Next Gen Transportation: Preparing Industry for Tomorrow, Today

Work Zone Access Management



TRANSPORTATION ENGINEERING AND SAFETY CONFERENCE



Todd Rothermel – HNTB December 5, 2018



Work Zone Access Management

- Standards available on how work zones should be planned.
- Standards available on how work zones should be installed.
- No available standard on how to manage roadway work zone access by multiple contractors at the same time to install work zones safely and effectively...



PennState College of Engineering ...until now.





Problem Statement

- Work Zone Impacts to Traffic:
 - Reduced Capacity
 - Speed Reduction
 - Unexpected Condition
 - Driver Distraction
 - Increased Signage



- Merging or Shifted Condition
- Increased Risk for Crashes







Problem Statement

- Manage roadway access by multiple contractors at the same time to install work zones safely and effectively
- Information overload (NJTA Statistics)
 - Over 1000 construction access requests per week
 - Email
 - Phone call
 - Text message
 - Paper forms





TRANSPORTATION ENGINEERING



...all with a single point of failure

Problem Statement

- Validation of MPT adherence for requests:
 - Traffic Manual(s)
 - Standard Drawings
 - Standard Taper Point List
 - Lane Closing Allowable Hours
 - Conflict Criteria
 - Holiday Restrictions

	Pho bank hits center (00007)			
ne	Poison/Cheap Trick			
ate	06/23/2018	* Start Time	07.00 PM	•
ate	06/23/2018	* End Time	10.59 PM	
22				

- Special Event Restrictions

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			NEW JE	RSEY TU	RNPIKE O	UTER ROA	DWAY	PNC1	NBO	116	125.5	06/23/2018	06/24/2018	05:00 PM	12:59 AM	No	No	No	No
			LA	NE CLOSU	RES: MP	96.1 TO 99	.9	PNC1	SBI	116	104.2	06/23/2018	06/24/2018	05:00 PM	12:59 AM	No	No	No	No
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term work effo	rts.*							PNC2	NBO	104.2	116	06/23/2018	06/23/2018	05:00 PM	07:00 PM	No	No	No	No
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8 am-9 am	4	3	4	3	4	3	2	2	2	2									
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10 am-11 am	3	3	3	3	3	3	3	3	2	2	1								
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Special Event Locat

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Technology – Significant Features

- Request to Approval workflows
- Granular user roles and permissions
- Data validation for all request types
 - Roadway model(s)
 - Taper Points
 - Time Tables
 - Heavy Traffic Days (Holidays/Special Events)
- Work Zone Conflict Rules
- State Police Involvement (Vehicles, Reporting, Cancellations)
- OpenReach and Public Website integration
- Data and User Administration
 - Reporting
 - Tracking
 - Configurability (Users, Permits, Taper Tables, Time Tables, Holidays/Special Events, etc.)
 - User self-administration
- Reports and Dashboard
- Constructability Planning Tools





Technical Approach

- Web services hosted at Amazon AWS EC2
 - Provides internal and external secured access via modern web browser
 - Supports desktop and mobile devices
 - High performance, High availability
 - All-inclusive environment:
 - Hardware
 - Software
 - Load balancing, auto failover
 - Network I/O
 - Data Storage
 - Inexpensive
 - Rapid Start







Application Demonstration

	Day - Status	- Roadw	ay - Contrac	t - Comp	any - Dis	trict - Lane / S	Shoulder - M	* 0. *	Conflicts:	Y Filter	¥ Clear										
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	Day /				Work	Work		Lane /			Work	Tur	npike State I	olice Activ	ity						
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Application – Moving Forward

- Enhanced Dashboard with Performance Measures and Roadway Health
- Automated Work Zone Request and Approval
 - If meets validation check \rightarrow auto-approve
- Enhanced Communication Tools
- Electronic Contract/Traffic Permit Approval
- More Detailed Roadway Modeling
 - Connector /distributors, service roads
- Integration with Other Software Applications
 - ATMS, DMS/VMS messaging, Accident management
- Smart Work Zone Mapping for Connected Vehicles





Work Zone Access Management Value

- Resolves outdated communications and paperbased methodology
- Searchable Database for record keeping and Work Zone Access audits
- Minimizes exposure to liability of contractors on roadway with expired permits or contracts
- Provides for better communications of work zone request approval/denial status back to contractors
 - Accessible from anywhere on any device
 - Provides real-time feedback to users
- Clean data via validation/verification (taper points, closure times, location, roadway naming, etc.)





Work Zone Access Management Technology

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