
From: Richard Holborn
Director, Engineering & Public Works

Subject: Northern Roads Hard Surfacing Strategy
- File: A-1440

Recommendation:

1. That the Northern Roads Hard Surfacing Strategy, identifying candidate existing loose surface roads to be upgraded to hard surface roads, from north of Taunton Road to the Uxbridge Pickering Townline, be endorsed by Council;
2. That Council consider funding for candidate roads selected for the Northern Roads Hard Surfacing Strategy through the annual budget process; and
3. That the appropriate officials of the City of Pickering be authorized to take the necessary actions as indicated in this report.

Executive Summary: As per Council Resolution # 227/14, Engineering & Public Works staff has developed a Northern Roads Hard Surfacing Strategy from north of Taunton Road to the Uxbridge Pickering Townline. The strategy identifies candidate existing loose surface rural roads, which are considered for upgrading to hard surface roads, from 2017 to 2021 (five year forecast).

Currently the City maintains approximately 60.5 centerline kms of hard surface roads, and 104.2 centerline kms of loose surface roads, north of Taunton Road. Staff have prepared the Northern Roads Hard Surfacing Strategy to identify and prioritize candidate loose surface roads to be upgraded to hard surface roads, based on the following criteria:

- Provide transportation connectivity to Regional Roads, Highway 407 and Highway 7,
- Ratepayer concerns regarding road conditions,
- Maintenance cost savings,
- Annual Average Daily Traffic (AADT) and
- Financial resources available.

Staff will be recommending approval to upgrade the following loose surface roads to hard surface roads in the 2017 Capital Budget and Four Year Forecast (2018-2021), at a total estimated cost of \$11,625,000 based on the following priority;

Priority Number	Road	Description/ Limits
1	Westney Road	Seventh Concession Road to Eighth Concession Road Eighth Concession Road to Ninth Concession Road
2	Sideline 14	Highway 407 to Seventh Concession Road
3	Seventh Concession Road	Sideline 32 to Sideline 26 Sideline 26 to Sideline 22 Sideline 22 to Brock Road
4	Kinsale Road	Highway 407 to Seventh Concession Road
5	Sideline 24	Highway 407 to Whitevale Road

The recommended Northern Roads Hard Surfacing Strategy and Forecast from 2017 to 2021, with cost estimates and location maps can be found in Attachment 2.

Staff considered two construction methodologies; resurfacing and reconstruction, for converting loose surface roads to hard surface roads. Staff recommend the reconstruction methodology to upgrade the loose surface roads, due to the inadequate existing gravel base material quality and thickness. Staff has also reviewed and included recommendations from the Draft 2016 Roads Needs Study in the Northern Roads Hard Surfacing Strategy.

The City of Pickering Municipal Performance Measurement Program (MPMP) report indicates that the average operating cost for loose surface roads from 2011 to 2015 is \$7,654.51/centerline km and the operating cost for hard surface roads is \$1,801.94/centerline km. The centerline km operating costs for either road type does not include Winter Control costs. The average operating cost for loose surface roads is more than four times that of hard surface roads.

Financial Implications:

Road	Description	Centerline Km	Cost (including 10% contingency and net HST)
Westney Road	Seventh Concession Road to Eighth Concession Road (see note)	2.3 km	\$1,750,000.00
	Eighth Concession Road to Ninth Concession Road (Regional Road 5)	1.9 km	1,800,000.00
Sideline 14	Highway 407 to Seventh Concession Road	1.2 km	925,000.00
Seventh Concession Road	Sideline 32 to Sideline 26	2.4 km	2,150,000.00
	Sideline 26 to Sideline 22	1.7 km	1,525,000.00
	Sideline 22 to Brock Road	1.6 km	1,525,000.00
Kinsale Road	Highway 407 to Seventh Concession Road	1.0 km	975,000.00
Sideline 24	Highway 407 to Whitevale Road	1.1 km	975,000.00
	Total Net Project Cost		<u>\$11,625,000.00</u>

Note: Westney Road from Seventh Concession Road to Eighth Concession Road was approved as an Accelerated Infrastructure Program (AIP) project in the 2016 Capital Budget at an estimated cost of \$1,550,000. The revised cost estimate is \$1,750,000 as the project now includes the segment of Eighth Concession Road between intersections.

The above cost estimate does not include any major structures/culverts construction, relocation or installation of new utilities, or consulting engineering fees. When a candidate road is being considered during the budget cycle, further investigation and refinement of the above associated project costs will be undertaken.

Discussion: On April 22, 2014 Pickering City Council passed Resolution # 227/14 (Attachment 1), regarding hard surfacing of loose surface roads, north of Taunton Road. The Resolution recognized that the maintenance cost of loose surface roads is much higher than hard surface roads, therefore, staff was asked to develop a five year plan to hard surface roads north of Taunton Road including hamlets, based on priority.

As per Council Resolution # 227/14, staff developed a Northern Roads Hard Surfacing Strategy north of Taunton Road to the Uxbridge Pickering Townline, to identify candidate existing loose surface rural roads, which are considered for upgrading to hard surface roads, from 2017 to 2021 (five year forecast).

Currently the City maintains approximately 60.5 centerline kms of hard surface roads, and 104.2 centerline kms of loose surface roads, north of Taunton Road. Staff have prepared the Northern

Roads Hard Surfacing Strategy to identify and prioritize candidate loose surface roads to be upgraded to hard surface roads, based on the following criteria:

- Provide transportation connectivity to Regional Roads, connectivity to Highway 407 and Highway 7,
- Ratepayer concerns regarding road conditions,
- Maintenance cost savings,
- Annual Average Daily Traffic (AADT) and
- Financial resources available.

Connectivity to Regional Roads:

To upgrade loose surface roads to hard surface, one of the major criteria considered by the staff is the logical transportation network connection between the Regional Roads, in east/west and north/south directions.

Westney Road is a good transportation connection between Seventh Concession Road and Regional Road 5 and ultimately to Uxbridge Pickering Townline. It is also a good connection to Regional Road 31. It will be reconstructed in two phases. Phase 1 will be reconstructed from Seventh Concession Road to Eighth Concession Road and was approved in the 2016 Capital Budget as an Accelerated Infrastructure Program (AIP) project. Phase 2 will be reconstructed from Eighth Concession Road to Ninth Concession Road (Regional Road 5). The section from Ninth Concession Road (Regional Road 5) to Uxbridge Pickering Townline is not included in this strategy based on priority. The segment of Eighth Concession Road between intersections is included in Phase 1.

Seventh Concession Road is a good transportation connection between York Durham Line and Brock Road. It will also benefit the Seaton Employment Lands. In the proposed five year forecast, staff have recommended Seventh Concession Road to be reconstructed from Sideline 32 to Brock Road, in three phases:

- Phase 1 - from Sideline 32 to Sideline 26
- Phase 2 - from Sideline 26 to Sideline 22
- Phase 3 - from Sideline 22 to Brock Road.

Seventh Concession Road (from York Durham Line to Sideline 32) is currently a hard surface road, but its existing condition is inadequate. Although it is not included in the Strategy, it is a candidate road for upgrading, and will be included in the Capital Forecast.

Connectivity to Highway 407 & Highway 7:

Existing loose surface roads connecting to the Highway 407 & Highway 7 have also been considered in the proposed Northern Roads Hard Surfacing Strategy. Staff recommend reconstruction of Sideline 14, Sideline 24 and Kinsale Road, in the Strategy.

Sideline 14 is approximately 2.2 km long from Highway 7 to Seventh Concession Road. The Ministry of Transportation (MTO) has built the Highway 407 underpass and hard surfaced the section of Sideline 14 from the north limit of Highway 407 to Highway 7. The remaining existing 1.2 km loose surface road will be reconstructed to hard surface road, up to Seventh Concession Road.

Kinsale Road is a good connection from Seventh Concession Road to Highway 7 and is currently a hard surface road from the north limit of Highway 407 to Highway 7. The remaining 1.0 km loose surface road will be reconstructed to hard surface road, up to Seventh Concession Road.

Similarly, Sideline 24 will be hard surfaced, from Whitevale Road to the south limit of the Highway 407 underpass, a distance of approximately 1.1 km. The section of Sideline 24 from the Highway 407 underpass to Highway 7 was reconstructed to hard surface when Highway 407 was constructed.

Ratepayer Concerns Regarding Road Conditions:

The City frequently receives requests from residents to have their existing loose surface road upgraded to a hard surface road. This has been considered in our evaluation criteria. For example, the City has received approximately 14 emails over the past few years requesting that Westney Road be upgraded to a hard surface road. Other maintenance concerns regularly received by residents include requests for grading the loose surface roads or applying dust control suppressant at various times throughout the year.

Maintenance Cost Savings:

The average operating cost of loose surface roads is higher than the average operating costs of hard surface roads. The maintenance of loose surface roads require different road maintenance equipment, materials and strategies than hard surface roads, such as regular grading, and application of material such as gravel and dust control suppressant. Staff has provided a maintenance cost comparison of loose surface and hard surface detail later in this report based on information from the Municipal Performance Measurement Program (MPMP) report.

Annual Average Daily Traffic (AADT):

Annual Average Daily Traffic (AADT) is also one of the important factors in converting loose surface roads to hard surface roads. Upon review of the research paper, "Cost Comparison of Treatments Used to Maintain or Upgrade Aggregate Roads" completed by Iowa State University, Department of Civil, Construction and Environmental Engineering, it shows that the operating cost significantly depends upon AADT. The research paper concluded that the maintenance cost of loose surface roads is greater than the maintenance cost of hard surface roads when the average daily traffic is above 100, and increases significantly when the average daily traffic is greater than 200. All but two of the roads listed in the Northern Roads Hard Surfacing Strategy have an AADT greater than 100.

Financial Resources Available:

Currently the City maintains approximately 60.5 centreline kms of hard surface, and 104.2 centreline kms of loose surface roads, north of Taunton. The staff recommended roads to be upgraded from loose surface to hard surface, as indicated in the Northern Roads Hard Surfacing Strategy five year forecast, are based on priority and take into account budget constraints and available funding options.

Funding for the roads included in the strategy will come from sources such as Federal Gas Tax, Debt Financing, and Senior Government Grants.

Construction Strategy:

Staff has considered two construction methodologies; resurfacing and reconstruction, for converting loose surface roads to hard surface roads. From past experience, staff had found that hard surfacing loose surface roads results in a lifecycle up to twenty to twenty five years, if the underlying base is sufficient. Full road reconstruction results in a lifecycle of up to forty to forty-five years, requiring only resurfacing after twenty to twenty-five years. Staff recommend using the reconstruction technique to upgrade the loose surface roads to hard surface roads, because of the inadequate existing gravel base material and thickness.

Operating Cost Savings:

Staff have reviewed The City of Pickering Municipal Performance Measurement Program (MPMP) report, which indicates that the average annual operating costs for loose surface roads from 2011 to 2015 is \$7,654.51/centerline km and the average annual operating cost for hard surface roads is \$1,801.94/centerline km. The operating cost for loose surface roads is more than four times as much as hard surface roads.

The operating costs for hard surface roads include pot hole repairs, cold patching, hot patching, and, crack sealing. The operating costs for loose surface roads include dust control, addition of gravel, grading/ compaction of gravel and frost boil repair etc. The winter maintenance and the line painting cost is not included in the above operating costs, as it is not reported for MPMP.

Hard Surface & Loose Surface annual operating cost difference= \$5,852.57 /centerline km

Maintenance Cost Savings in 20 years = $20 \times \$5,852.57 = \$117,051.40$ /centerline km

Staff have reviewed available information from other municipalities on their operating costs. The City of Hamilton operating cost for year 2013 for loose surface roads is approximately two times, and The City of Ottawa operating cost is approximately three times as much as hard surface roads. The City of Windsor operating cost for year 2010 for loose surface roads was less than the operating cost of hard surface roads. The operating costs are significantly related to traffic AADT, the different maintenance techniques used and levels of service.

Communication Strategy:


A letter dated September 26, 2016 was sent to residents in the City of Pickering, north of Taunton Road to provide them with information regarding the Proposed Northern Roads Hard Surfacing Strategy and the upcoming Executive Committee Meeting and Council Meeting dates (Attachment 3).

Upon endorsement, the Northern Roads Hard Surfacing Strategy will be placed on the City's website. After receiving budget approval from Council, individual projects will be listed under the Capital Construction Projects section on the City's website.

Attachments:

1. Resolution # 227/14
2. Northern Roads Hard Surfacing Strategy
3. Letter to Residents, September 26, 2016

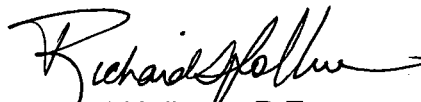
Prepared By:



 Nadeem Zahoor, P.Eng., M.Eng
 Coordinator, Transportation Engineering

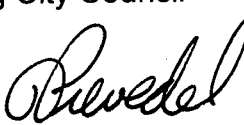

 Darrell Selsky, CET, CMM III
 Manager, Capital Projects & Infrastructure

NZ:mjh

Approved/Endorsed By:


 Richard Holborn, P.Eng.
 Director, Engineering & Public Works


 Stan Karwowski, MBA, CPA, CMA
 Director, Finance & Treasurer

<p>Recommended for the consideration of Pickering City Council</p> <p> Sept. 23, 2016</p> <p>Tony Prevedel, P.Eng. Chief Administrative Officer</p>
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Legislative Services Division
Clerk's Office
Directive Memorandum

April 29, 2014

To: Richard Holborn
Director, Engineering & Public Works

From: Debbie Shields
City Clerk

Subject: Direction as per Minutes of the Meeting of City Council
held on April 22, 2014

Notice of Motion
Roads

Council Decision

Resolution #227/14

Whereas there are 166 km of roads in Pickering, north of Taunton Road.

Whereas of these roads, 63 centreline km are hard surfaced and 103 centreline km are loose surfaced.

Whereas the maintenance of loose surface roads requires different road maintenance equipment, materials and strategies than hard surface roads, such as regular grading, application of materials such as gravel and dust suppressant. This results in a greater operating cost for loose surface roads. The City of Pickering's 2012 annual performance measures tracking indicates that these comparable operating costs are \$2,958.68/centreline km for hard surface roads and \$13,983.52/centreline km for loose surface roads, excluding winter control. Operating costs for loose surface roads are approximately 4.5 times as much as hard surface roads.

Whereas a number of these roads are heavily travelled and the loose surface roads are subject to greater deterioration due to rutting and weather conditions, particularly freeze and thaw, leading to poor driving conditions.

Whereas in order to address the need to hard surface these roads Council and staff need to develop a plan, including prioritization of roads for hard surfacing, a timeframe, and an annual budget allocation to implement the plan.

Subject: Directive Memorandum

Apr. 29/14
Page 2

Now Therefore the Ciity of Pickering staff develop a proposed plan to hard surface or re-surface roads north of Taunton Road including hamlets.

Now Therefore that the plan provide an estimate of the total capital cost and recommended forecast to accomplish this plan over the five year period 2015 to 2019, estimate the annual cost savings for road maintenance upon completion of this plan,

Now Therefore staff to explore any eligible federal or provincial funding programs that may be available to assist in funding the hard surfacing of the selected roads, and that staff report back to Council with the plan Including opportunities for public input no later than the January, 2015.

Please take any action deemed necessary.

Debbie Shields

/lr

Copy: Chief Administrative Officer

Northern Roads Hard Surfacing Strategy**Forecast from 2017 to 2021**

As per Council Resolution # 227/14, staff has developed a Northern Roads Hard Surfacing Strategy Forecast from 2017 to 2021 for roads north of Taunton Road to the Uxbridge Pickering Townline.

Northern Roads Hard Surfacing Strategy Forecast from 2017 to 2021:

Staff recommends the following roads to be upgraded from loose surface to hard surface, over the next five years from 2017 to 2021 in priority order. A road treatment type and an approximate cost estimate has also been produced. It would not be possible to upgrade all the loose surface roads to hard surface at one time, due to budget limitations and other competing priorities.

Priority # 1**Westney Road - Seventh Concession Road to Eighth Concession Road and Eighth Concession Road to Ninth Concession Road (Regional Road 5):**

Westney Road, from Seventh Concession Road to Eighth Concession Road and from Eighth Concession Road to Ninth Concession Road (Regional Road 5) is currently a loose surface road, with an AADT of 214 (2011 counts). It is approximately 2.3 km long, from Seventh Concession Road to Eighth Concession Road and 1.9 km long, from Eighth Concession Road to Ninth Concession Road (Regional Road 5). Westney Road runs parallel to Brock Road. It is a good connection from Regional Road 31 to Regional Road 5 (Ninth Concession Road) and ultimately to the Township of Uxbridge. The City has received approximately 14 emails over the past few years requesting the existing loose surface road be upgraded to a hard surface road.

Staff recommends hard surfacing Westney Road from Seventh Concession Road to Eighth Concession Road and then from Eighth Concession Road to Ninth Concession Road (Regional Road 5), in two phases. Staff may recommend upgrading Westney Road, Ninth Concession Road (Regional Road 5) to the Township of Uxbridge in the future, depending on the traffic and the budget requirement but it has not been included as part of this Strategy at this time. It will provide a good connection to Highway 407, Highway No. 7 and Regional Road 31 as the approval for Highway 407 includes a future interchange at Westney Road.

Westney Road from Seventh Concession Road to Eighth Concession Road was approved in the 2016 Capital Budget as one of the Accelerated Infrastructure Program (AIP) projects. The approved budget is \$1,550,000. The revised cost estimate is \$1,750,000 as the project now includes the segment of Eighth Concession Road between intersections.

Westney Road from Eighth Concession Road to Ninth Concession Road is in the Capital Forecast in year 2019, for \$1,500,000 but needs to be increased to \$1,800,000.

Both sections of Westney Road are recommended for full reconstruction in the Road Needs Study.

Staff supports the Road Needs Study recommendation of reconstructing Westney Road, due to the existing inadequate base material quality and thickness. Westney Road will be reconstructed and hard surfaced, with a suitable rural cross-section, with gravel shoulders and ditches, on both sides.

Priority # 2

Sideline 14 - Highway 407 to Seventh Concession Road:

Sideline 14 will be hard surfaced, from Seventh Concession Road to approximately 1.2 km south of Seventh Concession Road. It currently has an AADT of 38 (2011 counts). It will be a good north/ south connection between Highway 7 and Seventh Concession Road, parallel to Brock Road. The Highway 407 underpass has been constructed and the road was upgraded to hard surface from Highway 7 to the north limit of the underpass. Sideline 14 is in the Capital Forecast in year 2018 budget, for \$1,350,000 but this estimate can be reduced due to refinements made.

The Road Needs Study recommends to pulverize and resurface Sideline 14. The study provides a cost estimate of \$575,906.

Staff recommends reconstructing and hard surfacing Sideline 14, due to the inadequate existing gravel base material quality and thickness. It will be upgraded with a suitable rural cross-section with gravel shoulders and ditches, on both sides. The recommended budget is \$925,000

Priority # 3

Seventh Concession Road - Sideline 32 to Sideline 26, Sideline 26 to Sideline 22 and Sideline 22 to Brock Road:

Seventh Concession Road, Sideline 32 to Sideline 26, Sideline 26 to Sideline 22 & Sideline 22 to Brock Road, are currently loose surface roads, with an AADT range from 609 to 691 (2011 counts). It is approximately 2.4 km in length, from Sideline 32 to Sideline 26, 1.7 km in length, from Sideline 26 to Sideline 22 & 1.6 km in length, from Sideline 22 to Brock Road. It will be a good future connection from York Durham Line to Brock Road. It will be a future hard surfaced connection parallel to Highway 7 and will benefit Seaton Employment Lands. The future traffic volume will increase significantly on this road, with the proposed future development in the area.

The Road Needs Study recommends full reconstruction in year 2020.

Staff supports the Road Needs Study recommendation of reconstructing Seventh Concession Road, because of the existing inadequate base material quality and thickness. Seventh Concession Road will be reconstructed and hard surfaced, with a suitable rural cross-section, with gravel shoulders and ditches, on both sides, in three phases from Sideline 32 to Sideline 26, Sideline 26 to Sideline 22 and Sideline 22 to Brock Road.

The recommended budget for Seventh Concession Road from Sideline 32 to Sideline 26 is \$2,150,000. Sideline 26 to Sideline 22 is \$1,525,000 and Sideline 22 to Brock Road is \$1,525,000.

Priority # 4

Kinsale Road - Highway 407 to Seventh Concession Road:

Kinsale Road from Highway 407 to Seventh Concession Road is a north-south roadway approximately 1.0 km in length. Currently, Kinsale Road has an AADT of 81 (2011 counts). It is a good north-south connection from Seventh Concession Road to Highway 7. The Highway 407 underpass has been constructed and the road is hard surfaced from Highway 7 to the north limit of the underpass.

Kinsale Road from Highway 407 to Seventh Concession Road is in the Capital Forecast, for year 2017, for \$950,000.

The Road Needs Study recommends pulverizing resurfacing in 2017. The Study provides a cost estimate of \$375,412.

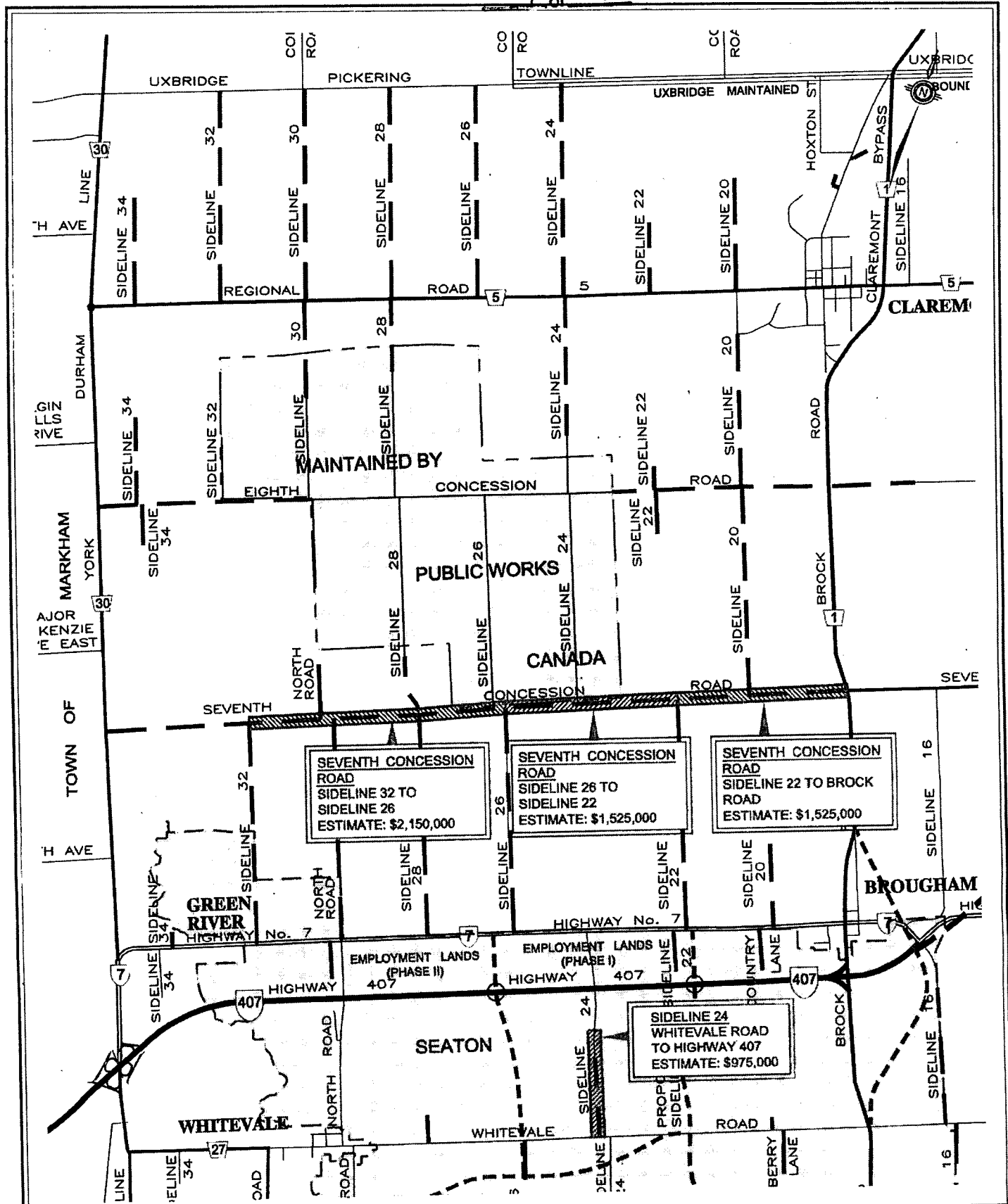
Staff recommends reconstructing and hard surfacing Kinsale Road, due to the inadequate existing gravel base material quality and thickness. It will be upgraded with a suitable rural cross section with gravel shoulders and ditches, on both sides. The recommended budget is \$975,000.

Priority # 5

Sideline 24 - Highway 407 to Whitevale Road:

Sideline 24 will be hard surfaced, from Whitevale Road to approximately 1.1 km north of Whitevale Road. It has an AADT of 114 (2011 counts). It is a good north-south connection between Highway 7 and Whitevale Road. The Highway 407 underpass has been constructed and the road is hard surfaced from Highway 7 to the south limit of the underpass.

Staff recommends reconstructing and hard surfacing Sideline 24 due to inadequate existing gravel base material quality and thickness. It will be upgraded with a suitable rural cross-section with gravel shoulders and ditches, on both sides. The recommended budget is \$975,000. This project needs to be added to the Capital Forecast



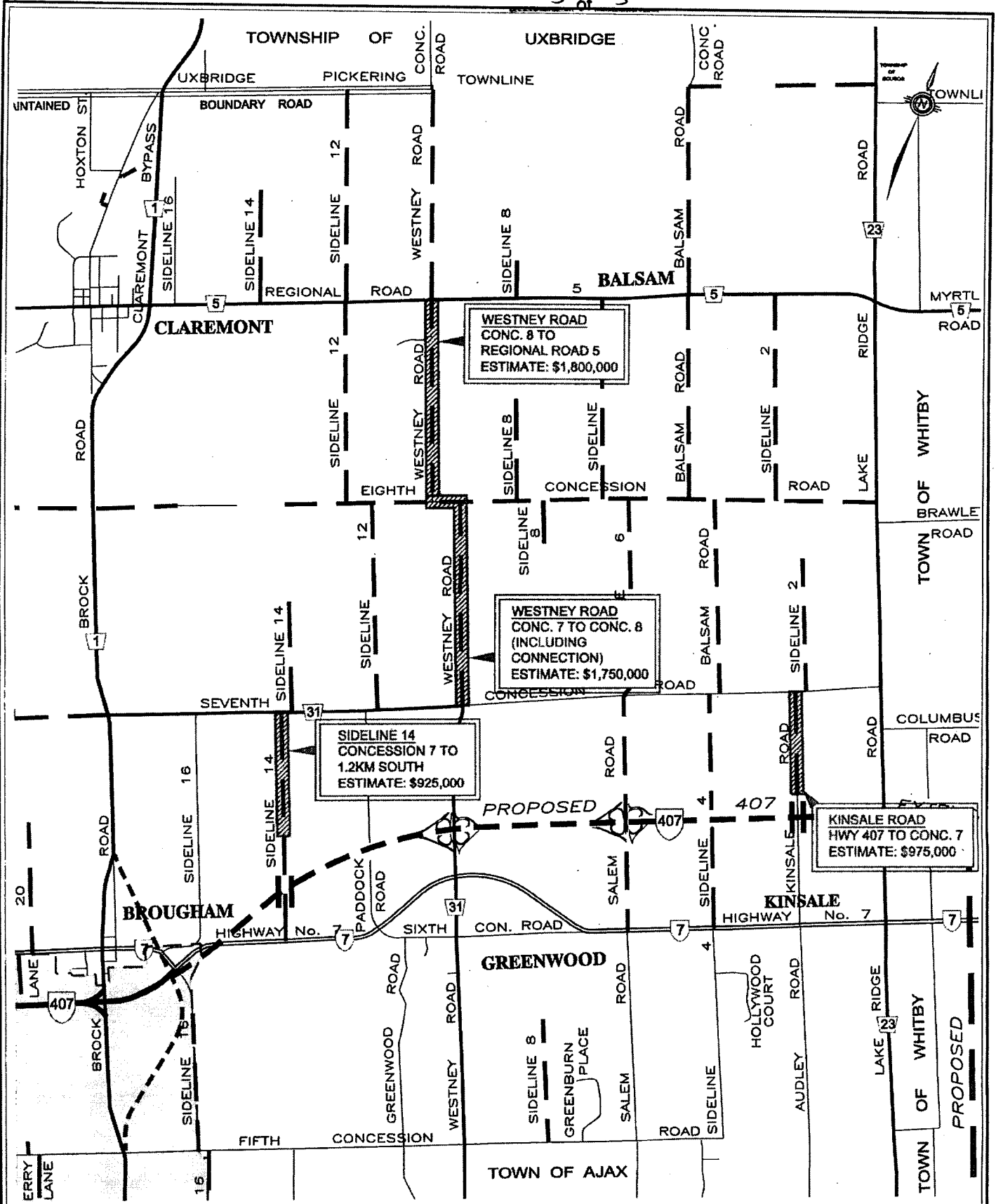
ENGINEERING & PUBLIC WORKS DEPARTMENT

SCALE: N.T.S.

DATE: Aug. 23 /2016

Northern Roads
 Hard Surfacing Strategy
 West Rural Pickering

City of
PICKERING



ENGINEERING & PUBLIC WORKS DEPARTMENT

SCALE: N.T.S. DATE: Aug. 23 /2016

Northern Roads
 Hard Surfacing Strategy
 East Rural Pickering

City of
PICKERING



Engineering & Public Works Department

September 26, 2016

Dear Resident

Subject: Proposed Northern Roads Hard Surfacing Strategy
 - City of Pickering
 File: A-1440

Councillors Pickles and Johnson, together with Engineering & Public Works staff, continue to review concerns and suggestions from residents regarding northern roads in the City of Pickering.

Pickering Council passed Councillor Pickles' Notice of Motion with Resolution# 227/14 requesting Engineering & Public Works staff to develop a Northern Roads Hard Surfacing Strategy for loose surface roads north of Taunton Road. Staff have prepared a draft strategy and will be recommending approval to upgrade the following loose surface roads to hard surface roads in the 2017 Capital Budget and Four Year Forecast (2018-2021), based on the following priority:

Priority Number	Road	Description/Limits
1	Westney Road	Seventh Concession Road to Eighth Concession Road Eighth Concession Road to Ninth Concession Road
2	Sideline 14	Highway 407 to Seventh Concession Road
3	Seventh Concession Road	Sideline 32 to Sideline 26 Sideline 26 to Sideline 22 Sideline 22 to Brock Road
4	Kinsale Road	Highway 407 to Seventh Concession Road
5	Sideline 24	Highway 407 to Whitevale Road

The Northern Roads Hard Surfacing Strategy, will be presented in Report ENG 09-16 at the Executive Committee meeting scheduled on Tuesday, October 11, 2016 at 2:00 pm, Pickering City Hall. If the recommendations in the report are approved, it will be brought forward for endorsement at the Council meeting scheduled on Monday, October 17, 2016 at 7:00 pm.

The agenda for the Executive Committee meeting which includes a copy of Report ENG 09-16, will be available on the City's website as of Friday, September 30, 2016, and the agenda for the Council meeting will be available on the City's website as of Friday, October 14, 2016. Information on how to

appear as a delegation at either the Executive Committee meeting or the Council meeting, is available on the City's website at pickering.ca.

Proposed Road Reconstruction Projects

In addition to the Northern Roads Hard Surfacing Strategy Projects, City of Pickering staff will also be recommending future reconstruction of the following existing hard surface roads north of Taunton Road in the short to mid-term through the annual budget process:

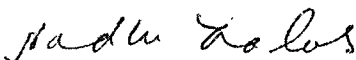
- Salem Road – Highway 7 to Fifth Concession Road (approved for 2017)
- Sixth Concession Road – Westney Road to Greenwood Road (approved for 2017)
- Scarborough – Pickering Townline Road – Finch Avenue to Third Concession Road
- Seventh Concession Road – York Regional Road 30 to Sideline 32
- Uxbridge – Pickering Townline Road – York Regional Road 30 to Sideline 26

Proposed Frost Boil Repair Program

Engineering & Public Works staff will be recommending a new "Frost Boil Repair Program" in the 2017 Roads Current Budget, to address frost boils on an annual basis. Frost boils occur when there is an upwards swelling of the soil during freezing conditions caused by an increasing presence of moisture in the road base. During the freeze thaw cycle in the spring, the City's loose surface roads experience frost boils making driving conditions difficult and requiring frequent maintenance. The Frost Boil Repair Program will consist of excavation of the moisture bearing material and replacement with new granular material.

If you have any questions or require any further information regarding the above, please do not hesitate to contact me at 905.420.4660 ext. 2213 or by email at nzahoor@pickering.ca.

Yours truly



Nadeem Zahoor, P.Eng., M.Eng.
Coordinator, Transportation Engineering

NZ:mjh

Copy: Mayor Ryan
David Pickles, Regional Councillor – Ward 3
Rick Johnson, City Councillor – Ward 3
Chief Administrative Officer
Director, Engineering & Public Works
City Clerk
Manager, Capital Projects & Infrastructure
Manager, Public Works
Supervisor, Customer Care