Stabilized Full Depth Reclamation Update

Materials Engineers Organization (MEO)
April 19, 2012, St. Cloud

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Pavement Engineering / Grading & Base Unit

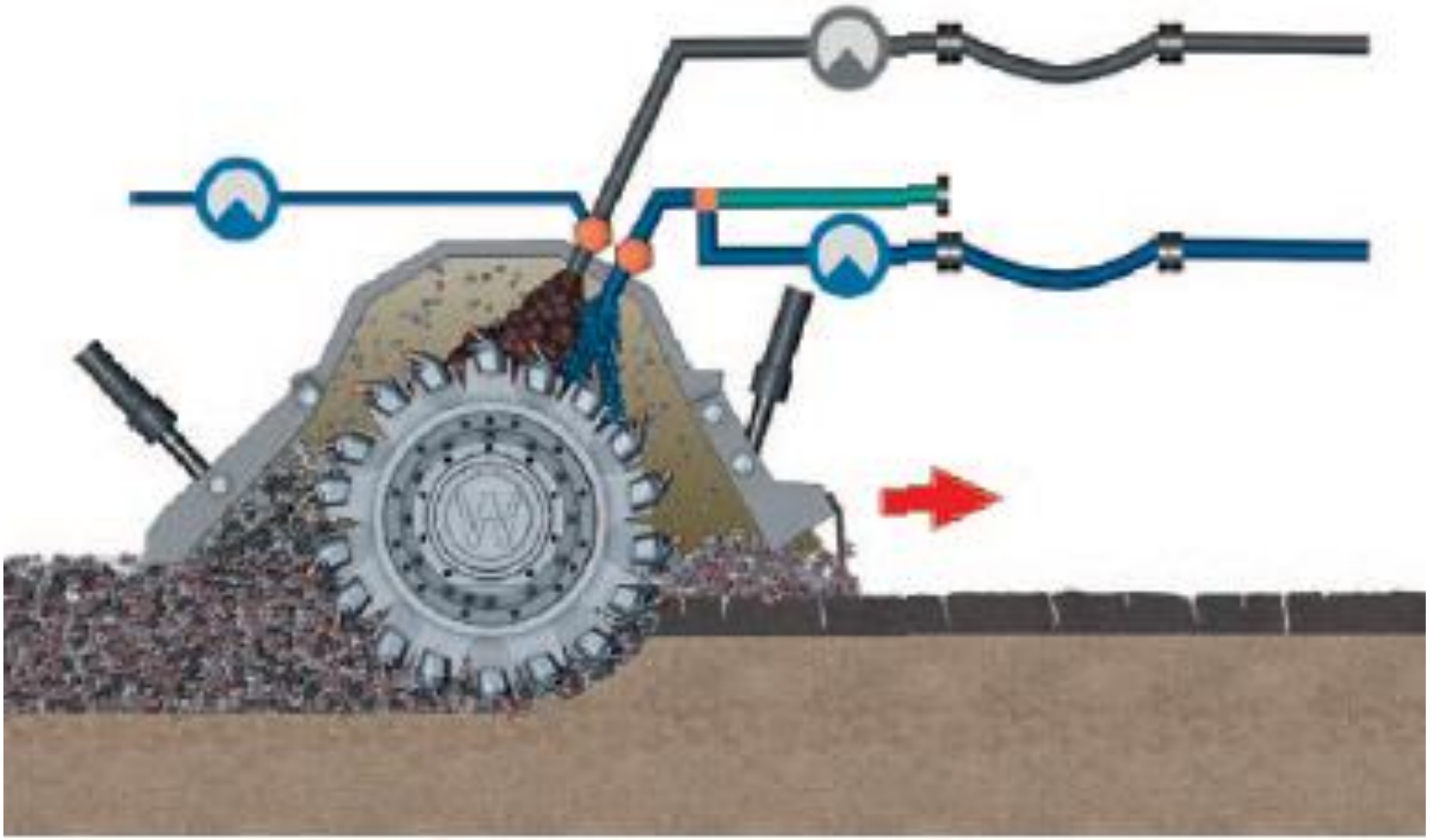
Outline

- Upcoming Projects (2012 Construction)
- Testing & Evaluations Completed
  - FWD (Back-Calculated Modulus) for 2010 built projects
- Update on:
  - Special Provisions
  - SFDR "Guide Book"
- Summary

FDR / SFDR

- Pulverizes HMA pavement with underlying base, mixing, initial shaping, compacting, and final shaping
- Stabilized FDR (SFDR) adds a bituminous stabilizing additive to above (then re-compacted)
- All now under Pavement Section / Grading & Base Unit (Maria / Terry)

FDR / SFDR

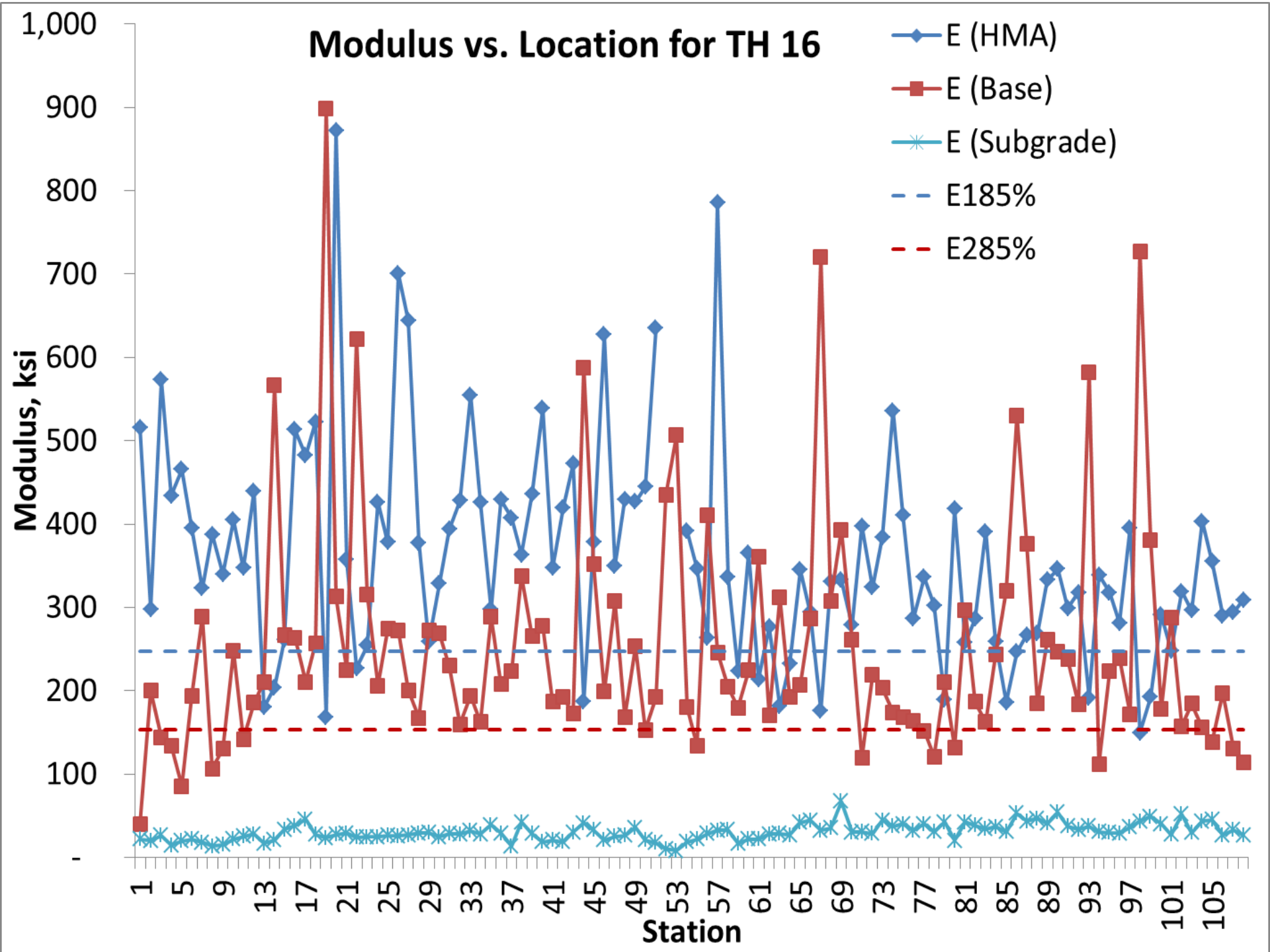


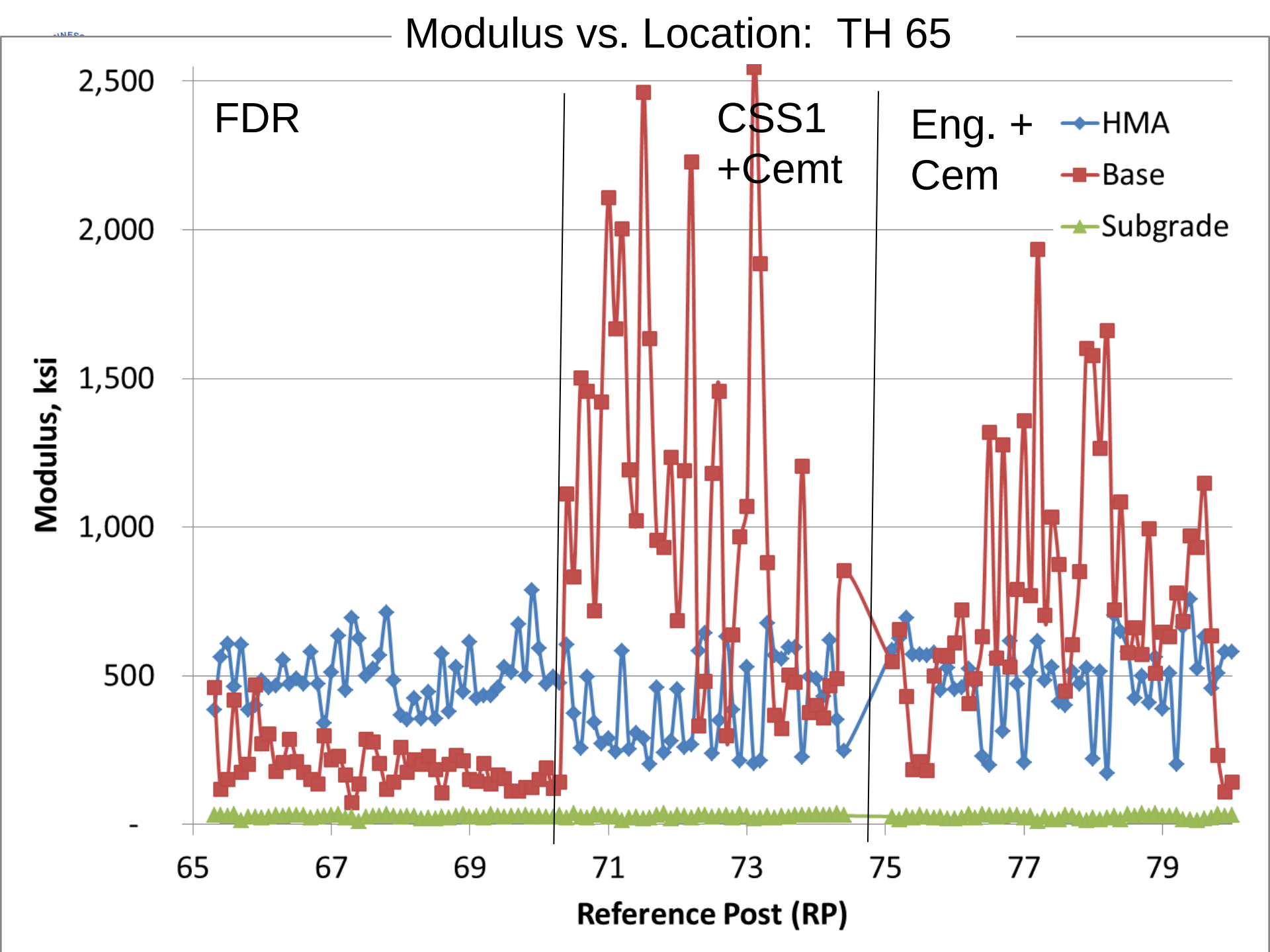
2012: SFDR / CIR Projects

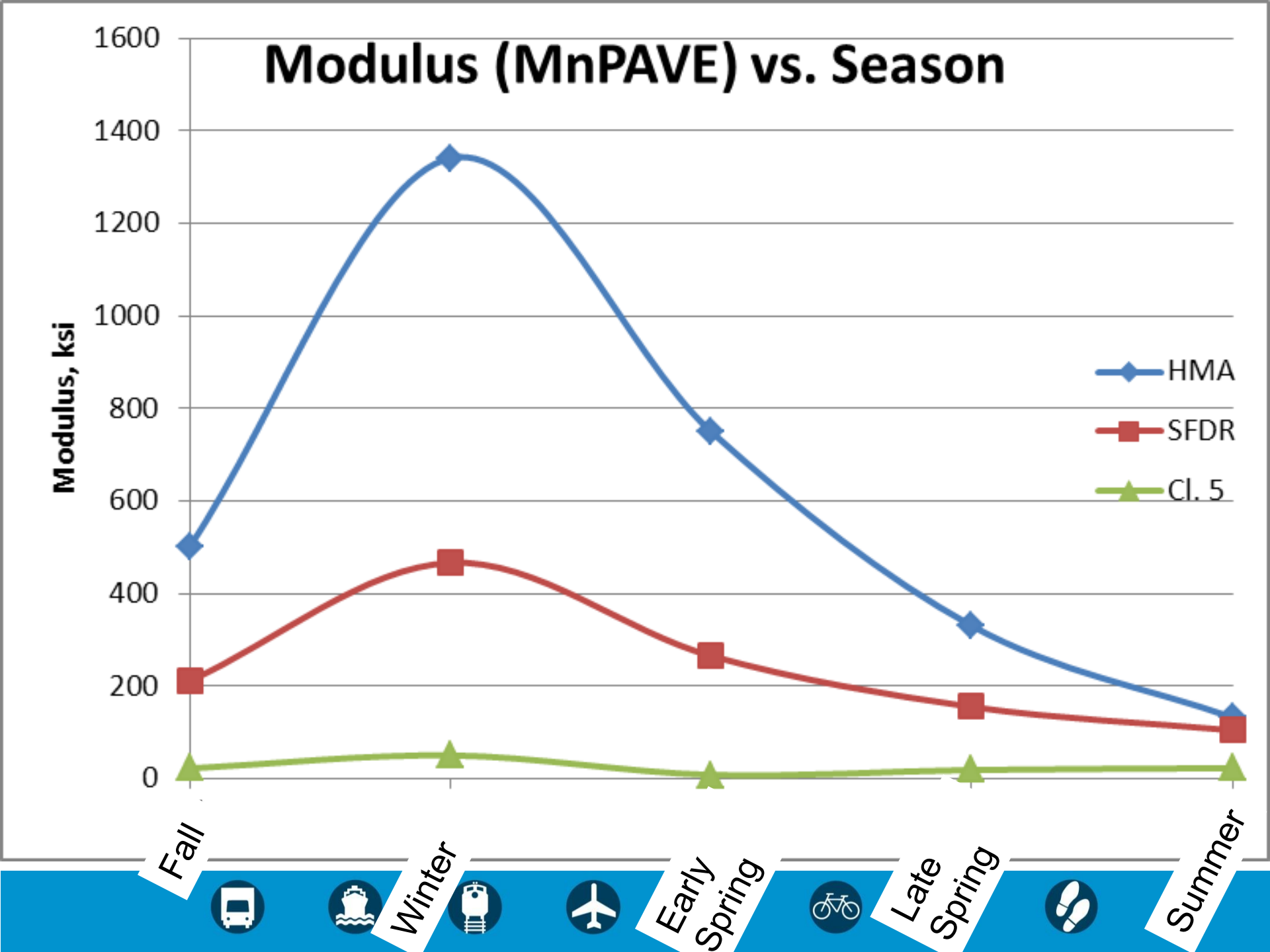
- TH 19 SFDR, 216,000+ SY (CSS-1 + Cement or Foamed AC?)
- TH 56 SFDR, 128,000+ SY (Engr'd. Emulsion)
- TH 109 FDR? (Alternate Bid)
- TH 59 CIR, 186,000 + SY (Foamed AC)
- TH 11 FDR, 288,500 SY

FWD Testing

- Tested after winter, then annually (MnROAD is tested more often)
- Ongoing Research Study to find GE of Stabilized Bases (Shongtao Dai)
  - Report due in late summer from U
  - Variable results project - project
- Modulus is one way to characterize SFDR behavior


Modulus vs. Location for TH 16
E (HMA)
E (Base)
E (Subgrade)
E185%
E285%
Modulus, ksi
1,000
900
800
700
600
500
400
300
200
100
-
1
5
9
13
17
21
25
29
33
37
41
45
49
53
57
61
65
69
73
77
81
85
89
93
97
101
105
Station


Modulus vs. Location: TH 65
FDR
CSS1
+Cemt
Eng. +
Cem
HMA
Base
Subgrade
2,500
2,000
1,500
1,000
500
-
Modulus, ksi
65
67
69
71
73
75
77
79
Reference Post (RP)


Modulus (MnPAVE) vs. Season
Modulus, ksi
1600
1400
1200
1000
800
600
400
200
0
HMA
SFDR
Cl. 5
Fall
Winter
Early Spring
Late Spring
Summer

So is SFDR Cost Effective?

- Depends …
  - How much credit is given to SFDR (MnPAVE ≠ FlexPave)
  - Thinning up pavements < 3.5"
  - Project Specific Variables (In-situ Material Properties, variability, risk)
  - Less Grade Raise with SFDR
  - Extended Life / longer lasting??
  - Cost of 4" CIR ~ 2" HMA

Current Initiatives

- Special Provisions
  - Agency-Industry Meetings produced 2 rounds of feedback
  - Final version to be uploaded onto website
- SFDR "Handbook"
  - Incorporate Guidance for Construction Design
  - In development

Current Initiatives

- MnDOT versions of:
  - Forms & Test procedures to be on G&B website
- Mix Designs
  - Agency completing (AET, Braun too)
  - Sem Materials method for Emulsion
  - Wirtgen /Sem Materials method for foamed

Thank You!

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