ASHE Presentation

US 11/15 ROCK SLOPE PROJECT
A PUBLIC INVOLVEMENT PERSPECTIVE

April 7, 2017

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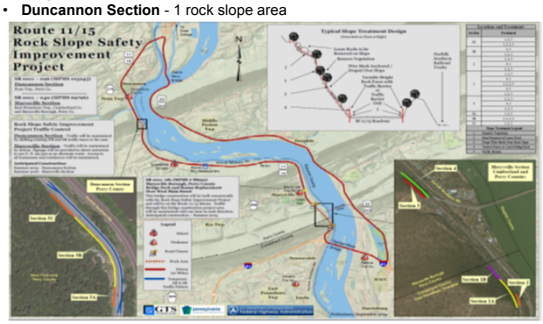
Engineering District 8-0

Presentation Overview

- Location and Problem
- Constraints and Challenges
- Unique History
- Preconstruction and Construction Process
- Public Outreach during Design and Construction
- Highlights, Innovations and Summary
- Questions and Answers

Location

- **Marysville Section -** 4 focus rock slope areas to be hand scaled
- **Duncannon Section** - 1 rock slope area



Location

- In background, I-81 crossing the Susquehanna River and the RT 11/15 interchange. In foreground, right of the River is the local "River Road", Norfolk Southern rail lines, RT 11/15, and beginning of the steep rock slopes for the **Marysville Section**.
- About 9 miles north and up river the **Duncannon Section** is located. It is very similar

The Problem

- Deteriorating rock slope stability and 80 years of tree growth creates falling rocks and trees at the **Duncannon Section** and continuous **Maintenance Issues**

The Problem

- The **Maintenance Issues** are also occurring at at the **Marysville Section,** only the situation is comparatively worse

The Problem

- The need to provide for motorist **Safety**. In this incident the firemen had to use the "Jaws of Life" to extract a passenger after a large rock had struck the van side.

The GOAL

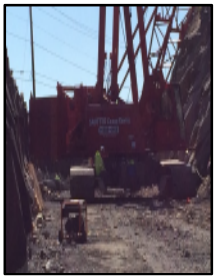
Design protective treatments at both the **Duncannon Section** and **Marysville Section** Projects, reducing future safety hazards and maintenance concerns, while least impacting the local communities and traveling public.

The Constraint(s)

- Large crane size is almost equal to the roadway width at the **Marysville Section**

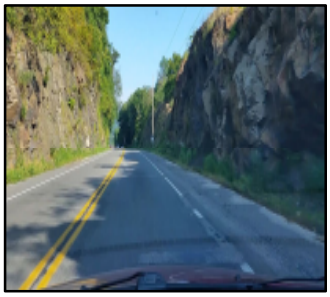
The Constraint(s)

- **Duncannon Section** had 30 feet to center barrier and was about 140 feet high
- Fortunately we were able to widen the NB side for 2 way traffic and still work



The Constraint(s)

- **Marysville Section** has steep slopes at 250 feet high, 42 feet wide roadway, and 80 years of tree growth



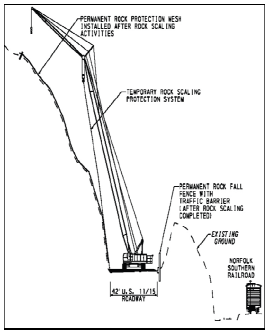
The Constraint(s)

- The Norfolk Southern Railroad abutted the RT 11/15 right of way for both sections

Project Site Challenges

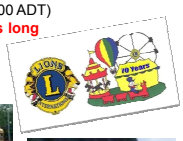
- Unstable/Unpredictable Falling Rocks
- Slope Heights up to 250'
- Very Large Crane Sizes were needed
- Narrow Roadway Width of only 42'
- **Norfolk Southern Railroad** located next to and below the RT 11/15 roadway
- Safely Protecting Motorists, Construction Team, and the NSRR from falling rocks
- Bottom line…….

CLOSURE is Required



Regional Area Challenges

- Local and EMS access
- US 11/15 is a heavy regional/commuter route (~ 16,000 ADT)
- Primary detour route using US 322 would be **27 miles long**
- Businesses and local truck delivery access
- Schools
- Marysville Lions Club Carnival (August 1 - 6)



GOAL – Limit Time and Impact of CLOSURE

History

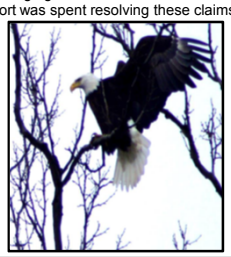
- **Marysville Section** – 1930's Original Construction

History

- **Marysville Section** - Grand Opening of the $900,000 project

History

- The Lincoln profile, a natural landmark, at one time existed at the **Duncannon Section,** but was later destroyed by the **PA Railroad** when they built the rail line.
- The project's sole ROW claimant, who was against the project, sent letters to the U.S. DOI, National Park Service, DCNR, and legislators arguing that PennDOT was further destroying the slope by placing mesh fencing against it. He also claimed a bald eagle was perching in his trees. A large effort was spent resolving these claims.



Preconstruction Process - Safety Features added to US 322

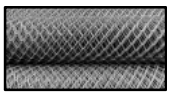
- To both help prevent and identify incidents for quick response and clearing, several Truck Rollover Signs and Temporary Mile Marker Signs were installed prior to construction. Speed trailers, PennDOT service patrols, and PSP presence were also added.

Preconstruction Process - Safety Features Added to US 322

- To help with potential US 322 incident closures lasting >3 hours two **Contra Flow Gates** were installed prior to construction. A **first in PA** to be used in this manner.

Preconstruction Process

- Stockpile 6000 tons of stone to be spread on RT 11/15 as part of the rock scaling drop zone
- Stockpile lots of proprietary mesh fencing
- Preinstall traffic and signal control items for the **27 mile primary detour**, **34 mile incident management detour**, and the **4 mile "unofficial" local and emergency access route**



The Construction Process

- Haul in the stone and form a 2 foot thick stone bed on the roadway to form a rockfall drop zone
- Assemble a 275 ton crane, and 2 temporary shields, to allow for tree cutting and rock scaling protection up to 250 feet in height

The Construction Process

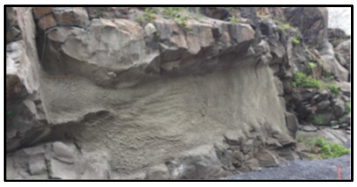
- Rock scaling crews used chain saws to cut 48" thick trees along slopes. They started at the bottom and moved upwards. Special equipment cleared the cut trees.
- Until the dense vegetation was removed for geology engineers and rock scalers to truly see the rock formations, they did not fully know the best course of permanent protection to both design and install. The rock scalers work was half art and science.

The Construction Process

- Rock scaling crews, starting at the top and working downwards, removed trees and rocks using simple hand tools. They let rocks freefall into the crane's shield. What missed hit a second 10' high shield within the drop zone to protect the N.S. Railroad.

The Construction Process

- Drill anchors for bolting rocks too large to remove and to attach wire mesh fencing
- Reinforcement and shotcrete added to significant overhang voids where removing rocks might otherwise destabilize the slope



The Construction Process

- Workers connect fence rolls at roadway level. Helicopter transports to top of slope.

The Construction Process

- Helicopter lowers the fencing at top of slope where workers anchor it. Helicopter then slowly lowers fencing down the slope to rappelers who overlap and anchor it.
- Later the fencing is clipped or spliced together with cable

The Construction Process

- Perspective from the ground

The Construction Process

- Caissons are drilled for the shoulder rockfall fences, posts are set, and cabled wire mesh and barrier are added for the final protection

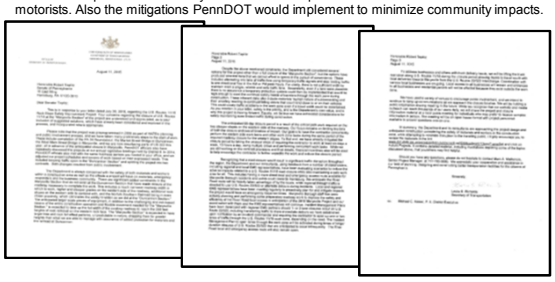
Specialized Equipment

Specialized Labor and Materials From Far and Wide

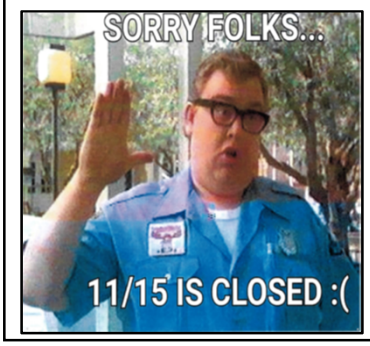
- Professional rock scalers (self proclaimed "goat people") came from an Oregon company. Very hazardous work and one worker fell during the project.
- Proprietary slope fencing came from a German manufacturer in New Mexico
- Helicopter and pilot came from Indiana

Secretarial Letter Announcing US 11/15 Closure

- PennDOT Secretary provided a response letter to a legislator explaining the need for a **3 month closure**. It was published by PennLive and added to PennDOT's project website due to its effectiveness.
- The letter emphasized the safety hazards and deep concern for construction workers and motorists. Also the mitigations PennDOT would implement to minimize community impacts.



The Required Closure is more Broadly Announced



The Protest Billboard

- Shortly after PennDOT announced that RT11/15 would be closed, the mysterious billboard notice occurred along RT 11/15
- Use of a large billboard by an anonymous party was **unusual for District 8**

Public Outreach – During Design

- Developed a detailed **Public Involvement Plan**
- Regional EMS coordination meetings (3)
- Stakeholder meetings and coordination
- PennDOT Secretary Richard's Letter
- Public meeting(s)
- Project newsletter
- Project website and rockfall video
- Press releases and Media briefings

Regional EMS Coordination Meetings

- **KEY MEETINGS - (3) during Design and (4) during Construction**

Incident / Emergency Management Stakeholders

- Community Life Team, Inc.
- Dauphin County Emergency Management Agency
- Duncannon Borough Emergency Management
- Duncannon Fire Company
- East Pennsboro Township Fire Department
- Hampden Township Emergency Medical Services
- Hampden Township Public Works Department
- Life Lion
- Marysville Police Department

- Marysville Fire Company
- Middle Paxton Township Emergency Management
- PA State Police, Troop H – Harrisburg
- PA State Police, Troop H – Newport
- PA State Police – Watch Center
- Penn Township Police
- Perry County Emergency Management Agency
- Reed Township Emergency Management Agency (also serves for Jackson and Wayne Townships)
- Rye Township

pennsylvania

Project Newsletter

- A newsletter was provided to key stakeholders and organizations for distribution

Public Meeting - PennDOT

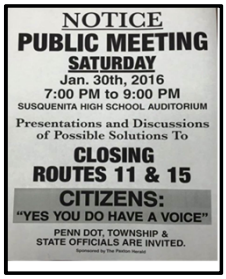
- A Public Meeting was intentionally held at the Marysville Fire House for the **Marysville Section.** The meeting was promoted for those who preferred to receive project information in person and be able to ask questions one on one. Our most effective use of public involvement and "spreading the word" was via technology.

Public Officials Meeting and Project Video

- A video of project details, using live rockfall events from the construction of the **Duncannon Section**, was effectively used to explain the **Marysville Section**

Public Meeting – Paxton Herald

- The Paxton Herald, a local newspaper, surprisingly scheduled their own public meeting after PennDOT held one. PennDOT was never officially invited to attend, but our District Executive went anyway, to make sure facts were presented properly.


NOTICE
PUBLIC MEETING
SATURDAY
Jan. 30th, 2016
7:00 PM to 9:00 PM
SUSQUENITA HIGH SCHOOL AUDITORIUM
Presentations and Discussions of Possible Solutions To
CLOSING ROUTES 11 & 15
CITIZENS:
"YES YOU DO HAVE A VOICE"
PENN DOT, TOWNSHIP & STATE OFFICIALS ARE INVITED.

Media Coordination

- Press releases
- Media group briefings **(Not too common at District 8)**. We wanted them to be part of the Team to broadly and accurately tell the story that needed to be told. This also helped to quell rumor mills, which still occasionally took place.
- Individual interviews
- Site tours

Project Website

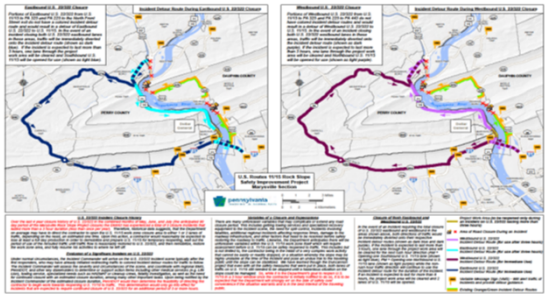
- Effective use in placing all public meeting materials, video, newsletter, all detours, and weekly construction photos on the website. It was a **ONE STOP SHOP** to send the public for all project information to gain understanding. **SIMPLE AND VISUAL!**

Local and Emergency Access Route

- It was very important to create an unofficial local access route to avoid the **27 mile** primary detour. Businesses were able to provide maps to vendors and customers.

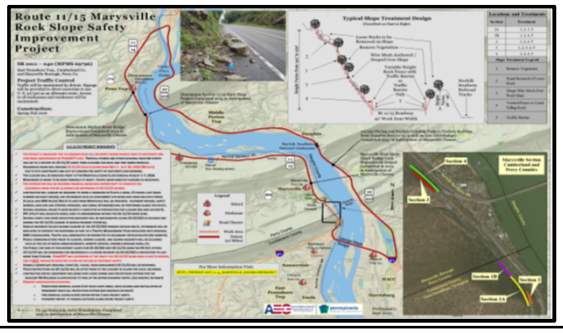
Incident Management Detour Routes and Summary

- Detailed, user friendly information on the **34 mile** incident management detour routes (AKA "**Goldfish Detour**"), should a long tern closure occur on U.S. 322



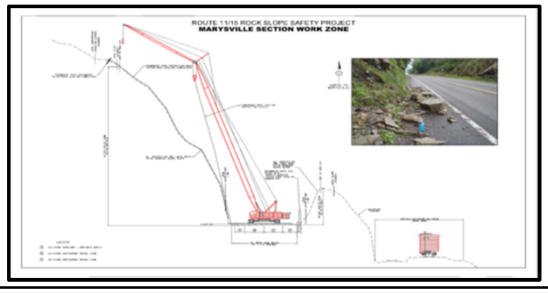
Project Overview Map

- All the key project information was placed on a single simplified graphic

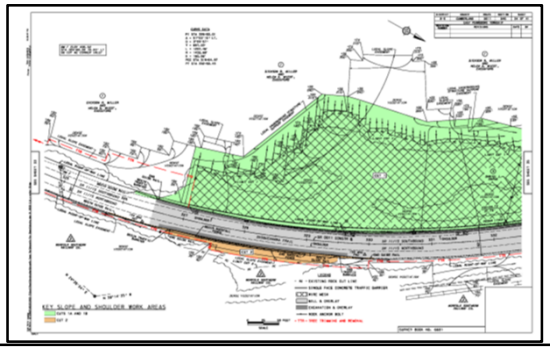


Work Zone Graphic

- This was a key graphic that helped to explain **why RT 11/15 required closure** given the height and width constraints. It clarified why cars could not get through, yet even in their absence, the **NS Railroad** still required protection from falling rock.



Colored Plans Showing Specific Details

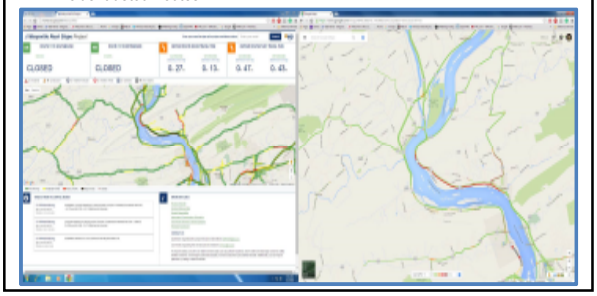


Public Outreach – During Construction

- Regional EMS coordination meetings (4)
- News media office briefings and site tours
- Project website updates (weekly progress photos)
- Message board alerts to motorists
- Traffic Alert Radios (for trucks)
- Stakeholder notifications
- **511PA** (added a separate Maryville Project Portal Site for users) and advertised sign ups for incident alerts. **Over 775 subscribers signed up for email alerts and the portal site had 45,000 hits.**
- Used social media
- Businesses/police notification – lifting of truck restrictions on US 11/15 to allow for "local deliveries"

Public Outreach - 511PA

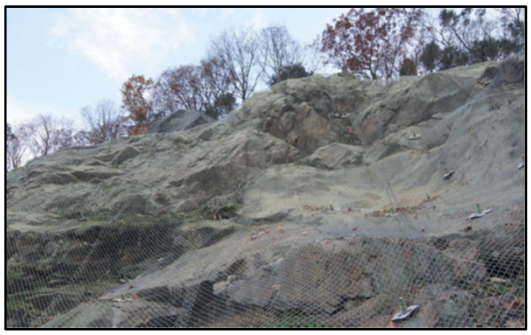
- 511PA (Marysville Project) portal site – **first time in PA** a portal page was dedicated to a specific project. It provided travel times of primary/other incident detour routes.



Tours of Construction Site

- Visible access to site was not available to the general public. Due to hazards, District 8 provided guided tour access to the Media, DOT staff and other agencies.

Duncannon Section – Final Solution



Duncannon Section – Final Solution

Marysville Section – Final Solution

Marysville Section – Final Solution

Project Highlights – Pre and Post Bid

Pre bid

- Close US 11/15 for max **90 days (May 1 - July 30)**
- Contract Incentives up to **$50,000/day < 90 days** (up to a maximum of **$2 million**)
- Disincentives up to **$160,000/day > 90 days**
- Prebid schedule assumptions of working 6 days a week, 15 hour days (maximum daylight), using multiple crews and equipment at concurrent areas
- Contractor to hold frequent regional EMS meetings
- Primary detour would be US 22/322 **(27 miles)**
- Additional incident management routes required
- Local and Emergency Access Route required

Post bid

- Contractor approach used a 24/7 operation for security, safety, and efficiency reasons
- Contractor used innovative approaches and special equipment including a helicopter to carry supplies to the top of slope
- Cost = $19.8 million ($2 million incentive was reached by the closure removal in just **55 days**)

Project Innovations

- Contract incentives/disincentives
- Contra Flow Gates were installed on US 22/322 (first in PA used in this manner)
- Completed two advance construction contracts on US 22/322 in preparation for the US 11/15 detour need. One was for paving and one for safety improvements.
- Expansion of Capital Beltway Service Patrol on to US 22/322 **(over 37 assists)**
- 511PA – project specific construction portal site (first in PA)
- Used social media to "get the word out'
- Incident Plans for up to **5 Detour Routes**
  - US 22/322 (27 mile Primary Detour Route)
  - Goldfish Detour (34 mile Primary Incident Detour Route to US 22/322
  - 3 Orange and Green Incident Detour Routes on US 22/322
- Contractor contingency plans to open US 11/15 for significant events

Summary

- **Closure of US 11/15 was required** for everyone's safety and was successful
- Safety improvement measures were made on US 22/322 before and during construction
  - Goal was to reduce number of incidents on US 22/322 from occurring in the first place
  - If incidents did happen, incident routes and a management approach were in place
  - Net result – **NO MAJOR INCIDENTS** occurred during the US 11/15 closure period
- Contractor created a 24/7 Text Alert System to communicate solely with regional EMS/PennDOT Team members for effective decision making.
- PennDOT partnered with the Media to be part of the effective public communications
- EMS coordination meetings were held regularly which bought community credibility
- Constant communication was key during incidents and all project decision points!
- Used facts, clear explanations, visualization graphics, photos and actual rockfall videos to solidify the answer to the public's repeated question of **why we needed to close the road?**
- Used innovative approaches like Contra Flow Gates, 511PA email alerts, and travel lane rental incentives/disincentives
- Allowed contractor flexibility to be creative with means and methods (eg. use of helicopter)
- Provided some performance based specifications for contractor to design final rockfall fencing
- Created project tours of the unique site for "once in a lifetime" educational experience
- Project design and construction information updated frequently on PennDOT Website
- Used an "all hands on deck" approach and rapid response of review and approvals of contractor submissions

We did what we did so this would not happen

THANK YOU

?? QUESTIONS ??