

For Reporting Period: January 1, 2016 through June 30, 2016

I. General Information:

Lead agency name: Washington State Department of Transportation (WSDOT)

Improvement project title: Geotechnical file indexing for information retrieval

Date improvement project was initiated: 3/31/2015

Project type: New Project

Project is directly connected to:	If applicable, specify the alignment:	
Results Washington performance	Goal 5: Efficient, effective and accountable	
measure	government	
Agency Strategic Plan	Goal 4: Organizational strength	

Report reviewed and approved by: Keith Metcalf, Acting Deputy Secretary of Transportation

II. Project Summary:

The Department of Transportation improved processing of geotechnical report files, resulting in 154% faster delivery of records from 0.61 boxes per person, per month (February 2014-March 2015) to 1.55 boxes per person, per month (June 2015-May 2016).

III. Project Details:

ldentify the problem:	Decades' worth of complex geotechnical records are being indexed and scanned at WSDOT's Materials Lab to comply with laws that dictate these records must be retained for 75 years. These records contain information relating to soil conditions, water table levels, and any results from archeological investigations, all of which informs transportation project design and construction work in the area. Many records are referenced by WSDOT staff in the future, if work is being undertaken nearby. The team scans individual records to make them available electronically, and creates a searchable index so that designers can locate the records relating to an area of interest. The team launched a Lean project to deal with the backlog of geotechnical records needing to be imaged and indexed.

ProblemCurrently, it takes 110 labor hours to process a box of geotechnical recordsstatement:compared to our target of 55 hours per box, which we want to reach by 12/31/2015.

ImprovementThe team focused on two categories of changes: 1) enhancing tools and workstationdescription:layout and 2) improving file selection and categorization.The team recognized that the tools and workstation layout affect processing time at
each stage of the process. Their strategies to improve in this area included:

• Improved maps, lighting and computer monitors so that it is easier to locate where each geotechnical investigation occurred.



- Larger adjustable workstations to optimize paper file layout and to reduce worker fatigue.
- Upgraded computers, software and scanners for enhanced productivity.

The team also evaluated how likely it is that geotechnical files will need to be accessed in the future. While all records are maintained in archival boxes, they determined that only some files were highly likely to be accessed again in the future would need to be indexed to the highest level of detail. Under the new system, files are categorized as either Tier 1 or Tier 2. They made the following determinations:

- Tier 1 files are considered to be lower priority due to age, relevance and likelihood that the data contained will be needed for current geotechnical projects. Most of these files will be imaged with a nominal amount of indexing. Geotechnical reports that do not include soil boring log records are not imaged, and only a basic index is entered into the electronic database.
- Tier 2 files are higher priority files that contain information most likely to be needed for current geotechnical projects. These files will go through the comprehensive imaging and indexing process.
- The team performs detailed indexing of any Tier 1 file that is identified by a project team for immediate use this "just-in-time" processing can be performed within a week of being requested.

The team increased from 1 full-time employee to 1.5 full time employees working on geotechnical file imaging and indexing, in order to address the backlog of 168 boxes.

CustomerThe internal customer for this process is WSDOT's Construction division geotechnicalinvolvement:office, which benefits in the following ways:

- The "just-in-time" option significantly improves response time to other agency staff.
- Improvements to the software interface enhances usability by agency staff.
- More standardized indexing protocol makes it easier to search the electronic records and data.

IV. Project Details:

Improved process as measured by: (Click those that apply)	Specific results achieved: (Complete the narrative boxes below)	Total Impact: (Actuals; Current Reporting Period)	Results status:
⊠ Time	Increased pace of processing geotechnical records 153% from an equivalent of 0.61 boxes per person, per month ¹ (February 2014-March 2015) to 1.55 boxes of records per person, per month ² (June 2015- May 2016).	The team redeployed approximately 1,000 labor hours annually, processing	Final

¹ There was 1 FTE in this timeframe – who was able to process 0.61 boxes per month.

² There were 1.5 FTEs in this timeframe – they were able to process 2.33 boxes per month, collectively.



Decreased estimated hours to process one box of geotechnical files by 44% **from** 110 hours per box (February 2014-March 2015) **to** 62 hours per box, on average (June 2015-May 2016). Decreased estimated time to eliminate current backlog of 168 hours of geotechnical files **from** 15.2

backlog of 168 boxes of geotechnical files **from** 15.3 years **to** six years.

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four more boxes in the

predicted.

This pace allows them to process 17

more boxes

each year

going forward.

first year than

VI. Optional Visuals:





For Reporting Period: January 1, 2016 through June 30, 2016

I. General Information:

Lead agency name: Washington State Department of Transportation (WSDOT)

Improvement project title: Timely delivery of Good To Go! passes to customers

Date improvement project was initiated: 12/8/2015

Project type: New Project

Project is directly connected to:	If applicable, specify the alignment:
Results Washington performance	Goal 5: Efficient, effective and accountable
measure	government
🗵 Agency Strategic Plan	Goal 4: Organizational Strength
	Goal 6 Smart Technology – Strategy 6.1 innovative
	technology

Report reviewed and approved by: Keith Metcalf, Acting Deputy Secretary of Transportation

II. Project Summary:

The Department of Transportation improved the process for ordering and supplying *Good To Go!* electronic toll passes to customers. During a major spike in sales in late 2015, it took up to four weeks from the time a customer ordered a pass to when it was shipped. This project made the inventory process more robust so that fulfillment times can be maintained within two days in the case of another major spike in demand.

III. Project Details:

- Identify the problem: Late in 2015, issues occurred in WSDOT's *Good To Go!* pass inventory management processes, which resulted in major delays in order fulfillment. At most, it took up to four weeks from when a customer ordered a pass to when it was shipped to them. Problems resulted from a dramatic increase in sales as the I-405 Express Toll Lanes opened in late September. In the months following the opening, pass sales tripled or quadrupled month to month. The increase in sales exposed several flaws in the established processes for tracking inventory, ordering new passes, and performing verification testing. Inadequate processes led to a shortage of passes during the peak of sales, which was the main reason for the delays in fulfillment. The team realized that the existing processes were labor-intensive and inefficient, which made it difficult to manage periods of elevated demand. This caused delays in mailing passes to customers during peak periods of pass sales.
- ProblemPreviously, it took 12 weeks to restock WSDOT's inventory of passes from the timestatement:WSDOT placed a restocking order with the pass vendor to when they were delivered
to customer service representatives for distribution. This was three times the
targeted restocking time of four weeks.



ImprovementA team of WSDOT and vendor staff worked together to improve the process, withdescription:the following key changes:

- Switched to testing a random statistically valid sample of vendor-supplied passes, instead of testing 100 percent of passes.
- Worked with the vendor to allow for partial shipments of orders, which leveled the flow without demanding significantly more inventory space.
- Developed a more robust tracking tool that is updated weekly to evaluate trends and make timely decisions on order volumes and timing. It is based on recent *Good To Go!* pass sales and includes dynamic forecasting of demand in order to ensure the supply is sufficient.

IV. Project Details:

Improved process as measured by: (Click those that apply)	Specific results achieved: (Complete the narrative boxes below)	Total Impact: (Actuals; Current Reporting Period)	Results status:
⊠ Time	TimeDecreased labor hours expended to order, test, and manage inventory for Good To Go! passes by 70% from 82 labor hours per week to 24.5 labor hours per week.	The team redeployed more than 2,900 hours annually to other toll management	Final
	order to shipment of their pass from four weeks (during the peak in 2015) to one day (typical in 2016).	tasks. Mailed nearly 14,000 passes	
	Decreased timeframe from when WSDOT places an order for a batch of passes to when the passes are available to customers by 58% from 12 weeks (in 2015) to five weeks (in 2016).	to customers the next business day in January 2016.	

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VI. Visuals:

The weekly transponder report details the following elements (illustrated on the next page):

Inventory Status

- Shows current inventory, backorder inventory (pending orders), and the combined amount.
- Low level indicators.

Order Status

- Indicates when a new shipment should be sent from the warehouse or a new order should be placed.
- Upcoming are highlighted yellow (shown on next page) and red is used for past due order dates.
- Status of any orders in progress.



Weekly Transponder Report - 7/14/2016

Inventory									
Inventory Status							Order Status		
Tupo	Type Current Inventory		Sparkline	Backorder Total		Request Part.	Place Next	Order	
Type			(31 Days)	Quantity	Inventory		Shipment By	Order By	Status
Flex Carpool	\bigcirc	2,796	/ /	-	\bigcirc	2,796	N/A	Mar-2017	
Flex Swap	\bigcirc	2,437	5	-	\bigcirc	2,437	N/A	Feb-2017	
Flex Sale	\triangle	20,786	/	50,000	\bigcirc	70,786	Sep-2016	Feb-2017	Ordered
Sticker	\triangle	22,468	/	-	\triangleleft	22,468	N/A	Jul-2016	
LPP	\bigcirc	3,699	/	-	\bigcirc	3,699	N/A	Oct-2016	
Moto	\bigcirc	4,356	/	-	\bigcirc	4,356	N/A	Jul-2017	
Moto Carpool	\bigcirc	3,362	{	-	\bigcirc	3,362	N/A	Sep-2017	
Flex Kits	\diamond	10,656	/	73,000	\bigcirc	83,656	Aug-2016	Apr-2017	Ready
Starter Kits	\diamond	5,506	{	70,300	\bigcirc	75,806	Jul-2016	Nov-2016	Ready

The team ran a simulation using this new inventory tracking tool to see how it would perform under the spike in orders experienced late in 2015. Under the old scenario, new passes were ordered October 20th and ready to be shipped to customers December 14th (nearly eight weeks). Under the new scenario, the passes would be ordered a month earlier, and ready to be distributed to customers six weeks earlier, completely eliminating the four-week delay experienced by customers late in 2015. See the table below for a simulation scenario compared to the actual timeline late in 2015. Tracking an actual order through the process in 2016 showed it took even less time than in the simulation below – only five weeks.

Metrics	Actual timeline	Simulated timeline with Lean improvements		
Date notified	Not recorded ¹	9/21/2015 Notification occurred before depleting inventory		
Date ordered	10/20/2015	9/21/2015	Ordered four weeks earlier	
Date received	11/30/2015	11/2/2015	Arrived four weeks earlier	
Time for testing	10 business days	1 business day	Reduced testing timeframe by 90%	
Date ready	12/14/2015	11/3/2015 Available to customers six weeks earlier		
Total:	8-12 weeks	6 weeks	Reduced by approximately 50%	

¹ The process for notifying the team as to when a new order needed to be placed was not formalized. This process could take up to four weeks.



For Reporting Period: January 1, 2016 through June 30, 2016

I. General Information:

Lead agency name: Washington State Department of Transportation (WSDOT)

Improvement project title: Installation of multi-post roadside signs in Olympic Region

Date improvement project was initiated: 5/31/2015

Project type: New Project

Project is directly connected to:

- Results Washington performance measure
- ☑ Agency Strategic Plan

If applicable, specify the alignment: Goal 5: Efficient, effective and accountable government Goal 4: Organizational strength Strategy 1.3: Asset Management

Report reviewed and approved by: Keith Metcalf, Acting Deputy Secretary of Transportation

II. Project Summary:

The Department of Transportation improved how quickly multi-post roadside signs are reinstalled after WSDOT is notified that a sign is down, resulting in signs being installed in 32 percent less time, from 11 weeks to 7.5 weeks.

III. Project Details:

Identify the problem:	There were 31 multi-post signs in WSDOT's Olympic Region that were damaged during windstorms or crashes in 2014. Repair of the downed signs takes approximately 11 weeks after it has been identified.
Problem statement:	Currently, it takes 11 weeks between identification and reinstallation of a downed multi-post roadside sign compared to our target of nine weeks, which we want to reach by 10/31/2015.
Improvement description:	 The team identified the following changes to the sign reinstallation process: Instituted making a follow-up phone call after placing an order with the WSDOT sign shop for a new roadside sign, confirming delivery date. Provided an option to use outside vendors to supply roadside signs if the WSDOT sign shop is unable to meet the needed delivery timeframe. Prioritized sign reinstallation work for the local maintenance teams, which allows for better coordination and fewer call-backs to perform the work.



IV. Project Details:

Improved process as measured by: (Click those that apply)	Specific results achieved: (Complete the narrative boxes below)	Total Impact: (Actuals; Current Reporting Period)	Results status:
⊠ Time	Decreased time between identifying and reinstalling a downed multi-post roadside sign in WSDOT's Olympic Region from 11 weeks to 7.5 weeks.	In the first quarter of 2016, approximately 40 roadside signs in Olympic Region were reinstalled, providing information to the traveling public on average 3.5 weeks faster than before.	Final

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VI. Visuals:

A multi-post roadside sign being installed along Highway 3 by WSDOT crews.



Updated: 05/26/16



For Reporting Period: January 1, 2016 through June 30, 2016

I. General Information:

Lead agency name: Washington State Department of Transportation (WSDOT)

Improvement project title: Pavement condition data collection and processing

Date improvement project was initiated: 1/30/2015

Project type: New Project

If applicable, specify the alignment:		
Goal 5: Efficient, effective and accountable		
government		
Strategy 1.1: Strategic Investments		
Goal 4: Organizational strength		

Report reviewed and approved by: Keith Metcalf, Acting Deputy Secretary of Transportation

II. Project Summary:

The Department of Transportation improved the collection and processing of pavement condition data, resulting in faster delivery of data to decision-makers, from 100 percent of data available in June following the year it was collected, to 40 percent of highest priority cracking and rutting data available in January (five months earlier than before), and 100 percent of data available in April (at least two months earlier than before).

III. Project Details:

Identify the problem:	WSDOT manages over 18,500 lane miles of state highway pavement assets. The Pavement Office is responsible for the collection of pavement condition data for more than 9,000 miles of highway annually. This pavement condition data has
	historically been used as the primary input for planning an upcoming biennium of pavement preservation projects, specifically as part of a larger decision support software called the Washington State Pavement Management System (WSPMS). Pavement condition data is not available until June following the year it is collected, but is desired in January.

ProblemCurrently, the pavement condition data collected in 2014 is not available until Junestatement:2015 compared to our target of data collected in 2015 being partially available to
decision-makers in January 2016, which we want to reach by 1/29/2016.

ImprovementThe team identified improvement opportunities to increase flow, improvedescription:communication, manage visually and better utilize people and software, including
the following changes:

• The WebWSPMS application was updated to allow for releasing partial sets of condition data, where it was previously built to deliver an entire year's



Improvement description: Con't worth of data. Additionally, the Pavement Office communicated with end users of the data regarding how they could access and use the incremental data sets. This required new data structures, new visualizations and communication with primary users.

- Changed how data for concrete pavements was assessed, while achieving the needed level of accuracy.
- Started pavement data collection in the field in April, instead of starting it in July as done in prior years.
- Documented and communicated standard work elements that need to be performed annually and weekly.
- Created visual controls for standard work, to ensure consistency. Used team's weekly huddles to evaluate work performance (see image on last page), standards, and any issues that arose.
- Developed a training plan with a focus on cross-training, to help build the team's capabilities.
- Integrated the automated rating capabilities of current software, automatically processing for pavement surface type, age and construction status. Previously the Pavement Office performed this step manually.

CustomerThis Lean Improvement Project was discussed with the Pavement Task Force at theinvolvement:meeting on 1/22/15, where input was solicited on the optimal timing and release of
condition information. This served as a confirmation from previous input received
from this task force, and helped the team set priorities and project targets.

Improved	Specific results achieved:	Total	Results
process as measured by: (Click those that apply)	(Complete the narrative boxes below)	Impact: (Actuals; Current Reporting Period)	status:
⊠ Cost	Decreased cost to preserve each lane mile of state highway pavement from \$13,605 per year to \$13,513 per year. Assumptions: earlier delivery of data results in better decisions for pavement management and leads to an average extension of pavement life by 1.2 months.	Annual costs avoided of \$1.7 million for WSDOT's network of more than 18,500 lane miles of state highway pavement.	Final
⊠ Time	Decreased delay between when data is collected and when it is available to decision-makers from six months following the end of the data collection year (June 2015 for 2014 data) to 40% of data being available one month following the end of the year (January 2016 for 2015 data), and 100% of data being	40% of data is published five months earlier than before; 100% of data is available at least two	Final

IV. Project Details:



available four months following the end of the year (April 2016 for 2015 data).	months earlier.
Increased pace for rating pavement condition by mile of pavement data from 2.1 miles of pavement data per hour of processing in 2014 to 3.0 miles per hour of processing in 2015.	The team redeployed more than 820 labor hours annually, enabling them to take on additional pavement data collection work for local agencies.

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VI. Visuals:

Visual controls for overall pavement data rating performance. The team tracked the number of miles of pavement data they were able to process every month, illustrating that the team has increased their data processing speed (represented in average rated miles per hour).

PAVEMENT MANAGEMENT PERFORMANCE MEASURES	Miles Coller	Field ed in	Ave. Rated	Der Houries	Le had	Wspurs
BASELINE	NIA	NIA	2.10	169/91.0	NIA	1
FEB 2015	AIM	702	2.55		NIA	
MAR 2015	NA	548	2.51	139 93.1	AIA	2014-15 = 2.2
APR 2015	NIA	960	2.44	99/94.0	N/A	miles/miles/
Betaber			the second			Sample: 4011 10.1
October 2015	N/A	436	2.61	1 Martin	A CONTRACT	
November 2015	NIA	727	3.15	1256 91.0		
December 2015	-	738	2.94	348 90.0		
January 2016	-	877	2.80*	606 90.0	SPICE -	
February 2016	-	946	2.84	476 /88		
0			* New	RATERS, CO	white 1950	es

Updated: 05/26/16



For Reporting Period: January 1, 2016 through June 30, 2016

I. General Information:

Lead agency name: Washington State Department of Transportation (WSDOT)

Improvement project title: Processing Rail Division invoices

Date improvement project was initiated: 9/28/2015

Project type: New Project

	Projec	t is	directly	y connected	to
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 Results Washington performance measure
 Agency Strategic Plan If applicable, specify the alignment: Goal 5: Efficient, effective and accountable government Goal 4: Organizational strength

Report reviewed and approved by: Keith Metcalf, Acting Deputy Secretary of Transportation

II. Project Summary:

The Department of Transportation improved the process for reviewing and approving vendor and contractor invoices by the WSDOT Rail Division, resulting in more than twice as many invoices being processed in 14 days or less (between receiving and paying a valid invoice), from 33.5 percent to 71.2 percent.

III. Project Details:

ldentify the problem:	WSDOT's Rail Division identified opportunities to improve how they review and approve vendor and contractor invoices for payment. Faster payment of invoices helps vendors and contractors with cash flow, which may further benefit any sub- contractors such as small or disadvantaged businesses. It would also accelerate WSDOT's reimbursement from the Federal Railroad Administration, freeing up state funds for other projects.
Problem statement:	Between June and November 2015, 33.5 percent of invoices were processed in 14 days or less compared to our target of 100 percent of invoices being processed in 14 days or less, which we want to reach by 3/31/2016.
Improvement description:	 The team evaluated the invoice review process and identified duplication of effort and unnecessary process steps. They implemented the following changes: Combined a tracking sheet and transmittal sheet into one tool for tracking

and documenting the review process.

 Provided clear guidelines for when to short pay an invoice, put into delayed status or reject the invoice entirely. This means that invoices are dealt with more consistently. WSDOT emails customers regarding invoices lacking sufficient information and identifies the steps that will be taken.



- Defined roles and responsibilities for what information would be reviewed during each step of the process and the level of detail the review would entail. This allowed the team to reduce duplicative effort.
- Delegated authority for verification signatures on invoices to those responsible and accountable for the details being reviewed – maintained signature for payment of invoices with the program manager.
- The team built in quality checks throughout the process, and eliminated a step exclusively for quality control at the end of the process.
- Created a visual management board to track where invoices are in the review process, and to help the team manage the workload to achieve the delivery timeline target (see next page).

CustomerThe team discussed reaching out to some of the vendors to ask about the currentinvolvement:process for feedback. The decision was made to focus on the internal process first.

IV. Project Details:

Improved process as measured by: (Click those that apply)	Specific results achieved: (Complete the narrative boxes below)	Total Impact: (Actuals; Current Reporting Period)	Results status:
⊠ Time	Decreased the average time between receiving and paying invoices by 50% from 20.6 days (June- November 2015) to 10.3 days (January-June 2016). Increased the percent of invoices processed for payment in 14 days or less from 33.5% (June- November 2015) to 71.2% (January-June 2016). Decreased the estimated labor hours to process an invoice by 30% from 15 hours to 10.5 hours. Estimate 764 invoices in the 2016 calendar year.	Approximately 764 invoices will be paid to customers on average 10.3 days faster annually. The team redeployed more than 3,400 labor hours annually to other project delivery activities	Final

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VI. Visuals:

The team's visual management board includes color-coded notes for each contract, with details printed out on sticker labels such as the contract number, invoice due date, and invoice dollar value. The board is divided into invoice review phases, and team members move the item to the next phase when their work on that invoice is complete. Invoices that are in dispute or otherwise on hold are moved to the bottom of the tracking board.



