

Blend Proportions Shown in Pans – White and Red Particles (the Fines) Are “Hidden” in Pile Core



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Close-Up Showing Coarsest Particles to Front and Bottom



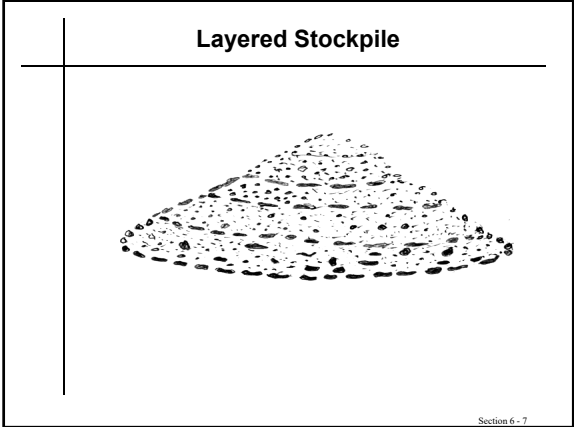
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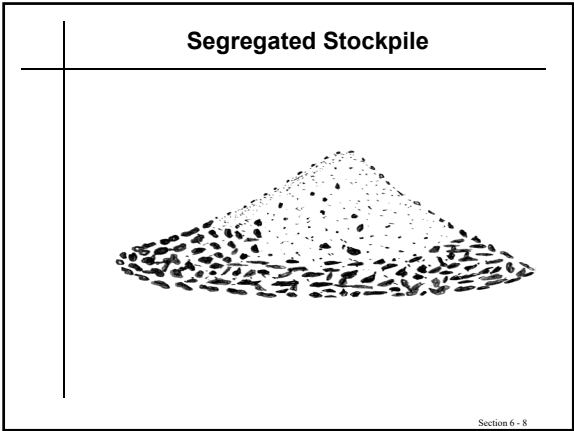
“Sampling” Pile With Remote Controlled Equipment –

Realistic Training Tool for Stockpile Recovery Techniques



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Compaction

- **Definition – act of decreasing material volume**

- **If a soil is being compacted, what phase is changing?**

- **Accomplished by:**
 - ▶ **Rolling**
 - ▶ **Tamping**
 - ▶ **Vibration**
 - ▶ **Combination**

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Compaction (continued)

- **Factors affecting compaction**
 - ▶ Particle size
 - ▶ Angularity
 - ▶ Compactive effort – types, weights, applications, etc.
 - ▶ Lift thickness
 - ▶ Moisture content

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Compaction (continued)

- **Compaction:**
 - ▶ Increases density
 - ▶ Increases strength or stability
 - ▶ Increases moisture resistance
 - ▶ Increases resistance to swell or frost
 - ▶ Decreases air voids
 - ▶ Decreases permeability
- **Effect of Layer Thickness on Density**

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Compaction (continued)

- **Compaction specifications**
 - ▶ Typical subgrade or base maximum lift – 8"
 - ▶ Equipment – Contractor option
 - ▶ Minimum levels for acceptance;
 - ◆ Untreated subbase and base – 95% of T-180
 - ◆ CTB – 100% of AASHTO T 99
 - ◆ Soils – typically 95% of AASHTO T 99

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Sampling AASHTO T 2

- Locations
 - ▶ Conveyor belt
 - ▶ Windrow
 - ▶ Stockpile
 - ▶ Mechanical sampler

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Sampling AASHTO T 2 (continued)

WYDOT MTM 804.0

- Conveyor belt
 - ▶ Preferred
 - ▶ Before additives
 - ▶ Stop belt
 - ▶ Select a location in the middle third of the belt between rollers
 - ▶ Belt should be filled to 80% of capacity
 - ▶ Use contractor furnished template
 - ▶ Collect sample including fines
 - ▶ The sample must yield 30 lbs minimum

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Belt Sampling



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Sampling Template

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Sampling (continued)

- **Windrow**
 - ▶ Random location
 - ▶ Flatten windrow to 8 inches for at least 6 feet
 - ▶ Divide into quarters
 - ▶ Sample each quarter
 - ▶ Combine quarter samples to equal 30 lbs min.

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Sampling (continued)

- **Stockpile – avoid if possible**
 - ▶ Random location
 - ▶ Use loader to dig into stockpile and transport to level area
 - ▶ Dump and spread to 8 inches
 - ▶ Divide into quarters
 - ▶ Sample quarters
 - ▶ Combine quarter samples to equal 30lb min.
- **Mechanical Sampler**
 - ▶ Must be correlated to belt samples per WYDOT 804.0 Materials Testing Manual

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Points of Acceptance

- Sub base and Base
 - ▶ Conveyor between stockpile or crusher and hauling unit
 - ▶ Windrow if belt not used
- Treated base
 - ▶ Conveyor prior to additives
- Plant Mix Materials
 - ▶ Conveyor prior to asphalt or additives
- Concrete Aggregates
 - ▶ Conveyor between stockpile and plant

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Points of Acceptance

- Seal Coat Aggregate
 - ▶ Final stockpile before hauling to spreader
- Miscellaneous aggregates
 - ▶ Conveyor between stockpile and hauling unit
 - ▶ Stockpile if belt not used

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Point of Sampling

Aggregates	Stockpile ⁽¹⁾	Conveyor Belt ⁽²⁾	Windrow
Plant Mix Materials (PMB, RPMPB, PMP, RPMP & PMWC)		X	
Subbase	X	X	X ⁽³⁾
Base		X	X ⁽³⁾
Maintenance Stockpile		X	X ⁽³⁾
Pervious Backfill Material & Bridge Approach Backfill Material		X	X ⁽³⁾
Gravel for Drains	X		
Chip Seal	X		
Microsurfacing	X		
Concrete	X ⁽⁴⁾		
Blotter	X		
Bed Course Material	X		
Class B Bedding	X		
Riprap, Stone Filled Cullions & Stone Mattress Aggregates	X		
Filter Aggregate	X		
Flowable Backfill	X		
Grout	X		

⁽¹⁾ Sample the last stockpile prior to final placement of the aggregate material.

⁽²⁾ Sample from the conveyor belt used to load the hauling unit for final

⁽³⁾ When not using a conveyor belt.

⁽⁴⁾ Stockpile or storage bin.

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