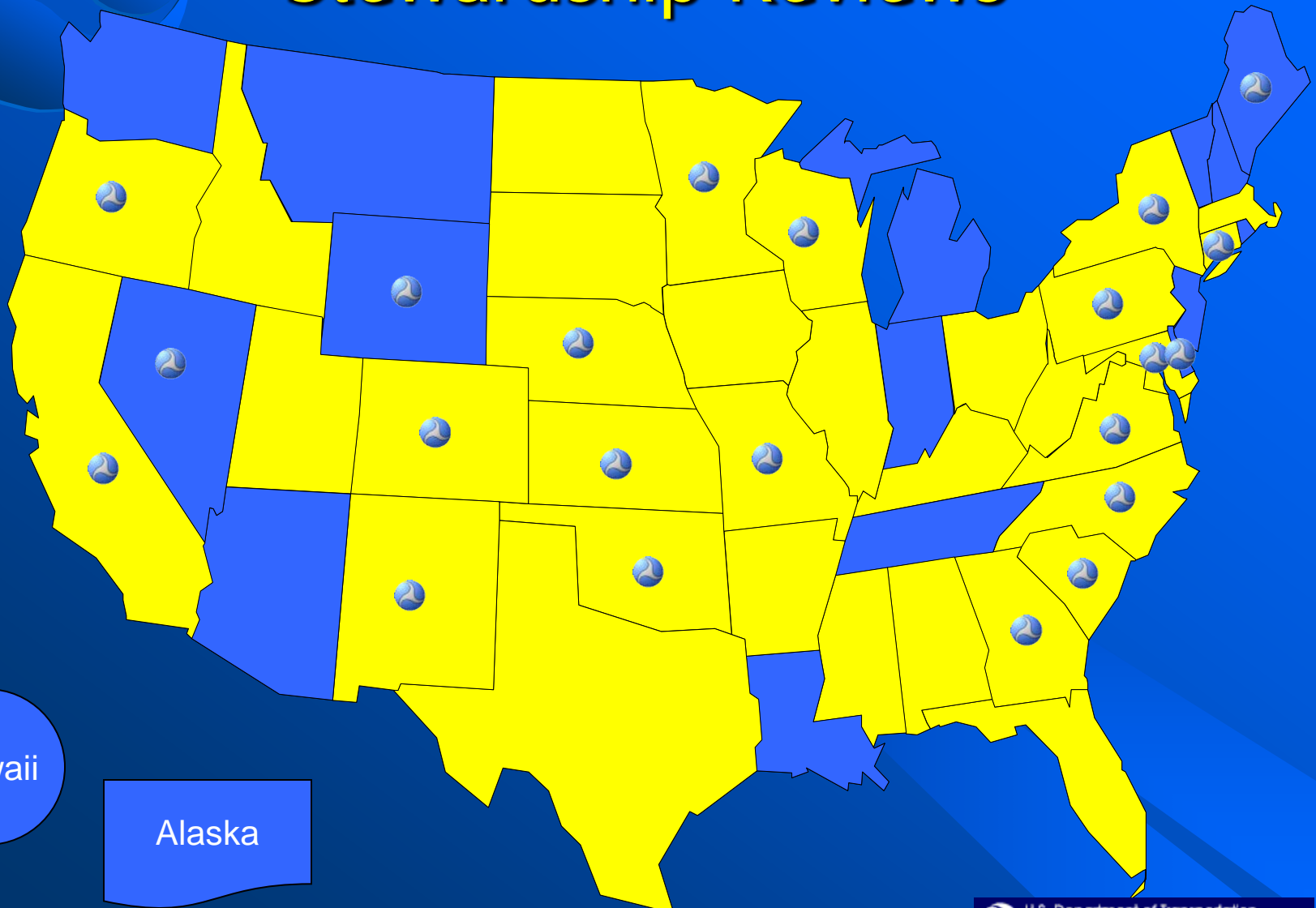




Assuring Performance and Limiting Risk

John D'Angelo
Office of Pavement Technology

22 States Reviewed as part of QA Stewardship Reviews



Hawaii

Alaska

Use of Contractor's Test Results ...

Needed Improvements

Sampling and testing provisions need to be stronger and require more emphasis.

**Largest Area of Concern
Identified during the
QA Stewardship Reviews**

Use of Contractor's Test Results ...

Needed Improvements

Need to strengthen the validation procedures of Contractor's results used for acceptance

- no independent samples

**Highest Frequency of
Regulatory Non-Compliance
Identified during the
QA Stewardship Reviews**



Quality Assurance Program FHWA Requirements

- Acceptance Program
 - State's Verification Testing
 - Inspection
 - May use Contractor test results
 - Dispute resolution
- Qualified Technicians
- Accredited / Qualified Labs
- Independent Assurance Program
- Materials Certification



Resources

- NHI Course 134042: Materials Control and Acceptance - Quality Assurance
- FHWA Basic PWL Workshop
- SPECRISK software (SPRING 2008)
- NHI Course 134059: Quality Assurance Specification Development and Validation Course (end 2008)
- 2003-2007 Summary Report
- www.fhwa.dot.gov/pavement/materials/stewardreview2006.cfm



Evolution...



QA Specs

Performance Specs

Design Build
Warrant Maintain



Intelligent Compaction

GPS antenna

GPS reference station

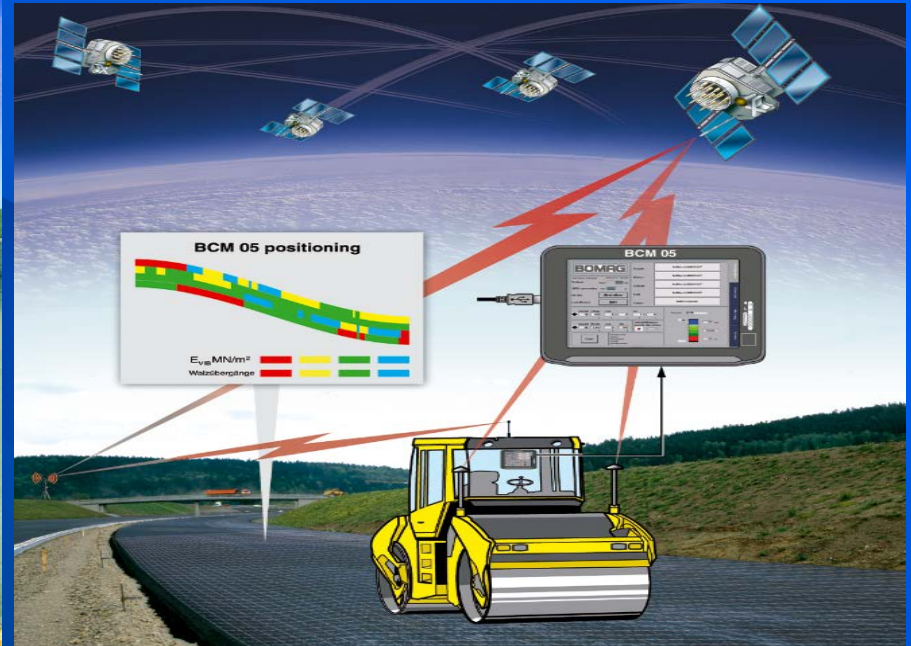
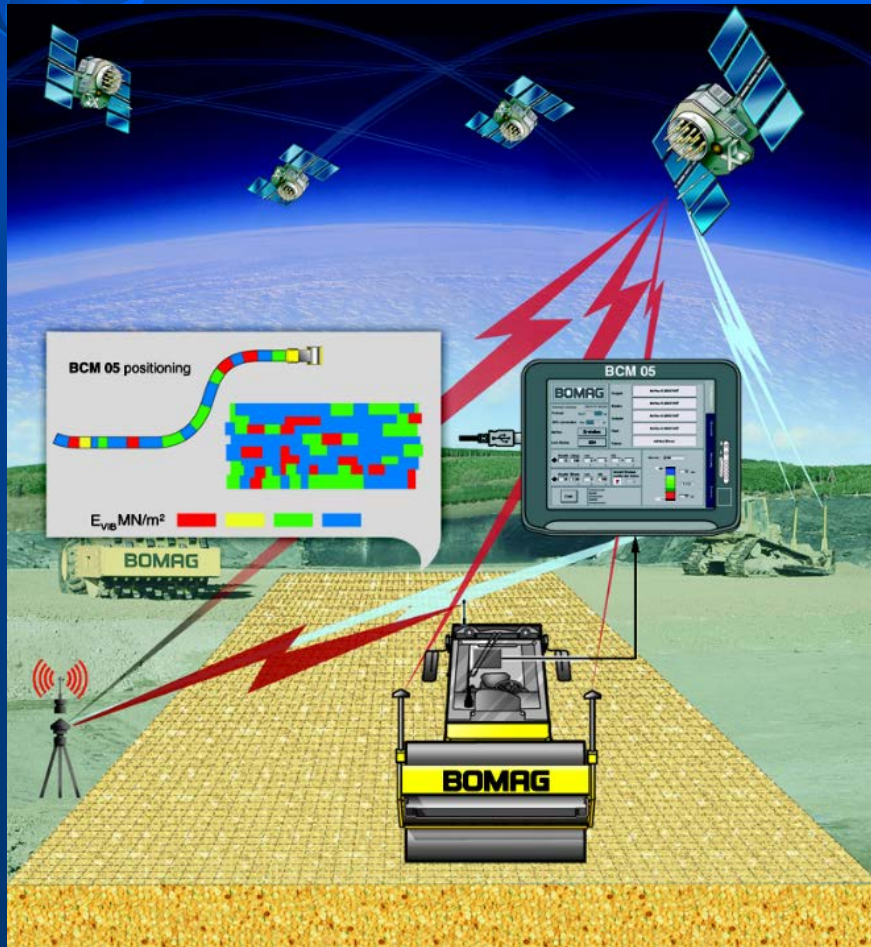




What is intelligent compaction?

- Automatic adjustable compaction equipment
- Selection of the most suitable equipment

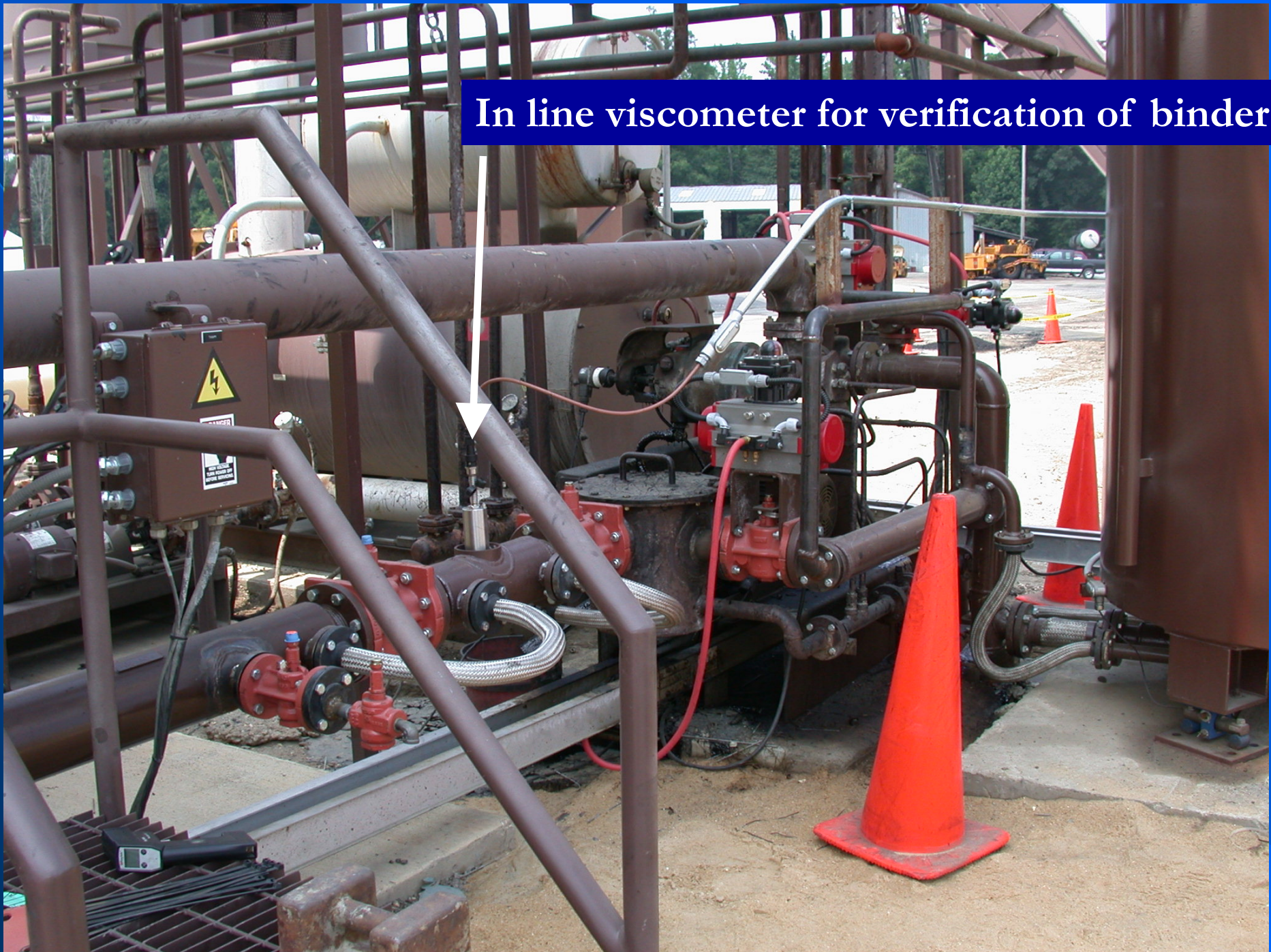
GPS / positioning with reference station



At the mix plant are there other process that can be part of a QA program?



In line viscometer for verification of binder



No more dials and knobs in the modern plant.



Computer recordation






QA of the Future

- The QA will all be tied to Internet.
 - Direct down load of info to the owner.
 - Posting of data immediately to all parties.
 - Faster review and resolution of discrepancies.



Where We Are Going ... Long Term

- Domestic Scan of other industries
- Move toward Quality Management Systems by all contractors and suppliers
 - Beyond ISO 9000 – sector specific requirement
 - Aerospace – AS9100
 - Automotive – ISO/TS16949
- Quality Based Selection and Procurement
- Design Build Warrant Maintain



Design Build Warrant Maintain - The Final QA?

- Long Term Warranty
 - Performance based contract
 - Guarantees product integrity
 - Contractor responsible for repair of defects or replacement
- Warranty Period
 - Pre specified for repair defects
- Present Warranty workshops to states.



... and beyond!

- Cannot continue on same path of regulate and enforce
- Cannot continue to police contractors trying to catch them in the act
 - System needed to match contractor's priorities in-line with agency's
 - Quality and long term performance

Change in Producer Prices for Construction Segments

AGC of America
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA
Quality People. Quality Projects.

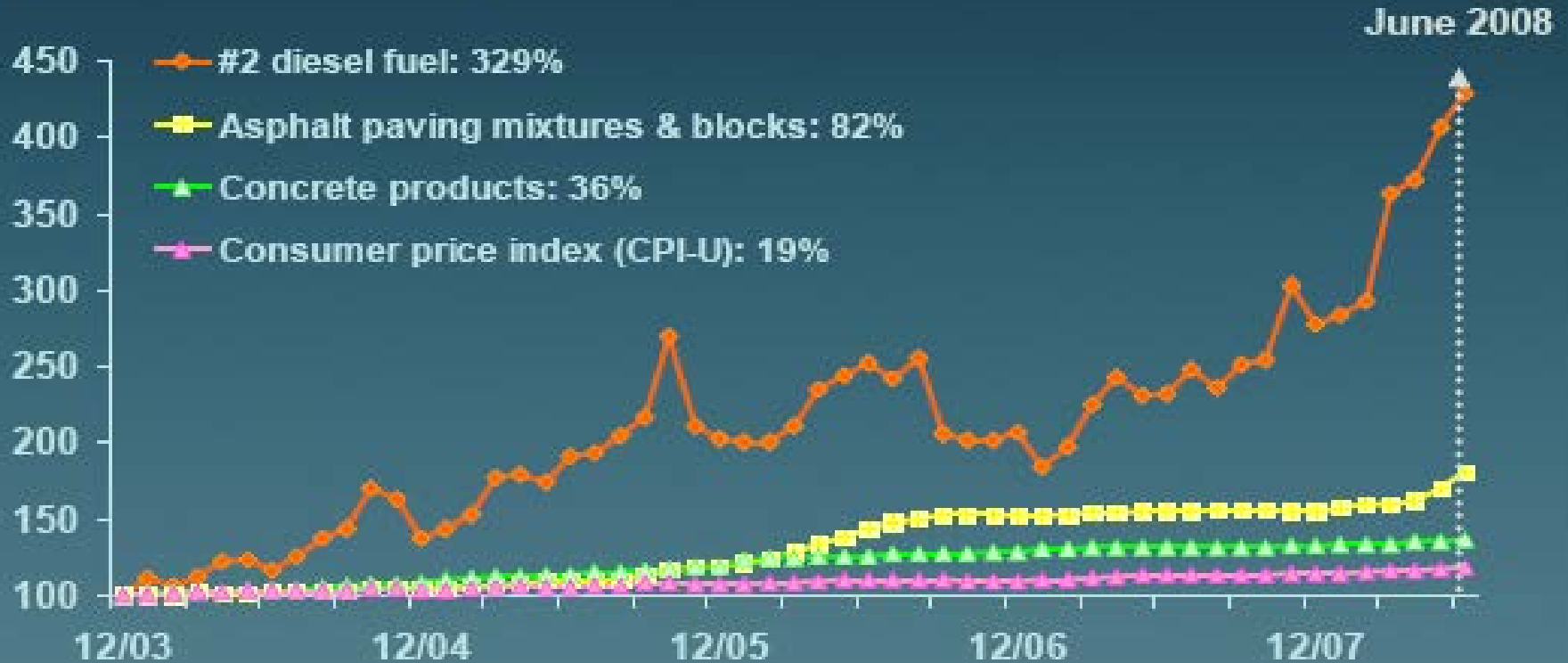


Change in Producer Prices for Construction Segments, 2003 - 2008
(December 2003 = 100)



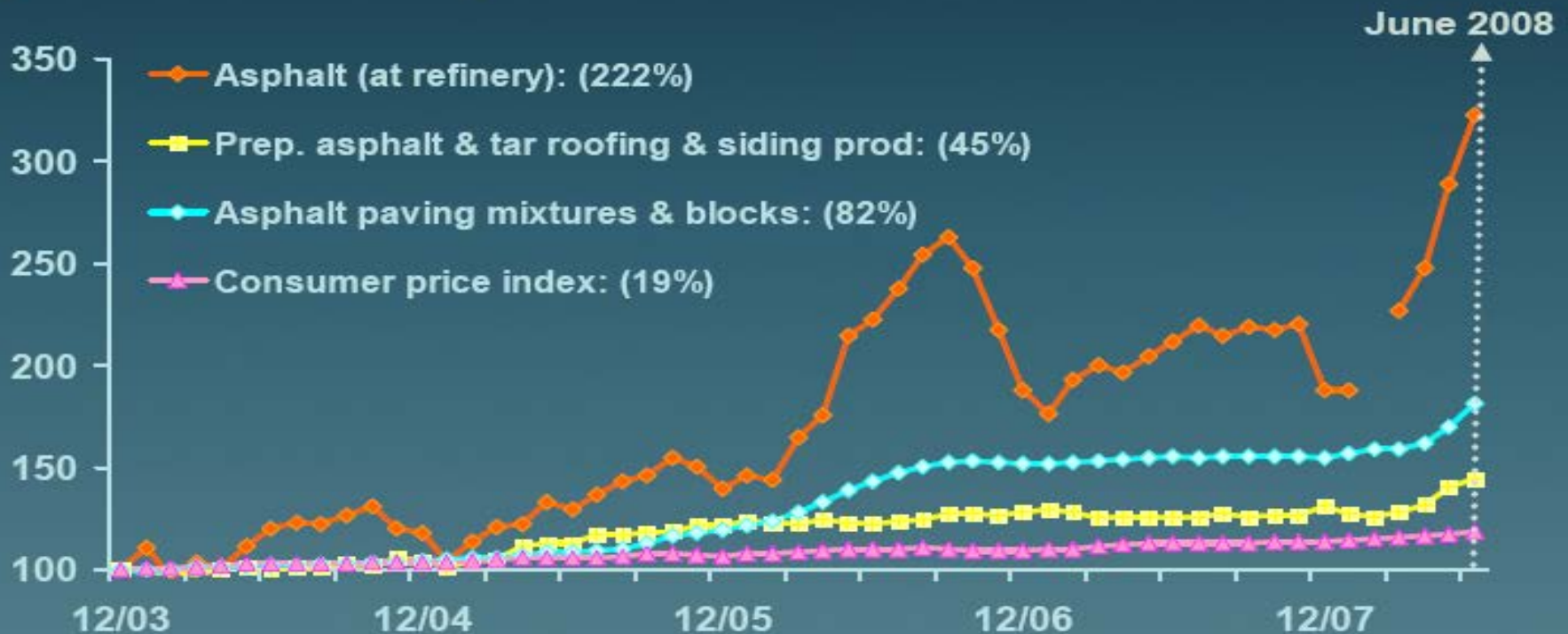
Change in Producer Price Indexes (PPI) for Highway Inputs

Change in PPIs for Selected Highway Inputs, 2003 - 2008
(December 2003 = 100)

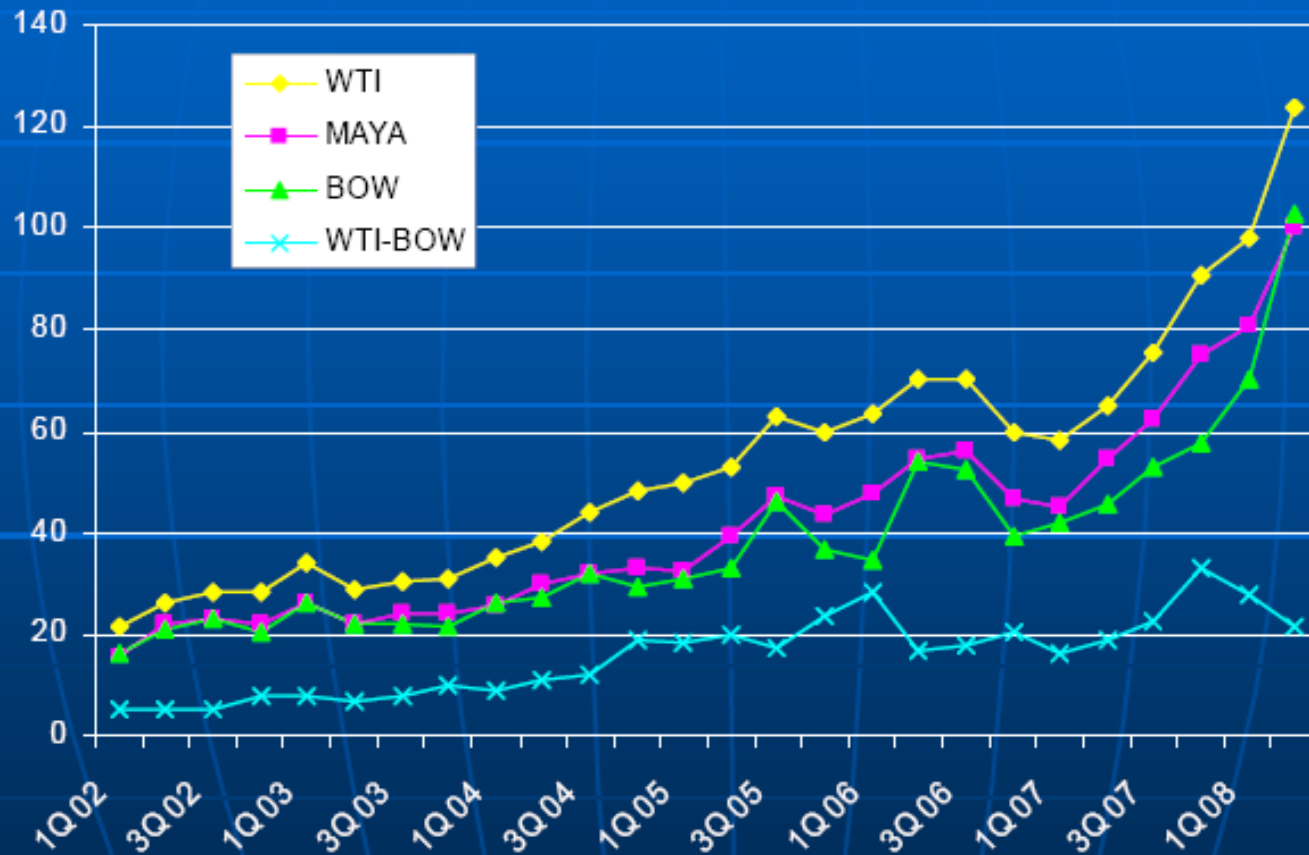


Change in Producer Price Indexes (PPI) for Asphalt

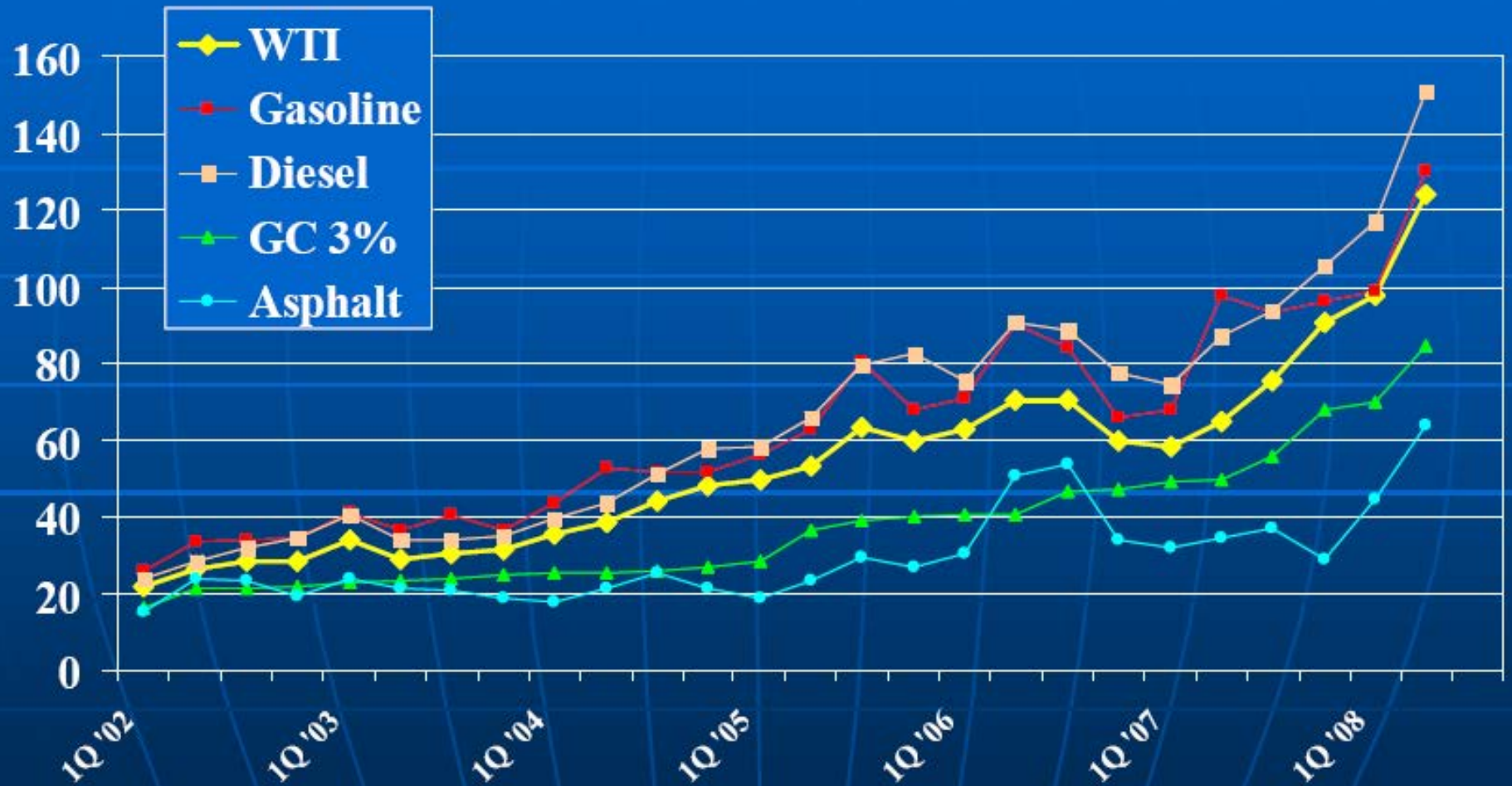
Change in Producer Price Index for Asphalt Products, 2003 - 2008
(December 2003 = 100)



Light-Heavy Crude Prices



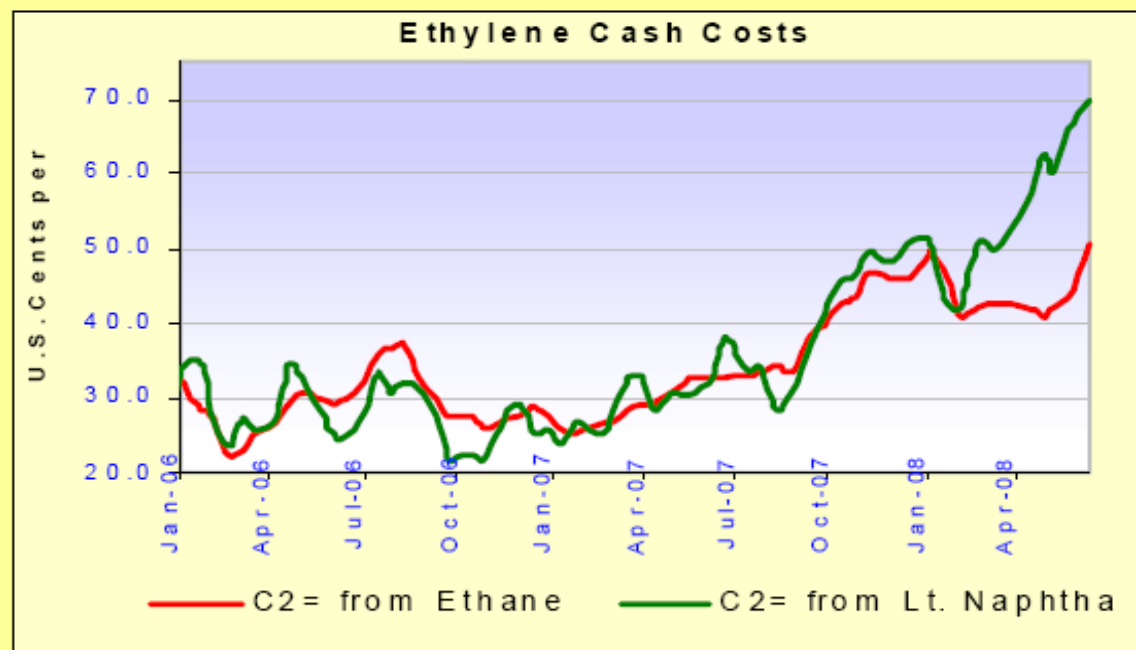
Crude/Product Prices



Production of Butadiene

- Butadiene is a by product of the production of Ethylene.
- Ethylene is used to produce plastic rap packaging.
- Ethylene is produced by cracking either naphtha or (propane, ethane, butane)
- Naphtha produces butadiene
- Propane, ethane, butane do not.

What's Changed



- Structural change - natural gas producers installed facilities to separate ethane
 - Ethane higher value than natural gas
- Ethane prices didn't increase with the crude oil run-up
- Economic incentive to run more ethane feed





Thank You

Questions