Maryland VWS Program Update
Maryland VWS Program Update

- Weight enforcement activities in Maryland
  - Primary agencies – SHA and MDTA
  - SHA: Maryland State Police – Commercial Vehicle Enforcement Division (Weigh stations owned by SHA)
  - MDTA: Maryland Transportation Authority Police – Commercial Vehicle Safety Unit (Weigh stations owned by MDTA)
    - MSP-CVED: All major interstates and highways
    - MDTA-CVSU: All toll facilities and bridges
  - Local jurisdictions (City and County) enforcement units
  - Maryland vehicle enforcement personnel: 438
  - Fixed weigh stations: 13
  - SHA: Virtual Weigh Station program
    - 6 current sites, 15 future sites (2015-2017)
    - 21 deployed sites by end - FY 2017
    - Deployment/program management/data analytics for SHA and MDTA sites
Maryland VWS Program Update

• Why VWS?
  – Over size and over weight load activity on bypass roads
  – Road damage – grossly over weight loads
  – Over size/over weight load permit fraud – ‘gaming the system’
  – Unpredictable routes based on enforcement behavior
  – Community interest - reduce local heavy vehicular traffic
  – Traffic management on state, county and other road arteries
  – Intelligent law enforcement deployment – roving patrols
  – Safety is the major focus, followed by weight enforcement
  – Efficient use of law enforcement personnel
  – Damage prevention on roads and structures (bridges, tunnels, etc)
  – Rapid deployment, low capital and operational costs
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Phase I – Deployed Sites
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- Concept of Operations

Legend
1. Fixed weigh station on mainline highway
2. Virtual weigh station deployed on bypass route
   2A. WIM scales
   2B. Camera system
   2C. Screening software
   2D. Communication system
3. Mobile enforcement unit deployed “downstream” from VWS
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Over Height Detector
LOOP Detector
Sensor Pair 1
Sensor Pair 2
Camera
Cabinet

Direction of Traffic

Full Box
Functionality - Route 32 VWS – Pilot Site
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Route 32 VWS – Pilot Site

- **QWIM Sensor**
  - Kistler Lineas® Quartz Weigh-In-Motion Sensor Type 9195E

- **Inductive Loop**
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- VWS location selection criteria
  - Joint study with MSP and MDTAP
  - Prioritize sites based on truck volume, enforcement need, and public outreach
  - Road surface conditions and planned resurface schedule
  - Availability of power and cellular service (3G or 4G)
  - Minimal environmental impact
  - No land acquisition cost (within State right-of-way)
  - Availability of local enforcement personnel and vehicles
  - Safe pull-off area for inspections, citations, and Out-Of-Service (OOS)
  - Data importance/availability for traffic engineering and pavement engineering (substitute in place of ATR)
  - Ability for remote and local diagnostics within 4 hours
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- RITIS Integration – In production September 2012
  - RITIS (Regional Integrated Transportation Information System) Integration
  - Integration of multiple VWS feeds, central location, unlimited archival capability
  - Multiple concurrent logins possible
  - Stream once, redirect anywhere
  - Multiple platforms (PC/Web, Smart phones, Tablets)
  - Enhanced reporting and analytics capabilities
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Virtual Weigh Station

L-53 North
L-36 South
MD 32 East
MD 213 South
US-301 North
US-301 South (Bay Bridge)

Analytics

VWS Monitor for Android
In order to use the VWS Monitor for Android, you will need to download and install the file linked above. By default, most Android devices will not allow you to install apps that do not come from a proper Android marketplace, but you can change this setting by following these instructions.
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Virtual Weigh Station Analytics

- Search options:
  - Date range: 06/16/2013 to 09/23/2013
  - Station: All, I-895 North, I-95 North, MD-213 South, MD-32 East, US-361 North, US-361 South (Bay Bridge)
  - Classes: All, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
  - Weight: Minimum 80000, Maximum Any
  - Flags: All, Off scale, Over height, Over length, Over speed, Overweight axle, Overweight bridge, Overweight gross, Overweight tandem, Random, Speed change, Random

- Results:
  - Vehicle count by date and hour
  - Vehicle count by speed
  - Vehicle count by class
  - Vehicle count by date
  - Vehicle count by day of week
  - Vehicle count by hour of day
  - Vehicles with nested axle details
  - Cardinal-style table of vehicles
  - Cardinal-style class count by date
  - Cardinal-style speed count by date

- Instructions:
  - Perform a search using the controls on the left, and your results will appear here.
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Vehicle ID: 20130822140725-10-151145
Date: 08/22/2013 02:07:25 PM
Weight: 109630 lbs
Speed: 42.0 mph
Length: 67.7 ft
Class: 10
Flags: Overweight gross, overweight bridge, overweight axle, overweight tandem VIOLATION
Spacing: 4.5 4.5 36.1 4.5 18.1
Axe: 4.5 16.5 17.1 17.2 24.3 24.1 10.5
Print this page
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Virtual Weigh Station Analytics

Date range: 10/02/2012 - 10/09/2012

Station:
- I-95 North
- MD-213 South
- MD-32 East
- US-1 North
- US-301 South (Bay Bridge)

Classes:
- All
- Offscale
- Over height
- Over length
- Over speed

Search options:
- Vehicle count by speed
- Save screenshot

Vehicle count by speed

Speed (mph):
- 0-5
- 5-10
- 10-15
- 15-20
- 20-25
- 25-30
- 30-35
- 35-40
- 40-45
- 45-50
- 50-55
- 55-60
- 60-65
- 65-70
- 70-75
- 75-80
- 80-85
- 85-90
- 90-100
> 100
Enforcement – Rte 32 Pilot site example
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- Enforcement example – Pilot and other deployed sites
  - Action based on VWS data – pre-screening tool
  - Gross weight, axle weight, bridge/tandem weights, over height violation
  - Additional Level 2 or Level 1 inspection based on initial observation
  - OOS for safety violations
  - Intentional un-balance (cheating the scale)
  - Mandatory offload >5000 lb over gross
  - Mandatory offload (depending on permit violations or fraud) for oversize loads
  - Arrests for other serious violations (criminal record, DUI, etc)

- Future enforcement actions (post LPR retrofit)
  - LPR information action – poor safety scores, IRP, IFTA, registration violations, stolen vehicle, permit violation
Maryland VWS Program Update

Commercial Vehicle Enforcement Division
Commander’s Notification Log

Date/Time: 08/21/2013 1315 hrs

Facility/ROV#: Parkton

Arresting Trooper/ID#: Senior Trooper Kirk Bandelin & CVSI Supervisor S.C. Kirkwood

Type of Incident: Overweight Vehicle

Location/County: N/B I-83 S/O MD 439 / Baltimore Co

Suspect(s) Information:

<table>
<thead>
<tr>
<th>Name</th>
<th>DOB</th>
<th>Race/Sex</th>
<th>City/State</th>
</tr>
</thead>
</table>

Narrative: On August 21, 2013, at 1315 hours, the Interstate 83 Virtual Weigh Station (VWS) in Baltimore County broadcast that a 2003 Peterbuilt truck tractor pulling a lowboy semi trailer transporting a Volvo EC480DL Excavator had a gross weight of 155,660 pounds. Senior Trooper Kirk Bandelin and CVSI Supervisor Steve Kirkwood stopped the tractor trailer on I-83 South of Maryland 439 for a NAS Level II inspection. The motor carrier was: [redacted] the driver was: Jensen F. Hamilton (White Male, DOB: 3/07/76 of Totowa, NJ). The driver produced a Maryland Special Hauling Permit for 150,000 lbs. The portable scales showed that the CMV weighed 161,400 pounds, so was issued a $27,395 citation for the 81,400 pound overweight violation. The Level II inspection found that the weight violated the condition of the permit by more than 5,000 lbs so the vehicle was taken back to legal weight as permitted by COMAR. was advised to make contact with Maryland SHA permits office and to contact his company. The permit was entered into the SHA Permit Violation System.
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• Current Locations (production)
  – US Rte 32 Southbound (Pilot, Site 1) (MSP)
  – US 301 Northbound near 227 (Site 2) (MSP)
  – US 50 Bay Bridge Westbound (Site 3) (MDTAP)
  – US 213 Southbound (Site 4) (MSP)
  – I-95 Northbound/Caton Ave (Site 5) (MDTAP)
  – I-83 Northbound/Parkton (Site 6, dual lane) (MSP)

• Future locations (2014 – end 2017)
  – 11 additional MDTAP sites (Bridges and high speed toll locations)
  – 4 additional SHA sites

• Battle tested and hurricane proof
  – ‘Blizzard of 2010’ – Rte 32 – no outage under 4+ feet of snow and plough debris
  – ‘Hurricane Sandy’ – All sites 100% functional except isolated power outages
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• RITIS Advantages
  – Single data repository for vehicle information from multiple locations
  – Powerful analytics engine assists in CMV violation search
  – Easy to identify habitual offenders and provide opportunity for self-correction
  – Law enforcement advantage for ‘predictive policing’ – deploy resources as needed
  – Easy real time access to traffic volume, type, and speed data for traffic planners
  – Real time analysis of traffic trends
  – Emphasis on CMV safety in immediate vicinity
  – Emphasis on system preservation of highway infrastructure
  – Local pro-active community and industry outreach for traffic issues
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• Next Generation – Additional capability (2013 and beyond)
  – License Plate Reader (LPR)
  – CMV ‘Hotlist’ integration
    • CSA2010, IFTA, IRP, Registration, HAZMAT, NCIC stolen vehicle lists
  – Ongoing LPR tests at fixed sites
  – DriveWyse pilot test and Weigh-In-Motion integration for electronic screening

• Upcoming Challenges
  – Accelerated deployment – 5 VWS sites per year
  – System and engineering resources – Maryland
  – LPR integration – OCR recognition of ‘at speed’ CMV license plates
  – Back office expansion and LPR query integration (centralized)
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• **Enforcement Activities**
  – Over weight, over height, unbalanced load pre-screening
  – Safety violations
  – Overload violations
  – Hauling permit violations – off loads
  – HAZMAT violations
  – Analytics based targeted enforcement initiatives

• **Legal aspects**
  – Maryland – CMVs can be stopped without cause for inspection
  – Compliance with county, rural, state and interstate road regulations
  – Effective deterrent for bypass violations
  – Effective traffic management – local routes
Maryland VWS Program Update

• Contracts
  – 2013 to 2017 – expanded Phase II production site RFP being established
    • Environmental, wetlands, and mitigation protocols being worked internally – SHA and MDTA
    • Memorandum of Understanding between MDTA and SHA – ownership, operation, data retention, maintenance
    • Single TORFP, solicitation in April 2014
  – Comprehensive maintenance contract
    • 6-month sensor calibration, cabinet and equipment cleaning, loop/sensor grout/epoxy maintenance
    • System preservation contract – inspect WIM sensor every 6 months, repair or replace any degraded sensors (none yet)
Maryland VWS Program Update

• Collaboration
  – FMCSA: Expanded CVISN funding (50-50 federal and state) – 6 initial sites
  – FMCSA: Core CVISN funding (50-50 federal and state) – CVISN personnel salaries, program maintenance
  – FHWA: Collaborative presentations and visits
    • Brazil DNIT/ UFSC LabTrans weigh-in-motion workshop – September 2013
    • Afghanistan Transportation Ministry – July 2012
    • Japan delegation – May 2012
    • Brazil DNIT – May 2012
  – Local, state and national presentations of technology
    • Data sharing with pavement and traffic divisions
    • Data sharing with other states (for VWS near other state jurisdictions – example – PA and DE)
Maryland VWS Program

• Questions and Open Discussion
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  – Manoj Pansare, CVISN Program Manager and System Architect
    • 410-582-5730, mpansare@sha.state.md.us