

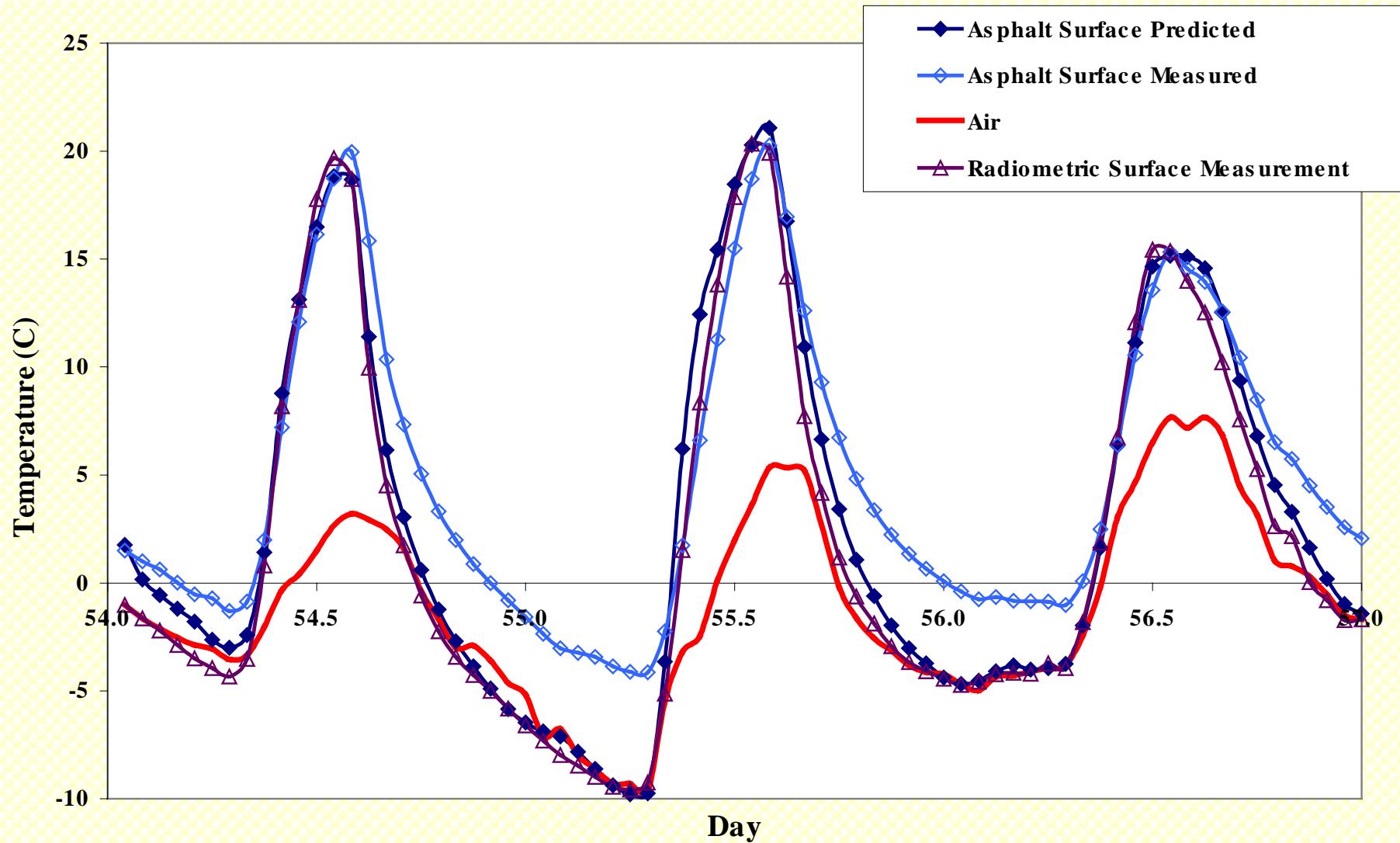
MDSS

Road Condition – Surface Temperature

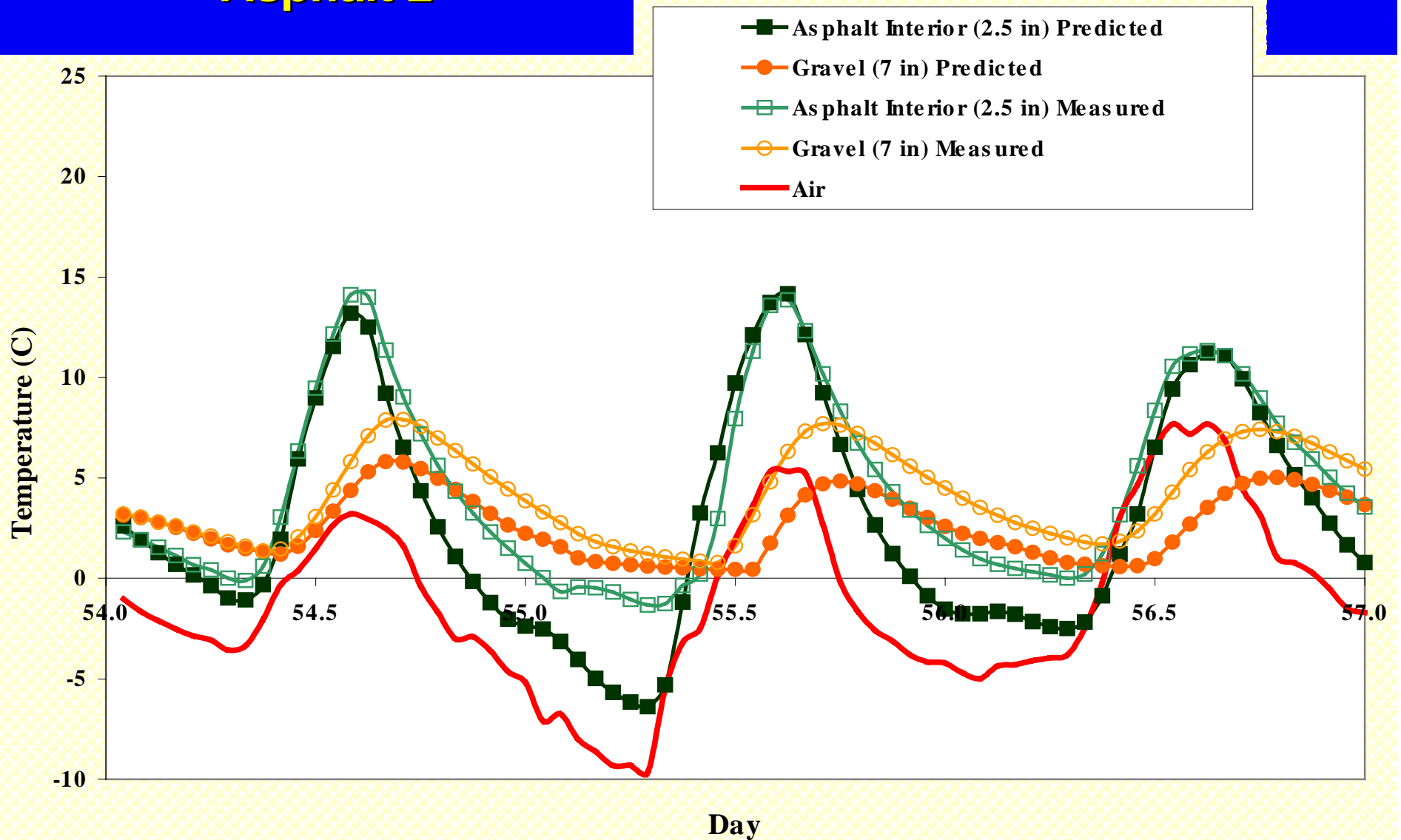
Approach

- **Adapt SNTHERM/RT code for Road surface Temperature calculations**
 - ✓ **Turned off latent heat calculations for road surface**
 - ✓ **New free convection curves for road surface**
- **Implement SNTHERM/RT algorithm within MDSS FP**
- **Establish validation/calibration research site**
 - ✓ **Continuous collection of environmental information since the first of the year including several winter weather events**
 - ✓ **Evaluate road temperature algorithm with and without presence of chemical application**

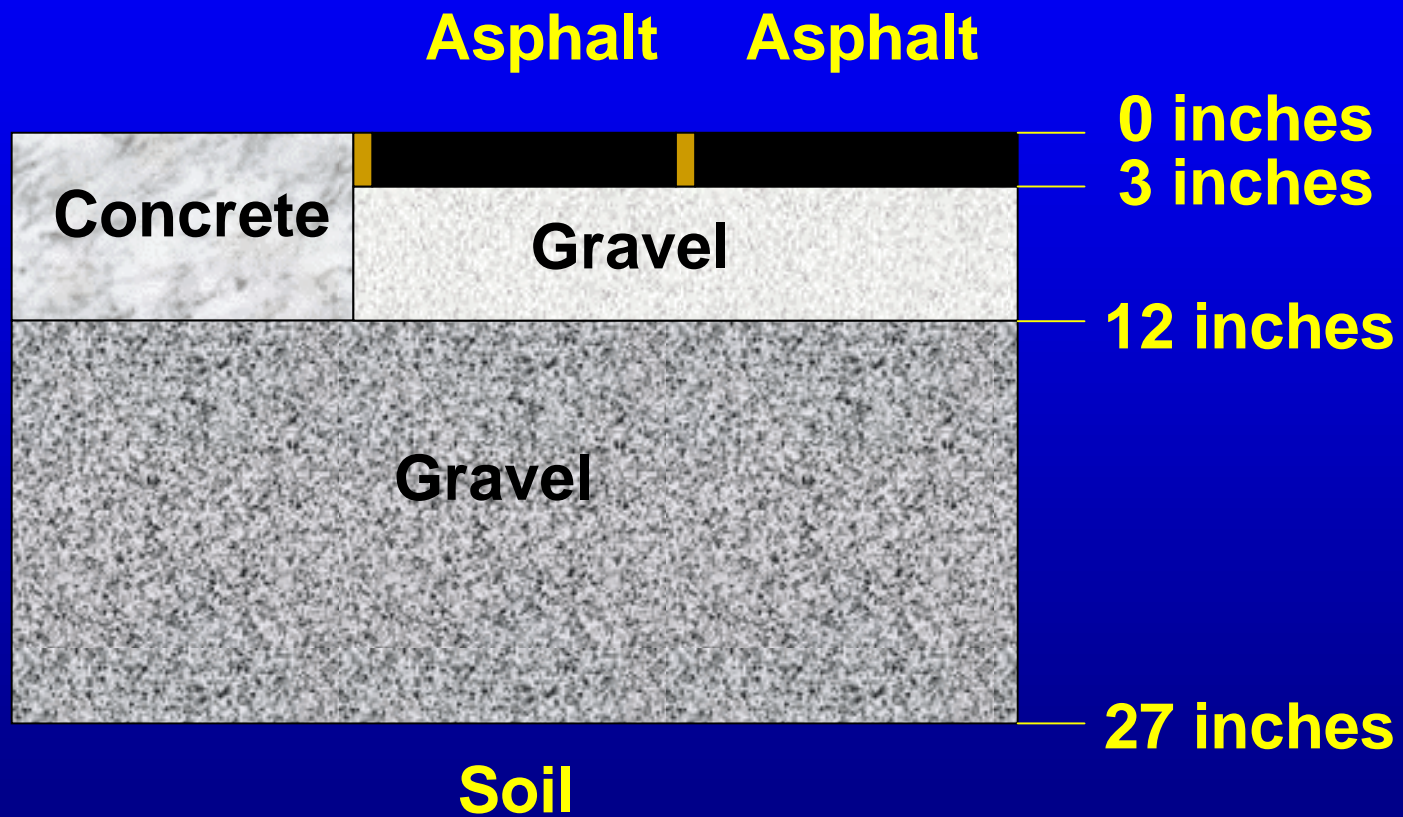
MDSS: SNTHERM/RT Tuned for road properties Asphalt 2



MDSS: SN THERM/RT Tuned for road properties Asphalt 2



MDSS Pavement Research Site Configuration



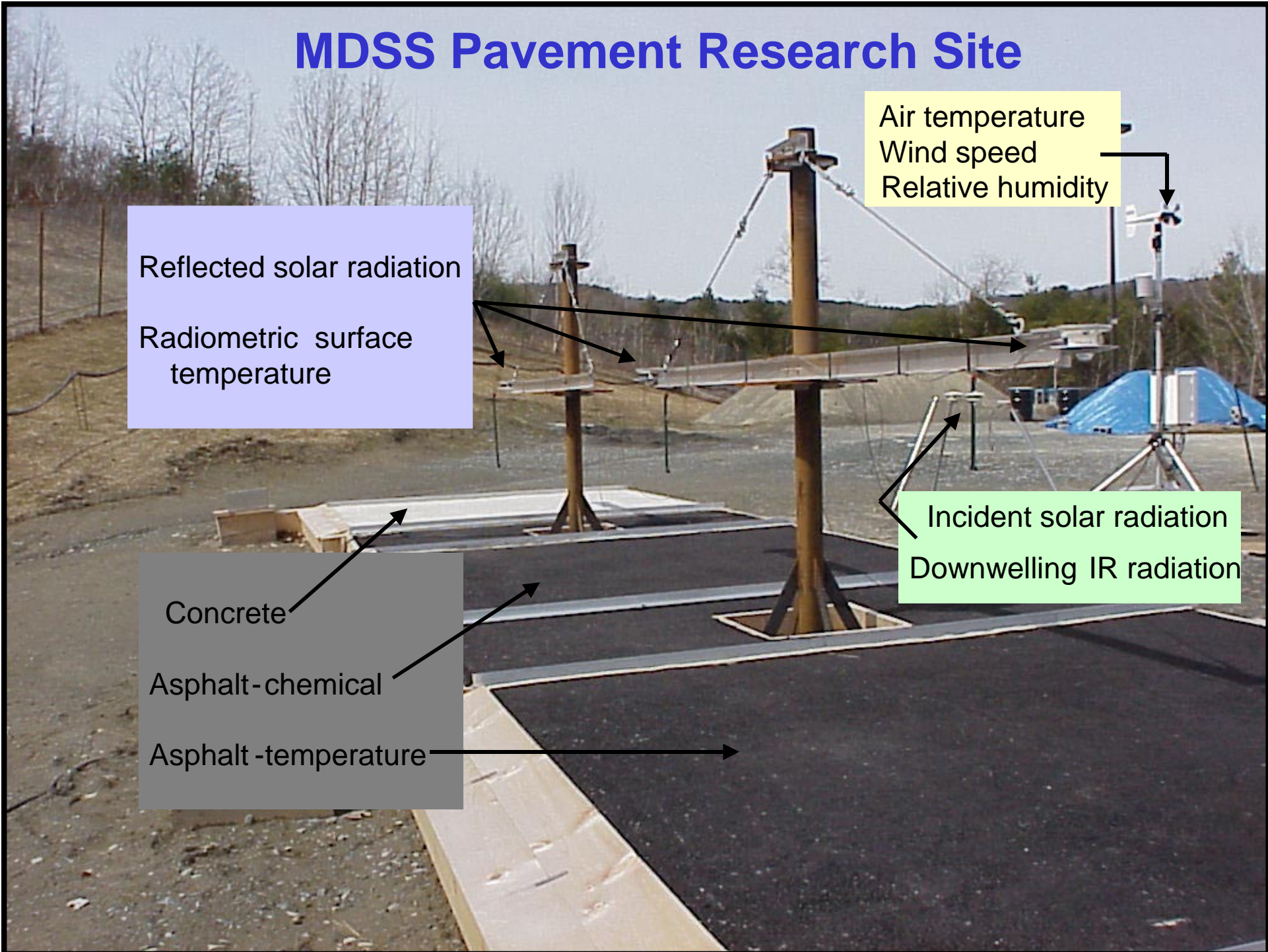
MDSS Pavement Research Site

Air temperature
Wind speed
Relative humidity

Reflected solar radiation
Radiometric surface temperature

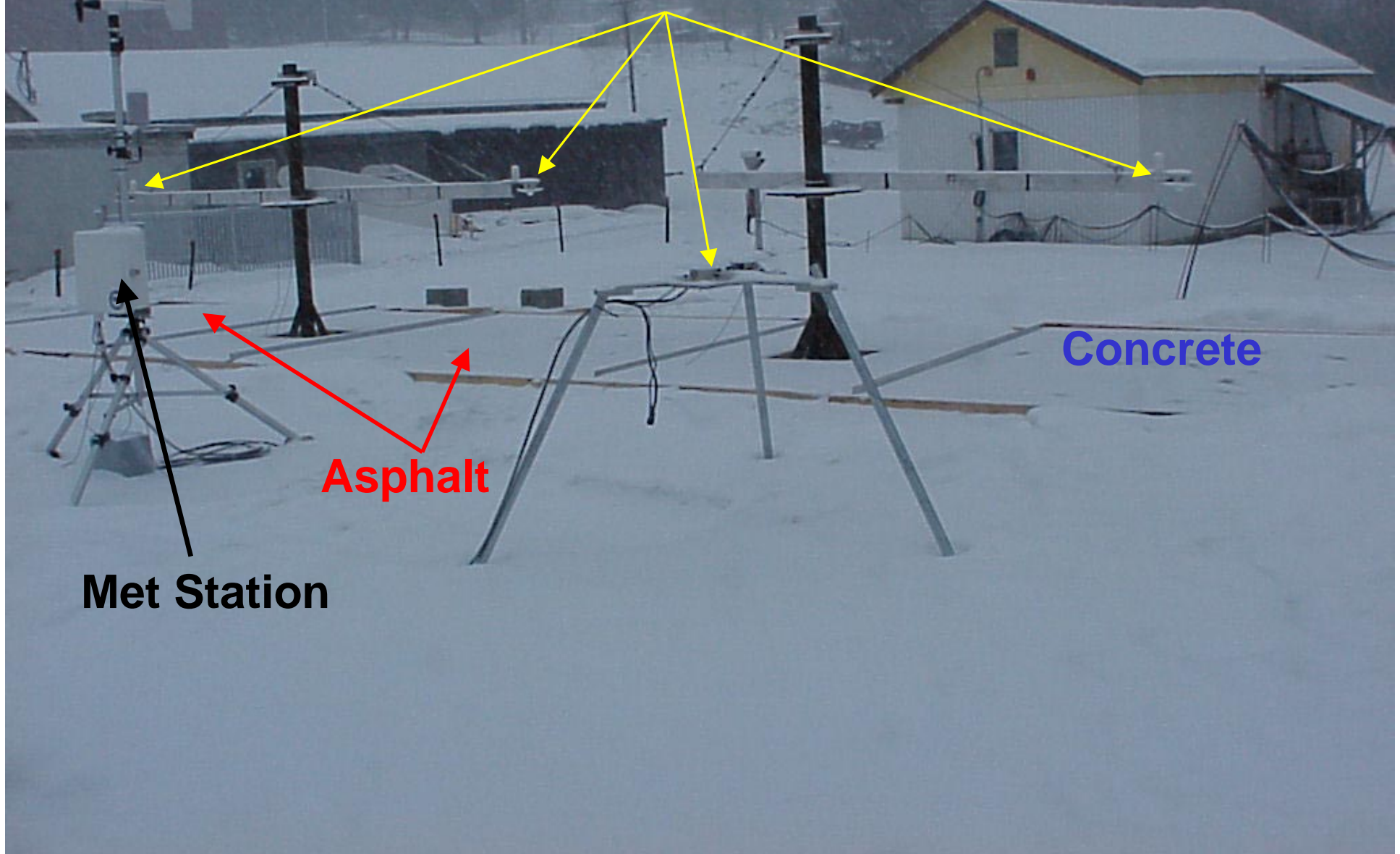
Incident solar radiation
Downwelling IR radiation

Concrete
Asphalt-chemical
Asphalt-temperature



MDSS Pavement Research Site

Flux Measurements



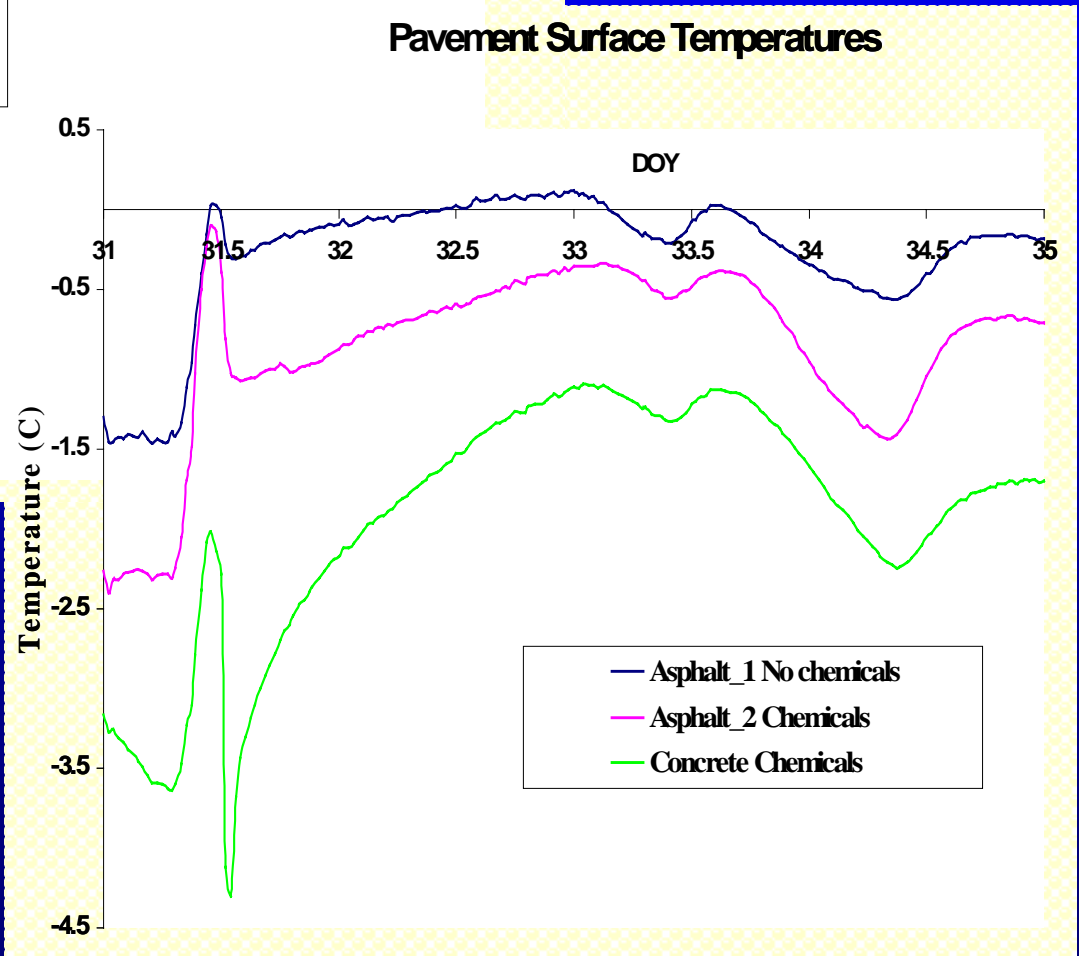
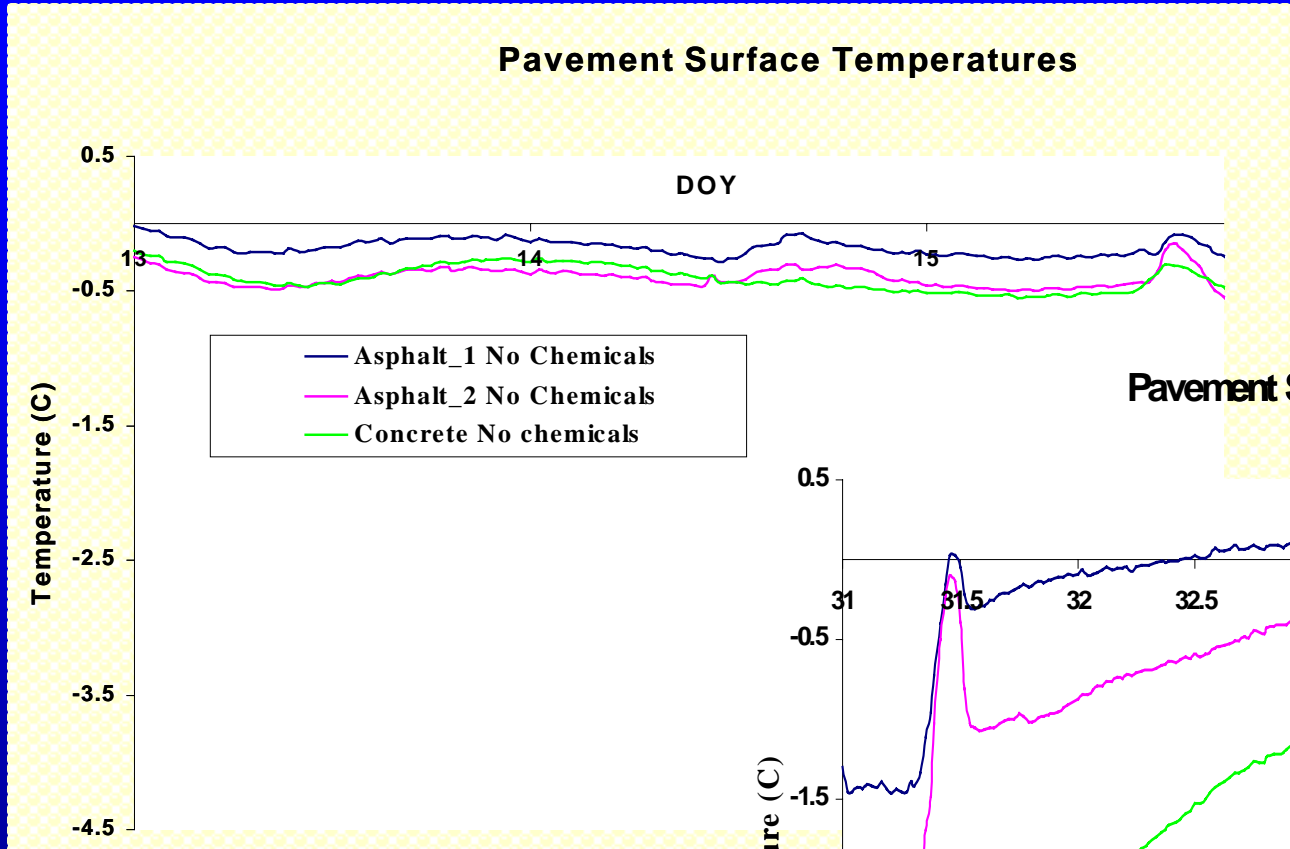
Concrete

Asphalt

Met Station

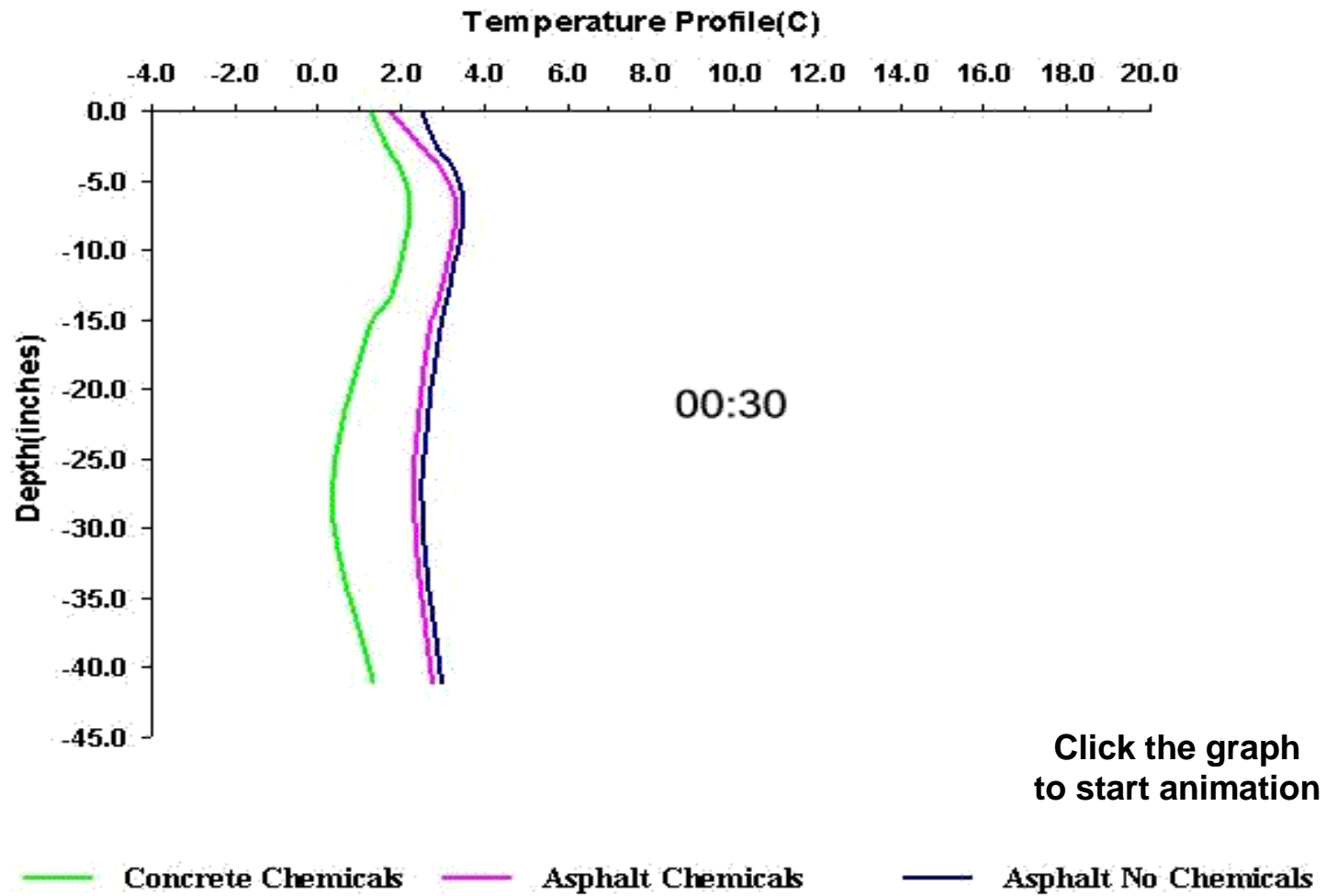
Undisturbed Snow Cover

Snow Cover with Treatment on Day 31



MDSS Pavement Test Site

Diurnal Variation in Surface Temperature



MDSS Road Temperature Algorithm

Future Efforts

- Support implementation/running of SNTHERM/RT within MDSS FP**
- Continue to operate research site to provide calibration and verification data for road temperature algorithm**
- Analyze research site measurements and evaluate/validate MDSS FP predictions/recommendations using site data**
- Demonstrate temperature prediction capabilities to state DOTs and attempt to validate ESS readings**
- Publish findings and present results at conferences**