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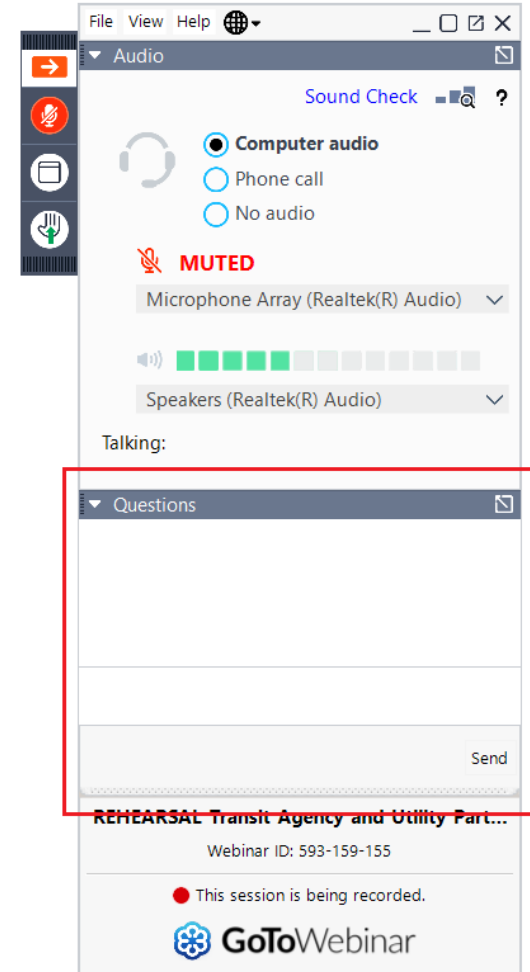
# Rail Transit Defensive Operations - Part 1

Presentation by Members of: The Rail Transit Operating Practices Working Group (OPWG)

# Questions

To submit a question or comment, please type it into the Questions box in the menu panel.

At the conclusion of the webinar, we will address as many questions as time allows.



The screenshot shows a webinar interface with two main panels. The top panel is the 'Audio' settings window, which includes options for 'Computer audio', 'Phone call', and 'No audio'. It also shows a 'MUTED' status and a volume slider. The bottom panel is the 'Questions' panel, which is highlighted with a red box. It contains a text input area and a 'Send' button. Below the Questions panel, there is a banner for 'REHEARSAL Transit Agency and Utility Part...' with the 'Webinar ID: 593-159-155'. At the bottom, a red dot indicates 'This session is being recorded.' and the 'GoToWebinar' logo is displayed.

# Defensive Operations Agenda

## Part 1 – July 14, 2020

Introduction & Background of the OPWG

Defensive Operations in a Light Rail Environment:

- ACI Light Rail Operations
- NJ Transit - Newark Line
- San Diego MTS

Q&A

## Part 2 – September 2020

Defensive Operations in a Heavy Rail Environment:

- Miami Dade County
- Bay Area Rapid Transit (BART)

Safety Overview:

- Defensive Operations as an integral part of an Agency Safety Plan

Q&A

# Defensive Operations – Meet Your Moderator



**Brian Riley**  
WSO-CSSD, Superintendent of  
Transportation for the Rail Division,  
MTS



# Defensive Operations – Meet Your Speakers



**CHRISTOPHER E. WALLGREN, WSO-  
CSE, TSSP**  
VICE PRESIDENT  
TRA



# Defensive Operations – Meet Your Speakers

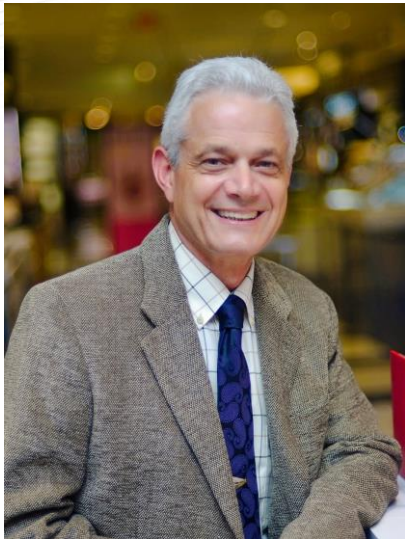


**William McClellan**  
Senior Associate  
Alternative Concepts, Inc.





# Defensive Operations – Meet Your Speakers



**Joseph Tassiello**

General Manager Light Rail Operations  
New Jersey Transit Corporation (NJ Transit)



**Joseph W. Bodine**

Manager, Light Rail Technical Training & Operations  
New Jersey Transit (NJ Transit)  
Newark Light Rail



# Defensive Operations – Meet Your Speakers



**Edward Graham**

Assistant Superintendent Transportation Department,  
MTS Rail Division at San Diego Trolley Inc.



**Michele Cederberg**

Transportation Training Supervisor, Rail Division,  
San Diego Metropolitan Transit System





# Background of the OPWG

- Develop standards, recommended practices and guidelines focused on **maximizing safety, efficiency** and **productivity** of rail rapid transit systems
- Promote the adoption and continuous improvement of the standards, recommended practices, and guidelines
- Open to all APTA members *and* non-members with interest in transit:
  - 79 members –*primarily operations, with some other experts*
  - 30 rail transit agencies
  - 13 businesses

# Background of the OPWG (cont.)

- Currently **27** published Standards & RPs
  - 3** new RPs in Development
  - 1** existing RP under review
  - 3** new Standards/RPs under consideration
- All Standards/RPs reviewed and updated every five years
- Sources include: industry ideas; FTA & NTSB requests; trends
- SWGs create original content/review; full WG refines & approves

# Defensive Operations – Meet Your Speakers



**William McClellan**  
Senior Associate  
Alternative Concepts, Inc.



# Defensive Operations in a Light Rail Environment

*Presentations by ACI Light Rail Operations,  
NJ Transit - Newark Line, San Diego MTS*

Alternate



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Transportation • Management

# DEFENSIVE OPERATIONS

“EXPECT THE UNEXPECTED”




# Valley Metro Light Rail Case Study

- 28-Mile street level LRT system with 200 grade crossings/intersections
  - 194 grade crossings unprotected
- LRT intersection accidents are a safety hazard and a leading cause of service disruptions at Valley Metro
- During 2018 ACI examined human factors contributing to accidents
- The Safety and Operations team established a goal to reduce the rate of accidents by 10% in 2019
- Defensive Operations training program was developed to reduce accidents and to improve focus and situational awareness of LRT operators.
- Field Supervisors support through increased “testing and observations”



# DEFINITION OF DEFENSIVE OPERATIONS

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- Defensive Operating is operating in such a manner that you are able to avoid a collision or accident in spite of the incorrect actions of others or adverse conditions
  - Defensive Operations is seeing things for the first time EVERY TIME
  - Defensive Operations is being prepared
  - Defensive Operations is Expecting the Unexpected

# Characteristics of Defensive Operations

Operators trained in Defensive Driving have better situational awareness through:

- **Knowledge**
  - Knows the traffic laws
  - Knows how to avoid a collision
  - Knows how to recognize hazards
  - Knows how to react correctly
  - Knows the limitations of the equipment
- **Alertness**
  - Is aware how physical and mental conditions affect operating
  - Gives 100% of his/her attention to duties
  - Stays alert to stale or changing traffic conditions



# Characteristics of Defensive Operations

Operators trained in Defensive Driving have better situational awareness through:

- **Foresight**

- Inspects their vehicle before operating
- Anticipates and prepares for hazards
- Sizes up traffic situations as far ahead as possible
- Does not rely on last minute action to avoid accidents

- **Judgement**

- Looks for changes in any traffic situation
- Does not make risky maneuvers
- Maintains a safe following distance

- **Skill**

- Operates the vehicle properly and safely
- Understand the vehicle, the capabilities and limits







# Clearances Around The LRV & Safety Zone

The clearance around the LRV must be maintained to prevent collisions , accidents and contact with people and objects.

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The **Safety Zone** is the area around the LRV which must be kept clear of hazards.

The **Safety Zone** consists of:

- ✓The area in front of the LRV
- ✓The area on each side of the LRV
- ✓The tactile warning strip on the platforms and crosswalks
- ✓The track area
- ✓The area between two LRVs



# Benefits of Defensive Operations

## Decrease In

- Accidents
- Injuries
- Repairs
- Lawsuits
- Employees out of service

## Increased

- Safety
- On Time Performance
- Customer Satisfaction
- Productivity
- Vehicle Availability

## Valley Metro Results

- 26% Reduction in grade crossing accidents
- 7% Reduction in Stop signal violations





Historic: Built on the alignment of the Morris Canal. Created in the 1930's making it one of the oldest "Light Rail's" in the United States.

Service: 490 daily M-F trips. 12.4 route miles. Wayside Signals – Automatic Train Protection.

System: Curved trackage limits lines of sight. Tracks are a combination of ballasted, wood block ties in concrete, direct fixation, and trolley rail.

Stations: Long platforms that once served multiple street running trolley lines that fed into the City Subway System.

Grade Crossings: Combination of 25 pedestrian and Motor Vehicle crossings.

Tunnel: Longest Rail Tunnel in NJT system. Cut & cover design. NYC IND type underground platforms.

# 16 Point Visual



Motor Vehicles

Bar Signals

Bikes

Debris

Catenary's

Signs



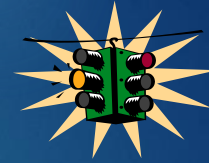
Other LRT's



Emergency Vehicles



Workers



On Coming Traffic

Passengers

Trespassers

Grade Crossing

Environment



Crosswalks

Track Obstructions





Transition From Surface to Tunnel During the day and the effects on the eyes.

# Grade Crossings – Blind Spots





# Broad St Extension



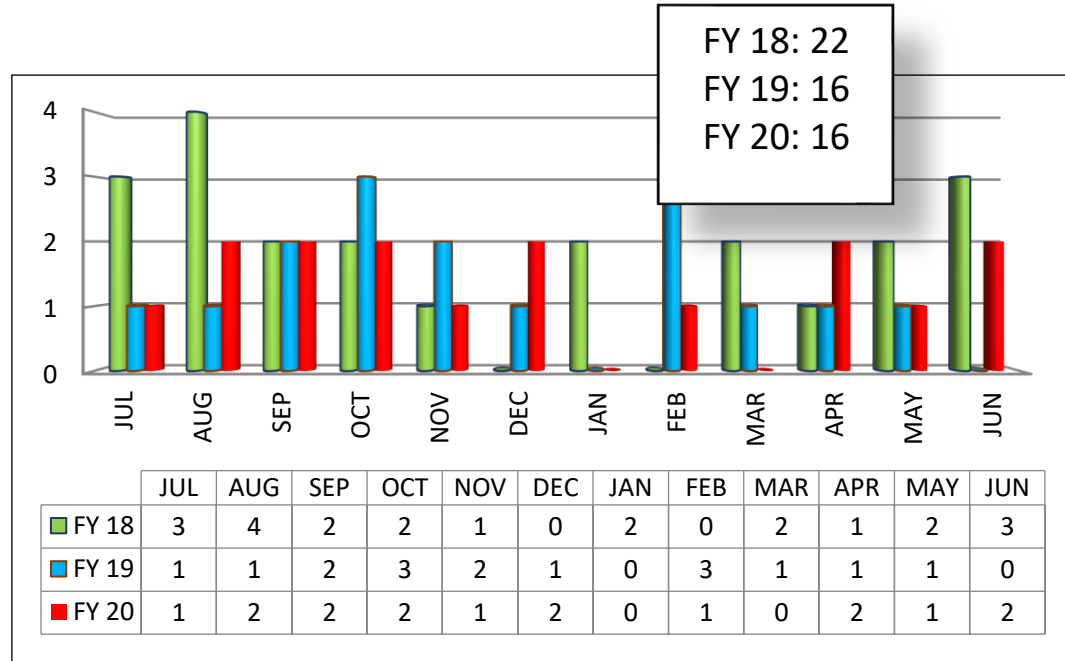
# MTS-San Diego Defensive Rail Operations



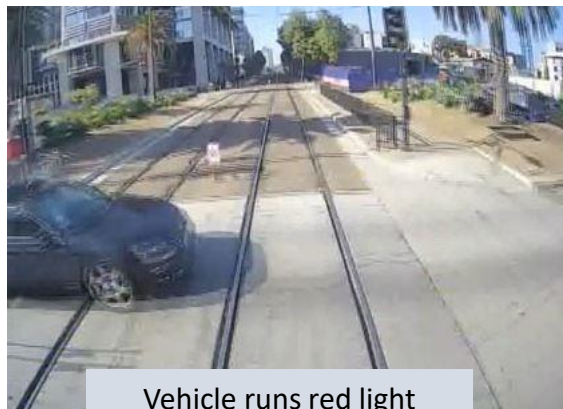
Edward Graham – Assistant Superintendent of Transportation  
Michele Cederberg – Transportation Training Supervisor

# Defensive Rail Operations

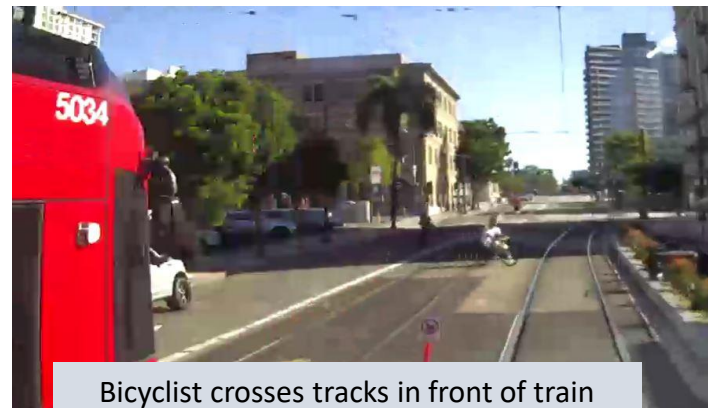
- Rule Violations
- Emergency Brake Applications
- Hazard Near Miss
- Accidents



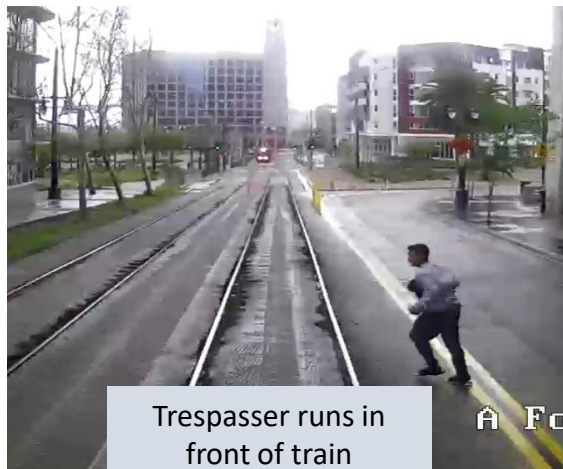




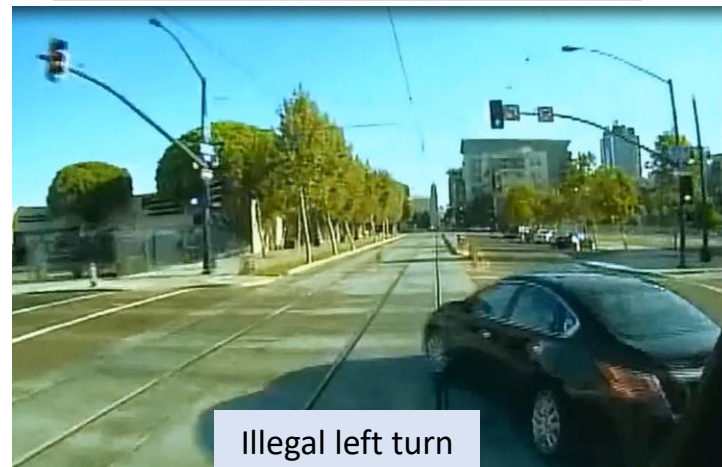
Vehicle runs red light



Bicyclist crosses tracks in front of train  
from behind opposing train



Trespasser runs in  
front of train



Illegal left turn



← *LIDAR Technology used in the Classroom*



Downtown Walk





# Hunting and Pointing Technique

## Human Factor's Tool

**“Hunting” for what’s next**  
**Keeps the mind on task**



***“Pointing” forces  
the brain to focus  
and process  
information***

***Active vs Passive***



Video

# Performance Indicators

## How are we doing?

### Supervisors Monitor:

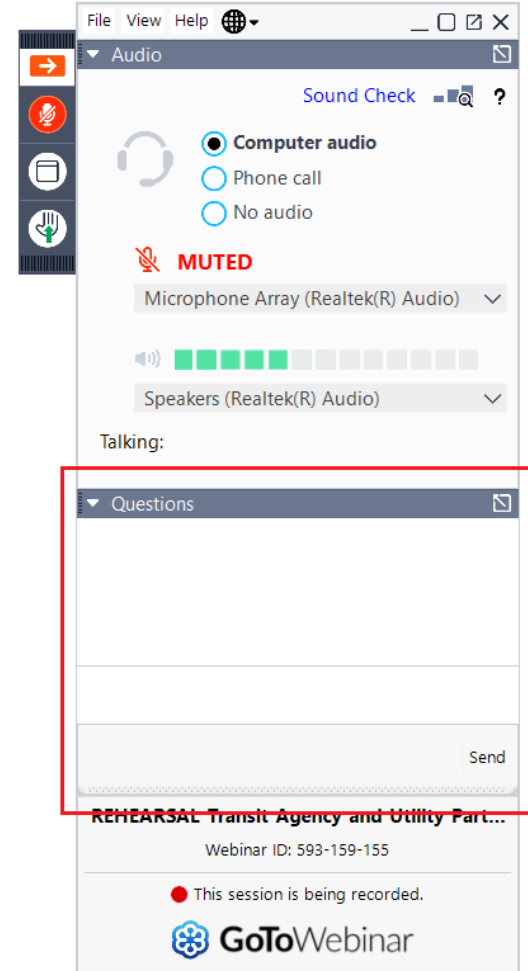
- Train Operator Efficiency & Evaluations Checks
- Rule of the Week
- Bi-Annual Recertification
- Field Site Inspections



# Q & A

# Questions

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# Speakers



William McClellan,  
ACI



Joseph Tassiello,  
NJT



Joseph Bodine,  
NJT



Edward Graham,  
MTS



Michele Cederberg,  
MTS



# Thank you!

Please join us for Part 2 of our Defensive  
Operations Series in September.