Replacement, Service and Repair of County Highway Equipment

ROY SHROTE
Highway Supervisor
Vanderburgh County Highway Department

When Should New Equipment be Purchased?

Since January 1, 1963, when the new cost system was inaugurated, county highway departments have had available a remarkably fine source of information which indicates costs of running each vehicle. This is Form 13, "The Equipment Inventory Record." At present only three years, 1963, 1964 and 1965, are available but just these three years furnish a wealth of information. Given another two years of additions to these forms and it will be safe to depend upon the accuracy of these figures. An hour spent by the highway superintendent will pin-point the time when a trade-in for new equipment is at hand.

For instance, on grader No. 188 Form 13 shows that in the past three years the following sums were spent:

\[
\begin{align*}
\text{\$5,416.71} & \quad \text{for parts}, \\
\text{\$2,613.02} & \quad \text{for our labor}, \\
\text{\$1,413.08} & \quad \text{for outside contract parts and labor}, \\
\hline
\text{\$9,442.81} & \quad \text{total.}
\end{align*}
\]

It is still an old, unreliable, worn-out grader. These figures indicate that a trade-in is overdue. The years of operation do not necessarily indicate trade-in-time.

When Should New Equipment be Purchased? When the book says so. Our figures indicate that five to six years work is frequently enough time in which to get all the good out of a truck. When should we hire or rent equipment? When let contracts? Each county is faced with its own problems.

Snow removal in northern counties is quite different from that in the south. In the southern counties it is neither feasible nor economical to invest too heavily in snow removal equipment. There will only be two or three snows each year of any importance. As a result, we use all the equipment and supplement it by hiring tractors, graders and blades.
Another problem faced once or twice each spring is that of clearing mud and debris from the roads covered by the Ohio River floods. Our own equipment does what it can but on a couple of our main roads, in the bottoms, it is best to hire the work done. Contractors clean the road, cut and remove the trees and haul away debris. Costs for this in the past have been surprisingly low and the speed and efficiency of the contractors makes for a better public image. There is a point of no return when investing in equipment; and in these two operations it is felt that any further investment would not be economical.

There are other types of equipment which we feel should be rented. One example, at least in our county, is an air-compressor. We own a fine [---*] compressor and $2600 is tied up in it, but in three years it has only operated a total of 154 hours or 51 hours per year. The equipment could have been rented for $154. Concrete mixers fall into the same category. They can be rented for considerably less than they can be purchased. We will never buy another pulverizer for the same reason—why tie up $10,000 to $15,000 for a piece of equipment that goes years with 24 to 40 hours of work?

We have $325 tied up in a sand-blaster used only 24 hours on one job. Rent them, don't buy them. The point is, equipment must be used to make it pay. Don't buy equipment for a one-shot deal. Our $40,000 [---*] slope grader is worked every possible day. We've got to make the investment pay.

Size or Capacity of Equipment

From our experience, the trend of the last few years has been toward bigger, heavier and tougher equipment. Our figures indicate that overpower is much less expensive than underpower. In 1963 we bought five [---*] trucks, the largest gasoline fuel trucks this company makes. Name brand heavy duty axles, tran-axles and clutches were specified and as a result parts cost are down and repairs and adjustments to the carburetion and maintenance of lights constitute the major portion of repairs. These trucks are called upon for the meanest kind of work. For instance, they are equipped with both snow plows and salt spreaders and handle them with ease. Actually they may have a bit more power than needed but it's sure a load off ones mind to know these outfits can go. Don't skimp on power.

After pure power consider capacity—these days it means much. In our case, with the labor shortages, we don't have too many hands whom one would call 'truck driver.' Where there were 25 on the list three years ago there are now only 12 employees listed under that cate-

* Trade name deleted by editor.
gory. To overcome this shortage we have gone to more power and bigger beds. From five to six tons per load we must get 10 to 12 to keep up with the hounds. At present five trucks and five drivers are doing the same amount of work that ten trucks and ten drivers were doing three years ago.

Plenty of power, plenty of rough rugged components can reduce the number of trucks and cut costs. Don’t buy underpowered, undersized equipment. Don’t go bear hunting with a switch.

**What Steps Should be Taken to Insure a Dependable Source of Parts and Service?**

Possibly the best way to insure good service and a good supply of parts is to try to purchase only brand name equipment. Don’t allow some off-brand dealer a hundred miles away to sneak in a bid. Make purchases locally, from a strong company and a company which will not be financially ruined by stocking $500 or $1000 worth of parts. Your chief mechanic, if he is on the ball, will have a good list of suppliers at his fingertips. By dealing with reputable companies, companies proud of the service they give, nothing but a major breakdown can hold up repairs for any appreciable time. It is repeated, use name brands and name vendors.

**What Can be Done to Get the Replacement of Road Equipment Setup on a Planned Schedule and Then Eliminate Obsolete Equipment Requiring Expensive Repair?**

Look again at Form 13, “The Equipment Inventory Record.” Properly and faithfully kept, this record will give a true picture of the cost of operation from the gallons of gas and quarts of oil, through insurance, overhead and depreciation. I believe that I would begin with the years of productive work to be expected. We all have had units in the over ten years old bracket but as a rule these show no exorbitant costs because these units are withheld from service and used only for special operations. But our records indicated that six years should be used as the maximum length of time a piece of equipment can be economically operated.

In other words at the end of each year review Form 13 figures and use them as a guide for replacement. Observe the steady build-up of cost and labor charges at a glance and make decisions accordingly.

**How Often Should Dumps and Graders be Replaced?**

As mentioned earlier perhaps five to six years should be tops in retaining dump-trucks. Graders on the other hand can hardly be kept
less than 10, 12 or 15 years. The terrific investment in the modern grader requires that the depreciation figure be spread over as many years as possible. Depreciate a truck, costing $6000, over six years but on a grader, at $20,000, it requires more time or one runs into some outlandish cost figures.

How to Improve the Efficiency and Effectiveness or Service Program on County Highway Equipment?

It seems that the prime factor in a service program is close cooperation between the county superintendent and the chief mechanic, with an assist from the records.

A supply of quick turn-over supplies should be kept at a pretty good size. There is no need for a $6000 piece of equipment being held out of action for want of a 48-cent spark plug, an 18-cent lamp bulb or a $1.79 blinker.

The superintendent and the chief mechanic can cut many costs by taking advantage of “deals.” Buy 48 filters in one month and they may be reduced 60 percent or buy six dozen spark plugs and get them at 48 cents each.

A good chief mechanic can cut a lot of money corners, he can keep a fine inventory of stock and still not get stung with obsolete material on the stockroom shelves. The keeper of the inventory can lend a hand, after a little experience by finding who sells what at the lowest price. Three years of inventory experience pretty well dictates from whom we should buy what. Just the other day we ordered six putty knives from one of our suppliers of other parts. Two of the six were delivered and four back ordered. When the inventory man made his entry he discovered we had been charged $2.45 for the putty knives whereas all past records were in the 90-cent to $1.10 range. The knives were returned and the order canceled.

So efficiency and effectiveness come from cooperation and horse sense, methodical buying and constant price watching. As the county superintendent signs his purchase orders he should always be on the look out for prices which seem out of line.

How to Determine if the Service Recommendations of the Manufacturer are Being Followed?

This depends, as do so many things, on the county highway superintendent and his chief mechanic. It should be apparent to all of us that the manufacturers’ recommendations are the result of long experimentation and common sense should tell us not to cut corners. Our county, for instance, is stocking nine different types of oil to fit various specifica-
tions. Why take a $40,000 machine and foul it up with a lubricant not intended for it? Better to spend an extra dime a quart and save a $5000 repair bill. Filters, plugs and points, condensers must meet the specifications or they don’t go in. A mechanic who will cut corners does not appreciate his job and some day, there will be a “blow-up” due to the inferior and cheaper parts.

*Should We Always Attempt to Make our Own Repairs?*

Our records say no. In 1963, 1964 and 1965 our outside repair costs were: $2300, $3020 and $4593 respectively. In 1965 a grader required a complete overhaul and in 1964 our [*——*] loader required a complete overhaul.

These jobs required highly specialized tools and equipment and our own garage was not about to buy hundreds of dollars of equipment for only one machine. Why tie up money in a one-shot deal? Simple repairs on complex equipment we are prepared to make but it is economical madness to purchase special equipment to repair just one item of machinery.

We have also found that valve grinding is more cheaply done, is better, and faster at a shop specializing in that work. So if one does not have the tools, and if the tools represent a big outlay of cash, and if it is for a single piece of equipment—*send it out.*

*How Much Inventory of Repair Parts and Supplies Should be Stocked by the County Highway Department?*

That figure of course depends on how much equipment a county has to maintain and keep running. Our county has 50 pieces of automotive equipment: 33 trucks, 1 [*——*] scarifier, 1 broom, 1 low boy, 3 tractors, 1 backhoe, 1 [*——*] loader, 1 roller, 1 front end loader, 1 compressor, 1 mulcher, 1 [*——*] slope grader, 2 graders plus odds and ends, pumps, saws, mowers, etc.

Our inventory on January 1, 1966 showed:

- $1,475.30 electrical replacement parts,
- 2,895.54 non-electrical replacement parts,
- 3,073.89 parts for special equipment,

$7,444.73 total.

The last figures are high and we are trying to reduce them. Mower parts take $1,400; salt spreaders, $400; scarifier, $135; graders, $539; power-saws, $115.

*Trade name deleted by editor.*
How much should be carried? It will depend on the size of the county fleet and how much repair work the county is equipped to do. Some counties are able to get by on $1000 and others, larger counties, need $10,000 or $12,000.

These figures might be useful as a guide-line to new men, but the figures are as flexible as a rubber band and experience will have to be the final guide. Just try to keep the investment as low as possible.

*Quality Buying vs Price Buying*

Buying for a price on a great many items—nuts, bolts, screws and washers and items of like nature—is usually worthwhile but not always. We paid $110 per thousand board feet for bridge timbers in 1964. The timbers were green and full of knots. They rotted in a very short time. We stand to lose 25 percent of this purchase as the timber is now unfit for bridge or guard rail use.

In 1965 we paid $160 per thousand board feet for [*—*] treated lumber of top quality. We expect these timbers to last not just one, two, or three years, but more in the neighborhood of eight years.

In this instance low price means low quality and the extra original expenditure for top quality materials winds up to be the advantage of our budget.

*Wiping Rag Experience*

We had been buying rags from an auto salvage firm at 24 cents a pound. The price was cheap enough, the rags were clean, but they were of all types of material: old overalls, slip covers, and corduroy. All clean—but they drove the hands crazy because they would not absorb. In 1963 we purchased 1100 pounds and in 1964, 1600 pounds of this type rag.

In 1965 we stopped buying for price. We went to a legitimate “Clean Towel” company and made arrangements for delivery of genuine shop towels. The Price? About 50 percent higher from 24 cents a pound to 35 cents a pound. But this increase was counterbalanced by having men turn in a dirty towel for a clean one. At intervals the dirty towels were cleaned at eight cents per pound and reused. From $271 in 1963, and $384 in 1964, we chopped the figure to $148 plus $12 laundry or $160 in 1965. Not only a monetary saving but the mechanics and hands were happy. Price buying can be expensive.

* Trade name deleted by editor.