

BENEFITS OF CONCRETE PARKING LOTS AND CONCRETE OVERLAYS OF EXISTING ASPHALT PARKING LOTS

Levi Singler

WHY CHOOSE CONCRETE?

- Maintenance – eliminate costly and time consuming year to year asphalt maintenance.
- Longevity – commonly designed with a 20-30 year lifespan.
- Improve Safety – twice as reflective as asphalt.
- Environmentally Friendly
- Aesthetically Pleasing
- Cost Effective - 3-D paving technologies make concrete a cost effective solution.



OVERLAY VS NEW CONSTRUCT

- What is a Concrete Overlay?

- A concrete overlay is a process in which the existing asphalt is used as a base layer for the new concrete pavement.
- Saves on engineering costs
- Avoid updating stormwater systems, adding curb islands, green space
- “Concrete overlays have been used to rehabilitate existing asphalt pavements since 1918 (Hutchinson 1982). Beginning around the mid-1960s, many highway agencies began to search for alternative means of rehabilitating existing pavements, and the use of concrete overlays increased significantly (McGhee 1994). In the 1990s, there was an even higher increase in the use of concrete overlays, spurred by improvements in concrete paving technology. (3-D Laser Screed)” -ACI Committee 325

- New Construct

- Adding to an existing parking area or constructing a new parking area.
- Engineering Implications – islands, stormwater, greenspace etc.
- Permitting



Concrete Overlay

MAINTENANCE

- Saving time! Stop reaching out for seal coating or crack filling.
- Asphalt requires seal coating every other year to maximize life.
- Eliminate crack filling.
- Increase waterflow/ Eliminate drainage problems.
- Long Term Cost Savings



IMPROVE SAFETY

- Concrete is almost twice as reflective as asphalt!
- Higher visibility improves safety – after school activities
- LED lights can save on energy costs
- Traction

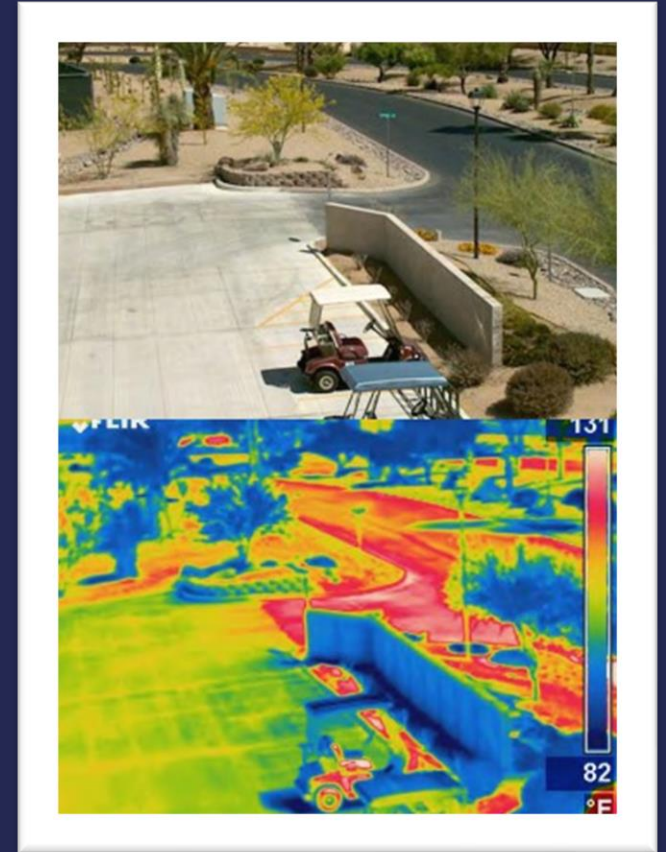


Jewelers Mutual Insurance – Neenah, WI



ENVIRONMENT/ SUSTAINABILITY

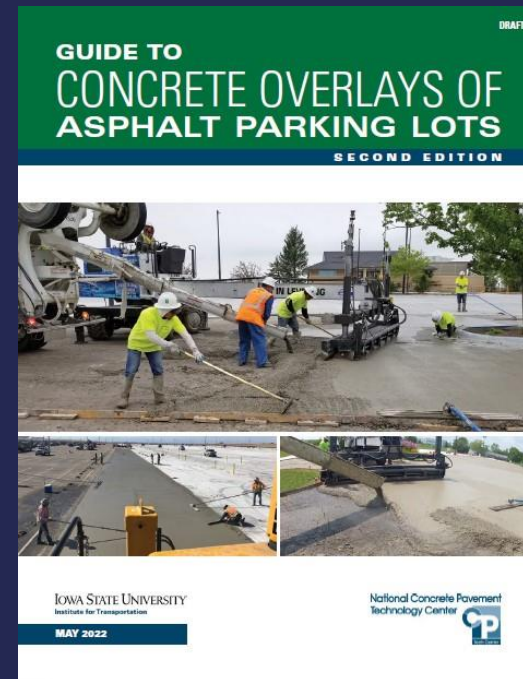
- Not a petroleum based product like asphalt
- Chemicals in seal coating
- Leaching – water penetrates asphalt
- Concrete reflects sunlight. Asphalt absorbs. A/C Costs
- Lowers ambient air temperature by 7 to 10 degrees
- LED lights can save on energy costs
- Concrete is 100% recyclable.
- LEED point certification.

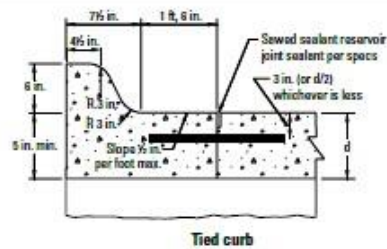
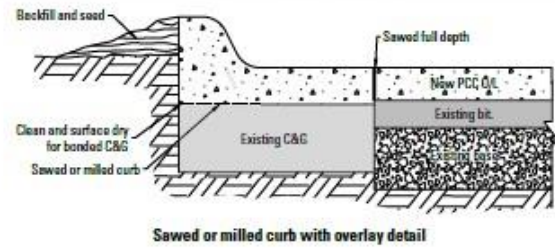
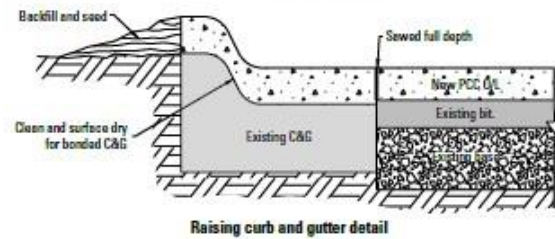
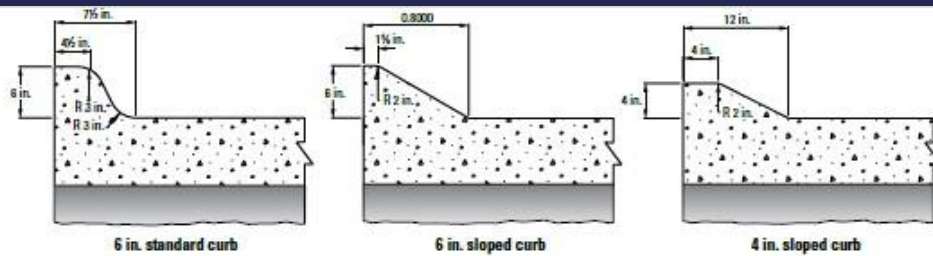


Concrete parking lot with thermal imaging of the same location (bottom) showing difference in temperature between concrete lot and the adjacent street paved with asphalt (Photo and image courtesy of Larry Scofield, ACPA)

LONGEVITY / DESIGN

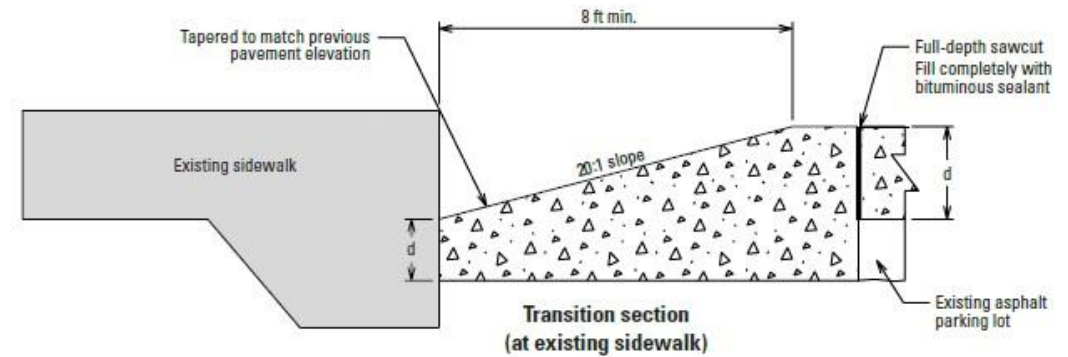
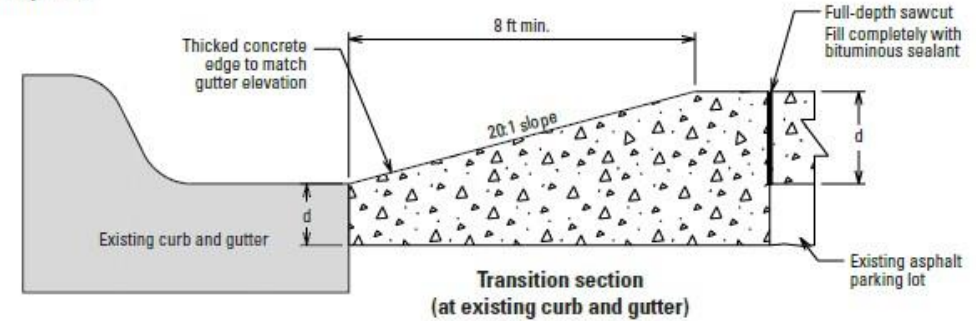
- NRMCA's Guide to Concrete Overlays
- ACI – 330 Design
- 20-30+ Year Design Life
- 85% Reliability on Year 20
- Do NOT Reference WI DOT Specs
- Joint Fillers
- Salt Protection





Recreated from Snyder & Associates, Inc., used with permission

Figure 22. Sawcut options



Recreated from Snyder & Associates, Inc., used with permission

Figure 23. Overlay transition into existing curbs

Recreated from Snyder & Associates, Inc., used with permission

Figure 24. Optional curb details

REINFORCEMENT

- Rebar & WWM are Things of the Past
- Unreinforced Parking Lots
- Fiber Reinforcement
- Optimized Pavement Mix Designs



ACI-330

3.8—Steel reinforcement in parking lot pavements

3.8.1 Distributed steel reinforcement—When pavement is jointed to form short panel lengths that will minimize intermediate cracking, distributed steel reinforcement is not necessary. The practice of adding distributed steel to increase panel lengths has largely been discredited, and generally leads to excessive joint movements and interior panel cracks that deteriorate over time. In areas where deicing salts and similar materials are used, distributed steel also presents a risk of corrosion. Shorter unreinforced panels are generally more economical and provide better performance. The use of distributed steel reinforcement will not add to the load-carrying capacity of the pavement and should not be used in anticipation of poor construction practices.

SELECTING YOUR CONTRACTOR

- General Paving Experience
- Size of Company Matters
- Overlay Experience
- Equipment – 3-D Laser Screed?
- Grading Equipment
- Pour Sizes



Photo Shows a 3-D Laser Screed in Action

PRE/CON & CONCRETE PLACEMENT



- Site Evaluation
- Existing Conditions
- Subgrade – Cracks Do Not Indicate Subgrade
- Pre-Con
- Cure Times
- Pour Days

Finished Product



Any Maintenance Required?

Resources:

Questions?

PAVE  AHEAD

DURABLE. SUSTAINABLE. **CONCRETE.**