewer. Said E. C. Cowart, Job Superintendent, "For my money Cat makes the best equipment in the dirt-moving business. I like the dependability of their engines when the going is tough!"

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Proposed Wash. Dam

THE FEDERAL Power Commission has issued a preliminary permit to Public Utility District No. 1 of Snohomish County, Washington, for a hydroelectric project on the north fork of Snoqualmie River in King County, Washington.

The proposed project would consist of an earth dam about 200 ft. high and 1,760 ft. long creating a reservoir with 100,000-ac. ft. capacity.

The preliminary permit does not authorize any construction. It merely gives the holder the right to priority of application for an FPC license while making

the necessary studies to determine the feasibility of the project.

Seattle Skyscraper awarded

HOWARD S. WRIGHT & Co. Inc. has been awarded a \$12,000,000 contract for the construction of a 20-story building in Seattle's financial district. The building, to be ready for occupancy in June 1959, will cover half a block between First and Second Avenue on the north side of Columbia Street.

The structure was planned by Bindon & Wright, Seattle architects. Skidmore, Owings & Merrill, San Francisco architects, are consultants. Designed to fit its

sloping site, the building will be a 17-story free standing office tower rising above a 4-story platform.

Proposed Sultan Hydro project

PUBLIC UTILITY DISTRICT No. 1 of Snohomish County, Washington, has filed an application with the Federal Power Commission seeking a license for a hydroelectric project on the Sultan River in Snohomish County. Main features of the proposed project are a concrete arch dam 320 ft. long and 242 ft. high with a powerhouse containing two 58,000-hp. turbines. Estimated cost of the project would be about \$42,000,000.

The FPC in January 1955, granted the PUD a 36-months preliminary permit to enable it to make the surveys and investigations necessary for the license application.

Page contact awarded

SINCE THE appearance of the article on Page, Arizona (*Western Construction*, February 1958) the following information has been received from the Bureau of Reclamation:

A contract was awarded December 10 to the Mobilhome Corp. for construction of 200 permanent 3-bedroom houses for Federal personnel who will be stationed at Page. Notice to proceed on the construction was given January 9. Under the terms of the contract, the contractor



THE LARGEST welded plate girders ever made in this country have been set in place for a new hangar which United Air Lines is building near San Francisco's International Airport. The hangar is a double cantilever structure with a three-story concrete core for shops, offices and storerooms. Inclined trusses are employed. The roof is supported by seven plate girders, resting on pillars which enclose the core. Each girder is 365 ft. long and weighs 125 tons. When completed next fall, the hangar will provide 153,000 sq. ft. of floor space. The hangar was designed by Skidmore, Owings and Merrill. Its massive girders were fabricated by the Pacific Iron & Steel Corp., Los Angeles. Dinwiddie Construction Co. is the general contractor.

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WESTERN CONSTRUCTION—March 1958

may lease an additional 150 lots for construction of houses as a private development for sale or rental.

Arizona reaffirms construction policy

ONE OF THE first acts of the newly organized Arizona Highway Commission was reaffirming the commission's planning and construction policy statement adopted October 26, 1957.

The statement follows: In order to comply with the provisions set forth in the Federal Aid Highway Act of 1956, concerning the Interstate System, and at the same time give the utmost consideration to protecting and aiding the interests of the citizens of Arizona, the State Highway Commission hereby gives notice of adhering to the following policies:

1. To use as part of the ultimate Interstate Highway System as many miles of the existing state highway network as possible.

2. During the early years of the Interstate Highway program, to first concentrate upon the construction of new Interstate projects in the non-controversial rural areas, on sections with low sufficiency ratings; to postpone until the later years of the Interstate program construction of urban traffic relief routes unless sooner requested by the urban areas affected.

3. As availability of Federal Aid Primary funds permits, to improve to Primary standards the existing routes through communities, before any construction is started on the Interstate alignment in that area.

4. When planning Interstate locations in urban areas, to survey as many routes as possible, in order to determine which would be of the greatest benefit to the community involved as well as to the motoring public. All such surveys to be made in cooperation with the officials of the community involved.

5. In compliance with Section 116(c) of the Federal Aid Act, to hold public hearings before going around or through any city, town or village, or to afford the opportunity for such a hearing, when Federal funds are to be used.

6. Where traffic relief routes away from the existing alignments are required, to construct them as near to the towns as possible, and to simultaneously plan for high standard, well signed, direct access facilities into the populated areas, with access controlled on the relief route so that businesses will not be built up on the new route and compete with those already established within the community.

7. Where the Interstate Highway is to be constructed in agricultural or grazing areas, the plans for construction will be made with a view toward creating the least inconvenience possible to persons or businesses affected consistent with engineering design standards provided pursuant to the 1956 Highway Act.



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bigger bite

Weight concentration in the lower center section eliminates top heaviness. Combined with 6 part block and tackle reeving, it gives OWEN Buckets that extra power to dig in at the beginning—and to continue to dig with equal force on both jaws during the entire closing cycle. At the end of the stroke, there is no power loss and lifting tendency is at a minimum.



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One-piece Head Construction

Riveted Bowl Construction

Single Main Shaft

Recessed Lip Design



On this our 50th Anniversary Year, The Owen Bucket Company wishes to express our appreciation for the excellent acceptance of our products and pledges to maintain in the years ahead the high quality of design, workmanship and service that has become associated with OWEN Products.



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BRIDGING GLEN CANYON

(Continued from page 49)

contractor for lowering the 5-ton anchor frames over the wall and also for placing the rest of the structural steel for the bridge. Located on the exact centerline of the bridge the towers will tilt 20 ft. to either side in order to cover the entire 40-ft. width of the bridge.

A smaller highline which is now in operation makes use of an endless in-and-out haul cable operated from a 2-drum hoist. The two 110-ft. high towers of the cableway are held in place by a single back cable with 2-side guys anchored 300 ft. from each tower by concrete deadmen sunk 15 ft. into solid rock. Each block is 10 ft. in length and 6 ft. in width.

Cable used in the small (10 ton) highline includes 1,460 ft. of 2-in. smooth coil for the main gut, 2,800 ft. of 3/4-in. endless cable, and a 4,400-ft. length of hoisting cable. An American Hoist used in the highline is powered by a 275-hp. General Motors diesel, with the braking system controlled by air pressure from a Wagner Rotary Compressor delivering 8 lb. of pressure. A torque converter transmission enables a single operator to let the load through the transmission without braking. As an added safety feature the cableway can also be dogged off mechanically.

Construction method

During the construction of the arch, the unsupported ends will be suspended from two 100-ft. tieback towers anchored near the rim. The cables will be required to support up to 1,000 tons in weight.

Once the final piece of steel has been set into place the arch will be entirely self supporting and ready for the erection of the vertical columns, floor beams and concrete roadway. The 6-in. deck will take 240,000 lb. of reinforcing steel and 1,300 cu. yd. of concrete. The finished deck will have a 30-ft. roadway and two 4-ft. sidewalks, with an overall width of 40 ft. Completion target date is February 1959.

The entire structure will require 8,000,000 lb. of structural steel, 250,000 lb. of reinforcing steel, 100,000 lb. of hand railing, and 2,650 cu. yd. of concrete.

Project superintendent is William T. "Bill" Choate.

Asphaltic Standards book

The American Society for Testing Materials announces publication of the 6th edition of "ASTM Standards on Bituminous Materials for Highway Construction, Waterproofing and Roofing."

This compilation includes specifications, test methods, recommended practices, and definitions of terms pertaining to bituminous materials used in highway construction and in waterproofing and roofing. It has been prepared for the convenience of the producers and consumers of these materials and is especially useful to engineers and contractors engaged in road, street, and highway construction. The vast Federal highway construction program now being undertaken will make important use of many of the included standards.

There are 112 standards in the compilation, 17 of which are new or revised since the previous edition was published in December 1955.

Copies of the compilation may be purchased from ASTM Headquarters, 1916 Race St., Philadelphia 3, Pa., at \$4.75 per copy.

Flaming Gorge housing

AN ORDER for change has been negotiated with the Witt Construction Co., Provo, Utah, to eliminate construction at this time of 30 of the 80 housing units at the Flaming Gorge Dam site.

Ten of the houses eliminated would be permanent type and 20 of a temporary nature. Commissioner of Reclamation W. A. Dexheimer said that the reduction amounting to about \$500,000, is possible because the prime contract for construction of Flaming Gorge Dam will not be awarded this fiscal year. A contract for a diversion tunnel will be awarded late in the spring according to the present construction schedule. Several contracts are now in force for access roads and for the construction camp.

The Witt Construction Co. is now building the streets, utilities, and residences for the Flaming Gorge community under a \$2,678,000 contract awarded in July 1957 and scheduled for completion in February 1959. "All construction under this contract will be completed, except for the 30 houses involved in the order for change," Commissioner Dexheimer said.

Included and to be completed are the grading and surfacing of streets, sidewalks, and other areas; the construction of the water, sewer, and electrical lighting systems for the government camp; and the building of 50 residences.

Low bids and contract awards

ARIZONA

W. J. Henson, contractor of Prescott, submitted a low bid of \$479,839 for 3.4 mi. of grading and surfacing the Cameron-Navajo Bridge Highway, in Cocconino County.

CALIFORNIA

A \$7,325,011 contract was awarded to Isbell Construction Co., Granite Construction Co., Gordon H. Ball, and Gordon H. Ball, Inc., Reno, Nevada, for 6.7 mi. of grading and surfacing a 4-lane highway, ramps, access roads and connections west of Boca and east of Floristan on U. S. 40 in Nevada County. Gordon H. Ball, Gordon H. Ball, Inc., and Ball & Simpson of Danville submitted a low bid of \$2,576,412 for 13.6 mi. of grading and surfacing and bridge construction on Rte. 90-A,B in Solano and Yolo counties. Secrest & Fish of Whittier received a \$1,300,000 contract for construction of a biology-geology building on the Pomona College campus, Claremont. James I. Barnes Construction Co., Santa Monica, received a \$3,137,180 contract for construction of an addition to the Division of Highways District VII office building at Los Angeles. Webb & White, Los Angeles, received a \$1,484,677 contract for construction of three concrete bridges and approaches on the Santa Monica Freeway, City and County of Los Angeles. A \$941,621 contract was received by J. E. Haddock, Ltd., of Pasadena for 3 mi. of grading and surfacing and bridge construction in Azusa, Los Angeles County. M. J. Ruddy & Son of Modesto submitted a low bid of \$435,885 for 3.4 mi. of grading, surfacing and structures on Rte. 5-A,B in San Joaquin County. A low bid of \$339,685 was submitted by I. L. Croft & Son, Inc., of Saugus for 6.2 mi. of grading and surfacing and construction of one bridge in City and County of Los Angeles. Fredrickson & Watson Construction Co. and Ransome Co. of Oakland received a \$7,629,605 contract for construction of 8.8 mi. of 4-lane highway and construction of 11 bridges east of Donner Lake to west of Boca, on U. S. 40 in Nevada County.

COLORADO

Hinman Bros. Construction Co., Denver, received a \$622,927 contract for 5.8 mi. of grading and surfacing the Mount Evans Highway, Arapaho National Forest in Clear Creek County. A \$415,938 contract was received by Pioneer Construction Co., Pueblo, for 7.4 mi. of grading, surfacing and structures, south of Walsenburg, Huerfano County. Northwestern Engineering Co., Denver, submitted a low bid of \$339,998 for 3.8 mi. of grading and surfacing and construction of structures of S. H. No. 10

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The Davis Loader—First with streamlined design that hugs your tractor—top, bottom, and sides. Guarantees you better visibility and lets you work in places inaccessible to other makes. Davis introduced box-frame construction and the widely copied "step-in" design.

It's tops in versatility, too, with a complete range of attachments that let you eliminate overlapping equipment expenditure.

The Davis Backhoe—Operates in areas where others won't even work—flush against buildings, fences, etc.—or at right angles to the tractor. You can see where you're digging, and always face your work because the seat sits right over the mast assembly and revolves with the boom and bucket.

Other important features for profitable production include 10,000 pounds breakaway, vertical stabilizers, quality valve and hydraulics.

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Davis Loaders and Backhoes are available for all popular models of International, Ford, Fordson Major, Ferguson, Case, Massey-Harris, Allis-Chalmers, Oliver, John Deere, Minneapolis-Moline, and Work Bull Tractors.

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MASSEY-FERGUSON INDUSTRIAL DIVISION

in Montezuma County. **Leon K. Suhm** of Denver submitted a low bid of \$116,636 for construction of roadway and bridge, City and County of Denver. A low bid of \$165,862 was submitted by **Siegrist Construction Co.**, Denver, for 6 mi. of grading, stabilizing and structures on S.H. No. 66 in Weld County.

IDAHO

Teller Construction Co., Portland, Oregon, submitted a low bid of \$334,716 for construction of the Transient Reactor Test Facility at the AEC's National Reactor Testing Station.

NEVADA

A \$486,289 contract was received by **Wells-Stewart Construction Co., Inc.**, Las Vegas, for 15.3 mi. of grading and surfacing portions of Rte. 507, north of Fallon in Churchill County. **Morrison & Knudsen Co., Inc.**, of Salt Lake City, Utah, received a \$1,690,287 contract for construction of a portion of the State Highway System, from 8½ mi. west to 4 mi. west of Wadsworth in Washoe County.

NEW MEXICO

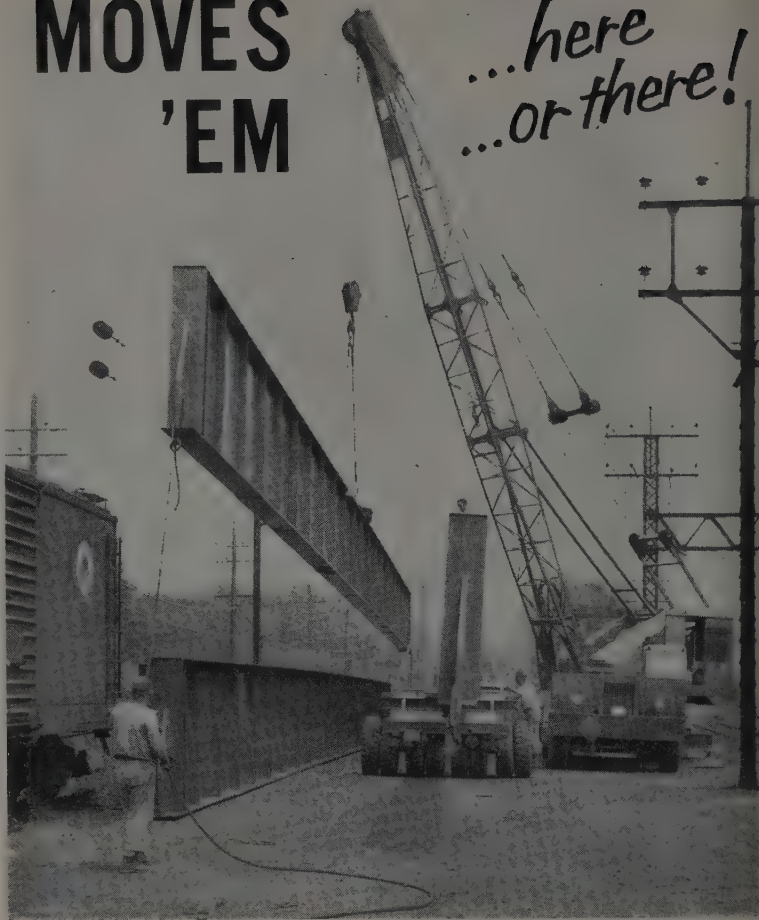
Jack Adams of Santa Fe received a \$452,820 contract for 9.8 mi. of grading and surfacing the Jal-North Road in Lea County. A \$481,442 contract was received by **Daniels Construction Co.**, Albuquerque, for 9.7 mi. of grading, surfacing and structures on the Blanco-Navajo Dan Road, Highway S.R. 511, in San Juan County. **Joseph C. Hastings**, Albuquerque, received a \$126,220 contract for construction of 2.3 mi. of the Mayhill-Denny Bridge road in Otero County. A \$247,655 contract was received by **Imperial Paving Co.**, Oklahoma City, Oklahoma, for construction of Logan Bridge and approaches in Quay County. **Miller, Smith & O'Hara, Inc.**, of Albuquerque submitted a low bid of \$405,000 for 7.7 mi. of grading, draining and surfacing the Regina-Coyote Route in the Santa Fe National Forest in Rio Arriba County.

OREGON

Earl L. McNutt Co., Eugene, received a \$540,280 contract for 2.6 mi. of grading and surfacing the Pioneer Mountain Section of the Corvallis-Newport Highway, east of Toledo in Lincoln County. **Pacific Concrete Co.** and **Otis J. Jordan, Jr.**, Portland, received a \$293,337 contract for construction of Sandy River Bridge and approaches, Columbia River Highway near Troutdale in Multnomah County. **Hamilton & Thoms, Inc.**, Eugene, received a \$290,247 contract for construction of overcrossings on the South Yamhill River Bridge and Wallace Bridge on Salmon River Highway, west of Sheridan in Polk County. **Durbin Bros.**, Eugene, received a \$1,117,802 contract for grading, surfacing and bridge construction on the Perry-Oro Dell Section of the Old Oregon Trail Highway northwest of LaGrande in Union County. A \$267,835 contract was received by **Porter W. Yett**, Portland,

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Loading steel beams—up to 102 ft.

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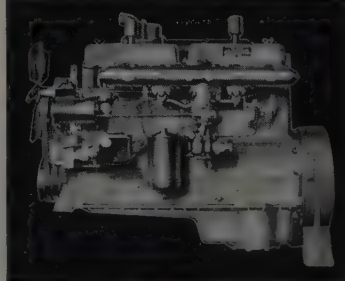
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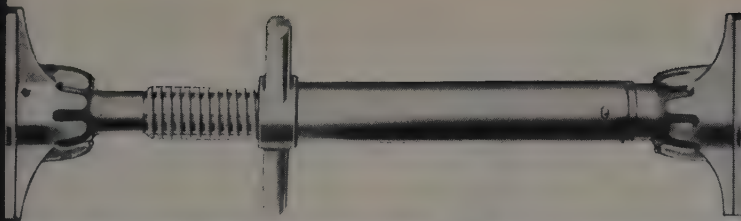
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WESTERN CONSTRUCTION—March 1958



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WESTERN CONSTRUCTION—March 1958

for grading and paving, also construction of one concrete structure, Murray Road Interchange Section of the Sunset Highway in Washington County.

UTAH

Tolboe Construction Co., Provo, submitted a low bid of \$1,420,980 for construction of Parking Ramp for Auerbach Co., Salt Lake City.

WASHINGTON

Donald M. Drake Co., Portland, Oregon, submitted a low bid of \$2,681,004 for earthwork, concrete lining and structures, Esquatzel Diversion Canal, Columbia Basin Project. Fiorito Bros. of Seattle received two contracts for road work in Thurston County. A \$1,732,683 contract for 6.2 mi. of grading, surfacing and structures, Troser road to Martin Way and \$1,184,881 for 2.7 mi. of grading, surfacing and structures, Mud Bay to Schneiders Prairie. A \$663,622 contract was received by Anderson Bridge Construction Co., Tacoma, for construction of Snohomish River Bridge in Snohomish County. Murphy Bros., Inc., of Spokane received a \$283,648 contract for 1.7 mi. of grading and surfacing in City and County of Spokane. K. C. Dack Construction Co., Pendleton, Oregon, received a \$260,325 contract for 3.1 mi. of grading and surfacing, Prosser South and Hayden Corner vicinity in Benton County. A \$158,990 contract was received by C & E Construction Co., Inc., of Yakima for 2.7 mi. of grading and surfacing in Yakima County.

WYOMING

L. H. Weber Contracting Co., Rawlins, received a \$411,856 contract for grading, surfacing and culverts on 5.2 mi. of the Guernsey-Sunrise road in Platte County. Asbell Bros. and Wyoming Paving Co. of Riverton received a \$268,263 contract for grading and surfacing on 8.5 mi. of the Rock Springs-Pinedale road from Farson South in Sweetwater County. Lichty Construction Co., Casper, received a \$130,663 contract for construction of two girder spans, one over Big Sandy River and one over Little Sandy River on the Rock Springs-Pinedale road from Farson South in Sweetwater County. A \$275,067 contract was received by J. F. Englands Sons, Inc., of Rapid City, South Dakota, for grading, surfacing and structure on 1.3 mi. of the Sussex-Linch road in Johnson County. W. R. Cahoon Construction Co., Pocatello, Idaho, received a \$193,000 contract for grading and surfacing, and 2 bridges on the North Entrance of the Yellowstone National Park. Read Construction Co. of Cheyenne received two bids for road work in Hot Springs and Goshen counties: \$424,834 for grading, surfacing and three concrete box culvert stock and machinery passes on 2.3 mi. of the Thermopolis-Shoshoni road in Hot Springs County and \$42,782 for grading and surfacing a portion of the Ft. Laramie-Ft. Laramie National Monument road in Goshen County.

ALASKA Newsletter

By CLIFFORD S. CERNICK, Anchorage

IN WINTER'S GRIP—Icy winter is king in Alaska as I write this. While many of last summer's Alaskan construction workers are basking in the sun of Florida or California, some points in Alaska are reporting fifty and sixty below zero. From a construction man's viewpoint, this is the gloomiest time of the year. Ahead lie two solid months more of winter and inactivity. No matter what bright prospects lie ahead for a profitable season—it's hard to ignore the fact that there's not much doing right now. The contractor with an Alaskan job or hopes of getting one can, of course, put these "slow" months to good use by planning for the busy months that lie ahead.

MISSILE MUDDLE—Alaska employment and union officials are just about tearing their hair out about the "missile muddle" caused by recent published news items about missile base construction in the Territory. A wire news service carried an item about "a \$300,000,000 program for tactical and strategic missile stations along a 350-mi. arc between Talkeetna and Fort Yukon." According to the item, labor unions had been alerted "to have their men ready for call shortly after New Year's day." Alaskans, currently sweating out the annual slump, wanted to believe this highly-optimistic report, and it so excited one Anchorage newspaper that it blossomed out in headlines two inches thick. Cold water was promptly tossed on the report by the Air Force which labeled the report "erroneous" just as many Alaskans were enjoying daydreams of a new construction boom to boost the lagging economy.

PIPE DREAMS, NIGHTMARES—However, the damage was done by the widespread publicity given the reports. Union officials were confronted with a flood of job inquiries from the states. Scores of construction men are pouring into the Territory seeking "missile jobs." The sad fact that will confront them when they arrive is that the news reports, if not entirely false, at least were several months premature. Apparently rooted in the psychology of the men who follow the construction game is a tendency to believe any report—no matter how unfounded—so long as the report is an optimistic one on the job outlook.

CASE HISTORIES—Union officials here provided me with a few case histories to illustrate what hardships such unfounded publicity can cause. Jesse Clark, dispatcher and business representative for Laborers Local 341 told of the young man, newly-arrived in Anchorage, who told him: "I'm broke and

can't pay the union initiation fee. But if you'll send me out to one of those missile bases, I'll pay you as soon as I get my first paycheck." Clark was forced to reply: "I haven't a thing for you. I don't know of any missile base. I've got 900 men out of work in this union and last month I had only two calls offering jobs. This month there hasn't been a single call. Figure it out."

CARPENTERS REPORT—Vern Ingram, business agent of the Carpenters union in Anchorage, also is peeved about the missile stories. He said he has had job-seeking letters from men all over the country since the stories were printed. Some hopefuls have gone so far as to make long-distance phone calls to him in the hope of securing jobs. "I've got 1,070 men in this local and only 75 are working," Ingram said. "There are 2,800 union carpenters in Alaska—more than enough to handle any project that's apt to come up." Ingram is so unhappy about the threatened heavy influx of men that he has sent letters to all state-side Carpenters locals warning them not to send any men to Alaska. "If more men keep coming, we're going to be in a tough spot," he commented.

AGC REPORT—When reports were circulated concerning Alaska missile sites, I immediately contacted Larry Moore, Associated General Contractors manager in Anchorage. He keeps in close contact with Alaska sources and said he could find nobody who would confirm the reports. When an Alaska newspaper published a report that the Puget Sound-Drake construction firm of Seattle had negotiated a \$58,000,000 Air Force contract for construction of a missile site at Clear on the Alaska Railroad, I wired the firm and they emphatically denied the report. As a writer for the New York Times and this magazine, I checked every possible source in the territory to determine whether the reports contained anything but hot air. Accordingly, I'm now willing to go on record with a summary of my findings.

TRUE AND FALSE—I discovered there was a germ of truth in the published missile stories—a microscopic germ. There's every indication that Alaska, ultimately, will be considered as a prime area for locating modern missile weapons, some of which are now being perfected. But the scope and specific location of the missile bases have not yet been revealed, and probably won't be, fully, because of security considerations. So far as I can find out, no contracts have been negotiated. Therefore, if you're clutching in your hot little hand a clipping reporting that a \$300,000,000

missile base program is under way in Alaska—do yourself a big favor and pretend you never saw it.

SET FOR SEASON—The Alaska Army Engineer District is getting set for the coming construction season by calling in field engineers from various parts of the Territory for annual briefing conferences. The conferences are valuable in more than one way. They represent a change in pace for the government's job supervisors and also give top officials a chance to determine first hand the problems and progress of widely-scattered job sites. The Engineers are emphasizing the matter of safety at these conferences and a great deal of time is spent in discussing methods for improving conditions on the job and eliminating safety hazards.

ATOM POWER PLANT—A \$6,675,000 steam model nuclear power plant has been authorized for construction at Fort Greely, about 60 mi. south of Fairbanks. The plant will generate electricity and heat for the post and will be modeled after the prototype plant now in operation at Fort Belvoir, Va. The Alaska District Engineer at Anchorage has been instructed to proceed with the necessary action to obtain a contract. The military aspect of such plants is that they would supply nuclear power to the military for the operation of weapons and other equipment even though normal supply lines are disrupted by enemy action.

SITUATION AT SITKA—The Territorial employment service, despite numerous warnings about the lack of jobs at Sitka, has apparently been unable to discourage job-seekers from going to that Alaska town in hopes of obtaining employment on the huge new pulp plant going up there. About 275 men are currently clearing ground for the big project which will employ about 1,000 men in 1959 and an estimated 1,500 men by 1960. Most of the men needed for the project are already residing in the Sitka area.

CONSTRUCTION NEWS NUGGETS—Col. Allen F. Clark, Jr., newly-appointed Corps of Engineers North Pacific Division Engineer, recently made a swing through Alaska to visit major bases here . . . The city of Anchorage budget for 1958 is \$8,000,000 . . . Landlords in Anchorage report hundreds of vacant rental units . . . The Alaska Railroad plans construction of a \$250,000 railroad depot at Fairbanks . . . John Lloyd, general manager of the Alaska Railroad, estimates cost of constructing a railroad from the states to Alaska would be about \$200,000 a mile with operation and maintenance costing \$18,000 to \$25,000 a mile. Although the U.S.-Alaska railway proposal is taken out and dusted off every year or so, the likelihood that the road will be actually constructed has never seemed great . . . Employment officials in Anchorage have indicated a small drop in total unemployment here.

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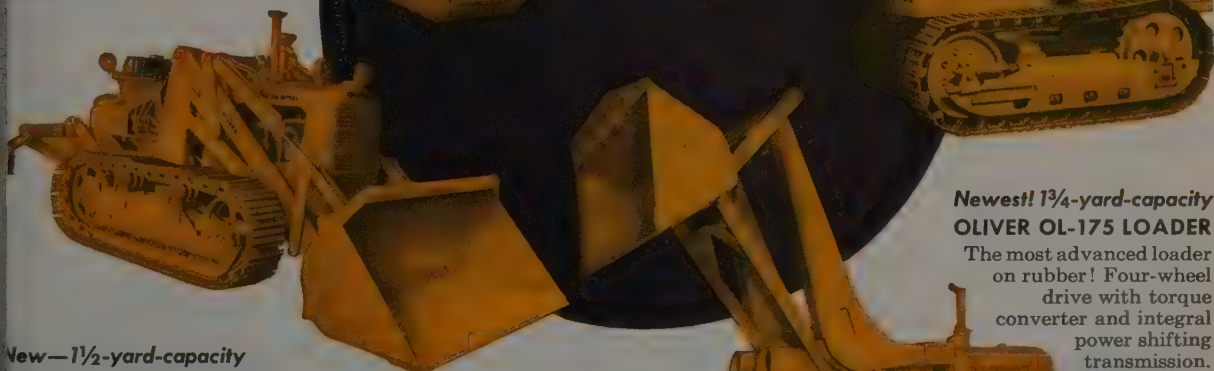
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Every model in this new Oliver series—the industry's newest full line of loaders—is a true loader! A factory-built loader. The machine is made for the bucket...the bucket for the machine. Each has special engineering and equipment features that match one to the other. They work in perfect harmony—load faster, dig faster, do more and earn more at any job.

By all means, talk to your Oliver distributor...size-up these big step-ahead loaders now.

New—2¼-yard-capacity OLIVER OC-156 LOADER

Nothing faster in the 2¼-yard size. The OC-156 is the big-profit machine because it's designed as an integral tractor-loader, with loader matched to the full capabilities of the powerful tractor. Easy air steering... and powered to put more pep into all loading and digging jobs.



New—½-yard-capacity OLIVER OC-46 LOADER

A full-fledged loader in the handy, compact size. Sure-footed stability (46" tracks) with powerful traction and hefty hydraulic action for deep-down, hard digging with high-up loading. Also works with backhoe, dozer, scraper, side boom.

Newest! 1¾-yard-capacity OLIVER OL-175 LOADER

The most advanced loader on rubber! Four-wheel drive with torque converter and integral power shifting transmission. Fast 21 m.p.h. travel speed. Rapid loading action, short turning. Handles amazing range of jobs.

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ENGINEERS and CONTRACTORS

Charles E. Shevling is retiring from Seattle City Light after more than 33 years with the City. He is leaving the City employ before reaching the required retirement age to take a position as project engineer in Thailand for Sverdrup & Parcel International, Inc., consulting engineers with headquarters in St. Louis, Mo.

* * *

Fred J. Grumm, 73, died at Sacramento, Calif., ending an outstanding career in public service. At the time of his retirement from the California Division of Highways in 1950 he was deputy state highway engineer. Since that time he has contributed much time to community endeavors and to the affairs of the many engineering and professional organizations of which he was a member, including the American Society of Civil Engineers.

* * *

E. C. "Duke" Simpson is the 1958 head of Tacoma Section of the American Society of Civil Engineers. President Simpson, a construction engineer with the Washington Department of Highways, will be aided by the following new officers who are also in the headquarters office of the Highway Department: **W. T. Robertson**, vice president; **Charles Nichols**, secretary-treasurer.

* * *

John R. Gray recently joined the West Coast Steel Works at Portland, Ore., as their chief engineer, engaged in



**John R.
Gray**

the fabrication, design, and erection of bridge and hangar doors. Gray was formerly Umatilla County Engineer, located at Pendleton.

Announcement is made that Kaiser Engineers, Oakland, Calif., is being divided into two inter-related, but independent, operating divisions. One, the Heavy Construction Division, will be responsible for all overseas work and heavy construction projects throughout the world. It will be headed by **George Havas** as vice president and general manager. A second group will be responsible for all industrial engineering and construction projects in the United States and Canada. **L. H. Oppenheim** will be vice president and general manager of this division, with **J. E. Hughes**, assistant general manager. Named assistant general manager of the Heavy Construction Division is **John L. Hallett**.

* * *

Edward C. McEneaney and **George V. Volpe** have been appointed vice presidents of the Ransome Company, large highway construction firm with headquarters at Emeryville, Calif. McEneaney was named executive vice president, and Volpe, vice president in charge of construction activities by **Tallent H. Ransome**, president.



GEORGE H. ATKINSON, left, president of Guy F. Atkinson Co., and outgoing president of The Beavers, talks things over with incoming president **John A. Kier** at conclusion of recent Beaver meet in Los Angeles. Kier heads the well known firm of W. E. Kier Construction Co.

C. D. "Cap" Curtiss has joined the American Road Builders' Association in Washington, D. C., in the newly-created position of special assistant to the executive vice president of the association. News of Curtiss' retirement as commissioner of the Bureau of Public Roads was published in **Western Construction** last month.

* * *

H. D. Carlson has been named business manager of Twaits-Wittenberg Co., pioneer Southern California construction-engineering firm. Carlson, with more than 36 years experience in the construction industry, has been associated with Twaits-Wittenberg since 1940. As construction manager, he has supervised and managed many varied T-W projects, including buildings, process plants, and government and military installations. He is active in various professional endeavors of The Associated General Contractors of America.

* * *

David C. Nerell, engineer with the Bechtel Corporation, recently changed his residence to Yuma, Ariz., where he is cost engineer on a steam generating plant under construction by Bechtel. This is Nerell's first venture into the cost engineering end of construction. Previously he has been employed as job engineer, resident, and project engineer on projects at such widely separated points as Edmonton, Canada, and in Illinois, Michigan, San Francisco, and other places.

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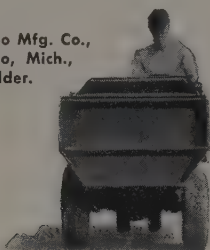
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member metal building manufacturers association

As of Jan. 1, eight appointments took place in the engineering staff of the Arizona Highway Department. **Cecil B. Browning**, deputy state engineer, was appointed assistant state engineer in charge of construction and maintenance. **J. R. Van Horn** was appointed deputy state engineer from his prior position as

assistant state engineer. **Angus Chadwick**, Flagstaff district engineer, moved to the Advance Planning Division at Phoenix as engineering assistant, while **Patton N. Syler** took over as district engineer of District 5 at Flagstaff. He was formerly assistant engineer in the Contracts & Specifications Division.

Kalamazoo Mfg. Co.,
Kalamazoo, Mich.,
is the builder.



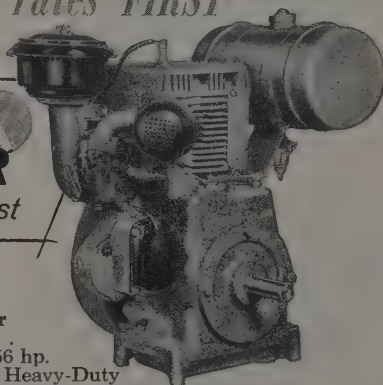
Built by Creative
Metals Corp.,
Emeryville, Calif.



Monroe Concrete
Trucks, built by
John's Mfg. Co.,
Grand Junction, Mich.

WITH
Professionals
WISCONSIN-
POWERED equipment
always rates FIRST

full-time
POWER
at its best



• Interesting fact! The great majority of the men earning their living in the construction field . . . *men in the know* . . . rely on 3 to 56 hp. equipment powered by Wisconsin Heavy-Duty Air-Cooled Engines. These men know that the percentage of profit often rides on the rugged dependability of the equipment working on the job. And they know, from actual experience, that Wisconsin Engines deliver this kind of dependability . . . *full time power* . . . day after day, month after month.

Wisconsin Engines are built by engine specialists. All skills and know-how are funneled in *one direction*, producing *only one product* . . . air-cooled engines, 3 to 56 hp.

"Down time" is cut to an absolute minimum when you specify equipment powered by Wisconsin Heavy-Duty Air-Cooled Engines. Local availability of parts and service through 2,000 service stations . . . several near you. Write for bulletin S-223, describing all models.

Sales and Service Supplied by these Distributors and their Service Stations:

CENTRAL EQUIP. CO., E. 45th at Garfield, Denver, Colo., Distributor for Colorado and Southern Wyo.
• 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 Idaho and Western Wyo. • OAKLEY WHOLESALE, INC., Boise, Idaho, Distributor for Western Idaho • STAR MACHY. CO., 241 Lander St., Seattle; East 415 Sprague Ave., Spokane, Distributor for Washington and Northern Idaho • INDEPENDENT DISTRIBUTORS, 27 N. E. Broadway, Portland, Ore. • E. E. RICHTER & SON, INC., 6598 Hollis St., Emeryville, Cal., Distributor for Northern Cal. and Western Nev. • CONTINENTAL SALES & SERVICE CO., 3817 So. Santa Fe Ave., Los Angeles, Cal., Distributor for Southern Cal. and Southern Nev. • MIDLAND IMPLEMENT CO., INC., Billings, Mont., Distributor for Montana and Northern Wyo.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

... for more details, circle No. 51 on Reader Service Postcard

J. R. Robinson, assistant state engineer (advance planning) was named senior assistant state engineer. Other appointments were: **W. S. Johnson**, engineer of standard specifications, who became engineering assistant to Browning; **Charles I. Smith, Jr.**, administrative officer, appointed manager of the Planning Survey Division, and **A. J. Medford**, planning survey engineer, named engineering assistant to the assistant state engineer, plans and designs.

* * *

Haas & Haynie, general contractors, have moved into new offices at 244 Pine St., San Francisco. The new headquarters are across the street from offices occupied by the firm since 1952 when **E. T. Haas** and **Robert Haynie** became associated in the present construction company.

Also announced is the appointment of **Jackson Moffitt** as an official of the company, with the title of vice president of sales. He has been with Haas & Haynie since 1953.

* * *

Walter H. Cates is the newly installed president of the Los Angeles Section of the American Society of Civil Engineers. Cates is manager of the hydraulic division of Consolidated Western Steel Corp., Los Angeles.

* * *

C. F. Pinkerton, who was materials engineer for the Bureau of Reclamation at Haystack Dam, Madras, Ore., is now located at Camp White, Ore., where he is construction management engineer in the USBR Rogue Project office.

* * *

James M. Newton, highway engineer with the Bureau of Public Roads, Portland, Ore., is responsible, with others, for reviewing and approving geometric designs for Federal-aid projects, particularly on freeways and interchanges, in the four Northwest states.

* * *

Tudor Engineering Co. has expanded its office space to accommodate a larger engineering force, and is now located at 595 Mission St., San Francisco. **Ralph A. Tudor**, **Leslie A. Helgesson**, and **Carl A. Trexel** are partners in the engineering firm.

* * *

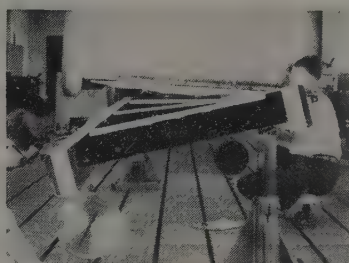
Fred W. Crocker, 72, died suddenly in India of a heart attack on Dec. 29. An engineer of note, he was widely known among the construction fraternity of the West, dating back since before Hoover Dam which he helped to build. For the past two years he was employed on a large project under construction in Calcutta by Kaiser Engineers.

Traction when you need it!

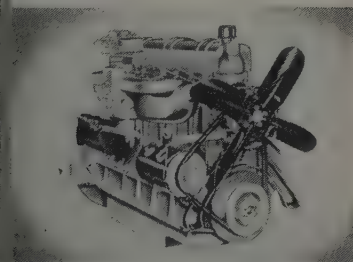
Just one reason why contractors find International Trucks cost least to own!



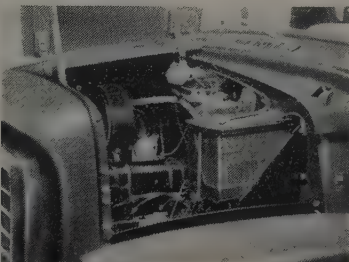
Negotiate rougher terrain—carry more load in less time—cut operating expenses with rugged all-wheel-drive.



Superior strength Steel-Flex frames test-proven to combine durability with proper flexibility for extra truck life.



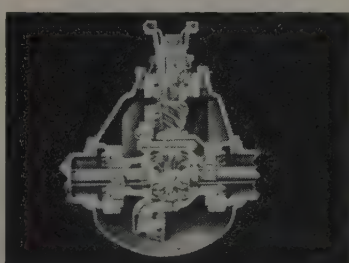
Dependable gasoline or LPG "six" power and economy backed by INTERNATIONAL all-truck engine leadership.



Easy servicing. Units in the wide engine compartment under the hood are located for quick, uncramped servicing.



Easy to handle in tight spots or on the roughest terrain with true geometric steering, cam and roller mounted gears.



Maximum load hauling, long life axles. Front and rear axles are full floating single reduction type.

INTERNATIONAL Trucks with *all-wheel-drive* are truck-built tough to make roads where there are none.

You get more traction, more sure-footed power because *all wheels are working*. They move you over sink-holes, mud, sand or snow . . . they grab hold to pull business-sized loads up the steepest grades.

What's more, *every* all-wheel-drive INTERNATIONAL Truck is all-truck manufactured in one plant. You get dependable performance that makes the most out of every workday, plus lasting economy of operation and long life. That's why INTERNATIONAL Trucks cost *least* to own. Fleet cost records prove* it.

When it's time that you need a truck, remember the line that's been heavy-duty sales leader for over a quarter of a century. Then see your INTERNATIONAL Dealer.

*Signed statements in our files, from fleet operators throughout the U.S., back up this statement.



INTERNATIONAL HARVESTER COMPANY, CHICAGO

Motor Trucks • Crawler Tractors
Construction Equipment • McCormick®
Farm Equipment and Farmall® Tractors

cost least to own!

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BONDED BUY

an exclusive of
your Caterpillar
Dealer



You *know* what you're buying from your Caterpillar Dealer. On used Cat-built equipment he offers you a "Bonded Buy" backed by his Guarantee Bond up to \$10,000—your assurance of satisfactory performance and guarantee of all parts.

Look for the "Bonded Buy" symbol—your guarantee of the best buy in used equipment.

Ask your Caterpillar Dealer about his "Certified Buy" and "Buy and Try" guarantees on used equipment, too. For the *safest* buy on the market, see your Caterpillar Dealer.

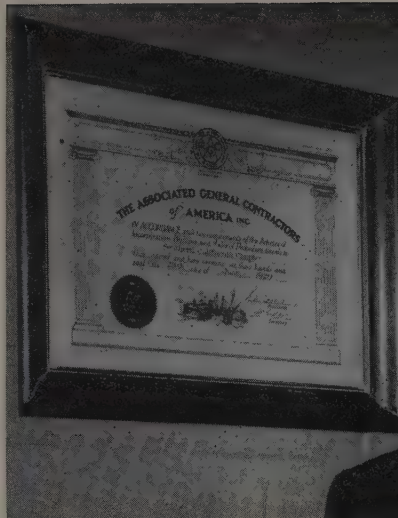
Caterpillar Tractor Co.,
San Francisco, Cal., Peoria, Ill., U.S.A.

CATERPILLAR

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Caterpillar Tractor Co.

**BEST BUY IN NEW
AND USED EQUIPMENT**

... for more details, circle No. 54



D. E. Kelbey has been installed as president of Southern California Chapter, Associated General Contractors. Kelbey is vice president and general manager of Alex Robertson Co. He succeeds J. P. Cagle of A. Teichert &

Son, Inc., who now assumes the office of treasurer. Newly elected vice presidents for 1958 are John L. Connolly of Connolly Pacific Co., R. H. Johnson of Del E. Webb Construction Co., and S. A. Wattson of R. A. Wattson Co.

John F. Boespflug of J. C. Boespflug Construction Co. has been elected 1958 president of Seattle Chapter, Associated General Contractors. He succeeds Gordon A. Mowat. Also elected to serve as officers are Andrew P. Wick of Wick Construction Co., and Fred C. Ness of Ness Construction Co., vice president; Larry Baugh of Baugh Construction Co., secretary, and John Frodesen of Farwest Construction Co., treasurer. Colton D. Harper is Chapter manager.

Seattle, Wash., where he is working as architect and engineer liaison for Bomarc missile base construction.

* * *

Charles W. Thomas, hydraulic engineer, U. S. Bureau of Reclamation, Denver, Colo., recently returned from a 2-month assignment in Japan. During this period he acted as consultant to the Japanese Government on the hydraulics of spillways and other works associated with storage dams for irrigation development.

Lt. Col. Raymond W. De Lancy has returned to Oregon and has reported for duty with the Portland District Corps of Engineers, following two and a half years in Alaska. Eventually he will assume the duties of Lt. Col. J. Newton Cox as executive officer. Colonel Cox is to relieve Lt. Col. Joseph F. Garbacz as deputy district engineer when the latter assumes another assignment in April.

* * *

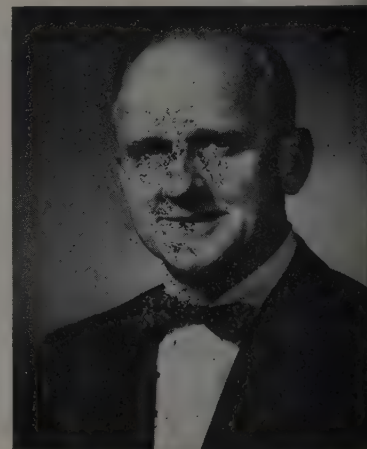
Election of two new officers of J. H. Pomeroy & Co., Inc., San Francisco, is announced. Walter P. O'Farrell, chief estimator, has been named a vice president and Earl T. Van Geem, chief engineer—overseas support operations, has been elected assistant vice president—foreign operations.

* * *

Joseph P. Condrey has rejoined the Arizona Chapter of Associated General Contractors as executive secretary after an absence of nine months. He has 23 years of service with the Chapter.

* * *

Lorn E. Anderson, formerly employed by the contracting firm of MacDonald, Young and Nelson, Inc., San Francisco, has joined the Boeing Airplane Co. at



J. ALBERT PAQUETTE, well known engineer of San Francisco, and newly elected president of the Structural Engineers Association of Northern California. A licensed structural engineer and an active member of the American Society of Civil Engineers, the new SEAONC president is a partner in the firm of Kellberg, Paquette & Maurer.

WESTERN CONSTRUCTION—March 1958

... for more details, adv. opp. pg., circle No. 55 on Reader Service Postcard ➡

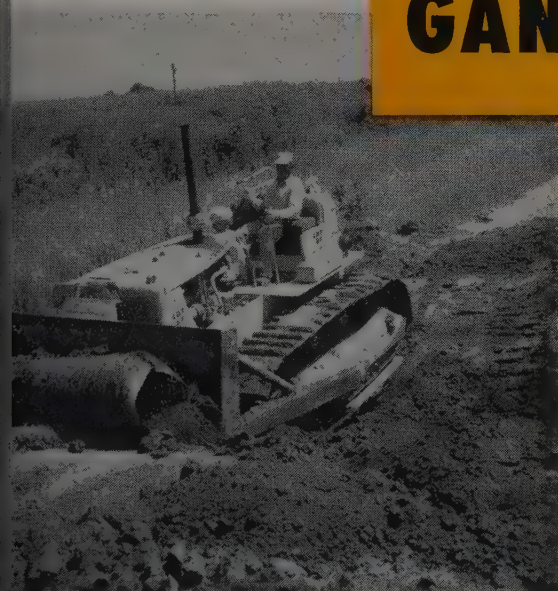


rather Brothers' Cat D7 Tractor opens up road to remove steel culvert before laying pipe.



Along highway's right of way, heavy stump with extensive root formation is 'dozed out.

ONE-MAN GANG-D7



one-man gang next removes old steel culvert and smooths out bed for pipe.



Final step, before covering and cleaning up, is laying the concrete pipe itself.

ast operator and versatile Cat D7 Tractor with match-
g No. 7S Bulldozer, gang up to handle a multiple-
ore road job on Highway No. 22 between Webster
d Keswick, Iowa. Contract called for 'dozing tree
umps, brush removal, cleaning and then laying 640 ft.
24-in. pipe, 582 ft. of 30-in. pipe, 198 ft. of 36-in.
pe and 84 ft. of 42-in. pipe.

This is the fourth Caterpillar crawler Tractor that
rather Brothers, of Russell, Iowa, has purchased. "We
st wouldn't consider any other make," says Jack
rather. "We like this machine's stability—its new oil
utch—its good vision, and hydraulic track adjusters!"

CAT track-type Tractors are rugged performers.
he heavy-duty Caterpillar Engine lugs without fouling
n the heaviest jobs, and its horsepower is honestly

rated. The D7's operating weight of approximately
34,000 pounds is well balanced for maneuverability.
The hydraulically boosted steering and quick-reversing
transmission keep production high and are easy on the
operator. For a practical demonstration of what these
better-built machines can do, call your Caterpillar
Dealer TODAY for a demonstration; he's as near as
your phone.

Caterpillar Tractor Co., San Francisco, Cal.; Peoria, Ill., U.S.A.

CATERPILLAR

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**THE YELLOW MACHINES
WITH LOW TOTAL COST**

SUPERVISING the jobs

Wayne A. Lowdermilk, superintendent; J. O. Gibson, assistant superintendent, and Lloyd C. Smith, office manager, are key men on a \$1,571,000 contract for grading, structures, and surfacing on 2.8 mi. of highway through the city of Idaho Springs, Colo. Foremen on this job, under way since Oct. 21 by Z. H. Lowdermilk, Inc., the successful bidder, are: Earl P. Archuleta and Thomas F. Dean, grade; F. W. Schooley, master mechanic; Anton M. Jensen, drill; Eli W. Kramme, grade; and Ted Kinsman and Reuben Richmond, labor. Work will be finished the end of June.

* * *

James Abshire is supervising a recent award to Gardner Construction Co. covering a highway job of grading and structures, from southeast of Toponas, through McCoy, in Routt and Eagle counties, Colo. Excavation foreman is Clifford Gray, and Bill Hasse is structure superintendent. Scheduled for completion June 1, the \$239,600 job started Dec. 2.

* * *

Lloyd E. Barling, oiling superintendent, and Lewis R. Barling, grading superintendent, are in charge of street work soon to start in Moorcroft, Wyoming. This grading and surfacing job went to W. E. Barling, Inc., on a low bid of \$145,052. Contractor expects to have the project finished by June 1.

* * *

J. W. Cherf, project manager, and Charles Stierwalt, superintendent for Cherf Bros. and Sandkay Construction Co., Inc., are in charge of grading and

surfacing the Adams road and Hiawatha Valley undercrossings in Grant County, Wash. Foreman on this \$159,345 job, which started in mid-October, is Harry Fish. Job will probably end about mid-May. The same three men are in charge of a \$157,228 Cherf-Sandkay award for grading and surfacing the Morrison road and May Valley undercrossings also in Grant County.



G. L. "GIB" CRISPIN, a supervisor for Gibson & Roberts Construction Co., who recently moved to Arizona, where he is engaged in access tunnel and powerhouse construction work at Glen Canyon Dam. Gib's prior job was on Gibson & Roberts' contract at Casitas Project in Southern California.

Larry Mahan is superintendent for S. Birch Inc. and S. Birch & Sons, contractor on 7.3 mi. of grading and gravel surfacing the Sunburst-Sweetgrass-westerly loop on Toole County, Mont. Assisting as foremen on this \$173,122 job are Carroll Graves, Bill Ille and Larry Heilman. Tony Wells and Austin Tayer

are mechanics, and John Nykalayou, service foreman. Job has been under way since Nov. 4 and will probably end August 1.

* * *

James Stephenson is superintending Oliver W. Scott & Son Paving Co.'s \$340,958 recent award for 3.2 mi. of grading and surfacing near Garden Grove, Orange County, Calif. General foreman is Perry Scott, and Bert Van Dyk is grading foreman on the work which starts in February and will be finished in August.

* * *

Sam Fritz has been appointed to superintend construction of residences in the new town of Page, part of the Glen Canyon Unit, Utah-Ariz. Contract which covers erection of 200 residences for the Government and 150 private homes was awarded to Page City Constructors on a low bid of \$3,157,580. A 2½-year project, work is expected to start in March.

* * *

John J. Walsh, project manager, Lester E. Phillips, superintendent, and James R. Kavanagh, construction foreman, key men for Kavanagh Building Co., are in charge of construction of 522 dwellings near Milpitas, Calif., a \$6,264,000 undertaking, work on which started Oct. 6.

* * *

George Pasch is general superintendent for C. R. O'Neil, who successfully bid a grading job on the Oregon Coast Highway in Coos County at a figure of \$906,819. Assisting Pasch as grade foreman is Gilbert Ross. With late fall set as the finish date, work got started Dec. 2 last.

* * *

W. R. Reiman is general superintendent, and Ken Rowe is job superintendent handling a \$150,009 bridge construction over the North Platte River in Goshen County, Wyo., for Riedesel-Lowe Co., contractor. Work started Dec. 1 and will be finished June 1.

(Continued on page 107)

PROFIT-BUILT by ABC...for MORE earning power!

... AS MUCH AS ONE TON MORE EACH TRIP

This revolutionary hard-working aluminum hauler features a new section design which adds 4 to 6 inches to the width and permits a payload gain of more than 1800 pounds.

Its unique, interlocking construction and integral flooring can be designed to meet special size hauler requirements. This

13' dump 10-12 yd. body weighs only 1350 pounds.
Call or write for information.

Aluminum body corporation

Washington Blvd. at Vail, Montebello, Calif. (E. Los Angeles)
Mailing Address:
P.O. Box 28, Montebello, Calif. • RAYmond 3-4621
Trailers • Truck Bodies • Dump Truck Bodies
Sleeper Cabs • Edbro Front Mount Hoists

... for more details, circle No. 56 on Reader Service Postcard

WESTERN CONSTRUCTION—March 1958

ides with the bit through rock
...speeds big bore hole cuts...

GARDNER-DENVER

"MOLE-DRIL"*

TRADE-MARK

ere's added power for your rotary rig—hard-
tting, in-the-hole power. "Mole-Dril" speeds
ep hole drilling in ore and overburden.

s easy to use—the "Mole-Dril" screws di-
ctly onto the bottom of standard drill pipe . . .
tungsten-carbide "X" bit screws directly onto
ill tappet. That's all the "make-ready" it takes
send the "Mole-Dril" through rock.

s powerful—"Mole-Dril" delivers more foot-
ounds of energy to the bit than any other drill
its size. Every pound of hammer energy is
ransferred directly to the bit.

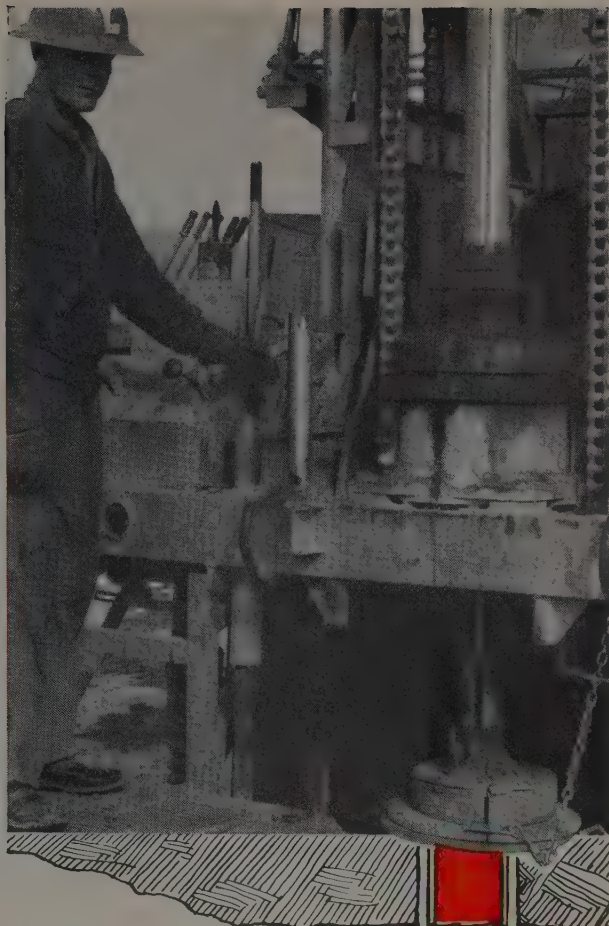
s rugged—the "Mole-Dril" has only three
oving parts, nine major parts. This simple, rug-
ed construction gives the "Mole-Dril" lasting
ep hole drilling durability.

Two models available:

Model AM4 for drilling $4\frac{3}{4}$ " diameter hole.

Model AM6 for drilling $6\frac{1}{2}$ " diameter hole.

Write for bulletin.



**"Mole-Dril's" positive
hole cleaning action**

Air at full line pressure
flows through drill's
air blowing tube di-
rectly to bit . . . this
direct air stream keeps
cutting face clean re-
gardless of drilling
depth.

Drill exhaust air
passes out up-cast air
ports and gives cut-
tings an additional
out-of-the-hole boost.



ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

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WESTERN BRANCH OFFICES: Butte, Mont.; Denver, Colo.; Los Angeles,
Calif.; Salt Lake City, Utah; San Francisco, Calif.; Seattle Wash.; Wallace,
Idaho; El Paso, Texas



... for more details, circle No. 57 on Reader Service Postcard

CONSTRUCTION BRIEFS

Promising new technique —

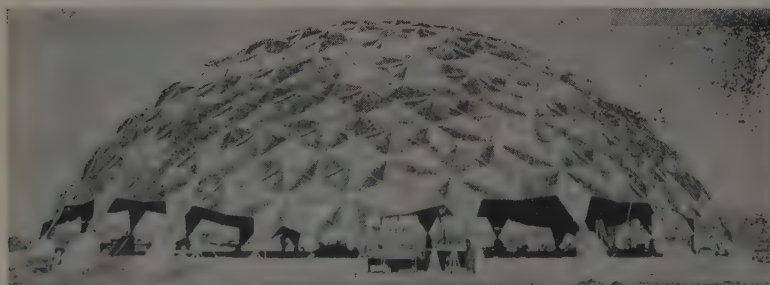
Balloon used to erect dome



Test inflation of balloon



Beginning of dome construction



Dome assembly completed

Building by balloon

A GIGANTIC balloon has proved successful for the erection of Kaiser Aluminum domes and has opened up the possibility that the technique might be feasible in other types of construction, particularly steel tanks.

The 16,500-sq. ft. building, located in Abilene, Kansas, is the fourth Kaiser Aluminum dome to be built. It was erected by the Fi Fo Construction Co., a licensed fabricator and erector of the domes, to house production facilities for the Fi Fo Conveyor Co., a manufacturer of pneumatic conveyor equipment. Both companies are divisions of Vacu-Blast, Inc., Belmont, Calif. The previous domes were erected with the use of 96-ft. steel towers with cables and winches to provide the lift. This method required adequate footings and sufficient span for guying. As there is considerable interest in placing these domes on top of existing buildings, a problem arises in finding sufficient span for guying the tower.

The job of making the balloon was given to Industrial Covers, Inc., of San Francisco. Their problem was to design and fabricate pneumatic bags capable of erecting the aluminum dome by the thrust of air pressure. The dome is 145 ft. in diameter and 49 ft. high. It weighs 39,000 lb. An additional 60,000 lb. must be allowed for wind load, counter force of tie-downs and other factors. The balloons must support the dome at specified points and must not interfere with workmen securing panels to the periphery. And, provisions must be made for guying and controlling the bags.

The solution was just as unusual as the problem. The design finally arrived at consisted of two bags. The upper bag was 50 ft. in diameter by 24 ft. high with a top sector paralleling the arc of the dome. The lower bag was shaped like a tub with a central depression in which the small bag rested. The shoulders thus formed were to bear against the dome at a radius point calculated to give the required support to the structure. The lower bag was 95 ft. in diameter, 33 ft. high in the center and 46 ft. high at the shoulders. The small bag was in two sections and the large in three. Sequence called for the small bag to carry the load until the dome reached a specified diameter. At that point the large bag was to be inflated and the two combined to provide lift until completion.

A scale model was first built and procedures were worked out for guying and controlling the operation. A total of 20 Griphoists, a manually operated hoisting device using single line wire rope and unlimited cable travel, were used during the lifting. The bags were made of 4,200 sq. yd. of DuPont's Hypalon, a coated nylon weighing 14 oz. per sq. yd.

After a test inflation on the side, the work began. Total time needed was 22 working hours by a 38-man crew.

The bags were designed to operate under pressure of 20 lb. per sq. ft. The

LOW...THE LORAIN-26

ers you even more
new advantages

More and more quality features are being added constantly to the heavy-duty, 3/4-yd. Lorain-26 to put it even further ahead in high-speed, productive output and lower maintenance.

For instance, today, all Lorain-26's are equipped with an improved, vertical swing shaft, mounted on anti-friction bearings. Also, all horizontal and vertical power shafts, except the infrequently-used boom hoist, now revolve on anti-friction bearings. Even the turntable rollers are so mounted.

Draglines are now equipped with a new style, fully revolving trunnion-type fairlead that adds weeks to cable life.

And look at these additional features . . . "E-Z" action operating controls on anti-friction bearings—five identical operating clutches—Hydra-Ease power operation of all crawler functions—the exclusive square-tubular-chord crane boom for lifting more at greater reaches—optional extra-wide crawler for even greater crane capacity—extra-strong, precision drop-forged treads—hydraulic coupling or torque converter.

You get all these advantages in this feature packed, heavy-duty 3/4-yd. machine that already has proven itself in the field. Also, investigate the top-notch service and parts facilities of your Thew-Lorain Distributor. His contribution to years of trouble-free operation is another part of what you get when you buy a Lorain.



**THEW
LORAIN**
*reliability
in action*

THE THEW SHOVEL CO.
LORAIN, OHIO, U.S.A.

ANDREWS EQUIPMENT SERVICE
Spokane, Wash.

ATLAS EQUIPMENT COMPANY
Salt Lake City, Utah

CENTRAL MACHINERY CO.
Great Falls, Havre and Lewistown, Mont.

COAST EQUIPMENT CO.
San Francisco 3, California

GENERAL EQUIPMENT CO.
Reno, Nevada

**INTERSTATE
TRACTOR & EQUIPMENT CO.**
Portland and Eugene, Ore.

MCCOY COMPANY
Denver 17, Durango, Grand Junction,
Pueblo and Sterling, Colo.

MOUNTAIN TRACTOR CO.
Missoula and Kalispell, Mont.

NASH-DAVIS MACHINERY CO.
Billings and Bozeman, Mont.; Greybull, Wyo.

NEW MEXICO EQUIP. CO.
Albuquerque, New Mexico

LEE REDMAN EQUIP. CO.
Phoenix, Arizona

SANTA FE EQUIPMENT CO., INC.
Los Angeles and San Bernardino, Calif.

SOUTHERN IDAHO EQUIPMENT CO.
Idaho Falls, Boise and Twin Falls, Idaho

TRACTOR & EQUIPMENT CO.
Sidney, Miles City and Glasgow, Mont.

WORTHAM MACHINERY COMPANY
Cheyenne, Casper, Sheridan and
Rock Springs, Wyo.

YUKON EQUIPMENT INCORPORATED
(for Alaska)
Seattle, Wash.
Fairbanks and Anchorage, Alaska

large bag was so constructed that personnel could enter them while under load for inspection. In the event of damage occurring to one of the bags, it was known that the strength of the nylon fabric would prevent the size of the cut from being extended by the internal pressure. It was also possible to calculate blower capacities necessary to offset the loss of air through a large hole so that a cut 5 or 6 ft. long would not be a problem. And since the bags could be entered at all times, any necessary repairs could be quickly made.

Air supply is a bank of three centrifugal blowers, each with a capacity of 4,450 cfm. One was led to the small bag through an 18-in. duct and was equipped with a sliding gate to adjust volume. The other two blowers were coupled to a "Y" with separate gates on each leg so that either or both could be supplied through a 26-in. duct to the large bag. The bags package into a transport area equivalent to a 1½-ton truck bed.

If the unusual technique is found feasible in steel tank construction, all welding would be done on the ground.



Bus converted to field office



A STANDARD INTERCITY motor coach has been converted to a combination office and home.

The coach was built as a demonstrator by the California Coach Co., Inc., of Springville, Calif., to show the possibilities of converting interiors of motor coaches to special uses. A significant feature is that it is equipped with numerous electrical conveniences operated by its own source of power, making the vehicle entirely independent of any out-

side power source. The conveniences can be operated when the coach is on the move or when parked in areas far from public power lines.

Power is supplied by a 3,500 watt electric plant, Model 3.5AM21, manufactured by Kohler Co., of Kohler, Wis.

The interior of the coach is laid out with a U-shaped lounge in the rear which will sleep two people, seat eight. In the center section are a two-unit hot plate, an 8-cu. ft. refrigerator, a 1,000-watt electric water heater, bathroom, and stainless steel bar with sinks. The forward end is equipped as an office, with cabinets, counters, a desk and drafting board. The coach has a pressurized water system.

The vehicle was converted from a standard 29-passenger intercity coach manufactured by the Flexible Co. of Loudonville, Ohio.

Nailing wood to steel

THERE ARE a multitude of ways to fasten wood to steel in light structures but probably the fastest is with the use of a powder actuated tool to actually nail the wood to the steel. Builder Ray D. Nichols of Oakland, Calif., recently employed this process in a home project designed by architect Thorne of Berke-

ley. The contemporary residence is supported by a series of six continuous rigid steel framed bays. The bays were fabricated by Herrick Iron Works of Oakland from steel supplied by Bethlehem Pacific Coast Steel Corp.

Since the bays or ribs could be fabricated in the shop, field erection costs were kept at a minimum. Erection took just two hours with only three field welds. The rest of the frames were bolted

to concrete piers. As soon as the erection was completed carpenters moved in and fastened wooden 2 x 4 sills to the roof and floor steel joists, on 4-ft. centers, with the use of the powder actuated tool. Herrick Iron Works also used the tool



in plumbing up the rigid frames during erection. As each frame was leveled, the steel could be quickly braced by nailing temporary bracing. Bracing was later peeled off and the fastener was cut from the steel with a cold chisel.

Nichols used a 3-in. long Ramset fastener No. 3320. The charge was a rebar crimp load No. 225. The fastener is .21 in. in diameter and zinc plated. It is made of austempered steel with a Rockwell C hardness of 48 to 52, a tensile strength of 230,000 to 280,000 psi. at shear strength of from 160,000 to 170,000 psi. When fired, it pierces a 14-ga. disk of steel which acts as a washer between the fastener head and the wood. The point of the fastener is undamaged after piercing ¾ in. of steel. The steel sections to which Nichols framed his wood sills were Bethlehem 12-in. wide flange 27-lb. sections. The compression of the steel around the fastener created by its penetration gives great strength to its holding power. The pull-out load for this type of fastener would have to overcome 6,000 lb.

Improvements in power-actuated tools which have been on the market for at least 8 years have resulted in producing a slow burning charge capable of driving fasteners through 1-in. steel plate. The charges used in framing wood to steel are 22 caliber. Each fastener operation costs about 22.5c.

Drilling in permafrost

A NEW METHOD to beat permafrost and protect pilings on which White Alice installations at Bethel are constructed is to be tried by the U. S. Army Engineer District, Alaska.

The work consists of encasing, with metal collars, approximately 71 steel pilings whose viscosity is little affected

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by cold temperature. The collars are to be filled with a special mixture of wax and oil. This scheme prevents the freezing ground from adhering to the pile and heaving it up.

Military defense construction at Bethel—an important link in the communications and warning system which stretches across the Far North—has gone forward under the Alaska District since 1953. Work completed or now being constructed under the Alaska District, totals more than \$7,000,000 in this area.

Just completed and turned over to the U. S. Air Force by U. S. Army Engineer District, Alaska, are White Alice and Tacan facilities. Alfred G.

Rex, supervisory construction engineer, represented the District Engineer in the brief ceremonies October 17 and 18.

Much of the growth of Bethel from an isolated Arctic coast native village to a small incorporated city has resulted from Alaska District construction. Contracts recently turned over to the Air Force or to be completed shortly include: a military installation (Aircraft Control and Warning) built by Morrison-Knudsen and Peter Kiewit Sons' Co. under a \$4,298,239 contract; TACAN facilities built by Nordin Construction Co. under a contract for \$134,285; and White Alice built by Morrison-Knudsen on a \$1,722,779 contract. Getting under way is a communication center.

Concrete design manual

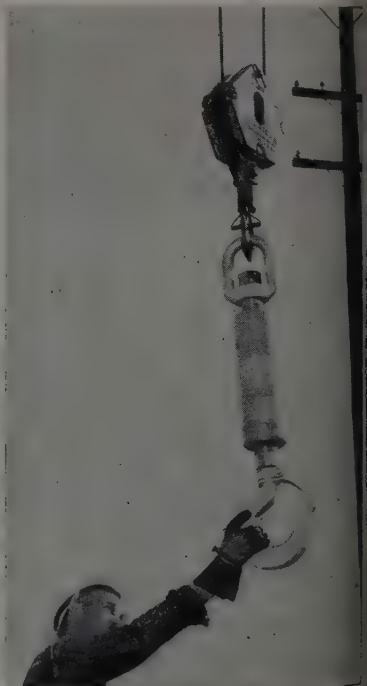
A NEWLY REVISED manual, which simplifies many of the problems in designing reinforced concrete structures, has been published by the Concrete Reinforcing Steel Institute of Chicago. Designs are based upon the new 1956 ACI Reinforced Concrete Building Code.

Price of the new manual is \$6.00. It may be obtained from the Concrete Reinforcing Steel Institute, 50 South Dearborn St., Chicago 3, Ill. The publisher offers a money-back guarantee of satisfaction.

Insulated safety hook

DURING THE PAST two years more than 20 men have been killed in California from accidents caused by cranes contacting high voltage lines. A number of states have passed legislation calling for the indictment of crane operators in such cases.

The new insulated safety link, manufactured by E. D. Bullard Co. and field-tested for over two years, protects hook tenders, riggers and men who work with "pullers" on energized electrical conductors from such accidents.



Crane booms and cable may be energized as much as 50,000 volts without danger to men handling hook or load.

Bullard Insulated Safety Links are manufactured in many sizes from ½ ton to 25 tons with dielectric strength from 1 to 50 kv.

Literature is available upon request from E. D. Bullard Co., 2680 Bridgeway, Sausalito, Calif., and from your Bullard safety equipment distributor.

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Now equipped with a new and larger Onan 12.9 hp engine, the new Miller AEA-200-L produces a full 225 amperes of continuous rated, high cycle welding current or, 5 KW of 110/220 ac power for operation of power tools, lights, milking machines, etc., or, 1 KW of dc power.

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UPERVISING
(Continued from page 100)

Ben W. Morris, Jr., for many years assistant superintendent for L. E. Dixon Co., general contractor, and a former Navy Seabee, has been appointed by the City of Los Angeles as coordinator, a position created by the City Council to focus forces on the "Los Angeles Beautiful" program and its Urban Community Crusade. Morris had been in the Bureau of Street Maintenance since 1953.

* * *

W. R. Veale, project superintendent, and **Marshall A. Patch**, general superintendent, are working for S & Q Construction Co. which is now finishing up a \$480,000 construction of a sewage treatment plant at Suisun, Calif., for the Fairfield-Suisun Sewer District. Other men who have been working in key positions on this project are **A. J. Viale** and **Charles Curry**, mechanical superintendents, and **Arnold Pehlke**, carter superintendent.

* * *

Harry Claterbos, Jr., **R. H. Hazard**, and **Ray Senior**, project manager, superintendent, and engineer, respectively, comprise the key men on a \$2,011,540 project which S. S. Mullen, Inc., has been working since last Nov. 1. Construction consists of road bed, drainage structures, and bridges on 13.3 mi. of U. S. 95, from Big Lost Bend to Nez Perce counties, Idaho. Mullen expects to have the work finished by June 1, 1959.

* * *

W. "Mac" McGlothlin is superintendent of an \$896,012 recent award to Gibbons Reed Co. covering grading, draining, excavating for three highway tunnels on the Yellowstone Park-Cody road from Buffalo Bill Dam east in Park County, Wyo. Office manager is **Robert Duclaw**, and master mechanic is **Lewis Nielsen**. Work has been going since December, with October set as the finish date.

* * *

Don McGuire, superintendent, **Robert Gelstein**, field accountant, **Harry Woods**, superintendent, are key men on a Northwestern Engineering Co.'s \$398,000 contract for grading, surfacing and structures east and west of Joe's in Yuma County, Colo. Job started in mid-November.

* * *

Lloyd J. Brooker, general superintendent for Erickson Paving Co., is in charge of a \$188,340 contract covering grading and surfacing, and structures, on Union Road to Salmon Creek in Clark County, Wash. Equipment superintendent is **Robert G. Schosteen**. Under way as of Dec. 1, work is expected to be finished the end of July.

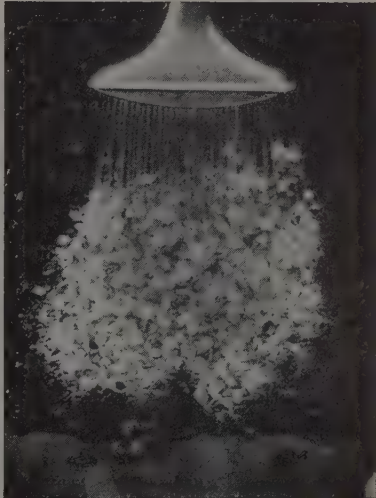
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Proof... the superior coating and holding properties of new CATIONIC Bitumuls are clearly demonstrated in this test. Note almost-complete washout of the conventional road binder (above); while CATIONIC Bitumuls (below) firmly holds the crystal-silica chips used for these test mix samples.



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Portland 8, Ore.

Nick Kohler, superintendent for Colorado Constructors, Inc., is in charge of grading, structures and surfacing 6.9 mi. between DeBeque and Palisade in Mesa County, Colo. Other key men on the job, which got under way in mid-October, are Ed Fagin and "Slim" Howard, dirt foremen; Gene Schurer, timekeeper, and Jay Hested, pipe foreman. The job is expected to be finished Aug. 1.

* * *

Joseph Muscolo, project manager; Ed Morris, superintendent; R. L. Bukey, master mechanic, and Leroy L. Fuller, job office manager, are top men working for Match, Sundt and Bevanda, successful bidder on a State Highway job in San

Bernardino, Calif. This \$2,328,523 contract is for 8.6 mi. of grading, surfacing and construction of six bridges. Contract is expected to be completed in November.

* * *

Vern Mulherron, project superintendent for Mardian Construction Co., is in charge of construction of underpass, grading and surfacing on the Quartzsite-Wickenburg highway in Maricopa County, Ariz. This \$175,173 job has been under way since December and will be finished about April.

* * *

E. C. Hooper, general superintendent, and Ferrin Burgess and Cliff Spriggs,

superintendents, are head men on construction of Emil Buchser High School in Santa Clara, Calif. W. J. Nicholson was awarded the contract on a low bid of \$1,912,710, got the job started in December, and anticipates it will be finished in August.

* * *

Carl Larson is job superintendent on construction of Joaquin Miller Junior High School, Oakland, Calif., a \$1,321,518 award to F. P. Lathrop Construction Co. Of frame and tilt-up construction, project has been under way since December, and according to the contractor will be finished January 1959.

* * *

N. Austin Ayers as project superintendent is directing construction of a 1-story building to house Chrysler Corporation's sales and training center at Anaheim, Calif. Al Babich is timekeeper and accountant on this \$960,000 project. Construction has been under way since November, and according to William Curlett, general superintendent for the contracting firm of Haas-Haynie-Fransen, successful bidder, the work should be finished about May.

* * *

D. J. Bressi is general superintendent and Leon Pierce is general foreman for Lord & Bishop, Inc., on this contractor's recent award for construction of New Hope Landing Bridge and approach across South Fork Mokelumne River west of Thornton, and construction of bridge in San Joaquin County, Calif. This \$231,846 job got under way in mid-December, with Aug. 1 next set as the finish date.

* * *

Dick Chafin, general superintendent and Paul Shaw, project engineer, head the list of personnel working on a Madonna Construction Co. realignment and widening job in San Diego County, Calif. Work consists of 9.9 mi. of grading and surfacing between Rancho Santa Fe and Escondido, which started in December and will run till December this year. Other superintendents on this \$1,052,253 job are Ralph Pugh; Leo Johnson, structures; A. Luster, paving; and Robert Pate, master mechanic.

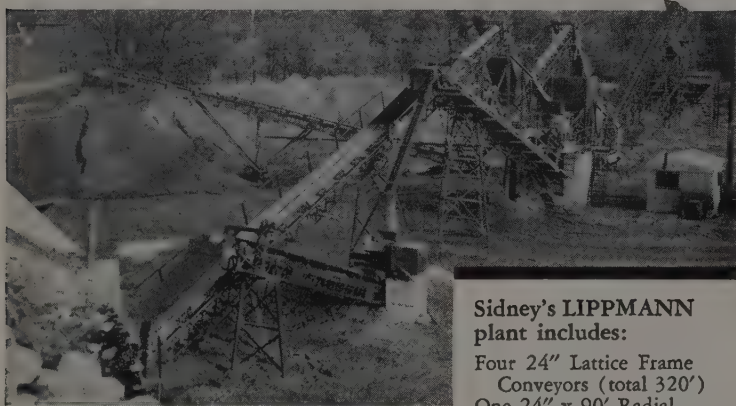
* * *

Robert J. Schurger, superintendent for Roth Construction Co., is in charge of grading and gravel surfacing on 10 mi. of the Jordan-Haxby highway in Garfield County, Mont. Foremen are Jim Dugan, John Jackson and Alvin Martens. Work on this \$255,611 contract started Oct. 20 and will end June 30.

Starting in April is another recent award to Roth covering 14 mi. of grading and surfacing the Armells Creel Highway in Blaine County, Mont. The same men will supervise this job, which Roth won on a low bid of \$477,952. The work is expected to be complete by Oct. 1.

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says William Milligan, Pres. The Sidney Sand & Gravel Co., Sidney, Ohio



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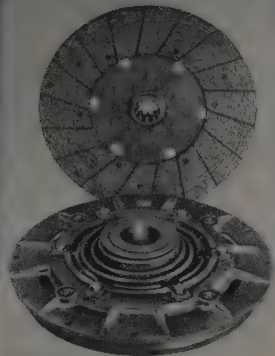
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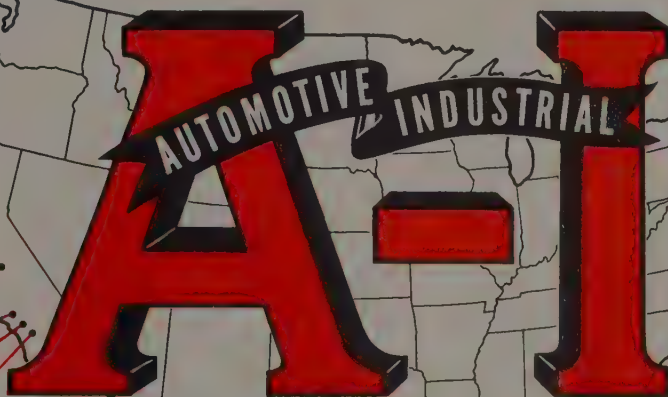
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109

Best manuals on concrete forms

To help you find your way through the diversity in the field of pre-fab concrete forms, here's a roundup of the best literature available on the subject. All the manuals reviewed are yours for the asking.

Universal

Universal Form Clamp Company has prepared a 56-page catalog which illustrates and describes their complete line of concrete forms, form ties, accessories, construction specialties and highway products. The Uni-Form system has three basic elements, the panel, which is plywood faced and steel framed, the tie, and the key. The forms are ready to use when they reach the job. They are made with the best grade plywood which insures maximum re-usage and provides a nailing surface, and are available in a wide range of heights, all of which fit one to another. All forms, ties, and accessories are very clearly illustrated and described. A particularly valuable feature of the catalog is a design section which presents easy-to-use data in tabular form to give the spacing of studs for safe value of sheathing, the spacing of wales for the safe value of studs, and the spacing of ties for the safe value of wales. The use of the table is fully explained on the facing page and an illustrative problem is carried through.

Also available is a 40-page set of typical engineering detailed drawings which show the application of Uni-Form panels to a basic foundation with constant wall thickness—with pilasters, bulkheads, corners, closures, fillers, alignment and bracing, and tie spacing.

... Circle No. 159

Superior

A handsome 62-page manual is available from Superior Concrete Accessories, Inc. The catalog explains with plentiful photographs and line drawings the company's extensive line of wall form ties and clamps for foundations, architectural concrete, engineering structures, water tight walls, and tilt-up slab accessories. Included are sections on accessories for form hangers and other products. A fine feature is the large fold-out table of concrete pressures in forms at summer and winter temperatures, recommended safe spacings of form ties, grouped by sizes of form lumber, and safe tie capacities. The data are presented as simply as possible for quick and easy reference.

Also available is a 4-page folder which explains the use of Superior's all-ply panel forms. The forms use only one working part which aligns and locks the form, receives the tie rod and holds the liner. The one working part, called the combination clamp, is operated by an

ordinary hammer. The 1 1/8-in. thick plywood panels to which are glued and nailed 1/2-in. plywood panels, come in standard sizes of 2 x 4, 2 x 6, and 2 x 8 ft., with special corners and fillers as required.

... Circle No. 160

Blaw-Knox

The 50-page book "Blaw-Knox Steel Forms for Concrete Construction" is built around 55 large job photographs of the many different types of forms that Blaw-Knox has engineered and fabricated for construction projects. By studying the photographs, contractors can develop construction ideas to aid bidding. Also the photographs should enable contractors to write more complete specifications when making inquiries concerning this highly specialized equipment. Of special interest are two pages of drawings which show practical design suggestions for the economical adaptation of steel forms from one shape to another. A condensed table lists the various types of forms made by the company. Further information and quotations are also available at no obligation.

... Circle No. 161

Williams

Williams Form Engineering Corporation, manufacturers of concrete form hardware, perhaps best known as originators of the she-bolt type form clamps, have published a 60-page catalog, spiral bound with a thumb tab index. Fully explained with drawings, photographs, and text is the firm's line of clamps, ties, anchors, locks, beam hangers, chairs, water stops, and other accessories. Many engineering tables are given which solve such problems as joist and stud spacing for different loads, concrete pressure for various temperatures and rates of form filling, most economical form design for maximum concrete pressures, allowable load per lineal foot for No. 2 yellow pine, etc.

Each item of form hardware described is accompanied with a full table of engineering specifications. Included are miscellaneous hints for concrete work and photographs of major projects where Williams hardware has been used. Special attention is called to a new wire form tie with a 5,000-lb. working load that sells for about one-third the price of the ordinary 3,000-lb. tie, and will work with any standard wedge.

... Circle No. 162

Sure-Grip

Another fine manual is the 50-page catalog published by the Dayton Sure-Grip and Shore Company. The catalog explains nearly 60 separate items, including several types of ties, wedges, hangers, spreaders, clamps, brackets, chairs, inserts, anchors, spacers, shores, 2 x 8 panels, etc. Four pages are devoted to accessories for tilt-up construction, and 3 pages to accessories for reinforced concrete.

This manual is outstanding for its manner of presentation. Many large drawings, simplified to retain only essentials, accompanied by brief factual text, illustrate each point.

... Circle No. 163

Atlas-Compo

From the Irvington Form & Tank Corp. you can obtain a manual on concrete forming with Atlas Compo equipment. The manual is essentially a bound set of 50 engineering drawings which cover in great detail how Atlas Compo forms can be used for every type of forming situation. The introduction makes it plain that what is intended is a field manual, not a catalog. The descriptions and drawings are fully detailed, and no attempt is made to over simplify complex forming problems. However, the drawings are simple to follow and show that a maximum use is made of standards parts. Twenty-five accessories are described and illustrated at the beginning so the reader can easily understand the drawings which follow. The basic units needed to assemble Atlas Compo forms are a wedge, a flat bar tie, and a wedge key.

The last 9 sheets, concerned with erection procedures, are particularly useful.

... Circle No. 164

Symons

An 8-page brochure describing specific application of its concrete forming equipment to heavy commercial and industrial work is now available from Symons Clamp & Mfg. Co. The brochure explains the Symons prefabricated forming system and shows uses of the forms on many different types of jobs. Also illustrated is a complete line of forms corners, pilasters, fillers, walers, bracing

d scaffolding, flat ties, base ties, column clamps, and a new culvert form which is designed to permit monolithic pouring on the walls and slabs of a culvert.

The basic hardware for the system consists of a bolt, a wedge and a tie. The panels are based on modules of 4 ft. Fillers vary from 1 to 20 in. in width. A panel with steel cross members on 12-in. centers is available for pouring walls with pressures up to 1,500 p.s.f. Another type has 2 x 4 cross members that lie flat against a 1/2-in. plywood face. The same simple hardware system is used on all types.

... Circle No. 165

Douglas Fir Plywood

The Douglas Fir Plywood Assn. has made available a 12-page handbook entitled "Concrete Forms" which would be of great help to anyone planning a forming system. Extensive data is given on allowable support spacings and a selection chart for various types of plywood is given. Many on-the-job tips and suggestions are made on such subjects as obtaining good alignment and inconspicuous joints, minimizing the size of the holes in forms, minimizing sagging after forms are removed (a method is described for removing leaders from the forms as the concrete is poured), and the proper methods of caring for plywood to extend its life.

... Circle No. 166

Economy

Three 12-page booklets are available from Economy Forms Corporation. One describes steel forms available on a rental basis, one is concerned with "life-size" steel forms available on a purchase basis and the third is a combination of the essentials of the first two, plus information on special forms manufactured to the purchasers' specifications. Among the advantages of steel forms are the following: Faces never need be removed so there is no replacement problem, dimensions are precise, concrete faces are high in water-proofing characteristics and early surface hardness, permitting early removal of forms. Any Economy form panel may be removed and replaced in any form set-up for placing concrete. Stripping may be started at any point. The panels can be clamped together in any staggered position in multiples of one inch.

The regular panels are available in lengths, 2 ft. and 4 ft. with ribs varying from 5 in. to 24 in. in six steps. When desired, of course, special panels can be ordered in almost any size or shape. Over 200 different types and sizes of panels are available on a rental basis.

The booklets make extensive use of photographs to describe the various panels, corners, inserts, plates, brackets, chutes, tools, and miscellaneous supplies. Often a photograph of an item

is accompanied by another showing it in place on a project.

Also available on request is a 1-page bulletin describing a form cleaning machine which automatically cleans and oils panels.

... Circle No. 167

Simplex

A variety of small booklets are available from Simplex Forms System, Inc., describing their line of plywood forms and hardware. One is devoted entirely to forming systems on swimming pools and includes 5 separate plans with 4 elevation drawings in each. Another presents 20 step-by-step photographs of a typical home foundation wall job, carrying it from start to finish, and showing the amount of time necessary for each step. It is claimed that in less than 20 man hours with Simplex forms, it is possible to remove forms from a poured foundation, set them up for a new one, pour concrete, and lay the footing for the next foundation. An unusual and very helpful piece of literature which is available is a 5-page set of questions and answers which cover the facts and details contractors want to know about the product.

In the Simplex system, no walers are required, and very little bracing. A lineup rail slips over the top of the panels to provide alignment. All hardware is mounted on the forms except for scaffold brackets, lineup rail and corner braces. If desired, the hardware and plywood can be purchased separately and assembled by your own men following clear mounting diagrams and instructions.

... Circle No. 168

Richmond

Three excellent manuals, each punched for notebook insertion, have been published and are available from Richmond Screw & Anchor Co., Inc. One is a 15-page article entitled "How to Plan Forms in Detail" which is complete with many photographs, drawings, charts, tables and graphs.

The main piece of literature available is a handsome 46-page comprehensive handbook printed in 3 colors. Section headings are in blue, text is in black, and ordering information is in red. There are a tremendous number of photographs and drawings, with many full-page blueprints showing all required details. An idea of the comprehensiveness of this manual can be given by pointing out that there are over 200 items listed in the index. The last 5 pages are devoted to engineering graphs which cover all the main aspects of form design.

The third manual is 18 pages long and is entitled "The Snap-ty Form Book." It contains panel designs for building forms for wall construction—a perfect manual for the small home builder, lumber dealer, or ready-mix dealer.

... Circle No. 169

Gates

An excellent 40-page pocket-sized manual called "Your Pocket Guide to Successful Forming" has been published by Gates & Son, Inc., manufacturers and distributors of concrete forming accessories. Contained are brief descriptions, well illustrated by drawings, of each type of forming developed by Gates in a very concise and practical manner. It gives good how-to-do-it information which a carpenter can use on the job. Simple step-by-step drawings describe forming with sheathing boards, break back form ties, the horizontal rod system for high walls and low walls, the vertical rod system, forming accessories, and radius walls.

Gates also has available individual pieces of literature for each of the systems described in the booklet.

... Circle No. 170

United Steel

Several bulletins are now available from United Steel Fabricators describing an unusual new product, galvanized corrugated steel sheets for use as leave-in-place steel forms for concrete bridge decks.

The leave-in-place forms were originally developed for use on extremely high viaducts where safe removal of conventional forms was difficult. Later they were found to be a practical solution on other structures. The forms are installed from the top side and are left in place after the deck is poured, thus entirely eliminating shoring and stripping.

The forms are custom fabricated for each project in standard widths of 24 in. to 30 in. Tightening 4 bolts and putting a metal joint seal in place is all that is required to complete 12 to 15 sq. ft. of forms. A time lapse of 90 days between date of order and start of delivery should be anticipated.

The literature also includes descriptions of jobs where the forms have been used.

... Circle No. 171

Krueper

A 4-page folder is available from the H. J. Krueper Co., manufacturers of concrete form equipment, entitled "How to Save Forming Time & Cut Labor Costs." Described is a new 9,000-lb. concrete form clamp which consists of only 3 pieces, a washer, a tapered rod and a key plate. The tapered rod is adjustable from 6 in. to 14 in. with combinations up to 46 in. Fast stripping is possible by removing the tapered rods from one side only.

A table is given comparing the 3-piece clamp with the conventional 5-piece she-bolt assemblies.

... Circle No. 172

NEW LITERATURE

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

How to keep your Cat happy

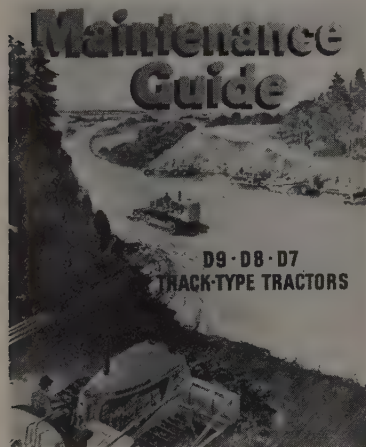
Good machine performance is usually traced to proper operator care. As an aid to operators, a new D7, D8, and D9 tractor maintenance guide has been

Ammonia transfer and application hose, as well as a complete line of hydraulic hose in all ranges of pressures and temperatures.

... Circle No. 175

Yale & Towne Manufacturing Co., Batavia, N. Y. A 3-page spread illustration of the loader gives a labeled detailed account of the loader's features. Specifications are also included.

... Circle No. 179



prepared by Caterpillar Tractor Co. The 24-page guide has more than 75 full color drawings of helpful hints for obtaining optimum service life from Caterpillar-built equipment. Written in narrative form, it tells the story of how one tractor owner learned to keep his machine on the job with lower maintenance costs. Cartoon-type drawings help point out good maintenance practices.

... Circle No. 173

Cool, comfortable welding

The Lincoln Cooltong, a fully insulated 300- and 400-amp. electrode holder, is featured in a leaflet put out by The Lincoln Electric Co. The holder is lightweight and well balanced with sturdy construction that can take rough treatment without becoming loose or broken. Bulletin includes cutaway illustration of the Cooltong and complete specifications.

... Circle No. 176

Hyster D4 backhoe catalog

In order to cover systematically and in detail the design and engineering features that make up the Hyster D4 Backhoe, a mobile hydraulic excavating machine, the Hyster Co. have published a 2-color, 16-page catalog which may be had for the asking. The D4 is specifically engineered and built to operate as an integrated unit on the Cat D4 tractor and the 955, HT4 Traxcavators, and the resulting machine provides the mobility and versatility to meet successfully and economically a wide variety of job demands.

... Circle No. 180

Miller swivels covered

Everything you need to know about Miller Swivels products is to be found in a 33-page catalogue put out by General Machine and Welding Works, Inc. Each page abounds with useful and interesting information including tables of dimensions and capacities for construction swivels and details on cargo rigs, headache ball assemblies and high lift blocks. Among the new items featured in this handy booklet are the Miller ball bearing swivel Model "T" for 40-ton working load; thimble-type end fitting; and the high lift block with Timken hook bearing. Available free on request.

... Circle No. 177

Welding and heating blowpipe described

The Oxweld W-47, an entirely new welding blowpipe capable of welding any metal thickness from 28-gage sheet to 3-in. plate is described in an 8-page booklet issued by Linde Co., Division of Union Carbide Corp. A unique feature of the blowpipe is its ability to handle gas flows as low as 2 cu. ft. per hr. for precision welding, or total flows as high as 1,500 cu. ft. per hr. for heavy heating operations. Cutting attachments that quickly convert the new W-47 from welding and heating to flame-cutting on all metal thicknesses up to 8 in. are also described.

... Circle No. 181

Barricade units

Sentry all-steel barricade system, including panels, stands, light brackets, extensions and flags, is illustrated and described in a seven-page brochure issued by Traffic Equipment Corp., 2064 S. Bannock St., Denver 23, Colo. Specifications for these items are included. Also available is a price list for their equipment.

... Circle No. 174

Weatherhead parts catalog

A 64-page Farm Implement and Construction Equipment Parts Catalog is announced by The Weatherhead Co. Identified as Catalog FC-200, it features the complete line of Weatherhead Brass Tube Fittings, Hydraulic Hose, Hose Ends and Hose Assemblies. Offered in the catalog is a Bulk Hose Specification Chart. It pictures and lists over 24 types of bulk hose available through Weatherhead distributors. Included are Underwriters' Laboratory approved L. P. Gas hose, Anhydrous

Big trucks for big jobs

"Built Big for the job" describes the Kenworth custom-built end-dump on the cover of a recent publication by Kenworth Motor Truck Co. Included in the 14-page booklet are illustrations of Kenworth's models 801, 802, 802-E, 802-B, and 803, ranging in size from 14 to 48 tons. Specifications are also given. In addition to rugged construction, these big trucks offer easy handling because of an angled front end, a tight turning radius, and maximum visibility.

... Circle No. 178

Yale and Towne loader

A folder on Yale & Towne's Model 154 Trojan, a front-end loader with 2 cu. yd. capacity for heavy-duty bulk materials handling is the subject of a 2-color fold-out, available from The

Welding guide

The 1958 edition of Eutectic Welding Alloys Corp.'s 180-page pocket-sized welding data book is now available. Featuring simplified welding procedures for every base metal, this volume covers 120 welding rods, electrodes, and welding compounds. The book is a guide to improved torch and metallic arc welding, brazing and soldering. Useful "how-to-weld" information is given for fabrication, maintenance, repair and salvage, overlaying for wear and corrosion resistance and welding of dirty, rusted parts. Other information includes weld preparation steps, lowest possible application base metal heats, and the best torch adjustments and electrode position and manipulation. Available free.

... Circle No. 182

NEWEST WAY TO BETTER SCREENING

Send for this valuable NEW BOOKLET TODAY!



Here it is . . . just off the press . . . a colorful NEW booklet that will introduce you to a new concept of two bearing vibrating screen construction and performance . . . SECO TWIN-BEARING SCREENS. Whatever your screening requirements, we sincerely believe you'll do the job better . . . and at lowest cost per ton . . . with SECO TWIN-BEARING SCREENS on your job. They're backed by over a quarter century of SECO dependability on the toughest screening jobs imaginable. They're the product of one of America's leading manufacturers of vibrating screens.

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ENGINEERING SALES SERVICE, INC. Boise, Idaho

CHENEY MACHINERY SALES Oakland, California

WESTERN MACHINERY CO. Spokane, Washington

Request SECO BOOKLET TB-21

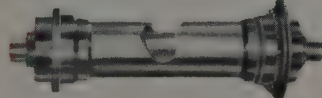
SCREEN EQUIPMENT CO., INC., Buffalo 25, New York

**YOU'LL
WANT
ALL 4**

**OF THESE
GREAT
NEW SECO
features**

**when you buy
2 bearing screens**

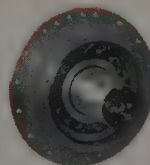
For Longer Life NEW SUPER DUTY SHAFT



for stout-hearted performance through peak loads . . . with an extra margin of safety.

For Longer Life

OIL BATH LUBRICATION OF BEARINGS



gives better lubrication and faster starts in any weather.

For Easier Maintenance

Patented REMOVABLE SHAFT

patented single unit construction for quick removal or interchange.



U. S. Patent No. 2751080

For Smoother Performance and More Accurate Results

GREATER ECCENTRICITY



offsets any tendency to lose vibration amplitude.

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

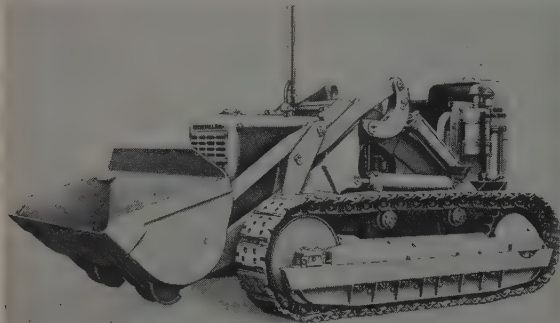
NEW EQUIPMENT

(Continued from Page 26)

For more information on items described in this section, circle the corresponding numbers on reply postcard.

Rugged Cats

To meet the demands of especially rugged conditions, Caterpillar Tractor Co. has introduced two traxcavators with design modifications from their corresponding Series C Models. The new machines are the Cat. No. 955 (Series E) and Cat No. 977 (Series E). Prime features of both are a strong under-



carriage, with heavy construction incorporated into all under-carriage parts, track roller frames, sprockets, front idlers, track rollers and track carrier rollers. Besides imparting extra machine sturdiness, these features also allow for high ground clearance of the units, and, at the same time, a low center of gravity. On both models horsepower and bucket capacity have remained the same as on their Series C counterparts. They also retain many features common to the Series C machines, which include oil-type flywheel clutch, 40-deg. tilt-back ability at ground level, automatic bucket positioner, and self-energizing brakes.

... Circle No. 183

How to break paving records

Records were broken at California's Beale Air Force Base runway paving project (described in *Western Construction*, Oct. 1957) to the tune of 500 yd. per hr. One of the reasons



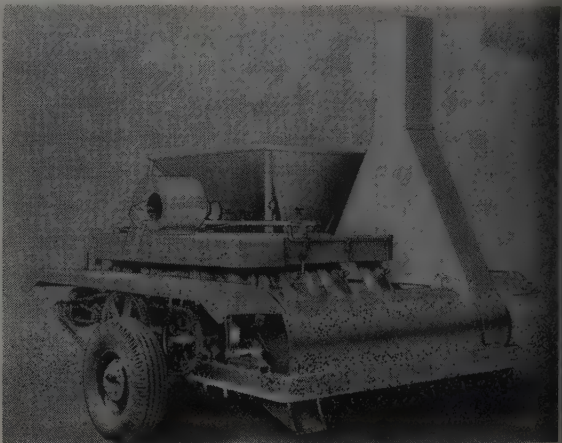
for this achievement was the Maginniss Hi-Lectric full-slab paving vibrator attachment. The new attachment provides uniform internal vibration throughout the slab because its vibrators operate completely submerged below the concrete surface, thus providing a homogeneous mixture of mortar and aggregate from base to surface. Finishing time is reduced since the vibrator leaves the surface smooth and there is no need for a second pass. The lightweight attachment, consisting of Maginniss Hi-Lectric motor-in-head vibrators spring-mounted on 28- to 30-in. centers on a sectional tubular steel frame, mounts directly on any spreader or finisher. Suitable for pavement slab up to 25 ft. and from 4 to 19 in. deep, the

attachment operates on 180-cycle, 120-volt, 30-phase current supplied by a gasoline engine-driven Hi-Lectric generator.

... Circle No. 184

Low-cost bituminous paving

The new Turbo-Mixer No. 15 for the production of low cost bituminous paving mixtures consists of an aggregate bin with a reciprocating feeder for proportioning aggregates, and a positive displacement pump to supply the asphalt. It has



a three-compartment, three-shaft pugmill mixer and heating unit with a total of 18 ft. of travel. Aggregates and asphalts are lifted and turned by 36 mixing paddles in the presence of the heating gases, directed into the mixing compartments by atomizing nozzles. The mixer can work with regular asphalt cements, cut-backs or emulsions. It can be electric, gas or diesel driven. Production is 12 to 15 tons of asphaltic concrete per hour. Turbo-Mixer No. 25, also available, can produce 20 to 30 tons per hr. Both units are sold through Asphalt Equipment Co., Inc.

... Circle No. 185

LeT-W adds scraper

One of the latest additions to the LeTourneau-Westinghouse equipment line is a new 18-cu. yd. scraper for use with tractors of 90 or more horsepower. Designated as the CT, it becomes a companion unit to the big 27-cu. yd. BT model introduced earlier. A four-wheel version of the company's Fullpak, the CT features a clean smooth bowl interior for mini-



mum loading resistance. The bowl floor which provides more than 46½ sq. ft. of load base, measures only 59 in. from the tip edge of the cutting blade to the face of the tailgate, mini-

minizing the distance material must travel in the loading process. Price of the CT with standard tires is \$13,716, f.o.b., Peoria, Ill. . . . **Circle No. 186**

Portable office space

Without special tools, an unskilled worker can put up Porta House's portable job office in an hour. The 3-ft. modular panel house of marine plywood is a neat stack of white panels and a package of wing nuts and bolts when not



in use. When needed it can be moved to the job site on a pick-up truck. Disassembled quickly, the units can be moved from floor to floor as needed. Porta Houses are adjustable in size and come in widths of either 9 ft. or 12 ft. By adding units at a time the buildings are indefinitely expandable along the lengthwise dimension. Windows and door panels are also interchangeable and can be moved around the walls in any combination that is required, **The Porta House Co.**

. . . **Circle No. 187**

One-pass sealing

Featuring one-pass pressure sealing—direct from kettle to joint is **Clipper Mfg. Co.'s** Hot Pour Joint Sealer, Model C-40A, successor to the AC-40. AC-40A combines the equipment needed for melting and properly applying the sealing



compound, in one compact unit, making it popular on highway, turnpike and airfield jobs. The new model is equipped with a material pump called the Moyno pump which is revolutionary in design and performance and produces a smooth flow without pulsation. The engine and the pump on the C-40A have been moved to the rear of the sealer for easier operation, particularly in the sealing of transverse control joints. Piping and distribution systems have been simplified. Sensitive instruments, such as the thermostat, are now grouped in a steel enclosure on the side of the sealer—readily available and protected. . . . **Circle No. 188**

STANG MAKES THE DIFFERENCE BETWEEN WET AND DRY DIGGING



Deas Island Tunnel approaches DUG IN THE DRY—thanks to Stang dewatering

On any project, you can depend on Stang to start the job right—IN THE DRY. Remember, the responsible handling of water, in any situation, is Stang's sole business. Don't fight water, and lose time and money doing it. For the practical, economical answer to all your water problems, call on **water-handling specialists . . . call on STANG!**

CONTRACTORS FOR THE APPROACHES:
Peter Kiewit Sons Co. of Canada,
Raymond International Co. and
B. C. Bridge & Dredging Co.

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



Moving 16,000 to 20,000 tons of

One of the biggest and most efficient stone-crushing plants on this continent is owned by The Highway Paving Company Limited of Montreal, which recently increased its capacity from over 400 tons per hour to over 1600 tons per hour.

Almost all of this operation is automatic. However, quadrupling production involved moving rock from quarry face to crusher in sufficient quantity to assure Highway Paving's booming operations of a continuous supply of crushed stone.

Seven Macks were given the job. Working under six-yard electric shovels, they shuttle from shovel to crusher, each making 10 trips an hour; the seven trucks average over 16,000 tons per day. The shovels really have to move to keep up with the hustling Macks, which are on the go 10 hours a day.

Highway Paving knows that its production of crushed stone is dependent on equipment that must maintain "the pace that kills", day after week after month, without crippling breakdowns. Their Mack



Mack being loaded by one of the six-yard electric shovels. The Macks take a brutal beating from the seven-ton impact of broken limestone dropped with each shovel pass . . . but come right back for more.



1 truck per 10 hour day with 7 trucks

proved that they are worthy of this dependence. No other make of dump vehicle is used in quarry.

Mack Trucks have everything it takes for dependable, reliable quarry, mine or construction hauling. Your Mack representative will be glad to give you names of Mack users in your area who are racking up production records, with minimum down time and top economy. Mack Trucks, Inc., Los Angeles,

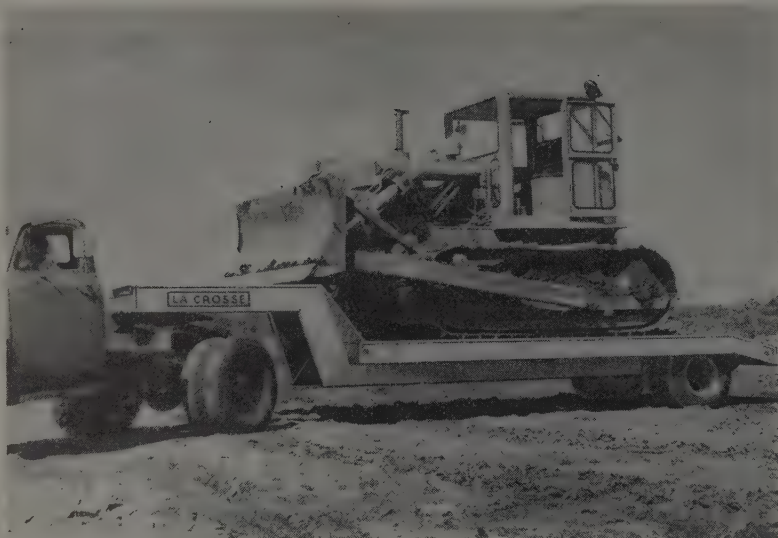
Denver, San Francisco, Seattle, Portland, Salt Lake City, Albuquerque.

MACK
first name for
TRUCKS

5511

ing rock into Highway Pav-
ment crusher which is so
designed that trucks can dump into
both sides. Number of
trucks emptied into crusher are
controlled electronically, and ton-
nage crushed is determined by
weighing equipment.





Zoological low-bed

What with its 41-in. gooseneck, 2-ft. beavertail, and brakes which feature wormy-type slack-adjusters and removable brake spiders, the new LaCrosse trailer offers a veritable zoo-full of advantages. Among the other features of this low-priced, 12-ton capacity, low-bed trailer, designated the DFS-12, is the fact that it makes use of two main beams and full-length outer channels as load-carrying members to provide maximum

strength with minimum weight. Engineered for use behind standard fifth-wheel tractors, the trailer has an 8 x 14-ft. oak deck platform, comes equipped with four 825 x 15-14 ply tires, ICC lights, lash rings, and 12 1/4 x 6-in. air or vacuum brakes, of S-cam design. FOB factory price, exclusive of taxes is less than \$2,000. The trailer has an 18,000-lb. 6 x 6-in. H-beam cambered axle designed for a gross load of 17,800 lb. with a gross load of 10,650 lb. on the kingpin.

... Circle No. 189



For a warm winter

Forced warm air immediately begins to heat workers, machinery, concrete materials, or space when the Porto-Heat is plugged into the nearest electric outlet and switched on. Manufactured by the Stow Mfg. Co., the small, compact model 120 delivers 120,000 BTUs per hr. at a rate of 950 cu. ft. per min. and

burns only .85 gal. of low cost fuel per hr. Fast, full-volume heat output and easy portability enables large areas to be quickly and effectively heated. Model 120 weighs only 80 lb. and is a mere 40 in. long by 16 in. high. It is easily portable and operates on No. 1 and No. 2 fuel oil or kerosene.

... Circle No. 190

D9 engine available

separately—uses all fuels

The Caterpillar D353 engine, well known as the power unit in the Cat D tractor, is now available in industrial engine, marine engine, and electric set arrangements. The 6-cylinder, 4-cycle D353 has a 6 1/4-in. bore and 8-in. stroke and is rated at 390- (max. output) hp at 1,300 rpm. The rated output of the D353 Electric Set is 200 kw. Important among the features found in the engine is the fuel system, the versatility which allows operation on a wide variety of fuels without fouling. It is designed to operate equally well on No. 2 furnace oil or premium quality diesel fuels. In addition, the camshaft on the D353 Engine is mounted high in the block permitting the use of a short, rigid valve train, which produces accurate valve motion. Hardened steel valve seat inserts and positive valve rotators contribute to long, efficient valve seat life.

... Circle No. 191

Three truck-tractors introduced by IH

Pictured is IH's new heavy-duty model AC-225-D truck tractor, one of three diesel-powered truck-tractors introduced by the motor truck division of International Harvester Co. All three of the recent models have short bumper



to back-of-cab dimensions—90 in. to rear top of cab, 91 1/2 in. to farthest point at back of cab. Model AC-225-D is rated at 30,000-lb. gross vehicle weight, 68,000- or 76,000-lb. gross combination weight, depending on rear axle and transmission selections. Power plants are available for each of the new diesel models and range from 175 to 220 hp. A wide choice of wheelbases, axles, and transmissions are offered. Cab comfort and engine accessibility are other features of the new cab-forward models. In addition to the four-wheel model AC-225-D are six-wheel models ACF-195-D and ACF-205-D. Both are rated at 40,000-lb. GVW., 70,000-lb. GCW.

... Circle No. 192

ATECO has 6 1/2-ton rock ripper for EIMCO tractor

Latest addition to the American Tractor Equipment Corp. line of tractor-mounted, heavy-duty rock rippers is a 7,025-lb. unit designed for the EIMCO

05 front loader or dozer tractors. A special drawbar takes all draft loads, preventing strain on the tractor transmission case. Ripper controls utilize the tractor hydraulic system, and do not interfere with loader or dozer operation. Up to three ripper shanks may be mounted on the heavy-duty head frame. Swivel mounting brackets allow shanks to swing 30 deg.; they follow the tractor like a trailer for effortless steering even while ripping at full depth. Shank selection includes a curved gooseneck shank for rock ripping, and a forged straight shank for ripping sandstone, gypsum, caliche, and similar material. Maximum ripping depth with gooseneck or straight shanks is 24 in.

... Circle No. 193

Accessories for Faircrete conveyor

The Faircrete conveyor's primary use is for pouring concrete from the transit mix truck directly into the forms. The unit is 40 ft. long and has a delivery height of 22 ft. when elevated. Available now from its manufacturer, The Fairfield Engineering Co., are several new accessories. Swivel wheels which permit the conveyor to be moved along the wall without changing its position in relation

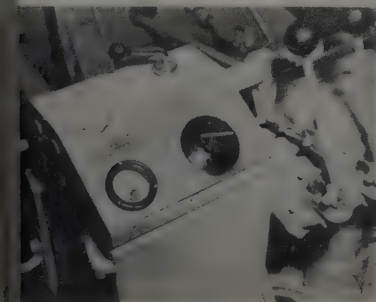


the forms are being manufactured, and a new deeper receiving hopper is now standard equipment on all Faircretes. The deep hopper permits fast delivery from the transit mix truck.

... Circle No. 194

Automatic blade control for Cat motor grader

Preco Inc. announces an automatic blade control made exclusively for Cat No. 12 Motor Graders. It automatically



ELECTRIC PLANT NEWS



Here's how Onan Portable Power pays you added profits!

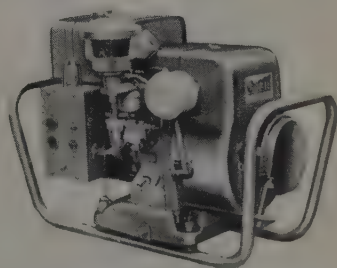
Gives you cost-cutting power on the job . . . from the start

Carry, truck or wheel in an Onan and you're all set with plug-in power for the whole crew. No wasting time with hand tools . . . no waiting for utility lines. If you're not using electric power *full time* chances are you're losing more money than the cost of several Onan plants.

4-cycle, season-long dependability

Onan plants are rugged . . . built to take abuse from weather and workmen. Special cast-iron block Onan engine and drip-proof all-weather Onan generator are direct-connected in a rigid, compact, smooth-running unit. Out-perform and outlast "assembled type" plants using general purpose engines. *Special contractor models from 500 to 10,000 watts.*

2500-watt model serves crew of 3!



Model 205AJ-1P, most popular Onan unit with residential contractors. Complete as shown with 4 plug-ins, pilot light, carrying frame, recoil starter . . . ready to run. Dolly-mounted model also available.

New folder helps you choose the right model for your job. Write today!

See your distributor for a free demonstration

D. W. ONAN & SONS INC.

3988A University Ave. S.E., Minneapolis 14, Minnesota

ELECTRIC PLANTS • AIR-COOLED ENGINES • KAB KOOLER • GENERATORS



... for more details, circle No. 67 on Reader Service Postcard

New SUPERIOR Heavy-Duty SCREED SUPPORTS

For Use with 1¼" and 1½" I.D. Pipe Screeds
and Vibratory Screeding Equipment

ADJUSTABLE
RE-USABLE



ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

Especially Designed for Use on Bridges, Underpasses and Overpasses

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

Adjustable Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



FOR SLABS ON FILL

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turn-pike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. *Write for Bulletin.*

HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.



SUPERIOR CONCRETE ACCESSORIES, INC.

9301 King St., Franklin Park, Ill. (A Suburb of Chicago)

New York Office

1775 Broadway, New York 19, N. Y.

Pacific Coast Plant

2100 Williams St., San Leandro, Calif.

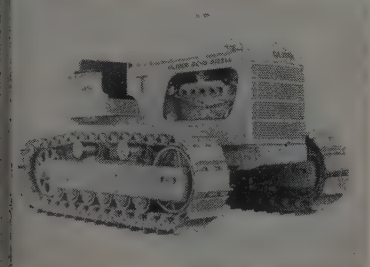
... for more details, circle No. 68 on Reader Service Postcard

WESTERN CONSTRUCTION—March 1958

pegs the grader blade at any desired depth, and its accuracy has been demonstrated to within $\frac{1}{8}$ in. in 10 ft. Because it is far more accurate than the human eye and faster than the hand, the equipment permits an operator to finish a given grade in a single pass at higher speed and with extreme accuracy, when conditions enable the blade to carry all the surplus material. Finish grading can then be accomplished in less than half the time as compared with manual control of the grader. . . . **Circle No. 195**

Oliver diesel crawler has wide speed selection

Model OC-15 diesel crawler, developed by Oliver Corp., is in a power class



tween Oliver's 53-drawbar hp. OC-12 and 133-drawbar hp. OC-18. A high-torque 6-cylinder diesel of 529-cu in. displacement delivers 75-drawbar hp. The new crawler has four forward gear speeds ranging from 1.67 to 5.60 mph. Providing wide speed selection and for rapid maneuverability, there are reverse gear speeds of 1.99 and 4.48 mph. Controls have new grouped design for simplicity and ease of operation. Operating weight is approximately 16,960 lb. Overall length is 128 in. Track frame is one piece and extra heavy. There are six lower and two upper track wheels. Specification details are now available. . . . **Circle No. 196**

Getman truck one-man operation

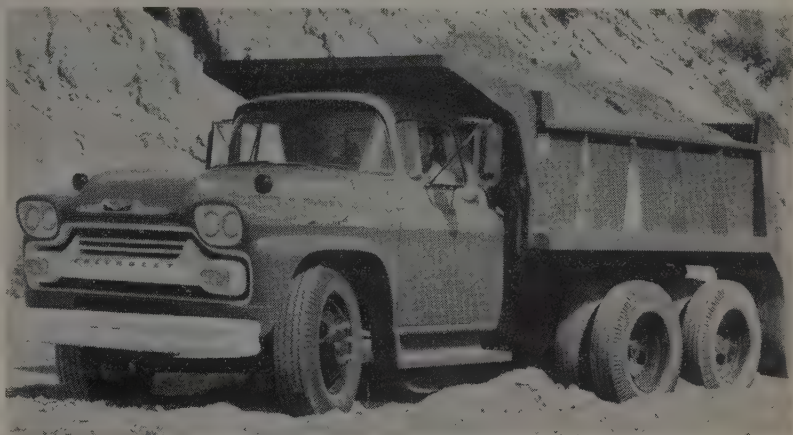
For \$3,450 the Getman KD-2 truck is designed for tunnels and mines. The truck has a capacity of $2\frac{1}{2}$ tons and makes it possible for one man to load, drive and dump. The manufacturers, Getman Brothers, are also responsible for the Getman Scoot-Crete. KD-2 has the following dimensions: overall length, 62 in.; overall width, 60 in.; box height to tail gate, 47 in.; turning radius, 96 in.; turning clearance in the clear, 20 in.; overall wheel base 83 in.; box capacity, 40 cu. ft.; carrying capacity, $2\frac{1}{2}$ tons. The new truck is powered by a 2-cylinder 20-hp. air cooled Deutz engine, imported from Kloeckner-Humboldt-Deutz A. G., Cologne, West Germany. The unit has four speeds forward and four speeds reverse, making it ideal for operation in narrow passageways where dual speeds in either direction are desirable. . . . **Circle No. 197**

Ford tractors improved

Offering nine tractor models of special utility and all-purpose four-wheel design Ford Motor Company's Tractor and Implement Division has re-styled its entire line. The newest addition is the Model 841 Powermaster, equipped with optional power steering and auxiliary over-under transmission for 12 forward

and 3 reverse speeds. The industrial loader and adjustable rear blade make this tractor a versatile unit with many applications. In the Workmaster tractor series, power has been increased 8% to 32-drawbar hp. The Powermaster class now develops 44-drawbar hp., a boost of 10% over former models.

. . . **Circle No. 198**

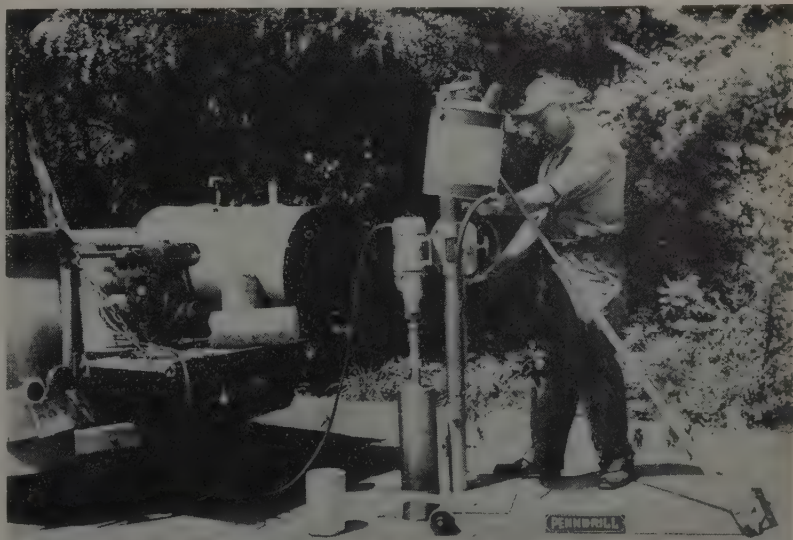


Chevrolet improves truck line

An expanded, widely diversified line of trucks with engine and chassis improvements is announced by Chevrolet Motor Division, General Motors Corp. Among the improved models is the 1953 Spartan heavy-duty tandem, which features a larger and more powerful V8 engine and new front-end styling. The 348-cu. in. 230-hp. engine is designed for truck service, and has sodium-cooled exhaust valves, heavy-duty bearings,

valve rotators, and Silichrome exhaust valve seat inserts. The machined combustion chamber located in the top of the cylinder bore for greatly improved combustion efficiency is another feature. It also permits central location of the spark plugs for shorter flame travel. The new engine is standard in the 90 and 100 series. Appearance changes include dual headlamps and redesigned grille, fenders and hood.

. . . **Circle No. 199**



REMOVING TEST CORES from a concrete highway is quick and easy with the Pennsylvania Drilling Co.'s electric Pendrill, shown here powered by a Kohler electric plant. The Pendrill can be operated by one man to drill holes from $\frac{1}{2}$ to $6\frac{1}{2}$ in. in diameter. Light and portable, quiet and dustless in operation, the Pendrill is adaptable for drilling vertically, horizontally or at any angle. It operates on a.c. or d.c. current. The Kohler electric plant supplying power to the drill shown here is the 1.5M25, 1,500-watt, 115-volt a.c. manual starting unit.

. . . **Circle No. 200**

Heltzel Flex-Plane



UNITIZED BATCHING PLANTS to further speed set-up and dismantling time . . . to give you even greater on-the-job flexibility. The new Heltzel Unitized Plant—like these on a G. Toccalino & Son job in Detroit—is designed in three easy-to-handle sections that go together in minutes. This installation is set up as push-button drive-through for extra fast service. Batchers and scale unit is integral part of center section . . . a real time-saving innovation. (Note new Heltzel E-4 twin-batcher cement plant.)

2202

THE HELTZEL STEEL FORM AND IRON

FLEX-PLANE COMBINATION FINISHER-FLOAT does two jobs in one, reducing crew time to an absolute minimum. The combining of these two jobs is a natural—results in a better finish in shorter time. This new machine was thoroughly tested on several jobs last season. Contractors report 4000 feet of 4-foot pavement was floated and finished in a normal day with but two or three hand finishers required. Get the facts on this profit maker before submitting too many quotations.

Engineering

brings you unitized batching, improved forms and a new way to finish concrete



Modern highway design demands top efficiency in highway construction machinery. Portable . . . versatile . . . automatic . . . fast.

That's why Heltzel Flex-Plane Engineering works to give you the most modern road-building equipment obtainable. Up-to-date engineering, for example, has produced a definite contractors' preference for Flex-Plane over all other makes. This preference is based, of course, on proved performance.

Find out now what Heltzel Flex-Plane Engineering can mean to you — call on actual users of Heltzel and Flex-Plane equipment, and prove to your own satisfaction that this is the *modern* equipment for modern highway construction.

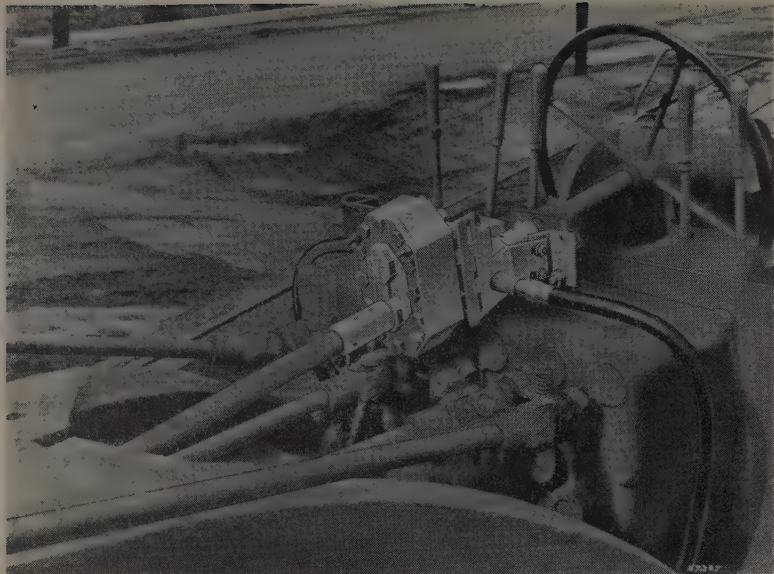
HELTZEL DUAL DUTY FORMS, such as those shown in use on the Plattsburg SAC base, have been redesigned to assure fast setting and stripping with maximum strength-weight ratio. Sizes available to exactly suit your job requirements.



COMPANY • Warren, Ohio



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



Power steering for motor graders

The Gyde-Master is an hydraulic-powered steering booster incorporating control valve and power section in one compact housing. It mounts in the steering shaft of a vehicle and provides steering control by applying torque to the steering shaft. Performing all the functions of any power steering device, whether accessory or factory installed, it

provides effortless turning for the operator, holds the vehicle on its course, absorbs road shocks applied to the front wheels. Gyde-Master can be connected into and operated by the vehicle hydraulic system, provided the vehicle system is suitable. If the vehicle has no hydraulic system, or no suitable system, the complete hydraulic system is available from the manufacturer. De-

signed initially for accessory installation on existing vehicles, the booster is equally suitable as original equipment on new machines. A product of Precision Controls Co. . . . **Circle No. 201**

Cable snafus eliminated

If you're troubled by having cables snap like rubber bands, the following information should be of interest to you. In an effort to reduce cable breakage on scrapers to a minimum, The U.N. Co. has developed a device called the UNCO Cable Controller. Entirely mechanical, this handy item is sturdily engineered and can be permanently installed. It is made to last the lifetime of the scraper. Models are available for Cat DW-20 and DW-21 scrapers. This new device eliminates slack at the drum by operating the brake at both the P.C.U. and the UNCO Cable Controller simultaneously, thereby preventing cable criss-cross and dog-knotting, prime causes of cable breakage. It keeps the cable perfectly reeved at all times. In any cycle of the operation it is impossible for the operator to overload cable to the point of breakage; instead, the controller will automatically disengage the clutch. . . . **Circle No. 202**

PORTA HOUSE



YOU CAN TAKE IT WITH YOU!

The field office or tool shed that you can move on a pick-up truck. Pays for itself on the first job.

Quickly assembled and disassembled by unskilled labor.

SIZES: 9' or 12' widths—to any length (in 3' modules)
(9x6, 9x9, 9x12, 9x15, 9x18, etc.—to any length)
(12x12, 12x15, 12x18, 12x24, etc.—to any length)

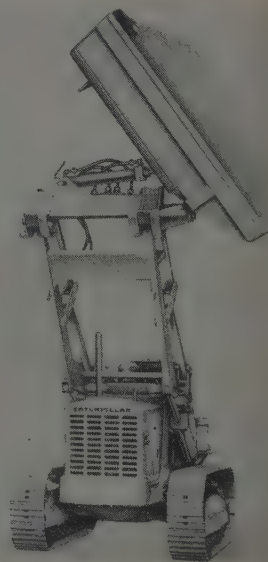
Light, watertight, strong.
Mass produced cheaper than you can build it!
Rental arrangements if you wish.
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Manufactured and Distributed by
RIDGELY K. DODGE

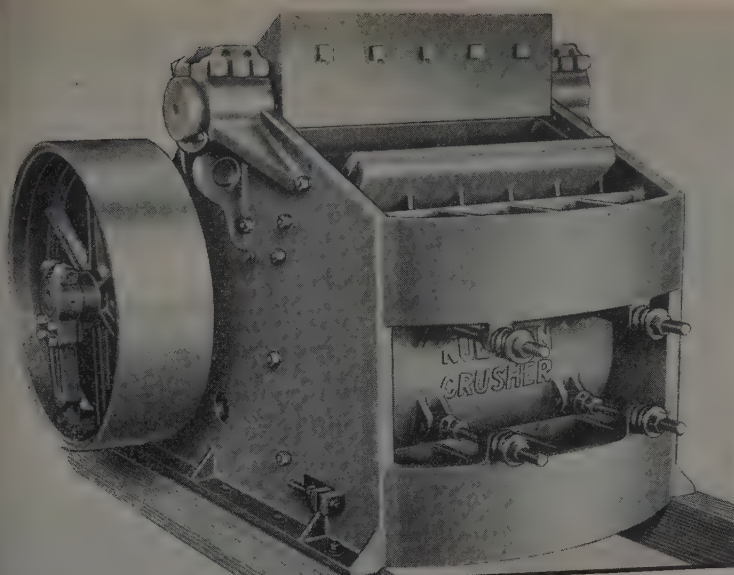
6767 Broadway Terrace • Oakland 11, Calif.
Olympic 2-7237

AVAILABLE
IMMEDIATELY
Plan to include
Porta Houses in
all future jobs.



THE MULTI-PURPOSE Cat No. 933 Traxcavator has been given new versatility. A side-dumping bucket attachment, recently made available for this model, is hydraulically operated from the operator's seat, has 1½-yd. capacity. Prime advantages are in allowing the Traxcavator to perform in-line loading, eliminating the need for constant turning in order to dig and load. As well as increasing loading time, this feature also serves to lower maintenance cost by reducing wear due to turning on track, track parts, steering and master clutches and idlers. . . . **Circle No. 203**

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



KUE-KEN[®] CRUSHER

gives greater
capacity
at lower
operating
cost

Here is a table of tons per hour that will pass through crusher with jaws set at dimensions shown when measured in the closed position.

Kue-Ken crusher size	3" 4"	1"	1 1/2"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"	6"	Horsepower range
24" x 12"	22	26	32	36	43	50	56					15 to 30
30" x 12"	32	35	38	42	55	70	76	85	110			20 to 30
36" x 10"	38	47	57	67	80	91	105					25 to 40
36" x 20"					70	82	90	115	135	160		30 to 50
42" x 25"					90	120	150	165	180	215	250	40 to 60

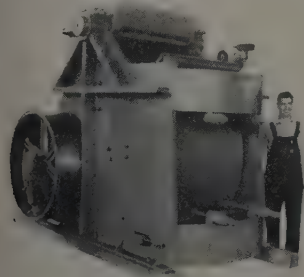
Table is based on crushing average hard dry quartz or similar rock weighing at least 100 lbs. per cubic foot when crushed. 32 sizes available from 12" x 5" to 48" x 42".

Kue-Ken crushes more tons per hour for its size than any other crusher. A built-in lubrication system allows Kue-Ken to operate at more crushing strokes per minute for greater capacity and more uniform product. Sealed against dirt and grit, the mechanism operates smoothly avoiding costly down-time and re-

pairs unavoidable with crushers without a lubrication system. With minimum friction, Kue-Ken requires substantially less horsepower to operate. An automatic flywheel release prevents damage from tramp iron. Operating on an exclusive "crushing without rubbing" action, Kue-Ken jaw plates last at least 5 times longer. Kue-Ken is the most profitable crusher to use for any crushing requirement. See in the above chart how a smaller, less costly Kue-Ken can provide the capacity you require.

Write for Catalog

KUE-KEN[®] CRUSHERS



'CRUSHING WITHOUT RUBBING'

STRAUB MFG. CO., INC., 8389 Baldwin St., Oakland 21, Calif.

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

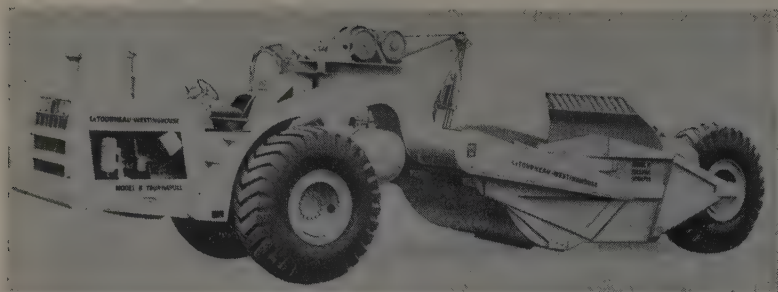
Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.

Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

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

DEALERS:

SEATTLE, WASH. Washington Machinery Co.
 SALT LAKE CITY, UTAH. Lund Machinery Co.
 SAN ANTONIO, TEX. Closer Equipment Co.
 PORTLAND, ORE. Contractors Equipment Co.
 LOS ANGELES, CALIF. Garlinghouse, Fremont Co.
 PHOENIX, ARIZ. Stapley's
 DENVER, COLO. Union Supply Co.
 CASPER, WYO. Moss Equipment & Supply Co.
 VANCOUVER, B. C. Universal Equipment Co.



Tournapull offered with torque transmission

Buyers of LeTourneau-Westinghouse big B Tournapulls now have a choice of

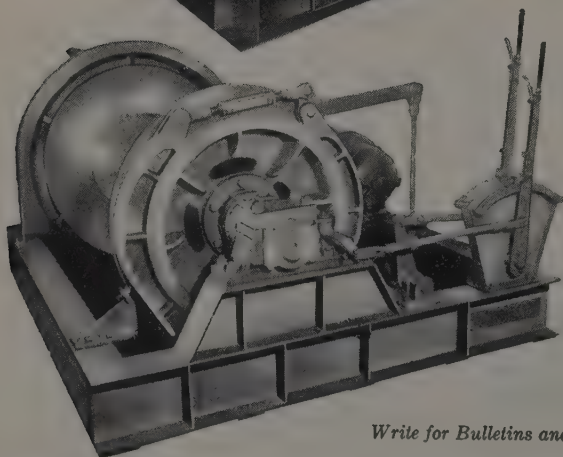
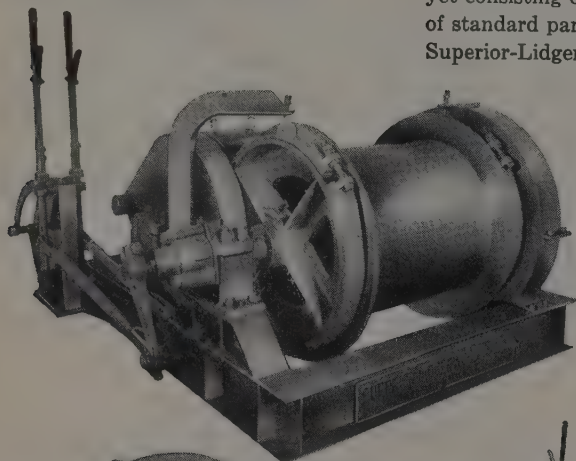
transmissions—a torque converter or conventional manual shift type. The torque converter version of the prime mover can be had with any of the stand-

ard B size interchangeable trailing tools, including the 27-yd. Fullpak scraper, 35-ton rear dump or 30-ton mobile crane. Important among the changes made when the scraper was converted to torque transmission was the adoption of a 335-hp. Turbocharged diesel engine as standard equipment. The transmission itself consists of a single stage, four element torque converter combined with a heavy duty, power shift gear box. Four forward and two reverse ranges provide the equivalent of an infinite number of gear ratios with speeds up to 30 mph. Features include an automatic lock-up clutch and a brake saving hydraulic retarder. ... **Circle No. 204**

INCLINE•HAULAGE• MINE HOISTS

SMALL • MEDIUM • LARGE

Your hoisting necessities can be met by equipment engineered and designed to suit, yet consisting of a combination of standard parts. Consult Superior-Lidgerwood-Mundy.



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. 72 on Reader Service Postcard

Joy adds loader, dozer and tractor

An overhead shovel loader, a bulldozer, and a utility tractor make up the new series of crawler equipment introduced by Joy Manufacturing Co. Called the JSL-7 Shovel Loader, JMD-7 Mining Dozer, and JMT-7 Mining Tractor, the machines come with either air or electric drive. With separate motors and independent track control for each track, one track can run forward and the other reverse to permit gradual or pivot turns or complete reversals within the machine radius. The Shovel Loader can load 2 to 4 tons per min. It can muck in round or rectangular shafts and takes over loading in the tunnel when the shaft reaches bottom. In tunnel construction, the JMD-7 Dozer cleans up invert sections before concrete is placed. The tractor serves not only as a base for the loader and dozer but for various other attachments as well. These make it a full-face drill jumbo, roof bolter, front-end loader, back-hoe scaler, or fork lift. ... **Circle No. 205**

Kenco pump completely submersible

Five design improvements are incorporated in the cast-bronze construction of the new Kenco Model 110 submersible pump. (Kenco is a division of The American Crucible Products Co.) These



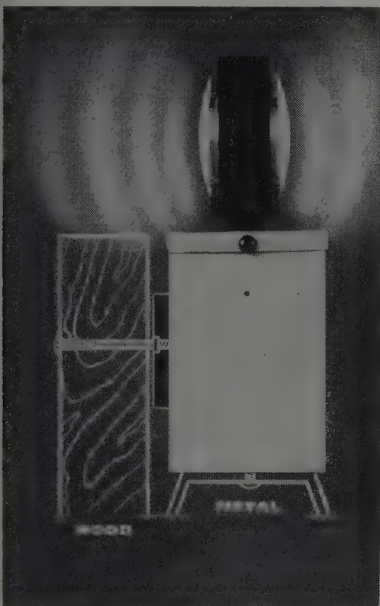
improvements give the 110 a capacity of 5,000 gal. per hr. at a 10-ft. head, with a 30-ft. shut-off head. In its compact design, the pump combines the high torque output of its 1/2-hp. motor with a new direct-drive non-clogging pump

impeller and uses a ceramic seal-seat mounted on the impeller back to completely seal the motor shaft away from the fluid being pumped. The new model is available with any of three controls: non-automatic for installations requiring continuous or separately controlled operation, fully automatic, easily adjusted for varying operating conditions; manual-automatic for portable applications where manual starting is desired with automatic stopping assured.

... Circle No. 206

Warning light gives long battery life

The intense flash of the Owl-Lite warning light is visible for over a mile, providing better job protection and greater warning visibility on construc-



tion jobs. Recently introduced by **Par-tronics, Inc.**, Owl-Lite Model P-8 is designed for mounting on wood or metal barricades as well as on a warning stand. A powerful battery, giving up to one year of life, furnishes a bright, intense light which stays constant throughout the life of the battery. Flash rate control is incorporated in the circuit. Engineering data, specifications and price information are available.

... Circle No. 207

Thew announces first front-end loader

The Thew Shovel Co., long-time manufacturer of power cranes and shovels, has entered the field of rubber-tired front-end loaders. The new line has been named Moto-Loader and the first model announced is a 4-wheel drive, 1¾-yd. capacity unit, designated Model ML-153. Available with either gasoline or diesel power, the loader utilizes an Allison Torqmatic, 3-speed, power-shifted, full reversing transmission and integral torque converter with



*If Ironworkers are
Essential to YOUR
Job Progress ...*

IDEAL REELS HAVE A PLACE IN YOUR PLANS!

Tying reinforcing steel bars in place on a 20 foot floodwall on the Mississippi river, as shown in the picture, required experienced ironworkers with plenty of "skill and know-how." The tool chosen for greater employee safety, efficiency, comfort and convenience is the **IDEAL** reel, *unmatched and unexcelled for versatility and dependable performance plus more economy for the contractor.*

By actual test, **IDEAL** reels are faster and longer lasting than any competitive reels. Exclusive patented design eliminates time-consuming change-over adjustments for **Right** or **Left** hand users. Requires no special tools to remove cover plate for quick, easy loading of tie wire. Brass and steel bushings eliminate friction—give longer wear—won't freeze up. Left hand threads prevent cover plate from dropping off as an unused portion of wire is re-wound onto reel. *Materials and workmanship fully guaranteed.*

IDEAL

TIE WIRE REEL

These and other extra time-saving features can't be found on any other reel. That's why **IDEAL** reels will do a much **BETTER** job for you, **AT LESS COST**. Ask you **IDEAL** distributor for the full story and a Free demonstration today—or write to us.

Ideal Reel Company, Paducah, Kentucky

... for more details, circle No. 73 on Reader Service Postcard

Rugged ASPHALT paving saves



Ribbons of velvet smoothness . . .

MODERN **ASPHALT** HIGHWAYS

Washington \$30,000 a mile

*...Saves State \$381,000
in first cost on 12.7 miles
of Interstate Highway.
Maintenance savings
expected, too!*

For the Prairie Creek to Tumwater section of U. S. Highway 99, the State of Washington chose modern Asphalt pavement.

By so doing it saved thousands of dollars in initial costs alone. The entire paving cost for 12.7 miles was \$826,978 . . . with savings of \$30,000 a mile compared with a connecting slab-paved section. *And more savings are to come . . . for Washington's records indicate that Asphalt pavements cost less to maintain.*

As records show in state after state, modern Asphalt highways are not only economical but also rugged and safe.

Rugged . . . because layer-upon-layer construction "locks" surface to the foundation, builds up strength and resilience.

Safe . . . because modern Asphalt pavement is traction-textured for high skid-resistance. There is less glare . . . greater traffic-line visibility.

In winter, snow melts faster and Asphalt pavement is not harmed by de-icing chemicals.



ENGINEERED FOR RUGGED WEAR

Modern Asphalt construction is a triumph of road-building science. Built-up layers spread the load . . . absorb shock and pounding. Economy, safety and comfort are built-in to last.

THE ASPHALT INSTITUTE

Asphalt Institute Building, College Park, Maryland



... for more details, circle No. 74 on Reader Service Postcard



a 2.5 to 1 ratio. Top speed is 21.4 mph. Use of the integral torque converter provides an infinite number of "gear" ratios in each speed range. Shifts can

be made into any of the three operating ranges under full power. Planetary axles are used both front and rear.

... Circle No. 208

Newly designed dozers for John Deere tractor

A bulldozer for use with the John Deere 420 crawler tractor has been introduced by the Henry Manufacturing Co. Two models are available, the Henry Angle Tilt Dozer ATD-1 and Henry Straight Dozer SD-1. Both dozers are designed with box steel push beams, outside mounted to insure against springing blade edges. The beam pivot point has been placed below the center line

of the tractor for increased traction. The Angle Tilt blade is 96 in. long. It has a 24-in. high mold board and 6-in. high cutting edge. The SD-1 is 72 in. long, goes to a depth of 15 in. below ground and lifts 42 in. above.

... Circle No. 209

High capacity buckets

Bucket elevators with capacities up to 120 tons per hr. are available through The Fairfield Engineering Co. The new series of standard elevators are of two

types: bucket on chain elevators for non-abrasive material, and bucket on belt elevators for abrasive materials. The enclosed elevators are complete with head platform, ladder, safety cage and large clean-out doors. Various types of loading methods are available including truck hoppers, boot hoppers and belt feeders. Screw feeders are available for cement applications. All discharge chutes are made of No. 10-gage steel, constructed so that the chute may be turned over when the bottom portion shows signs of wear. Capacities are from 24 tons per hr. to 120 tons per hr. in heights up to 70 ft. Specifications and prices available.

... Circle No. 210

Portable vehicle scale requires no pit

A subsidiary of Safety Industries, Inc., The Howe Scale Co. manufactures portable vehicle scales in capacities to 70 tons and lengths to 60 ft. Additional



scale sections can be joined for greater length and capacity; this operation requires no pit, which permits them to be re-located as the job requires. These portable vehicle scales incorporate Howe's Parallel Link Load Suspension assembly in their platform construction, designed to absorb loading shocks and to reduce wear on the scale pivots. A wide selection of weight indications is available to users of the scales—Standard Beam, Recording Beam, Dial Weightograph, Remote Dial, and many other methods including Mechanoprint and other weight recording devices.

... Circle No. 211

Versatile Cat rips, moves

Ripping and moving material in one bulldozing operation is the distinguishing feature of Caterpillar's new earth-moving tool, the No. 7G bulldozer, referred to as the Gyrodzer. Working in hard to handle material, the 7G produces full blade-loads in less time and shorter distances. Essentially it provides greater dozing efficiency by breaking up and conditioning hard material more readily, and supplying a more efficient wedging angle to utilize the full power of the tractor. Key factors in the higher production of the Gyrodzer are four penetrating teeth mounted on the cutting edge of the bulldozer blade. These teeth extend forward 23 in. in front of the cutting edge, and are used in ripping up stubborn material in order to more rapidly obtain full loading of the blade. Caterpillar Tractor Co.

... Circle No. 212

Save up to 40% when shoring Concrete Floor Forms



Rent Sensational New SPANALL!

OBSOLETES other methods of shoring concrete slab forms! SPANALL is basically a system of adjustable telescopic girders which can fit any desired span from four to 34 feet. Especially effective over irregular ground surfaces. **SAVE TIME**, with SPANALL! No more timber "forests" to get in the way ... space underneath SPANALL is uncluttered.

LIGHT IN WEIGHT, EASY TO INSTALL, STRIP AND RE-USE. SPANALL can be handled by hand, no special equipment necessary. SPANALL'S sturdy flanges fit over wall bearing surfaces.

When concrete has set, SPANALL can be removed quickly and re-installed, as desired, in new locations. Easy-to-follow folder tells you what SPANALL units to use, and how far apart they should be, for various loads and spans. **Save money on your next job! Rent SPANALL!** Complete engineering service available free! Call us for an estimate.

SPANALL OF THE PACIFIC

8907 Railroad Ave., Oakland 21, California

Sales agents: W. J. Burke & Co., in San Francisco, Oakland, Los Angeles, San Diego, Sacramento, Portland and Seattle.

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

NOW!

DOUBLE AND TRIPLE-DECK VIBRATING SCREENS

are available on the

KOLMAN

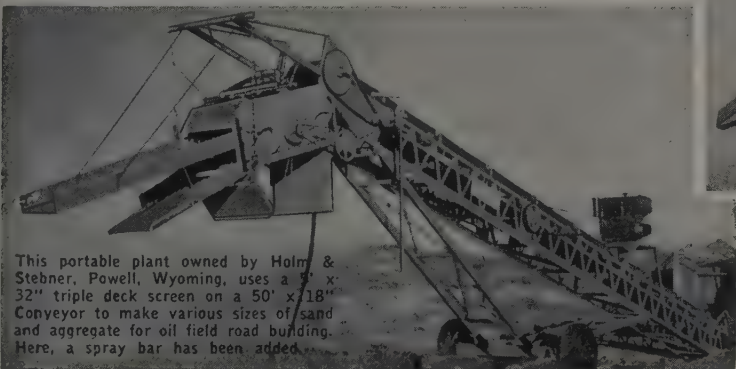
**COMPLETELY PORTABLE
CONVEYOR-SCREEN PLANT**
CONVEYOR • SCREEN • TRAP • FEEDER

Multiple separation with a Portable Conveyor-Screen Plant? Yes, that's just what the owners of the KOLMAN plants pictured here have got! Two and three-deck Vibrating Screens are now available on the KOLMAN Model 101 Portable Field Conveyor.

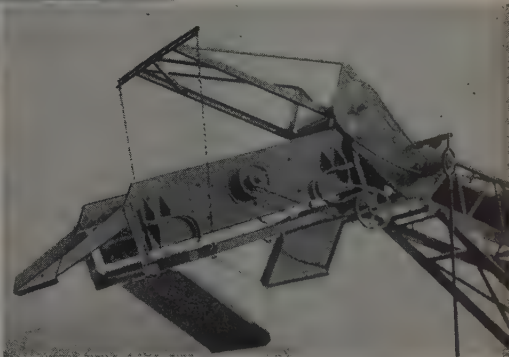
KOLMAN Screens, designed to eliminate all possible excess weight, are ideally adapted to conveyor installations. Their "floating action" avoids transmission vibrations to the conveyor. And see how easily the KOLMAN Heavy Duty Conveyor supports these multiple-deck screens without extra bracing.

With either a double or triple deck screen on a KOLMAN Portable Conveyor-Screen Plant it is possible to accurately make several sizes of material at one time. The plant has also proved ideal for scalping out oversize and rejecting fines in a single operation. With the top deck removing oversize, the capacity of lower decks for screening fine material is increased. All this on a portable outfit!

The two pictures above show a Type DC 6'x36" double deck KOLMAN Vibrating Screen installed on a 50'x30" Model 101 KOLMAN Conveyor used for loading and sizing coal in one operation by Rasmussen Bros., Sheridan, Wyo.



This portable plant owned by Holm & Stebner, Powell, Wyoming, uses a 5' x 32" triple deck screen on a 50' x 18" Conveyor to make various sizes of sand and aggregate for oil field road building. Here, a spray bar has been added.



Above is a 7'x42" double-deck screen on a 50'x24" Model 101 Conveyor. The owners, Claude C. Wood Co., Lodi, Calif., report excellent results loading and screening aggregate on a central California dam project.

See Your Nearest Dealer

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LOS ANGELES, BAKERSFIELD, SAN DIEGO, SANTA BARBARA—Brown-Bevis Industrial Equip. Co.
OAKLAND—Spears-Wells Machinery Co.

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DENVER—Faris-Moritz Equipment Co.

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BOISE, POCATELLO—Intermountain Equipment Co.

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ALBUQUERQUE—Construction Machinery Company

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ELKO—A-D Machinery Co., 251 W. Commercial St.

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Please send free literature on—

- ☐ Model 101 Heavy Duty Conveyor
☐ Model 202 "Junior" Conveyor
☐ Vibrating Screens ☐ Feeders
☐ Traps

Quote size or capa i y

Name

Address

City

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

Portable magazine holds 10,000 lb. of explosives

Blast hole loading has been facilitated by a portable explosives magazine that can be easily hauled to the job site. Manufactured by Austin Powder Co., the magazine is known as Model 800. It has capacity for more than the average daily requirements of explosives, detonating fuse and caps—8,000 to 10,000 lb. Loading and unloading are simplified by 5 large doors, 2 of which are located on either side with one at the rear. An important feature of the 800 is the fifth wheel type design of the front axle which is reputed to assure complete maneuver-

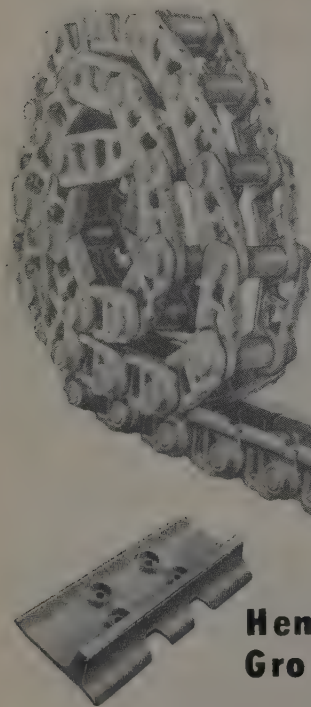


ability even in close quarters. The body of the magazine is of welded steel throughout and separated into two compartments. Sides and top are wood lined while the floor is covered with masonite. Overall body length is 14 ft., width is 6 ft., 4 in., and height is 46½ in.

... Circle No. 213



TRACK RAILS GUARANTEE YOU MUCH LONGER WEAR!



- ☒ **For D-8, D-7, D-6 and D-4 Tractors . . .**
Hensley Heavy Duty Track Link Assembly is the finest available . . . specially designed for use on D-8, D-7, D-6 and D-4 tractors.
- ☒ **Extra Rugged Construction . . .**
Made of highest quality heat-treated alloy steel . . . forged to Hensley's own specifications . . . built to stand up longer on the toughest jobs.
- ☒ **Longer Wearing . . .**
Heat-treated by the most modern methods to insure correct Brinnell hardness . . . pins and bushings ground for precision fit . . . your assurance of maximum wear.
- ☒ **No Stretch . . . Positive Mesh**
Hensley Heavy Duty Track Links will not stretch . . . always mesh correctly with drive sprocket.
- ☒ **Economy of Operation . . .**
Less parts replacement over longer periods means greater savings in man-hours . . . lower operating costs.

**MADE IN
U. S. A.**

**Hensley
Grouser Pads**

*WHEN THE GOING IS TOUGH CALL
YOUR NEAREST HENSLEY DEALER*



EQUIPMENT CO., INC.

800 Peralta Ave., San Leandro, Calif. LD. 9-1806

Transtar—new look for '58

A wide range of engines, power, models, and gross vehicle weights highlight the **Studebaker** line of Transtar trucks for 1958. Major features of the '58 truck line include: most powerful engine and highest gross vehicle weight in the company's history; five models in the two-ton medium and heavy-duty series; automatic transmission for the one-ton classification; power steering for the one- to two-ton models; power brakes for light-duty models; premium features package for light-duty model engines; large engine for light-duty units. Four engines will be offered for '58. A 259-cu. in., 170-hp. V-8 is offered in the half and three-quarter-ton models and a 289-cu. in., 182-hp. V-8 will be used in the heavy-duty units and as optional equipment for the two-ton medium-duty model. In styling, the Transtars have a modern grille and heavier, deeper bumper for a massive, yet functional front-end appearance. Pictured is the two-ton model, which has a GVW of 19,000 lb.

... Circle No. 214

Light-weight crane for truck mounting

Newest addition to the Star Machine & Tool Co. line of hydro-lift cranes is the Little Oscar Truck Mounting Crane. Light in weight (only 99 lb.) the crane will lift loads up to 1,000 lb. and is de-



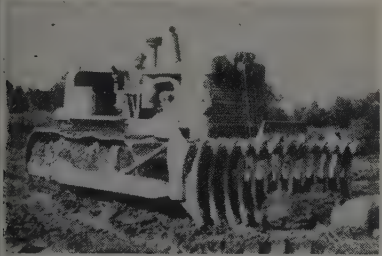
signed for use on trucks in its easily installed mounting well, weighing only 17 lb. The mounting well mounts flush with the deck of the truck so no deck space is wasted, and the crane is easily removed from the mounting well when a full truck deck is required. Easy to install and easy to remove, the crane provides low-cost lifting power for heavy truck loads. Its boom raises 88 in., drops to 23 in. and is 45 in. in length. Overall height is 49 in. An extra length boom which adds 15 in. to reach is also available.

... Circle No. 215

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

**Land-clearing rakes
carry life-time guarantee**

Debris that becomes hung up between rake teeth can be a major cause of time loss in land clearing. Rockland's Model RF-3 heavy-duty rock rake eliminates



this difficulty and carries a lifetime guarantee on its teeth as well. RF-3 is one in a new line of land-clearing rakes announced by Rockland Allied Equipment Co. Other models include a general-purpose clearing rake, a brush and root rake, and a stacking and piling rake, all made of cast steel alloy, and differing only in weight. Picture shows the RF-3 mounted on Allis-Chalmers HD-21 tractor.

... Circle No. 216

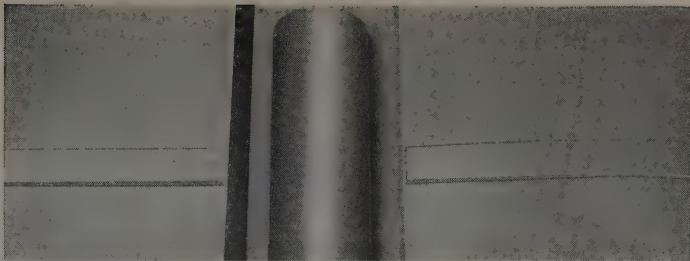
**Snow blower
for Michigan tractor shovels**

Heavy windrowed snow can be loaded into trucks at a rate of 12 cu. yd. per min. by the Snow-Thro, a snow blower which has been manufactured by Krause Industries for use with Clark Equipment Co.'s Michigan Models 75A, 125A, and 175A tractor shovels. This means that municipalities can now handle snow and ice control problems two ways. Using the standard bucket, they can load into 8-ft.-high haul trucks or, by using the blower, heap higher sideboard-equipped trucks. The Sno-Thro unit is not de-

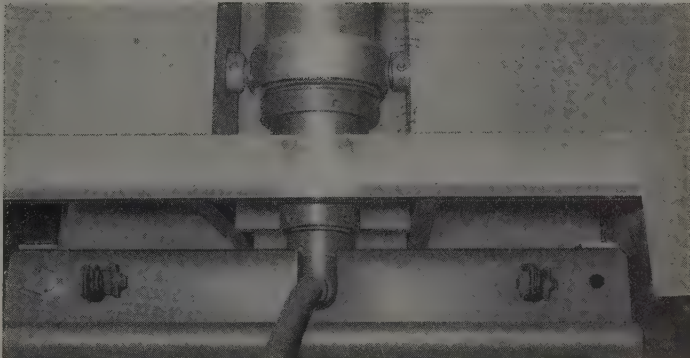


pendent upon high horsepower. Its large rotor travels at a very low rpm. and throws the snow. Clean loading results because it is not necessary to break the snow into very fine particles, nor to create a turbulence. The rotor is 38 in. in diameter, weighs 150 lb. and turns at about 400 rpm. Models come in 6- or 7-ft. widths, powered by 31- to 56-hp. Wisconsin air-cooled engines.

... Circle No. 217

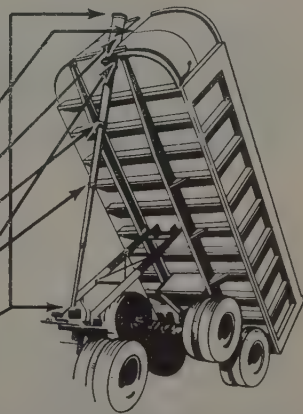


**THE ONLY AMERICAN FRONT END
HOIST MOUNTED "RIGHT SIDE UP"!**



**Marion's Job Proven Mount-
ing provides more payload
space—far more profit ad-
vantages than any other
front end hoist.**

1. Takes far less payload space for the hoist box.
2. Maximum accessibility.
3. Keeps packings oiled during non-use.
4. Prevents foreign matter from collecting in packing area.
5. More solid support directly to body longitudinals.
6. Bearing points closer together.



SEE YOUR MARION DISTRIBUTOR AND SAVE!

Bogard GMC Company.....2626 South Fourth Avenue, Tucson, Arizona
Truck Body Company.....2865 East 26th Street, Los Angeles 23, California
Ruckstell California Sales Co.....2985 Ford Street, Oakland 1, California
Ruckstell California Sales Co.....452 West Yolo, Fresno, California
Woeber Auto Body & Mfg. Co.....4950 Jackson St., Denver 16, Colorado
Pacific Body Builders, Inc.....1812 N.E. Grand, Portland 12, Oregon
Alloy Manufacturing.....Route No. 4 (West on U. S. 10), Spokane, Washington
Washington Truck Equipment, Inc....3626 Airport Way, Seattle 4, Washington
J. H. Holan Corp.....302 East Pima St., Phoenix, Arizona
Pioneer Equip. Co.....1910 Skidmore Ave., Grand Forks, North Dakota



MARION METAL PRODUCTS CO., MARION, OHIO, U.S.A.

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

Allis-Chalmers TS-160

7 yd struck

9.5 yd heaped

155 horsepower

5 speeds to 25.4 mph

12-ton payload



Measure these advantages for

22 hp per struck yard—Big Allis-Chalmers supercharged diesel engine delivers extra lugging ability for tough pulls, fast loading. Versatile TS-160 can team up with big equipment or work alone on long- or short-haul construction jobs—handle a wide range of utility jobs, travel at speeds up to 25.4 mph.



Measure these features . . . Allis-Chalmers 516-cu-in. diesel engine—dependable power at all working speeds • Independent, constant live hydraulic power for steering and scraper operation • Low, wide bowl—8-ft, 1½-in. cutting edge . . . 3-piece, interchangeable cutting edges . . . double-acting hydraulic bowl lift jacks • Positive hydraulic ejection, high apron lift to full 7-ft, 1½-in. opening • Roomy operator's compartment, easy-to-reach controls, 24-volt direct electric starting, adjustable bucket-type seat, synchronized 4-wheel air brakes • Big push block for all types of pushers.

See your nearby Allis-Chalmers dealer for a demonstration



wide range of earth-moving jobs...

turns non-stop in less than 25 ft with 90-degree hydraulic steering... easy maneuverability in narrow paths, faster cycles without reversing in tight turn-arounds.

Moves quickly from job to job... when required, transport wheels are available to meet legal load limits for highway travel.



FULL 90° STEERING



Glinns Equipment Company—Phoenix

CALIFORNIA

Tractor Sales—North Sacramento
Tractor & Equipment Sales—Redding
Engine & Equipment Company—Berkeley

CALIFORNIA

Machinery Co.—San Diego
Tractor Co.—Bakersfield
& 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
Richland Machinery Company—Sidney
Seitz Machinery Company, Inc.
Billings and Great Falls

NEVADA

A D Machinery Company, Inc.—Elko and Las Vegas
Reno Equipment Sales Co.—Reno

OREGON

Haupt Tractor Company—Medford and Klamath Falls
Wood Tractor Company—Portland
Timber Tractor Company—Springfield

UTAH

Cate Equipment Company, Inc.—Salt Lake City

WASHINGTON

Pacific Hoist & Derrick Company—Seattle
American Machine Company—Spokane

WYOMING

Studer Tractor & Equipment Company—Casper

... for more details, circle No. 79 on Reader Service Postcard

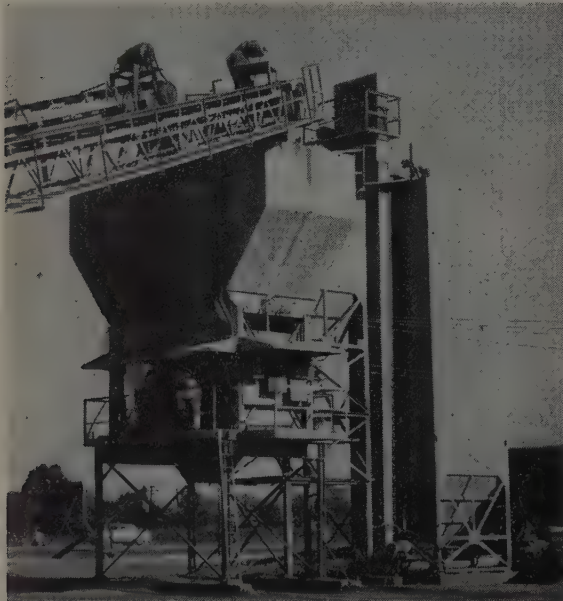
'Gator blade really digs in

Production of a new and revolutionary type cutting edge for earthmoving and road maintenance equipment has been announced by **Shunk Manufacturing Co.** Called the Shunk 'Gator Twistooth Blade, the new cutting edge features teeth



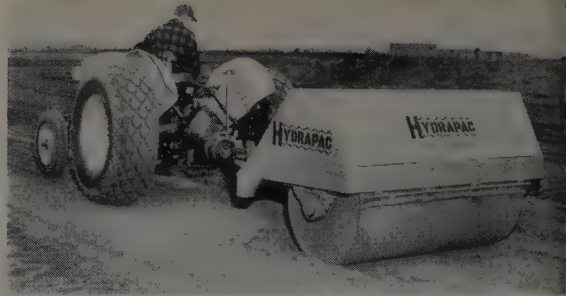
on the cutting surface that vary from each other in the angle they enter the earth or road surface. In this way, and because of the chisel-shaped design of the teeth, only a minimum blade area is required for initial contact with unbroken surfaces. This results in less impact on equipment and more effective "digging in" of the new blade. The 'Gator blade crumbles material to the point where it improves the spread pattern and permits faster and more even discharge. This leaves the material in much better condition for compaction, and results in fewer passes by the compaction equipment.

... Circle No. 218



OVER 300 YD. PER HR. with one operator in a one-stop or two-stop set-up are produced by a new concrete batching plant. The plant, designed especially for the road building program by **Noble Co.**, obtains its high capacity through weighing three materials for a single batch at the same time—sand, coarse aggregates, cement. It batches accurately to specifications and supplies two or three dual drum pavers. In factory-assembled sections all within legal width for highway transport, the plant can be moved easily and quickly erected on timbers or concrete. All batching components are permanently housed within the bin center section and require no removal on transport. Cement silo has facilities for direct loading of cement spreader trucks.

... Circle No. 219



HYDRAPAC, a new tractor-drawn vibrating roller using a hydraulic fluid motor instead of a gasoline engine has been announced by **Rolcor Industries**. With a diameter of 2½ ft., the Hydrapac is 5 ft. wide, weighs 3,260 lb. loaded and can be attached to the rear end power takeoff of any tractor. Compaction densities are easily obtained. Use of hydraulic power has greatly simplified the mechanism driving the vibrator and reduced the cost substantially.

... Circle No. 220

Make a clean sweep of it

A broom which sweeps refuse and dirt into a bucket, or reverses itself and piles material into trenches or onto road shoulders is now available for the Michigan line of tractor shovels. Made by **Clark-Wilcox Co.**, the Boston Load Sweeper has a simple design that permits speedy hook-up on the bucket

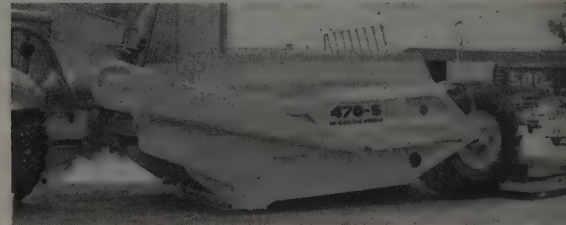


of standard Michigan tractor shovels. In operation, the combination unit works like this: The bucket is placed on the ground and the operator drives forward. He flips a hydraulic control and the broom rotates, sweeping refuse and dirt into the bucket for a clean swath. No overhang at the sides makes possible cleaning close to curbs and obstructions. After the area has been swept the operator raises the bucket and broom over the haul truck, tilts the bucket to empty it. The Load Sweeper comes in 50- to 100-in. widths, is of rigid, all-welded construction. Broom bristles, made of Palmyra fibre, are attached to the core by steel cable.

... Circle No. 221

That scraper can hold more

Now being offered by the **Shepherd Machinery Co.** is the M375 Bowl Expansion Kit for Caterpillar No. 456 and No. 470 scrapers. This kit adds 16 in. to the scraper bowl length and 17 in. to the scraper bowl height. Draft tube, draft arms and rear



axle supports are reinforced and engine output is increased. Factory welding on rear suspension, jig alignment of running gear, structural design, strength and appearance are retained. The expansion kit gives a struck capacity of 26.5 cu. yd. and a heaped capacity of 34 cu. yd. A specification sheet is available.

... Circle No. 222

A New Western Construction Reader Service

The Product Data You Want in a Quick Easy Way

In this issue, **WESTERN CONSTRUCTION** provides you with convenient **READER SERVICE POSTCARDS**, bound in every copy. Use them to get more information on equipment and materials, latest catalogs, bulletins and literature—the product data you want in a quick, easy way.

Each advertisement in **WESTERN CONSTRUCTION** is marked with a key number. Every item in the regular “New Equipment” and “New Literature” sections is keyed with a number. To obtain valuable information, free of charge, from manufacturers of construction equipment, materials and supplies, all you need do is:

- (1) Check the numbers on the postcard corresponding to the advertisements and items that interest you.
- (2) Tear out the postcard along the perforated line
- (3) Sign, date and mail. No addressing required. No postage required.

These **READER SERVICE POSTCARDS** are provided for **YOUR CONVENIENCE**. Use them every month and send in as many inquiries as you wish. They will receive our prompt attention.

**WESTERN
CONSTRUCTION**

News of DISTRIBUTORS



New Idaho distributorship

Complete facilities for sales and servicing of heavy construction equipment are provided by the newly organized equipment distributorship G-K Machinery Co. located at 5200 Federal Way, Boise, Idaho. While the name is new, both management and personnel of G-K have many years experience in equipment sales and service. Leland Knudson is president; L. W. Gurr, vice president. L. W. "Bill" Slack is manager; L. A. Frazier, office manager; Donn R. Miller, service manager. Sales engineers are Jim Sanders and H. L. McIntosh, Pocatello; Harold Jagers, Twin Falls; and Ace Knudson, Idaho Falls. Leonard

Gilson is in charge of service at Boise, and Tom Golen at Pocatello.

Initiated by and under the jurisdiction of the parent dealership, Rocky Mountain Machinery Co., Salt Lake City, Utah, lines presently handled by G-K are: LeTourneau-Westinghouse, J. I. Case Co., Industrial Division; American Hoist & Derrick Co., Worthington, Universal Engineering, Pettibone Mulliken Co., Acme Iron Works, Mixermobile Manufacturers, Inc., Talbert trailers, McGowan pumps, Straub Manufacturing Co., and Cataphote Corp., as well as the following supply accounts: Shovel Supply Co., Winslow scales, Murphy scales, and Columbia Steel Casting Co.

Case appoints Gilmore & Wilcox

Announcement is made by J. I. Case Co., Oakland, Calif., of the appointment of Gilmore & Wilcox, Los Angeles, as representative for the company in part of Los Angeles County. This aggressive distributorship, headed by Ray Gilmore and George Wilcox, has been in business ten years and is well equipped to service Case industrial equipment including the new 4-wheel drive, rubber-tired, 2-yd. W-9 loader and Terratrak crawler tractor loaders, dozers and backhoes.

Universal Co. changes name

Forrest J. Jenson, president of The Universal Co., announces change of the company name to Contractors Equipment & Supply Co., Denver, Colo. While the name has been changed, no other changes have taken place at CONESCO. In sales are Bill Sherman and Howard Riggs. Lyle Heater heads service, and Phil Hale has charge of the warehouse. Joe Campiglia manages the office. A branch office is maintained in Salt Lake City, Utah.

Ryerson-Lucas to sell Bantam line

Ryerson-Lucas Equipment Co., Eureka, Calif., has been appointed ex-

clusive distributor for northwest California for Schield Bantam Co., Waverly, Ia., producer of truck-cranes and excavators. Besides selling and servicing the complete Bantam line Ryerson-Lucas is equipped to render prompt field service.

New location for Atlas Equipment

Atlas Equipment Co. has moved from 1411 South Redwood Road to 1595 South Second West, Salt Lake City, Utah. Headed by James W. Walker, president and manager, with Walter W. Kershaw, vice president, R. W. Barnhouse, service manager, and John M. Smith, parts manager, Atlas distributes such lines as John Deere, Heltzel Steel Form, Thew Lorain, Buffalo-Springfield, and many others.

Bob Sedgwick adds Silent Glow

R. J. Sedgwick, Western Division manager for Ralph B. Carter Co., 2822 Doolittle St., Arcadia, Calif., announces that in addition to Carter he now represents the Silent Glow oil burner in California, Arizona, Utah and Nevada. His past years with Master Vibrator

Co., and his experience with their spa heater, well qualifies him to handle Silent Glow, presently distributed in the West by Mine & Mill Machinery Co., Los Angeles; Dealers Wholesale Co., Sacramento, Calif.; Holland Equipment Co., Salt Lake City, Utah; and Sierra Machinery Co., Reno, Nev.

Ralph B. Carter Co. recently added to its list of Western distributors the following California firms: Blythe Pump & Well Drilling, Blythe; D & M Equipment Co., El Centro; Morrissey Equipment Co., Los Angeles; San Diego Pump & Well Driller, Chula Vista; and R. Wayne Co., Fresno.

Lang opens Idaho Falls branch

Lang Construction Equipment Co. of Salt Lake City announces the establishment of a branch at Idaho Falls, Idaho. A 7,200-sq. ft. cinder block building with several acres of ground located at intersection of Yellowstone Highway and Iona Road just north of Idaho Falls city limits, has been purchased. T. Kevin Best, who has been with the company in the capacity of a parts man, assistant manager, and salesman, has been appointed branch manager. Keith Taylor, an experienced, factory trained service and repair expert, will be in charge of service and repair. Bob Hammond will be in charge of the parts department.

McCaffrey-Way opens new home

McCaffrey-Way Material & Supply Co. has officially opened its new building, according to announcement from J. W. "Bill" McCaffrey, president. The building, at 2107 Menaul Blvd., S.E., Albuquerque, N. Mex., was built especially for the company which handles highway construction material, contractors supplies, and utility and municipal material and supplies. At the same time McCaffrey announces the addition to the staff of Henry G. "Hank" Reiter, formerly manager of Viking Supply Co.'s Los Angeles branch. He will supervise utility material sales.

Officers of the firm are well known in New Mexico construction circles. McCaffrey was salesman and parts manager for Lively Equipment Co., and John H. Way, secretary-treasurer, is a former sales manager for Contractors' Equipment & Supply Co. Before helping to form the present company, Way was Western district manager for Badger Meter Co., working out of the Los Angeles office. The new office and warehouse are managed by Harry M. Morgan, who was associated with J. D. Coggin Co. for many years.

Two new Trojan distributors

Yale & Towne Manufacturing Co. has appointed two new distributors for the Trojan line of pneumatic tire tractor shovels. Contractors' Equipment and Supply Co., Albuquerque, N. Mex., has

been assigned all of New Mexico except the lower tier of six counties. Normont Equipment Co., Great Falls, has been given the Montana territory with exception of the northwestern section. John E. Becker, Western regional sales manager of Yale & Towne's Contractors Machinery Division, made the announcement from San Leandro, Calif.

Top appointments by Seattle firm

John P. Studebaker has been named president and Hil. Berglund, vice-president of Washington Machinery Co. of



Studebaker



Berglund

Seattle, Wash., according to announcement by Charles W. Thompson, chairman of the board. Studebaker has been with the firm for 21 years, and Berglund, 15 years. Washington Machinery Co. was founded in 1916 and is a major supplier of machinery to the construction industry, as well as mining and logging users throughout the West.

Chain saw outlet in New Mexico

Appointment of Log Cutters' Supply, Albuquerque, N. Mex., as distributor for McCulloch Motors Corp.'s complete line of chain saws, parts and accessories in New Mexico and southwestern Texas, was announced by Charles D. Allis, general sales manager of the Los Angeles firm.

Oakland firm named Moto-Bug outlet

Industrial & Foundry Supply Co., Inc., of California, with headquarters in Oakland, has been appointed distributor of the Moto-Bug. Manufactured by Kwik-Mix, Port Washington, Wis., a division of Koehring Co., the Moto-Bug is interchangeable as a forklift, hopper or platform carrier. Territory assigned to the new distributor is that portion of California lying north of and including Fresno, Monterey, and Mono counties.

New contractor equipment facility

Laurence Myers & Co., Inc., has opened a new facility at 801 Seventy-third St., in Oakland, Calif., for the distribution of contractors equipment. Housed at the new location will be offices and warehouse, repair, service and maintenance functions. In addition, scaffolding sales, as well as rentals and erection will be available.

ROCK?



**BUST IT UP, ROLL IT OUT FAST
WITH AN**



**"Pipeliner"
RIPPER!**

You can save plenty of drilling and shooting, cut trencher wear and tear when you rip ahead of trenching with an ATECO Pipeliner Rock Ripper. Mounted on the rear of your dozer tractor, an ATECO Pipeliner busts up rock, caliche, cemented gravel, hardpan — does it faster, better, at lower cost than any other tool or method you can use.

ATECO Pipeliners are performance-proved members of the world's oldest, best-known family of tractor-mounted rock rippers — the pioneer ATECO line. It's available in two forms — as an attachment for present ATECO Rock Rippers, to take 24" or 48" straight or curved shanks, or the complete new Pipeliner Ripper to take shanks to 72" ripping depth. Pipeliner has push pad for booster tractor when the going's really tough. Available for all popular heavy-duty crawler tractors.

Why let rock or tough materials slow your spread? Keep your trenchers on the move now by ripping ahead with an ATECO! Write now for free literature, specifications and prices — please address Dept. _____.



American

TRACTOR EQUIPMENT

Corporation

Designers and Manufacturers
Since 1920

9131 SAN LEANDRO BOULEVARD • OAKLAND 3, CALIFORNIA

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

MANUFACTURERS

J. G. Graham new branch manager

Appointment of James G. Graham as manager of Fairbanks, Morse & Co.'s Los Angeles sales and service branch is announced. He succeeds Paul A. Suess who retired Jan. 1. Joining F-M in 1946, for the past two years Graham has been general manager of the railroad division with headquarters in Chicago.

Waukesha purchases Climax Engine

Waukesha Motor Co. of Waukesha, Wis., announces its outright purchase of the complete plant and assets of Climax Engine Manufacturing Co., Clinton, Ia., manufacturer of combustion engines. Waukesha is well known as a builder of heavy-duty diesel, gas and gasoline engines for the construction, trucking, logging and allied fields. As a result of the acquisition of Climax, Waukesha now has complete coverage of engine sizes in a power range to 1,200 hp.

Raymond advances Charles Kiesel

Charles B. Kiesel, Jr. who recently was named manager of Raymond Concrete Pipe Co.'s prestressed concrete product sales, has been elected vice president and a director of Cen-Vi-Ro Pipe Corp. of South Gate, Calif., which is jointly owned and operated by Raymond and Morrison-Knudsen Co., Inc., and is engaged in the manufacture of concrete pipe. Kiesel joined the Raymond organization in 1948 as assistant general superintendent and from 1953 until his appointment as manager of prestressed concrete product sales had been a project manager.

Frank Jenks becomes president of IH

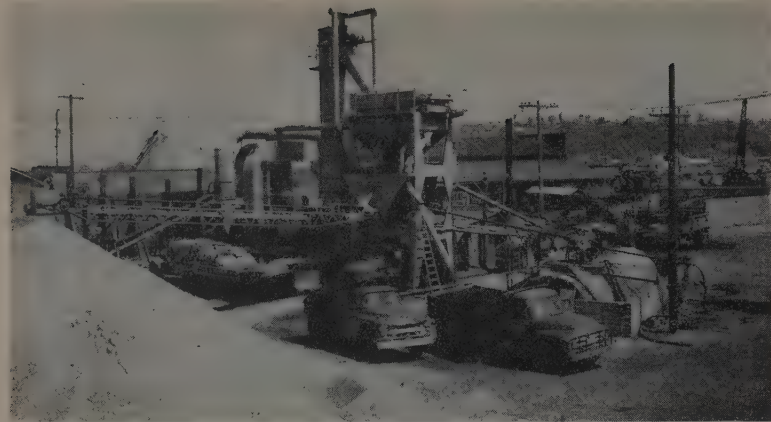
Frank W. Jenks, formerly executive vice president, International Harvester Co., has been elected president of the company. Jenks succeeds Peter V. Moulder who retired, closing a career of 47 years with IH. Jenks began his Harvester career as a clerk in 1914, advancing through various key positions to his recent election as president.

Heltzel joins forces with Leap, Inc.

The Heltzel Steel Form & Iron Co., Warren, Ohio, has joined with Leap, Inc., Lakeland, Fla., to design and manufacture a complete line of forms and accessories for the manufacture of prestressed concrete products. Heltzel is a leading manufacturer of steel forms for concrete shaping and Leap is a noted pioneer in designing forms for the prestressed industry. Heltzel is represented in the West by Ken Simpson, district manager, who makes his headquarters in Redondo Beach, Calif.

Chicago Bridge & Iron transfers

Kenneth W. Lange, contracting engineer in the San Francisco office of Chicago Bridge & Iron Co., has been transferred to Houston, Tex., to become dis-



STANDARD asphalt plant recently set up in Seattle for Northwest Asphalt Co. to meet the increasing demand on their output serving the industry of the area. The installation was sold by Washington Machinery Co. of Seattle and is a Standard Model R-M, 4,000-lb. capacity. It includes an oversize Superlift dryer 7 ft. in diameter by 28 ft. long, with burner and dust collecting equipment for maximum production during periods when high moisture content in aggregates would normally slow production, a common situation in the Pacific Northwest during winter. According to *Wes Davidson*, sales manager for Standard Steel Corp., Los Angeles, the new plant replaces a 2,000-lb. unit, and is the largest of the four asphalt plants in operation by Northwest.



NEW HOME of Crooks Bros. Tractor Co. now ready for occupancy at 600 Glendale Road in the Reno-Sparks area, Nevada. Adjoining the Southern Pacific tracks, the new facility occupies 16½ acres, affording adequate parking space, larger show room, and a new display area. Under supervision of *Robert C. Rose*, the new service department is said to be one of the most complete in the state. The parts department is under the direction of *Tom Berg*. Specializing in Caterpillar and John Deere equipment, the sales department is under the leadership of *Charles V. Crooks*, sales manager, and *C. John Charters*, sales promotion manager. *Herbert M. Peck, Jr.*, recently joined Crooks Bros.' staff as office manager.



AN ARCHITECT'S SKETCH shows the new home of Hawthorne Machinery Co., San Diego County Caterpillar and John Deere dealer. Scheduled for occupancy in March, the new location will provide 46,500 sq. ft. under roof and a total yard area of eight acres. Landscaped in a tropical setting, and with all offices air-conditioned, the headquarters are located on Highway 395 opposite Convair's new \$40,000,000 missile plant—only 12 min. by freeway from the center of San Diego. A staff of 65 will give contractors the very best in facilities for both parts and service.

Hawthorne Machinery Co., which maintains a branch at Ensenada to serve northern Mexico, was previously located at 701 First Ave. Officers in the firm are *J. B. Hawthorne*, president; *J. T. Hawthorne*, vice president; *R. W. Fowler*, sales manager; and *Ed Johnson*, service manager.

district sales manager there. Raymond A. Ehrde of the Los Angeles office has been transferred to San Francisco, replacing Lange.

John Grimmer succeeds Jay Paxton

John E. Grimmer is the new regional manager for Cummins Engine Co. at

T. Jay Paxton



Denver, Colo. His predecessor, T. Jay Paxton, is now manager-distribution, Western, Cummins Engine Co., Inc., Columbus, Ind.

W. J. Burke opens office in Oakland

Announced by W. J. Burke & Co., Inc., San Francisco, is a new company office in Oakland located 4700 E. Twelfth St. George Linchan is in charge.

Top level appointments by Kaiser

J. R. Walker, Jr., Kaiser Steel Corp., elevated to the post of vice president and controller. Simultaneously Kaiser announces that Ernest L. Ilsley, general manager at the Fabricating Division plants at Napa and Fontana, Calif., has been made a vice president also.

Genco appoints general sales manager

General Combustion Equipment Co., Alliance, Ohio, announces appointment of Howard G. Holzum to the position of

general sales manager. Holzum, who was vice president of Childers Manufacturing Co. before joining Genco, assumes responsibility for the development of a sales program on Gencomatic packaged automatic aggregate temperature control systems as applied to Genco burner systems.

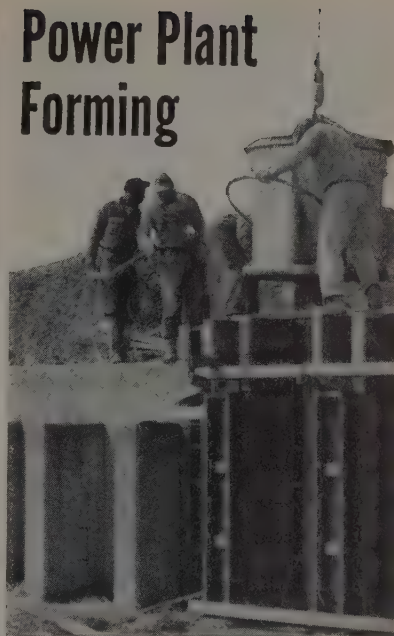
American Pipe moves to new building

Opening of new administrative offices of American Pipe and Construction Co. is announced by Robert V. Edwards, president. The new building, located at 390 South Atlantic Blvd., Los Angeles, accommodates the administrative offices, as well as the engineering, sales, advertising, accounting, personnel and production departments. For many years, American Pipe and Construction Co. had its administrative offices adjacent to its Southern California division plant at 4635 Firestone Blvd., South Gate. The division management and sales offices will remain at this location.

Chain Belt executive appointments

Election of an executive vice president and three new vice presidents at Chain Belt Co. is announced. O. W. Carpenter, formerly vice president, construction machinery and finance, is now executive vice president with direct responsibility for current operations. W. C. Messinger as vice president—construction machinery section, has been promoted from manager of the construction machinery division. E. M. Rhodes, as vice president—industrial equipment section, has previously been manager of this section. G. H. Woodland, as vice president—marketing, is advanced from general sales manager—industrial equipment section.

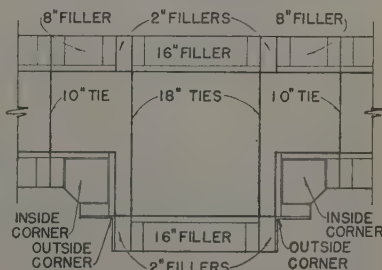
Power Plant Forming



Symons Forms Help Contractor Race Clock

Pour 530 Yards of Concrete in 5½ Hours

Racing a siege of wet, windy weather, workmen on the new \$10 million Blue Valley Station of the Independence, Mo. power plant, teamed up to pour 530 yards of concrete during one 5½ hour period.



Pilasters similar to the ones shown are easy to erect with Symons Fillers and Corners.

Sharp Bros. Contracting Co., Kansas City, the contractor, is using 8,000 square feet of Symons Standard High Strength Forms to pour 40,000 square feet of concrete. Much of the concrete is in thick slabs and pedestal bases with wall thicknesses varying from six to 84 inches. Symons 84-inch washer ties are being used in pouring pedestals for the turbines.

You can rent Symons Forms, Shores and Column Clamps with purchase option. Information on Symons products upon request.

Symons

SYMONS CLAMP & MFG. CO.

634 Williams Street
San Leandro, California
Phone: Lockhaven 9-9159

... for more details, circle No. 82



K. HUMPHRIES, president of Pacific Cement & Aggregates, Inc., looks over a fleet of ten new GMC Model FW556s recently added to PCA's fleet of mixer trucks. The company is one of the nation's largest aggregate producers and a leading western ready-mix concrete hauler.



FASTER FROM FOSTER

LIGHTWEIGHT PILING

Foster Lightweight Piling is the best, low-cost steel sheeting for light load excavations. Offers greater strength, pound for pound than any other lightweight piling. No special rigs required—easy to drive and recover—new interlock cannot jam, locks rigidly. Rent or Buy from Foster's nation-wide warehouses—Write for catalogs.

STEEL-SHEET PILING • PIPE PILES
H-BEARING PILE • STEEL PIPE • RAILS
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3460 Wilshire Blvd., Los Angeles 5, Cal.
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... for more details, circle No. 83

Austin-Western appoints H. G. Downey

Appointment of Harold G. Downey as district sales manager of District 12, for Austin-Western, Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Aurora, Ill., is announced by A. Merrill Smith, field sales manager. Downey's territory includes New Mexico, Colorado, Wyoming, and part of Texas.

Chrysler names Yost sales manager

M. J. Yost is named sales manager for Industrial Engines, Chrysler Corporation, Detroit, Mich. Yost, who has been with Chrysler for 30 years, has been manager of the West Coast office of the Marine and Industrial Engine Division at Los Angeles since September 1956. Prior to that he was sales representative of that division at Seattle, Wash.

Close cooperation with distributors

Creation of three regional Construction Equipment Distributor Advisory Councils is announced by Worthington Corporation's national Construction Equipment distributor group. The organization will consist of an Eastern, a Central, and a West Coast unit and the councils will provide an opportunity for Worthington to keep abreast of distributor reaction to policies and programs affecting them; at the same time distributors can learn first-hand more about facets of the corporation's operations.

Increased engineering services

Assignment of Lars Allon Gustaf DeJounge as special Sandvik Steel Works technical representative for the eleven Western states is announced by Atlas Copco Pacific Inc. Sandvik's Coromant drill steels and detachable rock bits are sold and serviced by Pacific in the West. DeJounge will headquarter at the main Atlas Copco Pacific office in San Carlos, Calif., where he will augment the engineering staff services to the construction industry.

Vilven heads Western region sales

John Vilven has been named Western regional industrial sales manager for Massey-Ferguson Industrial Division, Wichita, Kans. Vilven, a widely known



John
Vilven

Western industrial sales executive, will headquarter in Stockton, Calif. In making this announcement, C. J. Davis, the division's general manager, said that a new line of Work Bull tractors, shovel loader, and fork lift is soon to be introduced. Davis loaders and backhoes, and other attachments, are among the products in line.

Key appointments by Bucyrus-Erie

Robert G. Allen has been elected executive vice president of Bucyrus-Erie Co., South Milwaukee, Wis., excavator and drill manufacturer, reporting to W. L. Little, president. He joined Bucyrus-Erie last July as a vice president. Appointed manager of manufacturing is Joseph I. Andreini who comes to B-E from Borg-Warner Corp.

Merger plans off

Proposed plans for merger of Dresser Industries, Inc., Dallas, Tex., and Gardner-Denver Co., Quincy, Ill., have been abandoned following consultations between the two managements.

Worthington appoints district manager

Worthington Corporation announced the appointment of Charles R. Anger as San Francisco district representative for Worthington construction equipment. His headquarters are at 228 Townsend St., San Francisco 7.

Sherman names Western regional manager

Announcement is made by Sherman Products, Inc., Royal Oak, Mich. of the appointment of James Fisk as manager of its Western region. Fisk has been with Sherman Products since 1952.



**Over 100,000
WARN HUBS
now in use on
4-wheel drives!**

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APPROVED Jeep Equipment

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SAVE ON REPAIRS, GAS, TIRES ...**

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WARN MFG. CO., Inc. Riverton Box 6064- WC3 Seattle 88, Wash.

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Eimco appoints J. Lyle Prickett
Eimco Corporation, Salt Lake City, Utah, announces the appointment of J. Lyle Prickett as a tractor sales and service specialist in the Eimco branch office in Pittsburgh, Pa. Prickett, formerly purchasing agent for Eimco Process Engineers, Inc., in San Mateo, Calif., transferred to tractor sales and service last July and has spent the interim in an intensive factory training program in Salt Lake City. Prior to joining Eimco Process, Prickett was a well-known Allis-Chalmers dealer in Crescent City, Calif.

United Concrete Pipe appointment
George A. Reeves, formerly general sales manager for Graham Brothers, Inc., Los Angeles, has been appointed manager of the Prestressed Concrete Division of United Concrete Pipe Corp., Baldwin Park, Calif., according to announcement by Lloyd Earl, president. Reeves at one time was general sales manager of Metropolitan Sand & Gravel Corp., Inc., New York City, and active in The Associated General Contractors of America.

Elmer E. Kraig heads new department
Elmer E. Kraig has been appointed chief engineer of the new Rock Products Engineering Department of Hewitt-Packard, Inc., Glenbrook, Conn. This department will design and engineer plants for production of sand, gravel, and related materials.

Maxi appoints Griffin sales manager
The Maxi Corporation, Los Angeles, Calif., has appointed Howard D. Griffin to the position of sales manager for the company's complete line. He will direct the sale of Maxi self-propelled carriers

been assistant sales manager with headquarters in Aurora, Ill., since 1956.

Link-Belt's new facilities

The new Los Angeles plant at 1200 Sycamore St., Montebello, Calif., more than doubles the manufacturing facilities of Link-Belt Co. in the Los Angeles area, according to announcement by Robert C. Christiansen, southern general manager of Link-Belt's Pacific Divisions. It is a 1-story structure with about 90,000 ft. of floor space with air-conditioned offices and engineering department.

Western personnel changes by Skil

Skil Corporation has made several territory changes in the San Francisco Division. Roy Hanberg has been moved from Portland to become resident in Sacramento. Norman Thole has moved from Detroit to locate as resident in Fresno, Calif., and Hank Linder recently transferred from Seattle to San Francisco. The other San Francisco salesmen are Herman Plug and Robert Wooseley.

Paul Watts, former branch manager at San Francisco, is no longer connected with the Skil organization, having gone into business for himself at 265 Vermont St., San Francisco, as a factory representative. At present the sales organization is operating under Paul K. Jones, Western regional manager who makes his headquarters in Los Angeles.

Thermoid Western growth

Thermoid Company has moved its San Francisco sales office and warehouse to new quarters at 129 Sylvester St., South San Francisco, Calif. The building consists of 22,000 sq. ft. of office and warehouse space on one level and enables Thermoid to render even greater service to the area it serves. A new addition to the sales staff of Thermoid's industrial division is Thomas F. Keane, formerly of Monarch Corporation, who will cover the San Francisco and Northern California territory.

Sales head retires at B & B

Fred Zimmerman, vice president—sales, Broderick & Bascom Rope Co., St. Louis, Mo., has retired after 46 years with the company.

Chrysler's West Coast training center

Chrysler Corporation has under construction in Southern California a sales and service training center to serve the corporation's dealers in the eleven Western states. Located on a 11-ac. site on the Santa Ana Freeway, 22 mi. from downtown Los Angeles, the facilities when completed will be available to 812 dealers in the West.

Koehring names district rep

Koehring Division, Milwaukee, Wis., announces the appointment of Harvey C. Perry as district sales representative in District 2 which includes Washington, Oregon, Idaho, Montana, and parts of Wyoming. Perry is a former shovel and crane salesman in the state of Washington.



Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

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DISTRIBUTED BY

L. A. Rubber & Asbestos Works	Los Angeles, Calif.
Garlinghouse Brothers	Los Angeles, Calif.
Degen-Riege Co.	Los Angeles, Calif.
Kenton Equipment Co.	San Diego, Calif.
Miller & Stern Supply Co.	San Francisco, Calif.
Hendrie & Bolthoff Co.	Denver, Colo.
Sawtooth Company	Boise, Ida.
Paul Roberts Co.	Pocatello, Idaho
Moty & Van Dyke, Inc.	Klamath Falls, Ore.
Goodyear Rubber & Asbestos Co.	Portland, Ore.
Industrial Supply Co.	Billings, Mont.
Utah Bit & Steel Co.	Midvale, Utah
Western Sales Engineering Co.	Salt Lake City, Utah
Campbell Industrial Supply Co.	Seattle, Wash.
Northwater Company	Spokane, Wash.
Campbell Industrial Supply Co.	Tacoma, Wash.
Dodge-Yakima Supply Co.	Yakima, Wash.
Yukon Equipment Co.	Seattle, Wash.
Fleck Brothers Ltd.	Vancouver, B. C., Canada
Flury Supply	Roseburg, Oregon
George Myrme & Sons	Eugene, Oregon
Wilkinson & McClean, Ltd.	Calgary, Alberta, Can.

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WHERE TO BUY Gorman-Rupp Contractors' Pumps

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Andrews Equipment Service of Washington

Spokane

Bay Cities Equipment Co.

Oakland and San Jose

Brown-Bevis Industrial Equip. Co.

Bakersfield

The Harry Cornelius Co.

Albuquerque

Delta Tractor Co.

Stockton

Paul Droscher Sales

Redding

Faris-Moritz Equip. Co.

Denver

Flaherty Manufacturing Co.

Pocatello

Industrial Tractor Sales

N. Sacramento

The Lang Co.

Salt Lake City

Mid-State Truck & Mach. Co.

Wenatchee

Northern Commercial Co.

Seattle

Pacific Hoist & Derrick Co.

Seattle

Reno Equipment Sales Co.

Reno

Shasta Truck & Equip. Sales

Redding

Standard Machinery Co.

San Francisco

Starline Equipment Co.

Boise

Studer Tractor & Equip. Co.

Casper, Wyoming

Western Construction Equip. Co.

Billings and Great Falls

Western Equipment Co.

Portland and Eugene

Sales Department personnel changes

Announcement is made by Charles S. Norther, vice president of United States Pipe and Foundry Co., Birmingham, Ala., of the appointment of George Bogs, formerly Los Angeles sales agent, as assistant Pacific Coast sales manager. He will continue to make his headquarters in the Los Angeles office. Bartlett G. Bretz has been named assistant Western sales manager with headquarters in the Chicago office.

DA Western Division sales appointment

Richard G. Allen has been appointed sales engineer for construction specialty products in the Western Division, Dewey and Almy Chemical Co., Division of W. R. Grace & Co. His appointment was announced by Sam Burks, Western construction specialties manager, who said Allen will devote much time to the promotion and sales of WRDA, a concrete water reducing agent recently introduced, as well as other products for the construction industry, such as Darex AEA, Daracone, Daraweld, Darakote, etc. Allen will work from the Western Division headquarters at San Leandro, Calif.

Harold Parthemer succeeds Krueger

International Harvester Co., Chicago, Ill., announces the appointment of Harold W. Parthemer, formerly assistant manager, Industrial Engineering and Construction Department, as manager of this department. He succeeds Otto A. Krueger who has retired after 41 years of service.

Thermoid Co. appoints John Scherer

Warren E. Hill, president of Thermoid Company, has appointed John F. Scherer as vice president and director of marketing and sales to succeed Raymond F. Allen.

Paul Snow heads new division

Charles Burton, general manager of Atlas Copco Pacific, Inc., San Carlos, Calif., announces the formation of a construction sales division headed by Paul Snow. The new sales division will serve to integrate the five Western sales offices, providing a more complete coverage and improved service for the construction equipment market. Snow, who was San Carlos district sales manager, now becomes construction sales manager for the entire eleven Western states. Atlas Copco Pacific is the Western United States representative for the world-wide Atlas Copco organization.

Bucyrus-Erie promotes E. T. Goree

Edwitt T. Goree has been promoted to assistant general sales manager of Bucyrus-Erie Co., according to announcement from the company's main office in South Milwaukee, Wis. Goree will assist L. E. MacDonald, general sales manager. A member of Bucyrus-Erie's sales organization since 1947, Goree has been assistant sales manager, excavator distributors, at Bucyrus-Erie headquarters since 1955.

New sales appointment at CB&I

E. S. Fraser, formerly manager of Chicago Bridge & Iron Co.'s Salt Lake City plant, has been named assistant general sales manager with headquarters in Chicago.

B-E dredge business sold to Ellicott

The floating dredge business of Bucyrus-Erie Co., South Milwaukee, Wis., has been acquired by Ellicott Machine Corp., Baltimore, Md., according to announcement by C. Ellis Ellicott, Jr., chairman of Ellicott. Bucyrus-Erie was founded in 1880 and is well known throughout the world as an outstanding manufacturer of excavating and drilling machines. As a result of the disposal of its floating dredge business the company will concentrate on its shovels, cranes and draglines, and drilling machines. Ellicott was established in 1885 and has specialized in design and manufacture of dredges for river and harbor improvement, canals and waterways, etc. Ellicott is prepared to supply repair and parts for all dredges that were built by Bucyrus.

E. W. Percy made asst. sales manager

Edgar W. Percy has been made assistant sales manager of Williams Bucket Division, McDowell Company, Inc., Cleveland, Ohio. Percy has been with Williams since 1955. During World War II he served with the Corps of Engineers on the atomic energy projects. He is a member of the Parts and Statistics Committee of the Construction Industry Manufacturers Assn.

(Continued on page 150)

SAVE MONEY

when pouring concrete
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STEEL
FORMS**

Economy Steel Forms save time, labor, material. Quickly lock together with simple twist of a clamp. Standard units fit most jobs. Where needed, special forms can be fabricated to specification.

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Please send catalog and address of nearest sales office (there are 21 coast-to-coast).

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UNIT PRICES

Selected abstracts for Western projects

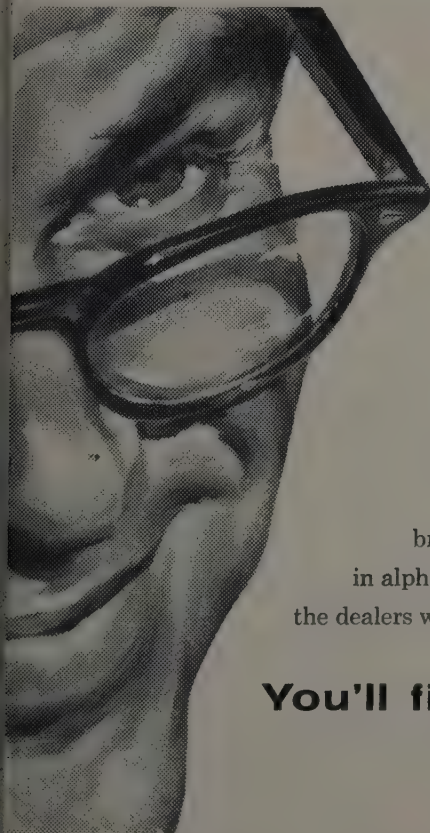
Highway—Construction of 1.4 mi. of highway and a concrete bridge in Idaho

Idaho—Gooding County—State. Neilsen & Miller has been awarded a \$4,726 contract for constructing the roadway, drainage structures, a concrete bridge and a plantmix bituminous surface on 1.4 mi. of highway furnishing crushed gravel and cover coat material in stockpile.

Neilsen & Miller.....	\$244,726
Duffy Reed Construction Co.....	260,826
Holmes Construction Co.....	258,108
Max A. Boesiger.....	269,274

	(1)	(2)
106 ea. Selective removal of trees.....	\$ 60.00	\$ \$50.00
14 ea. Selective removal of stumps.....	40.00	44.00
1 ea. Removal of bridge.....	1,500.00	1,100.00
425 lin. ft. Remove concrete curb.....	.75	1.10
160 sq. yd. Remove concrete sidewalk.....	1.00	1.10
ump sum Remove masonry.....	25.00	110.00
450 lin. ft. Remove fence.....	.10	.10
1 ea. Remove manhole.....	50.00	55.00
10 ea. Remove concrete headwalls.....	20.00	22.00
10 ea. Remove misc. irri. structures.....	30.00	27.50
850 cu. yd. Unclass. excav. schedule no. 1.....	2.00	3.00
900 cu. yd. Unclass. excav. schedule no. 2.....	.34	.80
310 cu. yd. Excav. for structures sched. no. 1.....	10.00	12.00
700 cu. yd. Excav. for structures sched. no. 2.....	5.00	5.00
200 cu. yd. Borrow.....	.35	.42
500 y. u. Haul.....	.38	.48
350 M gal. Watering embankments.....	1.75	1.50
270 M gal. Watering base and surface courses.....	1.75	2.00
200 hr. Rolling, power roller.....	7.00	8.00
140 hr. Rolling, tamping roller.....	7.00	8.00
175 hr. Rolling, pneumatic tire roller.....	7.00	8.00
630 cu. yd. Mechanical tamping.....	2.00	2.50
600 lin. ft. Small ditches.....	.15	.15
250 ton Cr. gr. base course, Type "A", 1 in. max.....	1.25	1.30
825 ton Cr. gr. base course, Type "B", ¾ in. max.....	1.25	1.40
600 ton Cr. gr. in stp. ¾ in. max.....	1.25	1.25
600 gal. MC-1 asph. rd. material for prime coat.....	.18	.19
190 ton Blotter material Class "C".....	2.00	2.50

6,000 gal. MC-2 asph. road material for Type "B" bituminous surface treatment.....	.20	.19
6,000 gal. RC-4 asph. road material for Type "B" bituminous surface treatment.....	.20	.20
100 ton Blotter material, Class "C".....	2.25	2.50
300 ton Cover coat material, Class 6, for Type "B" surface treatment.....	4.00	3.25
370 ton 85-100 penetra. asph. rd. mat. for plantmix.....	43.00	42.00
3,830 ton Plantmix bit. surf., Class "D".....	5.75	4.75
3,830 ton Plantmix bit. surf., Class "B".....	5.50	4.75
1,500 ton Cov. ct. mat'l, Class 3, in stockpile.....	2.55	2.75
35 cu. yd. Conc., Class "A" for prec. stringers.....	80.00	90.00
137.5 cu. yd. Conc., Class "A" poured in place.....	85.00	85.00
10 cu. yd. Conc., Class "C".....	85.00	65.00
24,880 lb. Metal reinforcement.....	.15	.16
150 lb. Structural steel.....	.50	.55
100 lin. ft. Steel beam handrail for conc. str.....	7.50	6.60
0.280 mfbm 1450 # str. grade timb. untreated.....	250.00	440.00
560 lin. ft. 12 in. pipe culvert.....	3.50	3.55
340 lin. ft. 18 in. pipe culvert.....	5.20	5.10
190 lin. ft. 24 in. pipe culvert.....	7.00	8.10
725 lin. ft. 12 in. pipe siphon.....	4.50	4.60
650 lin. ft. 18 in. pipe siphon.....	6.00	6.50
315 lin. ft. 24 in. pipe siphon.....	8.00	10.50
7,300 lin. ft. Comb. conc. curb and gutter, Type "A".....	2.40	2.40
640 lin. ft. Wire fence, Type 2-B.....	.30	.36
4,000 lin. ft. Wire fence, Type 3-B.....	.35	.46
2,350 lin. ft. Wire fence, Type 3-B (mod. No. 1).....	.38	.52
670 lin. ft. Wire fence, Type 3-B (mod. No. 2).....	.40	.63
14 ea. 10 ft. steel gates.....	50.00	60.00
3 ea. Project markers.....	35.00	25.00
18 ea. Right-of-way markers.....	7.00	8.00
1 ea. Salv. flash. inst. (spec. item).....	125.00	109.00
1 ea. Flash. beacon inst. (spec. item).....	1,100.00	1,100.00
940 lin. ft. Drill. and casing 6 in. drain wells.....	4.00	3.00
190 lin. ft. Furnishing 6 in. well casing.....	3.00	2.75
8 ea. Screen for drain well.....	25.00	25.00
1 ea. Metal trash rack.....	35.00	55.00
1 ea. Cast iron grate.....	50.00	55.00
1 ea. Metal weir.....	75.00	27.50
3 ea. 12 in. metal slide gate.....	35.00	82.50
5 ea. 12 in. sh. met. sl. gate (galvanized).....	15.00	33.00
1 ea. 18 in. sh. met. sl. gate (galvanized).....	30.00	55.00
1 ea. 21 in. sh. met. sl. gate (galvanized).....	35.00	82.50



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The Yellow Pages list brand names under many product and service headings. If you're shopping for a particular brand, turn to the product or service heading and underneath, in alphabetical order, you'll find brand names listed, with the dealers who sell or service them.

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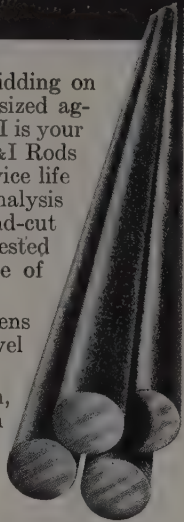
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Estimators—When you're bidding on jobs that require the production of sized aggregate and manufactured sand, CF&I is your western source for grinding rods. CF&I Rods will give you even wear and good service life because they're made from special analysis steel... machine-straightened and end-cut to exact squareness... and carefully tested and inspected through every stage of production.

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So for complete product information, quotations and quick delivery from one of our western mills, call the nearest CF&I office listed below.



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Oakland • Phoenix • Portland • Pueblo • Salt Lake City
San Francisco • San Leandro • Seattle • Spokane 5665

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NEW FOR YOUR CONVENIENCE...



**FLEXCO
"25-PAK"**
TWENTY-FIVE COMPLETE
SETS OF FLEXCO HD BELT
FASTENERS NOW AVAILABLE
IN ONE EASY-TO-HANDLE
ECONOMY BULK PACKAGE



Standard shipping carton contains four "25-PAK" boxes of one size fastener. Keep a supply of "25-PAKS" on hand... easy to store and inventory. Sturdy boxes and shipping cartons have many uses!

There's no need now to carry several 10-set boxes to the job—every "25-PAK" box contains 25 complete sets of FLEXCO fasteners (bottom plates, top plates, clips, nuts and bolts)... enough FLEXCO fasteners to join common belt widths (for example: one "25-PAK", size 1 1/2", will join a 36" belt).

Our savings from bulk-packaging are passed on to you. Label on each "25-PAK" box has chart indicating the number of FLEXCO HD fasteners to use for given belt widths.

Ask your FLEXCO distributor or write to us for additional information.

Flexible STEEL LACING COMPANY
4704 LEXINGTON ST. • CHICAGO 44, ILL.

FOR THE SPLICE OF A LIFETIME!

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1 ea.	Move and reset 12 in. met. slide gate.....	50.00	165.00
3 ea.	Move and reset check.....	50.00	165.00
1 ea.	61 in. outlet and valve.....	150.00	275.00
4 ea.	6 in. valve and riser.....	150.00	220.00
20 ea.	Move and replant small trees.....	10.00	17.50
10 ea.	Conc. catch basin, Type 2.....	160.00	220.00
1,115 sq. yd.	Paved conc. driveways, Type "A".....	4.25	5.00
205 ton	Plantmix bit. surf. for appr. roads.....	7.00	9.50
130 lin. ft.	18 in. conc. irrigation pipe.....	3.00	5.00
500 ton	Rejects in stockpile.....	.60	1.50

HIGHWAY—Construction of 9.5 mi. of highway in Arizona

Arizona—Pinal County—State, Tiffany Construction Co. has been awarded a \$174,031 contract for 9.5 mi. of highway southeast of Maricopa.

(1)	Tiffany Construction Co.....	\$174,031
(2)	L. & M. Construction & Engr. Co.....	186,451
	Phoenix-Tempe Stone Co.....	188,886
	Tanner Bros. Contracting Co., Inc.....	193,322

		(1)	(2)
200 cu. yd.	Structural excavation.....	\$ 1.50	\$ 1.50
10,000 cu. yd.	Borrow (CIP).....	.63	.30
Lump sum	Provide water supply.....	750.00	750.00
4,600 M gal.	Apply water.....	2.00	1.30
1,050 hr.	Rolling.....	8.00	8.00
69,450 ton	Select material (CIP).....	.45	.45
1,782 ton	Cov. mat. for seal coat (mod. Type B) (CIP).....	5.50	6.00
24,850 ton	Bit. stab. base (CIP except cost of liq. asph.).....	.70	.94
1,590 ton	Liq. asph. for stabilized base and flush coat (gr. RC-2, RC-3 or RC-4) (CIP).....	46.00	52.00
168 ton	Liq. asph. for seal coat (gr. MC-5) (CIP).....	48.00	50.00
294 lin. ft.	30 in. C.M.P. (CIP except excavation).....	7.50	9.00
360 lin. ft.	29 in. x 18 in. arch type C.M.P. (CIP except excavation).....	7.00	7.00
164 lin. ft.	36 in. x 22 in. arch type C.M.P. (CIP except excavation).....	12.00	10.00
350 lin. ft.	Rd. grd. (std. C-7) Type "A" or "B" (CIP).....	6.00	6.00
36 ea.	Guide posts (std. C-8) (Type BR) (CIP).....	6.00	6.00
60 ea.	R/W markers (std. C-1) (Type "B" or "C") (CIP).....	7.00	8.00

HIGHWAY—Construction of 1 mi. of highway and bridge in California

California—Contra Costa County—State, Bos Construction Co. has been awarded a \$347,325 contract for surfacing 1 mi. of highway and constructing a reinforced concrete bridge.

(1)	Bos Construction Co.....	\$347,325
(2)	George Pollock Co.....	347,635
	The Pacific Co., Engineers & Builders.....	349,276
	Ball and Simpson.....	349,817

		(1)	(2)
Lump sum	Remov. conc.....	\$ 500.00	\$ 1,100.00
Lump sum	Clear & grub.....	1,000.00	900.00
2,000 M gal.	Furnish & apply. water.....	2.50	2.20
14,000 cu. yd.	Roadway excav.....	.32	.50
1,200 cu. yd.	Struct. excav.....	4.60	1.50
5,000 cu. yd.	Struct. backfill.....	2.60	3.25
60,000 cu. yd.	Imported borrow.....	.53	.70
4 ton	Straw.....	71.50	110.00
200 lb.	Seed.....	.22	.33
1 ton	Commercial fertilizer.....	137.50	155.00
9,300 ton	Untr. base.....	2.49	3.00
35 ton	Liq. asph., SC 1 (pr. ct.).....	35.40	35.00
180 ton	Pav. asph., (P.M.S.).....	6.00	6.50
3,520 ton	Mineral agr. (P.M.S.).....	6.00	6.50
2,300 lin. ft.	Placing P.M.S. dikes.....	.41	.94
10 ton	Aph. emulsion (al. ct.).....	40.00	55.00
60 ton	Screenings (fine sl. ct.).....	6.00	11.00
140 cu. yd.	Class "A" conc. (struct.).....	60.00	60.00
Cont. sum	Class "A" conc. (bridge) (\$75 cu. yd.).....	40,000.00	35,000.00
290 lin. ft.	Rubber waterstops.....	1.60	3.00
15,000 lb.	Bar reinf. steel.....	.17	.17
Cont. sum	Bar reinf. steel (bridge) (73,000 lb.).....	11,000.00	11,500.00
250 lin. ft.	20 in. conc. caissons.....	21.50	11.00
230 lin. ft.	36 in. conc. caissons.....	37.00	34.00
200 lb.	Struct. steel (400,000 lb.).....	78,000.00	71,000.00
Lump sum	Miscel. iron & steel.....	40	40
5 cu. yd.	Clean. & paint. struct. steel.....	6,800.00	7,500.00
280 lin. ft.	Class "B" conc. (curbs & gutters).....	40.00	55.00
978 lin. ft.	Metal guard rail.....	4.25	5.00
50 ea.	Steel rail.....	11.00	11.00
690 lin. ft.	Guide posts & culv. markers.....	7.50	8.00
220 lin. ft.	New prop. fence.....	.86	1.00
530 lin. ft.	42 in. chain link fence.....	1.69	2.00
60 lin. ft.	Remov. & reconstr. 72 in. chain link fence	1.50	1.50
110 lin. ft.	12 in. C.M.P. (16 ga.).....	3.13	4.00
Lump sum	18 in. C.M.P. (16 ga.).....	3.79	5.50
40 lin. ft.	Metal bin-type retain. walls.....	59,000.00	53,000.00
3 ea.	# in. C.M.F. downdrains.....	2.50	4.00
4 ea.	Flared end sections for 12 in. metal pipe.....	46.50	45.00
3 ea.	Downdrain pipe anchors.....	27.50	22.00
5 ea.	Adjust. manholes to grade.....	110.00	110.00
9 ea.	Adjust. valve covers to grade.....	35.50	40.00
Lump sum	Remov. & reset. mailboxes.....	15.00	11.00
	Finish roadway.....	1,200.00	110.00

HIGHWAY—2.2 mi. of highway in Washington

Washington—King County—State, A \$218,679 contract has been awarded to N. Florito Co. for 2.2 mi. of construction on the East Lake Sammamish road in King County.

(1)	N. Florito Co.....	\$218,679
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WESTERN CONSTRUCTION—March 1958

Fiorito Bros.	226,090
Northwest Construction Co.	239,959
Erickson Paving Co.	261,171

	(1)	(2)
Lump sum	Clearing and grubbing.....	\$450.00 \$5,000.00
360 cu. yd.	Common excavation incl. haul.....	.60 .80
705 cu. yd.	Common trench excavation incl. haul.....	2.50 2.00
400 cu. yd.	Excav. of unsuit. foundation mat. incl. haul.....	.75 2.25
405 cu. yd.	Structure excavation.....	2.50 3.00
288 hr.	Pneumatic tired roller.....	8.00 7.00
128 hr.	Mechanical tamper.....	7.00 7.00
115 sta.	Finishing roadway.....	15.00 12.00
115 M gal.	Water.....	3.00 2.00
24 cu. yd.	Gravel backfill for foundations.....	7.00 7.00
50 cu. yd.	Gravel backfill for drains.....	7.00 8.00
750 ton	Selected roadway borrow.....	.80 .72
820 ton	Furn. & plac. crushed stone surf. top course	
	Type I-1 asphaltic concrete pavement.....	3.25 2.50
100 ton	Class "B", one course conc. pavement.....	10.00 8.00
.057 sq. yd.	Cement conc. pavt. std. 14 day, 5 sack mix	
	7 in. section.....	3.70 3.60
516 sq. yd.	Cement conc. pavt. std. 4 day, 5 sack mix,	
	7 in. section.....	4.70 5.00
696 lb.	Pavement reinforcement, Type 2.....	.18 .17
902 ea.	Dowel bars with rubber caps.....	.60 .50
6 ea.	Temporary bridge across pavt., takedown	
	type, other items.....	150.00 150.00
17 cu. yd.	Concrete, Class "A".....	100.00 200.00
298 cu. yd.	Concrete, Class "G".....	48.00 52.00
340 lb.	Steel reinforcing bars.....	.20 .17
126 lin. ft.	Perforated conc. drain pipe 6 in. diameter.....	1.00 1.15
108 lin. ft.	Plain conc. culvert pipe 12 in. diameter.....	2.25 2.25
711 lin. ft.	Std. reinf. conc. culvert pipe 18 in. diamet.....	4.50 5.00
273 lin. ft.	Std. reinf. conc. culvert pipe 24 in. diameter.....	7.00 7.00
124 lin. ft.	Corr. struc. plt. pipe-arch 84 in. span, 10 ga.....	58.00 70.00
90 lin. ft.	Relay. conc. culvert pipe 12 in. diameter.....	2.00 2.00
54 lin. ft.	Reinforced conc. cribbing, special headers,	
	5 in. x 8 in. x 6 ft.-0 in.....	3.00 3.25
222 lin. ft.	Reinforced concrete cribbing, headers,	
	5 in. x 8 in. x 6 ft.-0 in.....	3.00 3.25
108 lin. ft.	Reinforced concrete cribbing, headers,	
	5 in. x 6 in. x 4 ft.-0 in.....	2.60 2.75
144 lin. ft.	Reinforced concrete cribbing, stretchers,	
	6 in. x 10 in. x 6 ft.-0 in.....	2.40 2.60
492 lin. ft.	Reinforced concrete cribbing, stretchers,	
	6 in. x 8 in. x 6 ft.-0 in.....	2.30 2.50
336 lin. ft.	Reinforced concrete cribbing, stretchers,	
	6 in. x 6 in. x 6 ft.-0 in.....	2.20 2.40
18 ea.	Reinf. conc. cribbing, pillow blocks.....	2.00 2.00
98 ea.	Guide posts.....	5.50 6.00
24 cu. yd.	Hand placed riprap.....	25.00 30.00
Lump sum	Remov. portions of conc. box culvert.....	500.00 500.00
4 ea.	Remov. & stkilling exist. conc. spot posts.....	1.00 5.00
est.	Flagging, est. \$300.00.....	300.00 300.00

IGHWAY—10.7 mi. of highway in New Mexico

New Mexico—Torrance-Lincoln Counties—State. The Adams Construc-
 ion Co. has received a contract totaling \$498,016 for the construction of
 0.7 mi. on the Cedarvale-Corona road.

1) Adams Construction Co.	\$498,016
2) Skousen Construction Co.	507,972
Henry Thygesen & Co.	530,569
Allison & Haney, Inc.	532,091

	(1)	(2)
Lump sum	Removal of old structures.....	\$ 3,500.00 \$ 3,000.00
Lump sum	Removal of obstructions.....	8,700.00 1,000.00
Lump sum	Clearing and grubbing.....	32,500.00 20,000.00
14,075 cu. yd.	Excavation—unclassified.....	.45 .50
24,673 cu. yd.	Ordinary borrow.....	.20 .24
16,250 M gal.	Watering.....	.50 .50
675 hr.	Rolling (tamping roller).....	5.00 7.00
785 hr.	Rolling (pneumatic tired).....	2.00 4.50
280 hr.	Rolling (steel tired).....	4.00 7.00
915 hr.	Fifty (50) ton roller operation.....	5.00 7.00
1,090 hr.	Mechanical tamping.....	5.00 6.00
95,765 sta. yd.	Station yard overhaul.....	.02 .02
76,948 ¼ mi. yd.	Quarter mile yard haul.....	.04 .05
97,092 ton mi.	Ton mile haul.....	.065 .065
1.5 mi.	Obliterating old road.....	100.00 300.00
8 ea.	Cattle guard—24 ft. roadway.....	3,000.00 2,600.00
40,345 lin. ft.	Galvanized barbed wire fence.....	.30 .30
2 ea.	Gates—standard type.....	50.00 75.00
70 ea.	Bracing.....	10.00 10.00
1,065 lin. ft.	Galvanized woven wire farm fence.....	.50 .50
160 ea.	Right-of-way markers.....	7.00 7.00
1 ea.	Std. Fed. aid proj. mrkrs., Type I.....	50.00 100.00
145 ea.	Treated timber warning posts, refl.	
	(6 in. diam.).....	7.00 7.00
42,315 ton	Selected borrow subbase.....	.40 .68
24,035 ton	Controlled gradation subbase.....	.70 .73
22,250 ton	Base course.....	1.00 .93
1,470 bbl.	Bituminous material, Type MC-1.....	7.75 7.50
2,555 bbl.	Bituminous material, Type 120-150.....	8.50 8.50
5,745 ton	Cover material.....	7.00 5.50
920 sq. yd.	Class "A" concrete for blankets.....	12.00 9.00
3,460 lb.	Wire fabric reinforcement.....	.30 .30
804 lin. ft.	Culvert pipe—24 in. diam.....	8.00 8.00
120 lin. ft.	Culvert pipe—30 in. diam.....	9.00 9.00
200 lin. ft.	Culvert pipe—36 in. diam.....	13.50 13.50
690 lin. ft.	Culvert pipe—42 in. diam.....	16.00 16.00
1,010 lin. ft.	Culvert pipe—48 in. diam.....	18.50 19.00
386 lin. ft.	Culvert pipe—54 in. diam.....	22.00 24.00
92 lin. ft.	Culvert pipe—60 in. diam.....	28.00 32.50
10 lin. ft.	Corr. metal culv. pipe—36 in. diam.....	13.50 13.50
398 lin. ft.	Corr. metal culv. pipe—84 in. diam.....	
	Bevel 2:1.....	43.00 60.00
210 lin. ft.	Structural plate pipe—108 in. diam.....	
	Bevel 2:1 gage 412-110.....	60.00 70.00
140 lin. ft.	Structural plate pipe—120 in. diam.....	
	Bevel 2:1 gage 510-18.....	75.00 90.00



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 Billings, Montana, Midland Materials Co.
 Casper, Wyoming, Casper Concrete Co.
 Denver, Colorado, K. C. Construction Supply Co.
 Albuquerque, New Mexico, W. J. Burke & Co.
 Salt Lake City, Utah, Intermountain Concrete Specialists
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MANUFACTURERS

(Continued from page 146)

Gardner-Denver expansion

Final plans are announced by Gardner-Denver Co. for an addition to its office building in Denver, Colo., according to Cedric H. Rieman, vice-president in charge of operations. The addition, which will total about 15,000 sq. ft. of space and adjoin the present building at 1727 E. 39th Ave., will provide adequate facilities to handle the growth in the company's output of rock drills for the construction industry, Rieman said.

Caterpillar personnel appointments

Richard C. Locke has been appointed supervisor of the General Construction Section, Sales Development Division of Caterpillar Tractor Co. A member of the Caterpillar organization since 1952, Locke will have responsibility for a program of market development for Caterpillar general construction equipment.

Also announced is the reorganization of the company's manufacturing general office into three departments. As director of manufacturing, L. J. Ely will give administrative guidance to the three departments: Planning and Plant Engineering, headed by Hugh Boggs; Production Control of which Roy McCluskey is manager; and Quality Control under the management of Dale Wright.

Marion engineer promotions

Three new appointments on the engineering staff of Marion Power Shovel Co. are announced by A. F. Busick, Jr.,

executive vice president and general manager. Merle V. Lashey is now manager of engineering, Jack F. Weis is assistant chief engineer for large and intermediate size machines, and Robert W. Bergmann has been named to the position of electrical engineer. Marion Power Shovel Co. of Marion, Ohio, a division of Universal Marion Corp., manufactures a complete line of excavating equipment ranging in size from 3/4 to 75 cu. yd.

Jack Phillips opens consultant office

John H. "Jack" Phillips, who served until recently as territory manager for The White Motor Co., resigned from the firm to start a truck consultation service under his own name, according to Wilson D. Patterson, White's vice president in charge of the Pacific Coast region. In his last assignment with White, Phillips worked out of the company's San Francisco office. His new office will be located at 3339 Lakeshore Ave., Oakland, Calif.

Le Roi names engineering manager

Donald M. McDowell has been named manager of engineering for the Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis. McDowell joined Le Roi as chief development engineer in 1956, and for the past several months has been acting manager of the division's engineering department.

Clark names field engineer

The Construction Machinery Division of Clark Equipment Co., Benton Har-

bor, Mich., announces the appointment of Charles L. Ellis as field engineer. In this capacity he will handle job estimating, organize technical data, direct field tests and engage in regular field engineering activities in connection with new products.

Chicago Pneumatic names S. F. manager

The first of January A. B. Rudstrom became district manager of Chicago Pneumatic Tool Co.'s San Francisco branch, coming West from the Chicago area. Rudstrom's district includes Northern California and the northwest portion of Nevada, with the district office and service station at 855 Bryant St. in San Francisco. Henry P. Hansen, manager of the Los Angeles District, who directed the San Francisco office for the past two and a half years, will concentrate on the Los Angeles district to which is added the state of Arizona.

A Goodall transfer to West Coast

Thomas Meyer, manager of Goodall Rubber Co., Los Angeles, Calif., announces a new man in that office. Robert Semerau, who has had several years of experience with Goodall at Kansas City, Mo., has transferred to the Los Angeles branch to serve the contractors and general trade in the San Fernando Valley and the Bakersfield areas.

D. A. Bessmer made executive v.p.

Elected executive vice president of The Timken Roller Bearing Co. recently is Dwight A. Bessmer. Starting with Timken at Canton, Ohio, in 1933, Bessmer served the company in various key posts prior to his election as vice president in 1953, which position he held until this latest appointment.

IH makes ready for road-building need

International Harvester Co.'s motor truck division has established an inventory pool of heavy-duty International dump trucks to meet immediate need of contractors engaged in highway construction work, it was announced by L. W. Pierson, manager of sales. A range of IH models with factory-installed dump bodies, up to 33,000 lb. gross vehicle weight, is available from the pool at the company's Springfield, Ohio, and Fort Wayne, Ind., works.

Schield Bantam sales-service school

A new sales-service training school to continue through the early spring is announced by Schield Bantam Co., Waverly, Ia., manufacturer of trucks, cranes and excavators. It is open to all Schield Bantam distributor salesmen and is designed to offer them the opportunity of becoming better acquainted with the manufacturer and to give them a better working knowledge of its products. Several training programs have been used in the past throughout the distributor organization, but this is the first time a formal sales-training course is offered at the factory.

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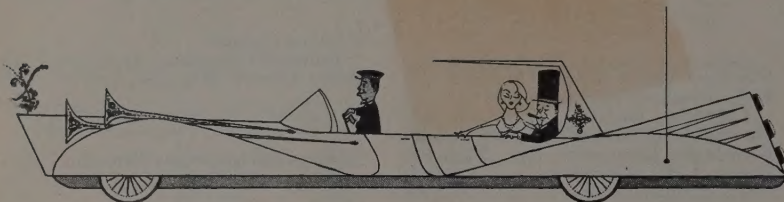
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Department of long-range forecasts

Next time you happen to be thumbing through 50-year-old magazines you might discover the following item, which appeared in the January 1908 issue of the *Scientific American*:

"That the automobile has settled down to its approximate final type is suggested by the small and decreasing number of novelties which have made their appearance during the past year. And with this ultimate agreement upon a best type there has come a remarkable improvement in the quality of the product, both as to the material of construction, the reliability of operation, and the finish and general appearance. Wonderfully rapid has been the development of this most complicated machine to its present perfection . . . the car body is distinguished by straight lines and a general simplicity and purity of outline and coloring. With reasonably careful handling and inspection, a car of this type, built by any of the first-class makers, affords as reliable a means of locomotion as exists today."

We thought it might be entertaining to search for similar boffs in 50-year-old copies of **WESTERN CONSTRUCTION** and present them here for the delight of our readers. The biggest mistake we found was that 50 years ago there was no **WESTERN CONSTRUCTION**. Twenty-five years ago there was, though. Outright goofs, however, are hard to find. The only thing of this sort worth reporting is an advertisement from a rubber company beating the drum for solid rubber tires to replace "old-fashioned pneumatics."

There were two articles entitled, "Is Hydro-Generated Power Losing Favor?" and "Why Build the Colorado Aqueduct So Big?" but they both gave the right answers. The article on hydro-power contained this ominous sentence: "Considerable in-

terest is being shown relative to activities in Russia . . . wherein 90,000,000 hp. of hydro power is reported available, exceeding that of any other country." The article on the aqueduct said, "A water supply tunnel or masonry aqueduct cannot be enlarged, but must be made full size at the start." This was the right idea, but the specific size recommended, which was thought to be generous, proved to be chincy. As diligent readers of this magazine know, the Colorado River Aqueduct is now being doubled in size.

Elsewhere in the March issue, 1933, is an ad by International Harvester announcing its latest model half-ton truck, which sold for \$360. Listed as standard equipment were a trumpet horn, front and rear fenders, and full length running boards.

Timken described the first detachable rock bit.

Caterpillar presented its line of crawler tractors, which ranged in price from \$1,000 to \$6,250.

A staff-written article described the widening of the Yolo Causeway leading to Sacramento, Calif., to its present bottleneck size. The subject of the editorial is painfully familiar—the raiding of the highway gas tax fund by the general fund.

These remarks may leave some of our greener readers with the impression that everything in those days was short-sighted, routine, or small-scale. Far from it. People lacked money, but not foresight or imagination. Simply listing the titles of three articles from the March 1933 issue shows that some of the things going on make current jobs like, say, Glen Canyon Dam look like mere minor disturbances: "Bids Opened for San Francisco-Oakland Bay Bridge," "Construction Started on Colorado River Aqueduct," and "Golden Gate Bridge Construction Under Way."

Indian trouble

The area around Glen Canyon Dam is Navajo country, which means that a few simple things must be kept in mind. For example, consider the incident which occurred on Southern Engineering Co.'s pipeline contract in connection with the new city of Page, Arizona. They were installing a diesel electric generating set to supply power for their crew's trailer camp. The first time they started the engine it wasn't vented properly and a series of black smoke puffs rose into the air. This brought Southern's Navajo labor foreman, Sam Denny, racing to the scene. "Shut that thing off," Sam said, "you'll have every squaw on the reservation up here!"

Chuck-hole engineers

is the label often applied to maintenance engineers by their more colorful counterparts in other phases of highway construction. However, as R. S. Titera pointed out before the recent Street and Highway Conference, repairing chuck-holes can sometimes be a formidable task. The Los Angeles County Road Department had to grapple with one 850 ft. deep. It was the result of an abandoned oil well. (Any discussion of outstanding chuck-holes should include the recent one in Seattle which spread from curb to curb.)

Mr. Titera, before beginning his fine paper on preventive maintenance of roads, got another good response from his audience with this letter to the editor of the *Phoenix, Arizona, Republic*: "If anyone has a couple of dead horses or cows and wants a place to bury them, there is a hole in the road at 35th Avenue and Van Buren Street that will hold them, and it will make the road more level."

WELL, I'LL BE DARNED

The bridge collapsed, it broke in half,
It failed at every joint.
The engineer just shook his head,
"Why, damn my decimal point."



(David Wally, Medford, Oregon, gets \$5 for sending this item. The editors will cheerfully send a minimum of \$5 to any reader who submits something usable for this page. Entries must be postmarked. The decision of the judges is ridiculous.)

... The Editors