


CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

Date: July 19, 2013

To: The Honorable City Council
c/o City Clerk, Room 395
Attention: Honorable Mike Bonin, Chair, Transportation Committee

From: Jaime de la Vega, General Manager
Department of Transportation 

Subject: **WORKMANSHIP OF CONTINENTAL CROSSWALKS AND BICYCLE
LANE INSTALLATIONS (C.F. 13-0866)**

SUMMARY

This is a report back on issues raised in the motion introduced by Council members Mitch Englander and Gilbert Cedillo.

RECOMMENDATION

That the Council RECEIVE AND FILE this report.

DISCUSSION

Overview

All pavement marking removal methods will result in some degree of alteration to the texture and/or color of the street, commonly referred to as pavement scars. There are no solutions to alleviate scarring when using a mechanical process.

About Lane Striping and Pavement Markings

LADOT is responsible for the installation and maintenance of traffic control devices on public streets. These devices include traffic lane striping and pavement markings, such as centerlines, lane lines, turn pockets, crosswalks, and pavement symbols/messages.

Routinely, markings must be reconfigured in order to implement various roadway improvements. If there is a change in lane measurements or the addition of surface treatments (e.g. slurry seal), the removal of existing markings may be necessary.

After the existing markings are removed, new markings are installed with a different alignment. Markings are removed using a mechanical process of surface grinding or high-pressure water blasting, which can alter the texture and/or color of the street in certain areas.

Accelerated LADOT Work Program

In fiscal year 2012-13, the Mayor and Council approved new initiatives that expanded the work plans for street resurfacing, bicycle lanes, and continental crosswalks. As a result, there was a substantial increase in the installation of traffic lane striping and pavement markings. Many of the installations involved the removal of existing markings to reconfigure roadway patterns for new bicycle lanes and continental crosswalks.

Striping and Marking Materials

Traffic control devices are intended to facilitate the safe and orderly movement of motorists, pedestrians, bicyclists, and equestrians. In order to apply traffic lane striping and pavement markings, LADOT utilizes two materials: thermoplastic and water-based paint.

On any particular stretch of roadway, the traffic layout can have 2 to 6 lanes for motorists with center lines, lane lines, bike lanes, and turn pockets. Additionally, the roadway may have numerous crosswalks and pavement symbols/messages.

Nearly all of the markings throughout the city consist of thermoplastic material. Thermoplastic is a highly durable polymer with adhesive characteristics that can be softened under extreme heat and hardens when cooled. Specialized equipment is used to melt the plastic and apply the material to asphalt and concrete surfaces. The time and materials necessary to install thermoplastic will vary based on the traffic design configuration. Thermoplastic can last for several years before gradually fading or chipping.

Water-based paint is an environmentally friendly application. It is the least costly of the three materials used by LADOT, but it is also the least durable and can begin to fade within weeks on heavily traveled streets.

Removal Methods

Thermoplastic, paint, and epoxy applications must be removed mechanically in one of three ways: surface grinding, sandblasting or high-pressure water blasting. All removal methods will result in some degree of alteration to the texture and/or color of the street, commonly referred to as pavement scars. The effects of scarring are visible on numerous streets across the city, particularly along corridors with new bicycle lanes and continental crosswalks.

In February 2013, the Texas A&M Transportation Institute (TTI) completed a research study on the effective removal of pavement markings. The published objective was to “determine the best practices for the safe, cost-effective and environmentally acceptable removal of work zone and permanent pavement markings with minimal damage to the underlying pavement or visible character of the surface course”. The final report is

pending official release, but staff recently interviewed the principal engineer about the project.

The TTI study was conducted over a period of 1.5 years. The research included a national survey sent to more than 100 cities, field studies of different removal methods under varying conditions, and investigative research on several removal processes.

The findings concluded that some removal methods are better than others for a given situation. However, there are no solutions to alleviate scarring when using a mechanical process.

Some agencies have been successful in applying "fog seals" on asphalt surfaces to minimize the appearance of scars and blend with the color of the street. A fog seal is a diluted asphalt mixture that requires 4 to 6 hours drying time and should only be applied under suitable conditions. Additionally, scarring on concrete surfaces can be reduced by lowering the pressure on water blasting methods. Removal time will be extended due to the lower pressure and the surrounding surface area may need to be washed to blend color.

LADOT has a contract with Sterndahl Enterprises, Inc. to perform grinding of traffic lane lines and pavement markings. Sterndahl specializes in full service roadway striping, stripe removal, and installation of traffic control devices. The company has more than 30 years of experience working on major freeway, highway and airport construction projects throughout California, Arizona and Nevada. The firm's president gave LADOT his company's experiences with different mechanical removal methods, which is summarized in the table below.

FISCAL IMPACT

There is no fiscal impact related to this report.

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c: Honorable Mitchell Englander, Council District 12
Honorable Gilbert Cedillo, Council District 1

Table 1 – Comparison of Pavement Marking Removal Techniques

Grinding	Water Blasting	Sandblasting
<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Removes all materials • Good control of removal pattern • Good production rates • Very little mess in most cases • Can be done with moving closure • Concurrent vacuum cleanup for long line operations • Easy to clean up • Does not remove fines between asphalt aggregate 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Removes all materials • Good production rates • Very little mess in most cases • Can be done with moving closure • Concurrent vacuum cleanup for long line operations • Easy to clean up 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Removes most materials • Good control of removal pattern
<p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Skill necessary to maintain proper depth control • Very high equipment cost and maintenance 	<p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Can cause damage to asphalt pavement adjacent to marking being removed • Access to water source in the field • Disposal issues with recovered water • Extremely high equipment cost and maintenance 	<p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • Removes fines and exposes/loosens underlying asphalt aggregate • Very messy, difficult clean up • Need extreme caution to avoid damage to surrounding environment. • Slow production, especially on thermoplastic • Very disruptive to traffic • Air quality and environmental concerns • CARB approved materials and CARB equipment registration required*

* CARB – California Air Resources Board