Highway Safety
You Cannot Live Without It

FHWA New York Division

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Safety Statistics
- On average each year 32,000 people die in traffic related crashes.
- On average 2.2 Million are injured
- In New York, approximately 4 people die and 500 people are injured every day in vehicle related crashes.

Madison Square Garden X 2
Seating capacity 36,000

Population of Manhattan, NY - 1,517,000

You Only Had One Job
New York’s Safety Objectives

- **Roadway Departure**: Average of 17,000+ fatalities per year, about 53% of total average fatalities (based on FARS).
- **Intersections**: Average of 7000+ fatalities per year; about 22% of total average fatalities.
- **Pedestrians**: Average of 4500+ fatalities per year; about 14% of total average fatalities.

Intersections

- Average of 7000+ fatalities per year; about 22% of total average fatalities.

Pedestrians

- Average of 4500+ fatalities per year; about 14% of total average fatalities.

26% of total in New York State

Systems Approach: Crashes Caused by Various Factors

- **Roadway 34%**
- **Driver 80%**
- **Vehicle 12%**

Human is weakest link in this system, so we must design around human needs.
You Only Had One Job

Run-Off-the-Road

Problem
- 1/2 of all Traffic Fatalities
- 2/3 on 2-lane roads
- 1/2 at night

Run-off-the-Road Reasons
- Distracted/Inattention
- Impaired Driving
- Poor visibility
- Speeding
- Avoidance of obstacle

Avoidance of obstacle

Better Guidance and Delineation

NY Triple Drop

RUMBLE STRIPS
- Milled-in
- Concrete Formed-in
Run-off-the-Road Solutions
Remove or relocate obstacle

Run-off-the-Road
Reduce impact severity with Crashworthy Devices

Run-off-the-Road Solutions
Shield obstacle

Run-off-the-Road
Delineate obstacle

Roadside Hazard Fatalities

Longitudinal Barriers
Rigid
Semi-Rigid
Flexible
End Terminals (NCHRP Report 350 or MASH)

- BCT
- Adiem II
- Sand Barrels
- QuadGuard

Which curve is sharper?

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Intersection Safety

- 22% of Fatal Crashes
- 50% of Injury crashes
Intersection vs. Roundabout

# of Conflict Points:
Roundabouts 8
Conventional Intersection 32

Intersection Safety

First day of school

Crash at Red Light Kills 2 Teenagers

Negative 6 ft offset
No offset (aligned)
Positive 6 ft offset
Positive 12 ft offset
Intersection Safety Countermeasures

- Unsignalized
  - Roundabouts
  - Sight distance
  - Turn bays
  - Flashing beacons at rural intersections
  - Intersection lighting

- Signalized Intersections
  - Roundabouts
  - Turn bays
  - Retiming / coordinating signals
    » All red clearance interval
  - Curb-corner radius design
  - Mast arms versus span

Roundabout Lighting

- LED overhead lighting
- Bollard-level crosswalk lighting

Sponsors: NYSDOT/NYSERDA

Pedestrians

- 4,739 Pedestrians Killed (~14% of all traffic fatalities)
  - 58% are working adults
  - 23% are elderly
  - 19% are children
- A pedestrian is killed or injured every 4 minutes

Speed – Injury/fatal Relationship

- Graph showing speed vs. number of injuries/fatalities
- Data points for Killed and Injured at various speeds
- Conclusion: Speed correlation with injuries/fatalities
Pedestrian/Intersection Issues

Mid Block Crossings

Crossing against light

The 3 E’s

Education

Engineering

Enforcement

Pedestrians Technologies

Rectangular Rapid Flash LED Beacon

Count Down Signal

Hybrid Beacon

LPI

In-Pavement Lighting

Hybrid Beacon
Designing for Pedestrian Safety – Crossing Illumination!

Corvallis OR

Lighting reduces the odds of pedestrian fatalities:
by 42% at midblock locations
by 54% at intersections

Systematic use of countermeasures where data shows consistent problem

Shoulder widths 1’- 3’, AADT 3500-5000, Radii 100 -500’…. 

Sponsors: NJDOT/FHWA

Pedestrian Crosswalk Lighting

Shoulder Rumble Strips

Centerline Rumble strips
Part 1 – Introduction, General Provisions and Definitions

Definitions

• SHALL – a mandatory condition and Standard
• SHOULD – an strong advisory condition
• MAY – a permissive condition

MUTCD applies on private property that is “open to public travel”

Effective Traffic Control Devices Should…

Fulfill a Need
Command Attention

Convey A Clear Simple Meaning

Command respect from Road Users

Give Adequate Time for Proper Response
Types of Signs

- Establish general meanings to convey traffic information through color and shape.
  - Yellow, Red, Blue, Green, Brown, Orange, Black, White.
  - Rectangular, Diamond, Octagon, etc.

Signs Should:

- Regulate
- Warn
- Guide
- Inform

- Just because it looks cool doesn't mean it is legal or effective

Questions