



Balancing Passenger Rail Safety with Public River Access



White Paper Summary



Presented by:
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Introduction

McLaren Engineering Group

- 41 years of full service engineering.
- Founded in Hudson Valley (West Nyack).
- Offices in Albany and NYC.
- An employee owned firm with 234 staff.

Introduction

Peter Melewski, PE

- 36 years experience (24 in public (NYSTA) & 12 in private sector).
- Transportation, planning, public outreach, & environmental stewardship.
- Senior Management Roles on numerous regional/statewide high profile projects/studies/programs.

George Stafford

- 40 years of public service.
- Former Deputy Secretary of State (NYSDOS) for Planning & Development.
- Former Director of NYS Coastal Management Program.

John DiMura

- 40 years experience (37 in public & 3 in private sector).
- Former Director of Empire Trail Program for NYS Canal Corporation (Albany – Buffalo).

Scope

- Scenic Hudson retained McLaren Engineering Group to determine if at-grade pedestrian/trail rail crossings could be advanced at some locations.
- Conducted desktop literature review to assess: current installations of conventional & higher speed at-grade pedestrian/trail rail crossings; policies & procedures; & applicable standards.
- Interviewed key individuals in the industry.
- Provided preliminary overview of potential impacts on coastal resources & achievement of New York's Coastal Management Program (CMP) policies.
- White Paper provides review of American Association of State Highway Transportation Officials (AASHTO), Manual on Uniform Traffic Control Devices (MUTCD), & other engineering standards.

White Paper



Interviewed

- **Wes Coates** – former Amtrak General Manager (Empire Corridor); current Executive Director of Catskill Revitalization Corp. / General Manager of Delaware & Ulster Railroad
- **Elliott Ramos** – Project Engineer at Illinois DOT Rail Division
- **Brian Trygg** – Illinois DOT Local Roadways Bureau
- **Tom Bonigut** – City of San Clemente Engineering Office

Background

- The riverfront is an important resource for water-dependent activities like fishing, hunting, & recreational boating.
- Amtrak proposed impasse fencing without conducting a regional assessment of access needs or analysis of impacts on coastal resources & policies.
- The proposed fencing would limit public access to the Hudson River.
- Train speeds in these sections can reach up to 90 mph.
- **NYSDOT study of the Empire Corridor (Buffalo to NYC) showed from 2002 to 2011, 10 incidents occurred on public crossings – 7 resulted in injuries, no fatalities.**

NYSDOT High Speed Rail

www.dot.ny.gov/empire-corridor



High Speed
Rail
Empire
Corridor



Home

Learn More

DEIS

Community Outreach

Location

Objective

Legislative Districts

Schedule

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Empire Corridor Tier 1 EIS

Project I.D. No. S937.51 , Contract Number

Home

The Tier 1 Draft Environmental Impact Statement

The Draft Environmental Impact Statement (DEIS) is available for public review. Download the DEIS and appendices from the [DEIS](#) page and learn how the high speed passenger rail service alternatives will affect mobility, safety, the environment, and economic growth.

Six public hearings were held across the State between March 4, 2014 and March 12, 2014. Public comments were accepted through April 30, 2014. If you missed attending one of the public hearings, you can download and view the same material shown at the open houses and presented at the public hearings:

- [Brochure](#)
- [Trip Times](#)
- [Display Boards](#)
- [Presentation](#)
- [Project Video](#) (or watch on [YouTube](#))
- [Comment Form](#)

Project Purpose & Need

- Amtrak indicated proposed actions will improve safety along Empire Corridor South.
- Federal Rail Administration (FRA) recommendations include:
 - Eliminating all redundant or unnecessary crossings, together with the crossings that could not be made safe due to crossing geometry.
 - Installing the most sophisticated traffic control/warning devices compatible with location, use four quadrant gates where train speeds are between 80 & 110 mph.

NYS Dept. of Transportation

<https://www.dot.ny.gov/content/delivery/Main-Projects/S93751-Home/S93751--Repository/04chap2.pdf>

US Dept. of Transportation - Federal Highway Administration

https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/07010/sec04a.cfm

Policies, Standards & Techniques

Proposed project affects coastal resources and impacts the following NYS CMP Policies:

- **Policy 19:** “existing *access* from adjacent or proximate public lands or facilities [such as public parks, parking lots or other public property] to public water related recreation resources and facilities [Hudson River and shoreline] *shall not be reduced, nor shall the possibility of increasing access in the future...be eliminated.*”

NYS Department of State: Coastal Management Program

<https://www.dos.ny.gov/opd/programs/pdfs/CoastalPolicies.pdf>

Policies, Standards & Techniques

- **Policy 20:** “in coastal areas where there are little or no recreation facilities providing specific water-related recreational activities, *access to the publicly-owned lands of the coast at large should be provided for numerous activities:*
 - Walking along a beach or a city waterfront
 - Bird watching
 - Photography
 - Nature study
 - Beachcombing
 - Bicycling
 - Fishing and hunting
 - There are several methods of providing access... “the provision of access across transportation facilities.”

NYS Department of State: Coastal Management Program

<https://www.dos.ny.gov/opd/programs/pdfs/CoastalPolicies.pdf>

Policies, Standards & Techniques

- **Policy 21:** “*among priority areas for increasing water-related recreation opportunities* are those areas where access to the recreation opportunities of the coast can be provided...*and those areas where the use of the shore is severely restricted by...railroads.*”

NYS Department of State: Coastal Management Program

<https://www.dos.ny.gov/opd/programs/pdfs/CoastalPolicies.pdf>

Policies, Standards & Techniques

At-grade crossings shall consider the following:

- Warning devices and traffic control for railroad/highway crossings covered by the MUTCD consisting of:
 - Signs
 - Flashing light signals
 - Pavement markings
 - Automatic gates
- 2002 USDOT report has considerable detail on design for at-grade rail-with-trail and related trail crossings.
- Traffic control system should be determined by engineering study for best combination of active safety devices. Including train frequency and speed, sight distance, train operating characteristic, potential obstructions, and volume of trail users.

American Association of State Highway & Transportation Officials

2011, 6th Edition – A Policy on Geometric Design of Highways & Streets

2012, 4th Edition – Guide for the Development of Bicycle Facilities

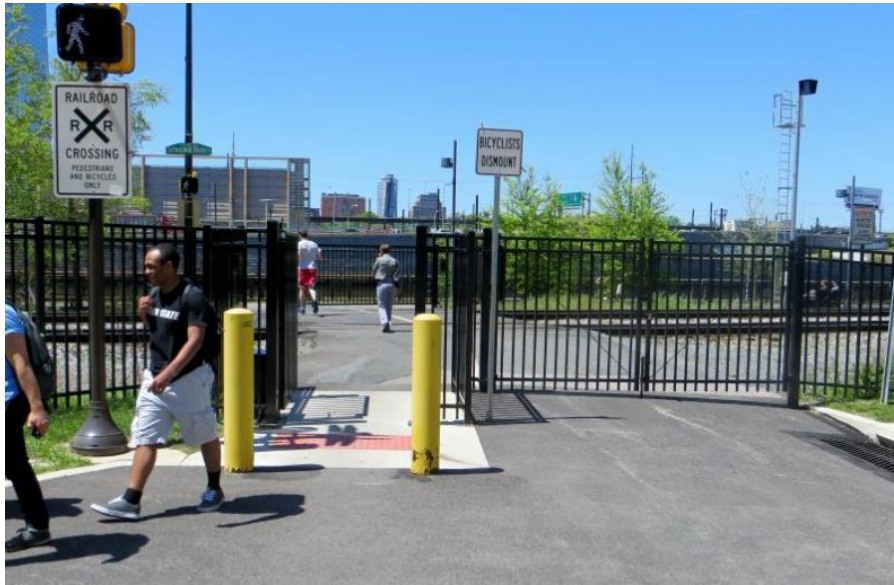
US Dept. of Transportation – Rails with Trails

<https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/RailsWithTrails.pdf>

Policies, Standards & Techniques

- Passive and active devices may be used improve non-motorist safety at trail crossings.
- Passive devices:
 - Fencing
 - Pedestrian barriers
 - Pavement markings & texture
 - Refuge areas
 - Fixed message signs

Policies, Standards & Techniques



Policies, Standards & Techniques

- Active devices:
 - Flashers
 - Audible active control devices
 - Automated pedestrian & vehicle gates
 - Pedestrian signals
 - Variable message signs
 - Blank-out signs

Policies, Standards & Techniques



Policies, Standards & Techniques



Outwater Lane Railroad Crossing, Garfield, NJ
<https://www.youtube.com/watch?v=GBJ1Vt9q-pM>

Policies, Standards & Techniques

- These devices should be considered at crossings with:
 - High pedestrian traffic volumes
 - High train speeds or frequency
 - Extremely wide crossings
 - Complex crossing geometry with complex right-of-way assignment
 - School zones
 - Inadequate sight distance
 - Multiple tracks

- All pedestrian facilities should be designed to:
 - Minimize pedestrian crossing time
 - Avoid trapping pedestrians

Policies, Standards & Techniques

- An additional issue for safety upgrades is extra warning time for pedestrians and motorists at grade crossings with higher speed rail.
- **Typical warning time is between 20 and 30 seconds.**
- **Areas with train speeds up to 110 mph should allow at least 80 seconds for warning time.**
- Bridge structures can provide additional level of safety, however there are drawbacks:
 - Cost – approximately \$1.5 M versus \$50,000-\$300,000 for a standard at-grade crossing
 - Aesthetics – site constraints due to the location of tracks in relation to the river
 - ADA standards
 - Kayak/canoe portage
- Maintenance and emergency vehicle access to the riverfront would require an at-grade crossing in addition to the pedestrian/trail bridge.

ILLUSTRATIVE EXAMPLES

Higher Speed At-Grade Pedestrian & Trail-Rail Crossings

Illinois High Speed Rail • Florida Brightline • Orange County Metrolink

Chicago-St. Louis, IL



Chicago-St. Louis, IL

- IDOT High speed rail program (up to 110-mph).
- Track improvements along 284-mile corridor.
- Enhanced signal systems and grade-crossing improvements .
 - Four quadrant gates
 - Pedestrian gates with escape gates
 - Fencing
- 80-second warning signal prior to a train's arrival.
- Current speeds are 79 mph, soon to increase to 90 mph as software improvements are complete, eventually run up to 110 mph.

San Clemente Metrolink Orange County Line, CA



San Clemente Metrolink Orange County Line, CA

- Speeds up to 90 mph along ocean side trail and popular beach with some segments below 50 mph due to line curvature.
- Constructed safety enhancements of 534 miles of rail:
 - 5 new at-grade pedestrian crossings along a 2.5 mile segment
 - Pedestrian crossing gate arms
 - Lights
 - Bells
 - Emergency egress gates
 - Fencing
 - Audible warning system that was part of a quiet zone initiative

Brightline, FL



Brightline, FL

- Speeds up to 79-mph.
- Corridor passes through urban and suburban areas on at-grade crossings.
- Did not upgrade all of its crossings along the corridor resulting in fatalities and injuries.
- Pedestrians and bicyclists moved around a lowered gate or crossing along the tracks.
- Curbed median islands and flexible polymer markers will be added to some crossings to deter this activity.
- Less than half of the crossings have quad gates.
- Reiterating the need for correct safety measures in specific rail crossings.

Findings

- Pedestrian bridge can cost \$1.5 M or higher.
- At-grade crossings can cost \$50,000-\$300,000 depending on existing conditions.
- At-grade crossings require less maintenance, provide easier portage and are more aesthetically pleasing.
- At-grade crossings can be combined with emergency and maintenance vehicle access.
- Based on McLaren's review of literature, interviews and illustrative examples; at-grade pedestrian/trail crossings, if properly designed to current AASHTO and MUTCD standards, are feasible.
- Analysis of the NYS CMP policies, approved LWRPs and public comments, shows current fencing proposal affects access to coastal resources and does not achieve or advance NYS CMP polices.

Summary

- Using today's technology, at-grade, gate-protected pedestrian crossings are a viable and safe alternative in the Empire Corridor South.
 - Safety
 - Maintain / enhance generational access
- Corridor locations should be evaluated as part of a comprehensive plan and education program with key stakeholders.
- Proper at-grade crossings should be designed to current AASHTO, MUTCD and FRA standards, and include features such as:
 - Pedestrian gates (including escape gates)
 - Fencing and signage at each crossing
 - Ample (80 second) signal delay

Today



Tivoli Site Location

Tomorrow



San Clemente, CA
Beach Trail Crossing

Existing Conditions



Germantown Site Location (MP 105)

Existing Conditions



Germantown Site Location (MP 105)