BRIDGE EXPANSION JOINTS

ORREN JENNINGS

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EXPANSION JOINTS

- A mechanical device in a bridge deck designed solely for the purpose of making a Bridge maintenance workers life miserable.

  -Mike Gehring (ODOT)

EXPANSION JOINTS

- ACCOMMODATE MOVEMENTS
- BE WATERTIGHT (SEALED)
- SAFE
- PROVIDE A SMOOTH RIDE
- TOLERANT OF SNOW PLOWS
- AS MAINTENANCE-FREE AS POSSIBLE

BRIDGE MOVEMENT

- THERMAL EXPANSION AND CONTRACTION
- CREEP, SHRINKAGE FOR CONCRETE, AND POST TENSIONING
- END ROTATION & TRAFFIC

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BRIDGE MOVEMENT

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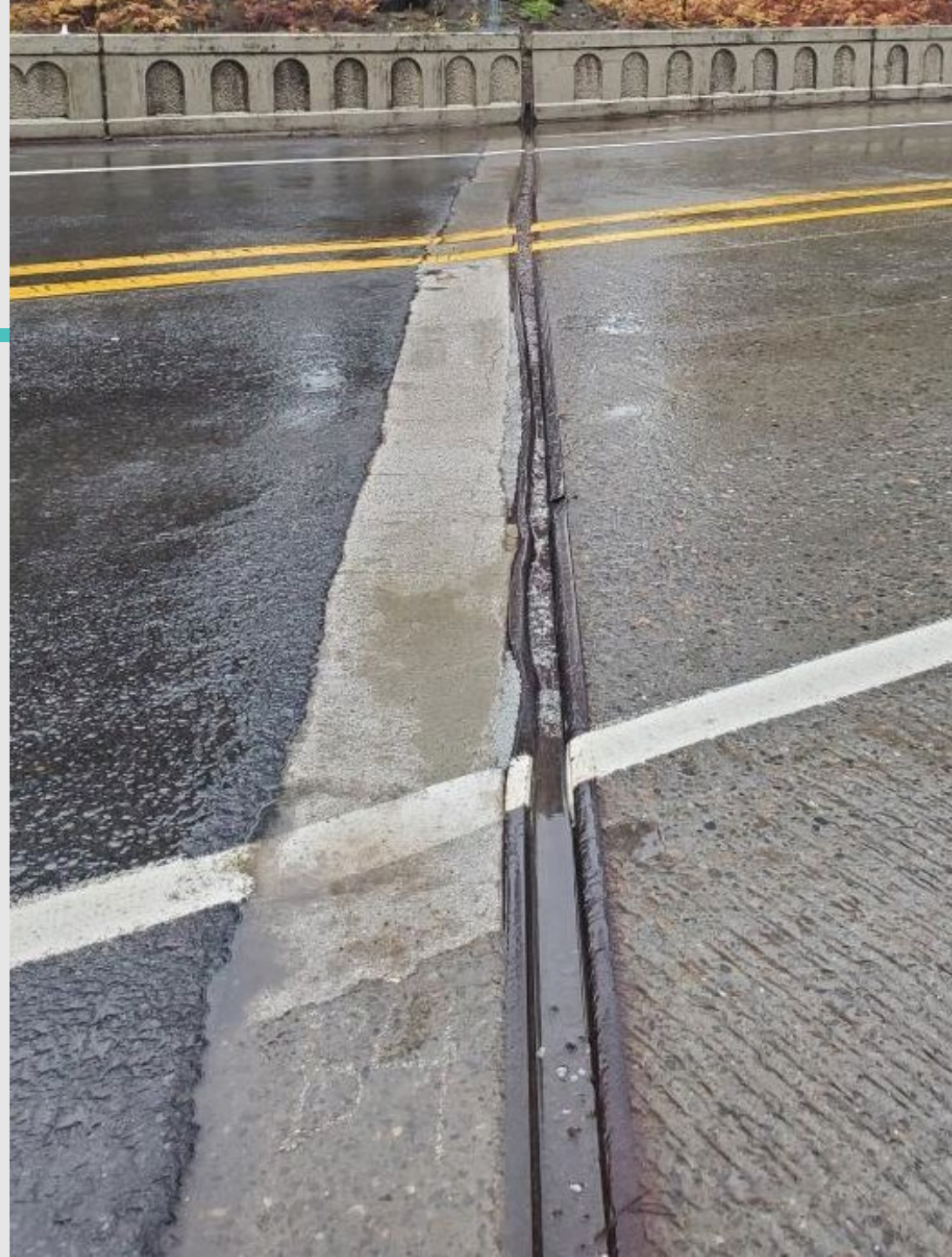
BRIDGE MOVEMENT

- THERMAL EXPANSION AND CONTRACTION
- **CREEP, SHRINKAGE FOR CONCRETE, AND POST TENSIONING**

WATERTIGHT (SEALED)

SNOW PLOWS

- WHAT'S THE PROBLEM?



SNOW PLOWS

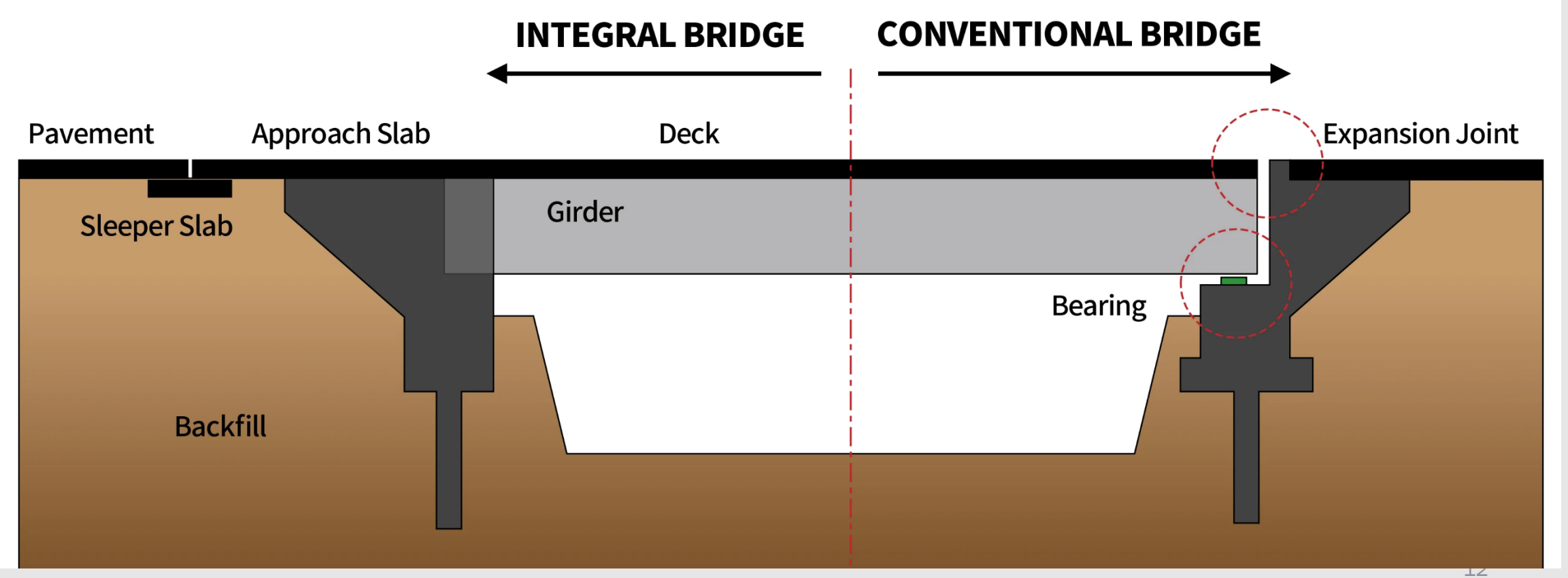
- PLOW DEFLECTORS

SNOW PLOWS

- PLOW DEFLECTOR

EXPANSION JOINTS

- THE LOWEST MAINTEANCE JOINT IS NOT HAVING ONE!

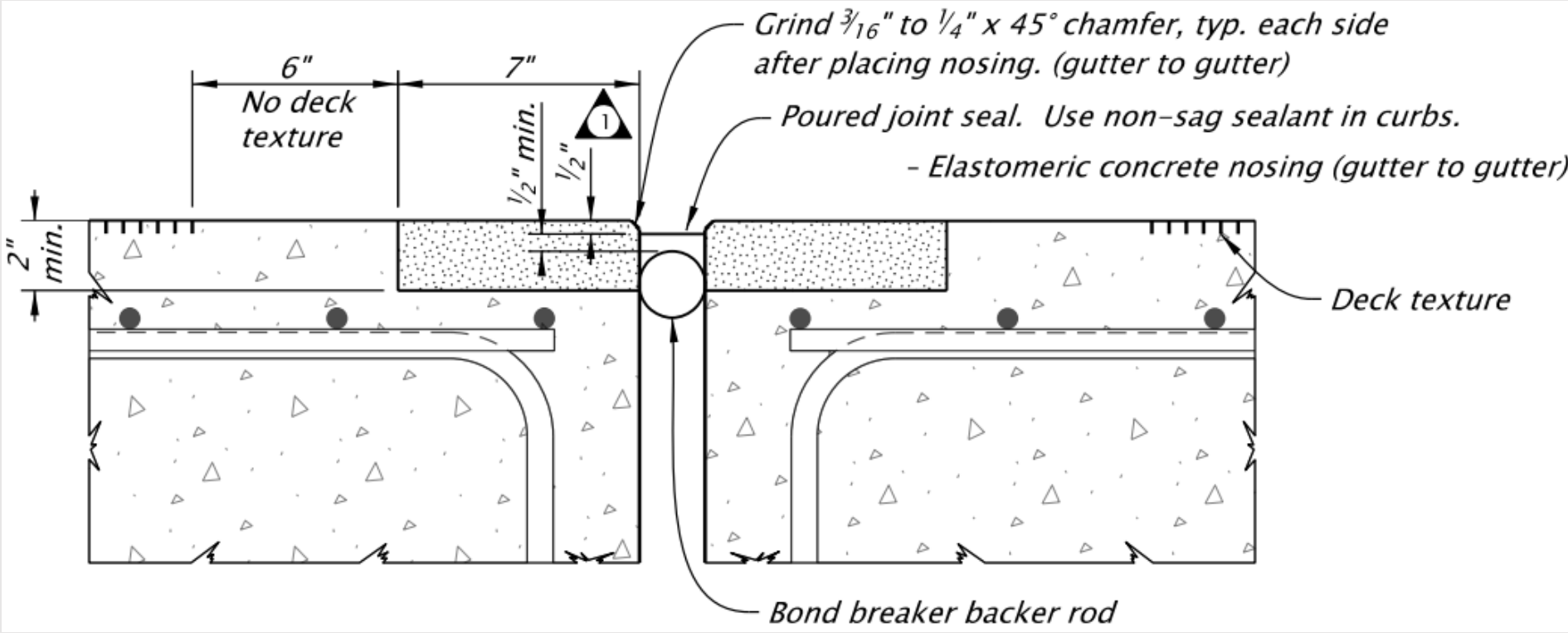


EXPANSION JOINTS SMALL MOVEMENT

- CONTROL JOINT– 1/4” MAX
  - HOT APPLIED LOOP SEALANT
  - 1/2” SAW CUT
  - CRACK CONTROL

EXPANSION JOINTS
SMALL MOVEMENT

- POURED JOINT – 1 1/2” MOVEMENT MAXIMUM



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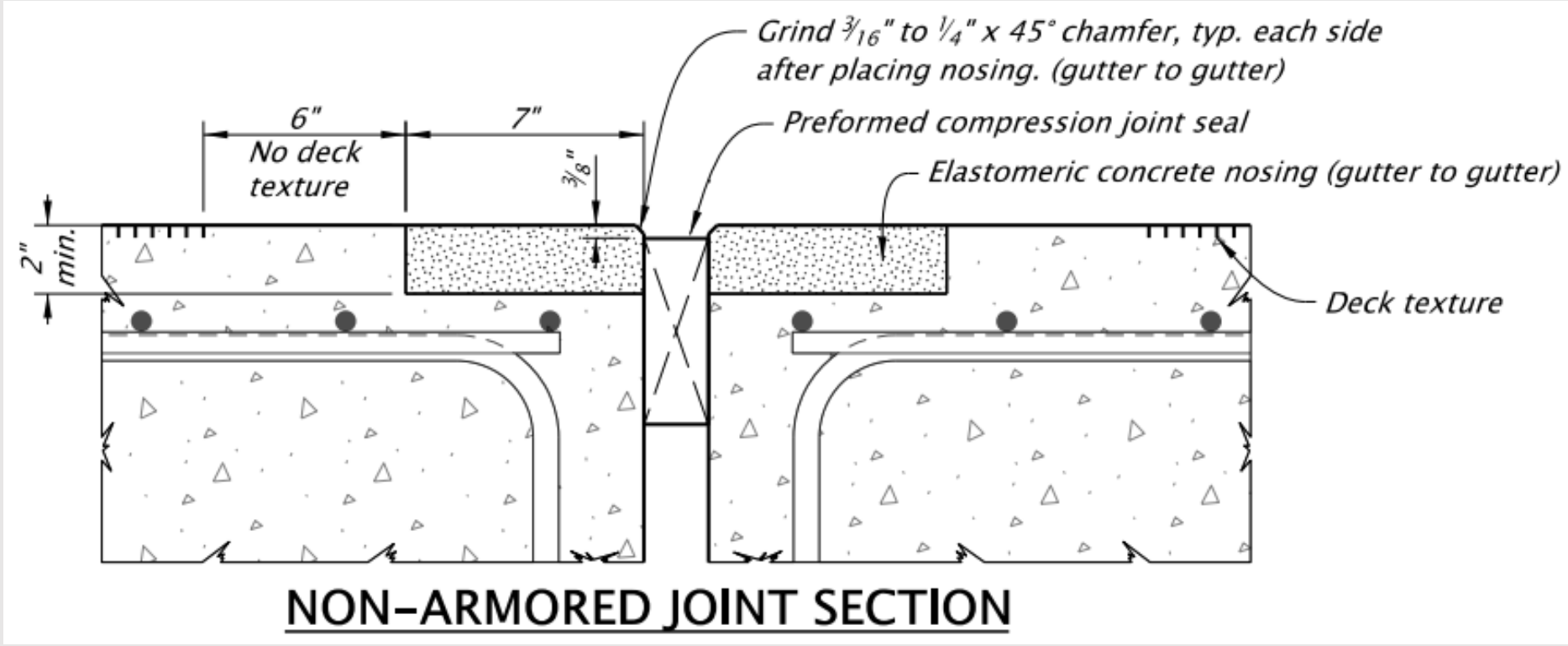
EXPANSION JOINTS SMALL MOVEMENT

- POURED JOINT – 1 ½” MAX
  - 2 PART SILICONE OR URETHANE

EXPANSION JOINTS
SMALL MOVEMENT

- COMPRESSION SEAL – 1 1/2” Movement



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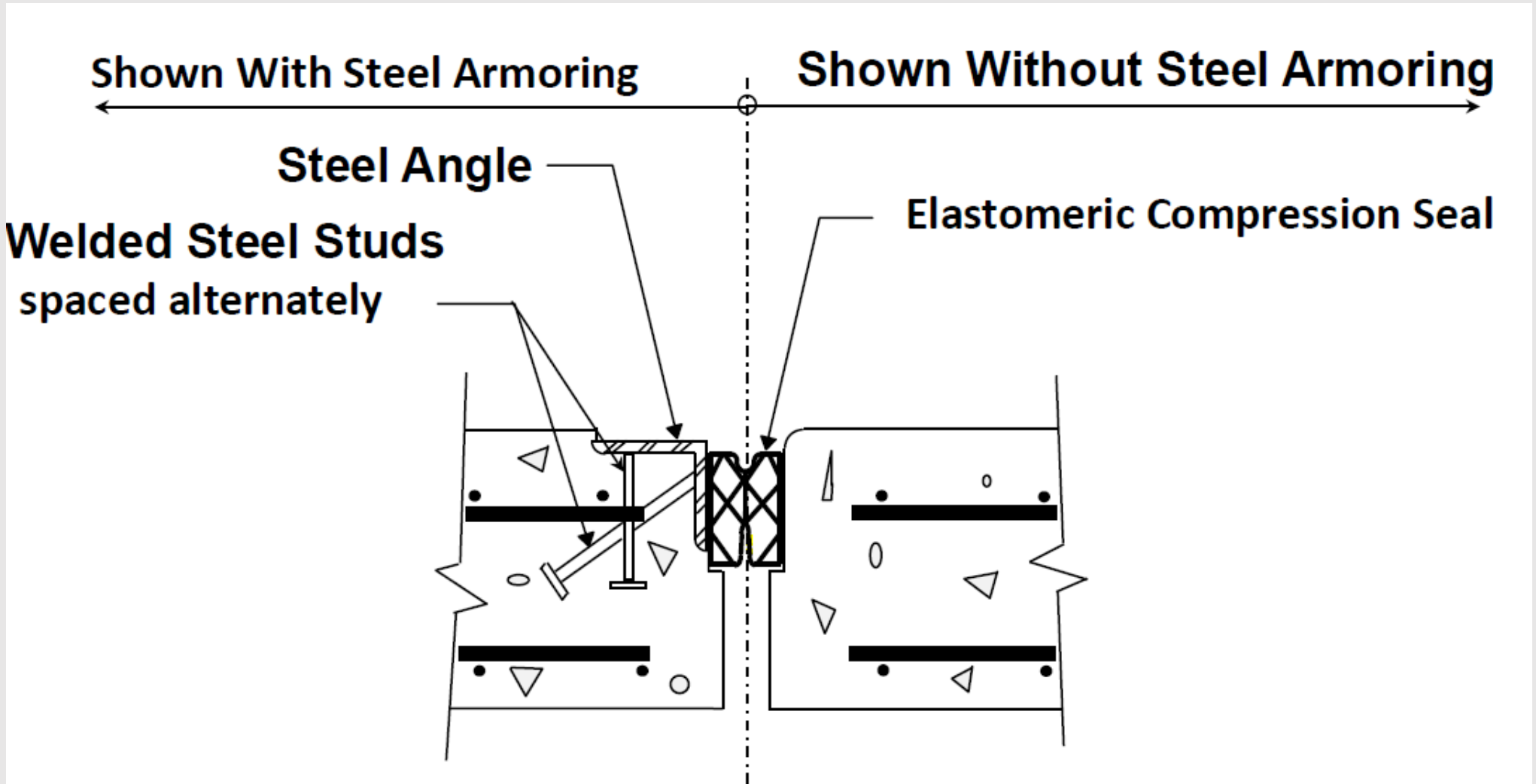
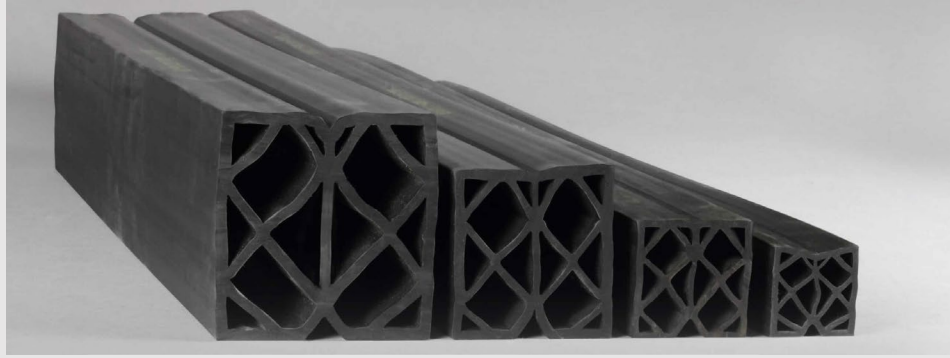
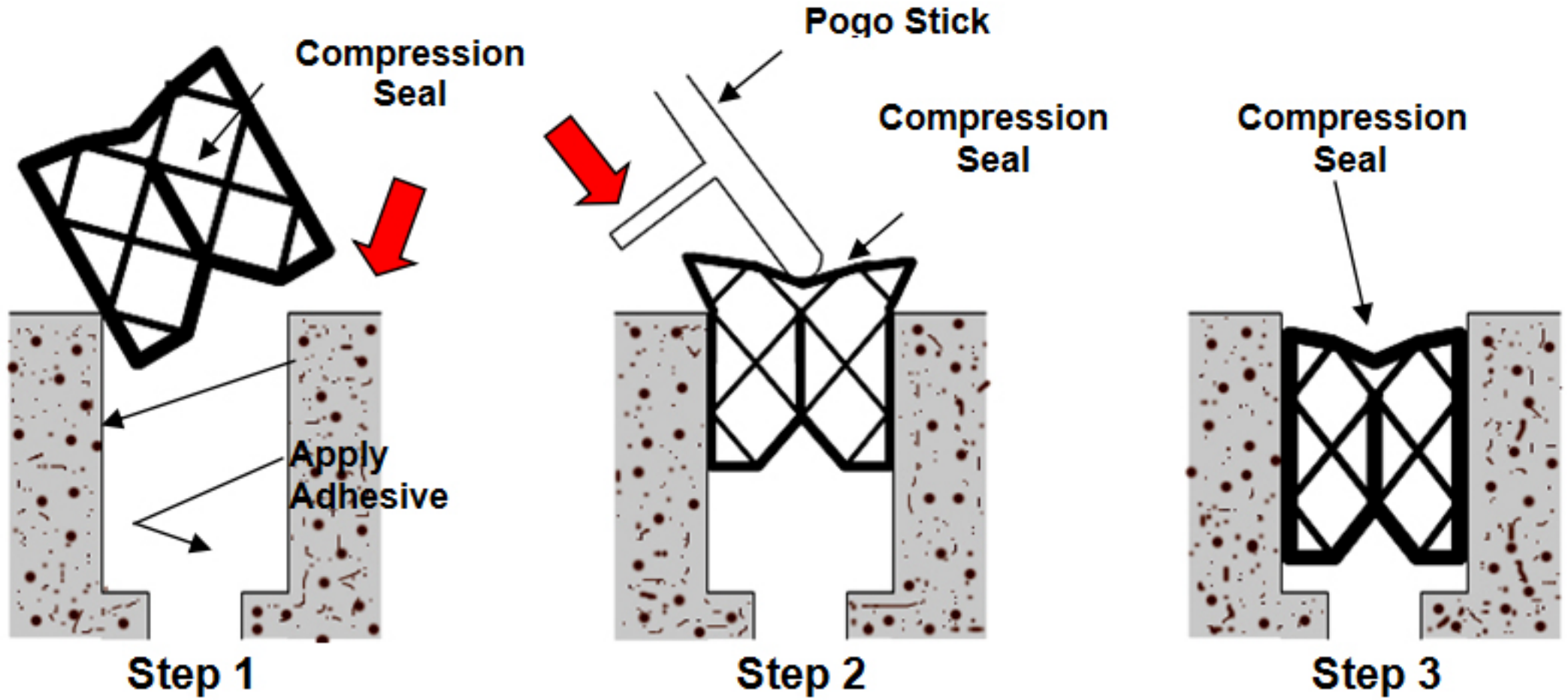
EXPANSION JOINTS
SMALL MOVEMENT



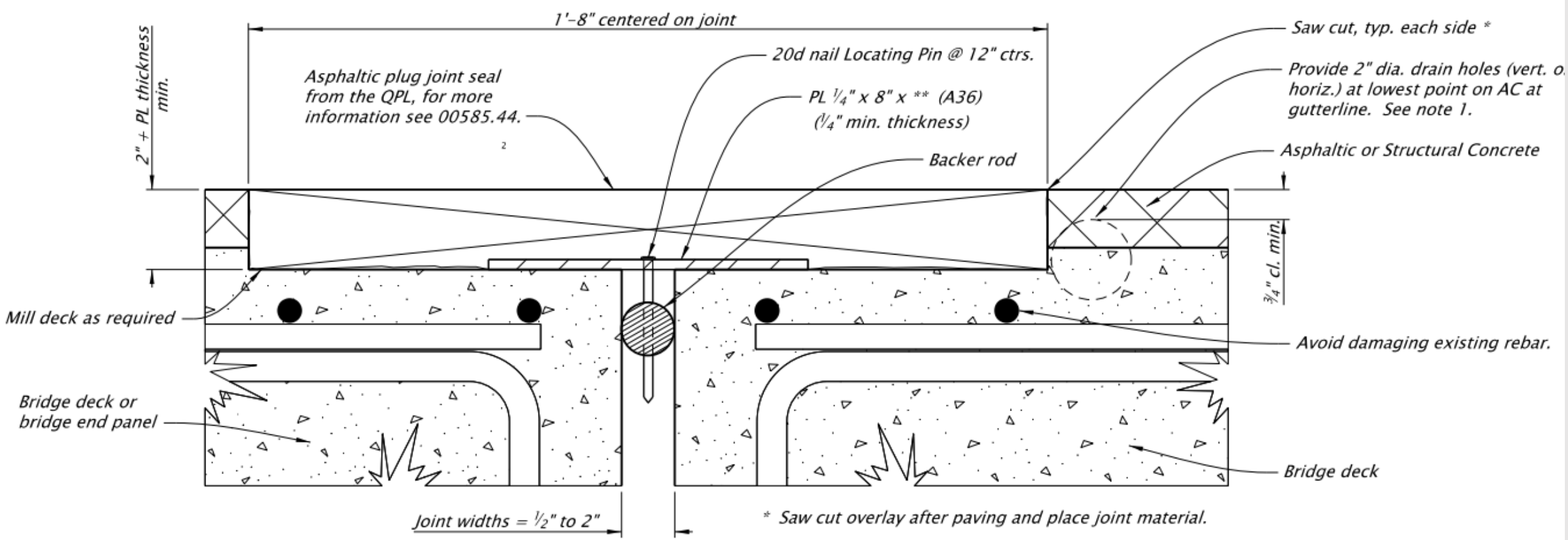
EXPANSION JOINTS
SMALL MOVEMENT





EXPANSION JOINTS SMALL MOVEMENT

- ASPHALTIC PLUG – 1 1/2” Movement



EXPANSION JOINTS SMALL MOVEMENT

- ASPHAULTIC PLUG –
  1 1/2” MOVEMENT

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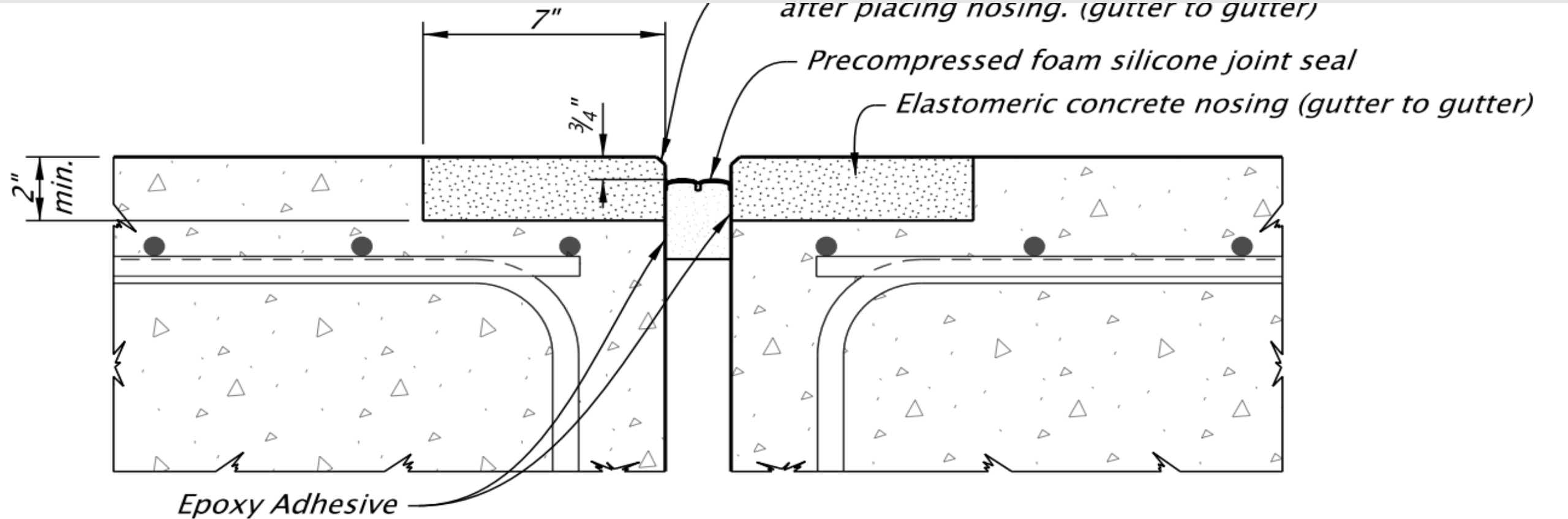
TYPES OF EXPANSION JOINTS
MEDIUM MOVEMENT

- PRECOMPRESSED FOAM SILICONE – 2 1/2” MOVEMENT



EXPANSION JOINTS
MEDIUM MOVEMENT

- PRECOMPRESSED FOAM SILICONE

  2 1/2” MOVEMENT

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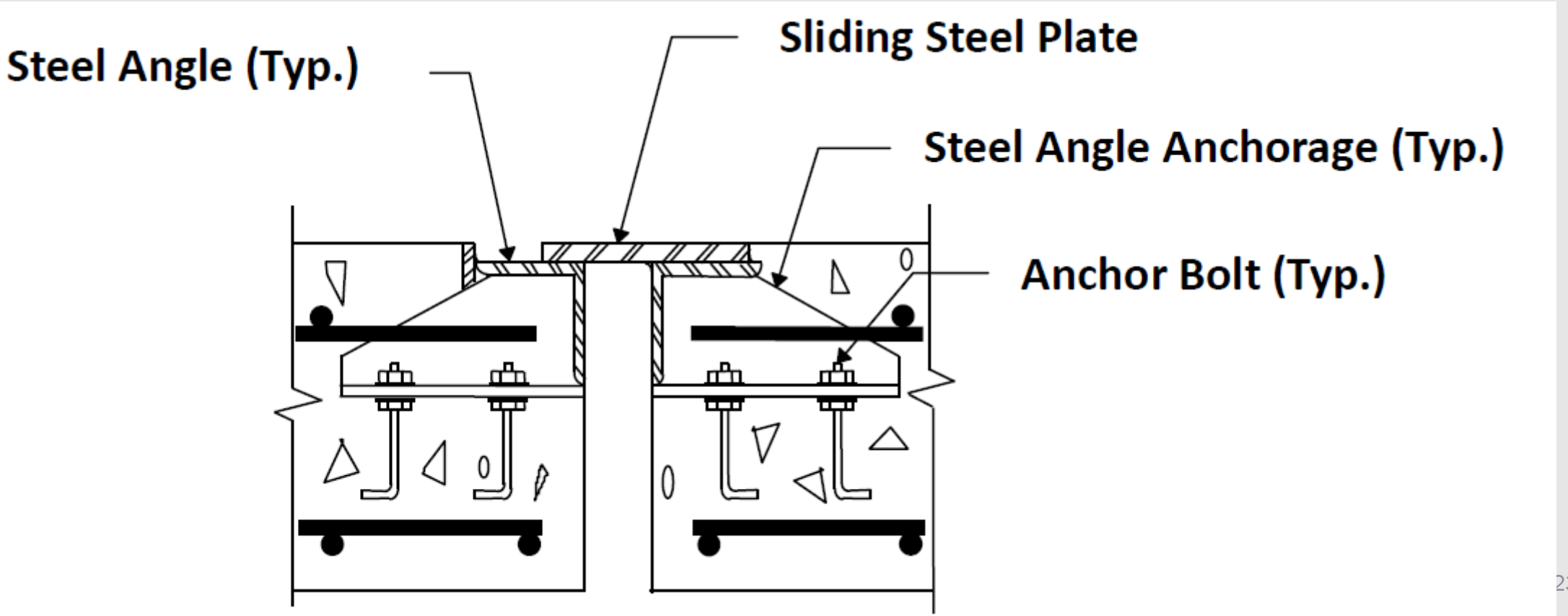
EXPANSION JOINTS
MEDIUM MOVEMENT

- SLIDING PLATE– NORMALLY 2 1/2” OR LESS MOVEMENT



EXPANSION JOINTS
MEDIUM MOVEMENT

- SLIDING PLATE

  NORMALLY 2 1/2” OR

  LESS MOVEMENT

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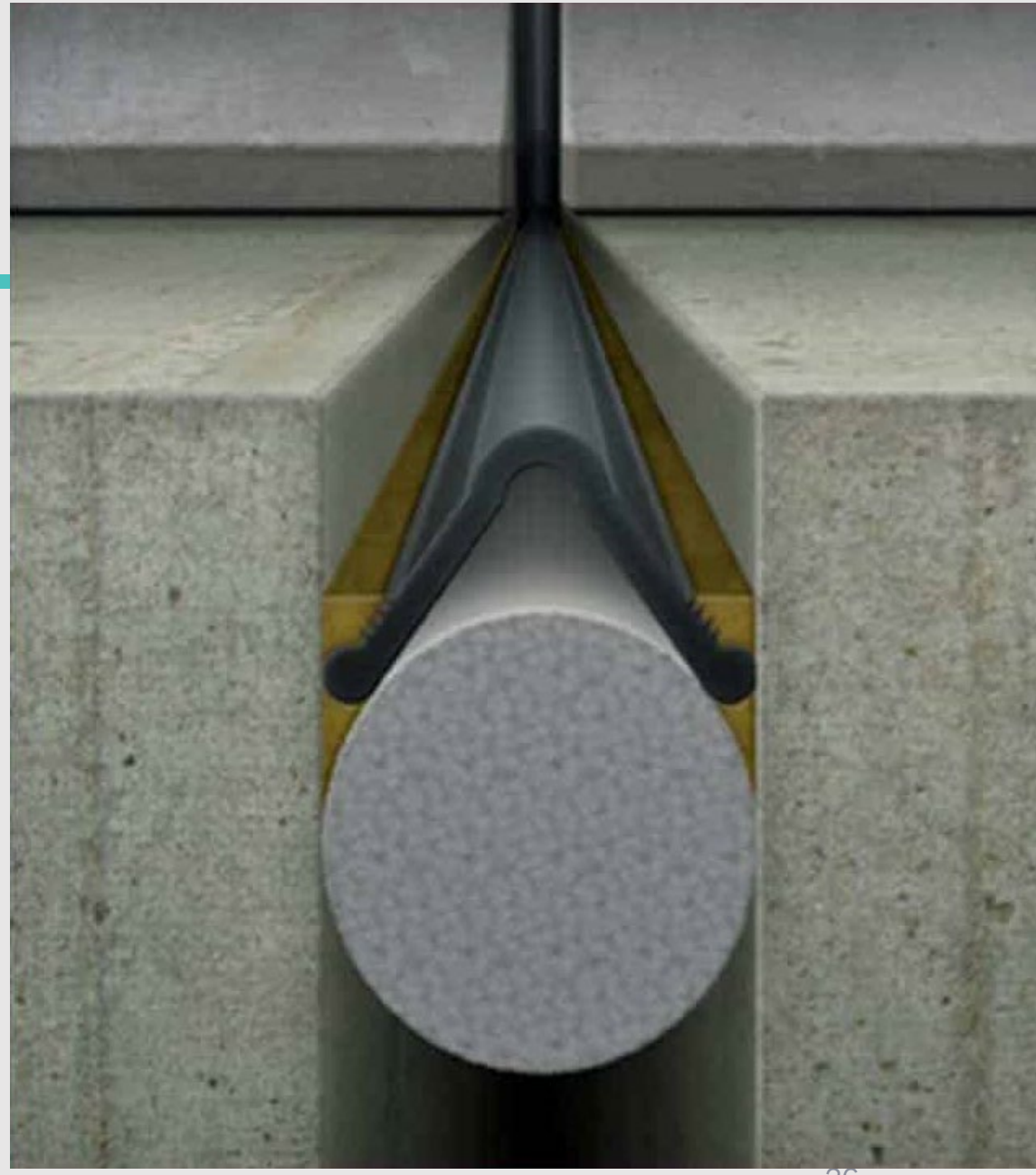
EXPANSION JOINTS
MEDIUM MOVEMENT

EXPANSION JOINTS MEDIUM MOVEMENT

- ADHESIVE STRIP SEAL

  4” MOVEMENT



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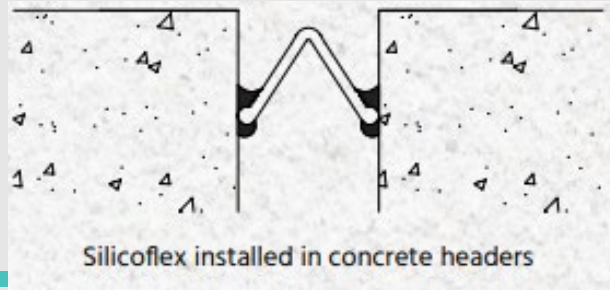
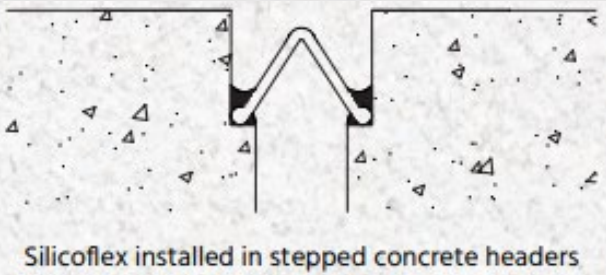
EXPANSION JOINTS MEDIUM MOVEMENT

- ADHESIVE STRIP SEAL

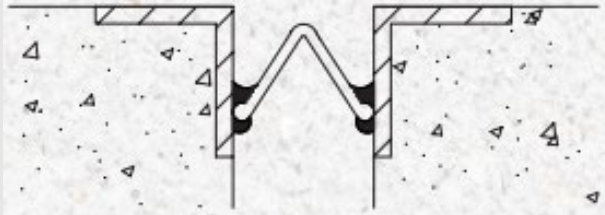
  4” MOVEMENT



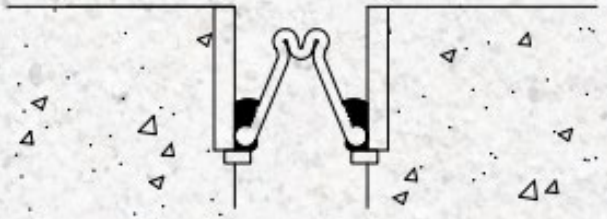
Silicoflex installed in concrete headers



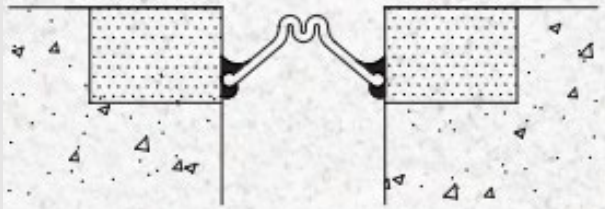
Silicoflex installed in stepped concrete headers



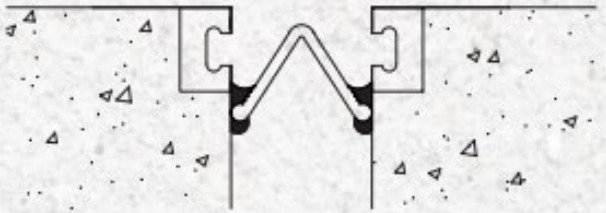
Silicoflex installed with steel angle armoring



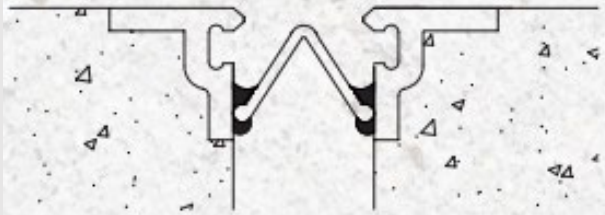
Silicoflex installed with stepped flat steel armoring



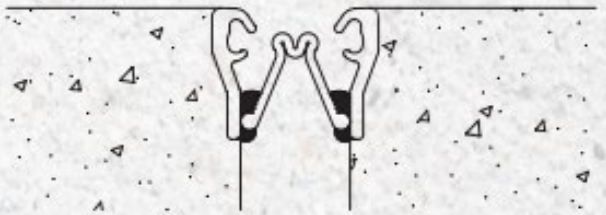
Silicoflex installed with elastomeric or polymer concrete nosing material



Silicoflex installed to repair Strip Seal Locking Mechanism Type A/E Extrusion



Silicoflex installed to repair Strip Seal Locking Mechanism Type M Extrusion



Silicoflex installed to repair Strip Steel Locking Mechanism Type P Extrusion

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EXPANSION JOINTS
MEDIUM MOVEMENT

- ADHESIVE STRIP SEAL

  4” MOVEMENT

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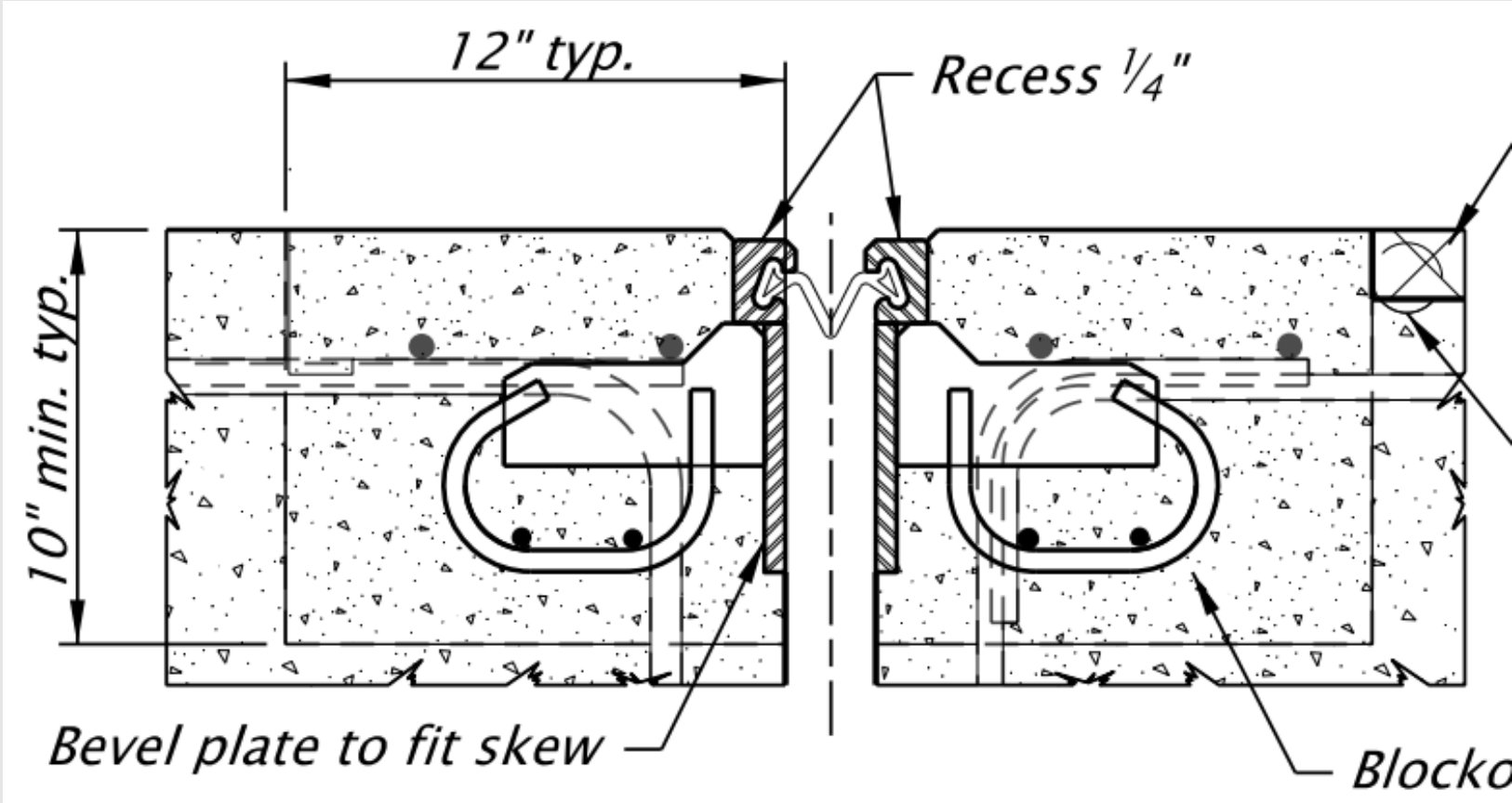
EXPANSION JOINTS
MEDIUM MOVEMENT

- STRIP SEAL

  4” MOVEMENT



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EXPANSION JOINTS
MEDIUM MOVEMENT

- STRIP SEAL

  4” MOVEMENT

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EXPANSION JOINTS
MEDIUM MOVEMENT

- STRIP SEAL

  4” MOVEMENT

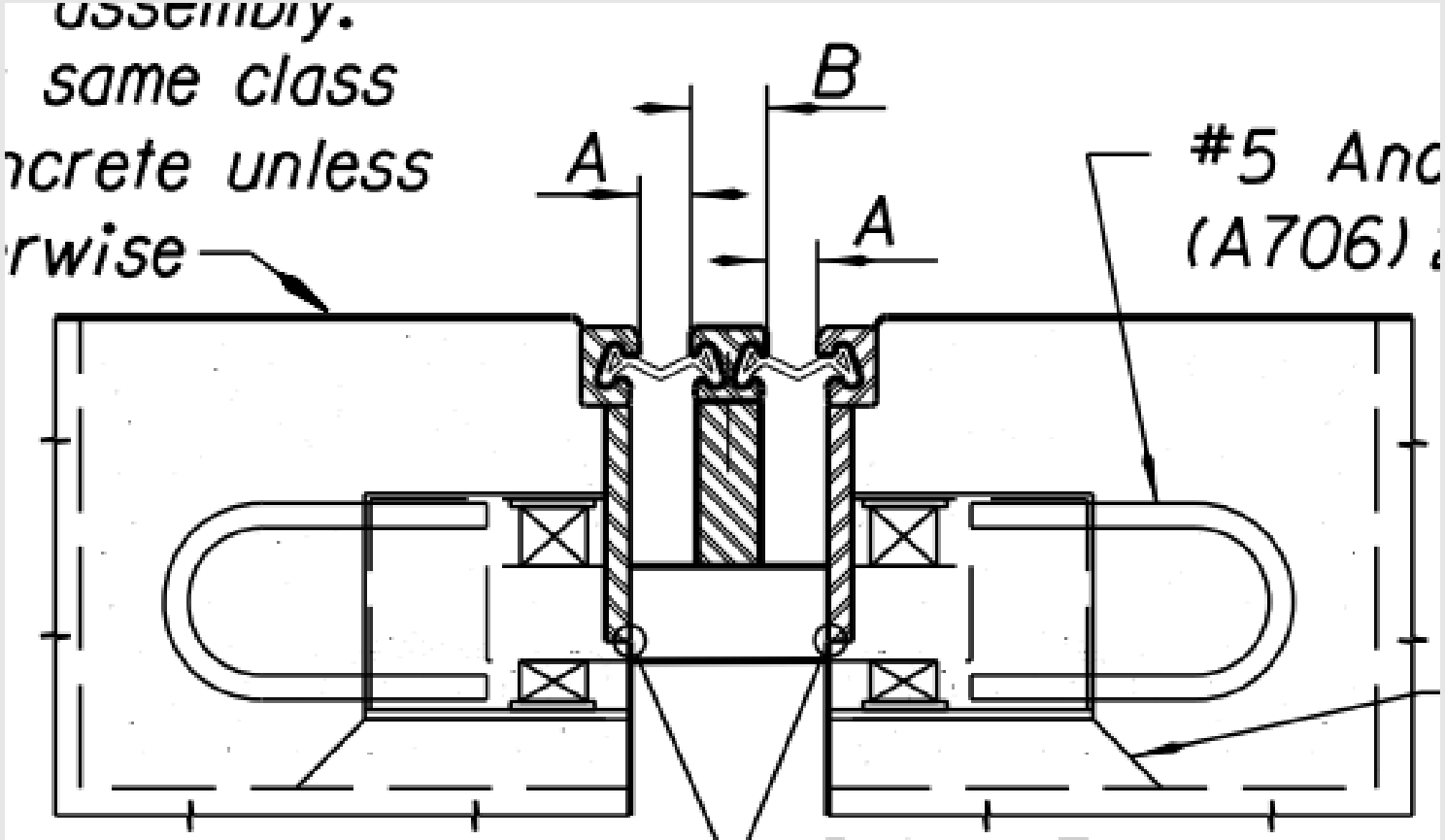
EXPANSION JOINTS
MEDIUM MOVEMENT

- STRIP SEAL

  4” MOVEMENT

EXPANSION JOINTS
LARGE MOVEMENT

- DOUBLE STRIP SEAL (MODULAR)



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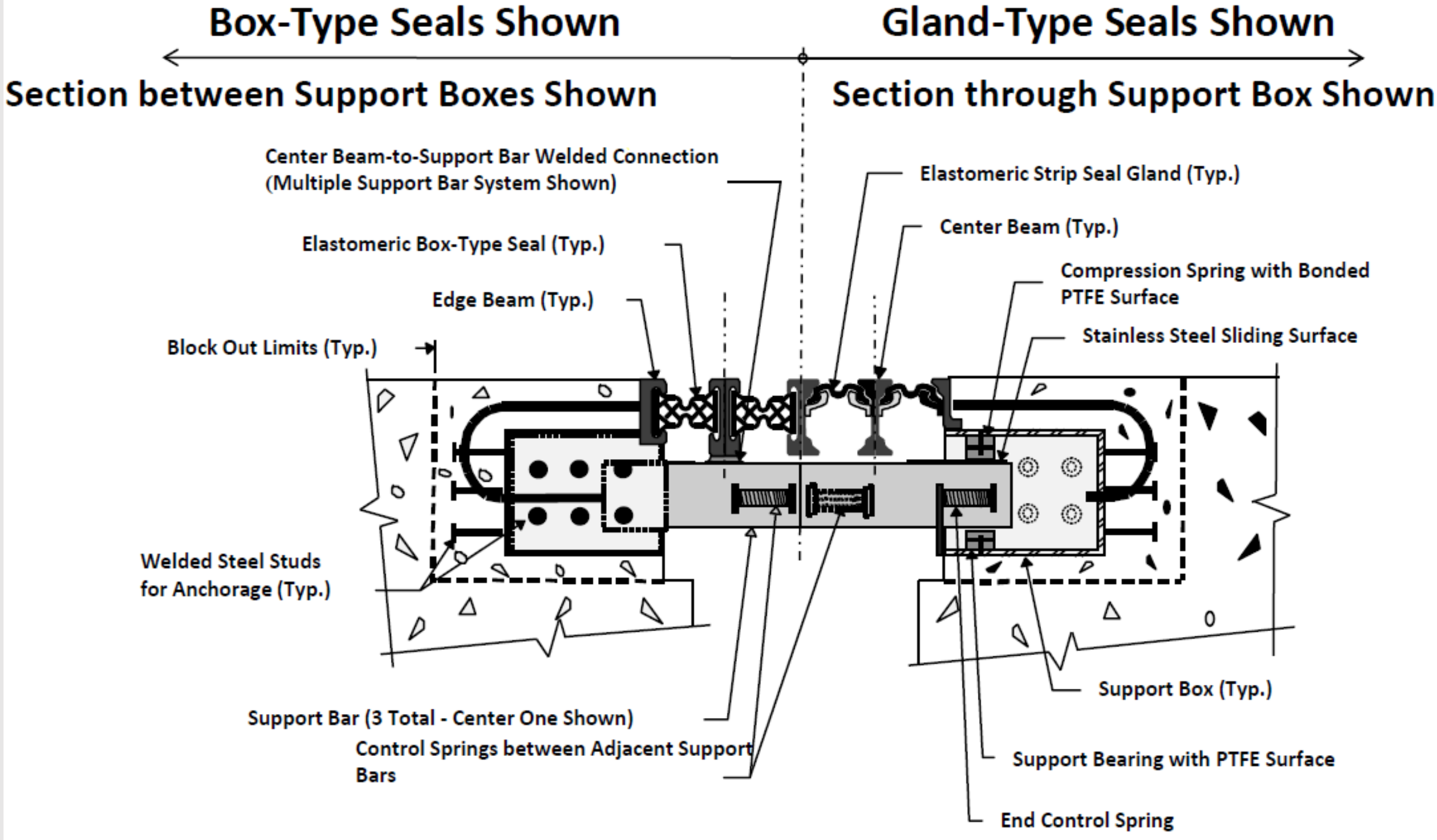
Box-Type Seals Shown
Gland-Type Seals Shown
Section between Support Boxes Shown
Section through Support Box Shown
Center Beam-to-Support Bar Welded Connection
(Multiple Support Bar System Shown)
Elastomeric Box-Type Seal (Typ.)
Edge Beam (Typ.)
Block Out Limits (Typ.)
Welded Steel Studs
for Anchorage (Typ.)
Support Bar (3 Total - Center One Shown)
Control Springs between Adjacent Support
Bars
Elastomeric Strip Seal Gland (Typ.)
Center Beam (Typ.)
Compression Spring with Bonded
PTFE Surface
Stainless Steel Sliding Surface
Support Box (Typ.)
Support Bearing with PTFE Surface
End Control Spring

EXPANSION JOINTS LARGE MOVEMENT

- MODULAR JOINT

  3” TO 30” MOVEMENT

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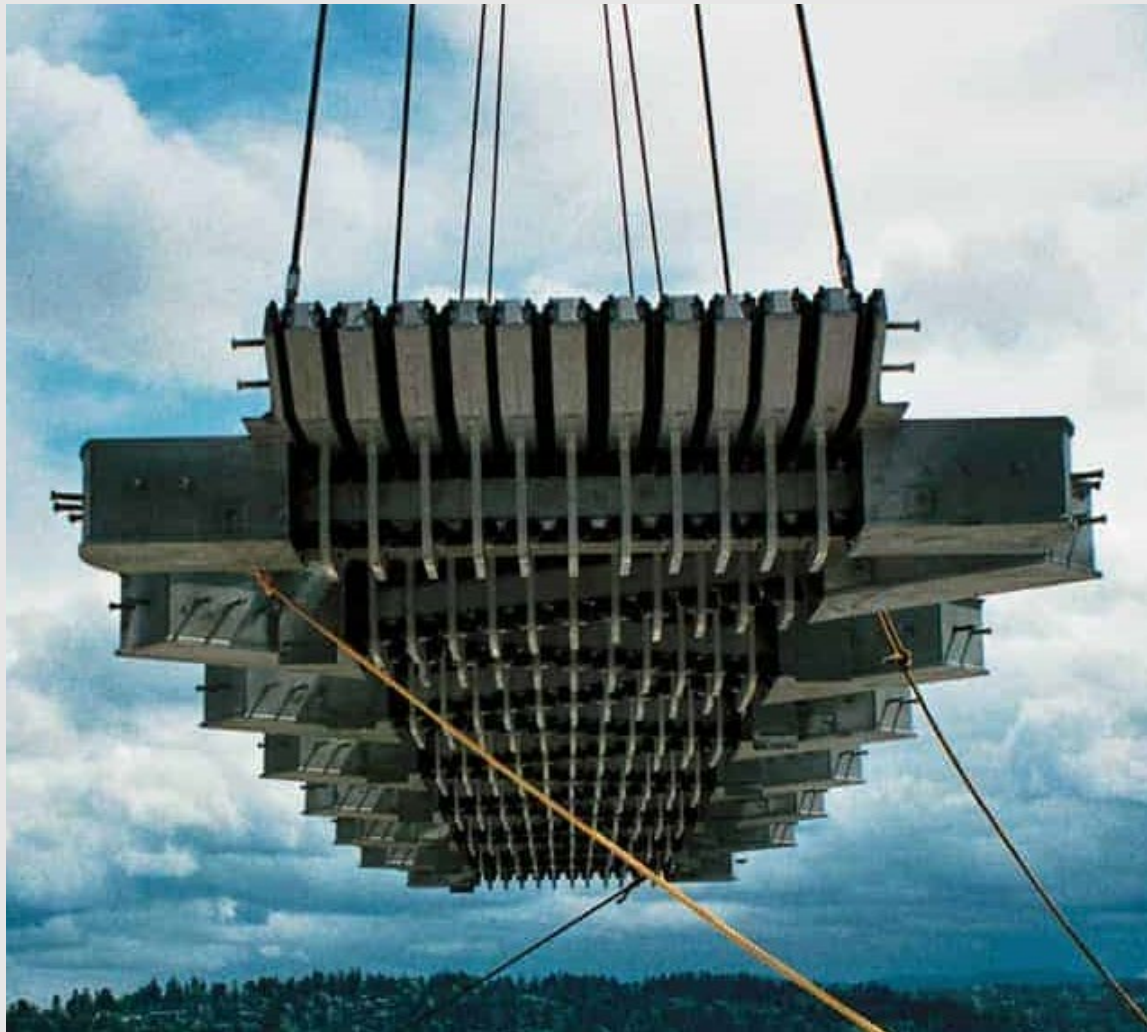
EXPANSION JOINTS
LARGE MOVEMENT

- MODULAR JOINT

  3” TO 30” MOVEMENT



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EXPANSION JOINTS
LARGE MOVEMENT

- MODULAR JOINT– 6” OR MORE Movement

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EXPANSION JOINTS LARGE MOVEMENT

- FINGER JOINTS

  5” OR MORE MOVEMENT

- TEND TO BE VERY EXPENSIVE

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EXPANSION JOINTS
LARGE MOVEMENT

- FINGER JOINT– 5” OR MORE MOVEMENT

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COMMON PREVENTIVE MAINTENANCE

- WASHING TO REMOVE DEBRIS
- CLEANING OUT DRAINAGE SYSTEM
- REPLACING SEALS

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QUESTIONS?