

Full Depth Reclamation and Chemical Stabilization

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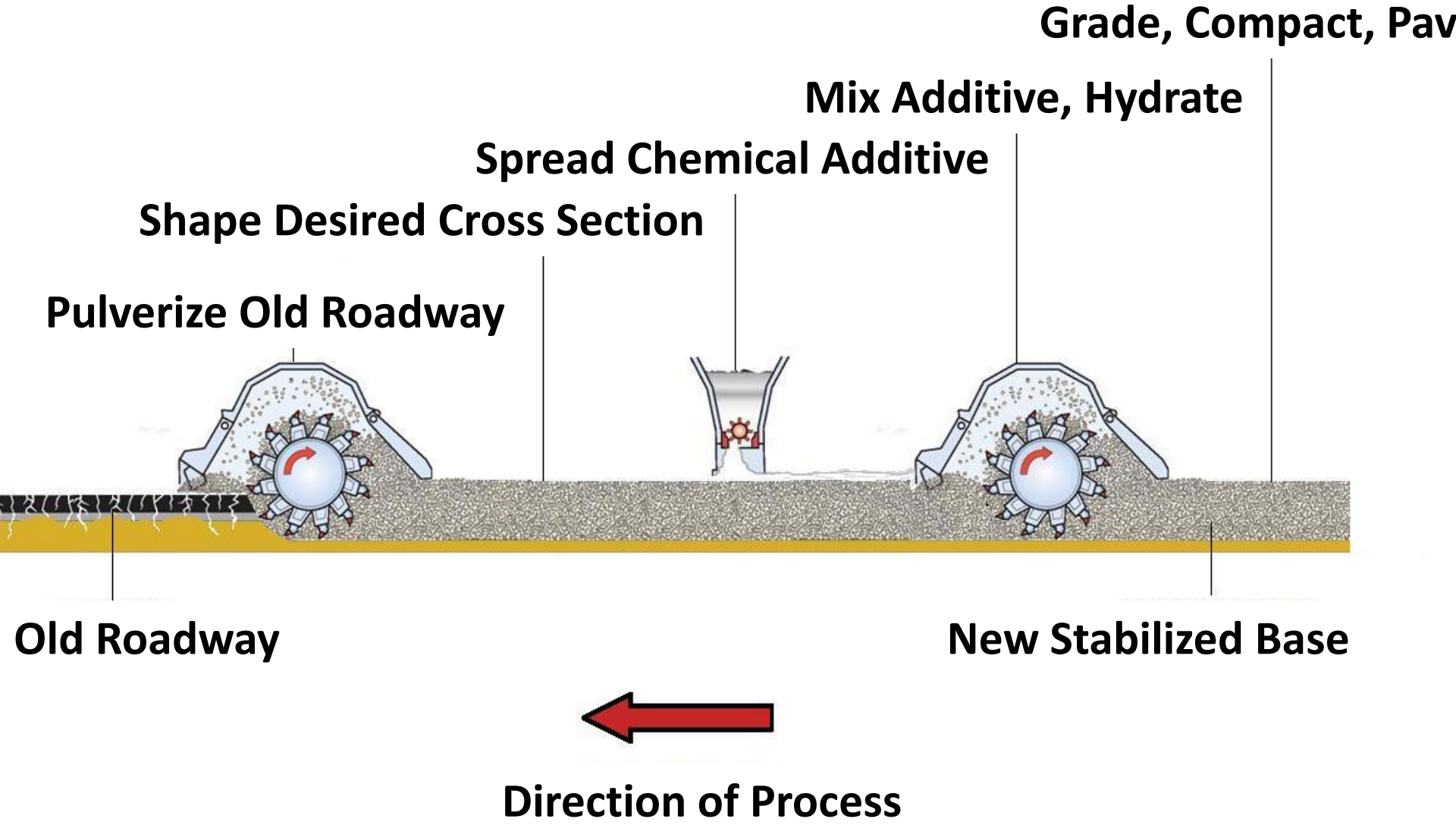


- Investigation and Design
- Design Considerations
- Construction

Design Process



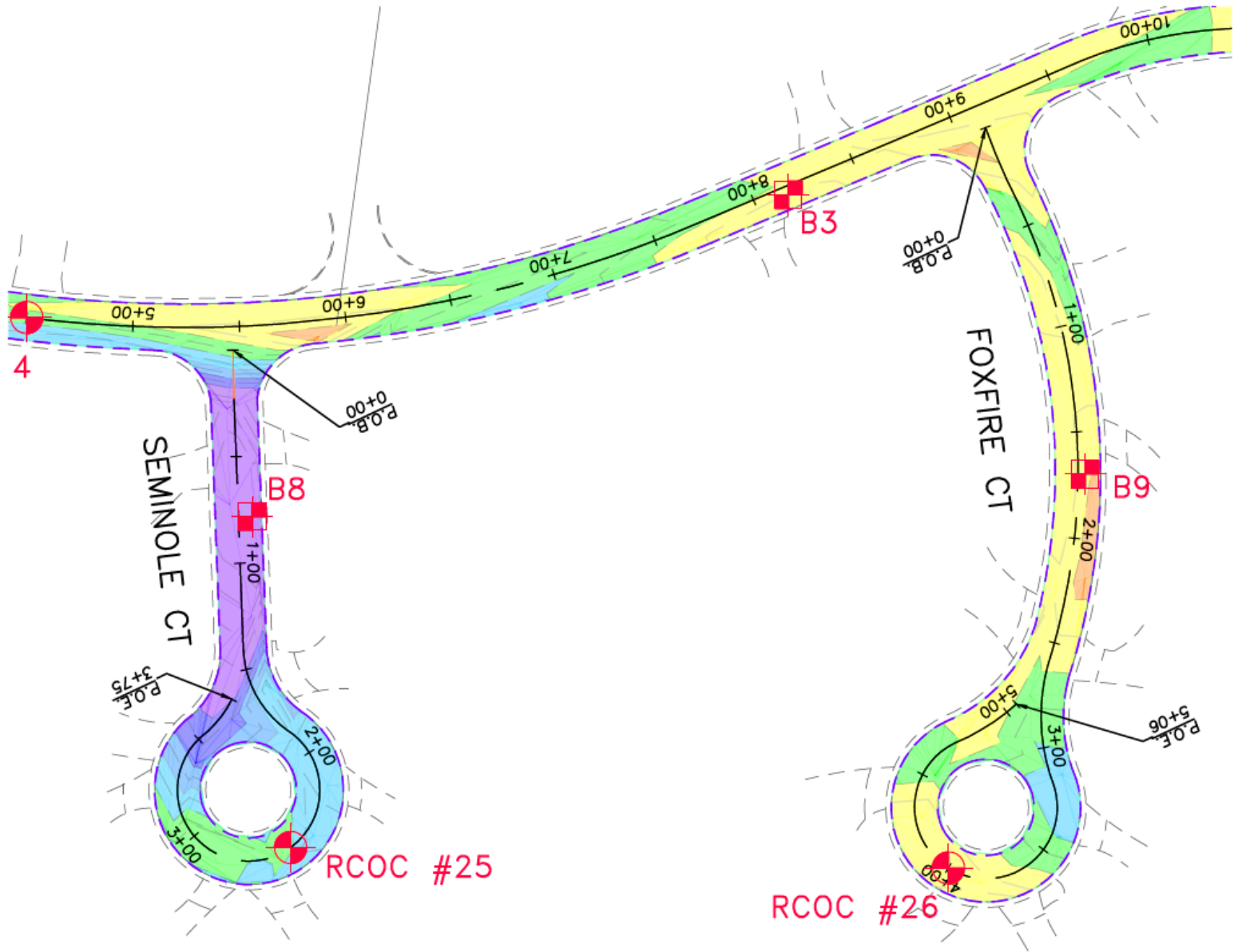
Full Depth Reclamation Process





Falling Weight Deflectometer





Field Sampling

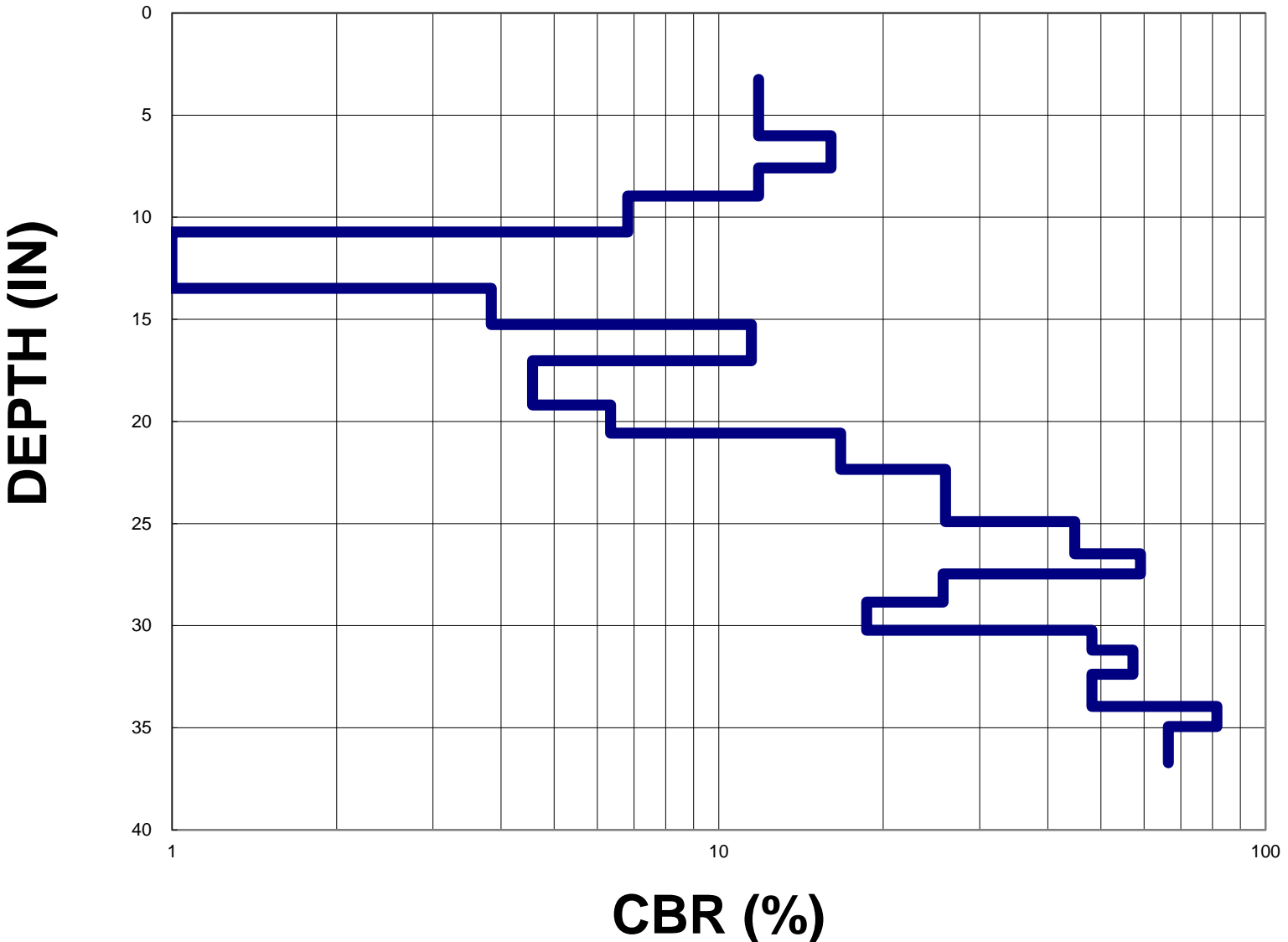




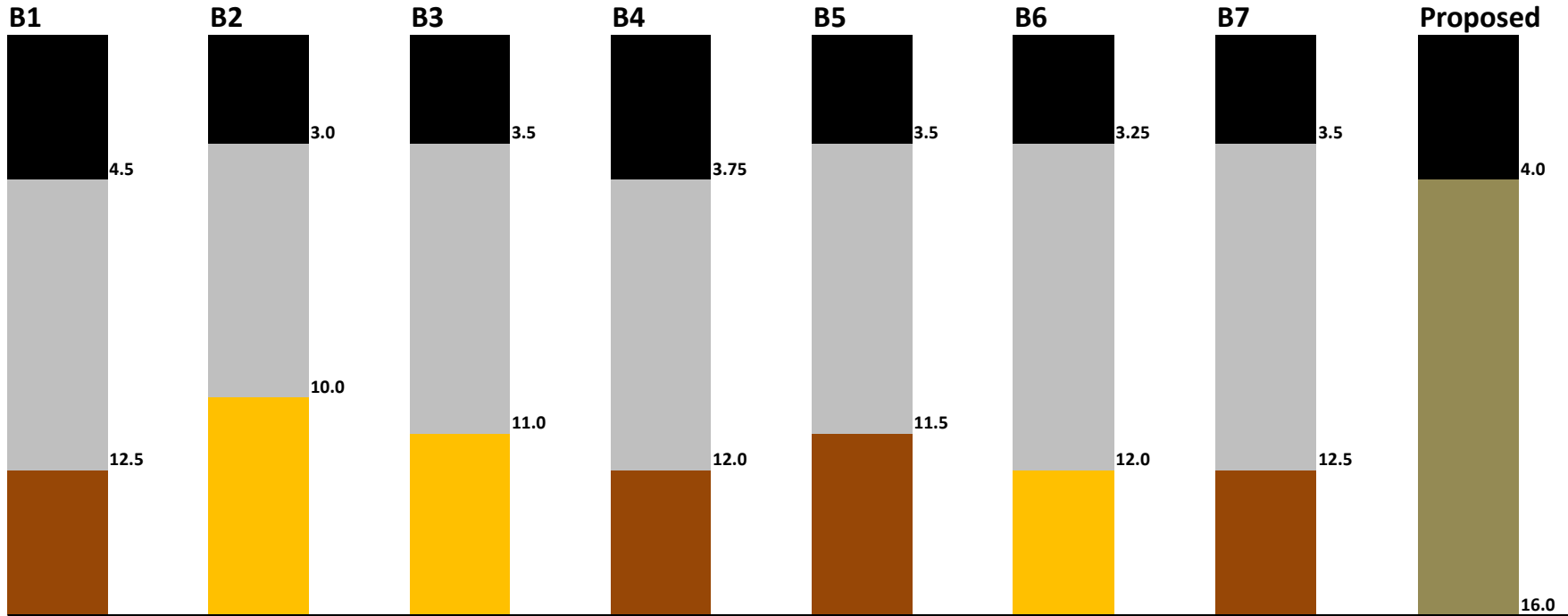
Bulk Sampling



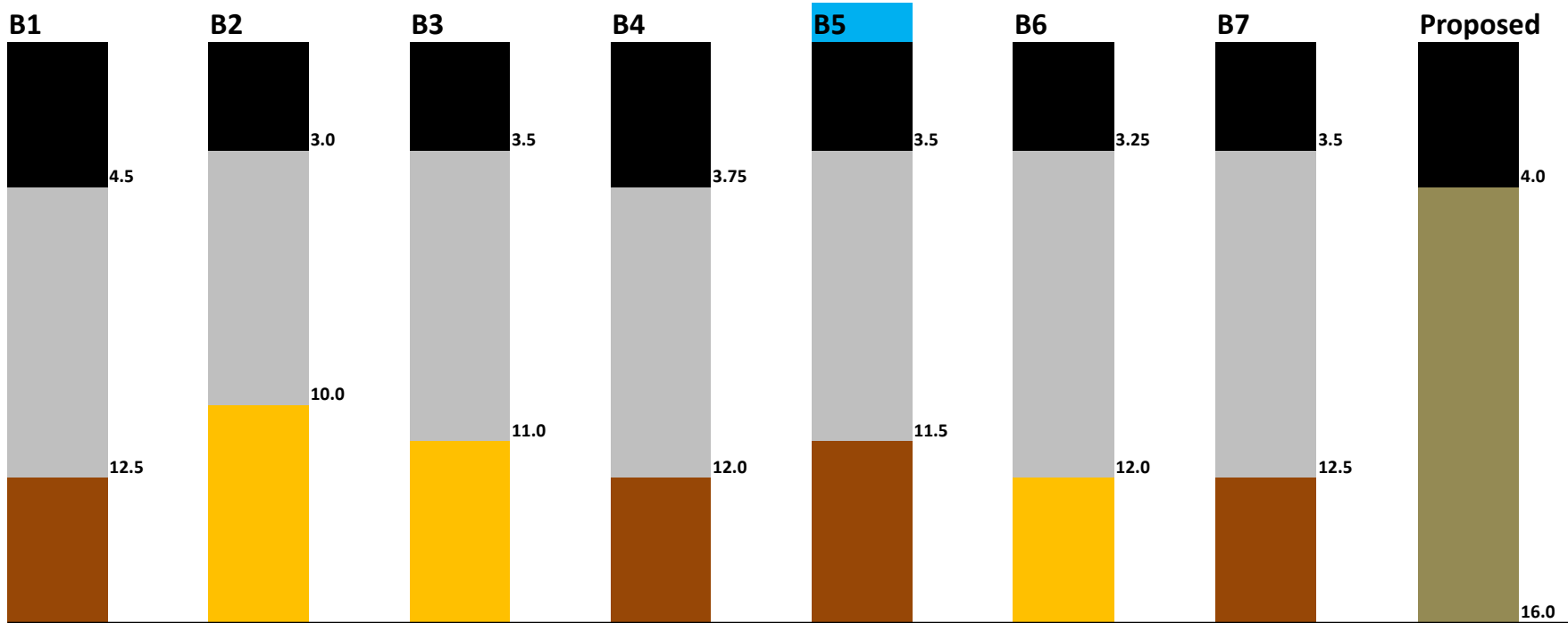
USACE ARMY CORPS DYNAMIC CONE PENETROMETER DEPTH VS CBR



Boring Cross-Sections



Boring Cross-Sections



**Target Blend Ratio: 22% Asphalt,
50% Aggregate Base, 28% Sub-grade**



Preparation of Compressive Strength Points Standard Proctor



50%

50%

50%

30%
Mix #

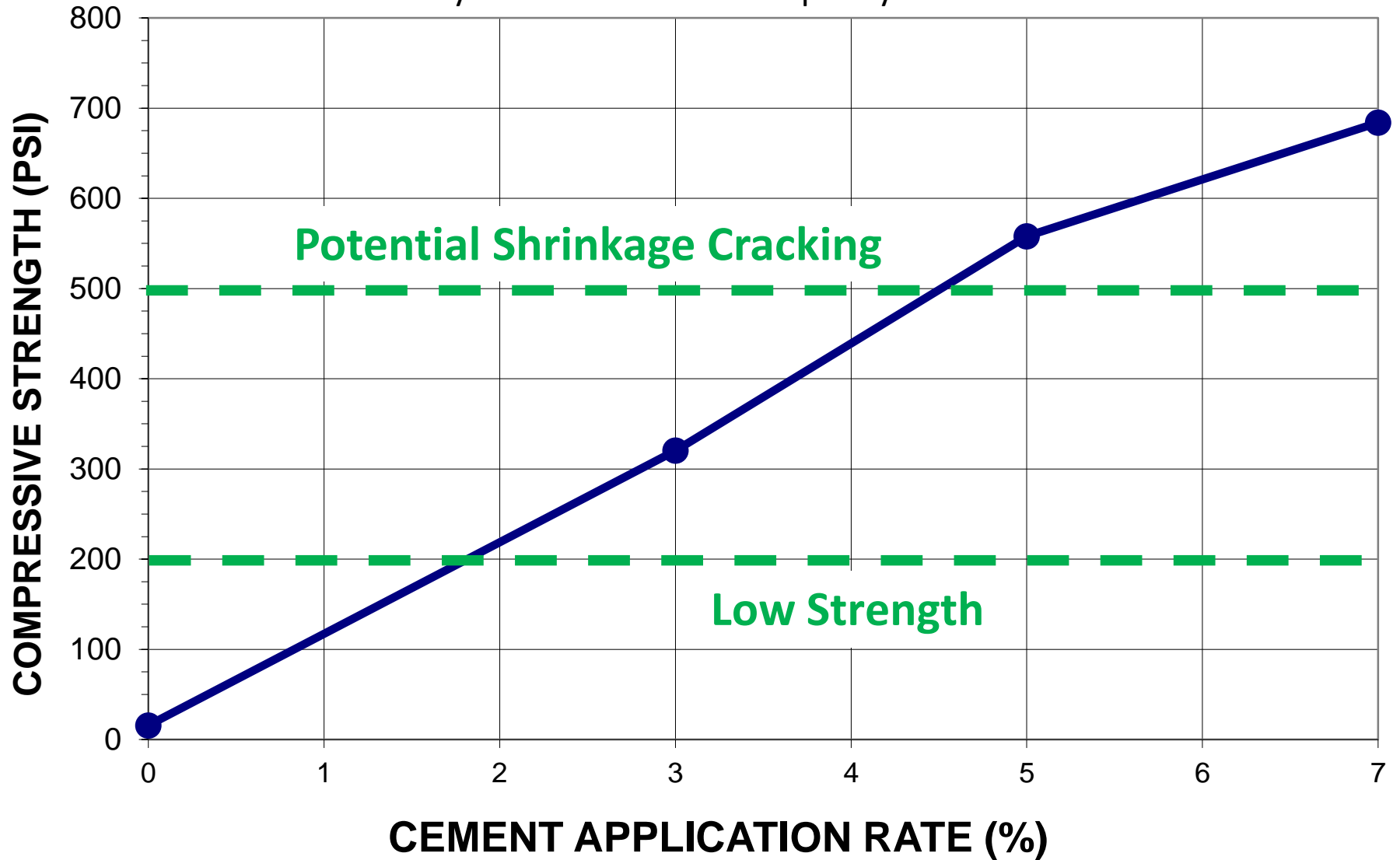
position 1 (chamber) on off
position 2 (sample) on off
position 3 (sample) on off
position 4 (chamber) on off
position 5 (sample) on off

Specimens
Date Recd
Specimen No
Date Recd
Specimen No
Date Recd
Specimen No
Date Recd
Specimen No
Date Recd
Specimen No



COMPRESSIVE STRENGTH VS. APPLICATION RATE

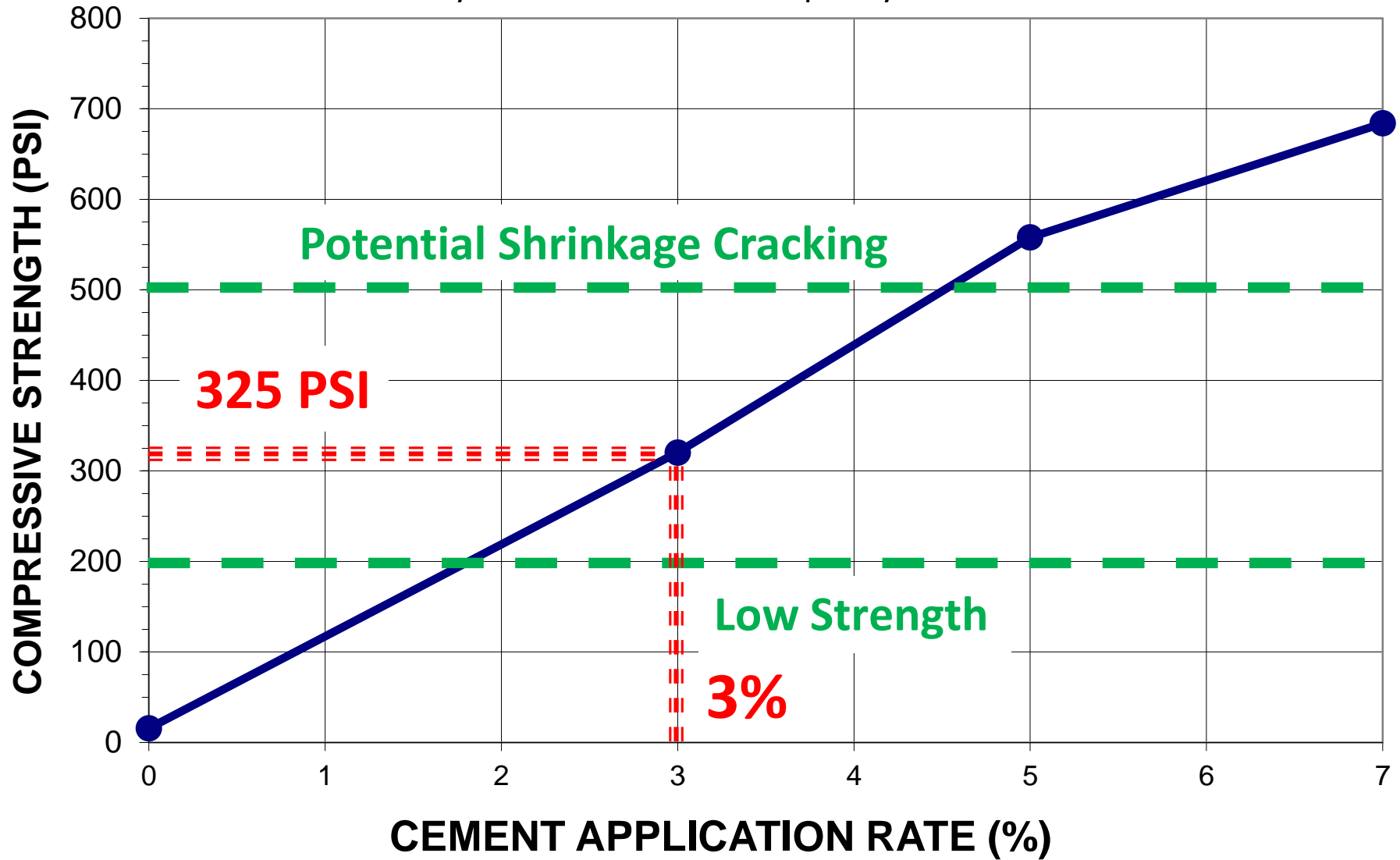
7 Day Cure with 24 Hour Capillary Soak



Target Blend Ratio: 22% Asphalt, 50% Aggregate Base, 28% Subgrade

COMPRESSIVE STRENGTH VS. APPLICATION RATE

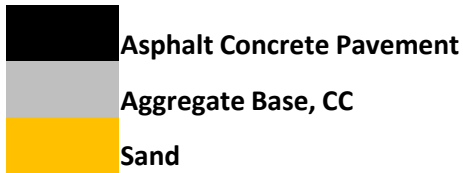
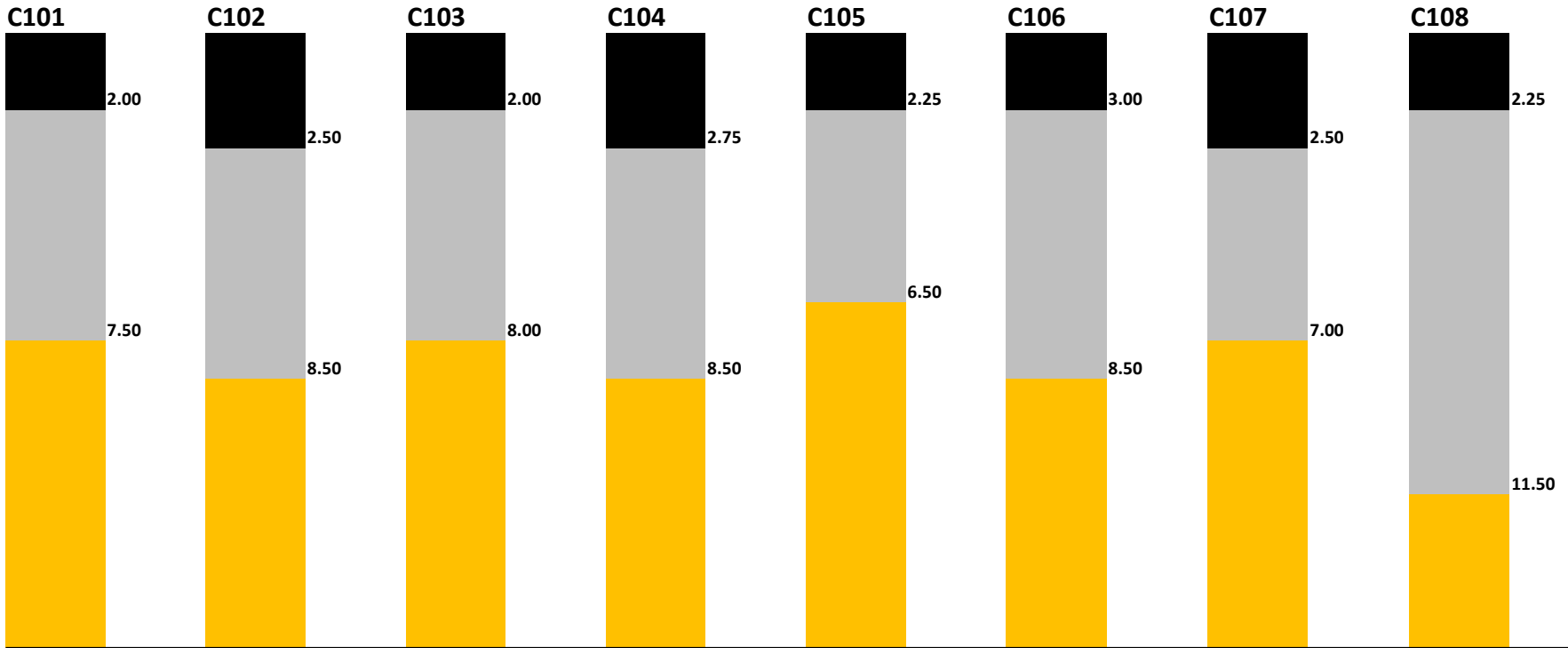
7 Day Cure with 24 Hour Capillary Soak



Target Blend Ratio: 22% Asphalt, 50% Aggregate Base, 28% Subgrade

Design Considerations

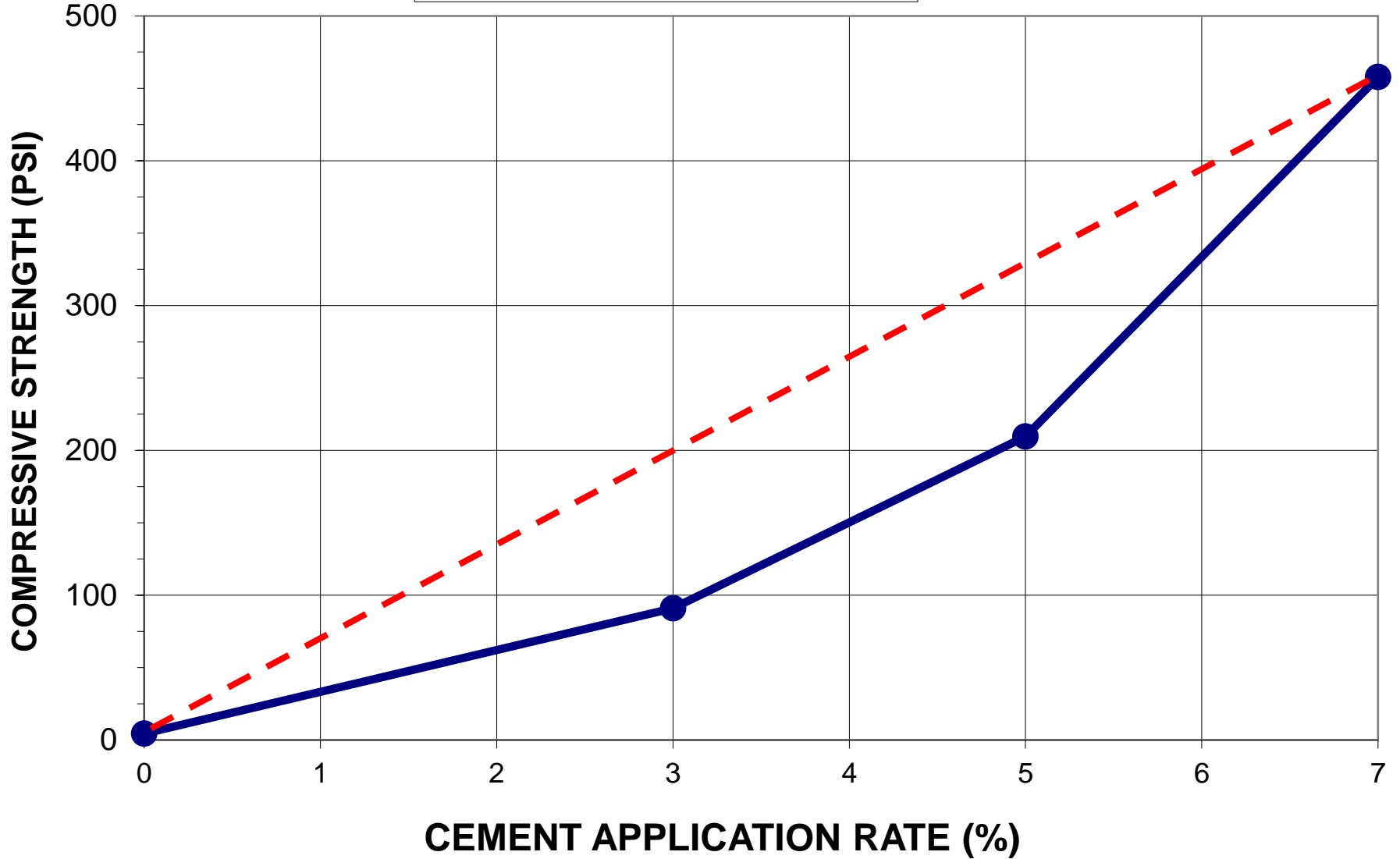




**Target Blend Ratio: 13% Asphalt,
28% Aggregate Base, 59% Sub-grade**

COMPRESSIVE STRENGTH VS. APPLICATION RATE

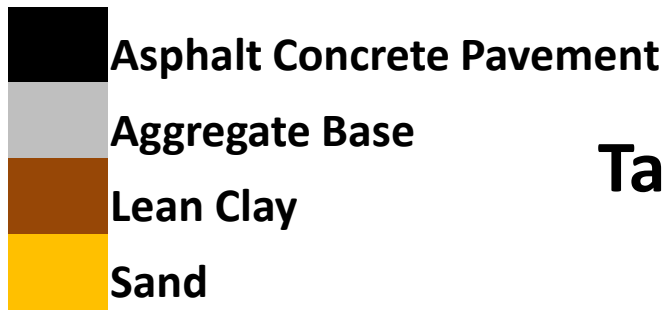
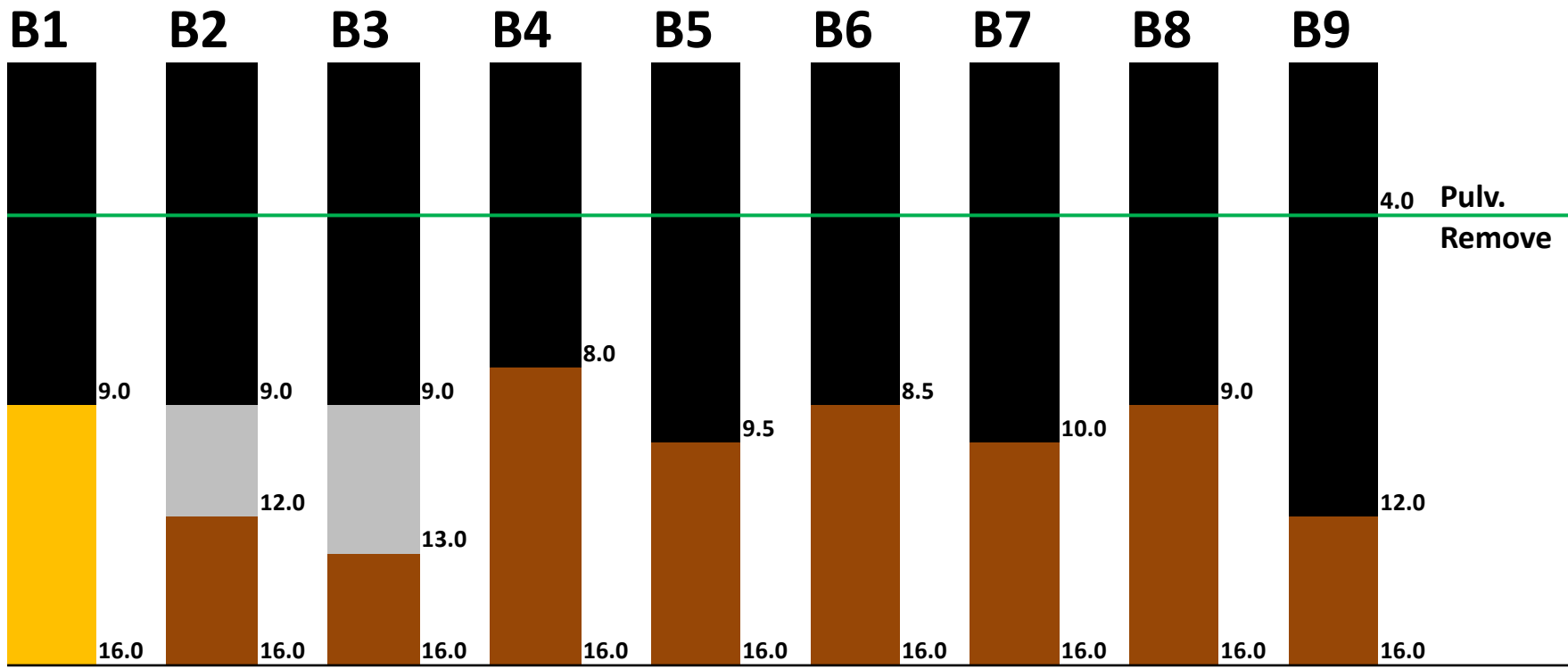
7-Day Cure with 24-Hour Cap Soak



Target Blend Ratio: 13% Asphalt, 28% Aggregate Base, 59% Sub-grade

Sieve Size	Weight Retained (g)	Percent Retained	Percent Passing
3	0	0	100
2	0	0	100
1 1/2"	0	0	100
1	0	0	100
3/4"	0	0	100
1/2"	0	0	100
3/8"	7.1	1	99
4	2.1	0.3	98.7
8	3.8	0.5	98.2
16	2.4	0.3	97.9
30	3.1	0.4	97.5
50	40.9	5.6	91.9
100	418.3	57.3	34.6
200	205.4	28.1	6.4
Pan	47	6.4	

Sieve Size	Weight Retained (g)	Percent Retained	Percent Passing
3	0	0	100
2	0	0	100
1 1/2"	0	0	100
1	0	0	100
3/4"	0	0	100
1/2"	0	0	100
3/8"	0	0	100
4	85% Below the #50 Sieve		
8			
16			
30	3.1	0.4	97.5
50	40.9	5.6	91.9
100	418.3	57.3	34.6
200	205.4	28.1	6.4
Pan	47	6.4	



**Target Blend Ratio: 44% Asphalt,
56% Sub-grade**

Durability



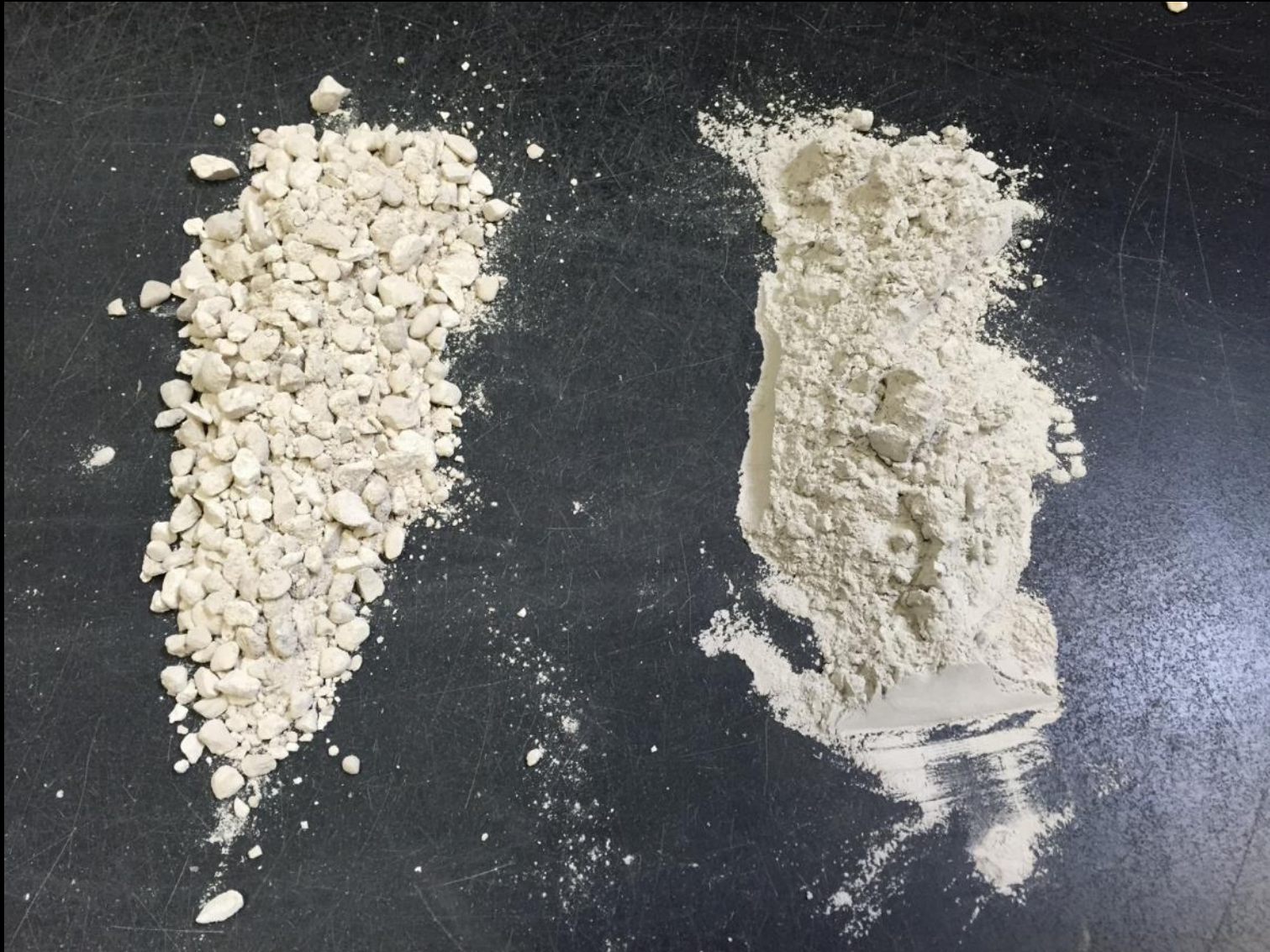
Modification vs. Stabilization

High vs. Low Plasticity

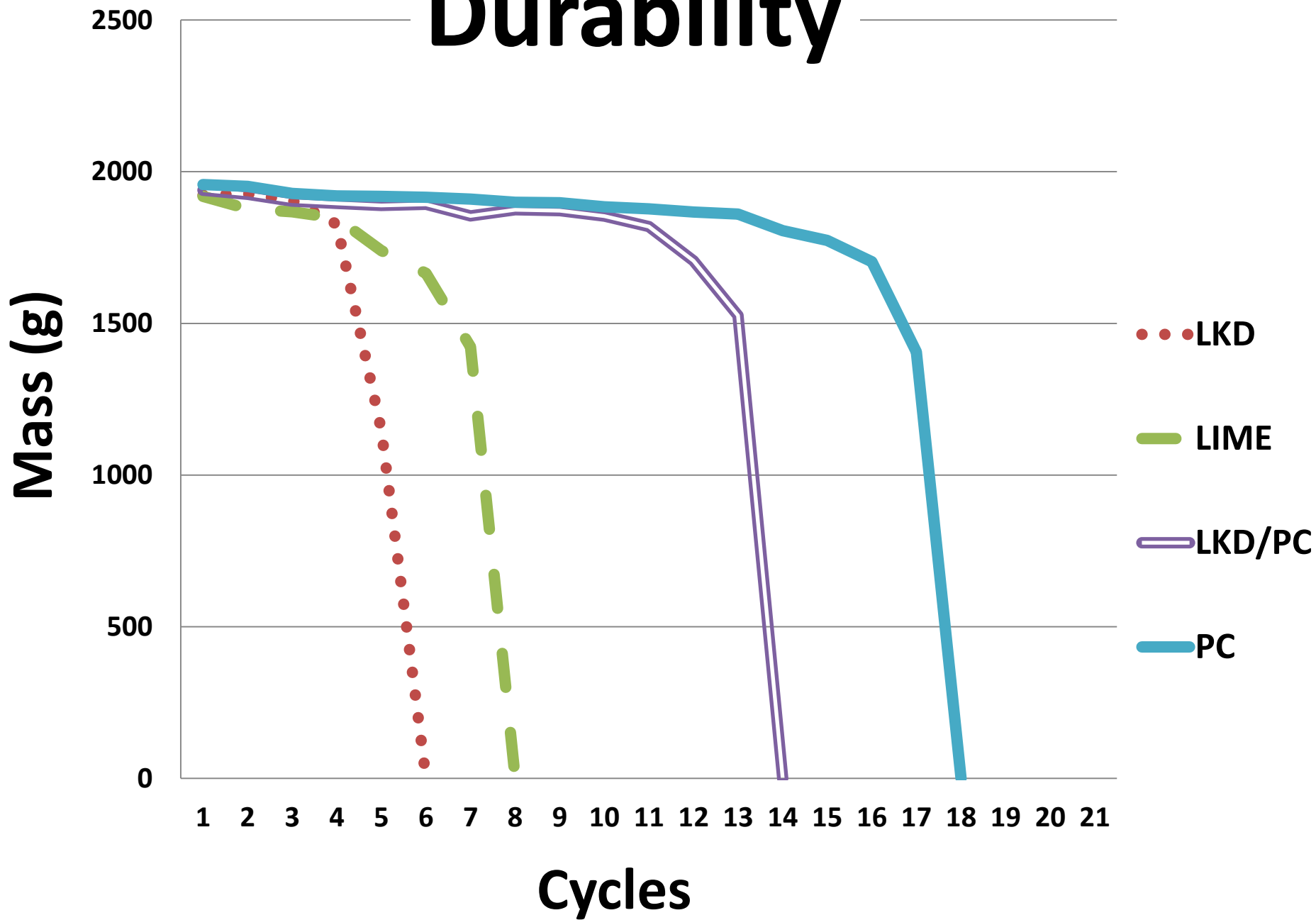


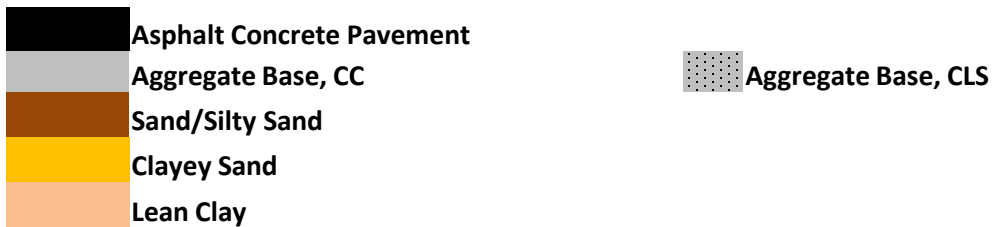
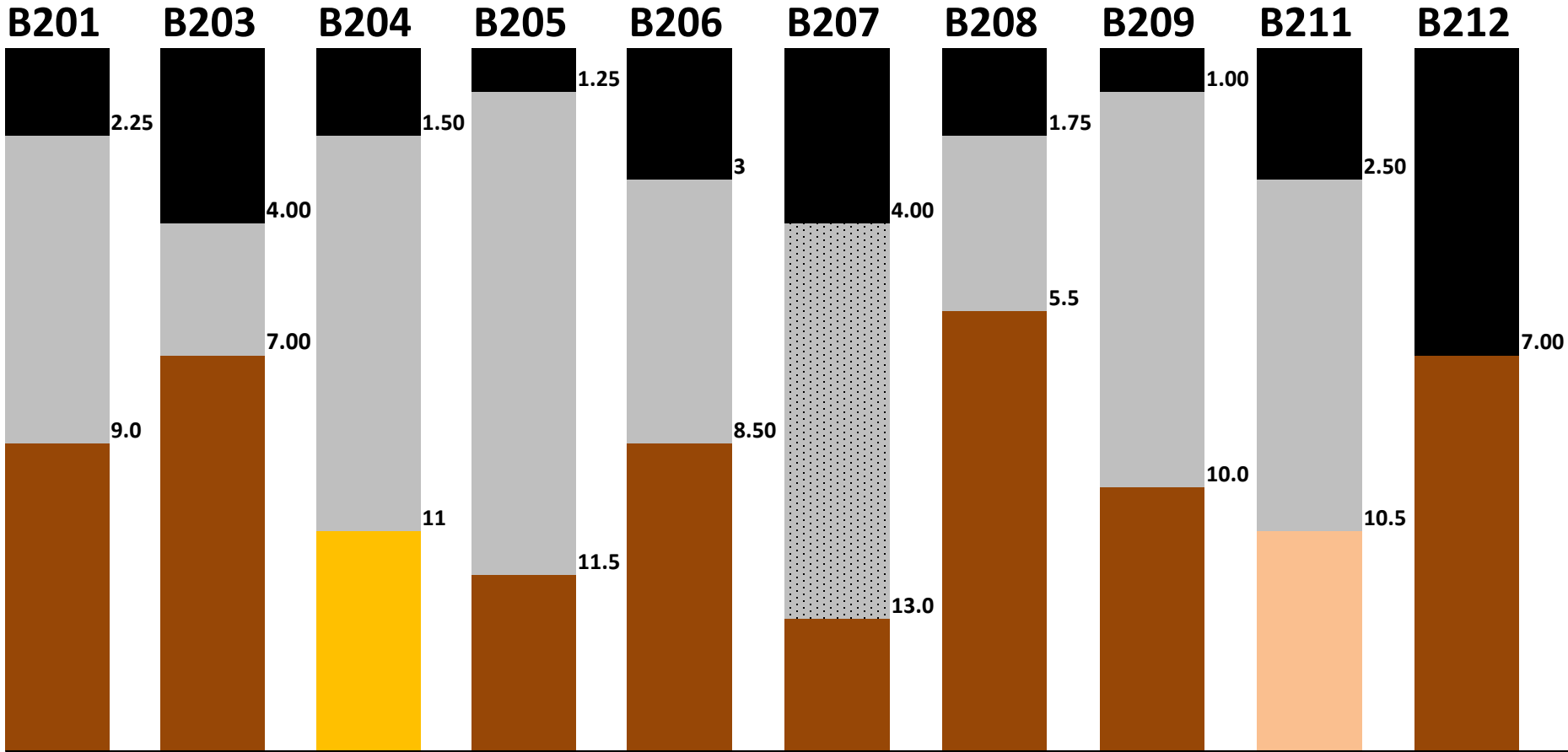
- Ion Exchange
 - Calcium
- Pozzolanic Interaction
 - PH 12.45+

Quick Lime Vs. Lime Kiln Dust (LKD)



Durability







Construction Process

Full Depth Reclamation



WSI Background



Common Pavement Maintenance



Cold Patching
Asphalt
Overlay
Asphalt
Wedging
Chip Sealing



Pulverize Grade And Compact

Total Reconstruction





Full Depth Reclamation

Reclaimer/Stabilizer





Cement /Lime Spreader

Cement/Lime Spreader





56th Ave.
City of Wyoming

A photograph of a road construction project. In the center, a white tractor is moving along a road, pulverizing the existing asphalt pavement. To the right of the tractor, a worker in a light-colored shirt and pants is spreading a dark, granular material onto the road surface. The road is flanked by green grass and large, leafy trees. The sky is clear and blue. The text "Pre pulverize existing pavement" is overlaid in white with a black outline at the bottom of the image.

**Pre pulverize existing
pavement**



**Hydrate base to avoid
segregation**



**Pre grade to achieve desired
cross section**



**Spreading of the
stabilizing agent**



**Start of the mixing
process**

Initial Compaction




Rough Grading



Final Grading





Three Days Later



2 Years Later

Summary

- *Speed of Construction*
- *Re-use Material*
- *Easily maintain or re-establish existing grade*
- *Extend pavement service life*
- *Cost Effective*

Budgetary Numbers

Typical costs range from \$4.75-7.50 per sy.

Contributing Factors

- **Stabilizing agent**
- **Percentage of stabilizing agent**
- **Project size**

Questions?



A photograph of a residential street. The road is paved and shows signs of wear, including cracks and dark patches. On either side of the road are grassy areas with trees, some of which are bare, suggesting a cooler season. In the background, there are several houses, including a prominent white one. A street sign is visible on the right side of the road. The sky is clear and blue.

Wabeek Road, Oakland County











