The 5 “E” Approach to Safety
A conceptual look...

Larry Hagen, P.E., PTOE

“Driving Down Fatalities Through Knowledge Sharing”
The Three E’s of Safety

- Engineering
- Enforcement
- Education
The Three E’s of Safety Four

- Engineering
- Enforcement
- Education
- EMS

“Driving Down Fatalities Through Knowledge Sharing”
The Three E’s of Safety Fail

- Engineering
- Enforcement
- Education
- EMS
- ?
Engineering

“Driving Down Fatalities Through Knowledge Sharing”
Engineering

**Warning Signs**

**Purpose:**

to call attention to unexpected conditions and to situations that might **not be readily apparent** to road users
Engineering

Speed feedback sign in school zone
Engineering

Brite Stick supplementing sign post
Engineering

Signal Ahead signs with solar-powered flashers
Qwick Kurb

Engineering
Engineering

Audible / vibratory markings to reduce crossover or run-off-road crashes
Engineering

“Driving Down Fatalities Through Knowledge Sharing”
Engineering

High-Emphasis Pedestrian Crossings

Before

After
Engineering

High-Emphasis Pedestrian Crossings

LATERAL 12" STRIPE

CROSSWALK

1'

0.002°

300'

LONGITUDINAL MARKING

CROSSWALK

10'

0.021°

300'

“Driving Down Fatalities Through Knowledge Sharing”
Approximately 25% of fatal crashes occur along horizontal curves
Engineering

Delineation – Markings – Signing – Superelevation

“Driving Down Fatalities Through Knowledge Sharing”
Engineering
County Road recently resurfaced. Edge drop-off resulted in 3 Fatalities.
Engineering

“Driving Down Fatalities Through Knowledge Sharing”
Engineering

Nebraska Avenue (before)
Engineering

Nebraska Avenue
(after)
Engineering

Nebraska Avenue (after) – Bike Lanes

“Driving Down Fatalities Through Knowledge Sharing”
Engineering

Nebraska Avenue

(after)

Mid-block pedestrian crossing
Engineering

Nebraska Avenue

(after)

Pedestrian signal upgrades

"Driving Down Fatalities Through Knowledge Sharing"
Engineering

“Driving Down Fatalities Through Knowledge Sharing”
Engineering
Engineering

Run-Off-Road Crashes

- Warn
- Remove
- Relocate

- Reduce Impact
- Shield
- Delineate

"Driving Down Fatalities Through Knowledge Sharing"
Engineering

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Engineering
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“Driving Down Fatalities Through Knowledge Sharing”
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“Driving Down Fatalities Through Knowledge Sharing”
Engineering

Must be enforceable

“Driving Down Fatalities Through Knowledge Sharing”
Enforcement

“All Traffic Must Turn Right”

“Left Lane Must Turn Left”

“Driving Down Fatalities Through Knowledge Sharing”
Enforcement

“Driving Down Fatalities Through Knowledge Sharing”
Enforcement
Enforcement
Enforcement
Enforcement

<table>
<thead>
<tr>
<th>Month</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>367 Warnings</td>
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<tr>
<td>August</td>
<td>399</td>
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<td>December</td>
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<tr>
<td>January</td>
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</tr>
</tbody>
</table>

“Driving Down Fatalities Through Knowledge Sharing”
Enforcement

“Driving Down Fatalities Through Knowledge Sharing”
Education

“Driving Down Fatalities Through Knowledge Sharing”
Education

“Driving Down Fatalities Through Knowledge Sharing”
Education

Not everyone who gets hit by a drunk driver dies.

Jacqueline Soler: 20 years old when the car she was riding in was hit by a drunk driver. Today, at 23, she is still working to put her life back together.

Learn more at www.TexasDAP.org

DON'T DRINK & DRIVE

“Driving Down Fatalities Through Knowledge Sharing”
Education

“Driving Down Fatalities Through Knowledge Sharing”
You can’t fix stupid...
Education

CarFit
car-fit.org

“Driving Down Fatalities Through Knowledge Sharing”
EMS

- Usually not much of a preventative role
  - Exception - Education

- Usually reactive rather than proactive

- Make crashes more survivable
  - The “Golden Hour”
The Five E’s of Safety

- Engineering
- Enforcement
- Education
- EMS
- ?
The Five E’s of Safety

- Engineering
- Enforcement
- Education
- EMS
- Everyone Else
The Five E’s of Safety

- Engineering
- Enforcement
- Education
- EMS
- Everyone else
Why is this important...
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The Five E’s of Safety

- EMS
- Everyone Else
- Engineering
- Enforcement
- Education
Questions / Comments?

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