

CITY OF LOS ANGELES
INTER-DEPARTMENTAL MEMORANDUM

Date: August 8, 2014

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

From: *Selwyn Hall*
Jon Kirk Mukri, General Manager
Department of Transportation

Subject: **STREET RE-STRIPING AND TRAFFIC LOOP INSTALLATIONS
RELATED TO PAVEMENT PRESERVATION PROJECTS
(COUNCIL FILE NOS. 13-0886, 14-0600-S208, 14-0600-S220, 14-0813)**

SUMMARY

The Los Angeles Department of Transportation (LADOT) was instructed to provide several reports to Council regarding its work performance for re-striping streets and restoring traffic loop detectors after pavement preservation installations by the Department of Public Works, Bureau of Street Services (BSS). The focus of the requested information is in the areas of project coordination, performance metrics and resource allocations. Since the scope of the various reports are interrelated, this single report serves to provide a more complete discussion of the various issues.

The Council File references addressed by this report include:

- 13-0886 Report on coordination of lane striping and resurfacing coordination.
- 14-0600-S208 Instruct LADOT to report regarding a metric for the average number of days to restripe following street preservation. The time frame for this metric to be developed and include a goal of restriping within 10 days.
- 14-0600-S220 Rate of restriping achieved with budgeted resources. Respond to questions of average days to restripe. How LADOT will keep up with BSS, and disclosure of full process from slurry to completion, how do Departments coordinate and communicate, what can be done to improve situation.
- 14-0813 LADOT/BSS coordination of connecting and replacing traffic detectors post resurfacing.

RECOMMENDATION

That the Council RECEIVE and FILE this report.

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DISCUSSION

LADOT performs two basic types of striping work: 1) Projects associated with BSS street reconstruction, resurfacing and slurry seals; and 2) LADOT traffic safety improvements and design enhancements that do not involve BSS.

Resurfacing and Slurry Projects

The following chart summarizes the current process for inter-departmental coordination of the pavement preservation work program:

RESURFACING	SLURRY
<p>Preface:</p> <p>Resurfacing occurs on major arterials and local residential streets. BSS has 8 crews dedicated to resurfacing 7 days a week.</p> <p>LADOT crews work Monday through Friday. Only 1 markout crew exists citywide. The crew interprets traffic design plans and places temporary markers and painted lines on the resurfaced street. This serves as detailed guides for permanent striping and pavement marking installations. Two long line striping crews operate heavy duty specialized equipment to install permanent lane lines. One crew installs yellow lines and the other installs white lines. Finally, there is one crew at each of 3 area yards that installs permanent pavement markings, including crosswalks, roadway messages, turn arrows, and parking stalls. These crews are also responsible for citywide maintenance of pavement markings.</p>	<p>Preface:</p> <p>Slurry mostly occurs on local and collector streets. BSS has 4 crews dedicated to slurry 7 days a week and the capability to increase up to as many as 7 crews daily.</p> <p>LADOT crews work Monday through Friday. The markout crew and long line striping crews are not required for the majority of slurry projects. The pavement marking crew at each of the 3 area yards installs permanent markings.</p>
<p>1) LADOT receives 30-day advance notice via email of confirmed resurfacing work, followed by daily and weekly updates. LADOT and BSS communicate daily to coordinate work activities.</p>	<p>1) BSS typically provides email notification of slurry projects one week in advance. A final list of confirmed locations is emailed after slurry is actually installed, which has ranged from 2 to 25 days during the current calendar year (9 days on average).</p>

<p>2) LADOT engineers re-evaluate every major street scheduled for resurfacing to confirm that the existing geometric striping design is up-to-date per the California Manual of Uniform Traffic Control Devices (MUTCD), departmental standards, and current traffic volumes. A new design plan is prepared to comply with regulatory standards. Additionally, LADOT may need to redesign the striping configuration to include improvements identified in the City's Bicycle Plan or other directives from the Mayor and Council.</p> <p>Depending on the complexity of the design and whether or not an electronic base map exists, actual design time may range from a few days to weeks.</p>	<p>2) Slurry is typically applied along block segments on local and collector streets, which do not require engineering plans. In Fiscal Year 2012-13, there was a substantial increase in slurry applied on long segments of major arterial and secondary streets in conjunction with resurfacing projects. In such cases, engineering designs were required. Slurry on long segments of major arterials was discontinued in Fiscal Year 2013-14 and is not planned for the current fiscal year.</p>
<p>3) Design plans are forwarded to LADOT's District Research and Support Division to prepare detailed work orders for field crews. This division also field checks local residential streets that do not require design plans and prepares work orders for field crews as appropriate. The work orders clarify the design specifications, stock numbers of materials, spatial and directional information, linear and height measurements, and special installation instructions.</p>	<p>3) LADOT's District Research and Support Division prepares detailed work orders, which are sent to field crews.</p>
<p>4) BSS paves the street with a new surface.</p>	<p>4) BSS covers the street with slurry.</p>
<p>5) LADOT markout crew installs temporary surface markings on the street to delineate the exact location of traffic lanes, bike lanes, crosswalks, pavement markings, and road markings according to the design plan. Mark outs are typically completed within 24 hours. However, the department has only one crew to perform this function citywide and occasional delays occur when there are unusually high volumes of striping projects.</p>	<p>5) LADOT field crews install permanent lane lines, limit lines, crosswalks, pavement messages, and road markings on the street if a local or collector street. If it is a major arterial or secondary street, markout is performed first.</p>

<p>6) LADOT markout crew forwards work orders to striping crews and the appropriate area yard to complete permanent installations. The department has 2 striping crews citywide: one yellow striping and one white striping. Crosswalks and pavement markings are performed by staff at 3 area yards: Central, Western and Valley. Each yard has only a single crew to perform pavement installations.</p>	<p>6) If a major arterial or secondary street, LADOT markout crew forwards work orders to striping crews and the appropriate area yard to complete permanent installations.</p>
<p>7) LADOT signal crews replace traffic detector loops and connect loops to traffic control boxes as required.</p>	

Other Striping Projects

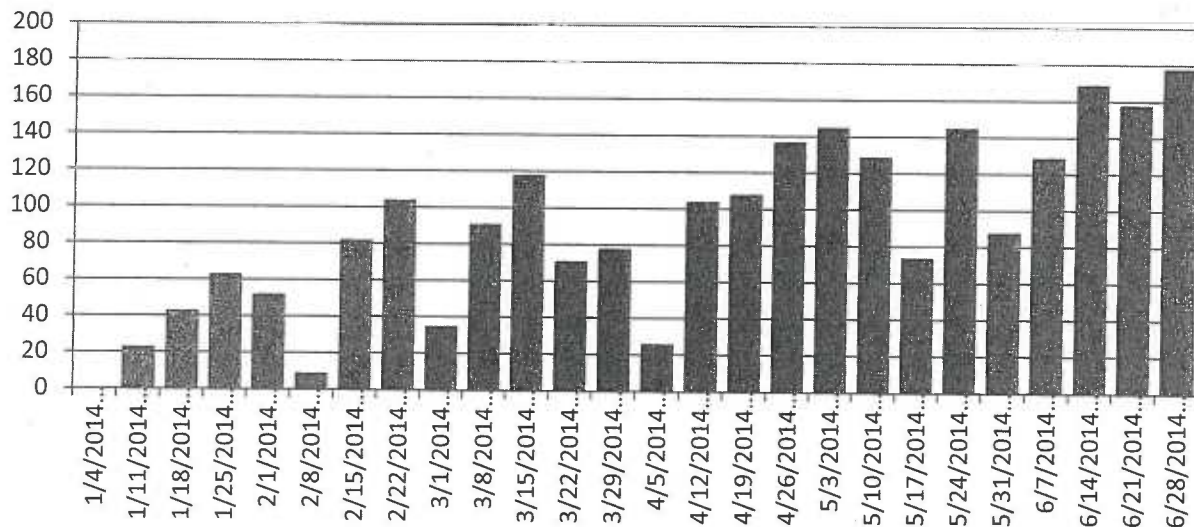
LADOT is responsible for a broad variety of striping work that does not involve BSS. These activities are performed by the same engineering and field staff that support street resurfacing and slurry projects. Work activities include:

- Adding bicycle lanes and shared-lane markings (“sharrows”) to existing street designs.
- Upgrading intersections with continental crosswalks.
- New crosswalks associated with the installation of traffic signals.
- Limit lines and pavement markings for new stop signs.
- Adding new left turn pockets or increasing the length of existing left turn pockets.
- Adding new striping for parking stalls and diagonal parking.
- Striping redesign to improve safety, efficiency and/or response to tort liability.
- Striping redesign related to projects for light rail, bus rapid transit and exclusive bus lanes.
- Special projects, such as streetscape enhancements.
- Maintenance and repair of existing striping and pavement markings.

Re-Striping Delays

LADOT views traffic safety as its core mission and continues to rank the re-striping of streets as our top priority among all striping projects. The department's goal is to re-stripe the street within 10 days after resurfacing or slurry seal is completed. In calendar year 2014, the re-striping turnaround time for resurfacing projects has ranged from 10 to 21 days. The re-striping turnaround for slurry projects after receiving confirmed list has ranged from 3 to 77 days.

It should be noted that there were extended delays in re-striping after slurry projects from April through June 2014. These delays were due to the depletion of the annual budget appropriations for materials and contracts, and limited savings in other funding sources to address the deficit. Concurrently, there was substantial increase in slurry projects toward the end of the fiscal year. The following chart represents the number of street blocks slurried each week from January through June 2014.



Key factors that have impacted turnaround times include:

- Increase in the total number of street resurfacing/slurry linear miles as reflected in budget documents, rising from linear 550 miles in Fiscal Year 2009-10 (150 resurfacing, 400 slurry) to 700 miles in Fiscal Year 2013-14 (245 resurfacing, 455 slurry).
- Further increase in street resurfacing/slurry for Fiscal Year 2014-15. The measurement has been converted from linear to lane line miles and the goal is now 2,400 lane miles. Approximately 200 more lane miles than last fiscal year.
- Fluctuations in the weekly quantities of slurry projects, which have ranged from zero to 178 blocks per week.

- Specialized striping trucks and equipment have frequent mechanical breakdowns and are sometimes out of service for several weeks.
- Staffing reductions among field personnel who perform striping functions.
- Expanded workloads from new bicycle and pedestrian safety initiatives, primarily the City's Bicycle Plan and expansion of continental crosswalks.
- Increase in paint and sign maintenance orders generated from the MyLADOT online service request system, which currently exceeds 5,800 requests citywide.

Traffic Loop Replacement Delays

Traffic loop detectors are embedded approximately 3 to 4 inches under the surface of the street. The loops facilitate data communications to measure traffic flow, adjust signal timing and actuate traffic signals. Currently, 64,500 traffic loops exist throughout the City.

Traffic loops are robust and secure within the streets, but can become damaged due to cuts from trenching during construction projects, street resurfacing, and exposure from degraded pavement. Last fiscal year, 5,035 were replaced (3,364 by LADOT and 1,671 by contractor). The department's current replacement backlog is 3,875 loops.

LADOT has two dedicated crews to perform loop replacements citywide. Each crew consists of 3 employees. The crews use specialized equipment to saw into the pavement, insert and connect loops, apply hotmelt sealant, and vacuum the surface area. In previous years, there were three 4-person crews to perform this work. Labor is occasionally supplemented by a contractor, but is limited due to budgetary constraints.

Resurfacing involves surface grinding that damages traffic loop detectors. This causes a disruption in communications affecting traffic signals and the Automated Traffic Surveillance and Control (ATSAC) Center. The signals remain fully functional and default to preset timing sequences, maintaining the safe and orderly movement of vehicles. However, ATSAC may lose its ability to receive data on traffic speeds and volumes and to remotely adjust signal timing if needed.

The department considers side street phasing as a priority for loop replacements. Along most arterial streets, the traffic signal will remain green unless the light is triggered to change when a vehicle is waiting to enter the intersection from a side street. If the side street loop is damaged, the traffic signals at the intersection will default to preset timing and periodically alternate green lights between the arterial street and side street. This alternating sequence will continue regardless of whether or not there are vehicles present on the side street, which may unnecessarily stop arterial traffic.

Loop damaged caused by street resurfacing represents a significant amount of the loop replacement backlog. The loops must be replaced after lane lines and pavement

markings are installed because there are often modifications to the street design configuration. Replacing loops after re-striping ensures the proper placement of loops in the street to perform at optimal levels. Based on the overall volume of loop replacements needed and limited resources, there are times when loops are not immediately installed on resurfaced streets, particularly in areas where signal timing is not impacted by damage to loops on side streets.

Staffing Levels

In the past 5 years, LADOT has experienced significant staffing losses. The number of full-time engineers and management analysts assigned to coordinate the pavement preservation program decreased from 5 employees to 2 engineers. Additionally, the Paint and Sign Division workforce has been reduced 31.3%:

	POSITION AUTHORITIES			Current Vacancies	Filled Positions	Overall Staffing Losses	Overall Change
	Fiscal Year 2009-10	Fiscal Year 2014-15	5-year Change				
PAINT AND SIGN DIVISION							
Traffic Marking and Sign Supt. III	1	1	0	0	1	0	0.0%
Traffic Marking and Sign Supt. II	4	3	-1	0	1	-3	-25.0%
Traffic Marking and Sign Supt. I	8	6	-2	0	5	-3	-25.5%
Sign Shop Supervisor	1	1	0	1	0	-1	-100.0%
Traffic Painter and Sign Poster III	14	12	-2	1	11	-3	-21.4%
Traffic Painter and Sign Poster II	28	19	-9	1	17	-11	-35.7%
Traffic Painter and Sign Poster I	33	30	-3	5	25	-8	-24.2%
Sign Painter	2	2	0	0	2	0	0.0%
Painter	1	1	0	0	1	0	0.0%
Maintenance Laborer	23	16	-7	4	13	-10	-47.8%
TOTALS	115	91	-24	12	79	-36	-31.3%

The Signal Operations workforce has reduced by 35.8%:

	POSITION AUTHORITIES			Current Vacancies	Filled Positions	Overall Staffing Losses	Overall Change
	Fiscal Year 2009-10	Fiscal Year 2014-15	5-year Change				
SIGNAL OPERATIONS							
Signal Systems Superintendent	1	1	0	0	1	0	0.0%
Signal Systems Supervisor II	4	3	-1	0	3	-1	-25.0%
Signal Systems Supervisor I	11	9	-2	0	9	-2	-18.2%
Asst. Signal Systems Electrician	22	12	-10	4	8	-14	-63.6%
Signal Systems Electrician	100	81	-19	7	74	-26	-26.0%
Electrical Craft Helper	16	8	-8	2	6	-10	-62.5%
Cement Finisher	4	1	-3	0	1	-3	-75.0%
Mechanical Repairer II	4	2	-2	0	2	-2	-50.0%
Maintenance Laborer	3	2	-1	0	2	-1	-33.3%
TOTALS	165	119	4	13	106	-59	-35.8%

The massive decrease in staffing resources combined with repeated equipment failures has resulted in thousands of lost labor hours and measurable declines in productivity. The department has attempted to compensate for resource shortages by utilizing staff overtime and contractor support.

Over the last three fiscal years, overtime work among field staff increased substantially in support of the pavement preservation program:

	<u>FY 2011-12</u>	<u>FY 2012-13</u>	<u>FY 2013-14</u>	<u>3-Year Change</u>
Labor Hours	15,354	33,701	53,974	252%
Salary Costs	\$741,436	\$1,631,767	\$2,742,990	270%

The costs for contractors to supplement field staff striping and pavement marking work also increased proportionately:

	<u>FY 2011-12</u>	<u>FY 2012-13</u>	<u>FY 2013-14</u>	<u>3-Year Change</u>
Service Costs	\$2,048,569	\$4,010,388	\$7,181,501	251%

Resource Considerations

LADOT will ensure that re-striping is performed as necessary to support the pavement preservation program. However, timeliness is the critical measure of performance because of the safety risks posed by unmarked streets. The workload demands have expanded in the current fiscal year, yet additional labor and equipment resources have not increased to meet the operational goal of re-striping the street within 10 days after resurfacing or slurry seal is completed.

In addition to striping and pavement marking work, Paint and Sign staff maintain approximately 1,200 miles of painted curbs, 22,000 marked crosswalks, 900,000 permanent signs, and post more than 78,000 temporary parking restriction signs each year. The department has considered redeploying some of these crews to periodically help with striping and pavement markings, but based on existing workload demands the neglect of maintenance for any length of time would be detrimental to public safety, traffic management, and parking enforcement.

The department has submitted request to backfill vacancies through the Managed Hiring Process and was recently approved to fill several positions through transfers and promotions. However, the department was not approved to fill vacancies with new hires from outside the City. Certain entry-level positions are job classifications unique to LADOT and makes the department unable to increase overall staffing levels.

LADOT also faces challenges with specialized trucks used for striping streets. The department has a limited number of vehicles available and frequent breakdowns impact productivity. The following chart identifies the vehicles dedicated to re-striping work and the number of days they were out of service for maintenance last fiscal year:

Vehicle Type	Days Out of Service
Markout Truck #1	31
Markout Truck #2	43
Markout Truck #3	20
Markout Truck #4	8
Pre-Melt Thermoplastic Truck #1	3
Pre-Melt Thermoplastic Truck #2	20
Long Line Striping Truck #1 - Yellow	99
Long Line Striping Truck #2 - Yellow	10
Long Line Striping Truck #3 - Yellow	30
Long Line Striping Truck #1 - White	131
Long Line Striping Truck #2 - White	>365

In Fiscal Year 2013-14, the department received funding to purchase new equipment to expand its fleet. The procurement is being coordinated through the General Services Department (GSD). Bids have been awarded and initial deliveries are expected by March 2015.

Additionally, LADOT and GSD management have been meeting monthly over the past year to specifically discuss vehicle equipment needs. The meetings address a full range of vehicle maintenance and replacement issues, and have resulted in improved communications in determining operational impacts, service priorities and planning strategies. These meetings have led to a mutual commitment for greater preventive maintenance care and repair turnarounds.

Improvement Strategies

In June 2014, the Mayor's Office initiated bi-weekly executive meetings to discuss departmental progress in meeting this year's pavement preservation goals. The agenda addresses critical operational issues, such as work priorities, performance expectations, coordination, efficiency opportunities, resource needs, and logistical challenges. Participants include the Mayor's Office, Board of Public Works President and executive/senior management from LADOT, BSS, GSD, Bureau of Engineering, City Attorney, and Office of the City Administrative Officer.

Additionally, LADOT is in the final stages of development of an automated work order system to replace the existing handwritten paper-based process. The system will

greatly improve internal notifications, dissemination of documents, recordkeeping, reporting capabilities, cross-functional, data sharing, and performance metrics. It will also operate on mobile devices with geo-referencing features to facilitate mapping and field deployment. Full system implementation is projected by December 2014.

FINANCIAL IMPACTS

LADOT has insufficient financial resources to fund staffing and equipment needed to meet the goal of re-striping the street within 10 days after resurfacing or slurry seal is completed. The department is committed to ensuring that all streets are striped and traffic loops are replaced, but turnaround times will likely continue to average between 3 to 6 weeks due to limited personnel and equipment.

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- c: Doane Liu, Office of the Mayor
- Miguel A. Santana, City Administrative Officer
- Nazario Saucedo, Bureau of Street Services
- Seleta Reynolds, Los Angeles Department of Transportation