MOVE ILLINOIS

The Illinois Tollway
DRIVING THE FUTURE

# Rebuilding And Expanding The Illinois Tollway With Minimal Impact To The Daily Customer

Paul D. Kovacs, P.E., Chief Engineering Officer
September 26, 2017

# Illinois Tollway

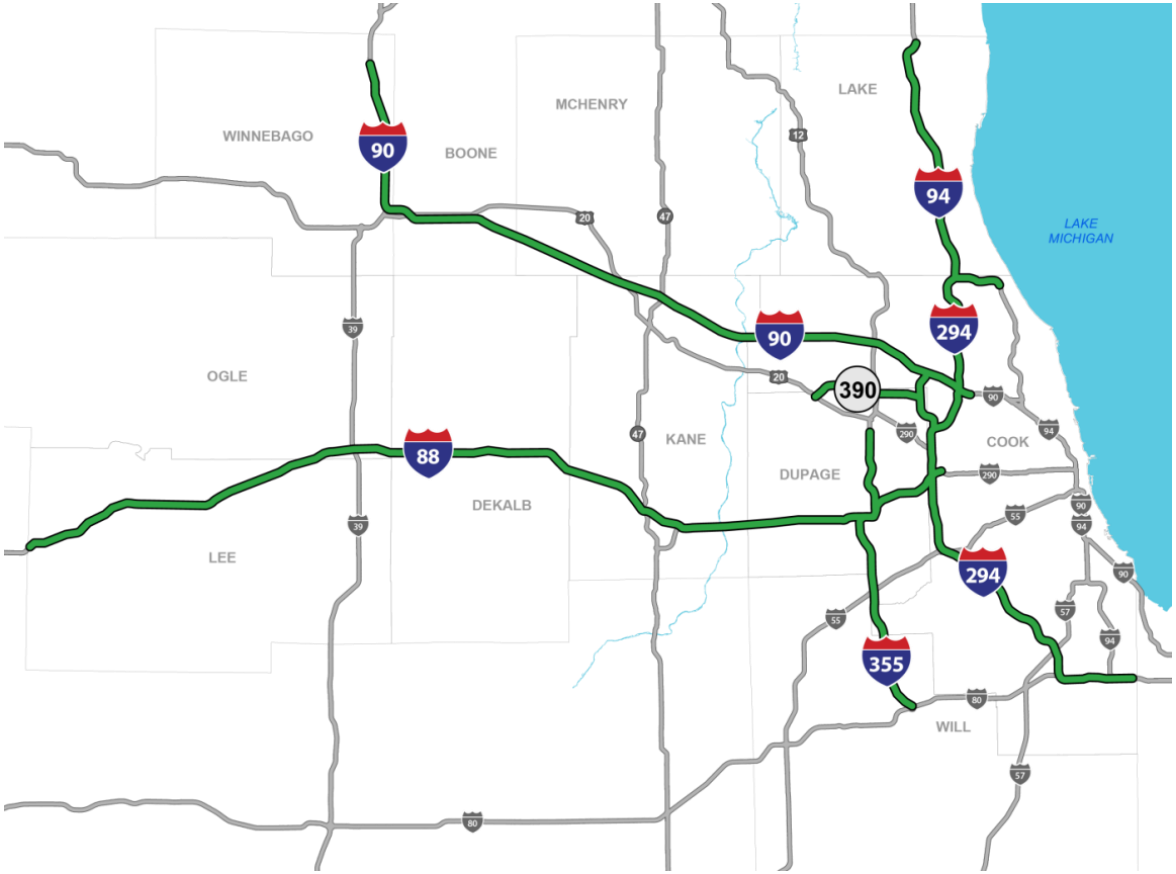
**292-mile system comprised of five tollways**

**Opened in 1958 as a bypass around Chicago to connect Indiana and Wisconsin**

**Carries more than 1.6 million vehicles per day**

**User-fee system**

- Only customers who use the Tollway pay for the Tollway
- No state or federal tax dollars used for maintenance and operations



# Redefining Transportation

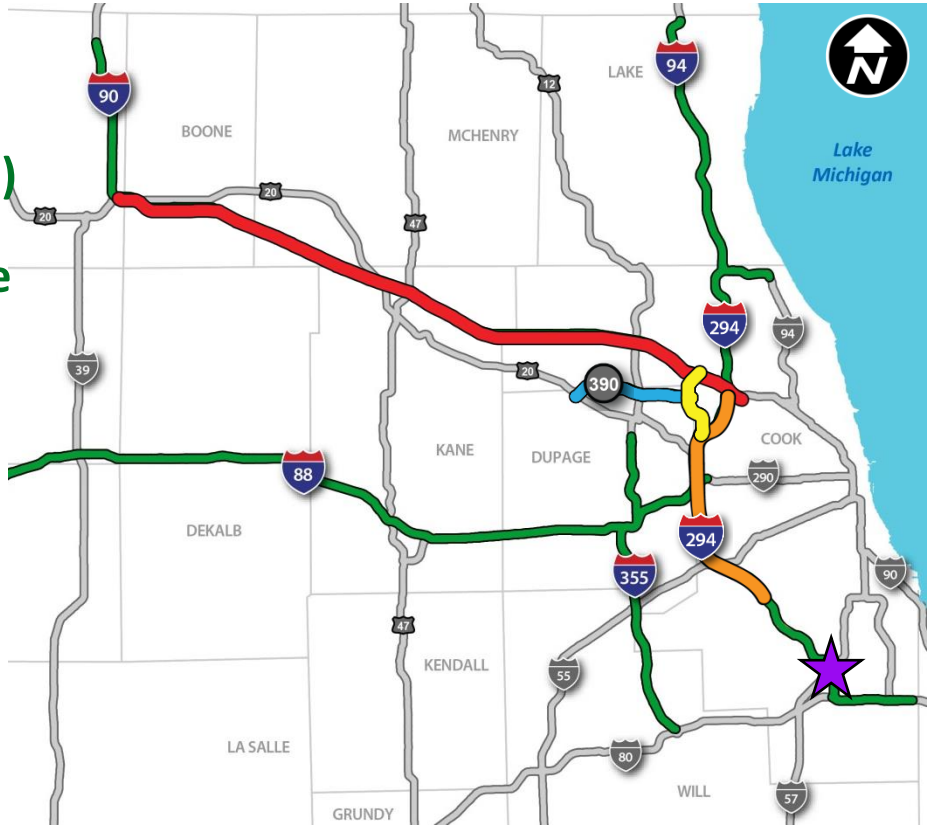
**Rebuilt and widened Jane Addams Memorial Tollway (I-90)**

**Provided new access at Tri-State Tollway (I-294)/57**

**Opening new Illinois Route 390 Tollway**

**Designing the Central Tri-State Tollway (I-294)**

**Building I-490 Tollway**

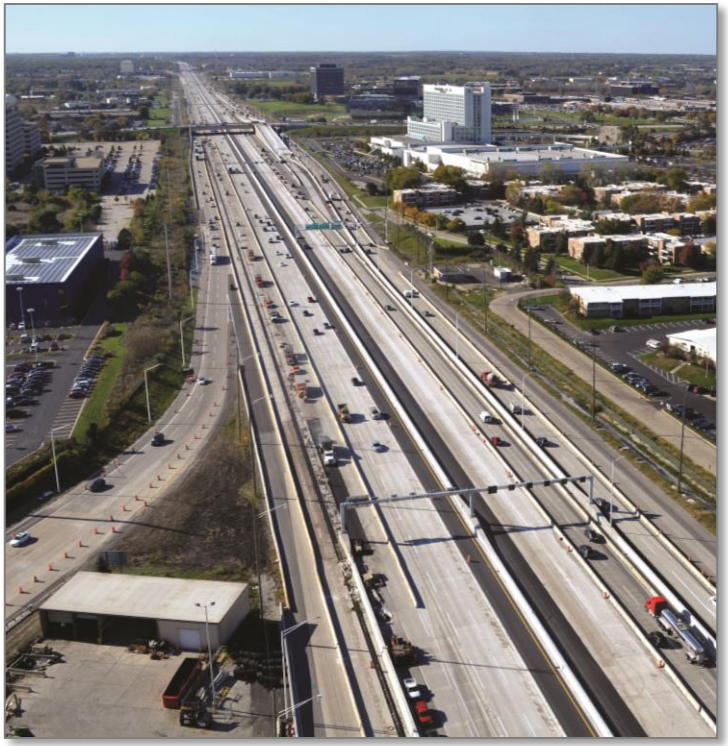



MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Commitment To Customer Service

**Goal is to minimize impacts to customers and maximize safety**

- Maintain customer focus throughout all phases of project delivery
- Maximize productivity and accelerate construction when possible
- Build and operate smarter roads
- Take advantage of industry research
- Keep the public informed along the way



MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Planning Criteria To Keep Things Moving

**Systemwide impacts**

**Combine corridor work**

**Large versus small projects**

**Deliver projects in usable sections**

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Design Approach To Reduce Impacts

**Avoid closing lanes during peak hours**

**Minimize impacts to traffic to off-peak or nighttime hours (pre-stage or rehabilitation type work only)**

**Mitigate impacts by evaluating a major impact over a shorter duration versus a multi-year impact on the same corridor**

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Maintenance Of Traffic Strategies

- Use counterflow lanes
- Shift all traffic to one side of the median
- Stage construction in 5-mile increments on low-volume interstates
- Shift inside to build outside lanes and then reverse
- Detours are not typically an option

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Lane Closure Guide

**Developed for entire system**

**Provides allowable hours to close lanes on every segment of the Tollway 24/7**

**Allows easy evaluation of shorter-term utility and rehabilitation work**

2015 Lane Closure Guide

Lane Closure Impacts

| Maintenance Yard 1 | | | |
|---|---|---|---|
| I-294 NB: 127th & Cicero (IL 50) to 95th St (US 12 & US 20) | | | |
| Route: Tri-State Tollway (I-294) | | Direction: Northbound | Milepost: 12.0 to 17.5 |
| Mainline Lanes: 4 | Capacity Lanes: 4 | Auxiliary Lanes: - | C-D Lanes: - |
| Opposite Direction (Southbound): Pg. 34 | | Downstream: Pg. 26 | Upstream: Pg. 24 |

Average Hourly Traffic (PCE) by Days

Segment ID: 11380
AADT Year: 2016

| Hour | Mon | Tue | Wed | Thu | Fri | Sat | Sun | Avg. Mon-Fri |
|---|---|---|---|---|---|---|---|---|
| 12AM-1AM | 830 | 950 | 1,050 | 1,040 | 1,170 | 1,430 | 1,090 | 1,008 |
| 1-2 | 600 | 790 | 860 | 850 | 900 | 930 | 690 | 800 |
| 2-3 | 640 | 840 | 930 | 890 | 930 | 800 | 540 | 846 |
| 3-4 | 920 | 1,210 | 1,260 | 1,270 | 1,220 | 870 | 480 | 1,176 |
| 4-5 | 1,720 | 2,090 | 2,220 | 2,270 | 2,260 | 1,110 | 540 | 2,112 |
| 5-6 | 4,870 | 5,220 | 5,430 | 5,410 | 5,230 | 1,990 | 810 | 5,232 |
| 6-7 | 7,580 | 7,870 | 7,980 | 7,900 | 7,770 | 2,560 | 1,160 | 7,820 |
| 7-8 | 6,670 | 6,620 | 6,630 | 6,940 | 6,840 | 2,900 | 1,390 | 6,740 |
| 8-9 | 5,680 | 6,100 | 5,990 | 5,880 | 5,690 | 3,240 | 1,810 | 5,864 |
| 9-10 | 5,180 | 5,430 | 5,650 | 5,720 | 5,650 | 3,780 | 2,550 | 5,526 |
| 10-11 | 4,830 | 4,950 | 5,130 | 5,230 | 5,510 | 4,110 | 3,260 | 5,130 |
| 11AM-12PM | 4,850 | 4,940 | 5,120 | 5,240 | 5,610 | 4,480 | 3,880 | 5,152 |
| 12-1 | 4,920 | 5,020 | 5,200 | 5,360 | 5,600 | 4,610 | 4,290 | 5,220 |
| 1-2 | 5,070 | 5,240 | 5,410 | 5,700 | 5,800 | 4,670 | 4,510 | 5,444 |
| 2-3 | 5,470 | 5,620 | 5,840 | 6,030 | 6,230 | 4,680 | 4,570 | 5,838 |
| 3-4 | 5,570 | 5,780 | 5,920 | 6,150 | 6,220 | 4,440 | 4,560 | 5,928 |
| 4-5 | 5,320 | 5,680 | 5,680 | 5,900 | 6,010 | 4,280 | 4,420 | 5,718 |
| 5-6 | 5,110 | 5,200 | 5,380 | 5,560 | 5,750 | 3,980 | 4,330 | 5,400 |
| 6-7 | 3,950 | 4,160 | 4,290 | 4,750 | 4,950 | 3,540 | 4,140 | 4,420 |
| 7-8 | 3,160 | 3,270 | 3,380 | 3,740 | 4,270 | 3,060 | 3,820 | 3,564 |
| 8-9 | 2,690 | 2,760 | 2,920 | 3,150 | 3,420 | 2,610 | 3,440 | 2,988 |
| 9-10 | 2,370 | 2,490 | 2,530 | 2,720 | 2,830 | 2,330 | 2,810 | 2,588 |
| 10-11 | 1,850 | 1,960 | 2,060 | 2,240 | 2,450 | 2,080 | 2,160 | 2,112 |
| 11PM-12AM | 1,360 | 1,490 | 1,510 | 1,660 | 1,940 | 1,620 | 1,410 | 1,592 |
| Totals | 91,190 | 95,680 | 98,370 | 101,600 | 104,250 | 70,100 | 62,660 | 98,218 |

3-Lane Closure Possible
2-Lane Closure Possible
1-Lane Closure Possible
Lane Closure Not Recommended

CDM Smith | Illinois Tollway | 25

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Processes To Accelerate Reconstruction

- Seek 100 percent recycling
- Create on-site storage/processing locations for contractors
- Expedite earthwork with chemical stabilization
- Desire earthwork balance
- Use minimal pavement layers
- Encourage rubblization for low-volume interstates

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Strategies To Accelerate Repair Projects

- Use weekends for accelerated patching
- Make fast-setting concrete patching mixes for overnight repairs more durable
- Use precast concrete for middle lane patching for all concrete pavement types
- Mandate warm-mix asphalt for nighttime-only overlays
- Implement schedule recovery efforts when necessary

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

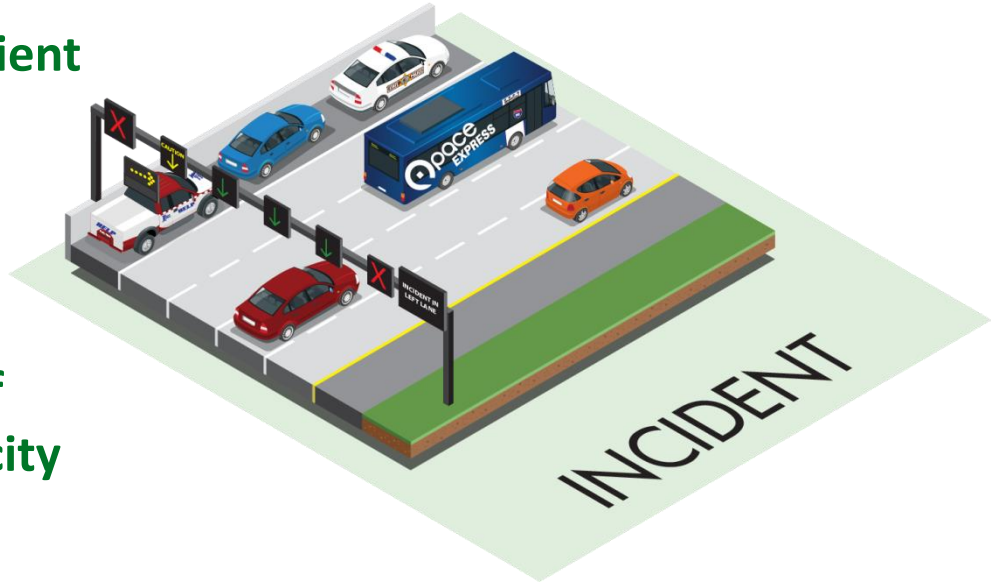
# Operations: SmartRoad

**Provide real-time information**

**Drivers get safer, more efficient roadway**

**Improved incident management**

**Allows for temporary use of shoulders as roadway capacity when authorized**




MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Next: Central Tri-State Tollway (I-294)

## Workhorse of the Tollway

## $4 billion project

## 22 miles

- 100 bridges
- Two existing system interchanges
- Nine service interchanges


MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Applying Research Initiatives

- Minimizing moisture/stability issues
- Using intelligent compaction
- Building the minimal amount of pavement layers
- Using accelerated bridge construction
- Implementing 3-D design

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Ongoing Research Initiatives

**Internally cured continuously reinforced concrete pavements**

**Optimized ternary Portland cement concrete mixes**

**Approach slabs on integral abutment bridges**

**Performance-related specifications for all concrete pavements**

**Integral abutment bridges**

**Extra high-performance concrete bridge decks without stainless steel reinforcement**

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Keys To Consider: Planning And Design

## Planning phase

- Retain the same number of lanes where deemed necessary
- Plan for traffic incident management
- Develop smarter roads for future technologies

## Design phase

- Design features with future maintenance work in mind
- Update standards to accommodate heavier freight loads
- Jointless bridge decks and compatible approaches
- More durable/maintenance-free pavements
- Continue 3-D design technology

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Keys To Consider: Rebuilding Roadways

## Construction phase

- Accelerated bridge and roadway construction practices
- Better temporary barrier systems

## Initiatives that incorporate all phases

- Design and build based on performance
- Search for techniques and practices for improved sustainability and measurement

MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# Summary: Three Pillars Of Sustainability


MOVE ILLINOIS
The Illinois Tollway
DRIVING THE FUTURE

# THANK YOU