FAST Spray Systems
Reasons for a FAST System

- Safety
- Infrastructure
- Congestion
HLT 4000’ dry tunnel
Tanker Fire On HLT Bridge
Safety
Safety
Chloride Reduction
Bridge Replacement
Chloride Reduction
Chloride Reduction
Typical System
Site Specific Designs
Site Specific Designs
New construction and retrofit
Pump House or Vault
(Confined Space Issues)
Pump House with secondary containment
RWIS Weather Instruments
Used for forecasting

Air Temperature
Precipitation
Wind (direction, speed, gusts)
Relative Humidity
Dew Point
Weather Identifier
Drizzle/Rain/Snow
Accumulation (total inches)
Road Visibility - Fog/Dust/Rain/Snow,
Pavement temperature and status
Pavement Sensors

Sensors are very susceptible to damage.
Road Sensors Have left the Road
The SPECTRO is able to give a Friction reading from off the roadway
The CYCLO is able to give surface temperature within .2 F and other readings
Cyclo:
Non-invasive Surface Temperature Sensor

- Remote surface temperature measurement
- Infrared measurement principles
Spectro: Non-invasive Surface Condition Sensor

- Utilizes state of the art optical non-intrusive technology to measure Road State – 3 eye safe lasers at differing frequencies are transmitted by top lens & received by bottom lens.
- Measures amounts of:  
  - Water  
  - Ice  
  - Snow / Frost
- Reports Friction
Non-Invasive Sensor Installation

Both Instruments mount on structures to side of road

Limitations are:
- \( c \) must be >6ft and <50ft
- \( \alpha \) must be >30\(^\circ\) and <85\(^\circ\)

Thus maximum distance (b) from base of tower/pole to measured road surface is 40ft when

sensor height (a) is 25 ft

(Maximum distance from sensor to road is 50 ft)
### Friction/Grip Readings

<table>
<thead>
<tr>
<th>Friction Level of Grip</th>
<th>Alarm Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6 and above</td>
<td>None</td>
<td>Good condition (dry road)</td>
</tr>
<tr>
<td>0.4 to 0.59</td>
<td>Warning</td>
<td>Poor condition (wet &amp; slushy road)</td>
</tr>
<tr>
<td>0.39 and below</td>
<td>Alarm</td>
<td>Very slick (snow packed or icy)</td>
</tr>
</tbody>
</table>

- **Dry** – pavement surface dry (amount of water below 0.01mm)
- **Moist** – pavement surface moist (darkened surface or amount of water between 0.001mm & 0.029mm)
- **Wet** – pavement surface wet (amount of water above 0.03mm)
- **Snow/Frost** – because “hoar frost” or white frost has the same physical properties as snow (ice crystals with high optical reflection) (amount of snow above 0.03mm)
- **Ice** – Pavement surface icy (more than 0.03 mm)
- **Slush** – pavement surface has a mixture of ice and water.

**Note:** All of the threshold values are adjustable. All measurements are water equivalent. As a rule of thumb the actual depth of snow is 10 times the water equivalent (10 inches of snow = 1 inch of water)
Vaisala Sensors with Camera
Web based

- No Hardware
- No Software to load
- No Firewall issues
State Highway 66 over I-25
State Highway 66 over I-25 (10-28-09)
I-225 / I-25 Bridges, Colorado
Direction: West

View of ramp from SB I-25 to NB I-225

Updated: November 15th, 2010 at 8:06 AM

Courtesy of ITS

Department of Transportation
Spray notification for 119

noreply@eispray.com
to me.
Wayne Lupton.

The following spray activation(s) have occurred for 119:

Activation Date / Time Type
02/07/2013 03:38:24 Sensor

Click here to Reply or Forward
Mini Systems
Mini system with Generator
Sensor call outs

- Text messaging
- Emails
- Web Site
Sign Activation