WAPA Conference

WisDOT Updates

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Wisconsin Department of Transportation
DTSD Deputy Administrator - Bureaus
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WAPA Conference

- Bureau of Technical Services & Materials Section
- WisDOT/WAPA Initiatives
- Japan Scan Tour

Materials Area

- Reorganization of the BTS Materials Section
  - Added 4 positions to the unit
  - Concrete and Asphalt Lab / Subsurface and Pavements
- Laboratory Equipment/Replacement Cycle (regions/bureau)
- Moving toward performance based testing
- Researching DOT Labs

WisDOT Materials Lab Staffing Updates

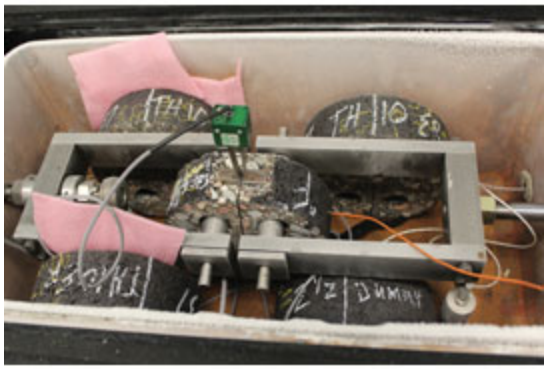
Steve Krebs – Director , Bureau of Technical Services
Barry Paye – Chief of Materials

Concrete Materials Laboratory		
10-15-07-11-00		
012131	SWB	100
Frank, Russell	CE Trans Sup	
338700	SWB	100
Arega, Zelalem	CE Trans Sr	
022262	SWB	100
Andreini, Matthew	ES Trans Adv	
021110	SWB	100
Downing, Robert	ES Trans Adv	
022696	SWB 100	
Vacant-A	ES Trans Sr	
001656	SWB	100
Carlson, Gary	ETT Sr	
018780	SWB	100
Fitzgibbon, Patrick	ETT Adv	

HMA Materials Laboratory		
10-15-07-12-00		
338586	SWB 100	
Vacant	CE Trans Sup	
017766	SWB	100
Kopacz, Daniel	CE Trans Adv	
000172	SWB	100
Vacant	ES Trans Adv	
035550	SWB	100
Anderson, Jeffery	ES Trans Adv	
006977	SWB	100
Barden, Richard	ES Trans Adv	

Laboratory Equipment

Hamburg Wheel
Rutting



Disk Shaped Compact Tension Testing (DCT) (photo courtesy of STATE Testing)
Low temperature cracking

Ignition Oven

WisDOT/WAPA Initiatives

Green Team

- Set priorities and move forward with initiatives

Membership:

- WisDOT
  - Senior Management Team
  - Bureau of Technical Services
  - Bureau of Project Development
  - Region
- Industry
  - WAPA
  - Paving Company Senior Management:

HMA Tech Team

- Focused on Standard Spec Revisions, Construction & Materials Manual, Facilities development manual, Highway Technician Certification Program and Green Team Initiatives

Membership:

- WisDOT Bureau of Technical Services
- WisDOT Regional reps
- FHWA
- Industry Technical Reps

WisDOT/WAPA Initiatives

- QV Increase
- Base Course Compaction
- Asphalt Mix Spec Updates
- MEPDG (Mechanistic Empirical Pavement Design Guide)
- IRI Ride (International Roughness Index)
- Durability
- **Cold Weather Paving**
- **Cold In-Place Recycling**
- **Longitudinal Joints**
- **High Recycle**
- Pavement Warranty
- Thin Overlay

WisDOT/WAPA Initiatives

- HMA Paving Inspection
  - Pavement rep on all projects over 5000 tons
  - Worked with WAPA on training and responsibilities
  - Build expertise and high quality pavements

WisDOT/WAPA Initiatives

- Cold In Place Recycling
  - Pulverize, inject foam and compact pavement and overlay
  - Alternative for mill and overlay

Benefits

Economics

Studies show significant savings per project (compared to equivalent Mill and Overlay)

Reduced construction time

Environment

Reduction of green house gases

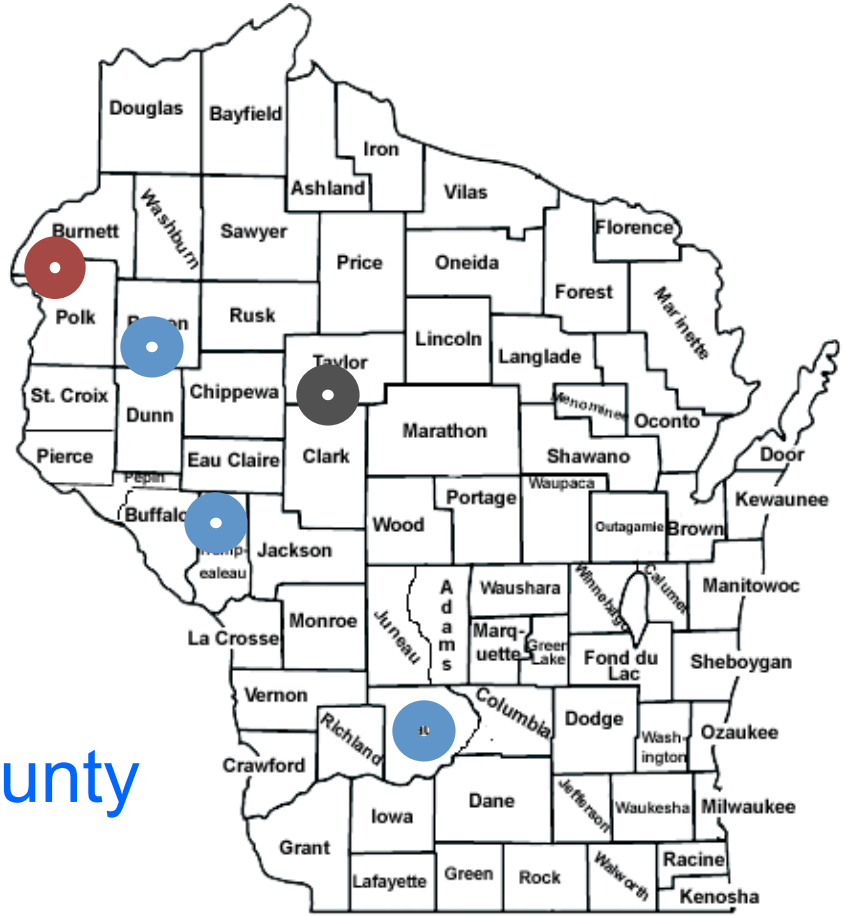
Use in-place materials minimizes hauling and use of virgin materials

Roadway remains open

Effective in rehabilitating distressed pavements w/stable bases & subgrades.

WisDOT CIR Projects (since 2012)

- 2012 STH 48
  Burnett/Polk County
- 2014 STH 64
  Taylor County
- 2015
  STH 48 Barron County
  CTH H Sauk County
  STH 95 Trempealeau County

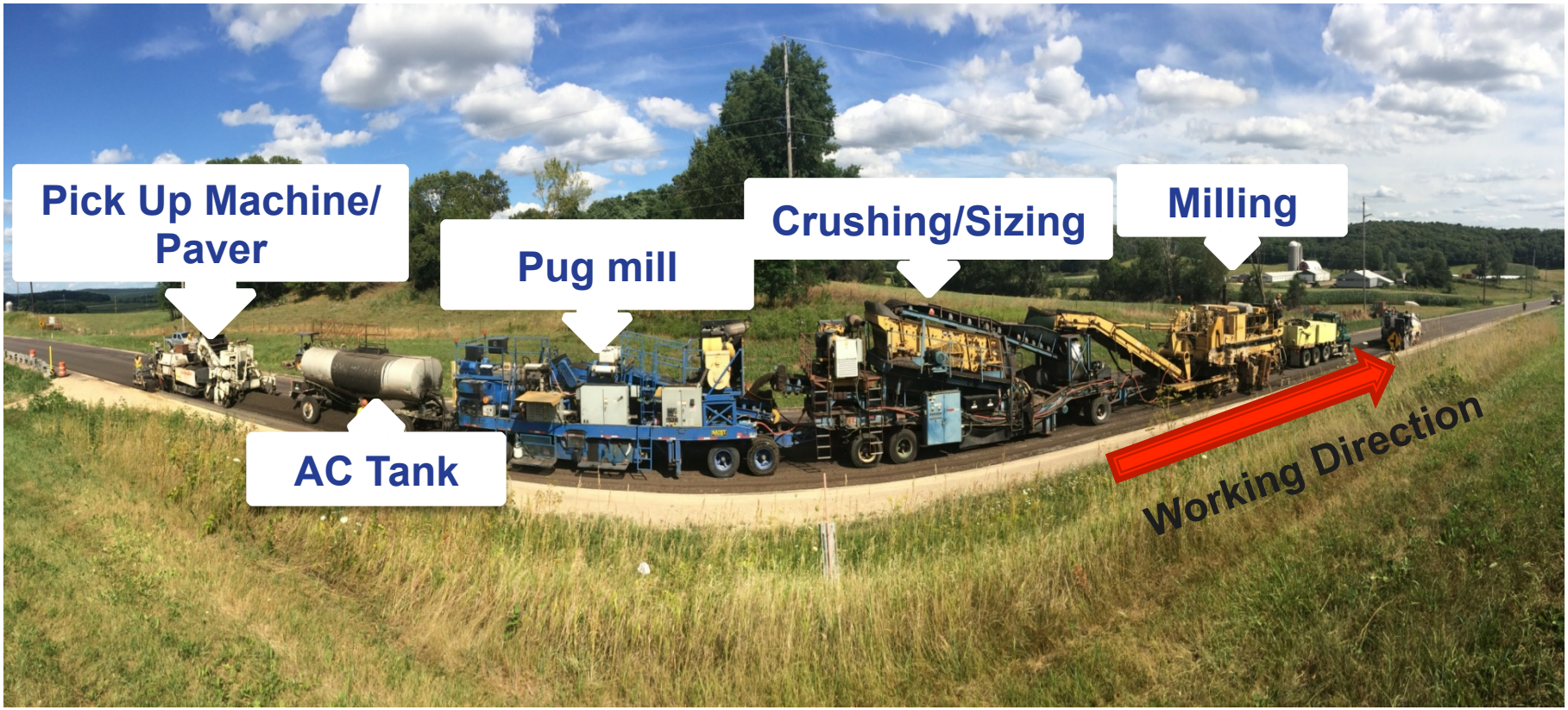


Cold In-Place Recycling (CIR)

- Mills deteriorated pavement (3-4”)
- Crushes RAP to required gradation
- Mixes with recycling agents
- Repaves recycled mix
- Compacts to specific density

CIR Equipment Types – Trains

Multi – Unit CIR Train



CIR Equipment – Single Unit

Mixes RAP with Foam AC in cutting Chamber

CTH H CIR Project

CIR Before and After

WisDOT/WAPA Initiatives

- Cold Weather Paving
  - Temperature based system for implementation of plan
  - Use of additional roller(s)
  - Use of Warm Mix Additives
  - More in the Breakout Sessions this afternoon with Don Greuel

WisDOT/WAPA Initiatives

- Longitudinal Construction Joint
  - Notched Wedge Heated
  - Milled Other
  - Collect contractor and Department data 2014-2015
  - Wisconsin Highway Research Project
  - Recommendations expected early in 2016
  - Note: WHRP update tomorrow with David Esse & Lori Richer.

WisDOT/WAPA Initiatives

- High Recycle Pilot Program
  - Use more recycled asphalt pavement and recycled shingles
  - Introduce stockpile control
  - Performance testing
  - More in the Breakout Sessions this afternoon with Barry Paye

Pilot Projects in 2014 & 2015

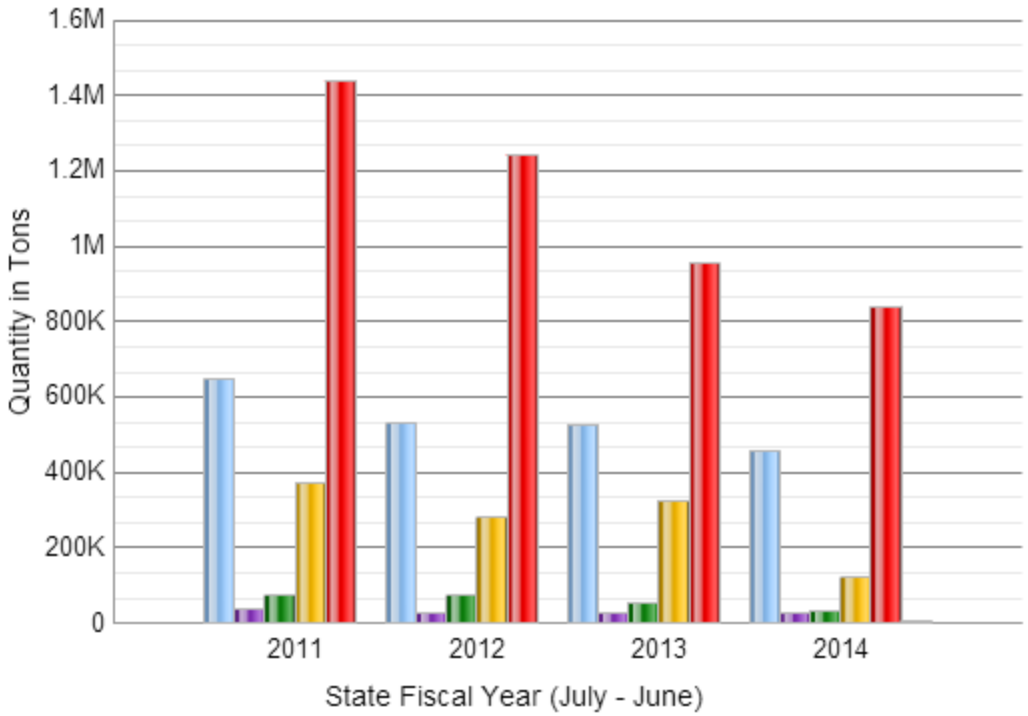
- 2014 Projects
- STH 77, Ashland Co.
- STH 73, Dane Co.

- 2015 Projects
- STH 26, Fond du Lac Co.
- USH 141, Marinette Co.

MAPSS Performance Improvement

Summary | Materials Recycled

Recycled Materials Used in Projects



RAP = reclaimed asphaltic pavement; RAS = recycled asphaltic shingles; HMA = hot mix asphalt

RAP in HMA

RAS in HMA

Fly Ash in Concrete

RAP in Base Course

Recycled Concrete

Recycled Steel

How is this measure trending?

Unfavorable

Preservation: Protecting, maintaining and operating Wisconsin's transportation system efficiently by making sound investments that preserve and extend the life of our infrastructure, while protecting our natural environment.

The department strives to use recycled materials whenever possible in improvement projects. Our goal is to incorporate 2 million tons of recycled materials each year and to continually strive to conserve resources, minimize waste and keep materials out of landfills.

For more Information:

About Measure

Scorecard

NCHRP & NAPA Scan Tour of Japan
High Reclaimed Asphalt Pavement (RAP)

December 1- 10, 2014

Japan has achieved a national average of 45% RAP use in asphalt mixtures where as the US is typically uses up to 25% RAP.

19 delegates, IL, TN, LA, WI - DOTs, Industry, NAPA, NCAT representatives

Visited: Asphalt Plants, Construction Projects, Research Lab, & Contractor Labs

Capital: Tokyo

Population: 127 Million, 10th largest in the world

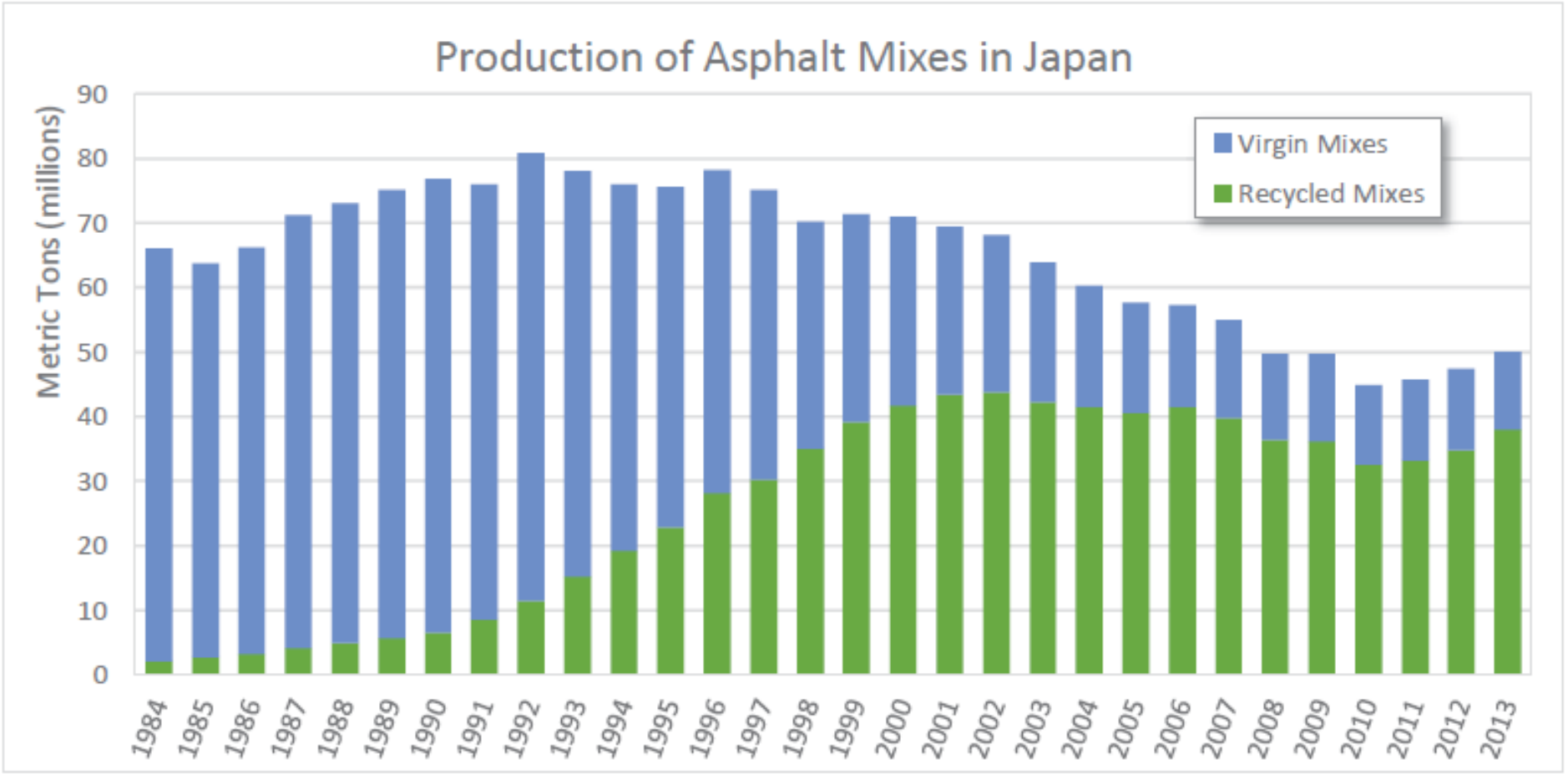
Size: Slightly smaller than California

Took Part: 6,852 Islands and 108 active volcanos

Recycling in Japan

- Law “Promotion of Procurement of Eco-Friendly Goods and Services enacted in 2000.
- Promotes recycled materials
- Encourage reduction carbon emissions
- Environmental and space issues appear to be behind much of the Japanese push to increase the use of recycled products

Recycling in Japan



Asphalt Plants – Japan & U.S.

Japan	U.S
>1000 plants, producing 50 million tons	About 3000 plants, producing 350 million tons
5-6 Majors producers, 1 supplier 20% of Countries mix	Mix of large and small producers
Recycling over 45%, use rejuvenators	Recycling about 25%
Batch plants with lower production, higher staffing	Plants with higher production, lower staffing
Small projects with high unit costs	Larger projects with lower unit costs

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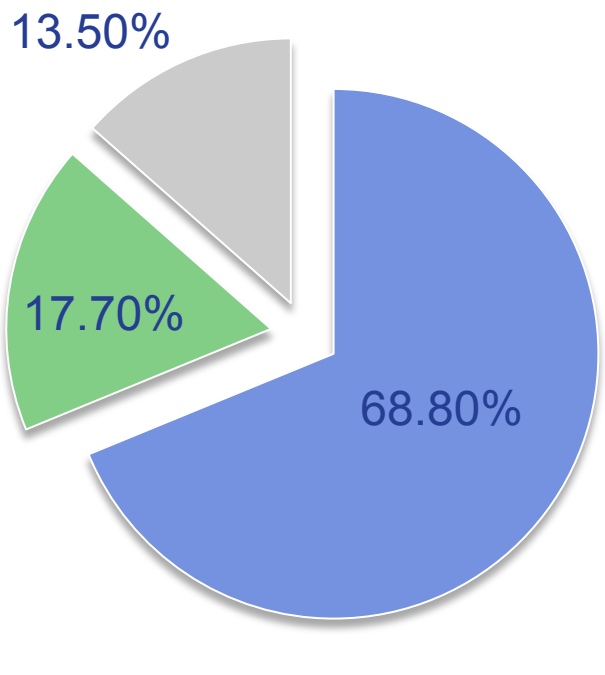
Mix Production – Japan & U.S.

Japan	U.S
Separate RAP dryer	Indirect heat, shorter time
Use rejuvenators, added earlier	Some use of rejuvenators added later in process
Covered storage - protect mix from moisture	Typically not covered
Fewer mixes	Greater number of mixes
Better blending, dryer materials	Less blending, not as dry

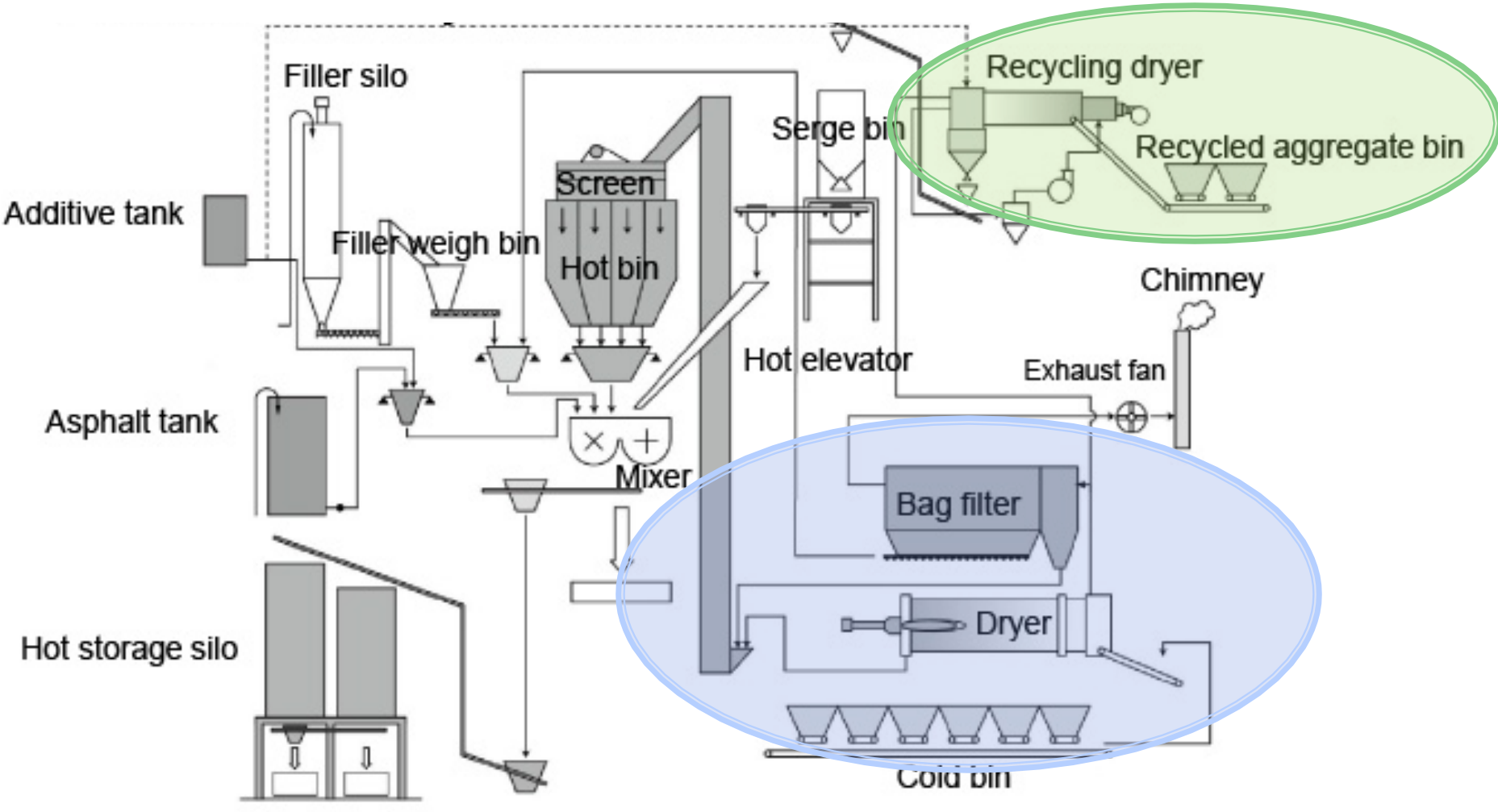
High Reclaimed Asphalt Pavement (RAP)

- Number of Asphalt Plants: 1,150



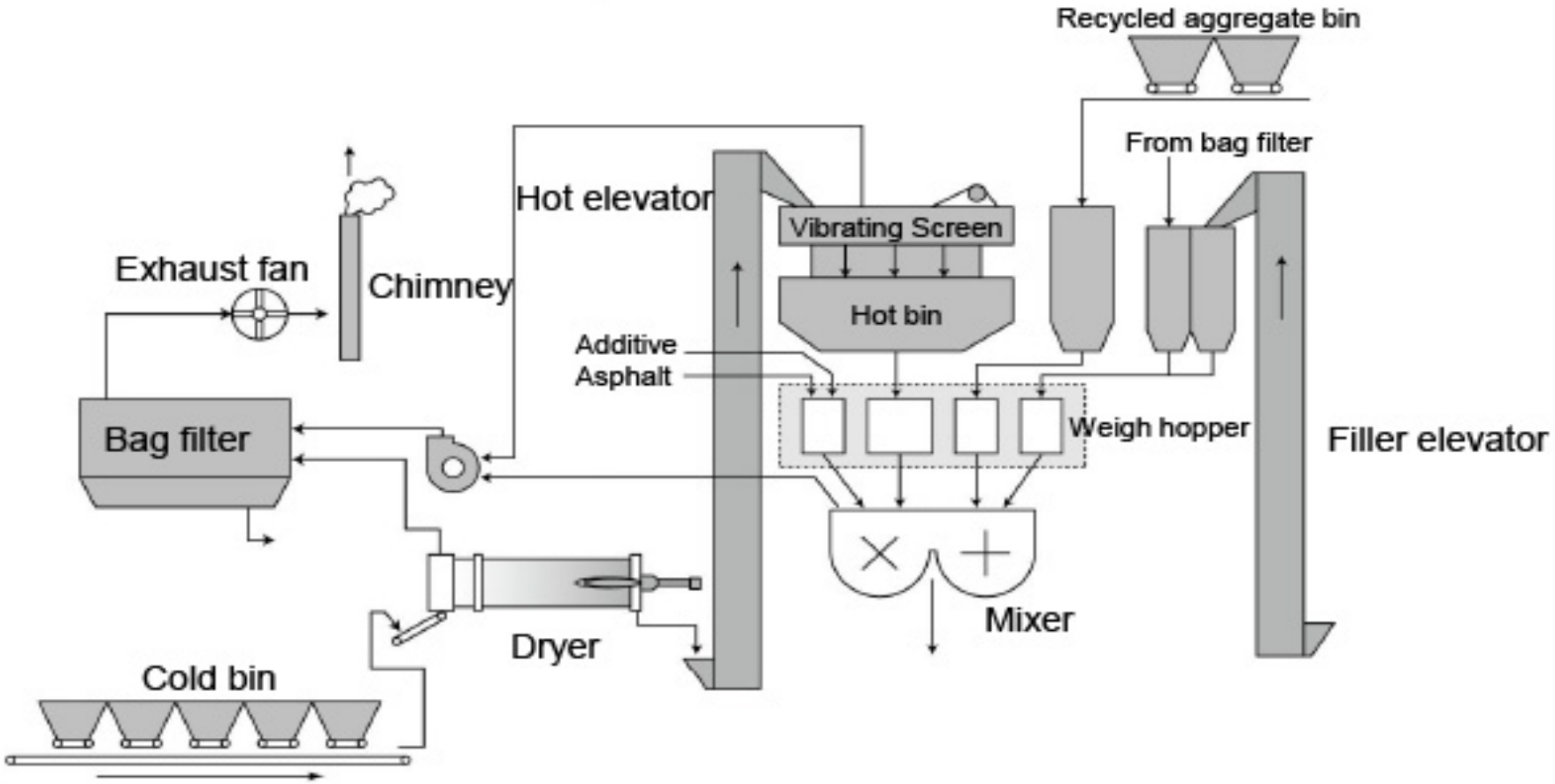
Parallel Heat System

- Most common 68%, visited on tour
- Parallel dryers: - one for recycle, one for virgin



In Direction Heat System

- Most similar to US
- Not Visited on tour
- Smaller amount (17.7%)



Construction – Japan & U.S.

Japan	U.S
Small projects with high unit costs	Larger projects with lower unit costs
Small haul trucks for material (9 metric tons)	Larger haul trucks
Slower pace - quality over quantity, attention to detail	Faster pace production

Japan & U.S.

Adaptations may be required in US for plants and for higher production

- Protecting the mix
- Heating and isolate the RAP with the rejuvenator
- Use of rejuvenators to increase RAP percentage

- Performance based specifications
- Emphasis on quality workmanship

Longitudinal Joints

- They form their joints in Japan
- Joints are very tight

Porous Pavement

- Safety, reducing hydroplaning
- Reduce noise
- More than 70% of expressways in Japan surfaced with porous layer
- Not used in areas that get snow – chains on tires, hard on pavement
- Special vacuum truck to recover loss of permeability (clean every 4 months)

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