Traffic Sign Life Expectancy

Investigation LAB943

Project TAP Meeting #2

05/01/2013

Project Team

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Project Update and Meeting Overview

- Project Schedule On-Track
- 3M tour
  - 3M retroreflectivity research and follow-up questions – expected life & others?
- Task 1 Report
  - Final draft discussion, review and comments
- Task 2 - 4 In Progress
- Discussion / Other Issues

Task 1: Survey of Practice
Draft Task 1 Final Report – For Review

1. Three different types of 3M brand sign sheeting will be analyzed;
   - 3M High Intensity Prismatic (HIP), Series 3930
   - 3M Diamond Grade (VIP), Series 3990
   - 3M Diamond Grade (DG3), Series 4000

2. Four Different Colors of traffic signs will be analyzed;
   - White
   - Yellow
   - Red
   - Green

3. Two different fabrication methods will be analyzed;
   - Inked (screened) colors of red and green (over white sheeting)
   - Transparent, colored, EC overlay film applied to white sheeting to create red and green signs

Task 1: Survey of Practice
Draft Task 1 Final Report – For Review

- Known, quantifiable drivers of sign replacements
  - Damage outpaces retro, but is a local occurrence –- anecdotal
  - Color is an issue gaining national concern
- Agencies with sign management data that could be used
  - Followed up on those with Retro Data
- All information that can be used from state studies, evaluations and databases
- List of sign replacement projects scheduled that can provide signs for test deck
  - Several from both MnDOT and City of Eagan identified

Task Schedule Jan 1, 2013 – April 30, 2013

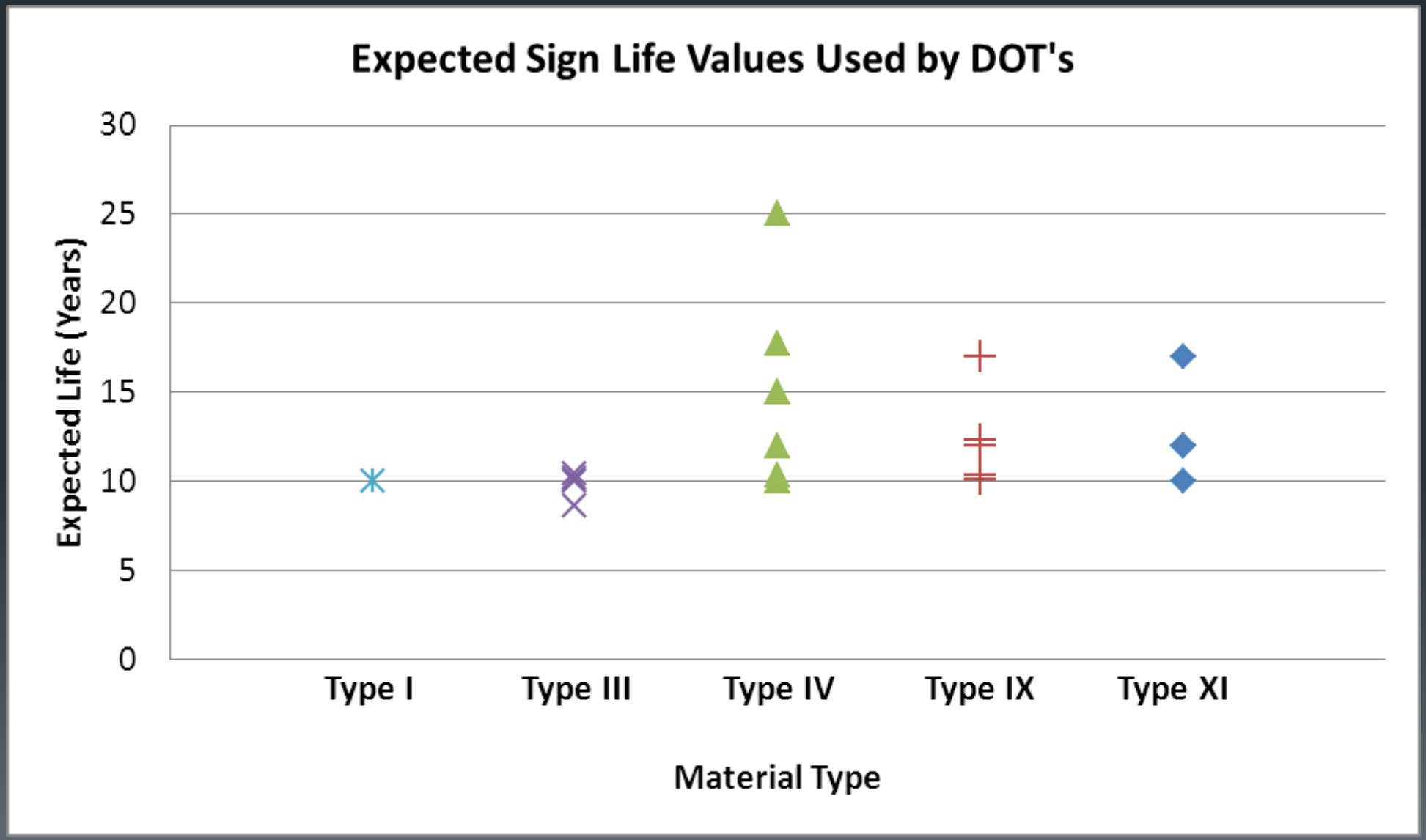
Survey of Minnesota Agencies

- Agencies willing to collect retroreflectivity data and/or sharing data.
- Agencies with asterisks may be willing to measure control signs for the project.
  - Becker County
  - Clearwater County
  - City of Eagan*
  - City of Brooklyn Park*
  - City of Golden Valley*
  - Dakota County*
  - Olmsted County
  - Itasca County
  - St Louis County
  - Watonwan County
  - MnDOT (*test deck control signs and other data collection)

Communication is ongoing to develop the schedule of retroreflectivity data collection

Survey of Other State Agencies

State DOT's Expected Life Values (14 states)



Other State Agency Data

Wisconsin Test Deck Data

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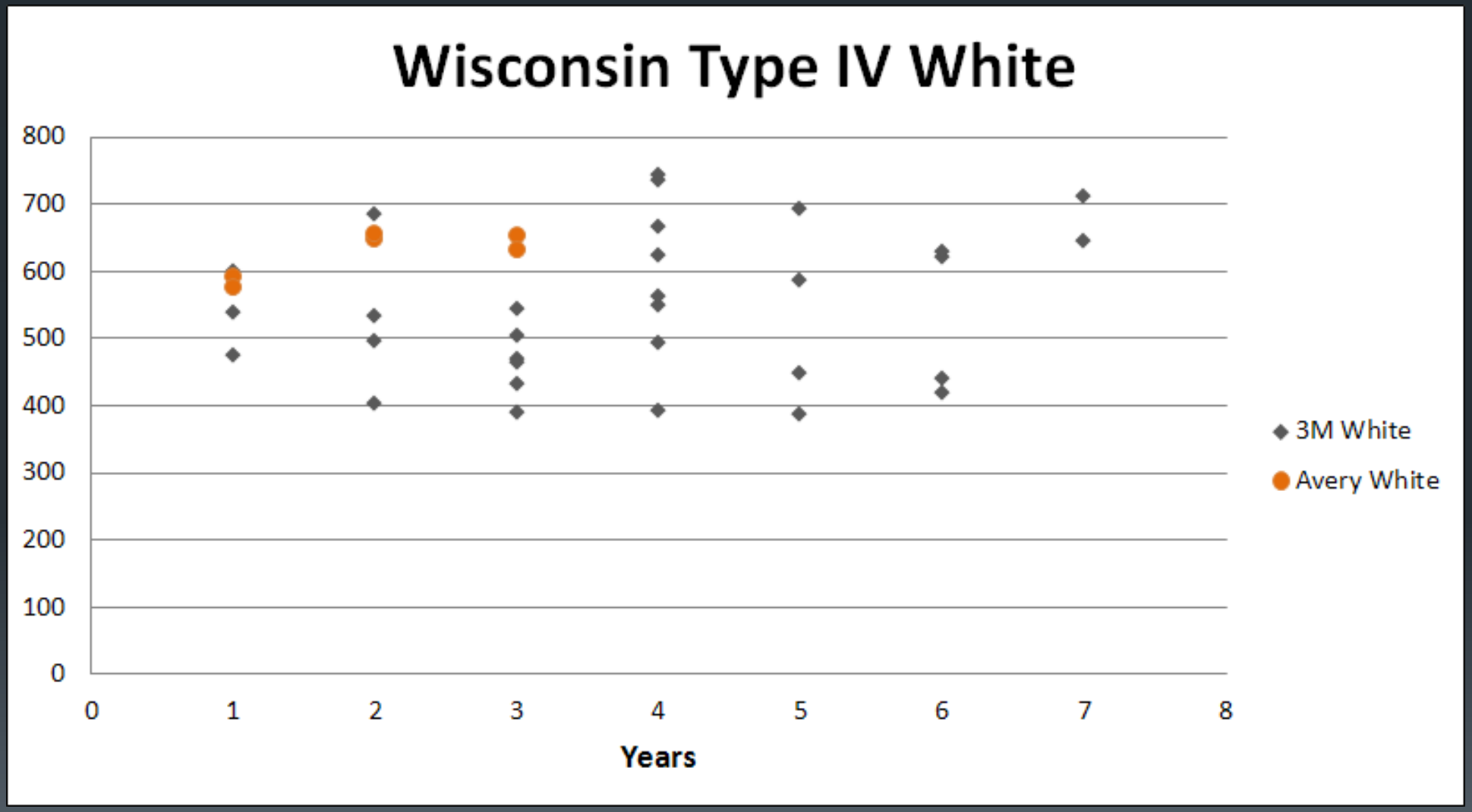

Other State Agency Data

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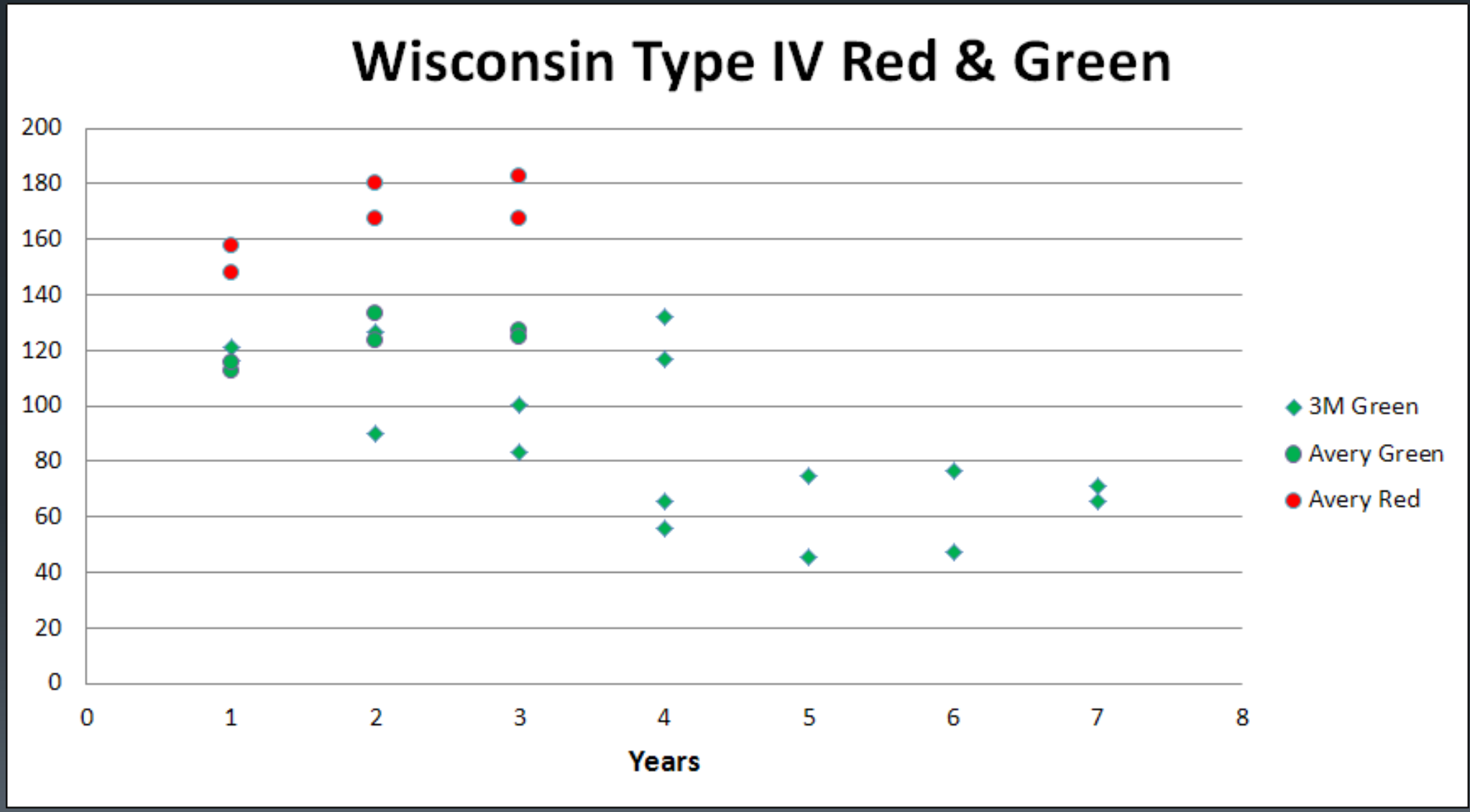
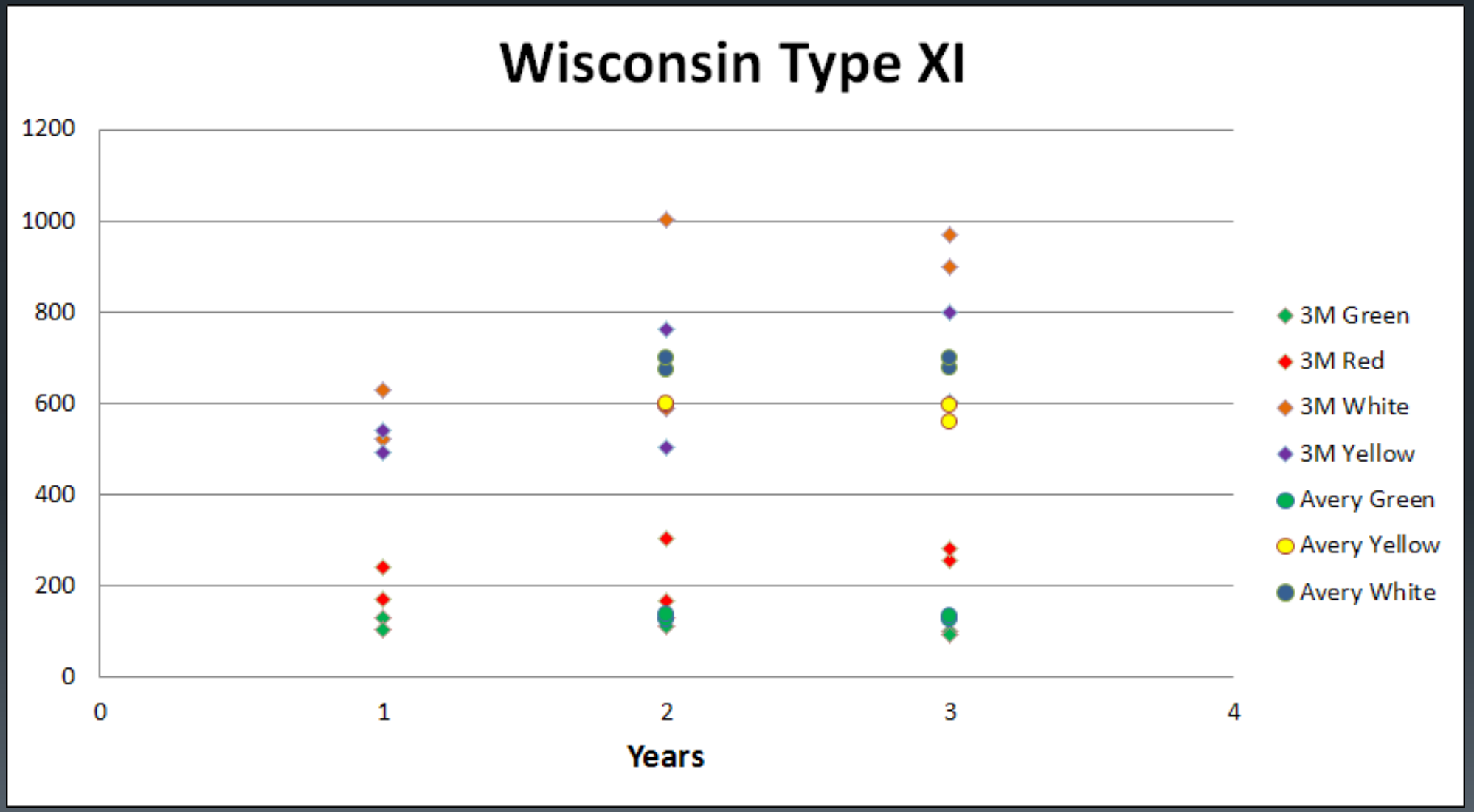


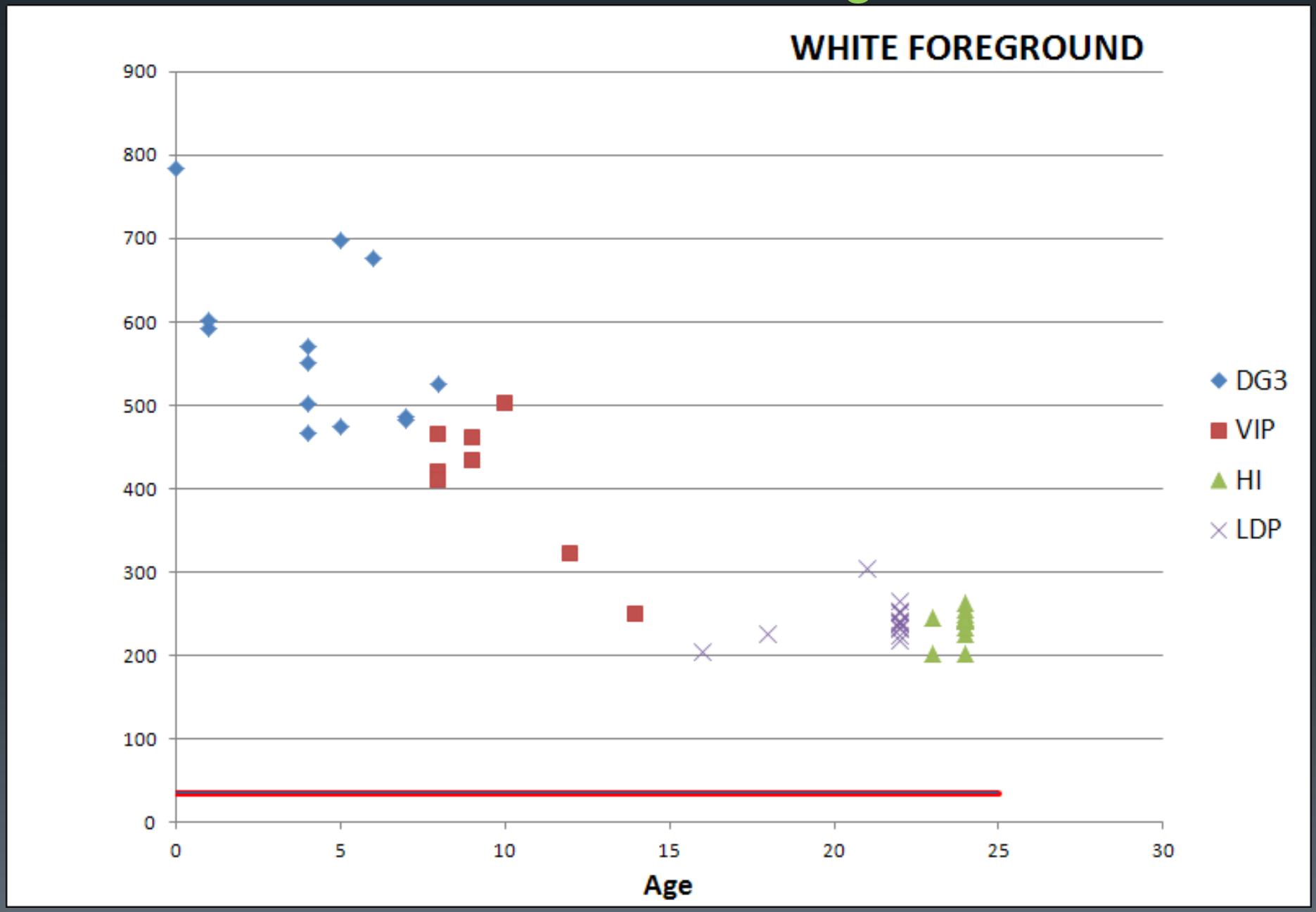
Other State Agency Data

Wisconsin Test Deck Data



Other State Agency Data

MnDOT D3 STOP Sign Data



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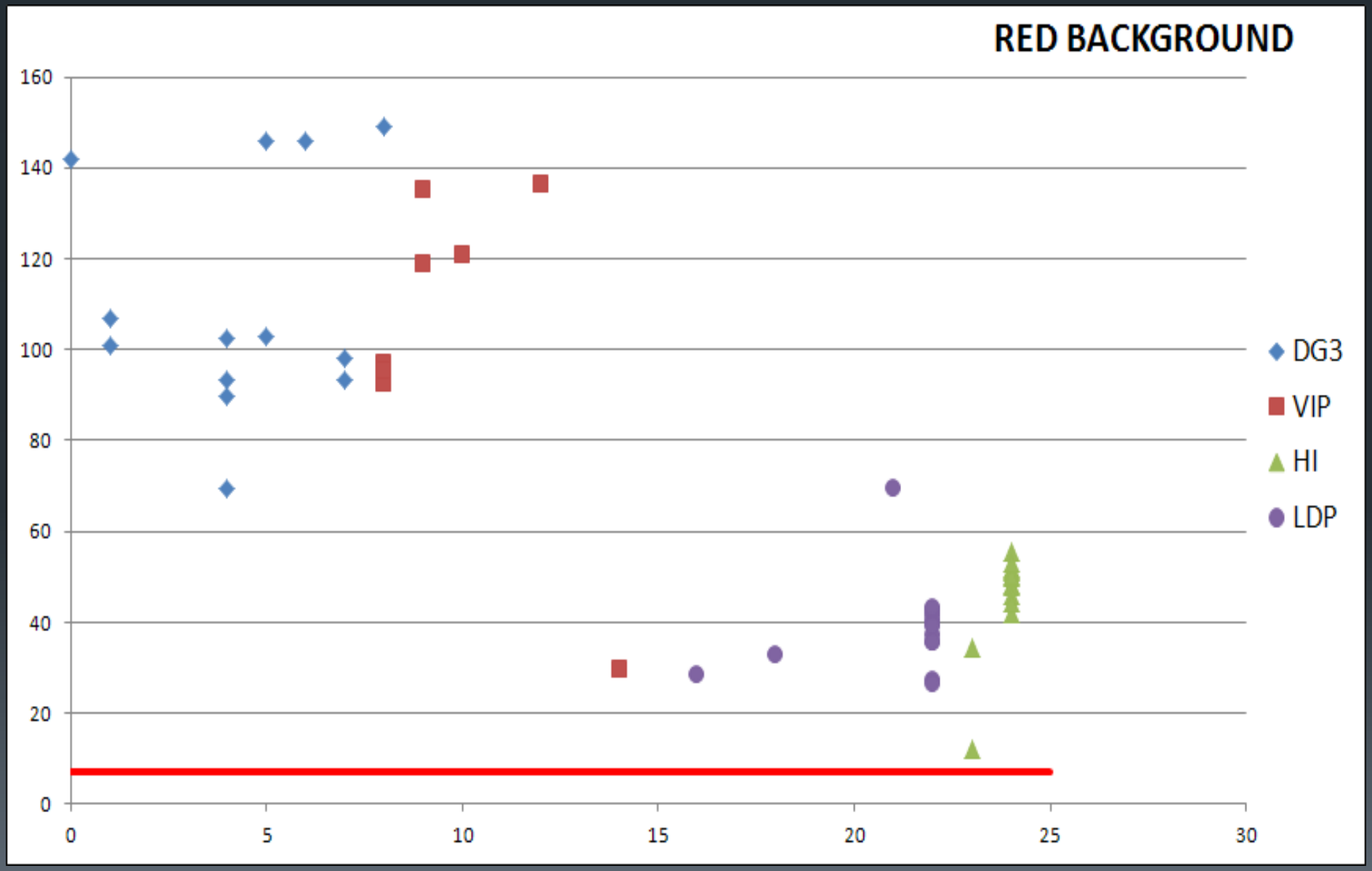


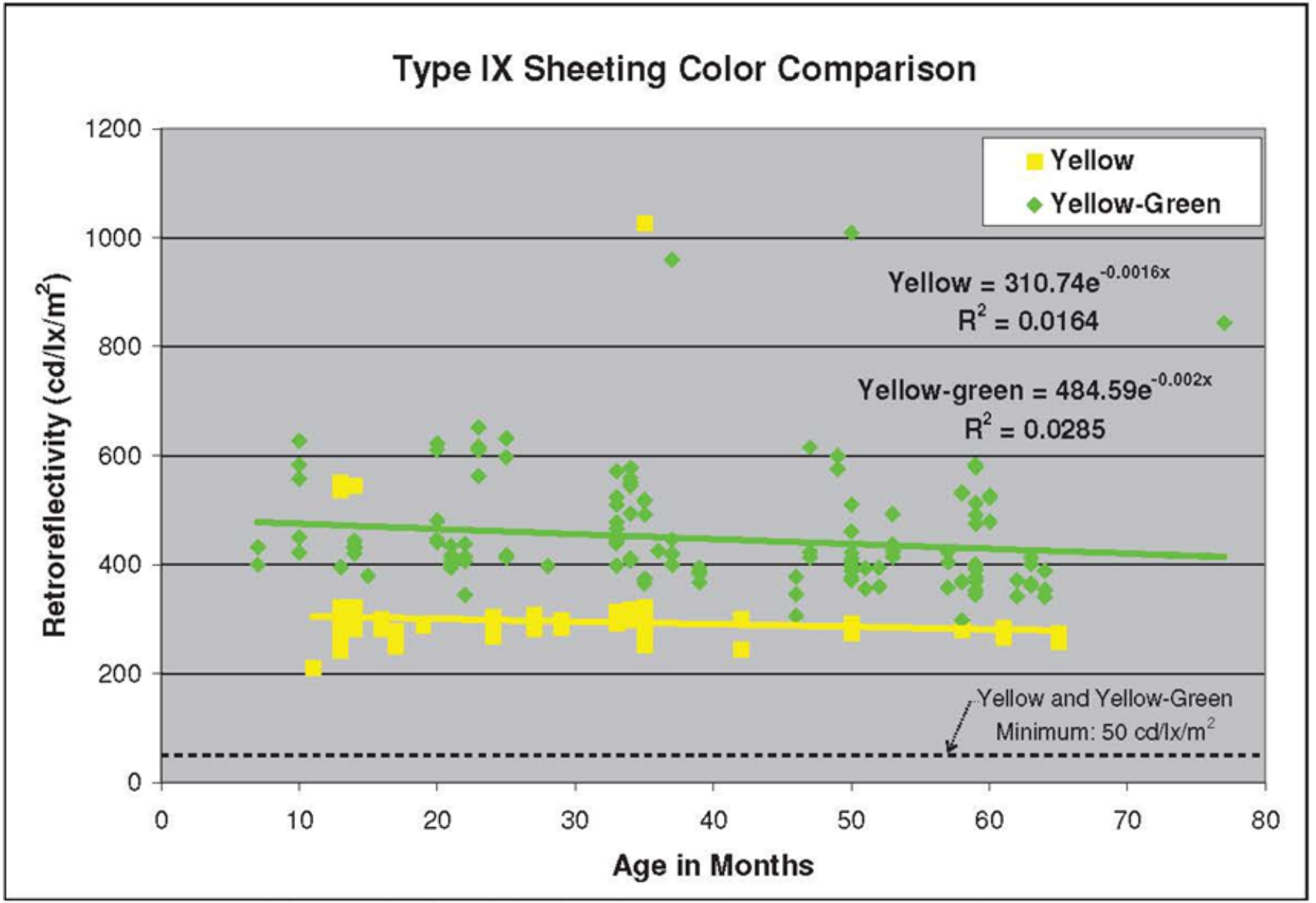
Other Agency Studies

Years to Failure Based on Models (NCHRP)

Color (Min. RA)	Study	Publication Year	Sample Size	Years to Failure
White RA=50)	FHWA	1991	909	56.6
	Australia	1990	N/A	60.2
	Purdue	2002	683	236.0
	NCSU	2006	56	298.0
	Vermont	2009	108	740.4
	TTI	2012	511	34.7
Red (RA=7)	FHWA	1991	662	Never
	Australia	1990	N/A	Never
	Purdue	2002	415	22.1
	NCSU	2006	84	19.8
	Vermont	2009	94	15.1
	TTI	2012	196	45.0
Green (RA=25)	FHWA	1991	326	16.6
	NCSU	2006	46	8.9
	Vermont	2009	105	740.4

Other State Agency Data

Vermont Type IX



Task 2: Test Deck & Data Collection Plan

In-Progress

- Identify in-service signs that will be measured
- Select or Develop Spreadsheet Database
  - Useable sign inventory database identified
- Develop how-to video??
  - Gamma922 Retroreflectometer manufacturer training videos reviewed: http://www.pppcatalog.com/922-training/
  - Project-specific video (or cheat-sheet instead?)
- Determine need for additional equipment
  - New retroreflectometer ordered, expect by mid-May
- Develop test deck plan for MnROAD
  - Types, colors, number of samples
  - Sign specimen layouts and plan prepared

Task Schedule May 1, 2013 – June 30, 2013

Task 3: MnROAD Data Collection In-Progress

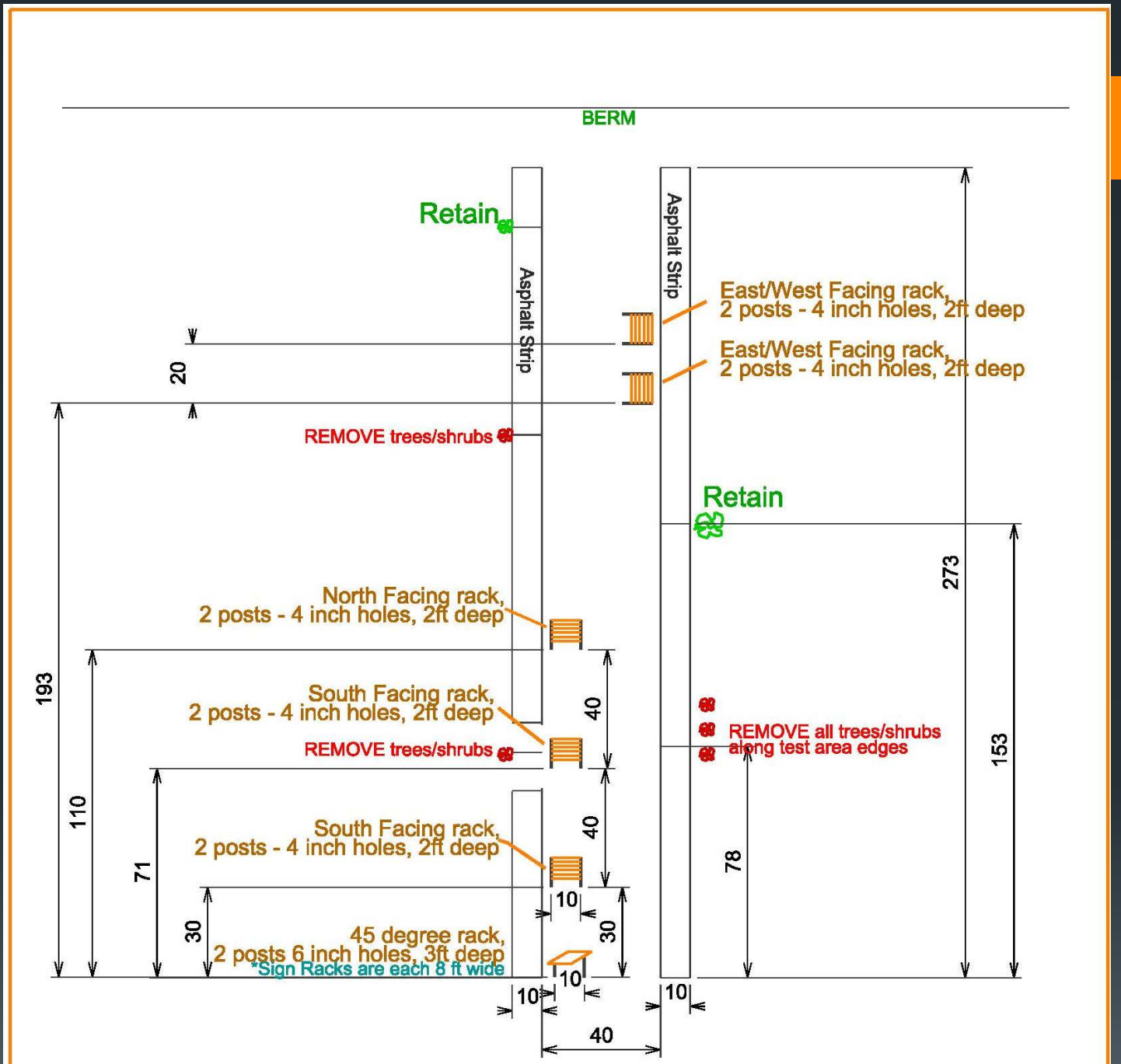
- Construct vertical and 45^0 accelerated decks
  - 45^0 deck is fabricated, vertical deck materials & plans done
  - Expect installation of all MnROAD decks before May 30th
- Populate with sign materials
  - Spreadsheet for remaining needed salvage panels
- Collect retroreflectivity and color annually
- Share Data on Website
  - http://www.dot.state.mn.us/materials/signretroreflectivity.html

Task Schedule July 1, 2013 – Nov, 2016

Sign Test Deck Proposed > Location at MnROAD

Proposed Sign Structure Locations

- 6 Structures
- One 45º rack,
- Two south facing
- One north facing
- Two east/west



MNROAD SIGN TEST DECK LAYOUT (DRAFT)

Task 4: System Data Collection In-Progress

- Provide Training at MnDOT Lab
- Coordinate shared retroreflectometers
  - Retro meter to be shared out has been cross-checked to Maplewood lab's meter and verified to be good
  - Draft loan-out agreement for retroreflectometer
- Provide stickers for field control signs
- Annually calibrate purchased equipment
- Review data, collate into database, prepare results, summarize on webpage

Task Schedule May 1, 2013 – Dec 30, 2013

Next Steps

- Retro measurement ‘how-to’ video / sheet
- Retro Meter loan-out schedule (Discussion)
- Installation of MnROAD test decks
- Begin data collection on in-service signs
- Begin salvaging of sign panels
- TAP meeting in Mid-June to cover Task 2 & Progress Report for Task 3

Questions?

Thank You