

Pavement cuts cost more than you think

Utility trenches and other pavement cuts cause damage beyond the immediate cut area and significantly shorten pavement life. As a result, some municipalities are revising their specs, enforcing permit requirements, and upping their pavement cut fees.

Excavations damage subgrade and weaken pavement three feet outside the cut edge, according to a 1991-94 study in Cincinnati. Cuts closer together than eight feet caused even more damage.

A Transportation Research Board study found damage even further out: more than an inch of settlement seven feet away from the cut edge. The cause was weakened soils and compression by excavation equipment. This level of damage occurred in granular soils adjacent to 5-foot-deep trenches with no sidewall support. More cohesive soils like clays showed less damage.



Pavement life goes down drastically around utility cuts—by five years according to a study in California; by seven to eight years according to a Vermont study. And, the best pavements suffer the greatest loss of useful life.

More damage comes from excavations made without pre-cutting the pavement. Jagged edges and stress cracks made by opening the pavement with a backhoe often produce poor patches and deteriorating pavement.

Degradation fees

Given these recent findings, some communities are charging pavement cut fees that better reflect the actual damage costs of the excavations. These degradation fees are in addition to the administration and inspection fee charged for the permit and the required proper repair.

One fee formula suggested by a study done for the Wisconsin Alliance of Cities, Inc., considers age of street, overlay and sealcoat using a straight-line depreciation schedule. The study also recommends a patch that is two feet wider than the cut on all sides.

Here is a sample degradation fee developed using this formula. It assumes a 20 year life for streets, a 12 year life for overlays, and a 5 year life for sealcoats. Average costs per sq. yard are based on a 1997 survey of Wisconsin cities.

Area of cut = 3x5 feet

	Cost	Age	Depreciation	\$/sq. yd.	Patch area	Fee
Street	\$36	16	25%	\$9	7x9 ft.	\$63
Overlay	\$15	5	67%	\$10	7x9 ft.	\$70
Sealcoat	\$ 5	1	100%	\$5	7x9 ft.	\$35
Total fee						\$168

Degradation fees, which are new to Wisconsin, were implemented by the City of Madison last February. Madison uses longer life cycles, varies depreciation according to the street's traffic load, and assumes that most depreciation occurs in the first few years of the street's life. So, for example, a 16-year-old arterial would be at 33%, while a same-age local street would be at 47%.

At the request of utilities, degradation fees and formulas are being reviewed by the Public Service Commission. Its findings are likely to affect them. **Crossroads** will report the outcome of these deliberations in a future issue.

Technical recommendations

A variety of remedies are recommended as a result of the recent extent-of-damage studies. Wider overcuts, extra depth of asphalt, and shape of patch all can help compensate for the weaknesses caused by pavement cuts. Some of these are:

- Establish standard location, cover, and clearance requirements.
- Require pavement be saw cut before excavation.
- Minimize excavation size. Use trenchless methods if possible.
- Require proper bedding for pipes.
- Set specific backfilling and compaction requirements, and test to see they are met. Consider requiring flowable fill (see story on page 8).
- Require greater patch depth on asphalt, T-shaped patches on concrete.
- Set and enforce safety requirement for both workers and traffic.
- Inspect. Inspect. Inspect.

Policies and communications

You cannot ensure that proper techniques are used or recover fees for street deterioration without a right-of-way occupancy policy. Your municipality should establish a permitting process, prepare written technical specifications, and enforce them. The T.I.C. has sample policies you can use as a starting point. (See *Resources* on page 5.)

Nothing is more disheartening than watching utilities or others cut into brand new pavement. Except for emergencies, most utilities plan repairs and replacements up to two years ahead. As a result, effective communication can coordinate utility work with reconstruction and overlay plans. Dane County, for example, has a meeting each February with representatives of municipalities and utilities to discuss and adjust plans before the construction season begins.

Get started on right-of-way and utility cut policies soon. The life you save may be your pavement's.

Use the form on page 7 to get copies of bulletin No. 17, **Managing Utility Cuts**, and sample ordinances and policies for cities/towns.