



NASCAR Chicago Street Race Design & Construction

Illinois Asphalt Paving Association
87th IAPA Annual Conference
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Background

Fourth of July Weekend 2023

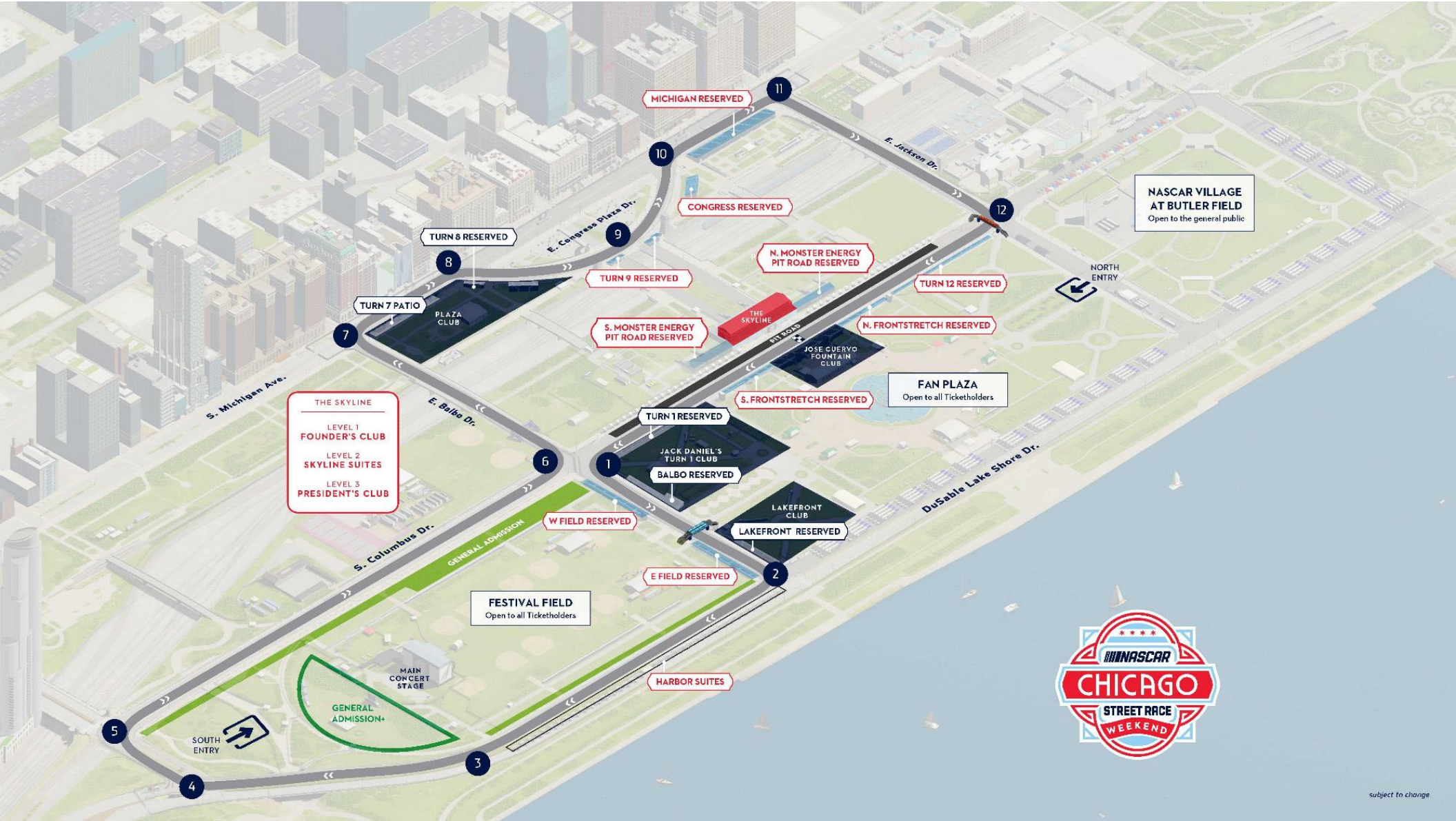
First ever NASCAR street race

- Saturday July 1: Xfinity Series "The Loop 121" (50 laps)
- Sunday July 2: Cup Series "Grant Park 220" (100 laps)

Street Course Features

- 2.2-mile street course in Downtown Chicago
- 12 turns
- 7 streets, 2 bridges
- PCC & HMA pavement





THE SKYLINE
 LEVEL 1
FOUNDER'S CLUB
 LEVEL 2
SKYLINE SUITES
 LEVEL 3
PRESIDENT'S CLUB

FESTIVAL FIELD
 Open to all Ticketholders

FAN PLAZA
 Open to all Ticketholders

NASCAR VILLAGE AT BUTLER FIELD
 Open to the general public





Street Course Design Considerations

Urban Street Design – How to turn city streets into a racecourse?

- 30-40 MPH Speed Limit. Race cars reached 140 MPH on DuSable Lake Shore Drive
- Rough Bridge and Approach pavement transitions
- Settlement at curb line near drainage structures
- Alternating PCC & HMA Pavement in fair to good condition
- Frequent manhole structures (telecom, power & sewer)
- Traffic Signals



Street Course Design Considerations

Racecourse Perimeter Protection & Fencing

15' safety/clear zone between fans and barrier wall

Special NASCAR-designed concrete barrier wall

Metal fencing atop wall



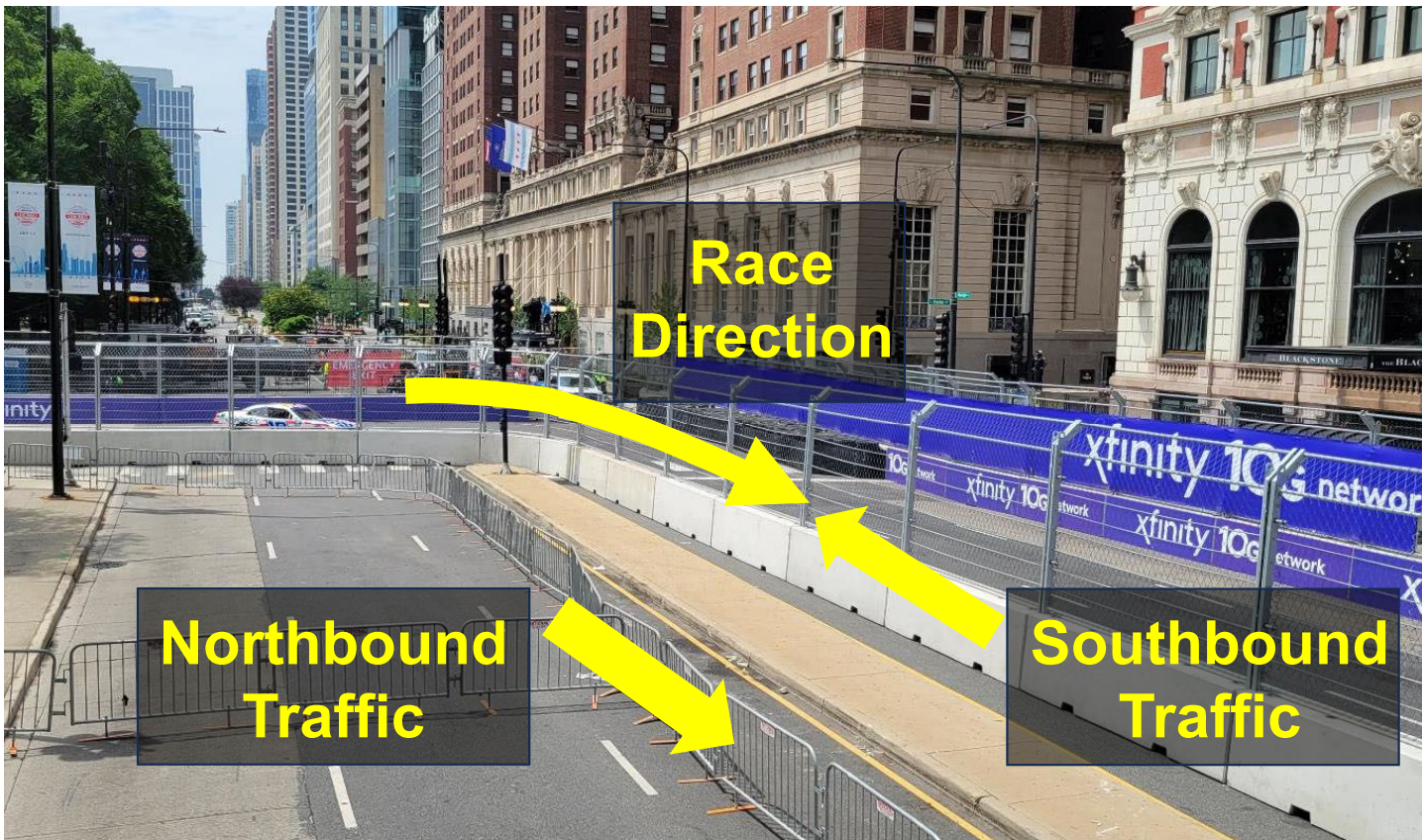
Concrete barrier locking mechanism connecting wall sections





Street Course Design Considerations

Center Medians & Race Direction



Roosevelt Road & Michigan Avenue center medians caused the racecourse to follow contraflow to street traffic directions to expand turning radius



Street Course Design Considerations

No New Thermoplastic Pavement Markings

New thermoplastic pavement markings are too smooth/slick for NASCAR racing tires – paint used for temporary traffic markings





Street Course Design Considerations

Secure Manhole Lids with Tack Welds



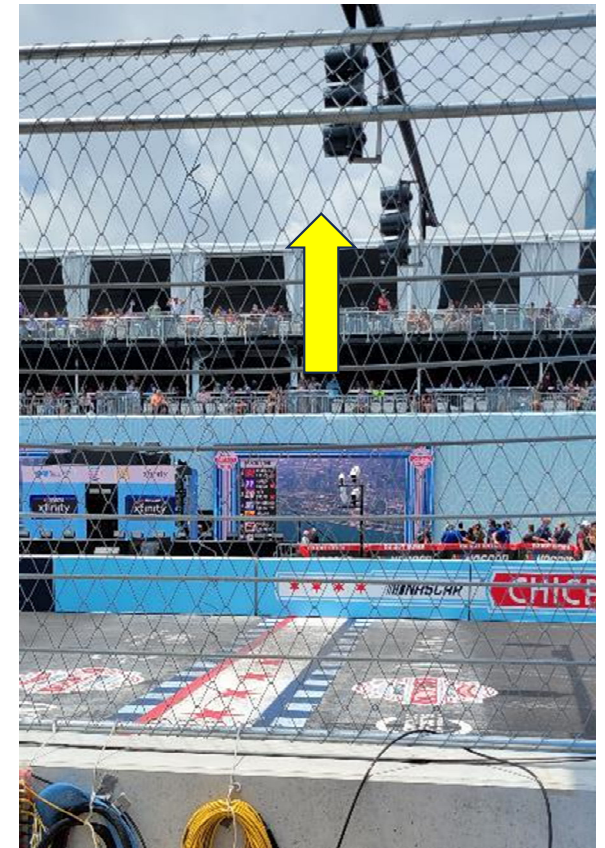


Street Course Design Considerations

Secure Traffic Signal Heads with Tethers

Traffic signals not designed for NASCAR racing speeds

To prevent loose material on the racecourse, signal heads were secured to the mast arms





Street Course Design Considerations

Existing Infrastructure Conditions

Congress Plaza Drive:

- Loose and cracked concrete at pavement patch
- Significant rutting in HMA pavement at CTA bus standing zone

DuSable Lake Shore Drive, Roosevelt Road, Columbus Drive:

- Loose and cracked concrete at pavement patches
- Deteriorated and cracked full-depth concrete pavement

Balbo Drive & Jackson Drive:

- High and Low transitions at bridge approach pavement



Street Course Design Considerations

Existing Infrastructure Conditions

Columbus Drive:

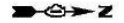
- Failed full-depth HMA patch
- HMA pavement in poor condition from Balbo Drive to Jackson Drive
- Peeling paint and corrosion on light poles
- Tree pits with rusted, broken, and missing sections of fence
- Cracked and settled West sidewalk

By the Numbers:

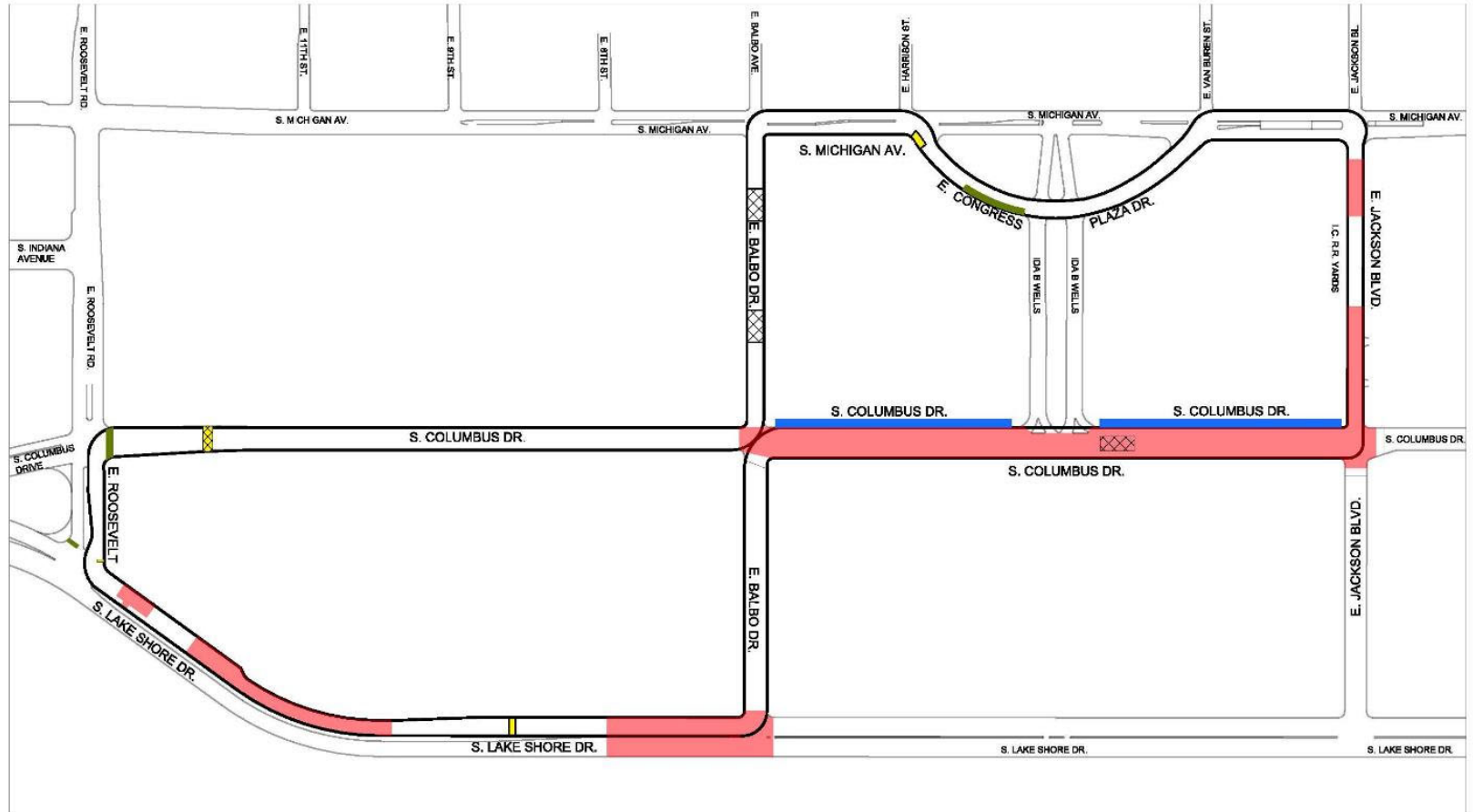
- 1/3 of the total racecourse
- Combined length of 3/4 of a mile



Street Course Proposed Improvements



- LEGEND**
- DIAMOND GRIND
 - PCC PAVEMENT 10"
 - PCC SIDEWALK 8"
 - FULL DEPTH SMA PATCH
 - HMA SURFACE COURSE
STONE MATRIX N80, 1.75"
POLYMERIZED LEVELING
BINDER MACHINE METHOD
IL-4.75, N50, 1"





Construction Schedule Considerations

Located in Downtown Chicago

Construction Window: March to May 2023

Special Events Scheduled within Construction Period

- March 26: Shamrock Shuffle
- April 26: PanCAN Purple Stride
- May 13: Girls on the Run Challenge
- May 13: Switch on Summer
- May 18: Chase Corporate Challenge
- May 21: Lifetime Half Marathon
- May 21-30: Suenos Music Festival



Street Course Repairs & Improvements

Congress Plaza Drive

Issue:

Damage Loose and cracked concrete at pavement patch

Significant rutting in HMA pavement at CTA bus standing zone





Street Course Repairs & Improvements

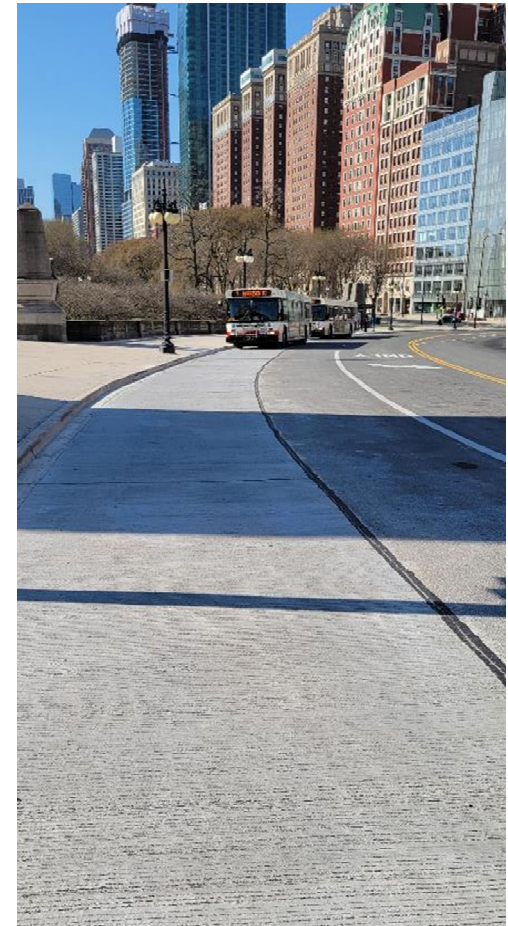
Congress Plaza Drive



Solution:

Rutted SMA composite pavement section within CTA bus standing zone replaced with full-length PCC pavement/*bus pad*

Deteriorated PCC patch replaced with SMA patch



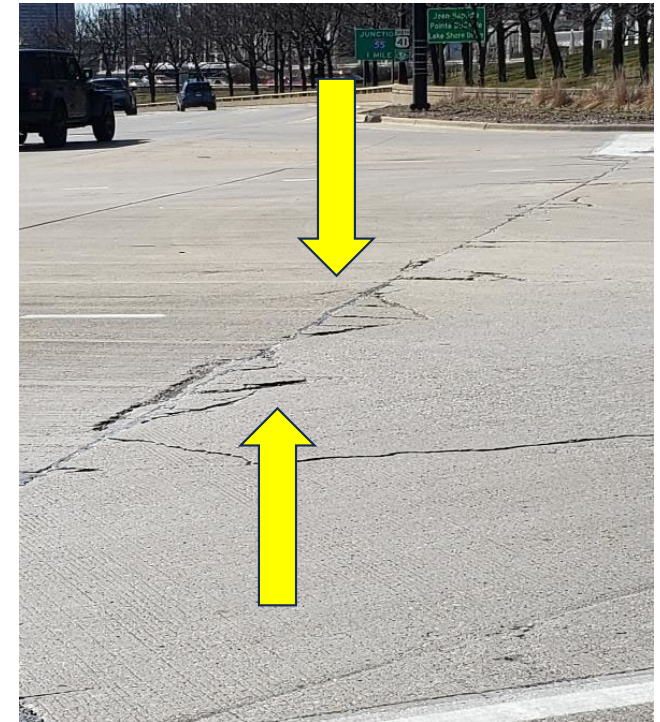
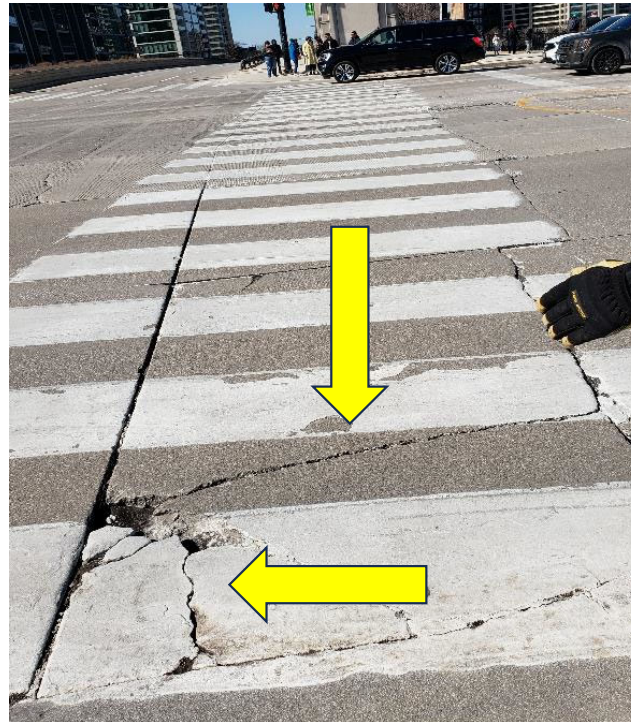


Street Course Repairs & Improvements

DuSable Lake Shore Drive, Roosevelt Road, Columbus Drive

Issue:

Loose and cracked concrete at pavement patches
Deteriorated and cracked full-depth concrete pavement





Street Course Repairs & Improvements

DuSable Lake Shore Drive, Roosevelt Road, Columbus Drive

Solution:

Locations determined to exhibit significant settlement, cracking or loose material (particularly at intersections and course turns) were replaced with PCC patches





Street Course Repairs & Improvements

Balbo Drive

Bridge Approach Transitions (High)



★ **Street Course Repairs & Improvements**
Jackson Drive Bridge Approach Transition (Low)





Street Course Repairs & Improvements

Jackson Drive Bridge Approach Transition (Low)





Street Course Repairs & Improvements

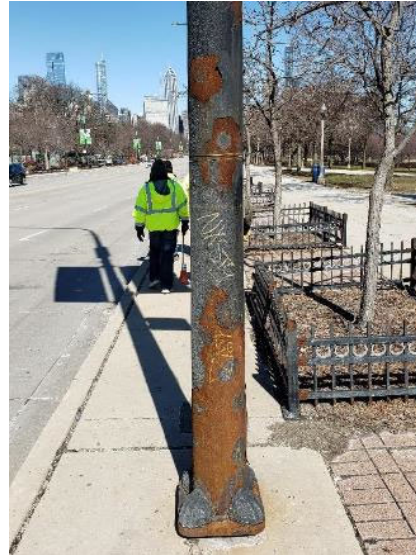
Columbus Drive

Issue:

Failed full-depth HMA patch

Peeling paint and corrosion on light poles

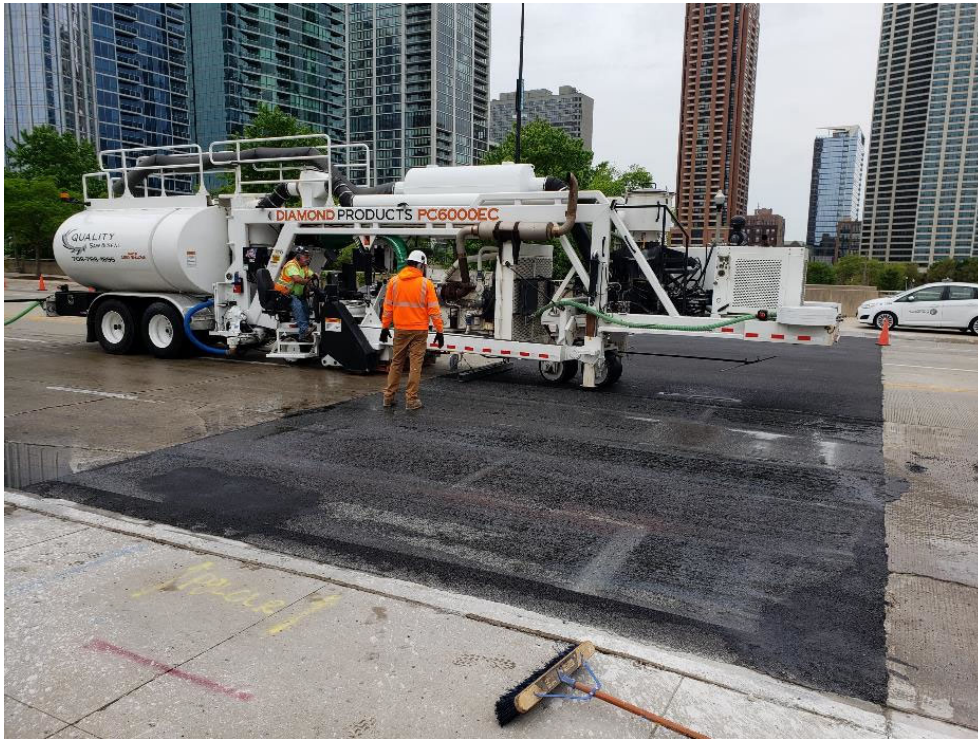
Tree pits with rusted, broken and missing sections of fence





Street Course Repairs & Improvements *Columbus Drive*

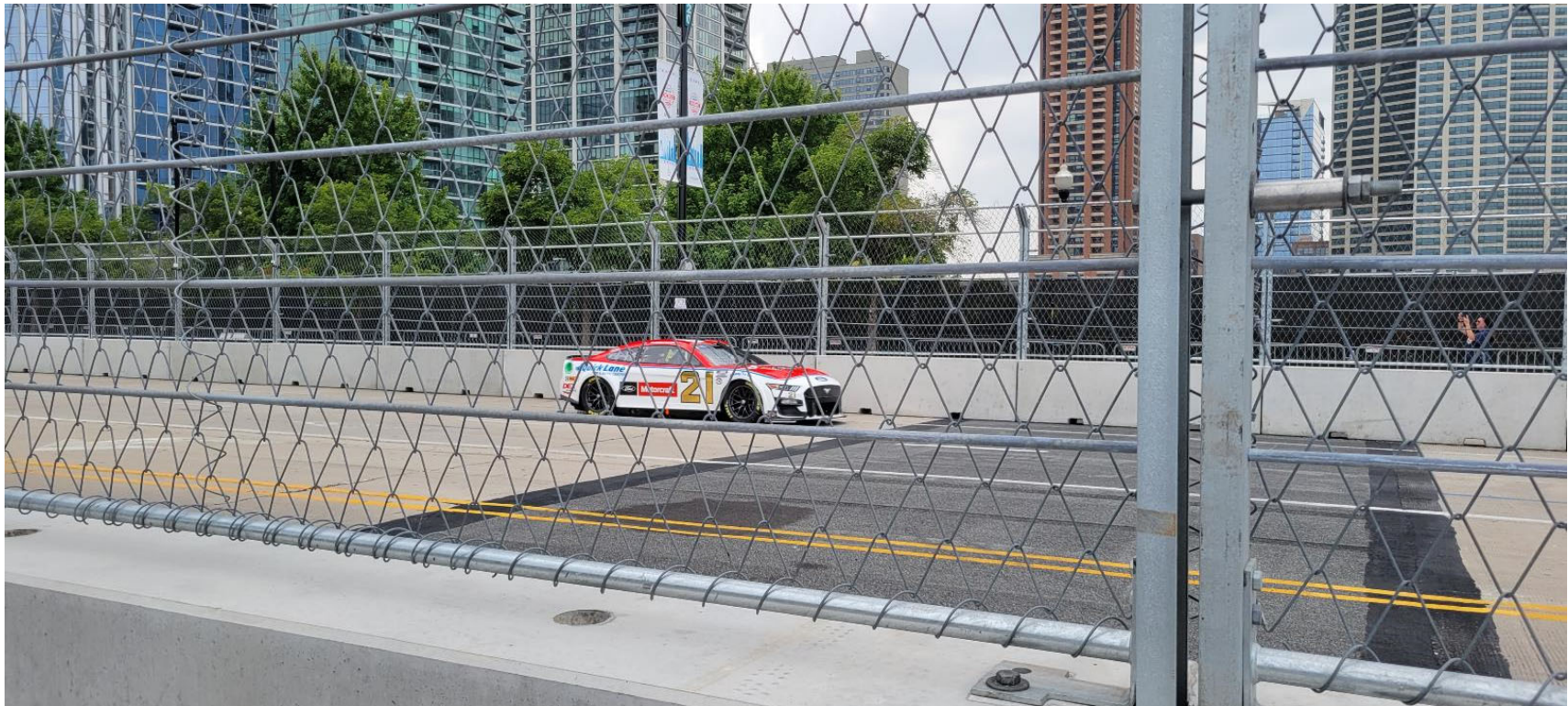
Solution: Remove and replace full-depth HMA patch





Street Course Repairs & Improvements *Columbus Drive*

Full-depth HMA patch on Race Day





Street Course Repairs & Improvements

Columbus Drive West Sidewalk

Issue: Cracked and settled sidewalk, ponding water





Street Course Repairs & Improvements

Columbus Drive West Sidewalk

Issue: Cracked and settled sidewalk, ponding water

Cause:

Asphalt ramps at curb line allow Chicago Park District & Grant Park event organizers to mount the curb and use sidewalks as a riding surface for vehicles and equipment





Street Course Repairs & Improvements

Columbus Drive West Sidewalk

Solution: Replace existing 5" sidewalk with thicker 8" sidewalk

Benefit:

New sidewalk infrastructure will withstand future vehicle loads without accelerated deterioration

Improve pedestrian safety

To be used for the NASCAR Pit Road





Street Course Repairs & Improvements

Columbus Drive Race Day Pit Road





Street Course Repairs & Improvements

Columbus Drive New HMA Overlay

Repave from Jackson Drive to Balbo Drive

Mill: 2 ½", Pave: ¾" IL 4.75 Level Binder + LJS + 1¾" IL 9.5 SMA

7 traffic lanes + 2 curb lanes = 94' wide roadway

Permit allowed for full street closure for 1 day (rarely allowed just for paving operations)

Proposed use of Echelon Paving technique

- Minimize joints
- Accelerate paving operations
- Minimize traffic disruptions
- Performed in 3 passes with a 2-paver operation (in lieu of 6 single passes)



Street Course Repairs & Improvements

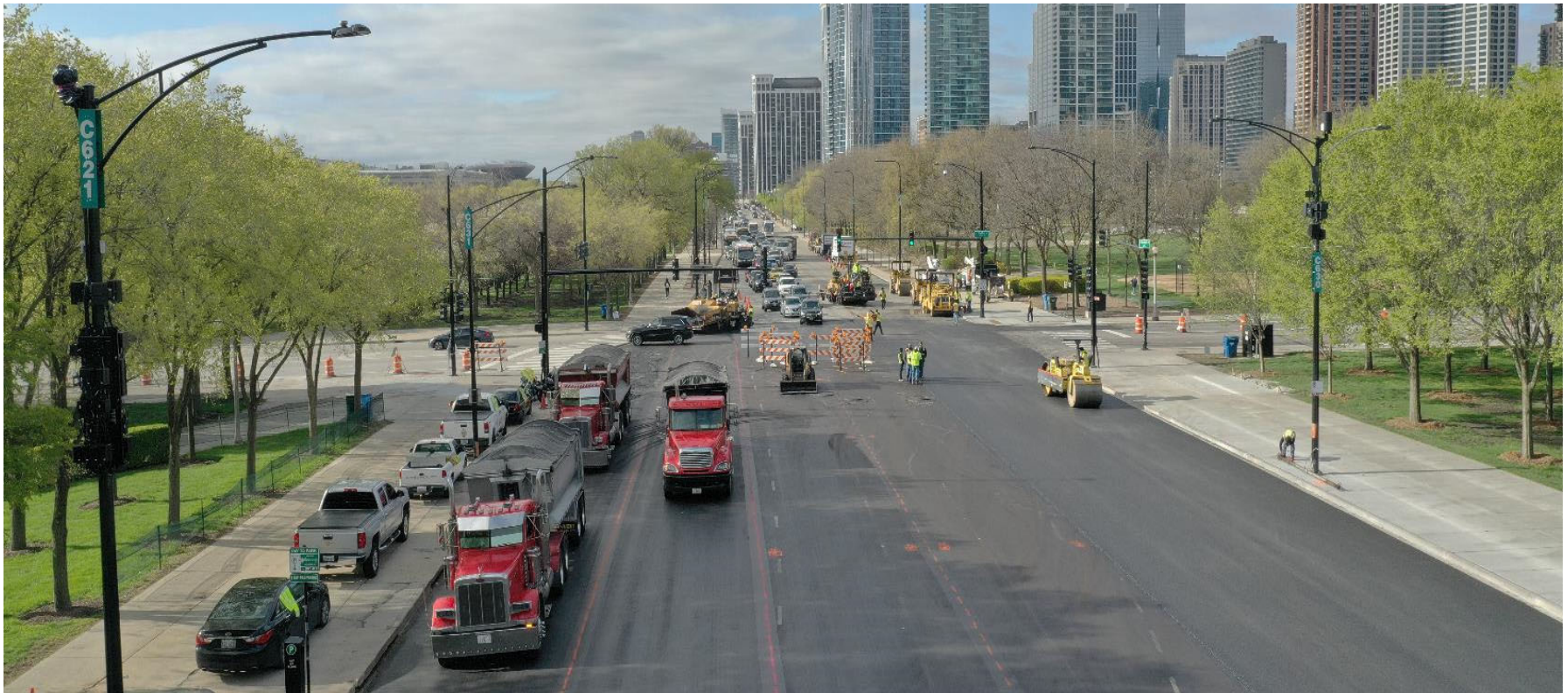
Columbus Drive Existing HMA Overlay





Street Course Repairs & Improvements

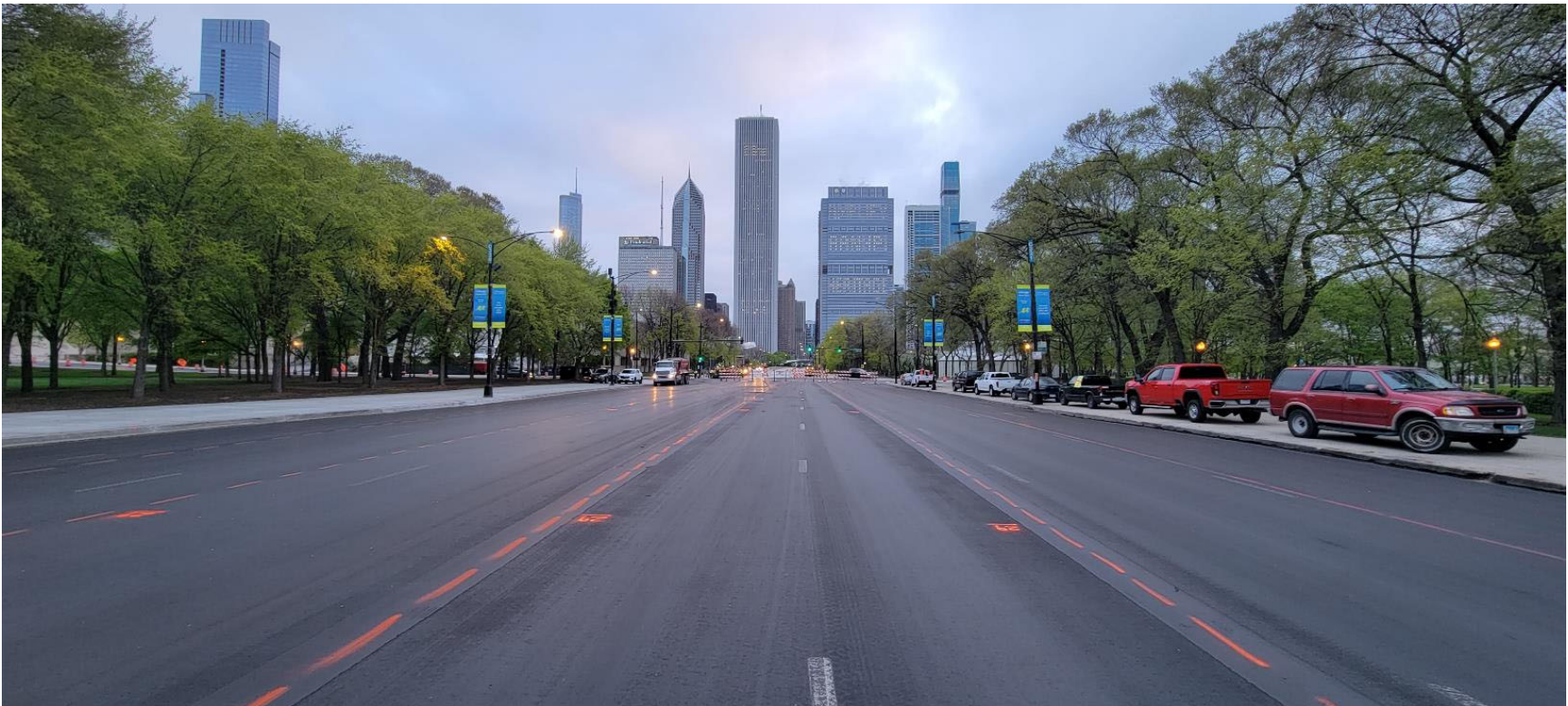
Columbus Drive Traffic Considerations





Street Course Repairs & Improvements

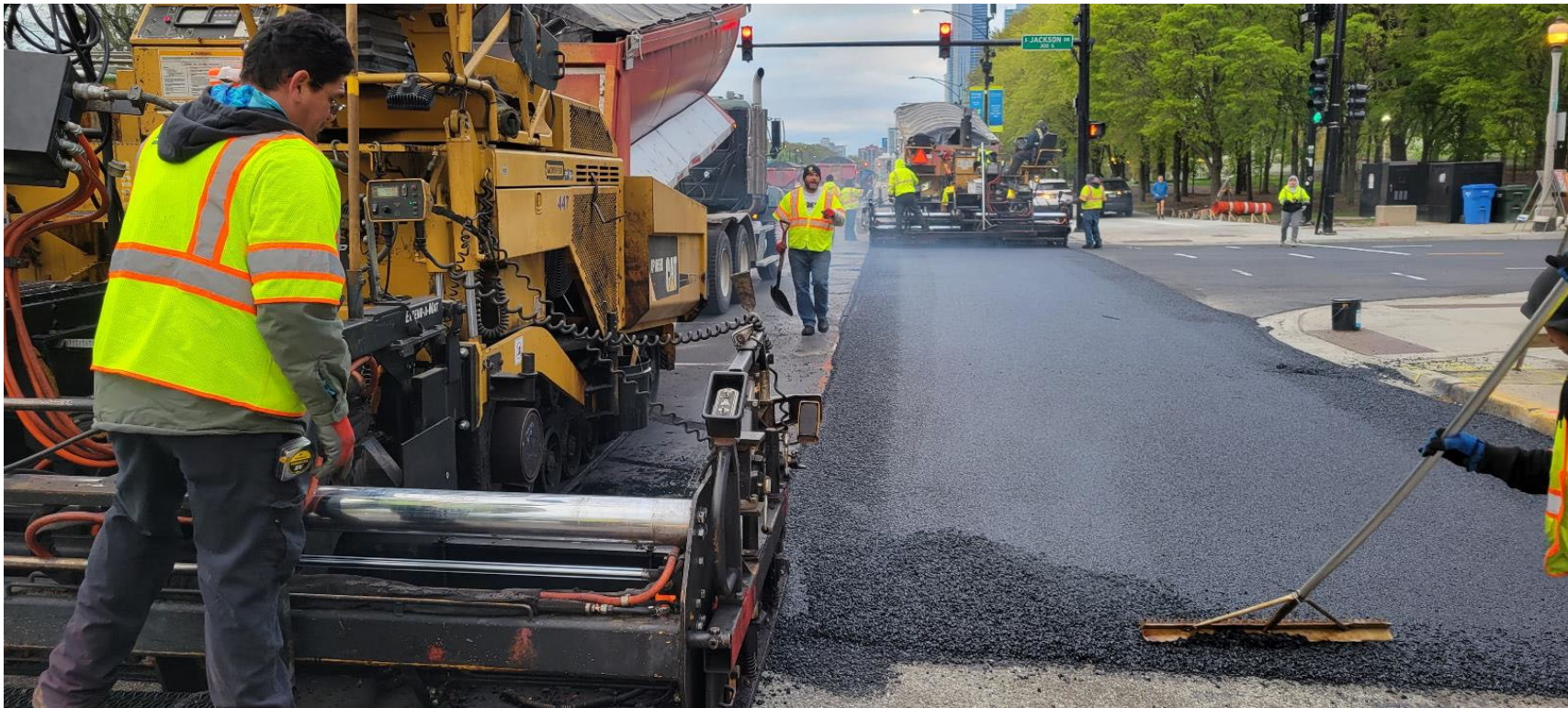
Columbus Drive IL 4.75 Level Binder & LJS





Street Course Repairs & Improvements

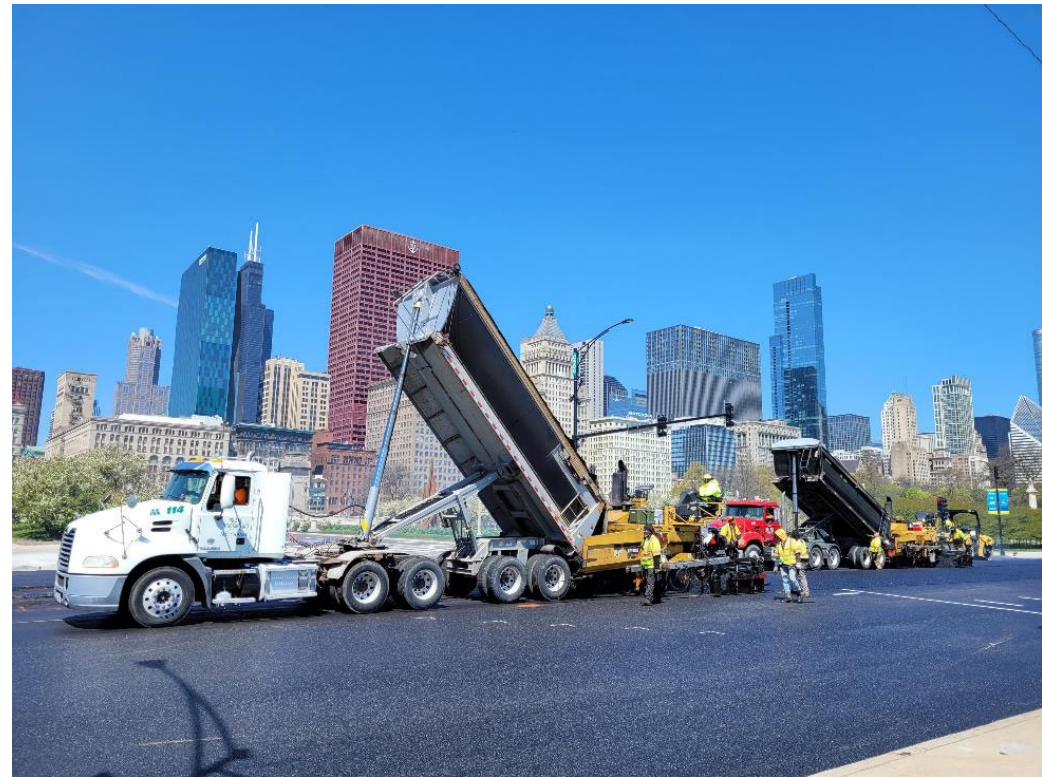
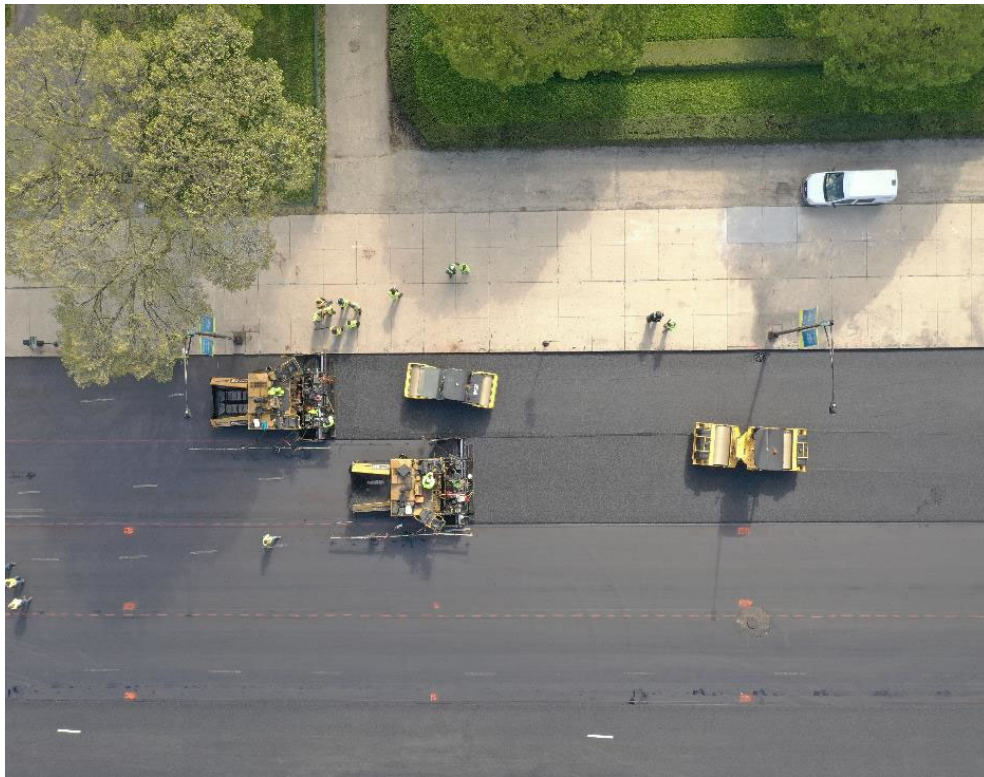
Columbus Drive Echelon Paving IL 9.5 SMA





Street Course Repairs & Improvements

Columbus Drive Echelon Paving IL 9.5 SMA





Street Course Repairs & Improvements

Columbus Drive Echelon Paving Passes





Street Course Repairs & Improvements

Columbus Drive New HMA Overlay





Street Course Repairs & Improvements

Columbus Drive Punchlist Bump Grinding





Street Course Repairs & Improvements

Columbus Drive Punchlist Bump Grinding





Street Course Repairs & Improvements

Special Feature Trackbond 50

Specified by NASCAR for use on racing surfaces

Ultra-thin asphalt repair and protectant product

Used to prevent segregated areas of HMA from raveling, resists pavement failure due to shear stresses (high speed turns and braking)

Two component product

- Blend of dry fine sand and cementitious material
- Liquid resin + water

Roller application on surface



Street Course Repairs & Improvements

Special Feature Trackbond 50

Typical application at joints (HMA-HMA & HMA-PCC) and pavement cracks

Applied on Columbus Drive:

- Full Depth SMA patch transition joints to PCC pavement
- Balbo intersection at joints between existing HMA pavement and new SMA pavement
- Jackson intersection at west crosswalk joint



Street Course Repairs & Improvements

Special Feature Trackbond 50





Street Course Repairs & Improvements

Balbo Drive LJS Pavement Flushing

Issue:

During racecourse setup, two separate areas between Columbus Drive and DuSable LSD (approx. 500 feet apart) developed Longitudinal Joint Sealant flushing in 5-year-old HMA pavement





Street Course Repairs & Improvements

Balbo Drive LJS Pavement Flushing

Likely Causes:

Hot weather + heavy equipment and material loads

Early years of LJS use for CDOT – higher application rate

Thin(er) surface lift thickness than design

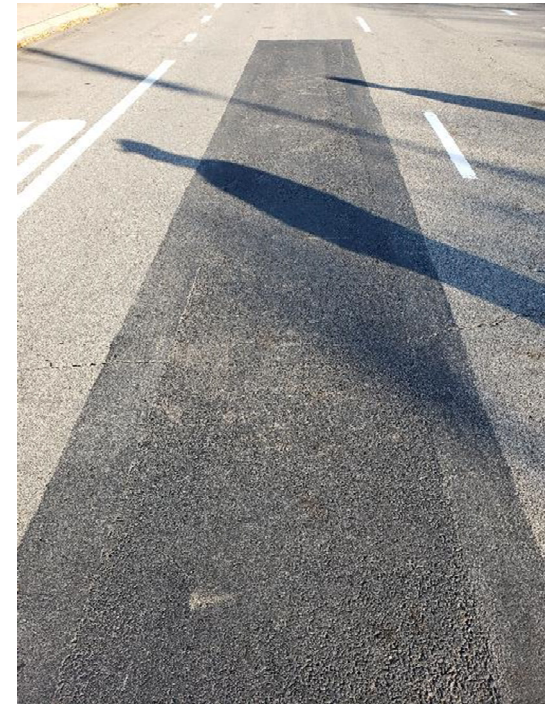




Street Course Repairs & Improvements

Balbo Drive LJS Pavement Flushing

Solution: Mill, tack coat, N70 patch, and Trackbond application





Street Course Repairs & Improvements

Balbo Drive Alligator Cracking & Trackbond 50

Balbo from Columbus to DLSD not identified for repairs during initial walk-through

Issue:

Accelerated deterioration during pre-race setup activities

Solution:

Punchlist repair using Trackbond 50 to prevent further deterioration or loose material during race activities





Special Features

The Skyline VIP Structure

Overlooks the Start/Finish Line

Elevated above tree-line

Spans over parkway trees and Ida B. Wells Drive roadway

360-degree views of Grant Park, Buckingham Fountain, Lake Michigan and Chicago Skyline

Direct views into the Pit Boxes

Premium / VIP seating and hospitality service

President's Paddock Club – approx. \$3,300 per person



Special Features

The Skyline VIP Structure – Under Construction





Special Features

The Skyline VIP Structure – Under Construction





Special Features

The Skyline VIP Structure – Under Construction





Special Features

The Skyline VIP Structure – Under Construction





Special Features

The Skyline VIP Structure – Rendering





Special Features

The Skyline VIP Structure – Rendering





Special Features

The Skyline VIP Structure – Race Day





Race Day

Jackson Drive Bridge Approach





Race Day

Roosevelt Road at Dusable LSD





Race Day

Columbus Drive at Start/Finish Line





Race Day

NASCAR Cup Series Grant Park 220 Winner



Acknowledgements

