

Utility Cuts and Traffic Operations

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The program explained here is not a duplicate of that of other cities, but a tried and proven way to control utility cuts. Since we have experimented in many different ways, it is hoped the following information will guide or help others in establishing their program. The utilities were very helpful in this program and all are now cooperating in every way possible. Without their help, the project certainly would have been difficult to control and establish.

Street Cut Permits

Today is Tuesday, March 29, 1966; time, 11 a.m. This is an insignificant statement to many of you but to many city engineers and engineers of permits, it is a very important time and date. By this time, today, in Indianapolis, more than 20 cut permits have been issued to cut into the street pavement by the four utilities or private plumbers and mechanical contractors.

Today, Indianapolis is averaging approximately 20 percent ahead of last year in the number of cut permits issued. This is due to the demolition of homes and buildings that are being removed because of redevelopment, proposed interstate construction and land development. All of the utilities which serve these rezoned and renovated properties are to be removed or cut off with the exception of sewers. It is estimated that approximately 100 additional cuts are made, yearly, without permits.

Utilities Making Cuts

	<i>Percentage</i>
Citizens Gas Company	55
Indianapolis Water Company	15
Indianapolis Power and Light Company	6
Indiana Bell Telephone Company	4
Others	
Plumbers for Water Services and Mechanical Cuts	15
Sewer Cuts	5

The total number of street cut permits issued in 1965 in the City of Indianapolis was 4,886 and fees collected for these cuts were \$35,205. This, alone, is quite an item paid to the City General Fund; charges range from \$5 for an improved pavement, street, or alley cut to \$3 for an unimproved street, alley, or berm cut. Included in the total collected were \$10,471 for repair charges assessed to plumbers or mechanical contractors not qualified to make their own repairs. Qualification of contractors making their own repairs is made only by the city engineer after the contractor has submitted his available equipment list and evidence of past performance. The utilities make their own repairs.

Cut Design, Repair and Inspection

After many years and through many test sections on local streets and highways and from test sections such as the Ottawa-Illinois project, the formulas to properly design a roadway pavement were developed. This entails the proper subgrade treatment, subbase, pavement thickness, joint spacing, reinforcing mesh and pavement composition. Extreme care is taken in materials testing during construction—checking of compaction, slump, mixture, placing, finishing, curing. There is also checking for proper alignment-deviations in surface texture, proper joint filling, coring for proper depth, breaking of beams and compression testing of cylinders. All of the aforementioned is necessary to insure construction of a facility that will withstand the elements and heavy vehicle loads. The structure has taken many hours of hard physical labor, calculations, tests and patience to produce at a substantial cost to the taxpayer and so should be properly preserved. Sometimes within minutes after ribbon-cutting ceremonies, a utility cut will be issued for repairs or enlargement of service, therefore, destroying to a great degree, this beautifully engineered structure.

As long as there are utilities within pavement limits and there are no controls on location, and as long as the city does not specify the type of equipment for installations to be used beneath structures, the city is going to be plagued with utility cuts. Many times human negligence or error will be the cause for this cut to be made—such as, faulty installation of a corporation cock or a water line, a bad valve on a gas service, a broken conduit on a telephone cable or a bad sewer pipe or joint.

The engineering department is unable, at this time, to actually classify these various types of cuts as to their damage to the street pavement section.

In Indianapolis, there are many different types of soils ranging from sand and gravel to a hard bluish clay with peat and muck. Therefore,

not knowing the soil condition at the cut location, it is insisted that all repairs be made to approved standards developed through the years. It is not the type of cut, or depth of cut that mars and destroys roadways but rather *repairs improperly made*.

It now becomes a necessity to check and inspect so that cuts are repaired according to standard specifications. With the rate now at nearly 5,000 cuts a year, and in order to assure fairness, cut inspection is assigned to a qualified man within our own engineering department. The inspector must be experienced and familiar with construction practices and not prone to accept gratuities. Evidence provided to the city council showed the need for a responsible inspector and they agreed his salary should be rated in the upper five percent of the department's salaries. For many years the department did not see the need for this prequalified man and now is paying dearly for mistakes made by many contractors.

What is the reason for the design criteria as used in our standards? First, it was a difficult task to convince the utilities and contractors that we did not want these cuts repaired to the old specification which stated, ". . . replace in kind or replace to original condition as found." We know this was impractical since the cut itself has weakened the old pavement and could not, under any circumstances, be repaired satisfactorily. Therefore, the engineering department insists upon the highest type of repair, regardless of the condition of the existing pavement. When there are plans for a new type of surfacing, the utility may be required to apply the same type of surfacing at the time of repair. After many meetings with the utilities, prior to establishing this program, their engineering staffs became aware of our problems and agreed to these new standards. It was then that things began to "shape up."

The design desired is for minimum loadings of 11,000 pounds. The equipment needed to properly repair these cuts to the minimum standard is not of special design but is available from any reputable contractor or equipment dealer, namely, a concrete saw, an air compressor and hammer, an air tamp and, if asphalt surfacing is used, a roller.

Cut in High Traffic Areas

After a cut and repair standard is developed, and a qualified inspector appointed, rules and regulations governing utility cuts in relation to traffic are established.

Due to many one-way street systems and the variability of the peak-hour traffic volume, it is not feasible to cut a street and to interfere with traffic. The safest and most expedient way to make this cut

and repair would be to block the entire street and detour traffic—but 40 streets closed in any single day would be impossible. The old saying “You cannot get there from here,” would become a reality.

Cuts must, therefore, be scheduled when the daylight traffic flow is at its lowest. The comments received from the general public concerning the daylight hours at which the traffic department records show a lower volume, are amazing. As it is physically impossible to not interfere somewhat with the traffic flow for a street cut operation, it is felt that traffic regulations are very important in helping to determine the proper time for cuts.

The process of determining the limit of hours to permit these utility cuts was really very simple. First, we recognized the confusion created by cutting and so restricted cutting in the downtown areas during peak traffic hours. The shortage of arterial highways and streets and the overloading of these arterials within the city precluded cutting in these thoroughfares during peak hours. It was also recognized that the over-loaded arterials caused some major streets to become high-volume thoroughfares, and so these streets were also restricted to cutting during rush hours.

Many of the street widths are less than 40 feet, making it necessary to control the amount of width that could be blocked and still permit traffic flow. It was agreed that only one lane at a time would be blocked, and before any additional cutting, temporary repairs would be made to the blocked lane.

Emergency Cuts

It is not right nor feasible to say that cuts could never be made in these streets during the rush hours because a utility could become involved in a liability, such as a gas leak or other emergency. If an emergency develops, the police have the power to permit cutting. This privilege is not abused, however, since the utilities are quite aware they must have an emergency to get this approval. The Gas Company has been granted this permission several times due to main breaks; the Water Company because repairs were not completed in time for rush-hour traffic and service was interrupted. In all cases of proposed emergency cuts, the police department, fire department and traffic engineering department are immediately notified.

In unusual cases where the utility or sewer cannot be repaired or replaced, within the time allowed or before the rush hour begins, the contractor is required to remove all excavated material from the roadway and to place and secure hot-rolled steel plates across any openings. Experimenting with different steel plates indicates that best general-

purpose type, for street cuts, is a $\frac{3}{4}$ -inch thick, four- by ten-foot, hot-rolled plate. This plate will carry essentially all types of vehicles, with very little deflection. One plate costs approximately \$125 and can be used indefinitely. Placing of these plates must be done by equipment capable of lifting a thousand pounds or more—a small tractor-type backhoe is usually sufficient.

In the case of large cuts, where the steel plates cannot be used, excavated material must be placed at both ends with adequate barricades. Flasher lights must also be placed far enough from the cut to warn and direct traffic around such an opening.

Residential Area and Temporary Cuts

In the case of cuts being repaired on residential or local streets, the contractor is permitted to properly barricade and use adequate warning lights to protect the opening until the repair is completed.

If, for some reason such as inclement weather, a temporary utility cut is necessary, it is permissible to make a temporary surface repair providing constant maintenance is assured.

Conclusion

It is neither too demanding nor too expensive for the utility to make repairs when one considers the original construction cost to the taxpayer for street facility and what it would cost this same taxpayer for repair or replacement. The utilities do pay taxes but a very small percentage is returned to the street systems in Indiana.