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Advancing Infrastructure

Fast Facts

- Each jurisdiction had to configure its permitting process to allow for a single, integrated solution.
- Implementing the statewide system involved multiple concurrent contracts, with sub-projects for the Web interface upgrade, GIS integration, and road and bridge analysis in multiple jurisdictions.

ROI

- Load tolerance modeling produces engineering-based routing decisions that reduce the risk of damage to infrastructure, while asset performance modeling tracks asset use for every permit.
- Carriers will save at least one hour on every move and an average hourly load expense of USD 200.
- The state will save about 10 minutes of manual processing time per permit, freeing up 10 full-time employees on an annual basis

SUPERLOAD Automates 80 Percent of Hauling Permits Issued by Maryland One System

Multi-jurisdictional OS/OW Permitting and Routing Will Save Carriers USD 24.6 Million Annually

Carriers Avoid Costly Delays

The Motor Carrier Division of the Maryland State Highway Administration (MDSHA) issues up to 150,000 oversize/overweight (OS/OW) permits per year for travel on more than 10,000 miles of roads, passing over and under about 5,200 bridges and underpasses. The permitted routes cross city, state, and county jurisdictions. In the past, carriers encountered significant delays as each jurisdiction had its own process for issuing specifically routed single trip and general 30- to 365-day multiple trip permits. To expedite the process, MDSHA implemented a statewide OS/OW permitting and routing system powered by Bentley's SUPERLOAD software, which is capable of achieving an automated issuance rate in excess of 80 percent. The new "Maryland One" system will free up 10 full-time employees for other duties and save carriers an average of USD 24.6 million in annual load expenses.

Removing Agency Roadblocks

Jurisdiction over the issuance of permits in Maryland is divided among city, county, and state agencies. MDSHA alone is responsible for 5,500 miles of U.S., interstate, and state routes that cross over 2,700 bridges and pass under 1,100 underpasses. In 2015, MDSHA issued 123,000 permits for specifically routed single trips that used these assets but also took carriers on Maryland Transportation Authority (MDTA) toll roads as well as stretches of county and city roads. The number of assets at play across jurisdictions has grown to include 4,900 county roads and bridges, 630 city roads and bridges, and 600 MDTA roads and bridges.

Carriers who chose to comply with the multi-jurisdictional permitting requirements had to repeatedly submit the same information, often causing significant delays. The Port of Baltimore was a persistent bottleneck, where more than 30 government employees in five offices had to review permit requests from carriers handling nearly 1 million auto imports and shipping containers each year. Processing delays at the Port cost carriers extra load handling expenses and delivery delay penalties totaling hundreds of thousands of dollars.

To eliminate these costly delays, MDSHA had to make the permitting process fast, easy to navigate, and accurate. A statewide online system would remove the administrative roadblocks and enable carriers to obtain hauling permits in a secure, user-friendly environment. MDSHA launched the Maryland One project to create a one-stop source for hauling permits that would encourage compliance, cut down on illegal moves and the accidents they often cause, and make roads and bridges safer for motorists.
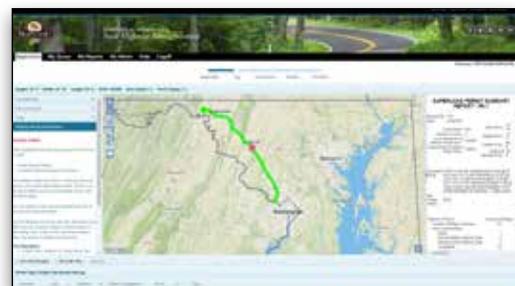
Permit requests automatically trigger accurate, up-to-date data searches to determine which route for an OS/OW vehicle will have the least impact on the infrastructure.

SUPERLOAD Streamlines Automation

The USD 2.3 million project required strong project management and leadership by MDSHA. Every jurisdiction had its own way of doing business, and some processes needed to be modified to allow for a single, integrated solution. Guidance from business analysts, developers, and experts with past OS/OW automation experience helped the project team to agree on functionalities that met the needs of all parties.

MDSHA selected Bentley's transportation asset management software to accomplish its objectives for the technically current, server-based system. SUPERLOAD fulfilled MDSHA's demanding permitting, routing, and analysis requirements, while LARS Bridge created detailed models of structures within the system, which were loaded into SUPERLOAD for use in real-time bridge analysis. AssetWise InspectTech

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maintains the bridge inventory and inspection information, ensuring that SUPERLOAD has accurate bridge locations and clearances for routing every vehicle. Bentley CONNECT cloud services provide an expertly managed installation within a reliable, high-performance environment.

The result is a configurable solution that has been updated with new functionality to meet the needs of all the jurisdictional workflows. The system seamlessly integrates permit administration, routing, bridge analysis, and restriction management. Using Bentley's permitting and routing products allowed the implementation to be completed several times faster than if MDSHA had developed the solution from scratch.
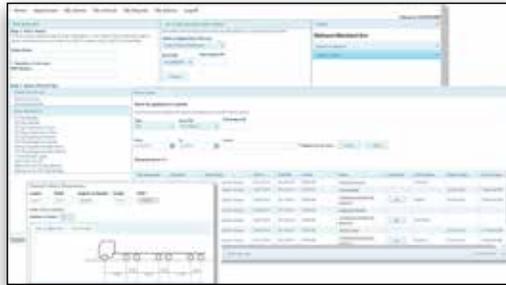
With an average hourly load expense of USD 200, carriers will save USD 24.6 million per year and at least one hour on every move in the state.

Maryland One Waives the Wait

Powered by SUPERLOAD, Maryland One allows carriers to sign in at any time, from any location, and with any desktop or mobile device. The automated registration process gets carriers on board quickly and lessens the administrative burden on permitting staff. Multiple options for immediate delivery of permit documents—including e-Permits— eliminate the wait for paperwork.

Maryland One coordinates routing across jurisdictions, and issues approvals and processes fees through multiple offices, providing true one-stop shopping. For MDSHA, an added benefit of the cross-jurisdiction service is having complete records of carrier routes. Historical routing data identifies OS/OW vehicle travel trends, helping to predict where conditions may deteriorate and infrastructure improvements may be required.

The wait for engineering reviews is also curtailed. The system automatically analyzes loads under 150,000 pounds, eliminating the manual review requirement and the associated engineering fees. The powerful analysis made possible by integration with LARS Bridge ensures safe passage along the permitting requested route. Bridge analysis includes moment and shear methods at a minimum, and live load analysis when structural models exist. As many as six load ratings automatically put conditions on carrier movement. If changing road and bridge conditions affect the safety status, then permit holders on the route are automatically notified.

Intelligent Permitting and Routing Drives ROI

SUPERLOAD leverages essential data on Maryland's roads and bridges to reduce the wear and tear on state infrastructure. Roadway location data from MDSHA's GIS, restrictions data from SUPERLOAD, and bridge inventory and inspection data from AssetWise InspectTech are continually updated in the SUPERLOAD Route Network Model. In addition, LARS structural data is continually updated in the SUPERLOAD bridge database. Every permit request automatically triggers a search of this up-to-date data to determine which route for an OS/OW vehicle will have the least impact on the infrastructure, with no clearance or loading issues. By reducing the number of damaging bridge crossovers and bridge underpass hits, MDSHA will lower infrastructure maintenance costs and lengthen the time before bridge renovation or replacement is required.

Maryland One is capable of achieving an automated issuance rate in excess of 80 percent. If agencies save just 10 minutes per permit, the system will free up 10 full-time employees for other duties during the year. With 70-80 percent of permits being issued immediately, carriers will have no wait for manual reviews by any jurisdiction. On average, the one-stop source will save carriers at least one hour for every move they make. Given hourly load expenses of USD 200 and yearly issuance of 123,000 permits, MDSHA estimates carriers will save USD 24.6 million per year. By enabling carries to obtain permits more quickly and avoid costly fees, delays, and penalties, Maryland One will promote compliance, decrease the number of illegal moves, and increase safety for motorists on roads and bridges.