



# STAFF REPORT TO COUNCIL ENGINEERING and PUBLIC WORKS

1100 Patricia Boulevard, Prince George, B.C., V2L 3V9

**DATE:** April 1, 2016

**TO:** MAYOR AND COUNCIL

**FROM:** DAVE DYER, GENERAL MANAGER, ENGINEERING AND PUBLIC WORKS

**SUBJECT:** Roads Division - Spring Status Update 2016

**ATTACHMENT(S):** Recommended Pride Crosswalk Locations and Crosswalk Configuration Options (included at the end of the report)

## RECOMMENDATION(S):

**THAT Council receive this report for information.**

## PURPOSE

This report is presented to Council to provide information on Roads Division spring status updates on annual operational activities. These activities include street sweeping and roadway paint markings.

## STRATEGIC PRIORITIES:

The City's Street Sweeping and Roadway Paint Marking programs support City Council priorities of Sustainable Infrastructure, Organizational Excellence and Clean Air.

## BACKGROUND

### Seasonal Sweeping

Each winter, approximately 15,000 to 20,000 tonnes of winter traction material is deposited on City streets and sidewalks by Roads Operations to improve safety and traction on icy surfaces. At the end of winter snow operations, this traction material is required to be picked up. Approximately 550km of paved roadway, 150km of sidewalk and over 24,000 square meters of hard surfaced medians are swept and flushed annually. Sweeping operations begin when the main roads are clear of ice and when temperatures permit the use of water to suppress dust without freezing. Full 24 hour sweeping operations run as temperatures increase overnight. Sweeping minimizes impacts to the air shed, reduces bicycle hazards and improves visual aesthetics within the City.

### Roadway Line Marking

The annual street line painting program typically begins with survey layout work once street sweeping operations are near completion in the spring. The program consists of survey-layout work, painted handwork pavement markings and painted linear lane markings. Survey-layout work includes all preliminary markings (street line spotting) required by the contractor to correctly apply traffic markings. Painted handwork includes the markings found at intersections such as crosswalk lines, stop bars, directional arrows, etc. Current painted handwork inventories required for the 2016 season include 595 pedestrian crossings, 463 stop bars and 609 directional arrows. Painted lane markings include all linear traffic lane lines on City streets. Current painted lane markings required for the

2016 season include all lineal solid white and yellow, single dashed white and yellow and solid double yellow markings totaling 459 kilometers.

With new regulations stipulated by the Government of Canada, the City of Prince George has experienced a decrease in paint performance. In high traffic areas such as arterial roadways, the street markings placed at the beginning of the season are no longer visible in the fall or following season. In 2009, Environment Canada began limiting the use of roadway marking paint having volatile organic compounds (VOC) measuring greater than 450 grams/litre. As of 2012, Environment Canada introduced seasonal restrictions that only allow roadway marking paint to have a volatile organic compound (VOC) content of 150 grams/litre or less between the period of May 1 to October 15. These are annual recurring restrictions. The City's roadway marking program falls into this annual period and must follow these product guidelines. Prior to 2009, City staff had experienced better life expectancy of roadway markings with the approved use of paint products containing higher VOC concentrations.

## DISCUSSIONS

### 2016 Sweeping

Winter traction material accumulates in the parking and gutter areas adjacent to travel lanes. When winter traction is left on City roadways during dry conditions, fugitive dust particles can become airborne from vehicular traffic and wind. These conditions can negatively impact local air quality and it is beneficial to commence sweeping operations as soon as conditions permit. Early mild weather and the absence of a major snow event have allowed for sweeping operations to begin in advance of historical seasonal scheduling. Typically, sweeping operations begin in early to mid-April. For 2016, sweeping operations began February 10<sup>th</sup>.

Spring snow melt occurs at a faster rate in the bowl area than outlying areas of higher elevation. As a result, major arterial and collector roads in the bowl receive the first stage of sweeping operations. Night shift crews begin winter sand pick up and large bulk material present in the parking/gutter area. Sweeping crews can encounter sub-zero temperatures during night shift hours. To facilitate pre-wetting of traction materials while eliminating the formation of ice due to these activities, a salt brine solution is used in lieu of straight water. The brine achieves dust suppression while preventing icy roadways and unsafe driving conditions. As arterials and collector routes in the bowl are completed, crews move into adjacent residential streets.

Currently, arterials, collectors and residential streets in the bowl area will have been swept. Outlying areas of higher elevations such as Hart Highway, College Heights and Blackburn will be complete in the month of April. All spring sweeping activities will be tentatively complete mid-May. At the completion of spring sweeping operations, the downtown will be swept twice a week and maintenance sweeping and flushing will occur as required.

### 2016 Roadway Marking

In 2015, the City of Prince George awarded separate 2 year plus a 1 year option contracts for lineal line painting and painted hand work. Sub-standard quality, accuracy and scheduling led to the termination of both of these contracts and subsequent award to the next qualified lowest bidder. Both contracts were awarded to Yellowhead Pavement Markings Inc. Yellowhead held the previous roadway paint marking contracts and have provided quality performance in the past. Yellowhead will carry out the remaining 1 year of the contract. At the end of 2016, the City will review the past years work and will consider pursuing the 1 year option on both contracts.

The 2016 roadway marking program commencement is dependent upon several factors. Street sweeping of paintable roadways needs to be complete to ensure a successful paint bond with the existing asphalt. Adjacent to street sweeping, survey layout and paint "spotting" is necessary to provide a guide for the contractor. Major collector and arterial roadways are marked in the early mornings to avoid impacts on traffic. To perform this early morning work, suitable daylight levels are required to provide a safe work environment for City staff and the motoring public. Ambient air temperatures need to be 10 degrees Celsius to provide suitable drying time. Cooler application temperatures slow drying time and can lead to vehicular traffic tracking wet paint across the roadway and intersections. Tracking of paint reduces the life expectancy of a paint marking and may require a return visit at additional cost.

At the completion of survey layout and paint spotting, the contractor will begin lineal roadway markings. It is more efficient to have a large volume of roadways ready for roadway paint markings as the contractor can paint routes continuously and minimize additional mobilization costs to the City. Handwork painting of intersections and pedestrian crossings will also be scheduled at this time. Weather permitting, roadway marking and handwork will start at the beginning of June. 2016 Capital Paving projects requiring new roadway markings will be coordinated with the contractor to fit summer paving and painting schedules.

## **OTHER CONSIDERATIONS**

### "Pride Walk" Crosswalk

In 2015, Council received a request for the installation of a "Pride Walk" – a rainbow colored crosswalk - to support Pride Week. Due to time constraints, this request was deferred for consideration until the next roadway marking season (2016). Public Works has determined two possible existing "zebra" crosswalk locations that could be converted to a multi-color rainbow crosswalk. The first crosswalk location for conversion proposed is near the Cenotaph at City Hall crossing George Street to the old Delorme site. The second crosswalk location for consideration is further to the south, crossing George Street from City Hall to the old Enterprise site. (See Recommended Pride Walk Locations below.)

Roadway marking paint is not produced in colored tints. Exterior household paint would be the only tint-able option. The drying and wear characteristics do not provide for a long life cycle and the crosswalk could potentially wear out in one season of exposure to traffic. A more durable option is cold plastic. Cold plastic is a multi-component system that uses a chemical catalyst to create a strong bond to the asphalt surface. It is available in the desired colors and possesses a longer service life. Two configuration options are available for crosswalk conversion. The first option would replace current white zebra crosswalk bars with alternating rainbow colored bars. The second option would be replacing existing zebra crosswalk bars with perpendicular rainbow striping across the entire roadway. (See Pride Walk Configuration Options below.) To complete one rainbow colored zebra crosswalk in cold plastic, the contracted price is \$3000.00. To complete one perpendicular rainbow striping crosswalk in cold plastic, the contracted price is \$6000.00.

### Next Steps

#### *Seasonal Sweeping*

At the completion of mechanical sweeping activities, ultra-fine dust remains on roadways. The only means of removing this dust is through a final water flushing of the roadway. Currently, Public Works completes this operation with 2 City fleet flusher trucks. To support and improve this process, Public Works is investigating the potential of utilizing existing fleet tandem trucks outfitted with removable water tankers. The addition of removable tankers will allow for increased flushing and less fugitive dust from City roadways.

#### *Roadway Line Marking*

In 2015, the Ministry of Transportation and Infrastructure (MoTI) began a roadway line marking paint test project. Differing formulations of paint have been applied perpendicular to the lanes on a section of Highway 97 south between Sintich Road and Old Cariboo Highway. The purpose of this project is to determine the wear characteristics of the various paint formulations. Public Works is very interested in MoTI's research and will engage in discussions at the end of the project period which will conclude in the spring of 2016.

Public Works will re-introduce a second fall roadway paint application pilot project. 15<sup>th</sup> Avenue from Foothills Boulevard to Highway 97 is a main arterial which experiences excessive paint wear. This section of roadway will have a second application of paint applied late in the season. City staff will monitor the success of a secondary paint application and explore expansion of this procedure in 2017 should results be positive. Expansion would incur additional funding. The contracted cost of this pilot project will be in addition to the 2016 budget.



Recommended Pride Walk Locations



## Pride Walk Configuration Options



Standard Zebra Configuration



Perpendicular Configuration