




Pete Lien & Sons – Enthusiastically Developing Essential Resources to Sustain Our Aspiring Communities

# Managing Aggregate Stockpiles


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## Who is Pete Lien and Sons?



**Company Motto:**  
*Built to Stand the Test of Time.*

**Company Vision Statement:**  
*Enthusiastically developing essential resources to sustain our aspiring communities.*



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## Consistency is KING...



### Why does Consistency matter?

- Asphalt Pavement is 95% Aggregate
- Concrete Mixtures are 85% Aggregate
- Asphalt and Concrete Mix Designs rely heavily on the properties of their Aggregates
- Changes to Aggregates result in changes in the Asphalt and Concrete Mix Designs

### Results of using Inconsistent Aggregate

- The Customer will be penalized
- Customer & Owner Expectations not met
- The Material that the Aggregate was used to create will prematurely fail



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## Mast or Stationary

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**Stockpiling with Mobile Equipment**

- Front-End Loader
- Dozer

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**Front-End Loader – Single Stack**

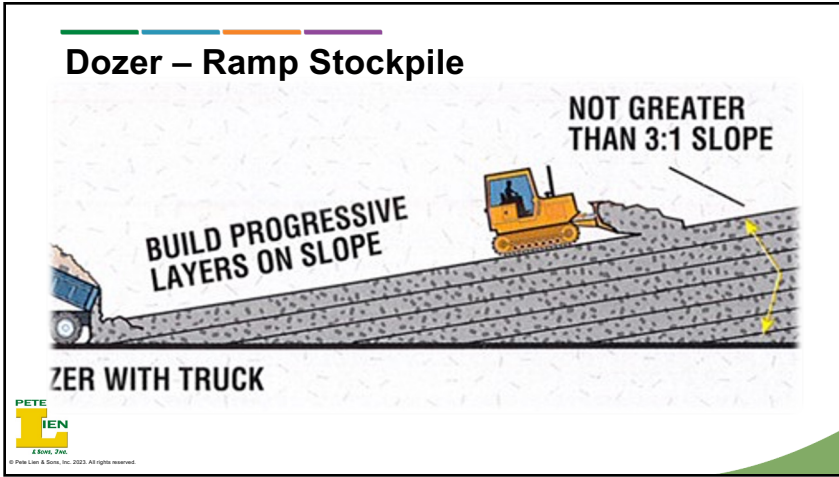
DUMP AGGREGATES IN PILES NOT LARGER THAN A TRUCKLOAD

MAKE PILES SO THEY STAY IN PLACE AND DO NOT ROLL DOWN SLOPES

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### CONTAMINATION

- “The presence of an undesirable element”



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### DEGRADATION

- “The wearing down of aggregate particles”



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### Building Stockpiles & Loading Material

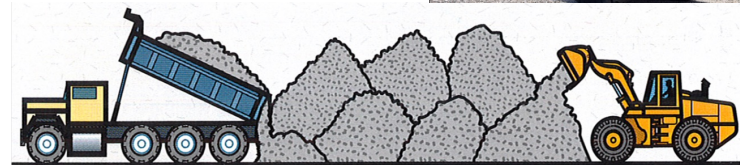


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### Building Stockpiles with Loader

- Dump into separate piles, do not “overrun”.
- “Push” the pile together.
- Raise the bucket to full height and dump material.
- DO NOT drive the loader onto the stockpile.
- For larger stockpiles, check with aggregate producer to ensure the material can withstand degradation from driving onto the stockpile.


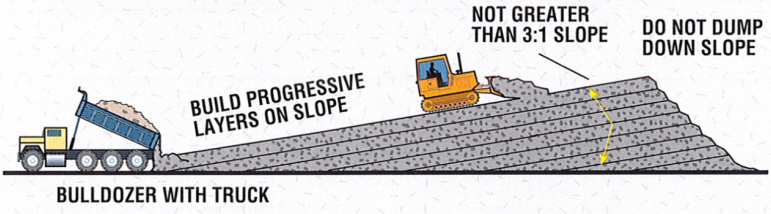


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### Building Layered Stockpiles

- Dump at the base of the stockpile.
- Push the material into layers as flat as possible and not exceeding a 3:1 slope.
- DO NOT push material over the edge.
- USE CAUTION when using a loader.

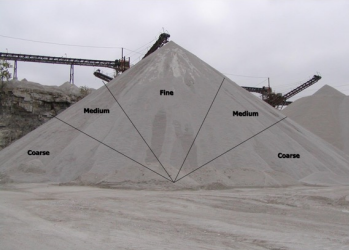
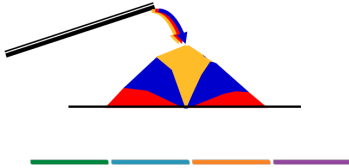
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### Building Stockpiles with Conveyor

- Keep the discharge as close to the top of the stockpile as possible.
- Rock ladders or paddle wheels can reduce segregation.
- The larger the aggregate band the higher the potential for segregation.
- Particle shape and moisture content also affect segregation.
- Stockpile must be mixed during loading.


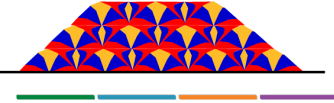
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### Building Stockpiles with Radial & Telescoping Conveyor

- Keep the discharge as close to the top of the stockpile as possible.
- Set the automation and check throughout the build.

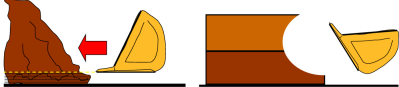
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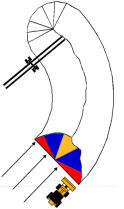
### Loading from Stockpiles

- DO NOT scrape the ground in front of stockpile.
- Keep the heel of the bucket slightly raised.
- Rotate the loader bucket upwards.
- DO NOT spin the tires of the loader.
- DO NOT undercut or create an overhang at the face of the stockpile.
- DO NOT over-raise the loader bucket.
- DO NOT drive onto the stockpile.
- Use fluid motions and a V-Pattern
- "Work the face" by moving across the stockpile.
- Avoid going deep into the stockpile.
- Control how trucks park for loading.
- When starting at a Cone-Shaped stockpile, remove the material from the edge and mix with the material from the core of the stockpile.



### Working the Face

- Move across face
  - Perpendicular to conveyor
  - Less segregation
  - better mix
    - fine
    - medium
    - coarse
- Avoid deep penetration



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**Not all the same, but the same factors apply.**

**TIME**

Completion Date?  
How quickly can material be shipped?  
How quickly will material be consumed?

**QUALITY**

Gradation Specification?  
Gradation Band of the Material?  
Aggregate Durability?  
Potential for Penalty?

**BUDGET**

Project Funding?  
Material Cost?  
Trucking Cost?

Stockpiling Methods		Capacity/Volume	Initial Cost	Cost per Ton	Segregation	Contamination	Degradation	Loading from Stockpile
		Stackers						
Stackers	Radial-Telescopic	Good	Good	Good	Good	Good	Good	Good
	Radial	Good	Good	Good	Good	Good	Good	Good
	Fixed	Good	Good	Good	Good	Good	Good	Good
Mobile Equipment								
Mobile Equipment	Single Stack (Loader)	Good	Good	Good	Good	Good	Good	Good
	Layered (Loader)	Good	Good	Good	Good	Good	Good	Good
	Layered (Dozer)	Good	Good	Good	Good	Good	Good	Good



*Expected versus Inspected*



**Thank you**

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