

Case Study

Railroads often require flaggers to be present during construction projects that are within or near a railroad right-of-way.

Specially certified railroad flaggers hold trains clear of the work limits, communicate with the train operators or railroad companies, and communicate with the construction crews. They may receive training on the rules of that railroad and approval from the railroad company.

Several States have revised practices to coordinate flagging with railways in ways that may be useful for other agencies. This case study highlights the practices of Wisconsin and Texas.

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When Road Construction Meets the Railroad: Flagging Coordination Practices

This case study discusses how two State DOTs manage flagging for construction or maintenance near railroads.

Introduction

Some State Departments of Transportation (DOTs) are exploring new ways to facilitate coordination of railroad flaggers when highway construction projects encounter the railroad right-of-way.

Railroads often require flaggers to be on-site when highway construction crews and their equipment operate within or near a railroad track. Finding flaggers that the railroad approves and who are available within a project's timeline can be complex. The larger "Class I" freight railroad companies that five or more years ago had provided flaggers from among their own employees many times now refer to third-party flagging services. Different railroad companies have different methods for who hires the flaggers and how to pay them. Arranging with flagging services creates an additional step for State Departments of Transportation (State DOTs) that adds time and requires additional documentation before construction or maintenance can begin. This may lead to schedule delays that can increase project costs.

This case study focuses on the Texas Department of Transportation (TxDOT) and Wisconsin Department of Transportation (WisDOT) as examples of agencies that have refined practices to resolve cost overruns and delays on projects that have difficulties finding flaggers.

TxDOT moved to a more systematic approach that entails standard agreements and notification forms already approved by its stakeholder Class I railroads. WisDOT has pushed for more communication with railroad liaisons starting early in construction planning. WisDOT also adjusted project specifications to better manage flagging schedules and costs.

In Texas, the new strategies have helped, said Robert Travis, TxDOT Rail-Letting Section Director. "We're able to get the work done more efficiently and get out there more consistently and get a lot of the work done."

Background

How State DOTs handle arrangements for flaggers varies. Some State DOTs set up right-of-entry agreements and pay for flagging directly with the railroad or vendor. Others put flagging coordination and fees into the construction contract. Also, railway companies have their own flagging agreements, billing structures, and approved vendors.

During the second Strategic Highway Research Program (SHRP2) study on [Railroad-DOT Mitigation Strategies \(R16\)](#) from 2016 to 2019, State DOTs shared challenges with coordinating railroad flaggers. SHRP2 was a joint research effort by FHWA, the American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB). Challenges shared through SHRP2 included:

- Project delays, which can add to construction costs and extend detours for travelers.
- Construction work that continued but avoided the area near the right-of-way.
- Extra costs for transportation, hotels, and keeping flaggers at the construction site, even beyond hours they were actually on duty.
- Potential for fines or loss of Federal funding on Federal-aid highway projects within or near a railroad right-of-way when certain maintenance work could not be achieved for lack of a flagger.

State DOT participants also shared a variety of strategies to improve flagging coordination that were documented in SHRP2 R16 program case studies (such as [“Best Practices for Flagging Coordination,”](#) 2019). For example:

- Early project scoping to identify projects with railroad involvement, including those requiring railroad flaggers.
- Holding a pre-construction conference between the State, the project coordinator, and railroad representative and setting a project schedule for all to follow.

Role of Flaggers

Railroad flaggers can be employees of the railroad or third-person vendors who are trained and qualified to enter the railroad right-of-way.

Training ensures that flaggers follow that company’s procedures, including communicating with train operators and knowing the train schedules.

Flaggers’ services may include:

- Conducting job safety briefings.
- Communicating with trains and on-track equipment.
- Providing notice of approaching trains and on-track equipment.
- Making sure that construction crews’ work is stopped and is moved clear of track before letting trains go through.
- Providing notice when track is clear and construction or maintenance work can resume.

State DOTs are responsible for paying for flagger services on their highway and bridge projects but choose different ways to manage that payment. Some States incorporate payment as part of the construction contract as a direct cost. Others hire a third party to manage the flagging services and reimbursements.

Payment for a flagger can exceed \$1,000 per day. Some projects call for more than one flagger.

- Writing (or rewriting) general provisions for flagging into project construction contracts to be consistent with the labor requirements of the local railroad.
- Putting specific language on project advertisements and agreements to be transparent with the project contractor about flagging costs and payment expectations.

Railroad Facts

- The U.S. freight rail network runs on nearly 140,000 route miles, with seven Class I (major) freight railroads, 22 regional, and 584 local or short line railroads. Two of the Class I railroads are Canadian-owned.
- Amtrak, the passenger railroad, operates in 46 States and the District of Columbia.
- There are approximately 212,000 highway-railroad grade crossings in the U.S., on approximately 140,000 miles of track.

Source: Federal Railroad Administration, <https://railroads.dot.gov>

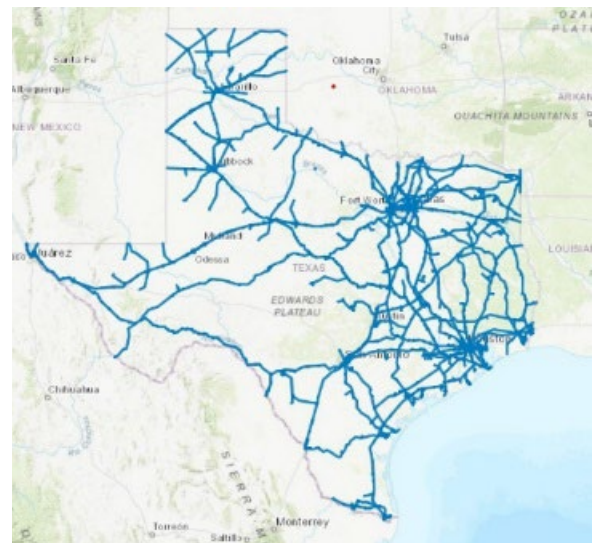
A Solution in Texas — Streamlining Agreements with Local Railroads

The Texas Department of Transportation (TxDOT) standardized its flagging agreements in 2017 after seeing project overruns and delays associated with difficulties scheduling railroad flaggers. “Especially on a long-term construction project, it was very, very hard to get a railway flagger,” said Robert Travis, TxDOT Rail-Letting Section Director, who has been with TxDOT since 2013, and involved in highway-railroad coordination since 2007. “It was 35 to 45 days to get them.”

Another issue was that even when there was no work, a flagger was kept on the project to avoid releasing them and restarting the entire process.

Texas has more than 10,000 miles of railroad tracks and as many as 390 design-build and maintenance projects each year that touch a railroad right-of-way. These projects are overseen by TxDOT’s 25 district offices. Three Class I railroad companies operate in Texas — BNSF Railway, Kansas City Southern Railway, and Union Pacific Railroad — along with about 60 short line railroads.

TxDOT noticed difficulties on maintenance projects, like pavement preservation, mill and inlay, or seal coat. These projects represent the majority of construction and maintenance agreements the agency submits to railroads. “Our contractors would have trouble scheduling flagging, so the road within the



Railroad lines in Texas.

Source: Image retrieved January 2022 from Open Source file, https://gis-txdot.opendata.arcgis.com/datasets/90f8c6d733274c26b9c8ea25e41fff62_0/explore?location=30.384282%-92.014286%2C5.29

railroad right-of-way would not be maintained,” Travis said. “This new process allowed us to solve that.”

What TxDOT Did

In 2016 and 2017, TxDOT developed a set of standard agreements and notification letters to each of the three Class I railroads that the agency can use when beginning a project. TxDOT created its materials in coordination with the Class Is.

These materials are customizable with project dates, locations, and estimated number of hours or days flaggers would be on duty. The agreements also outlined the reimbursement process between TxDOT and the railroads. The materials were reviewed and approved by the respective railroads.

Previously, agreements with the railroad were coordinated project by project, with each agreement needing a separate signoff by the railroad company. With the new agreements, the TxDOT Rail Division in Austin clears the way for the construction owner or contractor to coordinate directly with the railroad company and schedule a third-party flagging service.

The materials included:

- A one-page notification letter, signed by TxDOT, to the railroad ahead of a long-term project, if a master agreement exists with that railroad company. The letter is customizable to include TxDOT’s approval of work, scope of the work, expected schedule, and that the TxDOT contractor will contact an appropriate flagging company.
- A one-page maintenance notification letter, signed by TxDOT, to the railroad ahead of typical maintenance projects, if a master agreement exists with that railroad company and an approved vendor is being used for flagging. These projects include pavement planning, filling and seal coat, signing and striping of roadway, bridge maintenance and inspection, or common ditch and vegetation work. The letter is customizable to provide the location, scope, and scheduled contract-let date for the work, as well as how flagging services will be coordinated.
- Railroad scope of work sheets, with fillable areas to describe planned flagging services on projects, including estimated days of flagging and whether nights or weekend duties are requested. The work sheets also communicate if TxDOT will directly pay the flagging service, or if the contractor would directly pay a third-party flagging company and be reimbursed by TxDOT.

- Standard flagging agreements with short line railroads that do not contract out flagging, setting billing terms (an estimated \$500–\$1,000 per day) and estimated time frame, which are billable to the State.
- An online manual, along with other information and sample notifications on the TxDOT website, <https://www.txdot.gov/business/resources/railroad-highway-crossing/requirements.html>
- Contact information for third-party flagging services that do business in Texas and had approval from the relevant railroad company.
- An on-call flagging contract to cover State forces working on Class I railroads as needed.

Benefits

The standardized agreements gave TxDOT a simpler and more efficient way to set up flagging, especially for routine projects, the agency reported. Before, it might take 30 to 60 days to receive the railroad’s right-of-way permission on each project. Two of the Class I railroads now only seek a notification letter, which is where TxDOT notifies the railroad that the State is going to be working in the railroad’s right-of-way, while the other Class I seeks a simplified letter of consent.

Travis said TxDOT has seen other advantages:

- Smoother hiring processes for third-party flagging services. Billing, hourly rates, and reimbursement procedures are written into the standard agreements with the railroads.
- Contractors have what they need to arrange for flaggers as soon as they are let the project, because TxDOT has already gotten the railroad’s right-of-way permission.
- More control over flaggers’ schedules on projects. This avoids having to pay to keep flaggers on duty when construction has not yet entered railroad property or after construction has stopped. This can save as much as \$500 to \$1,500 per day, based on current hourly rates.
- More control over flaggers’ hours by working directly with third-party vendors. This can save money in avoiding stand-by costs and can also provide the contractor more confidence in flagger availability.

Project Example: U.S. Highway 59 Bridge Repair

Soon after TxDOT’s new agreements with railroad companies were developed, two freight trains — from separate railroad companies — collided at a rail interlock beneath a U.S. Highway 59 overpass in Jefferson, Texas. No one was injured in the 2017 collision, but the trains derailed and sheared off a column to the Highway 59 bridge, which had to be closed to traffic.

TxDOT used its new agreements to quickly set up an emergency contract and arrange for two flaggers, one for each Class I railroad, according to Travis. Once the train was removed, “we were able to very quickly shore up the column and the bridge to keep it from collapsing,” Travis said. “We had the bridge repaired and open to traffic within a month.”

Travis noted that Hurricane Harvey landed in Texas later that year and Highway 59 was a primary evacuation route.



Collision beneath the U.S. Highway 59 overpass in Jefferson, Texas. Photo: TxDOT

A Solution in Wisconsin — Communication and Better Budgeting

Early communication and coordination with railroad liaisons are key to the Wisconsin Department of Transportation's (WisDOT) additional efforts to facilitate flagging services on highway-railroad construction or maintenance projects.

One dozen freight railroads touch Wisconsin, including four Class Is — BNSF Railway, Union Pacific, Canadian National Railway, and Canadian Pacific. Wisconsin has more than 3,300 miles of rail lines that include Amtrak and excursion passenger rail services.

Lisa Stern, WisDOT Railroad and Harbor Chief, said that working with the Class I railroads in recent years became more formal, making the process for obtaining flagging approvals “more difficult.” Historically, project engineers had built relationships with local railroad workers. For maintenance projects, they could simply call to ask for a flagger from among the railroad's employees. The railroads now have more structured processes and often refer to third-party vendors for flaggers. It can take 30 to 60 days to get the railroad's approvals for flaggers, Stern said.

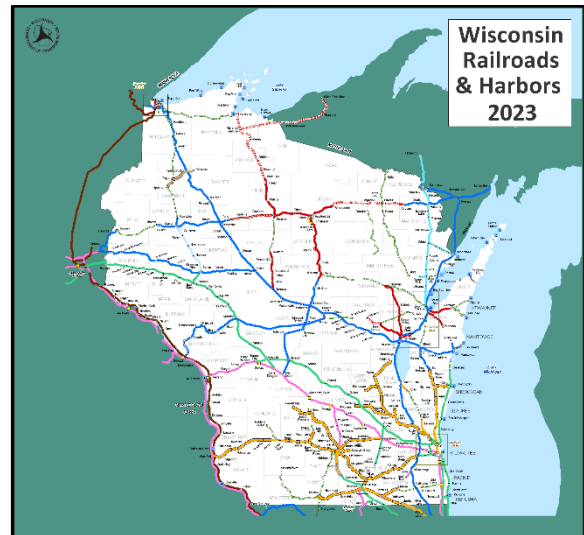
WisDOT became more selective about projects that involve flaggers. The agency also often saw projects that were bid with underestimates both for the lead time for scheduling a flagger and for the hours that would be billed for the service.

What WisDOT Did

WisDOT aimed to engage railroad liaisons earlier on major projects and checks in with the railroads monthly or quarterly to better budget lead times and costs of flagging services when letting a project. The agency had long invited railroad representation in planning, but now it actively pushes for a railroad company liaison on major projects where significant flagging is expected.

Other efforts to improve the process include these specific steps:

- Regularly scheduled meetings with the Class I and regional railroads to check on how many days' notice to give for seeking flaggers for projects. Some regional railroads may need just two weeks while Class Is have recently asked for 30 to 45 days, according to Stern.
- Notifying railroads of upcoming design and construction projects a year or more in advance, so that they can plan for them and other staffing resources.



2023 Wisconsin Railroads and Harbors map. Source: wisconsin.gov, <https://wisconsin.gov/Documents/travel/rail/railmap.pdf>

- On larger projects with significant flagging, encouraging someone from the railroad to attend the preconstruction meeting. That way, “you’ll have people at all levels of the railroad aware of the project ahead of time, which helps streamline and get the flaggers as you need them,” Stern said.
- Providing contact information for third-party flagging services that are approved by the Class I railroads operating in the State.
- Adjusting project specifications to include clearer estimates for how many days the agency expects for flagging and the expected cost, based on going rates. WisDOT keeps tabs on existing rates to avoid underestimating costs. WisDOT will foot 100 percent of a bill for underestimated rates, but will foot only 50 percent of the bill for flagging that is expected beyond what is outlined in the contract specifications.

Benefits

Stern said WisDOT noticed that its efforts to engage railroads earlier and to budget realistically for flagging services have helped in a few ways:

- Identified potential issues on more complicated projects up front.
- Achieved more buy-in from the railroad. That makes it easier to find solutions if issues come up.
- Provided more realistic timelines for arranging for flaggers.
- Helped manage costs on projects by controlling reimbursement on flagger work hours and costs that go over amounts specified.

Stern said the third-party vendors seem to be better staffed now than just a few years ago, which has also helped. The agency continues, however, to have difficulty finding reliable railroad flaggers for short turnaround maintenance projects in the railroad right-of-way.

Project Example: Winona Connector Bridge

A multiagency effort to continue the Flyway Trail bike path called for extensive coordination with the BNSF railroad in 2019. A new bicycle-pedestrian bridge over a BNSF railroad track would connect the trail from Buffalo County, Wisconsin, to Winona, Minnesota.

WisDOT engaged BNSF throughout the bridge project, including negotiating the scope of employee flaggers and consultant oversight of the project with BNSF, as well as agreeing on when flaggers would be there. Said Stern: “We had weekly meetings, every Monday morning, so BNSF had someone designated from their company to call in. That worked out really well.”



The Flyaway Trail bike path under construction (left) and completed (right). Photos: WisDOT

TxDOT and WisDOT Considerations for Other Agencies

TxDOT and WisDOT offer these suggestions for other States seeking to improve on obtaining flagging services for railroad projects.

- Create standard agreements, template agreements, and notice letters to use as needed for routine kinds of projects.
- Have projects' standard specifications spell out that the contractor can directly hire the flagger and how they will be compensated.
- Share any State standards or contract specifications with railroad stakeholders and get their buy-in.
- Communicate with the railroads, and engage them early on in planning for larger, complex construction projects.

Contacts and Resources

General

AASHTO Rail Management Center, <https://transportation.org/rail/resources/rail-management-center>

Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB) Second Strategic Highway Research Program (SHRP2), R16

- SHRP2 R16 Innovation Library of State and Railroad Agreements, Manuals, and Processes, https://shrp2.transportation.org/Pages/R16_InnovationLibrary.aspx
- SHRP2 R16 webpage, https://shrp2.transportation.org/Pages/R16_RailroadDOTMitigationStrategies.aspx

Authorities

23 U.S.C. Section 130: <https://www.govinfo.gov/app/details/USCODE-2021-title23/USCODE-2021-title23-chap1-sec130>

49 CFR 214.353, <https://www.ecfr.gov/current/title-49/subtitle-B/chapter-II/part-214/subpart-C>

Texas

Robert Travis, Texas Department of Transportation (TxDOT) Rail-Letting Section Director, robert.travis@txdot.gov

TxDOT online manual: http://onlinemanuals.txdot.gov/txdotmanuals/rho/maintenance_projects.htm

TxDOT Rail Division website, <https://www.txdot.gov/about/divisions/rail-division.html>

Wisconsin

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