2003 January 19
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TO: City Manager

FROM: General Manager Engineering and Public Works

SUBJECT: **PAVEMENT CUT RESTORATION AND ROAD DEGRADATION FEE**

FOR LIVEABLE COMMUNITIES STANDING COMMITTEE

RECOMMENDATION

1. That Council approve in principle a Pavement Cut Restoration Program to protect the road infrastructure.

2. That a pavement cut restoration fee and road degradation fee be incorporated as an amendment to the Fees and Charges Bylaw No. 3614, 2003 for Council consideration.

3. That the Utility companies affected by the program be consulted prior to final reading of the Bylaw.

4. That the General Manager of Engineering and Public Works be authorized to grant variances to the City's policy of 5-year protection of new pavement against trench damage.

BACKGROUND

The City has a significant investment in road infrastructure valued at over $260 million. In 2004, over $4 million is budgeted for pavement rehabilitation. While the annual pavement rehabilitation program is designed to improve and maintain the condition of the road network, the road pavement must also be protected from unavoidable pavement cuts which is one of the major causes of premature pavement failure. Pavement cuts occur when utility pipes and conduits are installed by trench excavation in existing roads. Approximately 4,000 square metres of pavement were cut through construction activity in 2003.

To minimize the impact from pavement cuts, the City implemented a 5-year moratorium on cutting new pavement in December, 1999. This program has been effective in protecting new pavement, but in some cases is restrictive to development. The 5-year moratorium also does not protect older streets that are still in good condition.

The City's current practice for repairing pavement cuts is to require contractors to follow the specifications of the Master Municipal Construction Documents, MMCD. For a typical trench excavation, the requirements for pavement repair include:

- backfill trench with specified granular materials and proper compaction,
- initial pavement repair with approved asphaltic cement to allow traffic back onto the road, and after completion of construction,
- final pavement repair by milling out the top 35 mm of asphalt and paving 200 mm beyond the limits of the initial repair.

The success of any pavement cut repair is dependent on adequate inspection to ensure that proper construction techniques are followed. The figure 1 below shows the MMCD requirements for pavement cut repair.

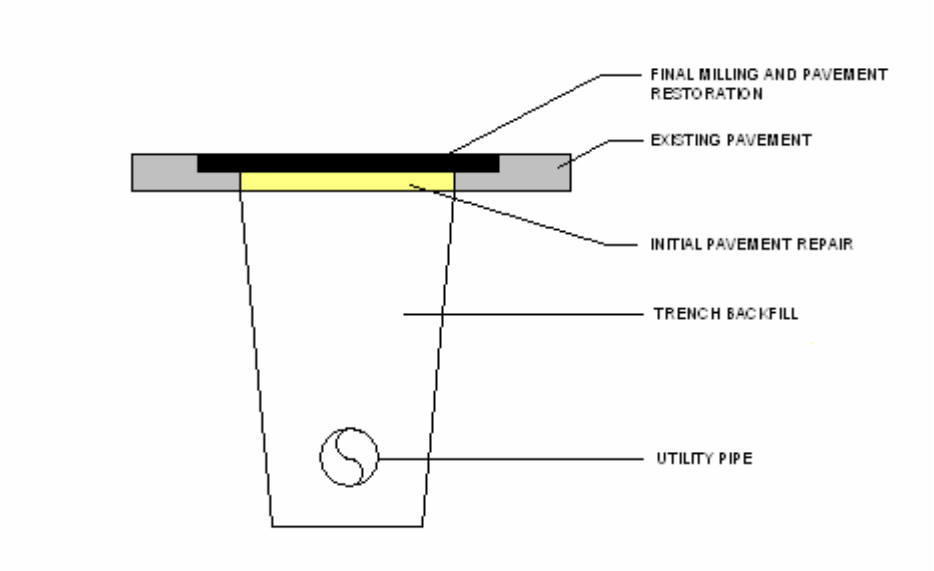

Figure 1 – MMCD Requirements for Pavement Cut Repair

While the current practice of pavement cut repair is adequate in most cases, pavement failures continue to occur due to:

- lack of notification of pavement cuts by outside utility companies, which leads to inadequate inspection,
- inadequate compaction of trench backfill causing settlement of the trench backfill, and
- reflective cracking at the pavement cut joints.

To minimize pavement failures, a comprehensive Pavement Cut Restoration Program is required that addresses the above issues.

At best the Pavement Cut Restoration Program returns the road to good condition. It does not prevent the long term degradation of the road. Trench excavation will disturb the adjacent ground which weakens the existing pavement support. Lack of base support leads to pavement settlement and cracking. Literature research by the American Public Works Association[1] has found that utility cuts can reduce the life of pavement by 20 to 56 percent. Poorer pavement cut restoration techniques result in higher life reductions.

Pavement Cut Restoration Program

The proposed Pavement Cut Restoration Program requires Permits to be issued for all pavement cuts. Each pavement cut can then be adequately tracked, and inspected during and after construction. This would include work by contractors, developers, utility companies, City forces and anyone else cutting pavement.

The initial pavement cut repair would be made by the Permittee according to City specifications. The final pavement restoration would be delayed for at least six months to allow the trench backfill to consolidate. Work would include milling the top 35 mm of asphalt, laying a flexible membrane over the cut joint and final paving beyond the limits of the initial pavement cut. The flexible membrane prevents reflective cracking from reaching the pavement surface. To ensure high quality workmanship and ensure that the final pavement restoration is completed, the work would become the responsibility of the City using funds from the Pavement Restoration Program.

On a twice per year basis, the City would complete final pavement restoration on all Permitted cuts. The size of the annual pavement cut restoration program may necessitate tendering a contract for the works.

The City's 5-year moratorium on cutting new pavement would remain in effect, but with greater flexibility for granting variances. Occasionally, utility companies, property owners or developers encounter situations where there is no practical alternative to cutting asphalt. The recommendations include delegating the decision regarding cutting asphalt less than five years old to the General Manager, Engineering and Public Work. The Pavement Cut Restoration Program will minimize structural damage and degradation to new pavement. The aesthetics of pavement repair patches remains an issue, but can be mitigated by expanding the pavement restoration area to include the full width of driving lanes and at least 3 metres along the longitudinal axis of the road.

[1] Pavement Degradation – How Other Cities Are Dealing With It, APWA, September, 2002

Pavement Cut Restoration and Road Degradation Fees

All costs of the Pavement Cut Restoration Program, including administration, inspection and final pavement restoration, would be recovered by a pavement cut restoration fee. The rate would be based on the measured area of pavement cut with a minimum charge per project to cover equipment mobilization. Using unit rates for recent pavement repair contracts, plus an allowance for inflation, administration and inspection, the proposed fee is:

Pavement cut restoration fee	$40.00 per sq.m.
Minimum charge	$200.00

An additional fee would be charged to compensate for the reduction in pavement life for all roads including MRN roads. The fee reflects an estimated 20 percent reduction in the life of the road. Based on 20 percent of the cost of a typical road asphalt overlay, the proposed road degradation fee is:

Road degradation fee	$8 per sq.m.

The road degradation fee would only apply to roads with pavement that is less than or equal to 15 years of age. The reduced value of older pavements does not warrant the degradation fee due to betterment of the road value.

Participation by Outside Utility Companies

Outside utility companies are regulated under senior government legislation such as the Telecommunications Act, Pipeline Act, Gas Utility Act, Hydro and Power Authority Act, and Utilities Commission Act. These acts allow outside utilities to enter a municipality and place their facilities in a public street. Utility companies are, however, required to make good any damage they cause. All outside utility companies are expected to participate in the Pavement Cut Restoration Program and pay both the pavement cut restoration fee and road degradation fee.

Locally, the cities of Vancouver and Surrey have pavement cut fees. While all outside utilities are covered by the fee, by mutual agreement some utility companies are allowed to undertake final pavement cut restoration and are exempted from the fee.

CONCLUSION

Establishment of a Pavement Cut Restoration Program and adding the new fees to the Fees and Charges Bylaw No. 3614, 2003 will ensure that pavement cuts are adequately tracked and properly restored. This will help preserve the safety, ride quality, appearance and structural integrity of the City's road infrastructure.

Funds collected from the road degradation fee will be incorporated into the annual pavement rehabilitation program.

Delegating the authority to grant variances to the City's 5-year moratorium policy for new pavement cuts will protect the structural integrity of the road, while allowing the servicing of development to proceed where no other alternative exists.

KEN WRIGHT, P.ENG.