# End Treatments and Their Use

Purdue Road School 2012

March 6, 2012

# Key Terms

1. NCHRP350
2. Gating
3. Non-Gating
4. Re-directive
5. Bi-Directional
6. Clear Zone
7. Beginning Length of Need
8. Self Restoring

# What are End Treatments?

Attached to Guardrail to prevent impalement

Selected from the INDOT list of approved products

Certified installers

24 h of completion of the guardrail

# What are Impact Attenuators?

Used as crash cushions in high speed environments

Bridge piers, overhead signs, Barrier wall…

Selected from the INDOT list of approved Impact Attenuators

Certified installers

# INDOT Categories, **49-8.04(01) Types**

1. Type ED – Energy Dissipation. This is an energy dissipation device.
2. Type R1 – Re-directive 1 side. Has re-directive capability on one side.
3. Type R2 – Re-directive 2 sides. Has re-directive capability on two sides.
4. Type CR – Clearance Restriction. Has re-directive capability on two sides. Used where there are lateral clearance restrictions that make installation and maintenance of the attenuator difficult.

   Type CR1 should be specified unless CR2 conditions exist

   Type CR2 largely self-restoring after a typical impact, and has the ability to partially absorb additional impacts that can occur before the unit can be serviced.
5. Type SD – vertical Sight Distance limitation. Has re-directive capability on two sides.

# IMPACT ATTENUATORS

## December 16, 2011

## Specification Reference: 601.07.1

- BARRIER SYSTEM, INC
  - TAU-II ED, R1, R2, AND SD
- ENERGY ABSORPTION SYSTEM, INC
  - ENERGITE III MODULE ED, and Gravel Barrels
- ENERGY ABSORPTION SYSTEM, INC
  - QUADGUARD II ED, R1, R2, LS and SD
- ENERGY ABSORPTION SYSTEM, INC
  - REACT 350 or REACT 350 II MODELS ED, R1, R2, CR1 and CR2
- PLASTIC SAFETY SYSTEMS, INC
  - CRASHGARD BARREL SYSTEM ED, and Gravel Barrels
- TRAFFIX DEVICES, INC
  - Big Sandy ED, and Gravel Barrels
- TRINITY INDUSTRIES, INC
  - CAT-350 ED (alternate with guardrail transition)
- TRINITY INDUSTRIES, INC
  - TRACC ED, R1, R2, and SD
- SCI PRODUCTS, INC
  - SCIGM ED, R1, R2, SD and CR1

Re-directive
Non-gating
Bi-directional

NCHRP Report 350,
Test Levels 2 and 3.

Low and high speed applications
30-70 mph

The system can protect hazards of various widths

ED, R1, R2, SD

# Barrier Systems, Inc

## TAU-II

NON Re-directive Gating

NCHRP Report 350, Test Levels 2 and 3.

ED

# Energy Absorption Systems

## Energite III

Re-directive,
Non-gating
Bi-directional

NCHRP Report 350,
Test Levels 1, 2 and 3.

Low and high speed applications
25-70 mph

The system can protect hazards of various widths

ED, R1, R2, LS, SD


# Energy Absorption Systems

## Quadguard II

Self Restoring
Re-directive
Non-gating
Bi-directional

NCHRP Report 350,
Test Levels 2 and 3.

Low and high speed applications
30-62 mph

The system can protect hazards of various widths

ED, R1, R2, CR1, CR2

# Energy Absorption Systems

## REACT 350, REACT 350 II

NON Re-directive Gating

NCHRP Report 350, Test Levels 2 and 3.

ED

# Plastic Safety Systems, Inc

CrashGard

NON Re-directive,
Gating

NCHRP Report 350,
Test Levels 2 and 3.

ED

# Traffix Devices, Inc.

## Big Sandy

Non re-directive, Gating

Alternate ED with guardrail transition

NCHRP Report 350, Test Levels 3

ED

# Trinity Industries, Inc.

CAT-350

Re-directive,
Non-gating
Bi-directional

NCHRP Report 350,
Test Levels 2 and 3.

Low and high speed applications
30-70 mph

The system can protect hazards of various widths

ED, R1, R2, SD


# Trinity Industries, Inc.

TRACC

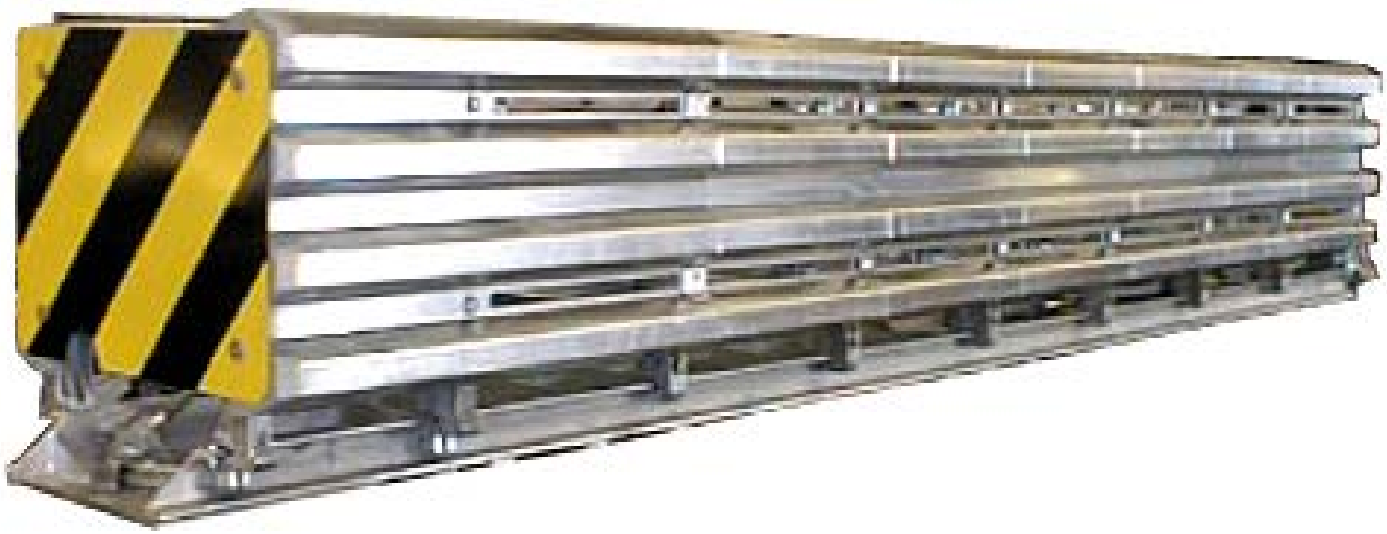
Re-directive,
Non-gating
Bi-directional

NCHRP Report 350,
Test Levels 2 and 3.

Low and high speed
applications
30-70 mph

The system can
protect hazards of
various widths

ED, R1, R2, SD, CR1



# SCI Products

## SCIGM

# Any Questions?