

Advantages of Concrete Parking Lots

Presented by:

National Ready Mixed Concrete Association
(NRMCA)

American Society of Concrete Contractors
(ASCC)



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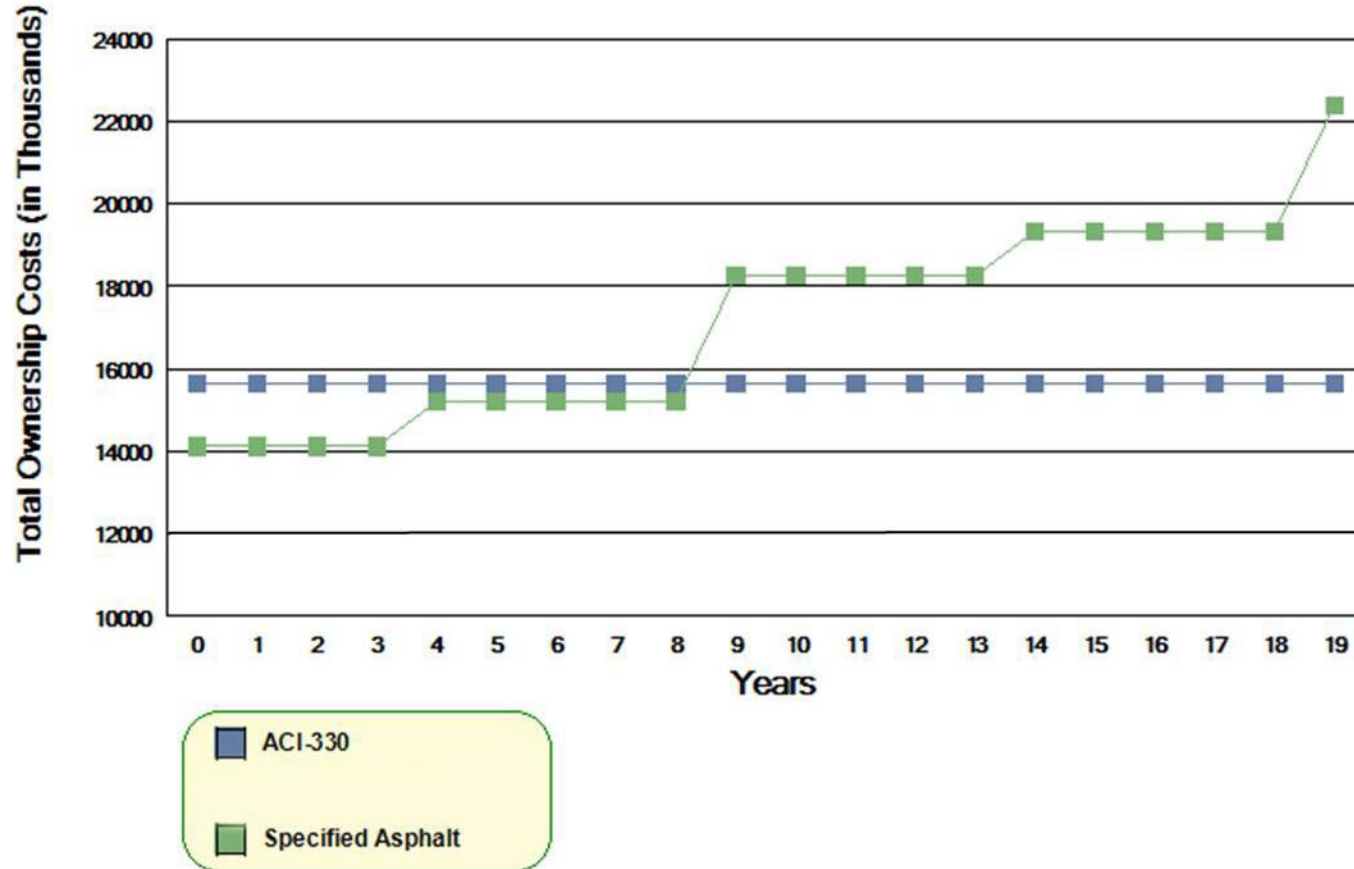
disclaim vb 1 to deny (responsibility for or knowl
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Today's Outline

- Market Trends
 - Benefits of Concrete Parking Lots
 - Economics
 - Concrete/Asphalt Comparisons
 - Sustainability
 - Our Goal: To give you correct information from the people who make concrete and the contractors who build with it, enabling you to make an informed decision regarding your parking lot project.
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Historical Trend-The Market Has Changed

Break Even Analysis - Current Costs



Benefits of a Concrete Parking Lot

- Economical
- First Cost
 - Affordable and competitively priced
 - Minimum subbase preparation
 - One pass completion



Benefits of a Concrete Parking Lot

- Economical
- Long Term Cost
 - Lower annual maintenance
 - No scheduled re-paving
 - Lower life-cycle cost
 - No business interruption



Benefits of a Concrete Parking Lot

- Performance
 - Proven long life
 - Strength increases with age
 - No potholes, bumps, or wrinkles
 - Evenly carries heavy loads
 - Resistance to freeze/thaw

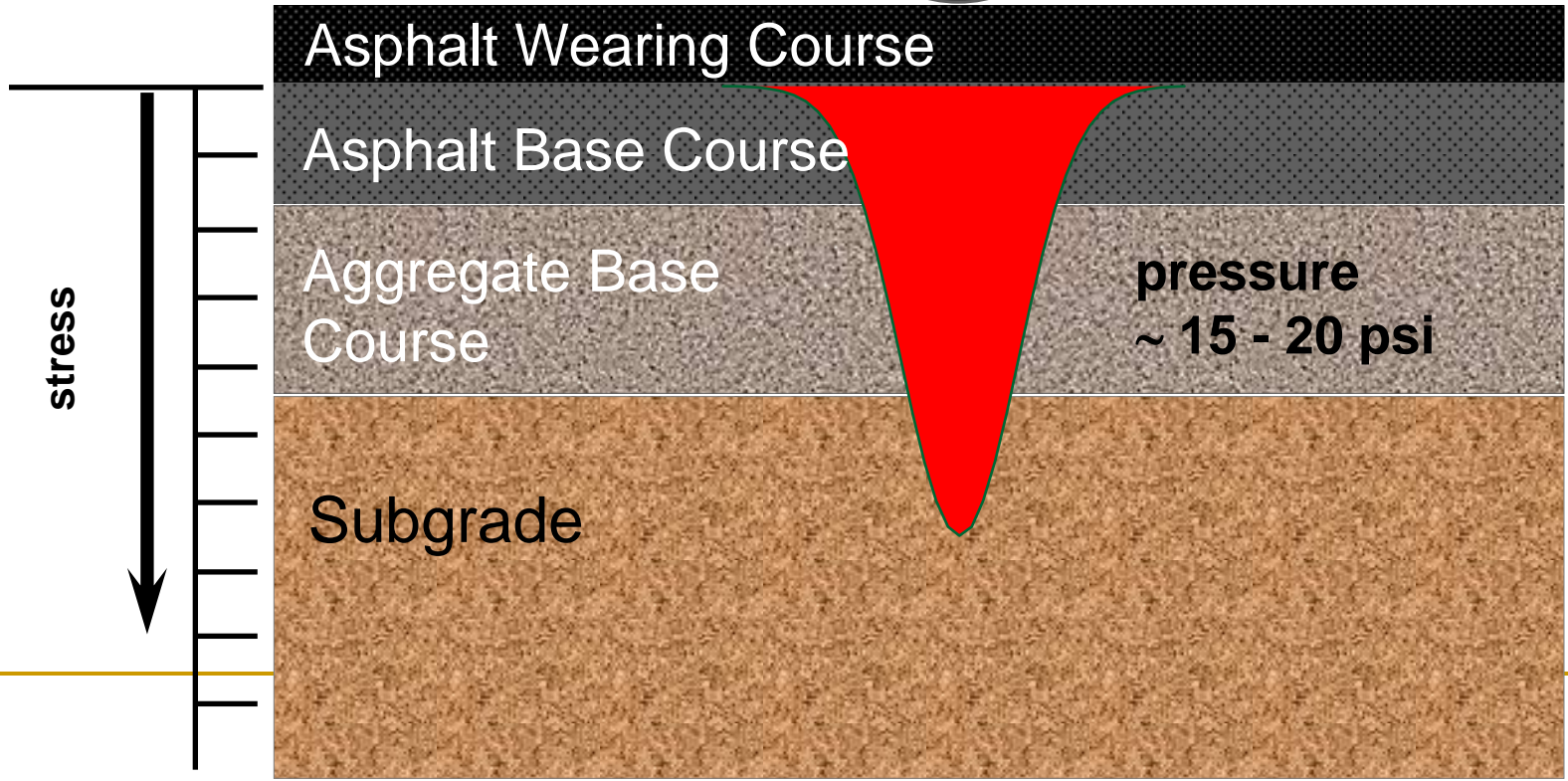
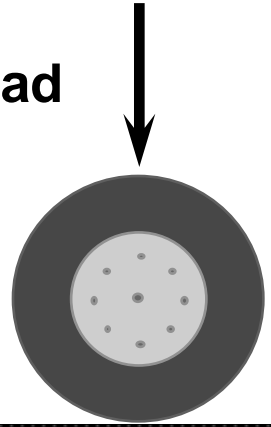


Why Do Pavements Failure?

- Not due to # of years/age
 - Due to stress of carrying loads
 - Vehicle traffic-Improper Design
 - Heat / Cold-Weather Conditions
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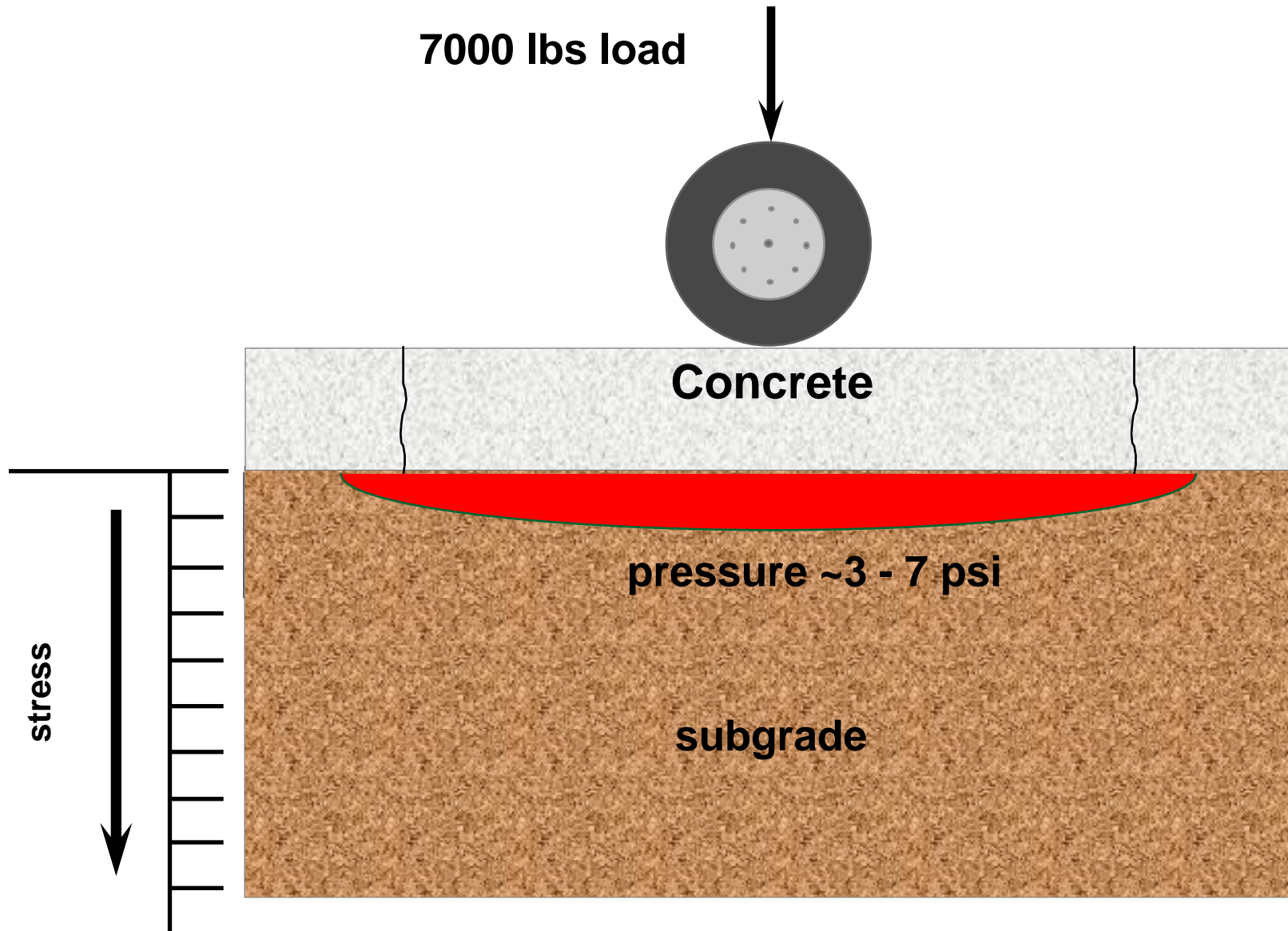
Tire Point Load Transfer-Asphalt

7000 lbs load





Tire Point Load Transfer-Concrete



Design Thickness

- Design for purpose (adjust thickness)
 - Passenger vehicle parking
 - Truck lanes
 - Loading areas
 - Truck parking (sand shoes/dollies)
 - Increase thickness
 - Thickened beam

Established National Design

- ACI 330R-08
 - Guide for the Design and Construction of Concrete Parking Lots
- ACI 330.1-03
 - Specification for Unreinforced Concrete Parking Lots
- NOT AASHTO

ACI 330R-08

Guide for the Design and Construction
of Concrete Parking Lots

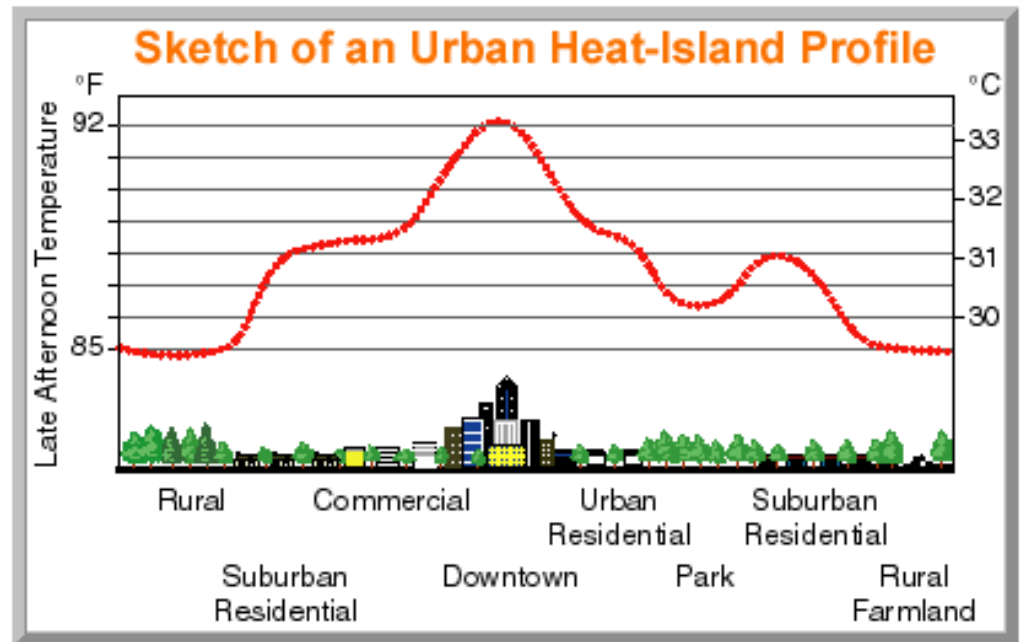
Reported by ACI Committee 330



American Concrete Institute®

Heat Island Mitigation

- Concrete's lighter color means less heat absorption
- Lowers ambient air temperature by 7 to 10 degrees
- 1 degree equals 1.5% change in energy consumption



Solar Reflectance (Albedo) and Solar Reflective Index (SRI)

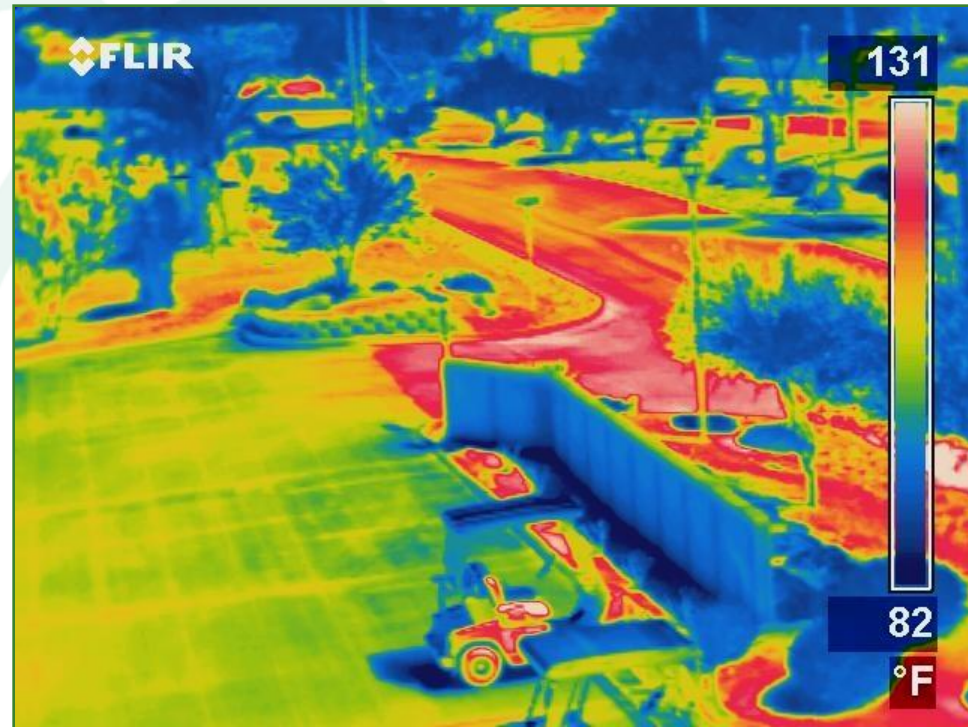
| Material surface | Solar Reflectance* | Emittance | SRI* |
|------------------------------------|--------------------|-----------|-----------|
| Black acrylic paint | 0.05 | 0.9 | 0 |
| New asphalt | 0.05 | 0.9 | 0 |
| Aged asphalt | 0.1 | 0.9 | 6 |
| *White* asphalt shingle | 0.21 | 0.91 | 21 |
| Aged concrete | 0.2 to 0.3 | 0.9 | 19 to 32 |
| New concrete (ordinary) | 0.35 to 0.45 | 0.9 | 38 to 52 |
| New white portland cement concrete | 0.7 to 0.8 | 0.9 | 86 to 100 |
| White acrylic paint | 0.8 | 0.9 | 100 |

EPA Heat Island Reduction Initiative

- Trees and Vegetation
- Green Roofs
- Cool Roofs
- Cool Pavements



Concrete Pavements can Reduce Global Warming Potential by 50%



Photos courtesy of the American Concrete Pavement Association

LED Lighting – The New Normal



Concrete's reflectivity optimizes performance of LED lighting
Reduce wattage from 400W to 125W

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WWW.NRMCA.ORG

“The higher reflectance values from concrete play as much of a role in the visibility and apparent brightness of the site as the lighting.”



www1.eere.energy.gov/femp/technologies/solid_state_lighting.html

A Concrete Alternative for Existing Asphalt Parking Lot

Concrete Overlay

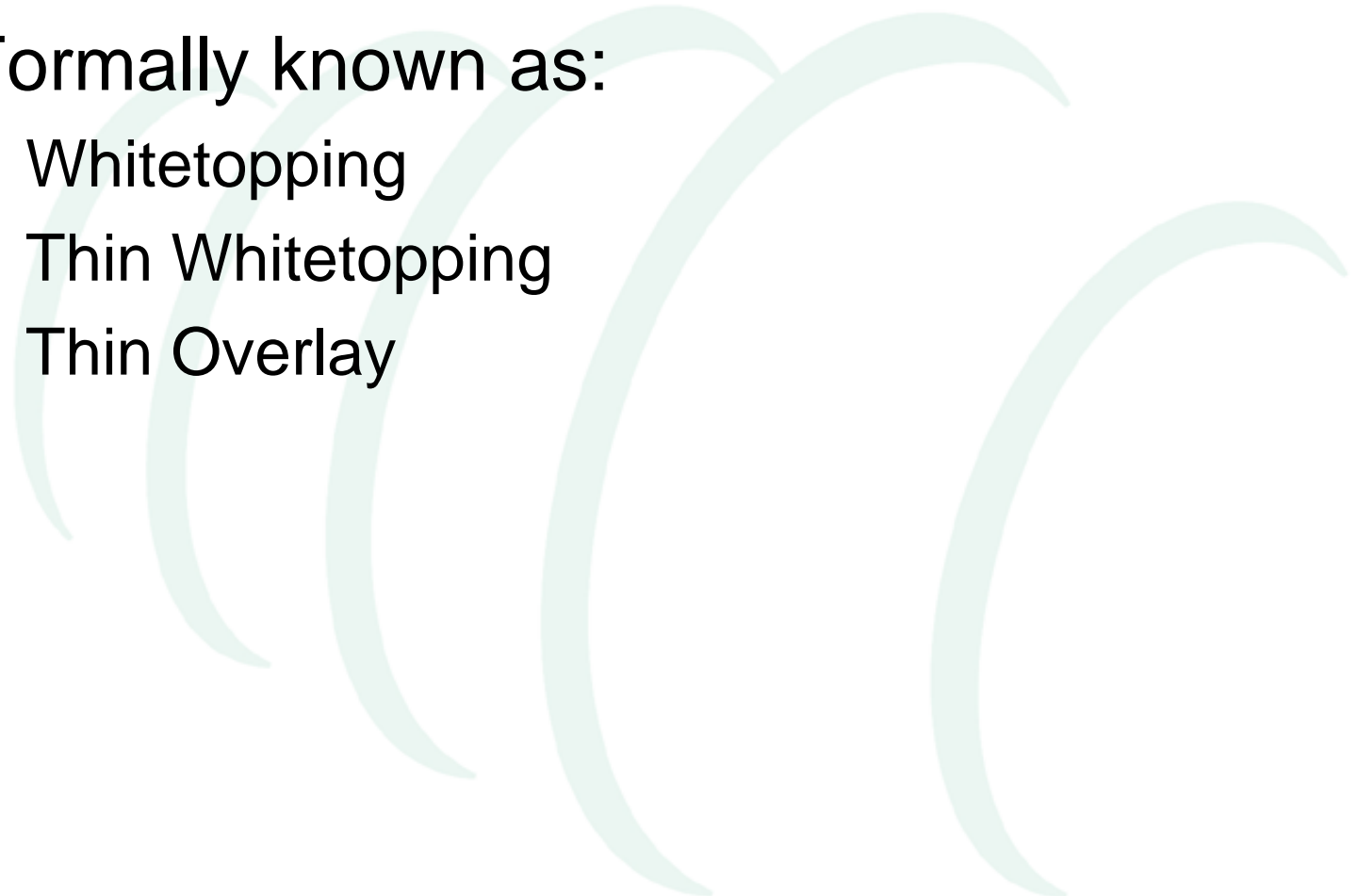


What can be done with an existing asphalt parking lot?

Concrete Overlays: New life for existing parking lots without reconstruction



What is an “overlay”?

- Formally known as:
 - Whitetopping
 - Thin Whitetopping
 - Thin Overlay
- 
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What is an “overlay”?



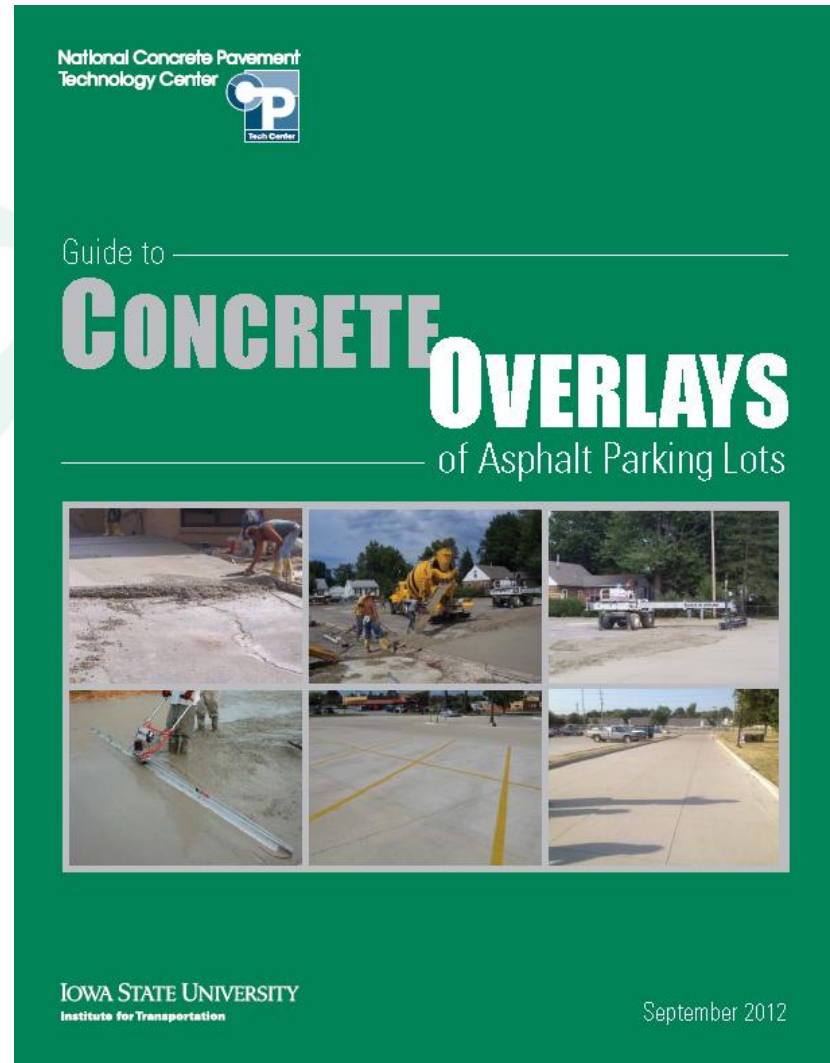
- 3” - 5” concrete on existing asphalt surface
- Provides rigid pavement able to withstand heavy traffic
- Existing asphalt serves as compacted base for concrete pavement

Why Concrete Overlays?

- Can be placed on both concrete and asphalt pavements.
- Offer an economically sound solution that will outlast any asphalt.
- All the benefits of concrete pavement
 - Long-term skid resistance
 - Greater visibility.
 - Reduced Heat Island effect
 - Reduced lighting requirements
 - Increased safety
- Concrete overlays have a proven track record with millions of Yds² across the U.S.

Like ACI 330, there is an industry standard guide

- Pavement Evaluation
- Required Thickness
 - Car parking area
 - Access roads
 - Heavy duty truck Lanes
- Surface preparation
- Placement procedures
- Joint layout guidelines



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Questions?

