WRONG WAY DRIVER INITIATIVE

John Gianotti, P.E.
San Antonio District
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San Antonio Wrong Way Driver Task Force

- March 15, 2011 – SAPD Officer Stephanie Brown (27 yrs old) – killed in the line of duty by a wrong way driver on IH 35 on N side of Downtown San Antonio.

- WWD Task Force was organized in the spring of 2011 to examine factors contributing to wrong way driving in San Antonio, and to identify methods of addressing wrong way drivers.

- Agencies Participating:
  - Texas Department of Transportation
  - The San Antonio Police Department
  - City of San Antonio Department of Public Works
  - The Bexar County Sheriff’s Department
  - The Federal Highway Administration
  - The Texas Transportation Institute
Goals
- Identify high risk locations
- Investigate prior WWD related research
- Investigate WWD Countermeasures implemented elsewhere
- Identify potential WWD Countermeasures
- Identify funding for implementation of WWD Countermeasures
San Antonio Wrong Way Driver Task Force

- **Challenges**
  - Determining points of entry for WWDs
  - Number of ramps:
    - More than 400 exit ramps in San Antonio metro area
  - How to get the attention of drivers that are severely impaired
  - Manual of Uniform Traffic Control Devices Compliance
  - Spike Strips are not MUTCD compliant
San Antonio Wrong Way Driver Task Force

- **August 2010** – San Antonio Police Dept. (SAPD) - Implemented E-Tone WWD notification for its radio network
- **November 2010** - SAPD: Initiated use of portable spike strips
- **January 2011** – SAPD: Implemented code in Computer Aided Dispatch (CAD) system identifying WWD events
- **March 2011** - TxDOT: TransGuide Operations began documenting all WWD events. Previously documented WWD crashes
- **May 2011** – TxDOT: TransGuide operators authorized to display WWD warning message on DMS when SAPD issued E-Tone for WWD alert. Previously operators verified the WWD, and then placed the messages.
- **July 2011** – SAPD: Traffic Investigations Section instructed to focus on determining entry point/exit ramps used by WWDs
San Antonio Wrong Way Driver Task Force


- **November 2012** - TxDOT: Completed installation of LED illuminated WWD signs on all 28 US 281 exit ramps.

- **Fall of 2012** - TxDOT: Committee Members of Research Project 0-6769 visit TTI at College Station to review test track.

- **January 2013** - TxDOT: IH 35 project N of San Antonio lets - first construction project to install LED illuminated WWD signs and radar.

- **March 2013** - TxDOT: Activation of first WWD radar on US 281 SB exit ramp @ Josephine St.

- **October 2013** - TTI: Successful testing of mainlane WWD system at SWRI test track in San Antonio.
2012 WWD Statistics (TransGuide Operator Logs)

274  Total WWD Events logged by TransGuide Operators

240  WWD not apprehended, no crash (88%)

19   Total crashes documented (7%)

5    Fatal crashes – resulting in 7 fatalities

7    Crashes with serious injuries, Driver DWI

7    Crashes with no serious injuries, Driver DWI

13   No Crash, WWD apprehended, Driver DWI (4%)

2    No Crash, WWD Disoriented due to medical condition (1%)
2011, 2012 & 2013 GIS Density Maps

2011  June - Dec

2012

2013  January - August
Countermeasures Identified

- On-Site Driveway Channelization
- Enhanced Static Signing & Pavement Markings
- Active/Illuminated Signing
- Detection Technologies (Radar Sensors)
On-Site Driveway Channelization

Existing Problem

IH 410 WBML
IH 410 EBML
EBFR

Possible Solution

IH 410 WBML
IH 410 EBML
EBFR
Enhanced Static Signing & Pavement Markings

- Increased visibility of “WRONG WAY” and “DO NOT ENTER” signs shown to reduce wrong way driving
  - Field Inspection of all ramps using 2004 TTI Study Checklist
  - Ensure all required signs, pavement markings and RPM’s are in place and visible

- Wrong Way Arrows on TxDOT Standard Sheet FPM (1)-12
Enhanced Static Signing & Pavement Markings

- Recommend additional (supplemental) measures:
  - Add reflective tape on sign posts
  - Increased size of ONE WAY signs
  - Additional WRONG WAY & DO NOT ENTER signs at critical locations
  - Lowered sign heights*

* Note: TxDOT is not implementing lowered sign heights at this time
DMS Wrong Way Driver Warning Message

- No lane instructions given
- Message displayed first, then operator searches for vehicle using cameras
- Displayed Until:
  1) WWD stopped,  2) Accident found,  or  3) SAPD cancels Alert
72% of the wrong way driver events occur at night

The flashing LED lights will be visible from a greater distance
Blank Out Sign is an LED DMS panel capable of displaying a single message when activated, otherwise message panel is “blank”
Detection Technologies (Radar Sensors)

Exit Ramps - TAPCO Radar

Mainlanes – Wavetronix HD Radar
Budget for WWD Active Countermeasures

- **Exit Ramps**
  - TAPCO LED WW sign w/solar panel = $1,988
  - TAPCO LED WW sign w/Radar & solar panel = $5,340
  - Prices are for existing sign mounts.
  - Typical ramp installation = $14,000

- **Mainlane System**
  - 2 TAPCO LED WW signs Sign = $3,996
  - 2 SES Blank Out Signs = $16,400
  - 1 Wavetronix HD Radar Detector = $6,400
  - 1 contact closure radio link = $4,010
  - Additional electronic components - $1,430
  - Typical mainlane system = $40,000
Exit Ramp Countermeasures

Existing Signs

New LED WW signs
Mainlane Countermeasures

EXISTING OSB

Normal condition

Active condition

Solar Power

Controller cabinet

ROADWAY
US 281 Pilot Project

1. US 281 From IH 35 to Stone Oak
   Most Events on Any Corridor
US 281 Pilot Project

15 Miles

28 Exit Ramps
- 2 LED Illuminated Wrong Way Signs
- 1 Radar Detection Unit

4 Mainlane Locations
- 2 LED Illuminated Wrong Way & 2 LED Blank Out Signs installed on both shoulders
- 1 Radar Detection Unit

- Installation began Jan 2012
- All LED Illuminated Wrong Way Signs have been installed
- 16 Radar Units Installed
- Mainlane System tested and waiting installation
- Budget $500,000
### US 281 Pilot Project - 14 Month Results

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<tr>
<td><strong>Reduction in Avg. Rate of WWD Events</strong></td>
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<tr>
<td>TransGuide Logs</td>
<td>28.11%</td>
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<tr>
<td><strong>Reduction in Avg. Rate of WWD Events</strong></td>
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<tr>
<td>SAPD 911 Logs</td>
<td>29.77%</td>
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<tr>
<td><strong>Project Cost</strong></td>
<td>$377,605</td>
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<td><strong>Annual Cost Savings</strong></td>
<td></td>
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<tr>
<td>Avg. of SAPD &amp; TxDOT data</td>
<td>$246,508</td>
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<tr>
<td><strong>Benefit - Cost ratio</strong></td>
<td>13 : 1</td>
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<tr>
<td><strong>Cost Recovery Time (yrs)</strong></td>
<td>1.5</td>
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2011 & 2013 GIS Density Maps

2011: June - December

2013: January - August
TxDOT Research Project 0-6769

WWD Countermeasures

- Evaluate the effectiveness of WWD countermeasures implemented in San Antonio, elsewhere in Texas and around the country.

- Evaluate detection methods used to detect wrong way drivers in San Antonio, Dallas (NTTA), Houston (HCTRA) and elsewhere.

- Review MUTCD guidelines for Illuminated Signing applications for WWD countermeasures and make best practice recommendations.

- Began fall of 2012 (2 year project).
Research Plan

- **Task 1**: Assess State-of-Knowledge in the US and Texas - COMPLETE

- **Task 2**: Evaluate Countermeasures in a Closed-Course Environment
  - Monitored, intoxicated test subjects on a closed course at night in an instrumented vehicle – 50% Complete

- **Task 3**: Evaluate countermeasures and detection systems in an operational environment
  - Utilize data from San Antonio, Dallas and Houston WWD countermeasure deployments to assess their impacts – 50% complete

- **Task 4**: Develop and assess wrong-way driver warning messages
  - Determine what message(s) to deliver to right-way drivers – 30% complete

- **Task 5**: Develop recommendations and report
How are we doing?

KSAT NEWS STORY
NOVEMBER 2012
Summary – WWD Task Force Lessons Learned

- Adopted lessons learned from prior research and countermeasure deployment projects
  - TTI Study 2003/2004
  - NTTA Project- Task Force Summary Report
  - HCTRA Detection Project

- Law enforcement (SAPD) took steps that aided in identifying problem areas:
  - E-Tone Radio Network Alerts
  - Created specific code in CAD systems for wrong way driver reports
  - Critical data for developing GIS map

- Many opportunities for sharing lessons learned
  - Dallas, Houston and San Antonio all have active WWD efforts
  - WWD sessions have been included in many technical conferences (ITS Texas November 2011, ITS America May 2012, WWD Summit - Illinois July 2013)
  - TxDOT Research Project
  - NTSB Special Investigation Report on Wrong Way Driving (December 2012)
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