



***ENNIS-FLINT***®

The Mark of Traffic Safety™



# Global at a Glance



**While global in reach – local relationships are what make and keep us strong.**



# Traffic Paint: Generic breakdown

## Binder / Resin (15-19%)

- Solids
- Solids dissolved in solvent(alkyd resin)
- Solids suspended in solvent(latex).

## Coloring Pigments (5-8%)

- Powders
- Powders pre dispersed in resin & solvent

## Water / Solvents (18-35%)

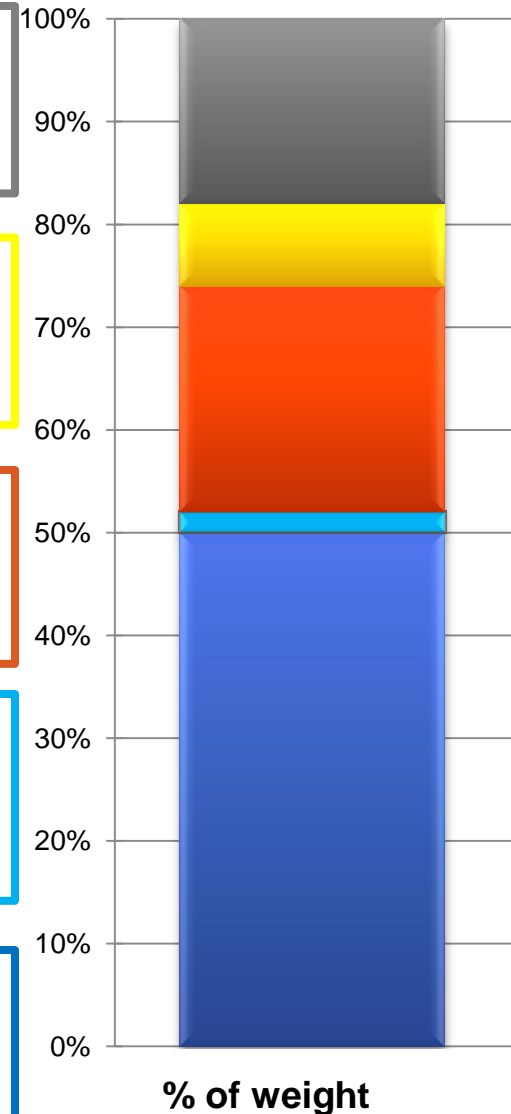
- Water
- Acetone
- Toluene
- MEK

## Additives (1-2%)

- Ammonia
- Thickeners
- Driers
- Alcohols
- Coalescing agents

## Fillers (44-53%)

- Calcium Carbonate
- Clay
- Sand



# Traffic Paint: Cold Weather Impacts

## Binder / Resin (15-19%)

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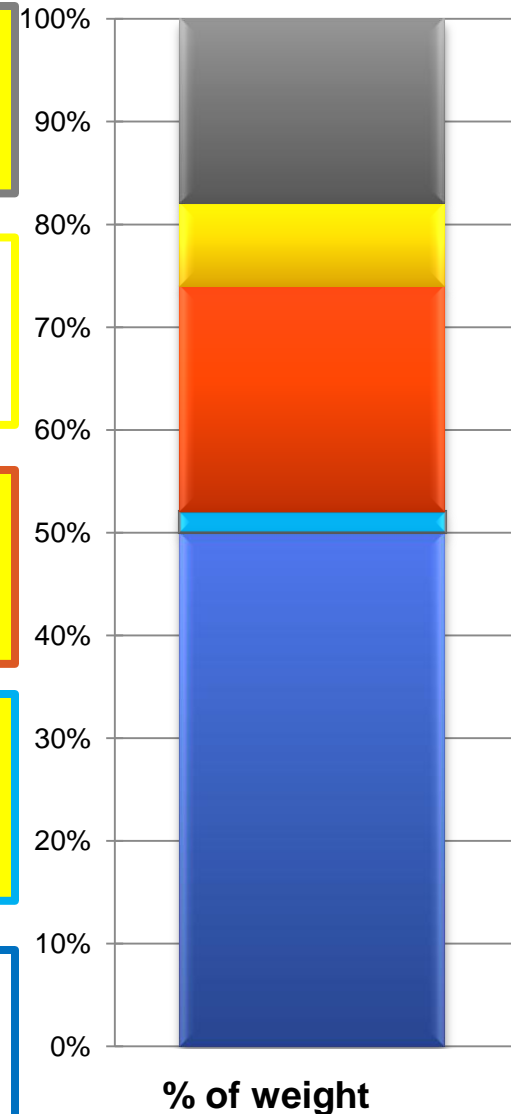
- Water • Acetone • Toluene • MEK

## Additives (1-2%)

- Ammonia • Thickeners • Driers • Alcohols • Coalescing agents

## Fillers (44-53%)

- Calcium Carbonate • Clay • Sand



# Traffic Paint: WB Drying Characteristics

## Water based

### Installation

( 0-3 min )

- Imprints or deforms easily.
- Can be tracked by car tires
- Ammonia, water and solvent are released.
- Starts to gel/skin on the surface

### No-track time

( 3 – 5 min )

- Deformable.
- No longer transfers to another surface.
- Dry to touch.
- Remaining Ammonia, water and solvent are released.
- Paint forms a film on top

### Early Water Resistance

( 20 – 45 min )

- Marking and glass could still be slightly deformable.
- Formed enough of a film and won't re-dissolve / wash away

### Through Dry

( 60 - 120 min )

- Marking could still be slightly deformable.
- With effort, a few optics might be picked out.
- Ammonia and most water evaporated.
- Freezing in next 24 hours will hinder or destroy film integrity.

### Complete Dry

( 1-14 Days )

- Paint is hard and optics completely anchored.
- Solvent has evaporated. Paint completes drying

## Stages of How Waterborne Traffic Paint Dries

(at 25C and 60% humidity)

# Traffic Paint: Application Characteristics

## Installation

( 0-3 min )

- Imprints or deforms easily.
- Can be tracked by car tires



Cold liquids having higher viscosity compared to warm ones. This makes application much more difficult as more power is required from pumps, film thicknesses are hard to control. Also higher viscosity limits the mobility of water leading to reduced evaporation.



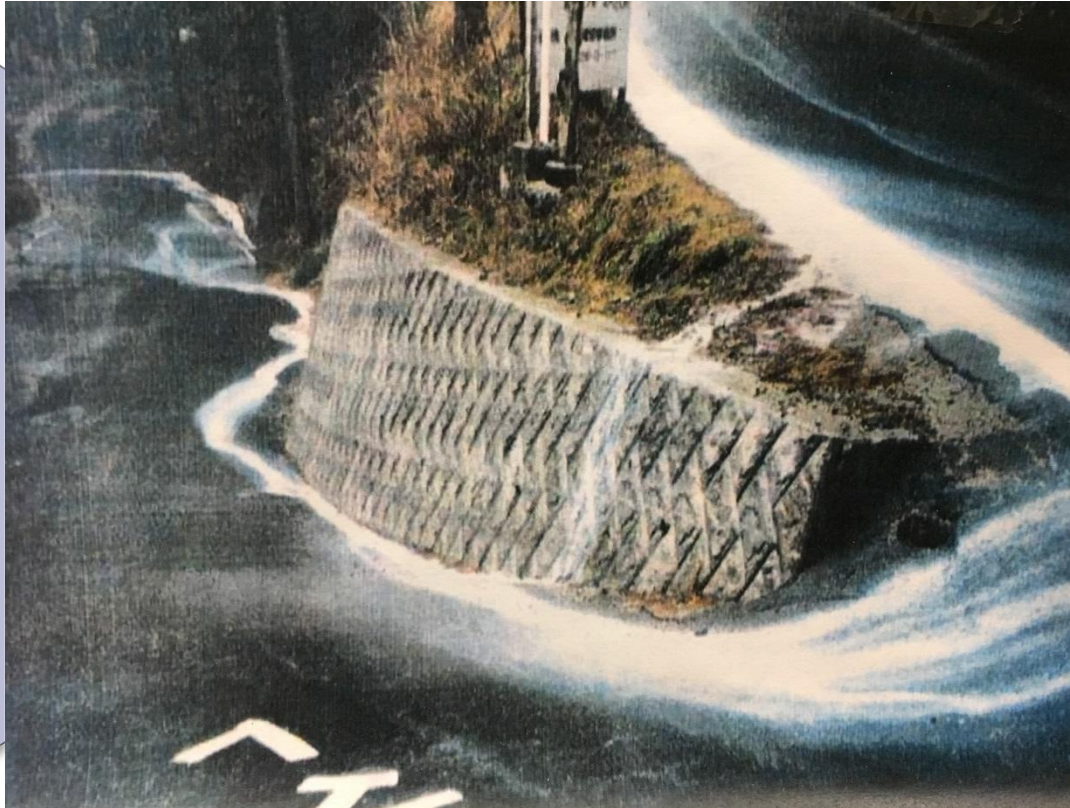


# Early Water Resistance

## Early Water Resistance

( 20 – 45 min )

- Marking and glass could still be slightly deformable
- 2x to 3x extended .



Cold temperatures reduce the evaporation rate of water meaning the applied paint is susceptible to early rain events for much longer.



# Through Dry

## Through Dry

( 60 - 120 min )

- Marking could still be slightly deformable.
- With effort, a few optics might be picked out.



Colder temperatures below 10°C increase the hardness of the individual latex particle which leaves them as dry individual particle rather a continuous strong film.





# Complete Dry

## Complete Dry

( 1-14 Days )

- Paint is hard and optics completely anchored.



Weak, chalky films are unable to anchor beads effectively leading to poor night time visibility (retroreflectivity) and reduced driver safety. Resultant low durability will also require remarking prematurely (increased cost).



# Traffic Paint: Offering

## Water based

## Solvent based

Fast Dry

High Build

Standard  
Dry

Extended  
Season

High VOC

Low VOC

New Zealand

WB Fast Dry

WB Fast Dry, 55

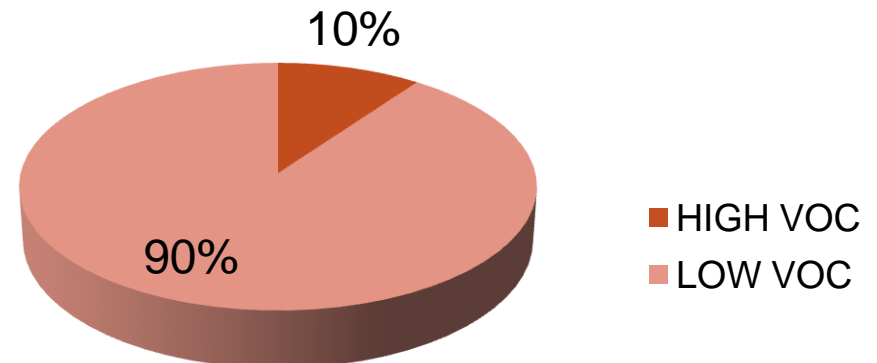
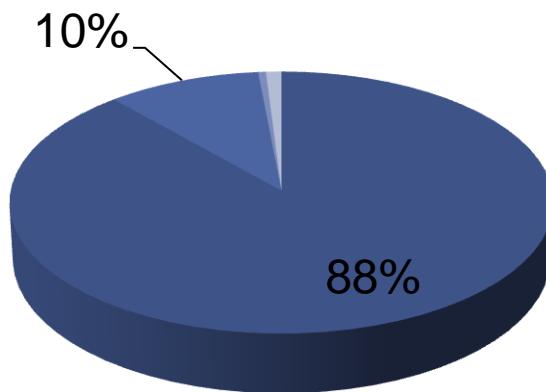
Solvent

Solvent , 45

0 10 20 30 40 50 60

North America

- FAST DRY
- HIGH BUILD
- STD DRY
- EXT SEASON



# Traffic Paint: Offering

Water based					Solvent based	
Fast Dry	High Build	Standard Dry	Extended Season		High VOC	Low VOC

- More durable than typical evaporative solvent based systems
- Build Thickness: 375um wet film thickness (~15 mils).
- Viscosity: 82-88 KU
- Dry Time:
  - Lab: less than 10 minutes/no glass beads.
  - Field: no track dry - 3 minutes or less.



# Traffic Paint: Offering

Water based					Solvent based	
Fast Dry	High Build	Standard Dry	Extended Season		High VOC	Low VOC

- **Increased durability through high build wet film**
  - Up to 650um wet (~25 mils).
    - Fast dry paints typically limited to 375um wet or less. (~15 mils).
  - Cost effective alternative to long life markings.
  - Holds big beads.
- **Dry Time:**
  - Field: no track in under 3 minutes (77 F / 25 C and low humidity)
  - Lab: dry time less than 25 minutes/no glass beads at 650um (~25 mils).



# Traffic Paint: Offering

Water based					Solvent based	
Fast Dry	High Build	Standard Dry	Extended Season		High VOC	Low VOC

- **Designed for parking lots / curbs**

- Ideal for small equipment
- Thinner viscosity – 70 to 80 KU.
- Dry time too slow for roadway use.
  - 20-30 minutes
- Lower total solids - more water.





# Traffic Paint: Offering

Water based					Solvent based	
Fast Dry	High Build	Standard Dry	Extended Season		High VOC	Low VOC

- Binder - acrylic
- Solvent - Toluene (High VOC), Xylene (High VOC), Acetone (Low VOC, exempt)
- Flammable
  - Handling and loading
- Dry through: quicker drying when it is cold.
- Easy cleanup, contractor friendly



# Traffic Paint: Offering

Water based					Solvent based	
Fast Dry	High Build	Standard Dry	Extended Season		High VOC	Low VOC

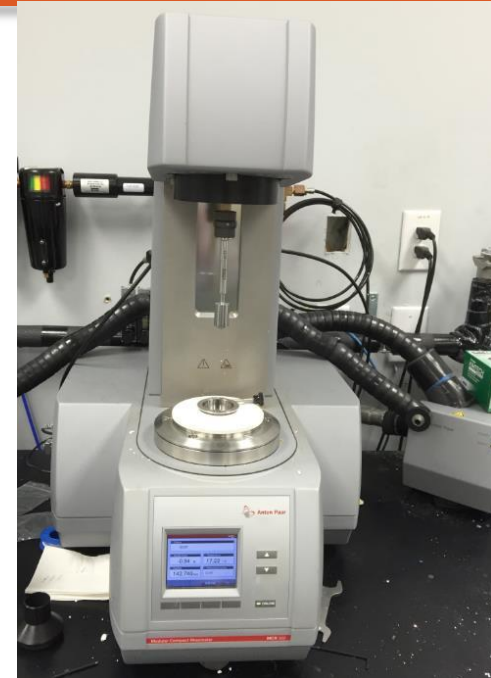
- All Season Paint designed to cure in temperatures as low as 2°C (35°F)
- Applied at 375um wet mils (~15 mil).
  - Temps must stay above 2°C (35°F) for at least 2 hours for ultimate dry through and durability
- 300-400um wet film (12-15 mils) will field no track in less than 10 minutes at a temperature of 3°C and rising.
- Limited Shelf life
  - 6-9 months



# Minimum Film Forming Temperature Deformation

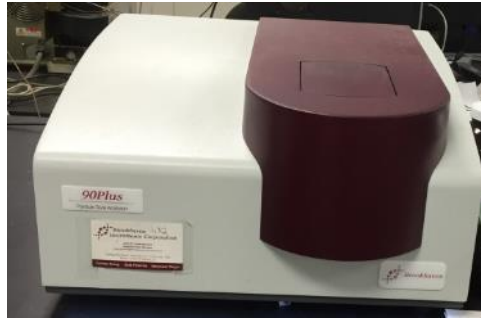
- How does extended season work



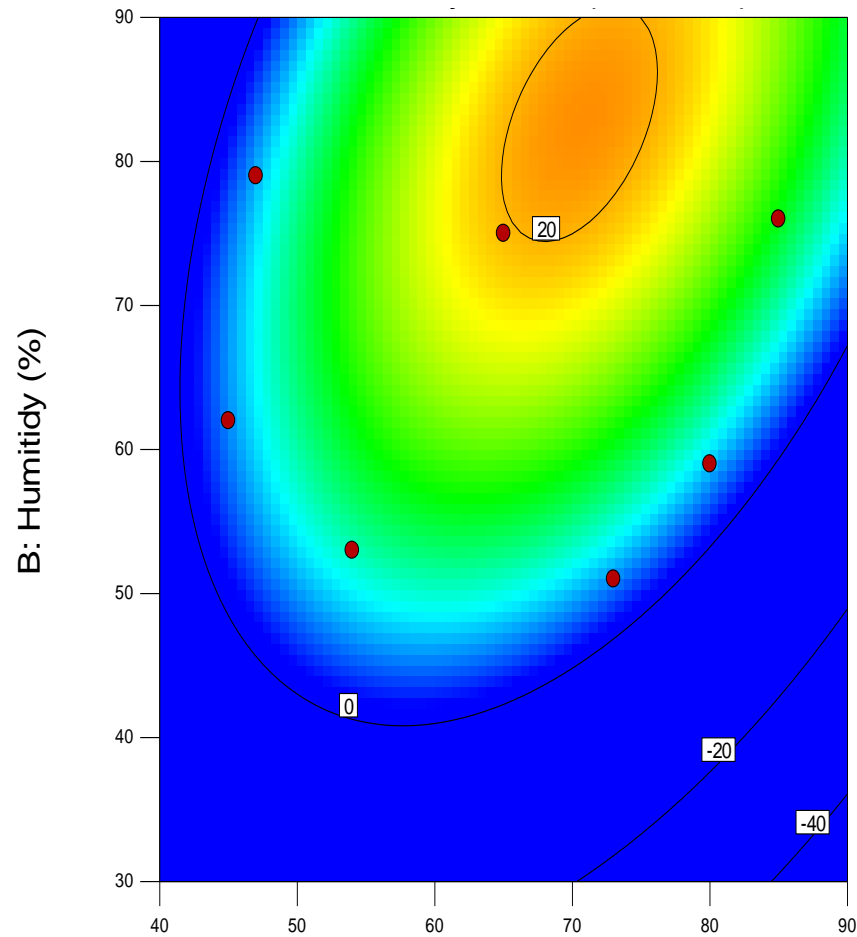




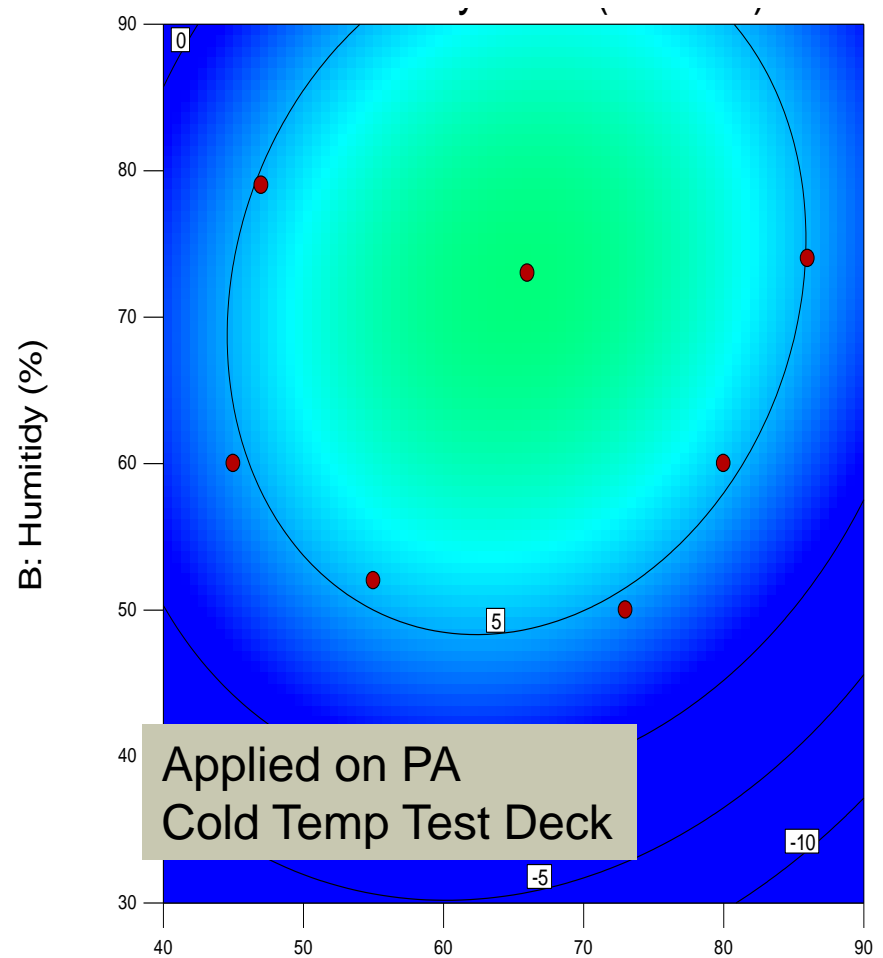








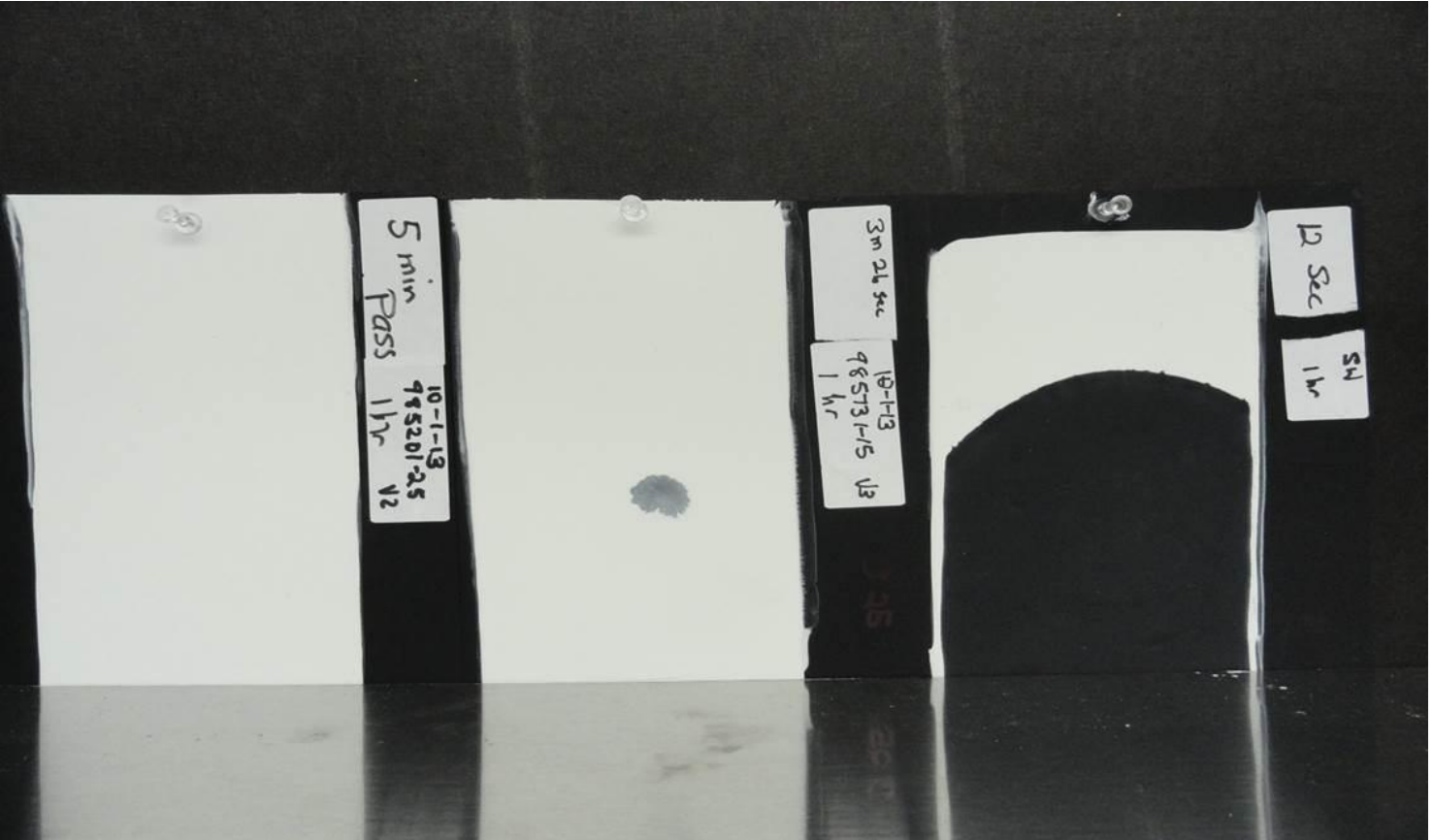
A: Temperature (Degree F)



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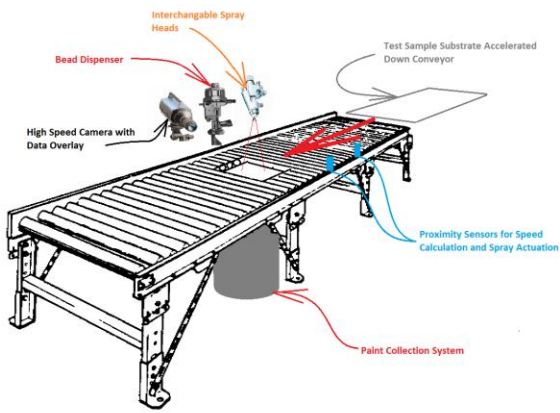








# Lab Spray Application

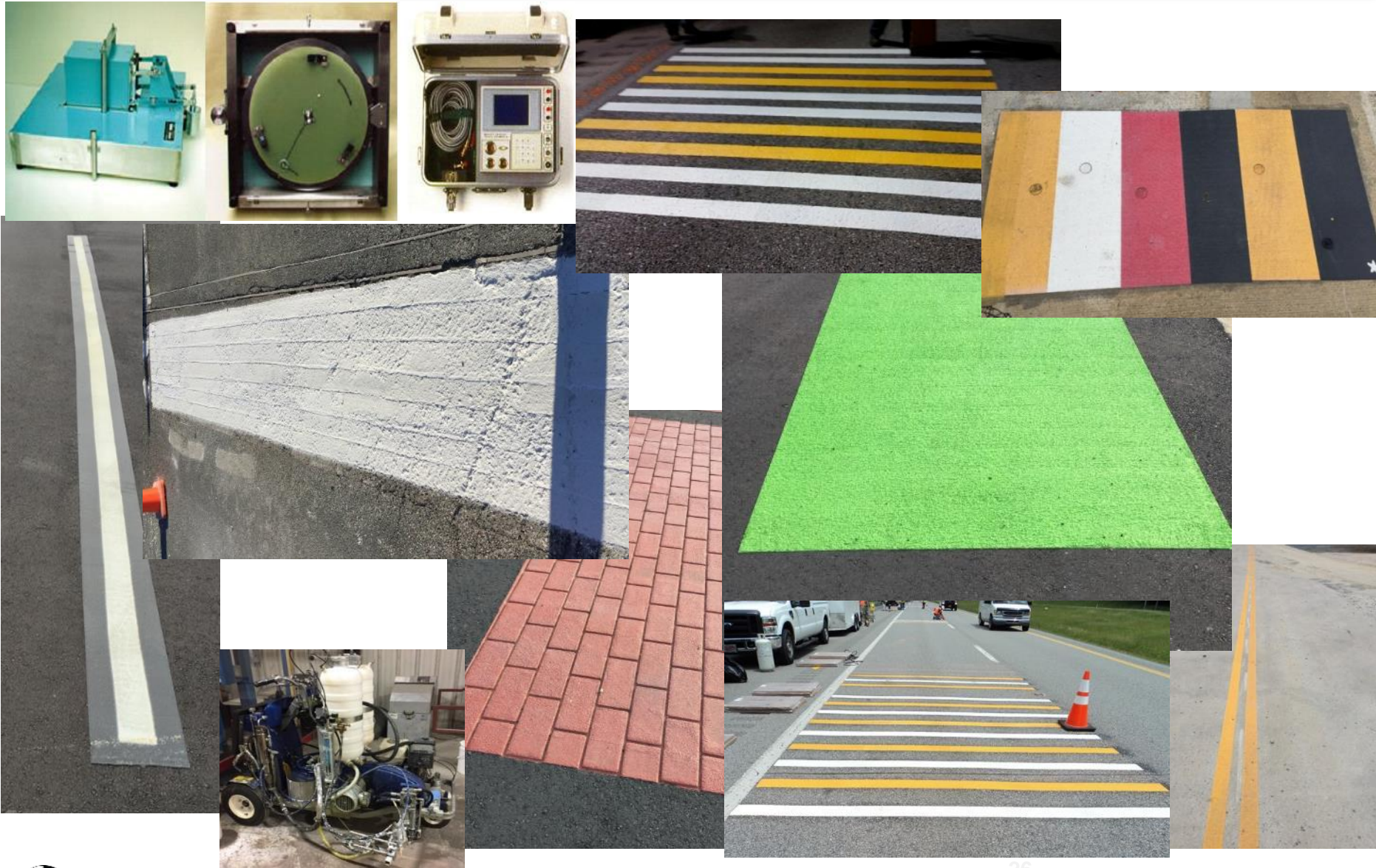


# Ennis Global Application

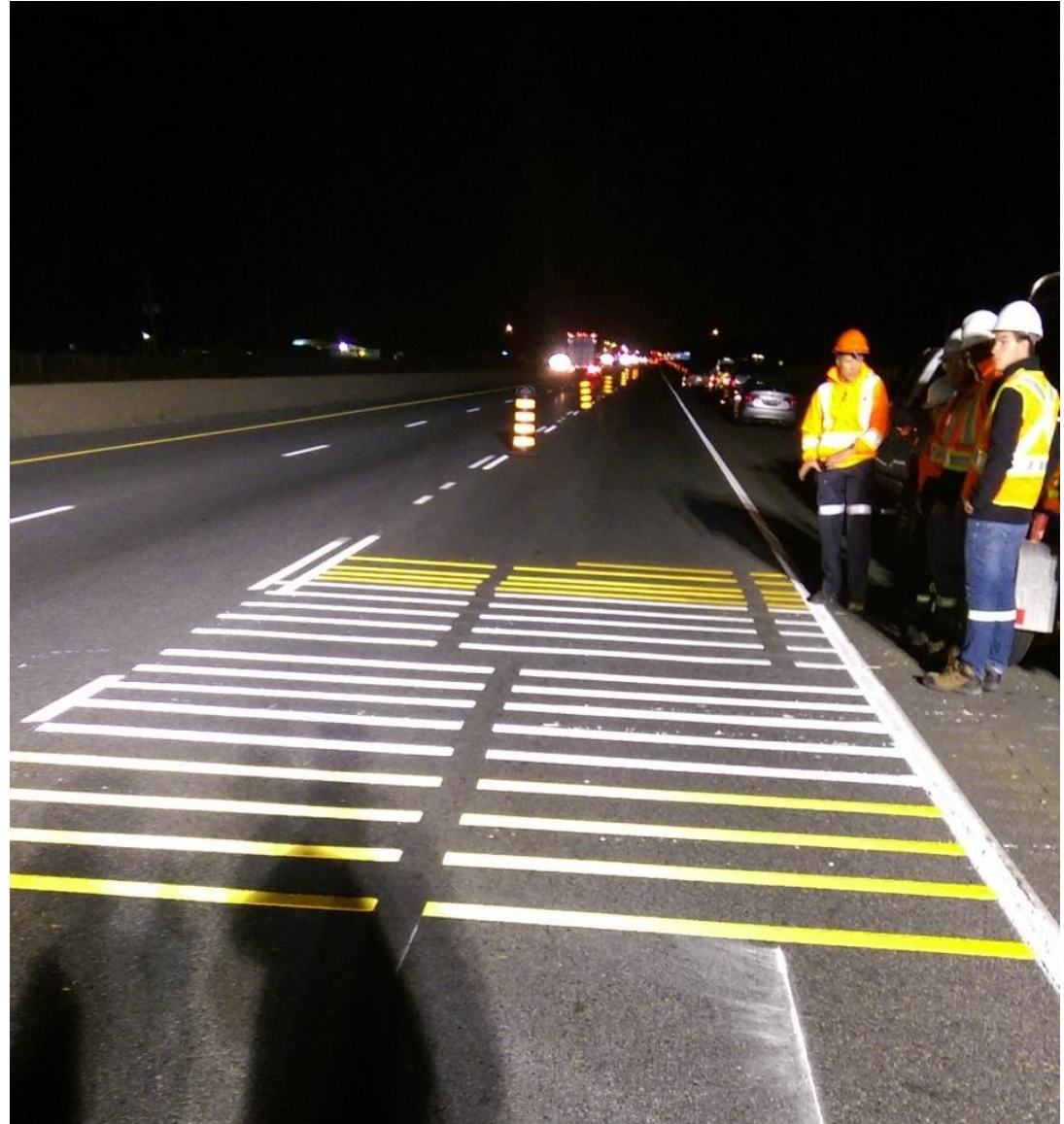




# Local and agency test decks







# Traffic Paint: Ambient Conditions

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## **Surface temp, air temp, wind, sun, shade and humidity**

- Play a complex roll in application.
  - Slight wind good for surface dry

## **Surface / Ambient temperatures:**

- 2°C (35°F) and rising for solvent based paints / low temp waterborne
- 10°C (50°F) and rising for all other waterborne

## **Humidity below 70%:**

- Products with volatiles dry well.
- Increased humidity slow up dry
  - Waterborne the most effected.





Q & A

