



## EXPANSION JOINTS: BRIDGING THE GAP BETWEEN REPAIR AND REPLACEMENT

APRIL 4<sup>TH</sup> 2024, CHRIS FANNING

SIKA / WATSON BOWMAN ACME TRANSPORTATION

BUILDING TRUST

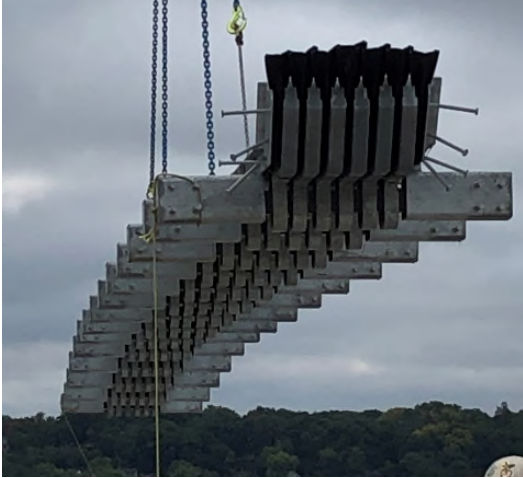


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- 01** Why Expansion Joints
- 02** Types of Expansion Joints
- 03** Replacement / Repair
- 04** Overlay Solutions
- 05** Low-Height Deck Solutions
- 06** Replacement of Existing Finger Joints

# WHY EXPANSION JOINTS

# WHY EXPANSION JOINTS



## Movement

- Thermal
- 6 degrees of movement



## Water Management

- Element protection
- Corrosion prevention

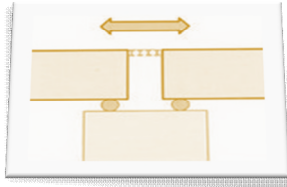


## Spanning the Gap

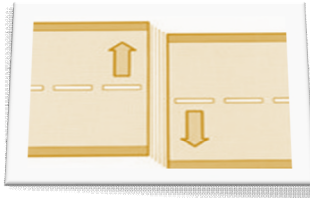
- Seismic regions
- Adjacent structure

# WHY EXPANSION JOINTS

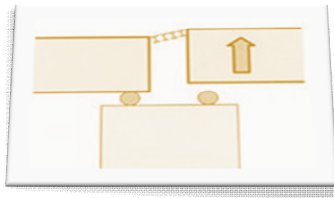
## MOVEMENT



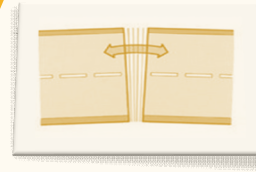
**Longitudinal  
Movement**



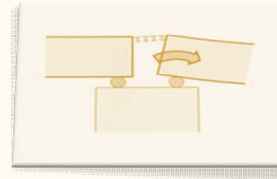
**Transverse  
Movement**



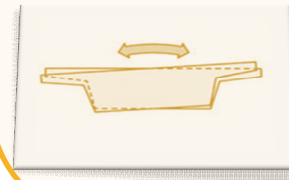
**Vertical  
Movement**



**Rotation about "X"  
Axis (fanning)**



**Rotation about  
"Y" Axis**



**Rotation about "Z"  
axis**

# WHY EXPANSION JOINTS MOVEMENT



# WHY EXPANSION JOINTS WATER MANAGEMENT



# WHY EXPANSION JOINTS SPANNING THE GAP





# TYPE OF EXPANSION JOINTS

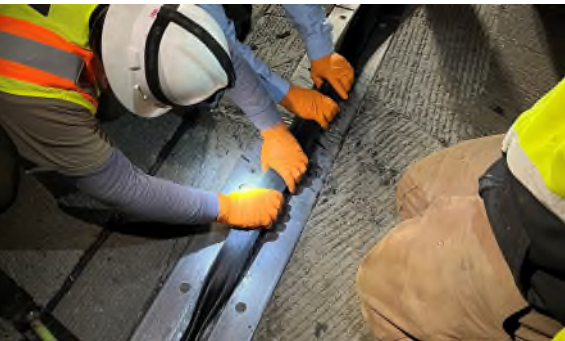
# TYPES OF EXPANSION JOINTS

## MOVEMENT CLASSIFICATION

Small Movement: 0 – 2 in.

Medium Movement: 2 – 4 in.

Large Movement: >4 in.



# TYPES OF EXPANSION JOINTS

## MARKET SECTORS



Bridges



Highways



Airports



Tunnels



Ports

# TYPES OF EXPANSION JOINTS PRODUCT SOLUTIONS



SILICONE TECHNOLOGY



FOAM TECHNOLOGY



NEOPRENE SOLUTIONS



HEADER SOLUTIONS



JOINT SEAL ASSEMBLY



SEGMENTAL TECHNOLOGY



SEISMIC SOLUTIONS



TUNNEL SOLUTIONS

# REPLACEMENT / REPAIR

# REPLACEMENT / REPAIR HEADERS

## Types of Headers / Nosings

- Elastomeric
- Epoxy
- Polyester



# REPLACEMENT / REPAIR HEADERS



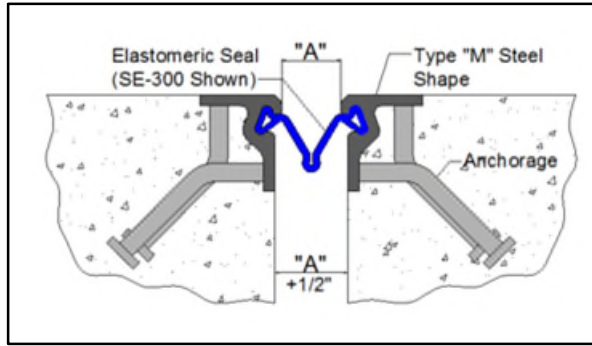
- Adhesion / Bonding

- Support

- No relief

# REPLACEMENT / REPAIR

## STRIP SEAL EXPANSION JOINTS



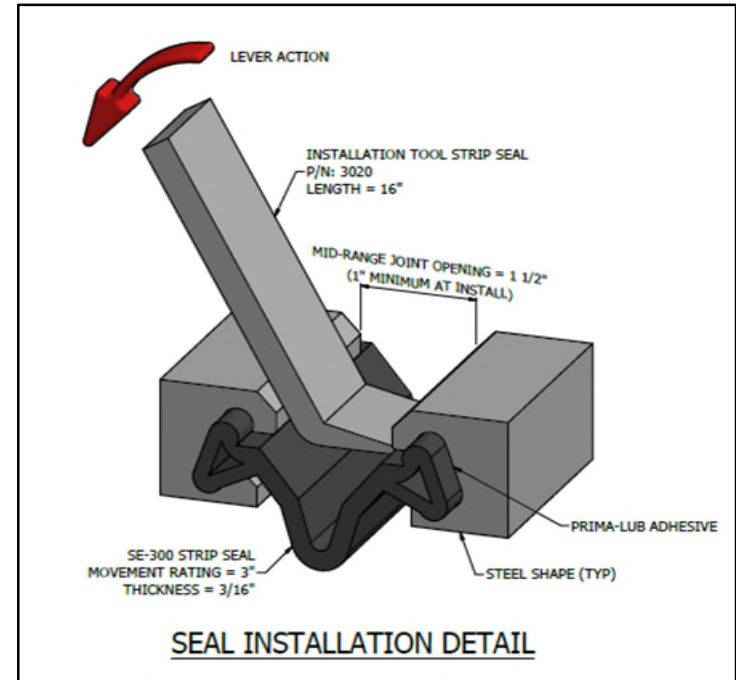
- Edge Member
- Sealing Element
- Anchorage





# REPLACEMENT / REPAIR

## STRIP SEAL EXPANSION JOINTS – GLAND REPLACEMENT



# REPLACEMENT / REPAIR PRE-COMPRESSED FOAMS

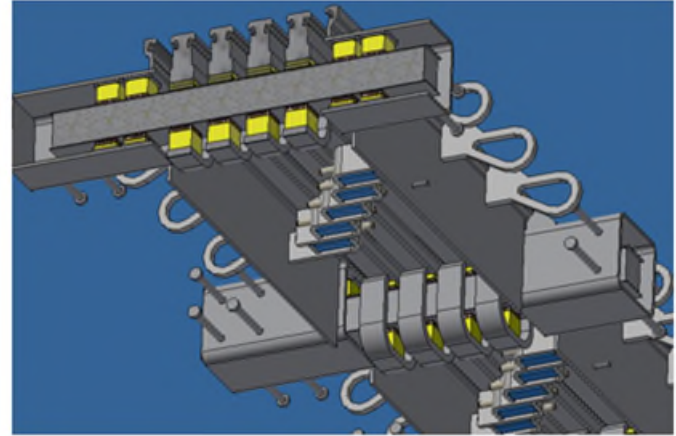


# REPLACEMENT / REPAIR

## PRE-COMPRESSED FOAM – STRIP SEAL REPAIR

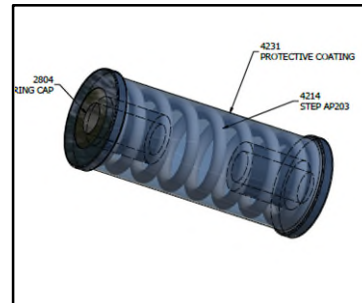
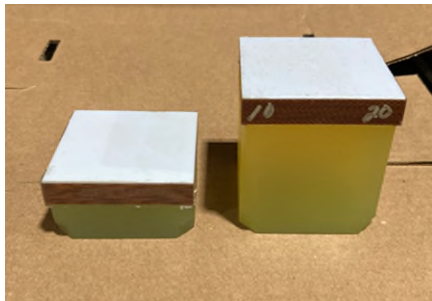
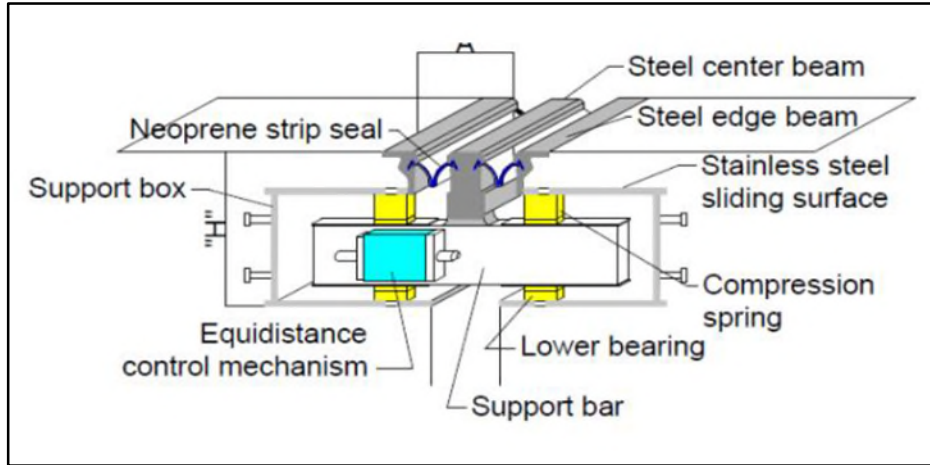


# REPLACEMENT / REPAIR MODULAR EXPANSION JOINTS



- Large movement capacity
- Able to be installed on skew
- Longer length sections preferred
- Wearable componentry

# REPLACEMENT / REPAIR MODULAR EXPANSION JOINTS



# REPLACEMENT / REPAIR MODULAR EXPANSION JOINTS



- Gland & Equidistant



- Header / Spalling



- Centerbeam Issues

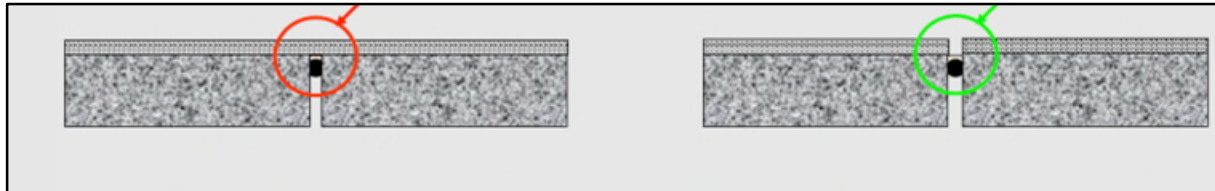
# OVERLAY SOLUTIONS

# OVERLAY SOLUTIONS

## OVERLAY TYPES



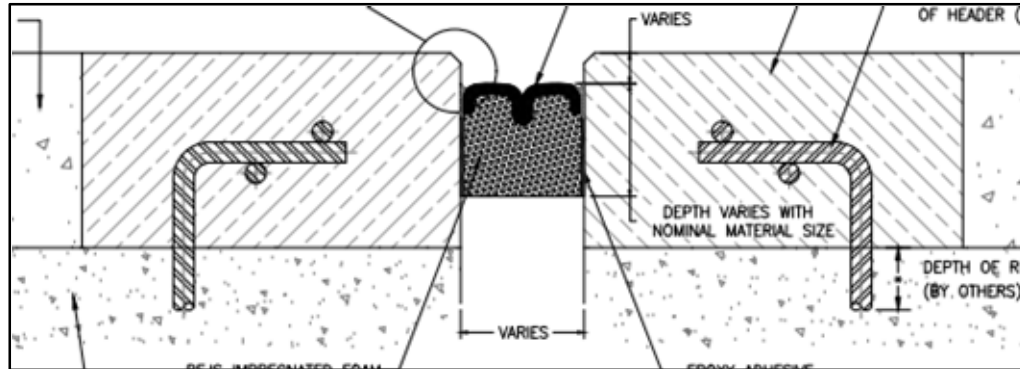
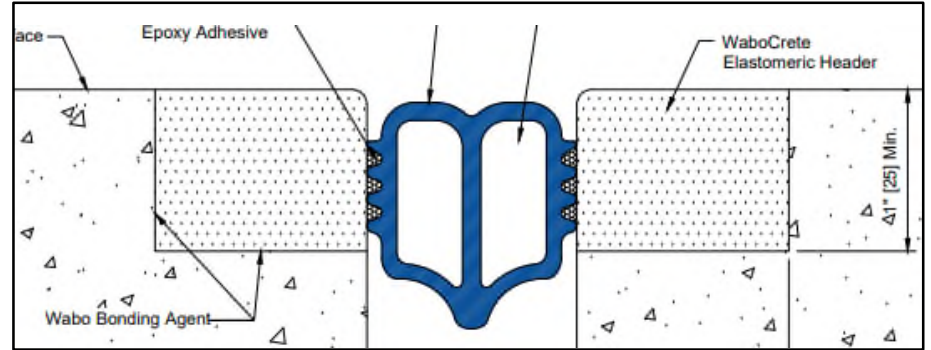
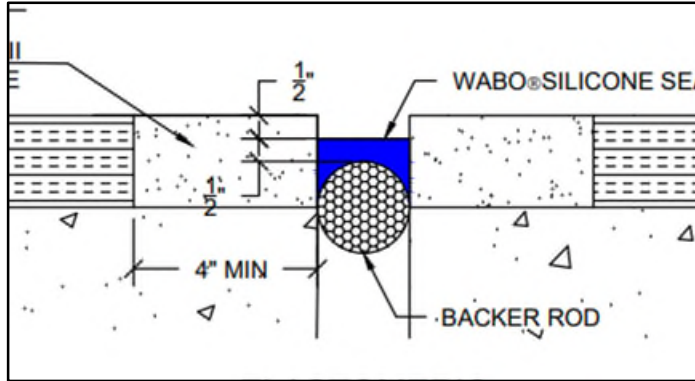
- Asphalt Concrete
- Portland Cement-Based Concrete
- Latex Modified Concrete
- Epoxy Polymer Concrete
- Polyester Polymer Concrete





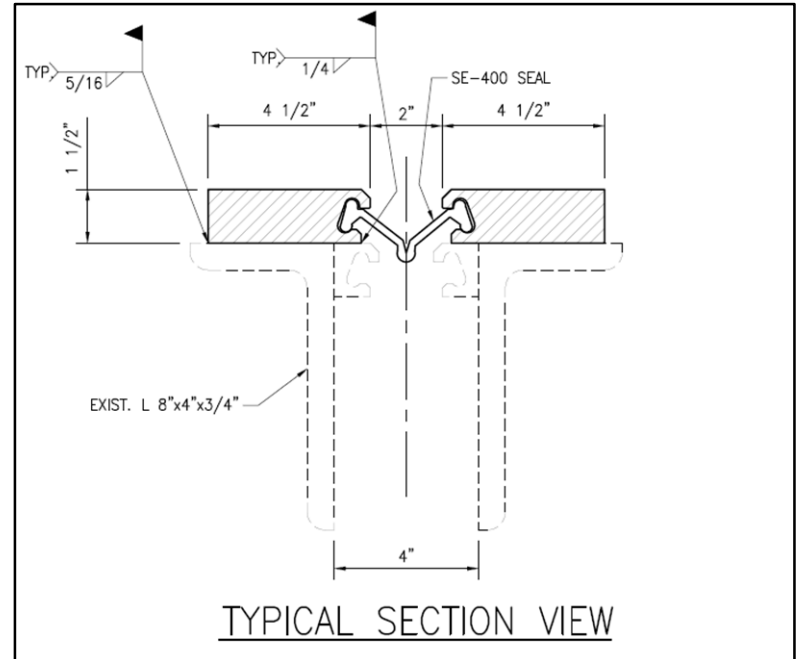
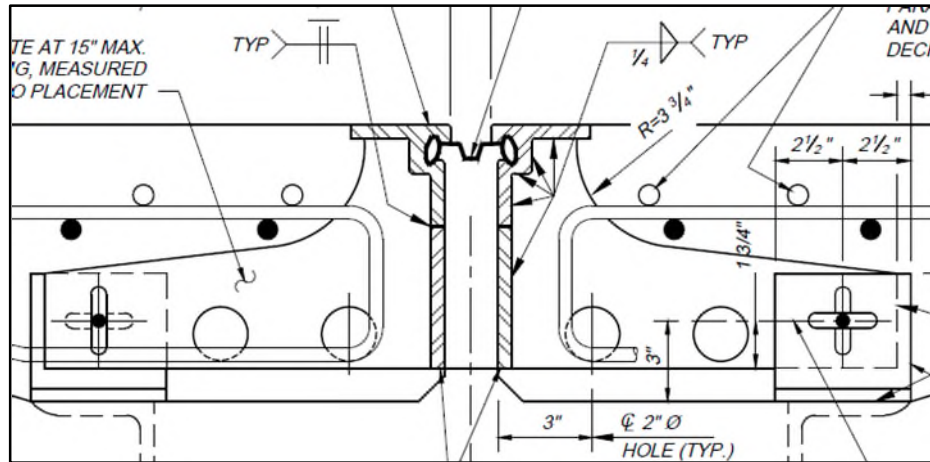
# OVERLAY SOLUTIONS

## ARMORLESS JOINT



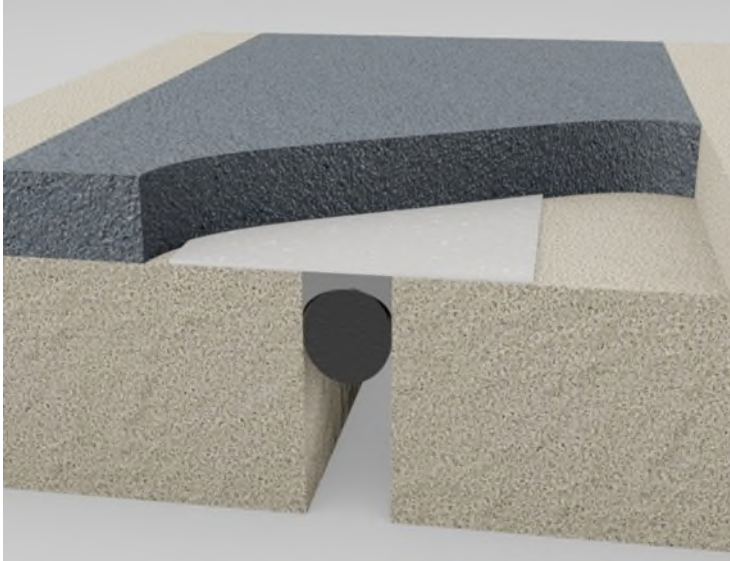
# OVERLAY SOLUTIONS

## STRIP SEAL RETROFIT



# OVERLAY SOLUTIONS

## ASPHALTIC PLUG JOINTS



### **Wabo® Expandex**

- Flexible asphaltic plug joint system
- Provides a smooth riding transition between slabs
- Accommodates +/- 3/4" movement
- Single pour application

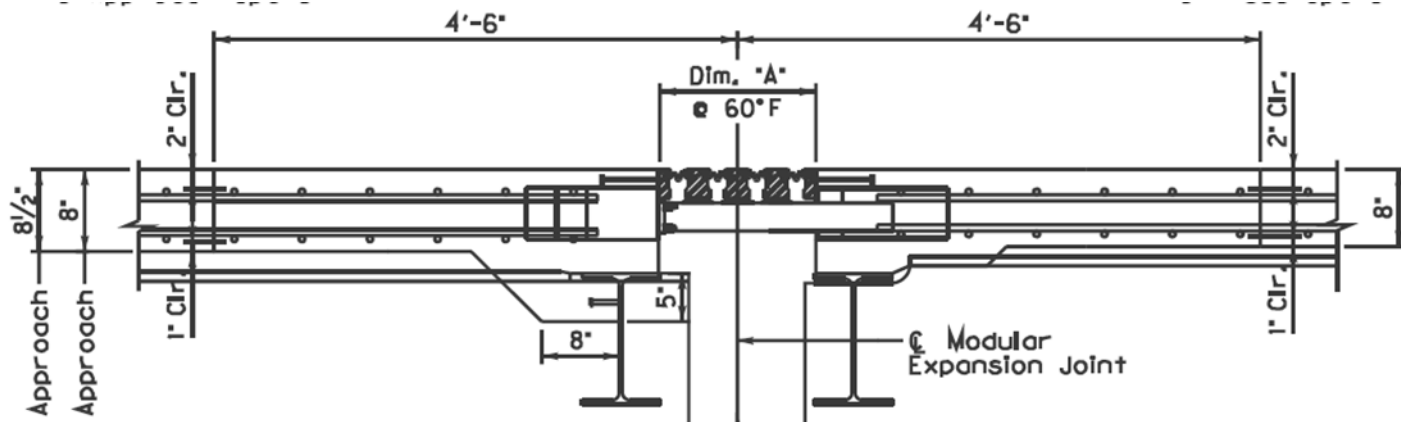
# OVERLAY SOLUTIONS

## ASPHALTIC PLUG JOINTS

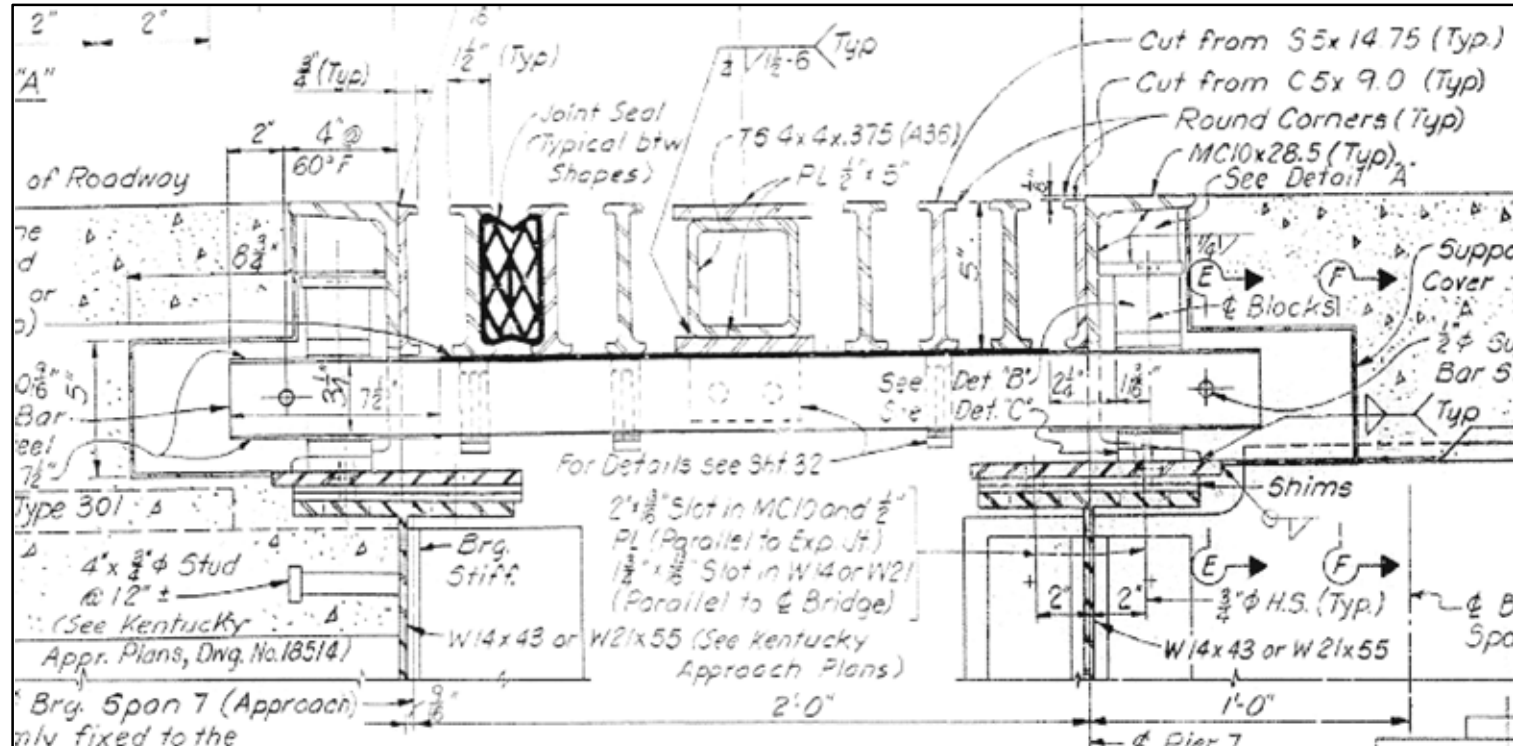


# LOW-HEIGHT DECK SOLUTIONS

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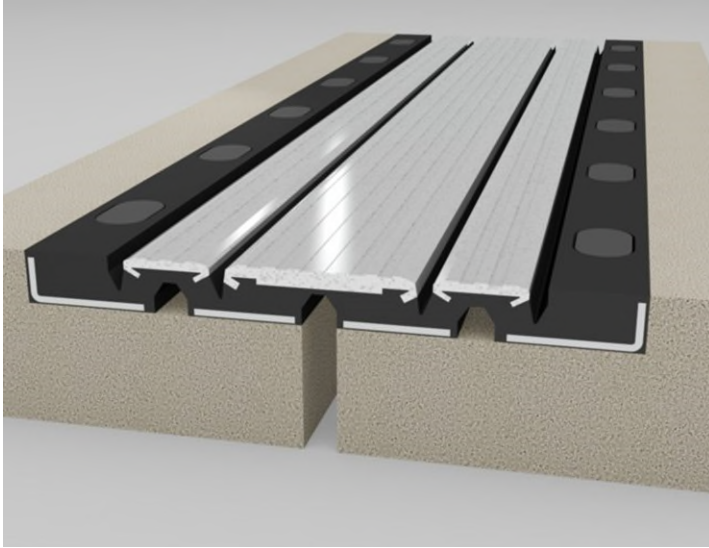


# LOW-HEIGHT DECK SOLUTIONS



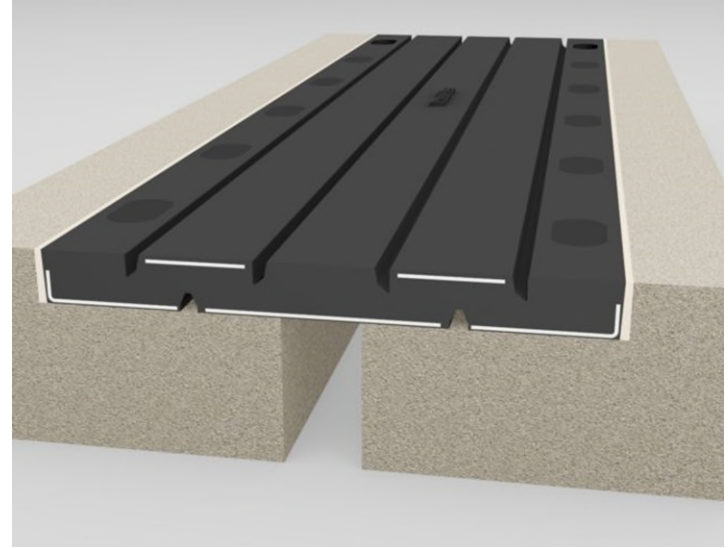
# LOW-HEIGHT DECK SOLUTIONS

## SEGMENTAL JOINT SYSTEMS



### Wabo®Flex

- Reinforced elastomeric molded rubber expansion joint system
- Reduced expansion cavities to limit debris accumulation
- Movement classification from 2" up to 13"



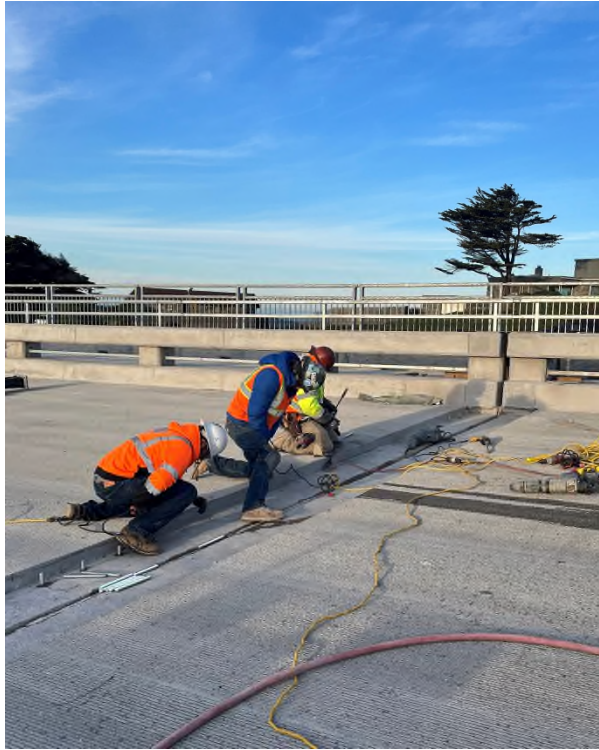
### Wabo®TransFlex





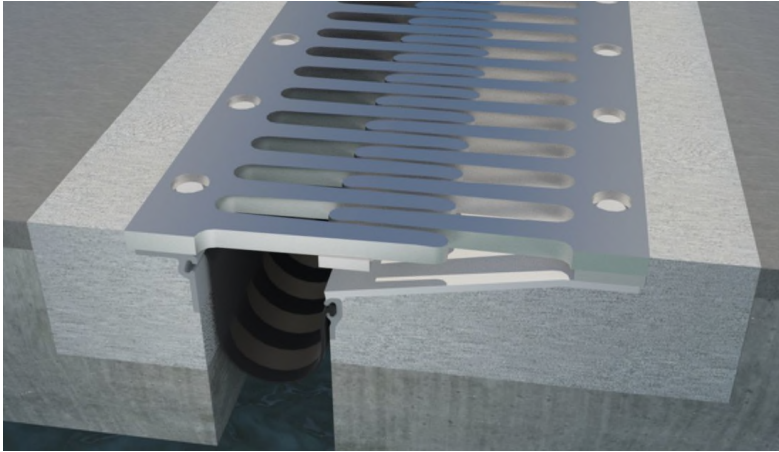
# LOW-HEIGHT DECK SOLUTIONS

## SEGMENTAL JOINT SYSTEMS



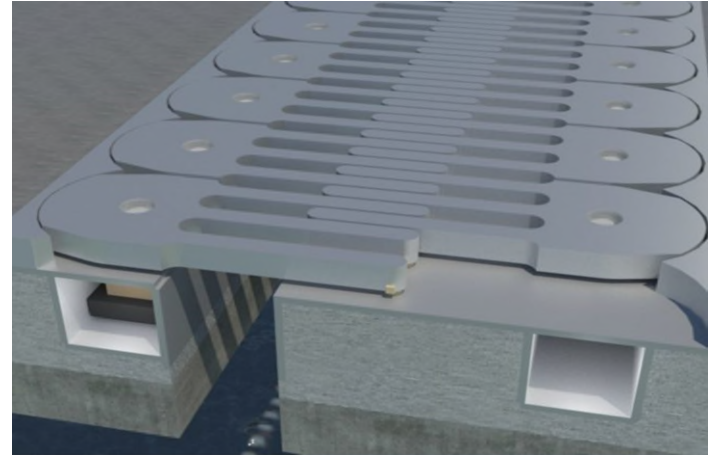
# LOW-HEIGHT DECK SOLUTIONS

## FINGER JOINT SYSTEMS



### Wabo® FingerPlus

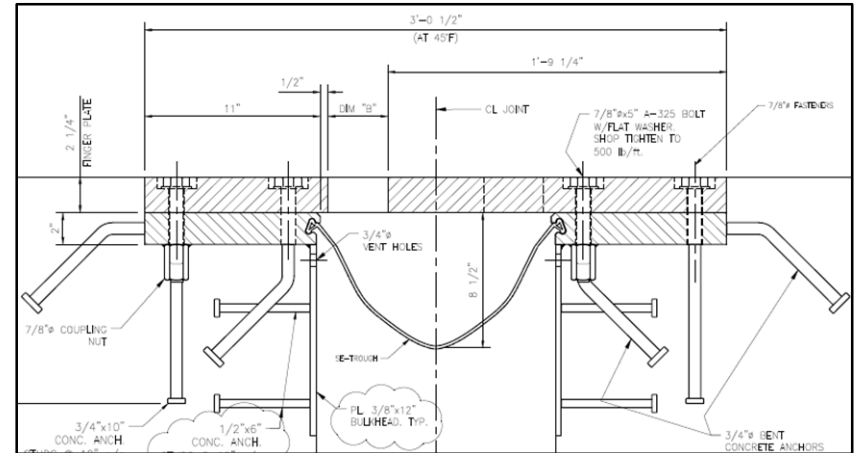
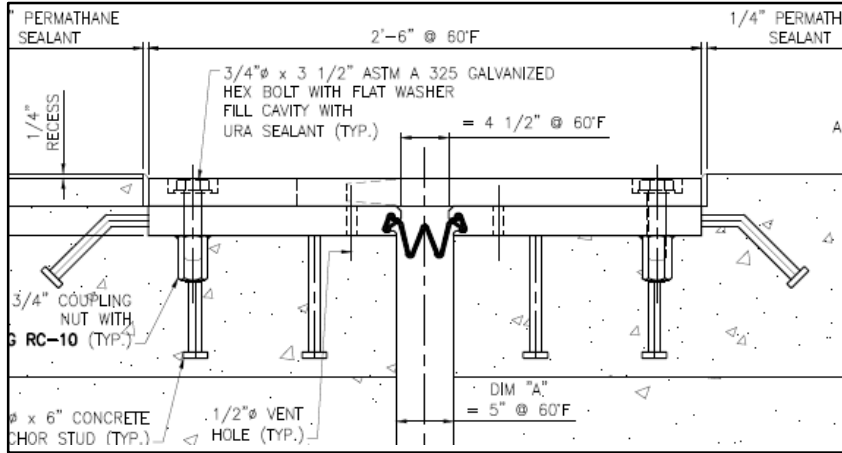
- Installed and maintained from top-side of deck
- Segments provided in smaller manageable segments
- Water management system can be integrated into both system
- Multi-directional movement can be integrated



### Wabo® Trident

# LOW-HEIGHT DECK SOLUTIONS

## FINGER JOINT SYSTEMS



# LOW-HEIGHT DECK SOLUTIONS

## FINGER JOINT SYSTEMS



# REPLACEMENT OF EXISTING FINGER JOINTS

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## EXISTING TYPES IN MARKET



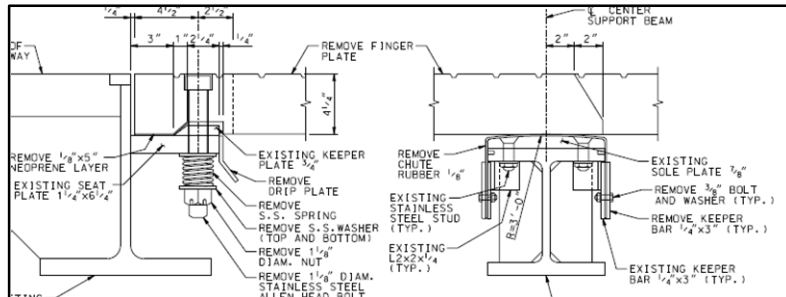
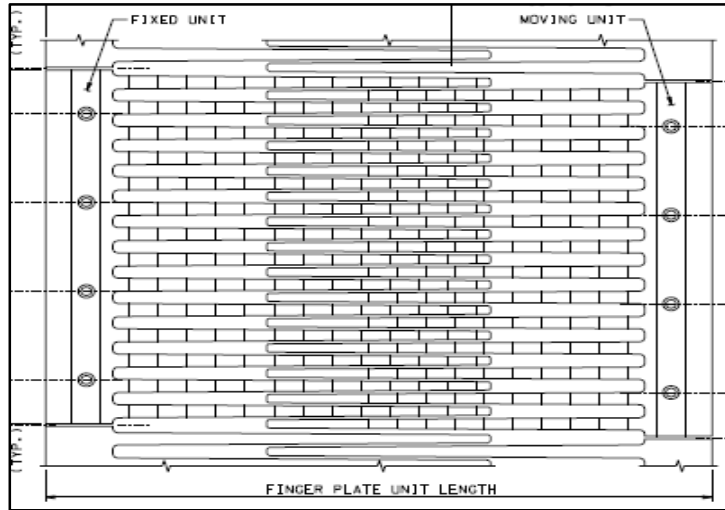
### Cast in Place

- Cantilevered Fingers
- Permanently part of the structure
- Steel deflector plates
- Neoprene trough for water management



# REPLACEMENT OF EXISTING FINGER JOINTS

## EXISTING TYPES IN MARKET



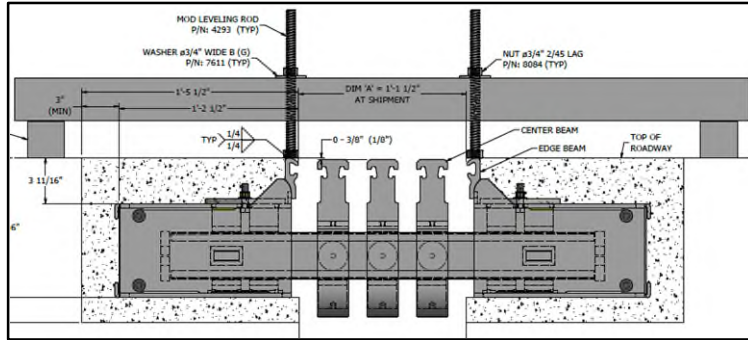
### Extreme Movement

- Cantilevered Fingers
- Multit-point of support
- Steel deflector plates
- Multiple degrees of movement



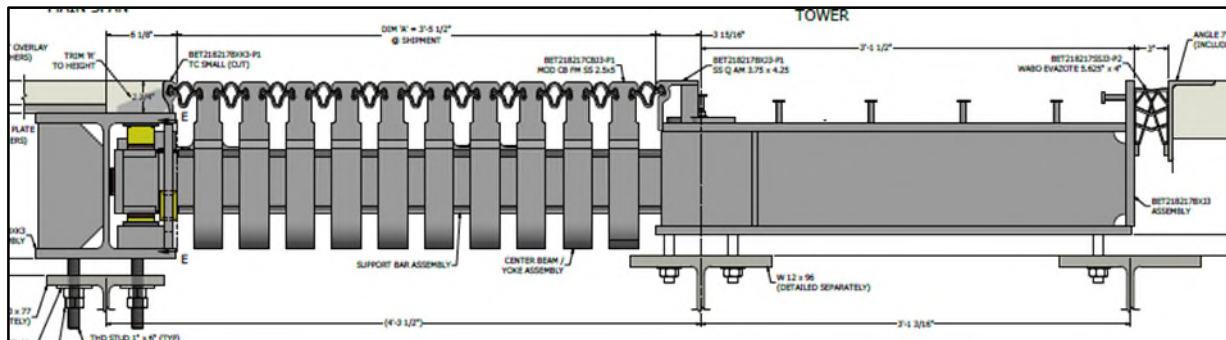


# REPLACEMENT OF EXISTING FINGER JOINTS CUSTOM MODULAR EXPANSION JOINT SYSTEMS



## Standard Product Solution

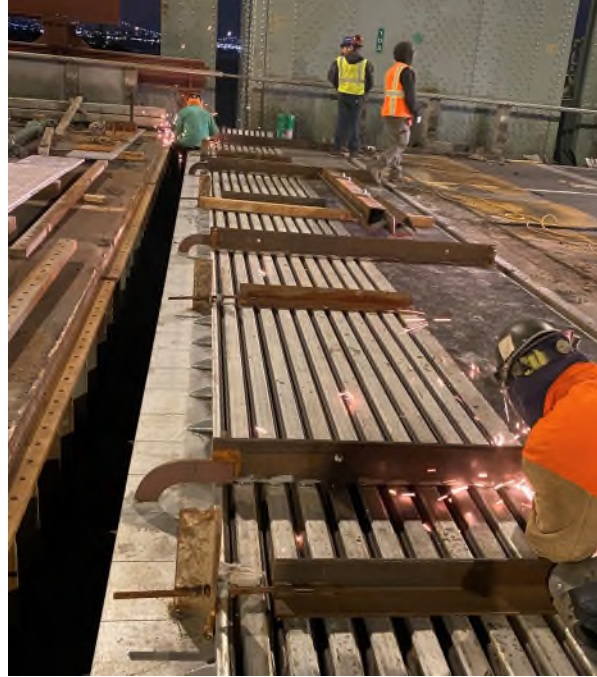
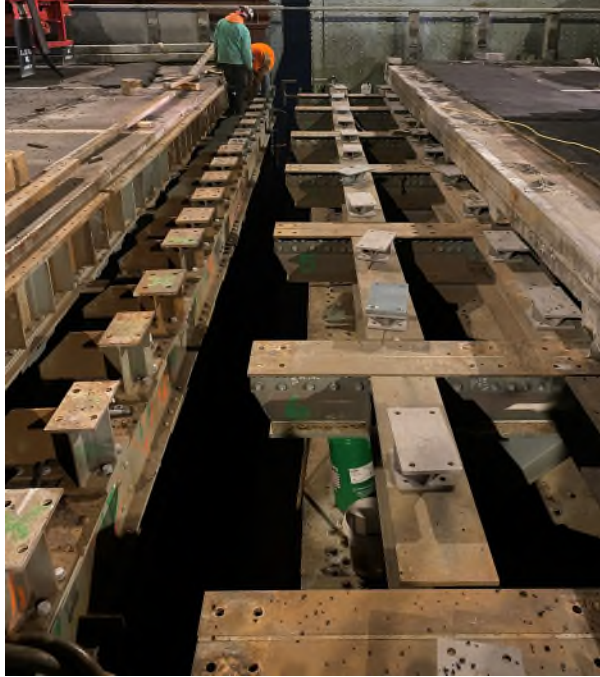
- Customer fit
- Integrated support
- Sealed water management



## Project Specification Solution

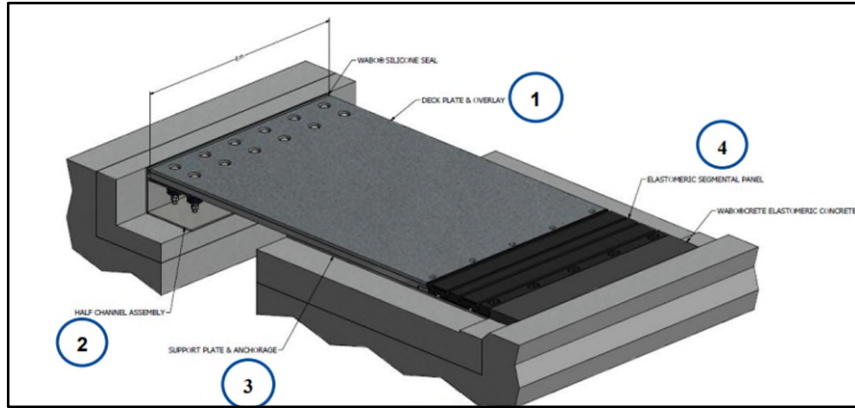
- Customer fit
- Integrated support
- Sealed water management
- Specific testing

# REPLACEMENT OF EXISTING FINGER JOINTS CUSTOM MODULAR EXPANSION JOINT SYSTEMS



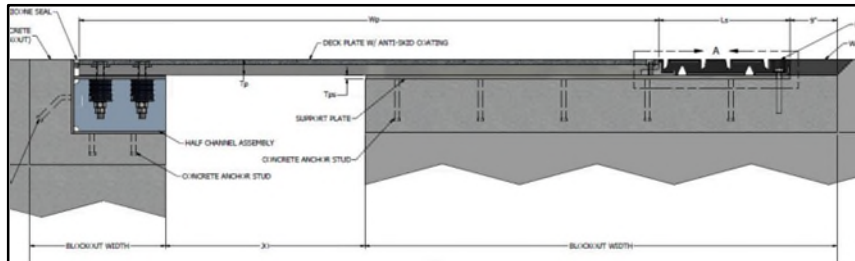
# REPLACEMENT OF EXISTING FINGER JOINTS

## MULTI-DIRECTIONAL MOVEMENT JOINT SYSTEMS

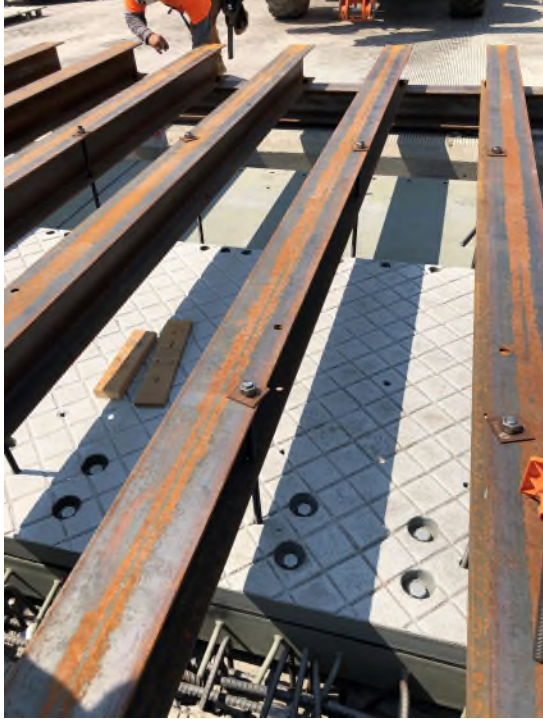


### Wabo®MDM-TransFlex

- Unique sliding design
- Large translational movement
- Minimal noise
- Installation advantages
- Reduced traffic disruption



# REPLACEMENT OF EXISTING FINGER JOINTS MULTI-DIRECTIONAL MOVEMENT JOINT SYSTEMS



# SUMMARY

- 01** Why Expansion Joints
- 02** Types of Expansion Joints
- 03** Replacement / Repair
- 04** Overlay Solutions
- 05** Low-Height Deck Solutions
- 06** Replacement of Existing Finger Joints



THANK YOU

CHRIS FANNING

716-364-2177

[CHRISTOPHER.FANNING@WATSONBOWMANACME.COM](mailto:CHRISTOPHER.FANNING@WATSONBOWMANACME.COM)

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