Legislative Budget and Finance Committee

A JOINT COMMITTEE OF THE PENNSYLVANIA GENERAL ASSEMBLY

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A REVIEW OF PENNDOT'S HANDLING OF PENNSYLVANIA'S SPRING 1994 POTHOLE PROBLEMS

June 1994

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Introduction

The Legislative Budget and Finance Committee, at its March 16, 1994 meeting, directed its staff to conduct a review into PennDOT's handling of Pennsylvania's spring 1994 pothole problems. The results of this review are presented in this report.

Study Objectives

The following objectives were established for this review:

- To determine how PennDOT identifies pothole problems.
- To determine how the pothole hotline works, how hotline calls are referred to county and local maintenance offices, and how hotline calls affect the repair schedule.
- To determine the average elapsed time between a pothole hotline call and date of the repair and to determine what factors affect this response time.

Scope and Methodology

To gain an understanding of the pothole situation in the Commonwealth, we interviewed PennDOT officials in the central office and in two engineering districts. We also reviewed pertinent agency files and reports.

We visited 17 counties located within eight of the Department's 11 engineering districts. (See map at Appendix A.) We met with officials of three engineering districts, including one district engineer, three assistant district engineers for maintenance, one community relations coordinator, and others. At 14 of the 17 county visits, we spoke with the PennDOT county manager or assistant manager about their pothole operations, selected five hotline calls to determine whether the reported potholes had been repaired, and toured the state roads in the county with the PennDOT county manager or assistant manager to inspect these and other sites. We inspected roadways in one additional county without meeting with PennDOT staff and, in two other counties, met with PennDOT staff but did not inspect roadways. We spoke with union representatives in 5 of the 17 counties we visited.

We also called all PennDOT hotlines during two different time periods to determine how long it takes to get through to an operator. We contacted the six states

contiguous to Pennsylvania to compare their pothole repair operations to Pennsylvania.

Finally, we asked PennDOT personnel in 9 counties to calculate the average response time to repair a pothole called in on the hotline. We did not examine all the original data that was used to determine this average response time, but we did review and recalculate the data and spot-check the accuracy of the reported dates for several calls. We used original data to calculate the average in a tenth county.

Acknowledgments

The LB&FC staff expresses appreciation to officials and staff of the PA Department of Transportation for their input and assistance in this inquiry. In particular, we thank Howard Yerusalim, Secretary; William R. Moyer, Deputy Secretary for Highway Administration, and R. Edward Baumgardner, Special Assistant to the Deputy Secretary for Highway Administration.

Appreciation is also extended to the district engineers, the assistant district engineers for maintenance, and, especially, to the county managers and assistant county managers who spent a significant portion of one or more days inspecting roadways with our staff.

This report was developed by LB&FC staff. The release of this report should not be construed as indicating that the Committee's members endorse all of the findings and recommendations. Any questions or comments regarding this report should be directed to Philip R. Durgin, Executive Director, Legislative Budget and Finance Committee, P.O. Box 8737, Harrisburg, Pennsylvania 17105-8737.

Findings and Recommendations

Many parts of Pennsylvania set new records for snowfall and cold temperatures during the 1993-94 winter season. Parts of northcentral and northeastern Pennsylvania received nearly 140" of snow, while parts of southeastern Pennsylvania had to contend with severe ice storms and numerous freeze-thaw cycles. The harsh winter created severe pothole problems in many parts of the state, especially in the southcentral and southeastern regions.

Calls to the state's Pothole Hotline increased from 2,016 over a four-week period in 1992 and 4,533 over a five-week period in 1993 to 5,574 over a five-week period in 1994. The largest number of hotline calls this year--2,072--was reported in the five-county Philadelphia area. PennDOT reported using 130,000 tons of material to patch potholes in the winter-spring 1994. This compares to 101,000 tons in 1991, 94,000 tons in 1992, and 97,000 tons in 1993.

In mid-February 1994, PennDOT officials established two goals regarding potholes: (1) to repair all roadways identified as having a severe pothole problem by the beginning of May and (2) to ensure that no roadway has a pothole problem rated higher than "low severity" by June 10, 1994. Roadway pothole severity ratings are:

Low:	5 or fewer potholes per mile
Medium:	6 to 12 potholes per mile
High:	13 or more potholes per mile

A pothole is defined as a hole in the pavement surface having a minimum depth of one-half inch and covering an area of at least one square foot.

As a result of the harsh 1994 winter weather, 37 PennDOT county maintenance offices will be eligible for $14 million in federal disaster funding. The Department intends to give the county offices flexibility in programming projects with the extra money, but also plans to emphasize its surface improvement program. The $14 million Federal Emergency Management Agency award represents 75 percent of eligible costs.

How Potholes Are Created and Repaired

The primary culprits in the creation of potholes are water and the frequency of "freeze-thaw" cycles, with traffic as another important factor. Potholes typically result from cracks in the surface, poor water drainage, or both. A crack develops in the pavement, often near joints. Water enters the crack area; it freezes, expanding

the crack area, and knocking small pieces loose. Traffic enlarges the crack area allowing more water to enter, and the cycle repeats. Water eventually leaks into the roadway's sub-base, freezing below the surface area. Expansion forces larger pieces to become dislodged. As the roadway thaws, the road surface drops. Traffic pushes the road surface even further down, and the pothole is fully developed.

Poor drainage is also an important contributing factor. Asphalt is not a waterproof substance. Asphalt is similar to a sponge, but not nearly as absorbent. Poor surface or underground drainage allows water to saturate both the asphalt and the layers of grading materials beneath the asphalt. Waterlogged grades become soft and are unable to support the weight of vehicles. The pavement surface then begins to break into small pieces, typically about 2" in diameter, as vehicles pass over the spot. This is called "alligator cracking" because the spot resembles the back of an alligator. Eventually, the small pieces of asphalt are kicked out by traffic passing over, creating a pothole.

Because of the severe ice storms in southeastern Pennsylvania, several PennDOT county managers were forced to use road graders to remove ice from the road. This machinery is especially hard on roads because hydraulic pressure pushes the steel blades into the road to scrape the ice. While graders are able to peel the ice from the road, they scrape and damage the road in the process. Potholes then developed in and around the damaged areas. We were also told that the City of Philadelphia, which is under contract with PennDOT to plow some state roads within the city, uses snow plows fitted with steel blades rather than the rubber-cushioned blades used on PennDOT plows. These steel blades cause greater damage to the roadway.

Several of the county managers we visited in eastern Pennsylvania noted that some of their worst potholes were caused by "utility cuts." Utility cuts are made by telephone, electric, gas, and water companies to service underground lines. PennDOT requires that utilities repair these cuts properly, but some county managers told us the companies frequently do a poor job. Even when properly repaired, the road's integrity is damaged and the likelihood increases that a pothole will form around the cut. Similar problems occur at railroad and trolley crossings. Railroads have maintenance responsibilities where their rights of way cross the roadway and for 18 inches on either side of the tracks. Several county managers told us that repairs at (sometimes abandoned) crossings have not been made or are not sufficient, causing potholes. The Philadelphia county manager also noted liability concerns if they repair potholes caused by utility cuts or that are on railroad/trolley right-of-way.

Both PennDOT management and several county maintenance managers noted that PennDOT's extensive joint and crack sealing, as well as seal coating, have contributed to reducing the severity of the pothole problem.

How Potholes Are Repaired

PennDOT repairs potholes with cold patch, hot mix patch, or warm spray patch. The method selected is influenced by factors such as weather, temperature, traffic patterns, availability of patching material, and the type of road surface being repaired.

Cold Patch (Cold Mix). A cold patch is a combination of either stone, synthetic resin, and a fiber binding material or of mineral aggregate and bituminous material. PennDOT uses cold mix to quickly and temporarily repair holes during the winter and spring until a more permanent repair can be made. Cold patch can be used in any weather or at any temperature, but it holds best in a dry hole. Cold mix is soft and pliable and is simply shoveled into the holes and packed down with a roller or tamper. After several hours it settles into the hole and hardens. However, it is not unusual for cold mix patches to break apart within a few weeks or even within a few days after making the repair.

Hot Patch (Hot Mix). Hot patch is hot asphalt. It must be kept hot or it will harden; thus, it is difficult to store and must be obtained fresh each day. Hot patch is not available year-round because the asphalt plants which produce the hot mix material do not operate during the winter months. In the counties we visited, none of the asphalt plants were in operation until the last week in March. In the coldest areas of the Commonwealth, the plants did not open until mid- or late April. Also, many hot mix plants are closed on the weekends. This impedes PennDOT's weekend work because hot mix must be obtained fresh every day.

Unlike a cold patch, a hot mix patch is considered a permanent repair.[1] Hot mix cannot be used unless the temperature of the road surface is about 40°. Additionally, the hole should be dry, making hot mix difficult to use in wet weather. Because hot mix material must remain hot and fresh, PennDOT uses specialized equipment to transfer the material from the plant to the roadway. PennDOT crews typically transport the hot mix in trailers called "pizza ovens." These trailers are towed behind PennDOT's trucks and have a butane burner to keep the material hot. Before the material is shoveled from the pizza oven into the pothole, the hole is first squared off using a jack hammer. This ensures that there will be firm, stable edges for binding the hot mix.

Spray Patch (Warm Mix). A spray patcher is a machine which shoots or "sprays" a liquid emulsion of asphalt and stone (warm mix) into a pothole. The repair, which is considered permanent, is most effective when the temperature of the road surface is at or above 40°. There are two types of spray patchers: a trailer-mounted model that is towed behind a truck and a self-contained truck that allows

[1]Even "permanent" repairs typically last only about two years.

the operator to control the machine from within the truck's cab (referred to as an "over–the–cab" model).

A spray patcher shoots a column of high velocity air into the hole. This removes debris and water from the cavity. An emulsion of liquid asphalt is blown into the hole, coating the sides, filling the cracks, and sealing the edges. The hole is then filled with a mix of liquid asphalt and stone at a sufficient velocity to cause uniform compacting of the patch from the bottom up. This eliminates the need for tamping or rolling that is necessary with a cold or hot mix patch. A thin layer of aggregate is applied to the top of the patch to prevent tire drag-out.

While the spray patcher is faster than a manual patch with hot mix or cold patch, it is not without its problems. Several county managers told us that the spray patcher, although designed for use on both asphalt and concrete, is more effective on concrete. (Hot mix appears to be the preferred choice on asphalt.) The liquid asphalt emulsion in the spray patcher must be fresh. It cannot be stored because it quickly separates. Lastly, these machines are expensive and reportedly require frequent maintenance. An over–the–cab model costs about $130,000; trailer models, $27,000.

Nearly all the counties we visited in eastern Pennsylvania own or rent spray patchers. None of the counties we visited in western Pennsylvania use them, although Westmoreland County is considering purchasing one. Where PennDOT rents rather than owns the machines, the Department primarily provides traffic control. The actual repair work is done by the vendor. In the greater Philadelphia area, PennDOT pays about $200 per hour (labor and material usage) for the machines. Some county managers told us they preferred renting, rather than owning, the machines because they are high maintenance items.

Spray patchers do, however, have notable benefits. Spray patchers are fast and reduce labor costs because fewer people are needed to operate the machinery. Additionally, an over-the-cab model is especially useful on busy highways from a safety standpoint because repairs can be made from within the cab without exposing the crew to traffic.

How Pothole Hotline Calls Are Handled

PennDOT's Pothole Hotline, first established in 1981, typically operates during the four weeks of March. The 1994 hotline was initially scheduled to run from March 7 through April 1. In response to this study and the large volume of calls received from the motoring public, the hotline was extended through April 8. The hotline also operated for a full five weeks in 1993 due to the "Blizzard of '93." Last year's five-week operation logged 4,533 calls; this year's five-week total was 5,574, a 23 percent increase. (See Appendix B for a breakout by county.) Previous mild

winters generated many fewer calls to the hotline. The 1992 hotline generated 2,016 calls, and the 1991 hotline generated 2,260 calls. In addition to the hotline calls, pothole complaints are sometimes called directly to PennDOT's county maintenance offices on their year-round telephone numbers, especially in southeastern Pennsylvania.

PennDOT's "hotline" is actually 16 different hotlines, each with its own telephone number. Five hotlines serve single counties and 11 serve two or more counties (see Appendix C). The hotline numbers are publicized by PennDOT and by the local media. Hours of operation vary. Some hotlines take calls only from 8 a.m. to 4:30 p.m., Monday through Friday, while others operate 24 hours a day, seven days a week. Callers usually talk directly to a PennDOT employee.[2] PennDOT does not hire staff specifically to operate the hotlines but rather uses available personnel who have other job responsibilities.

When a citizen calls one of the toll-free hotline numbers to report a pothole, the PennDOT employee answering the phone will record as much information about the pothole as the citizen can provide. This information is recorded on PennDOT's standard complaint form, called Form M-206. If the hotline operator is aware that the complaint is for a nonstate-maintained road, either the caller is asked to call the responsible local authority or the PennDOT operator takes the information and forwards it to the local authorities, often by a telephone call.

For hotlines that serve multiple counties (typically these hotlines serve an entire engineering district), the completed complaint form is forwarded to the appropriate PennDOT county maintenance office for action. We found the method of transmittal varies considerably by engineering district, with some districts using PennDOT's daily courier and others using fax, telephone, or first class mail. In one county we visited, the county manager picked up the complaint forms when he stopped at the district office each morning on his way to work. In those counties which use the PennDOT daily courier, complaints phoned-in after the courier leaves on Friday are not forwarded to the county maintenance office until the courier run on the following Monday. The one county office we visited that reported receiving the complaint forms from the engineering district through the U.S. Mail told us it may take as long as four days to receive the complaints.

Complaints are then assigned to an assistant county manager, who uses the information in scheduling pothole repairs. The PennDOT county office may call the complainant for additional information if they have trouble finding the pothole from the initial description of its location. They may also call the complainant if it is determined that the road section cited in the complaint has already been repaired.[3]

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[2]Westmoreland County uses an answering machine for those times when the hotline operator is unable to answer the phone.

[3]In Philadelphia, the PennDOT county maintenance office often sends status reports to the complainant.

When the pothole repair is completed, the complaint card is so noted, signed, and dated by the assistant county manager or foreman. A tally of each county's hotline calls is prepared weekly and forwarded to the Engineering District and to Department headquarters in Harrisburg.

In most of the counties we visited, hotline complaints were recorded and tracked by hand. However, the county manager in Luzerne uses a personal computer to record and track the resolution of all potholes identified in the bi-weekly pothole survey conducted by the assistant managers. In Lehigh County, a database has been set up on a stand-alone personal computer to track all complaints received, including those from the pothole hotline. According to the county manager, this data has proven helpful in tort cases.

Westmoreland County reported it is developing a computerized complaint tracking system with the aid of PennDOT management information system personnel. This system would use dumb computer terminals in Greensburg to electronically store all complaints received by the county onto PennDOT's mainframe computer in Harrisburg. When completed, it is anticipated that the system will allow both PennDOT's central office and the county maintenance staff access to the complaint information. PennDOT plans to implement a pilot project in one county in each Engineering District in FY 1994-95 to computerize complaint forms based upon the Westmoreland County model. This will include, but not be limited to, complaints regarding potholes.

Over the past 14 years, according to a PennDOT spokesperson, the pothole hotlines have become an institution, almost with a life of their own. Both the public and the media await the announcement of the start of the hotlines each year, and the hotlines have become an important public relations tool for PennDOT. The hotlines also help PennDOT improve safety by providing a ready means for the public to inform county maintenance districts of pothole problem areas. The program also allows PennDOT to demonstrate its responsiveness to citizens.

Scheduling Repairs

PennDOT's county maintenance offices conduct weekly repair scheduling meetings on Wednesday or Thursday of the preceding week. These sessions consider input from weekly road surveys, a master maintenance plan, the availability of material and personnel, the weather forecast, hotline and other complaints received by the county, average daily traffic counts for roads under consideration for repair (those with the higher traffic volume get a higher priority), whether or not the road is a "pinch point" (only one access), the severity of the potholes, and the safety of the motoring public.

PennDOT county maintenance staff told us that, in most instances, they are already aware of the county's problem areas and have a good idea where potholes

are developing. This is due both to road surveys conducted by assistant county managers each week and to previous experience. Road crew personnel also report the conditions of the roads on which they travel going to and from work. As a result, oftentimes potholes reported on the hotline have already been scheduled for repair. However, assistant county managers are evaluated in part on their ability to close complaints, and some told us they will give potholes reported on the hotline a priority, especially if they are on heavily traveled roads.

Timeliness of Response to Hotline Calls

The county maintenance offices often have informal goals of taking action on hotline complaints. These goals vary by county, anywhere from within 24 working hours for a high priority pothole to within 3 to 5 working days, with a 14-day maximum. PennDOT does not have a department-wide goal, but notes that potholes reported on the hotline are normally repaired within 5 to 10 working days.

As part of this review, we traveled to 15 counties in 8 of PennDOT's 11 engineering districts to observe how the pothole hotlines operate and to assess how county maintenance staff responded to hotline calls. PennDOT county maintenance offices do not normally calculate the average response time to a hotline complaint. We requested that nine of the counties we visited calculate their average response time. The results are shown below:

Average Reported Hotline Response Time[4]

Reported in Calendar Days		Reported in Work Days	
Indiana	2.1 calendar days	Chester	2.5 working days
Bucks	3.3 calendar days	Luzerne	3.1 working days
Luzerne	4.4 calendar days	Philadelphia	5.0 working days
Lycoming[5]	4.6 calendar days	Westmoreland	5.5 working days
Adams	5.1 calendar days		
Lehigh	6.3 calendar days		
Lancaster	6.8 calendar days		

[4]We did not attempt to verify the accuracy of each of these averages. We did, however, where we found an apparent error, contact the county office to clarify the information. We also spot checked several of the dates reported against the original complaint forms. Because the counties did not use the same methodology to report the data, county to county comparisons are not valid. Six counties based their calculations on all hotline calls received; the other four used a random sample. (Those counties that used sampling differed in their approach, with three counties randomly pulling 50 complaints from their files and the fourth county pulling every fourth card.) One county used the date they received the complaint from the district office as the start of their calculation. All of the other counties used the actual day the call came in as their starting point. Three counties included in their averages hotline calls for potholes on nonstate maintained roads; the other seven included only calls for state-maintained roads. Four of the ten counties included complaints about utility cuts or railroad/trolley tracks in their hotline call total and recorded the completion date as the day the appropriate authorities were notified, not the date of the repair. Six counties did not include these complaints in their hotline total. Five counties included complaints of potholes that repair crews were unable to locate from the description given by callers; the day of the attempted repair was used as the completion date.

[5]Response time for Lycoming County was calculated onsite by LB&FC staff.

Readers are cautioned against making direct county-to-county comparisons because, as described in footnote 4, there was variation in the methods used by the counties when calculating these averages. Six counties reported elapsed time in calendar days, three reported elapsed time in working days (only those regular and premium time days on which PennDOT employees worked), and one county, Luzerne, reported the results both ways. Also, several factors affect response time that are largely out of the control of county maintenance personnel, such as weather and material availability.

Factors Affecting the Timeliness of Pothole Repair

Weather and Other Seasonal Factors

Unlike recent past winters, Pennsylvania experienced over 16 storms during the winter of 1993-94. In many areas of the state, it also snowed or rained on numerous days in March, hampering pothole repairs. Bad weather impedes pothole repairs because snow removal and salting takes precedence over pothole repairs and potholes cannot be repaired if covered with snow or ice. Also, PennDOT often uses the same trucks for snow removal, salting, and pothole repair; some county managers were reluctant to remove snow plows and salt spreaders with the continued threat of bad weather in March. Moreover, for permanent repairs to be effective, potholes should be dry and road surface temperatures should be at least 40 degrees.

Additionally, the plants that produce the hot mix needed for permanent repairs typically do not open until late March or early April and may be closed on weekends. In the coldest areas of the Commonwealth, these plants do not open until mid- or late April.

Crew Shifts and Overtime

Another key factor in pothole repair response time is the number of maintenance crews in each county and the number of hours they work during the week. In the counties we visited, the number of crews generally varied from 5 to 15. Crews often work dual shifts during the pothole season to maximize repair time during the daylight hours (4 a.m. to 12 noon and 12 noon to 8 p.m.). In many of the counties we visited, crews were repairing potholes on Saturdays. In several counties in the southeastern region, crews also worked on Sundays during the middle and later weeks of the 1994 pothole season.

Several county managers indicated that they did not like to work crews on Sundays except in an emergency. The Master Agreement between Council 13, American Federation of State, County and Municipal Employees (AFSCME) and

the Commonwealth of Pennsylvania requires double time pay for every seventh and thirteenth day worked. The seventh day typically falls on a Sunday.

Fatigue is another factor managers consider when scheduling crews to work on Sundays. A pothole repair crew is a team, with each team member relying on the work of another. If one of the team members falters because of fatigue, the potential for an accident is greatly increased. In our visits to county maintenance facilities, both management officials and union representatives expressed concern about the possibility of someone getting seriously injured. One manager stated that working the crews seven days a week without a break is a "time bomb" waiting to explode.

Weather also influences the ability of crews to fix potholes. Under the Master Agreement, during periods of inclement weather which result in unacceptable visibility and unsafe conditions, crews are to be reassigned to other duties. The agreement does not, however, allow PennDOT to work the crews on Saturday or Sunday in lieu of an inclement regular work day.

PennDOT incurred $30 million in labor costs for pothole patching in the winter-spring 1994, a large increase over previous years ($11.9 million in 1991, $10.7 million in 1992, and $11.5 million in 1993). PennDOT incurred $524,000 in overtime costs for pothole patching in the winter-spring 1994, compared to overtime expenses of $169,000 and $140,000 in the 1992 and 1993 pothole patching seasons, respectively. Winter-spring 1994 pothole patching overtime costs for the five-county Philadelphia area, $197,000, represented 38 percent of the $524,000 total. This compares to overtime costs for the five-county Philadelphia area of $11,000 in 1992 and $22,000 in 1993.

Several county managers told us that the union provision which prohibits assigning employees to work on four (or more) lane limited access highways on Fridays and the day before a state holiday can be another obstacle. The managers noted this requirement limits the amount of time they can work on a major highway, thereby increasing the time needed to complete a job. According to the Master Agreement, this policy was put into effect because of safety considerations resulting from the high traffic volume on these days. One manager noted that, although this may increase the length of time needed to repair a pothole on major highways, the crews can be assigned to other roads and tasks.

Contracted Pothole Repair

During the winter of 1993-94, the only pothole repair work contracted out by PennDOT was for spray patching machines. The Department pays these contractors an hourly rate, which includes use of the machine, labor, and materials. The rate varied in counties we visited from a low of $117 per hour in northcentral Pennsylvania to a high of $200 per hour in the southeast region. PennDOT's primary

responsibility when they rent the equipment is to provide traffic control. PennDOT officials noted that road construction contractors are responsible for the repair of potholes while the road is under construction.

Although in years past PennDOT has occasionally used independent contractors to assist in pothole repairs, PennDOT has not used independent contractors for this purpose in recent years. Both the county managers and the union representatives, whom we spoke with separately, preferred that pothole repairs be made by PennDOT crews. According to officials in one engineering district, there is no efficient way to contract pothole repair. They report that if the contract is based on the number of tons applied, the contractor overuses the material. If the contract is based on hours, the contractor takes too much time to complete the work.

Deteriorated Roads

Many of the roads that we observed as having the worst pothole problems also had major structural problems. Several of these roads were "pie crust" roads, consisting of little more than 1½-2 inches of asphalt on top of a previously dirt road. Many of these roads also have poor drainage.

We traveled several such roads in upper Bucks County. One of these roads, which was in very bad condition, had been scheduled for resurfacing this summer but will now be delayed an additional six months due to budgetary constraints. The county manager told us they needed to use more money than anticipated on snow removal, anti-skid material, and pothole patching and have little money left for rebuilding or resurfacing roads.

Similar concerns were voiced by the county manager in Chester County. PennDOT Engineering District 6-0 officials confirmed that Bucks, Delaware, and Chester Counties, in particular, had little funding left for major maintenance and repair projects. County maintenance staff told us that, in addition to unanticipated costs due to the severe winter, the present highway maintenance allocation formula established in Act 1980-68 hurts counties whose circumstances have changed since 1980. PennDOT management explained that the base allocation established in 1980 was not needs-based, but rather reflected the level of work that happened to be programmed at that time. The needs-based portion of the formula (above the base allocation) is somewhat sensitive to population growth with 15 percent of needs above the base allocation determined by vehicle miles of travel.[6]

Other state roads we traveled on that need major renovation included the Roosevelt Boulevard in Philadelphia; Route I-81 in northeastern Pennsylvania, particularly north of I-80; and Route 22 in and around Westmoreland County.

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[6]The maintenance allocation formula was the subject of a 1981 LB&FC report (Report #8), which is available upon request.

Roosevelt Boulevard is scheduled for major work this summer under a federal betterment program. Some portions of Route I-81 in Luzerne County are scheduled to have slabs of road replaced as a temporary solution; a complete resurfacing contract is scheduled to be let in FY 1994-95. Route 22 in Westmoreland County is on the betterment program list; PennDOT is discussing the extent of repairs to make on the road until it can be rebuilt.

Pennsylvania's Efforts Compare to Other States

We compared PennDOT's pothole repair efforts to the contiguous states of Delaware, Maryland, New Jersey, New York, Ohio, and West Virginia. Pennsylvania was the only state to operate a pothole hotline. Maryland and West Virginia operate toll-free numbers year round for road complaints, and the New Jersey Department of Transportation publicizes telephone numbers of the local highway maintenance offices in newspapers throughout the state. We were told that some newspapers in Delaware publish their own pothole hotline numbers.

Neither Pennsylvania nor any of the six contiguous states use a computerized system to track pothole repairs. Scheduling for pothole repair is typically handled by county maintenance offices in each state's Department of Transportation. Ohio does have a computer system which identifies available crews and the operational status of equipment, but the actual scheduling of crews is done manually. Delaware uses a similar system.

No formal timeliness goals for pothole repairs have been established by any of the seven states. Each state told us they fill potholes as quickly as possible and prioritize repairs based upon traffic volume and the severity of the pothole.

In the states we contacted, pothole repair is largely the responsibility of state crews and not contractors. New York does contract for the maintenance of some stretches of road, including pothole repairs. New Jersey employed one contractor to help with pothole repairs this spring. New Jersey and Delaware both reported having worked some overtime repairing potholes, and West Virginia crews have worked numerous Saturdays. Overtime for Pennsylvania crews has varied from county to county, with crews in some counties in the southeastern region working both Saturdays and Sundays.

Recommendations

1. PennDOT should proceed with its pilot project to computerize its M-206 complaint forms, including pothole complaints received through the pothole hotline. Such computerization might be especially helpful in counties that typically re-

ceive large numbers of pothole hotline complaints. Computerization could allow PennDOT staff to quickly identify potholes reported on nonstate-maintained roads so they could be referred to the proper local authorities. Computerization would also facilitate the complaint information being electronically transmitted to county maintenance offices or faxed to other local authorities, thus avoiding the delays which can occur by using couriers and the U.S. mail.

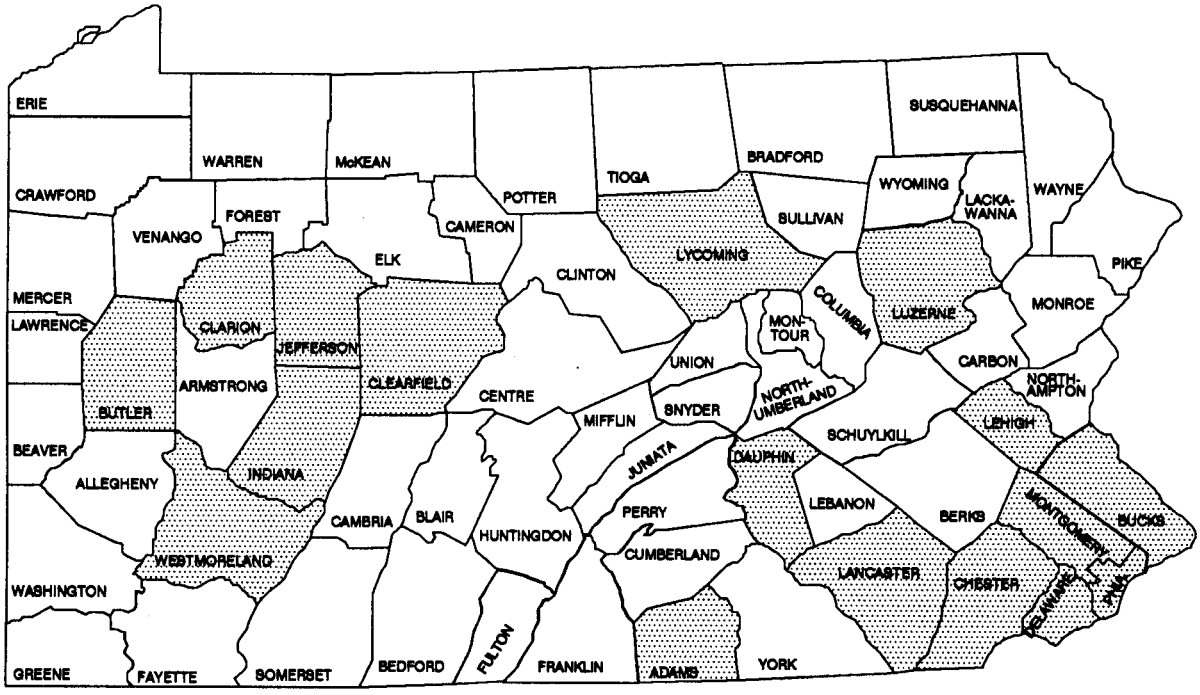
2. PennDOT and AFSCME Council 13 should consider renegotiating the section in the Master Agreement that restricts PennDOT crews from working on limited access highways on Fridays and the day before a state holiday. Perhaps this restriction could simply be modified so that it does not apply in the months of March and April, the prime pothole season.

3. The General Assembly may wish to consider modifying the highway maintenance allocation formula established in Act 1980-68 to better provide for counties whose population has increased substantially since the late 1970s.

APPENDICES

APPENDIX A

PennDOT County Maintenance Districts Visited and Inspected by LB&FC Staff



LB&FC staff both met with PennDOT officials and inspected potholes in roadways in 14 of the 17 counties. In Dauphin and Delaware Counties, we met with PennDOT officials but did not inspect potholes in the roadway. In Jefferson County, we inspected potholes in the roadway but did not meet with PennDOT officials.

Source: Developed by LB&FC staff.

APPENDIX B

Pennsylvania Pothole Hotline Calls

March 7 to April 8, 1994

Engineering District 1-0

Crawford	32
Erie	186
Forest	0
Mercer	38
Venango	8
Warren	11
Total	275

Engineering District 2-0

Cameron	1
Centre	11
Clearfield	28
Clinton	35
Elk	12
Juniata	1
McKean	13
Mifflin	9
Potter	15
Total	125

Engineering District 3-0

Bradford	88
Columbia	37
Lycoming	83
Montour	13
Northumberland	75
Snyder	8
Sullivan	5
Tioga	11
Union	11
Total	331

Appendix B (Continued)

Engineering District 4-0

Lackawanna	383
Luzerne	101
Pike	18
Susquehanna	23
Wayne	50
Wyoming	16
Total	591

Engineering District 5-0

Berks	100
Carbon	11
Lehigh	54
Monroe	40
Northampton	25
Schuylkill	46
Total	276

Engineering District 6-0

Bucks	555
Chester	257
Delaware	153
Montgomery	394
Philadelphia	713
Total	2,072

Engineering District 8-0

Adams	17
Cumberland	67
Dauphin	158
Franklin	30
Lancaster	192
Lebanon	19
Perry	19
York	189
Total	691

Appendix B (Continued)

Engineering District 9-0

Bedford	42
Blair	125
Cambria	212
Fulton	4
Huntingdon	5
Somerset	63
Total	451

Engineering District 10-0

Armstrong	10
Butler	87
Clarion	1
Indiana	12
Jefferson	4
Total	114

Engineering District 11-0

Allegheny	270
Beaver	91
Lawrence	40
Total	401

Engineering District 12-0

Fayette	63
Greene	2
Washington	62
Westmoreland	120
Total	247
Total for all Districts	5,574

Source: PennDOT Engineering District Offices.

APPENDIX C

PennDOT 1994 Pothole Hotline Service Areas

Hotline Number	Counties Served
District 1-0	
800-352-0130	Crawford, Forest, Mercer, Venango, and Warren
800-352-0100	Erie
District 2-0	
800-252-3549	Cameron, Centre, Clearfield, Clinton, Elk, Juniata, McKean, Mifflin, and Potter
District 3-0	
800-332-6752	Bradford, Columbia, Lycoming, Montour, Northumberland, Snyder, Sullivan, Tioga, and Union
District 4-0	
800-432-8010	Lackawanna, Luzerne, Pike, Susquehanna, Wayne, and Wyoming
District 5-0	
800-322-9550	Berks, Carbon, Lehigh, Monroe, Northampton, and Schuylkill
District 6-0	
800-222-1956	Bucks, Chester, Delaware, Montgomery, and Philadelphia
District 8-0	
800-932-4855	Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, Perry, and York
District 9-0	
800-252-3878	Bedford, Blair, Fulton, Huntingdon, and Somerset
800-252-3880	Cambria

Appendix C (Continued)

Hotline Number	Counties Served
District 10-0	
800-442-6948	Armstrong, Butler, Clarion, Indiana, and Jefferson
District 11-0	
800-242-0688	Allegheny
800-642-1953	Beaver and Lawrence
District 12-0	
800-342-8255	Fayette and Greene
800-542-0359	Washington
800-442-6955	Westmoreland

Source: Pennsylvania Department of Transportation.

APPENDIX D

AGENCY REPONSE TO THIS REPORT

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF
SECRETARY OF TRANSPORTATION
HARRISBURG, PENNSYLVANIA 17120

June 24, 1994

Mr. Philip R. Durgin, Executive Director
Legislative Budget and Finance Committee
P.O. Box 8737
Harrisburg, PA 17105-8737

Dear Mr. Durgin:

Thank you for providing the opportunity to comment on the preliminary findings and recommendations of "A Review of PennDOT's Handling of Pennsylvania Spring 1994 Pothole Problems." The department was impressed with the professionalism of the report. PennDOT is looking forward to working with the Legislative Budget and Finance Committee to improve the products and services that this agency provides to transportation customers.

Highway Maintenance Allocation Formula:

Regarding page 12 (paragraph 3 under Deteriorated Roads) and Recommendation #3 on page 14, the department has the following comments:

-- The base allocation established in 1980 was not needs based, but rather reflected the level of work that happened to be programmed at that time.
-- The needs based portion of the maintenance allocation formula (above the base allocation) is somewhat sensitive to population growth with 15 percent of needs above the base allocation determined by vehicle miles of travel.
-- There has been continued legislative interest in revising the formula for allocating maintenance funds, but there has been no action because there are "winners and losers" in any scenario. Identifying an acceptable scenario would be particularly difficult at a time when maintenance funding is not growing. This is proven out by the fact the legislature, each year, provides a hold harmless appropriation to ensure that no county receives less funds than they received the previous year even though the formula would otherwise distribute those funds based on needs.

Technical Considerations:

On page 3 (paragraph 5), it would be more accurate to say that FEMA provided $14 million -- which represented 75 percent of eligible costs.

On page 4 (first full paragraph), "alligator backing" should be alligator cracking. It could be noted that PennDOT's extensive joint and crack sealing, as well as seal coating, have contributed to reducing the severity of the pothole problem.

On page 6 (second full paragraph), the cost of an over-the-cab model is $130,00; trailer models are $27,000. The statement "the spray patcher does not work as well on asphalt as it does on concrete surfaces" could be interpreted to mean that use on asphalt is not acceptable. This could be clarified by stating that the spray patcher can be used on both asphalt and concrete, but is more effective on concrete.

If you have any questions, or need additional information, please contact my office at 717-787-5574.

Sincerely,

Howard Yerusalim

Howard Yerusalim, PE
Secretary of Transportation

***LB&FC NOTE: All these changes have been made in the final report.**