

Waterstop Installation Guide

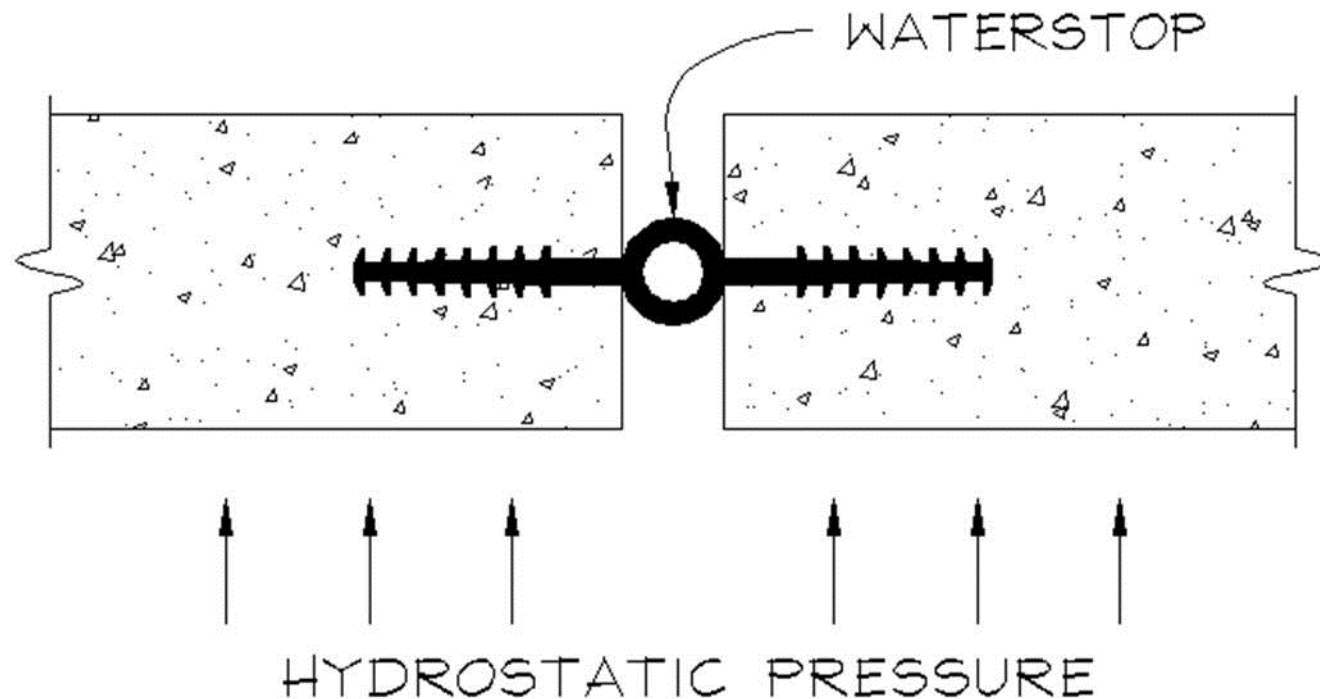
Presented By:

Bruce Zhu - Sika Greenstreak



Waterstop Design- Purpose of Waterstop

...to prevent the passage of liquid through a joint



Construction

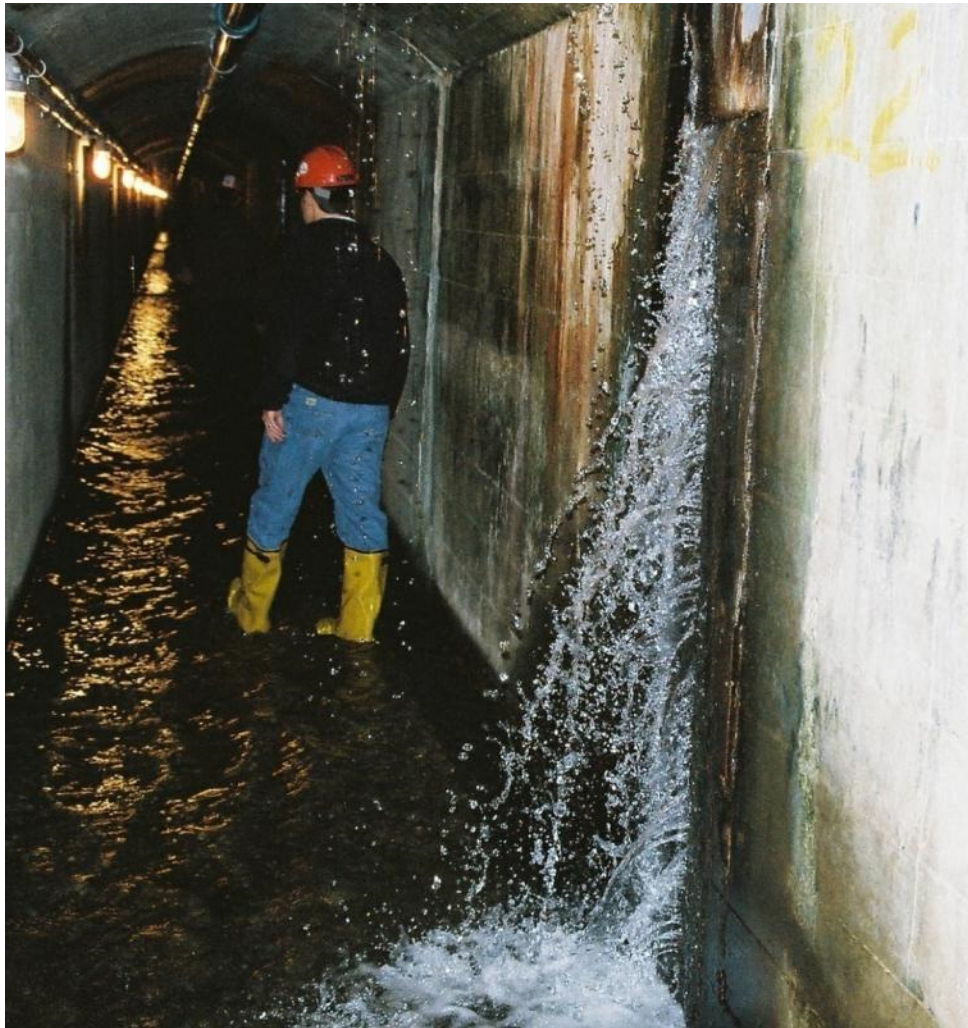
The goal...this!



Sika®

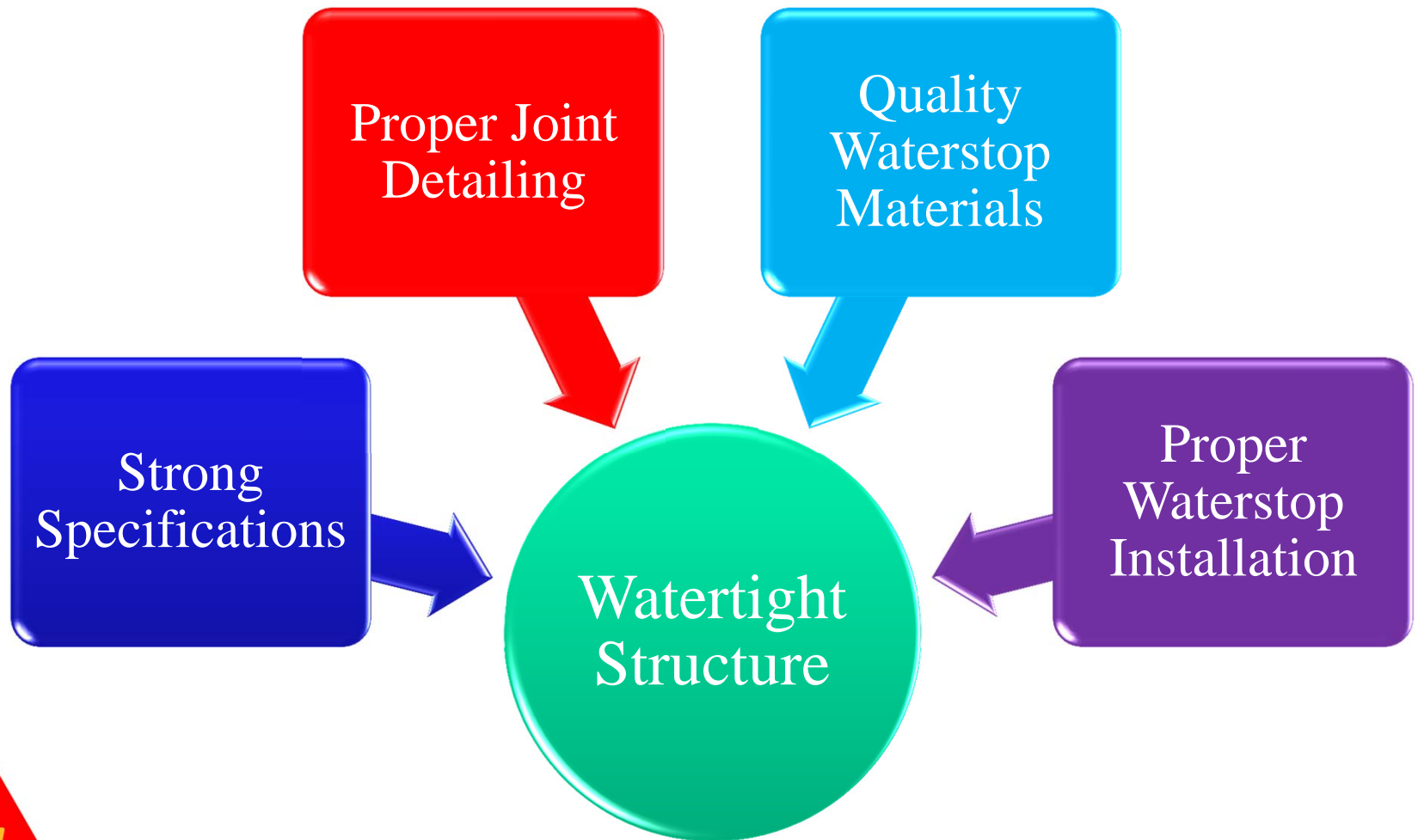
Construction

The goal...not this!



Construction

Keys to Success



Waterstop Materials

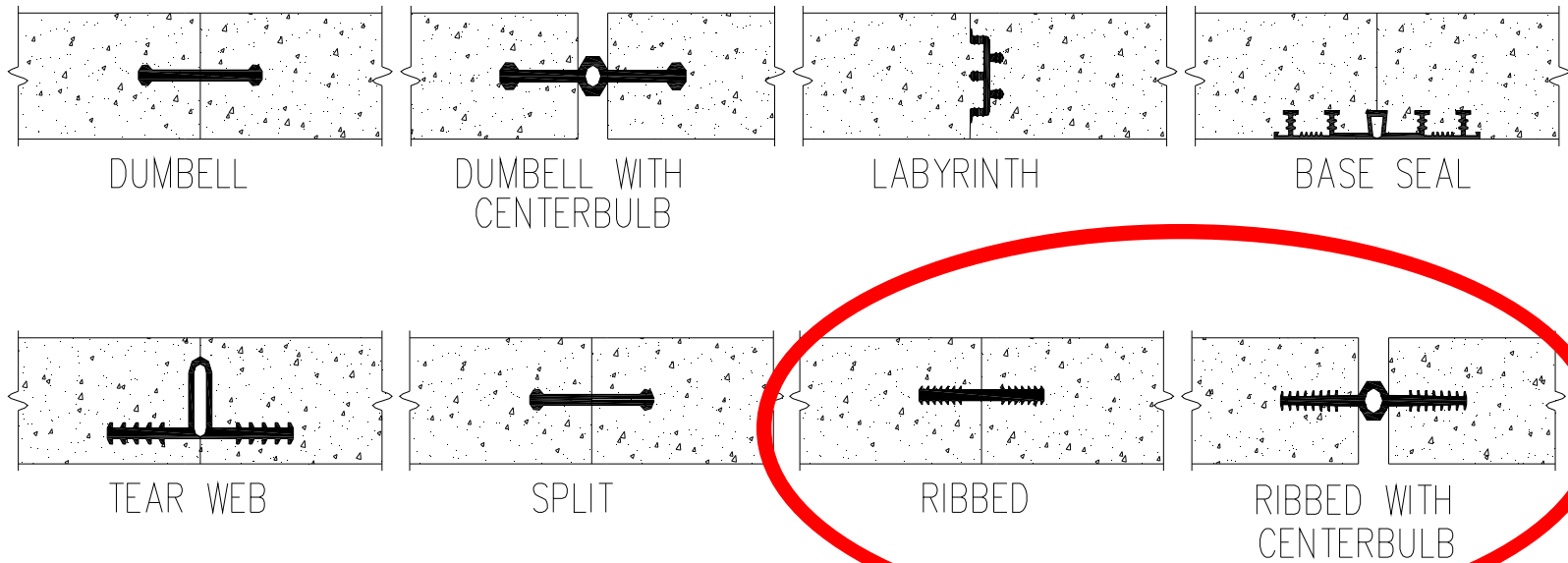
- PVC (Polyvinyl Chloride)
- Rubber – SBR and Neoprene
- TPE-R (Thermoplastic Elastomeric Rubber)
- Polyethylene
- Stainless Steel

Not highly recommended for chemical containment

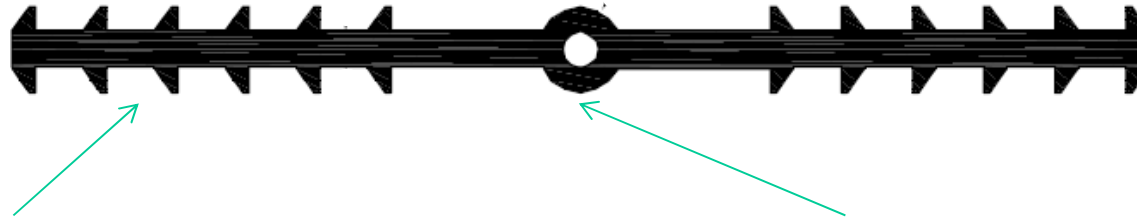
- Strip-applied Hydrophilic Rubber
- Strip-applied Hydrophilic Bentonite
- Strip-applied Mastic



Typical Waterstop Profile Options



Ribbed Centerbulb Profile



Ribs give good interlock and difficult fluid path

Centerbulb allows for typical joint movement

“The ribbed centerbulb is generally regarded as a universal type waterstop for application to both expansion and contraction joints. It’s ability to accommodate both transverse and lateral movements provide an additional dimension of safety...”

-Army COE Engineering Manual, Waterstops and Other Joint Materials

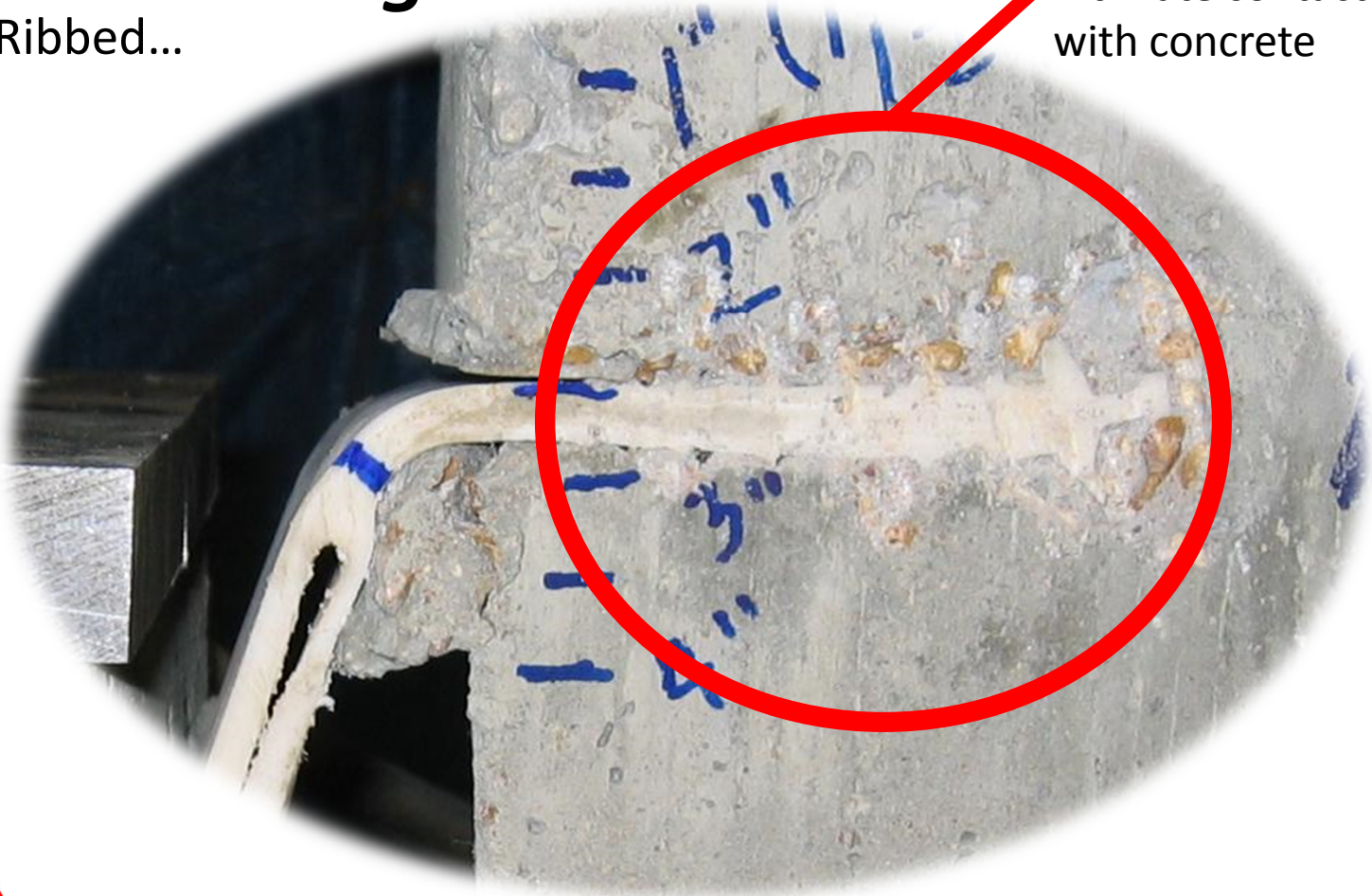
Gaps between concrete and waterstop create leak paths



Good Contact with Waterstop means Fluid Tight Seal

Ribbed...

Intimate contact
with concrete



Purpose of Centerbulb?

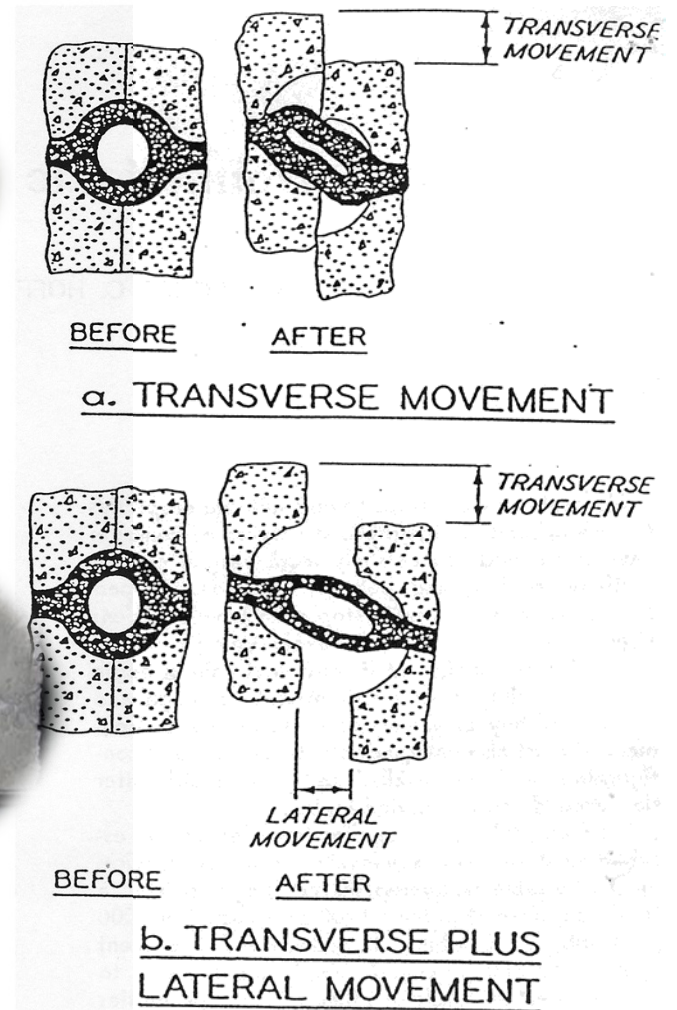
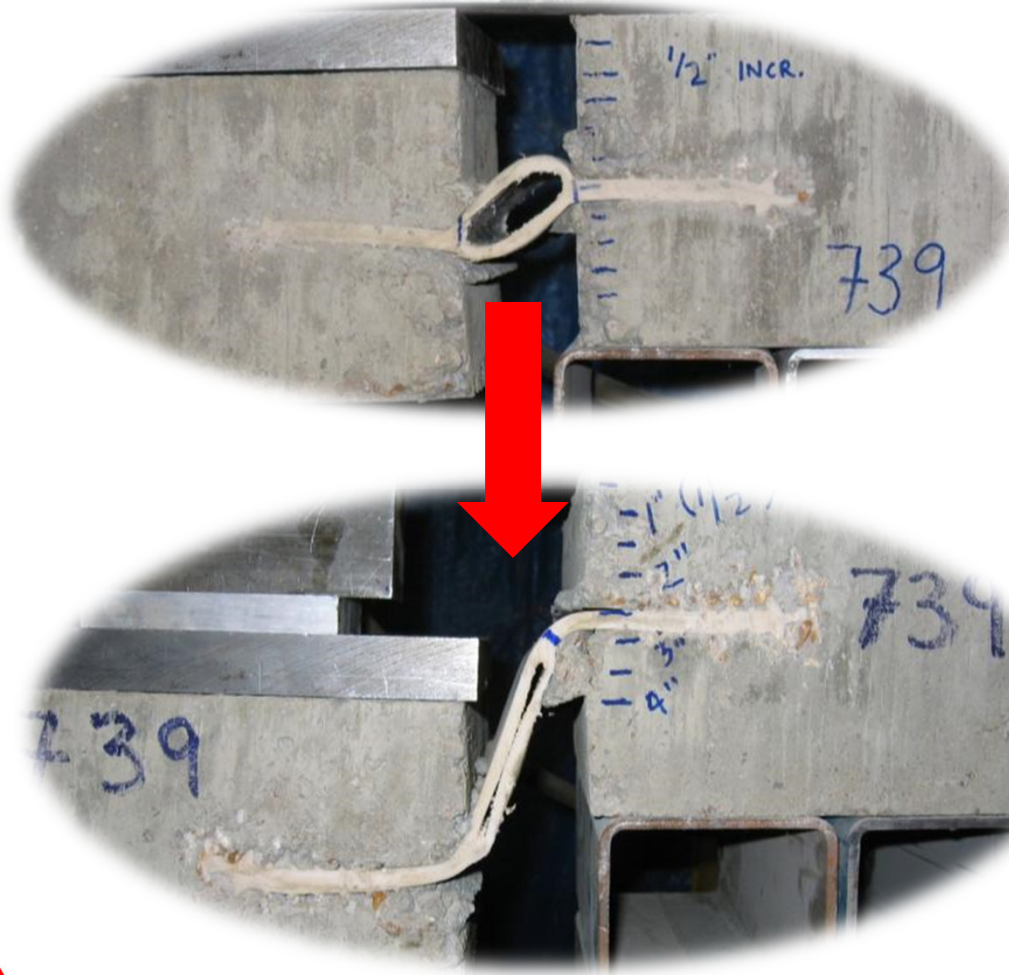
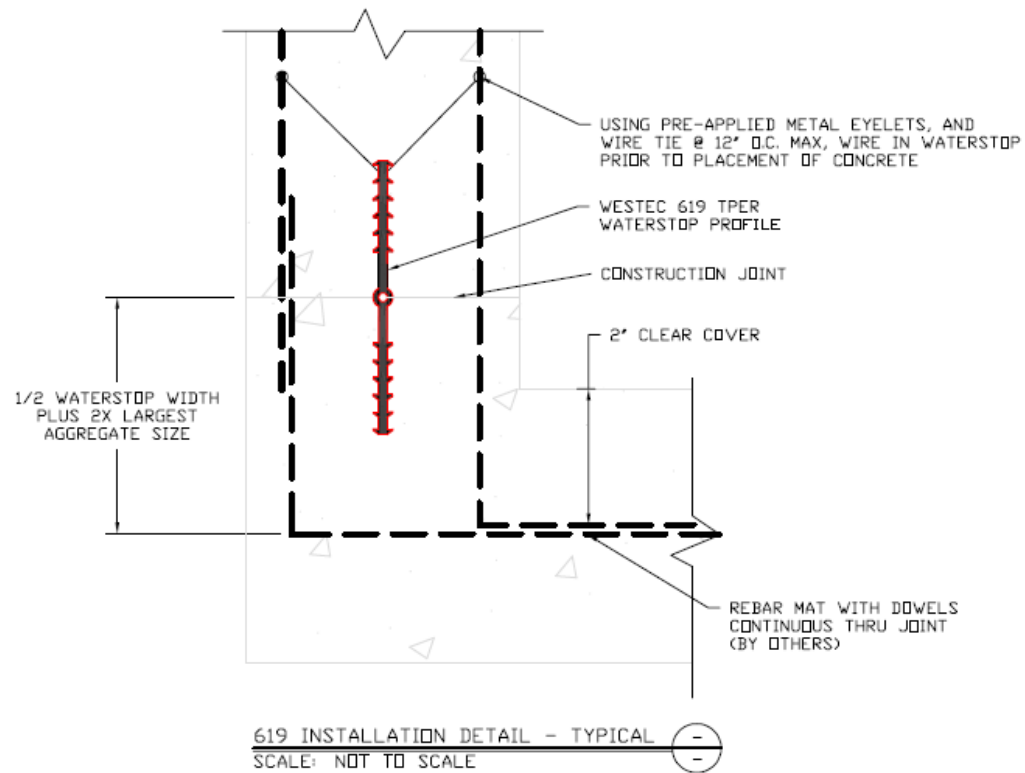


Fig. 2 — O-bulb deformations

Standard Waterstop



Installation Procedures – Key Items for Success

- Installed prior to concrete placement
- Tie off to adjacent rebar through factory-installed grommets/hog rings
- Proper alignment with joint (centered in joint)
- Heat welded connections only
- Proper consolidation of concrete around waterstop
- Split-formwork often required



Proper Concrete Coverage

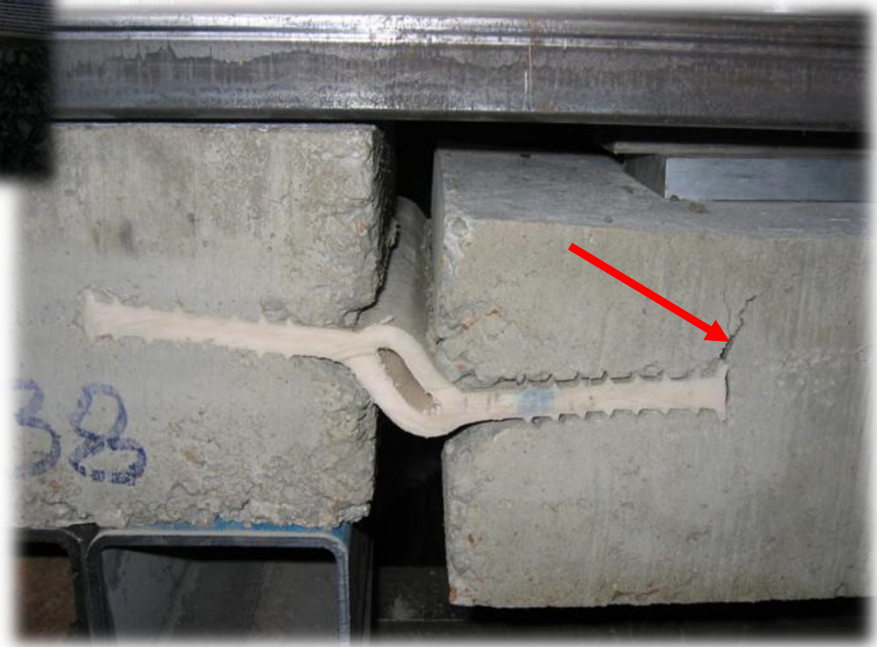


Waterstop coverage = $\frac{1}{2}$ waterstop width

Proper Concrete Coverage



Waterstop coverage = $\frac{1}{2}$ waterstop width



Waterstop must be installed prior to first pour – No “wet setting”

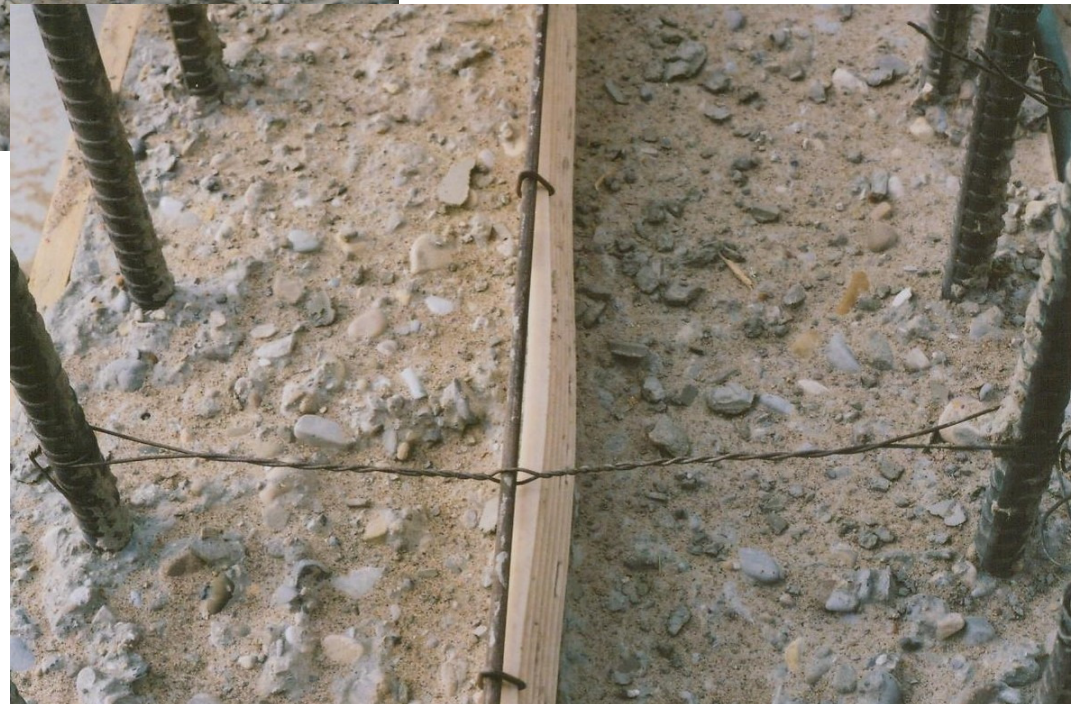


Construction

Correctly installed prior to first pour



Correctly installed prior to first pour



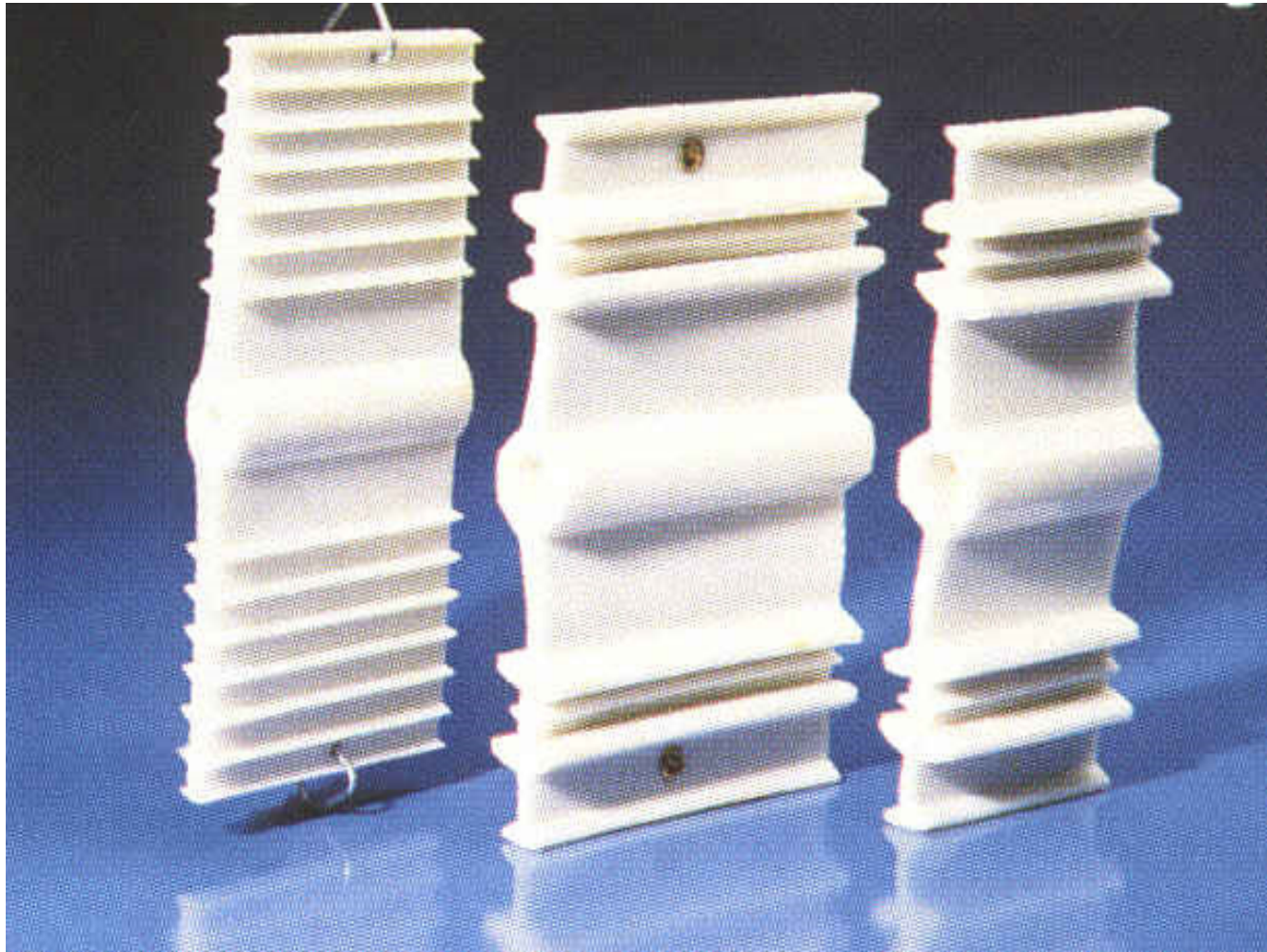
Correct tie-off of waterstop



Waterstop not tied off



Suspending Waterstop in Place



Split-form bulkheads may be required



Results of split formwork



Waterstop Positioning – Must be centered on the joint



Waterstop Positioning – Must be centered on the joint



Avoid Waterstop/Rebar Interference



Improper concrete consolidation



Gaps in Waterstop Design

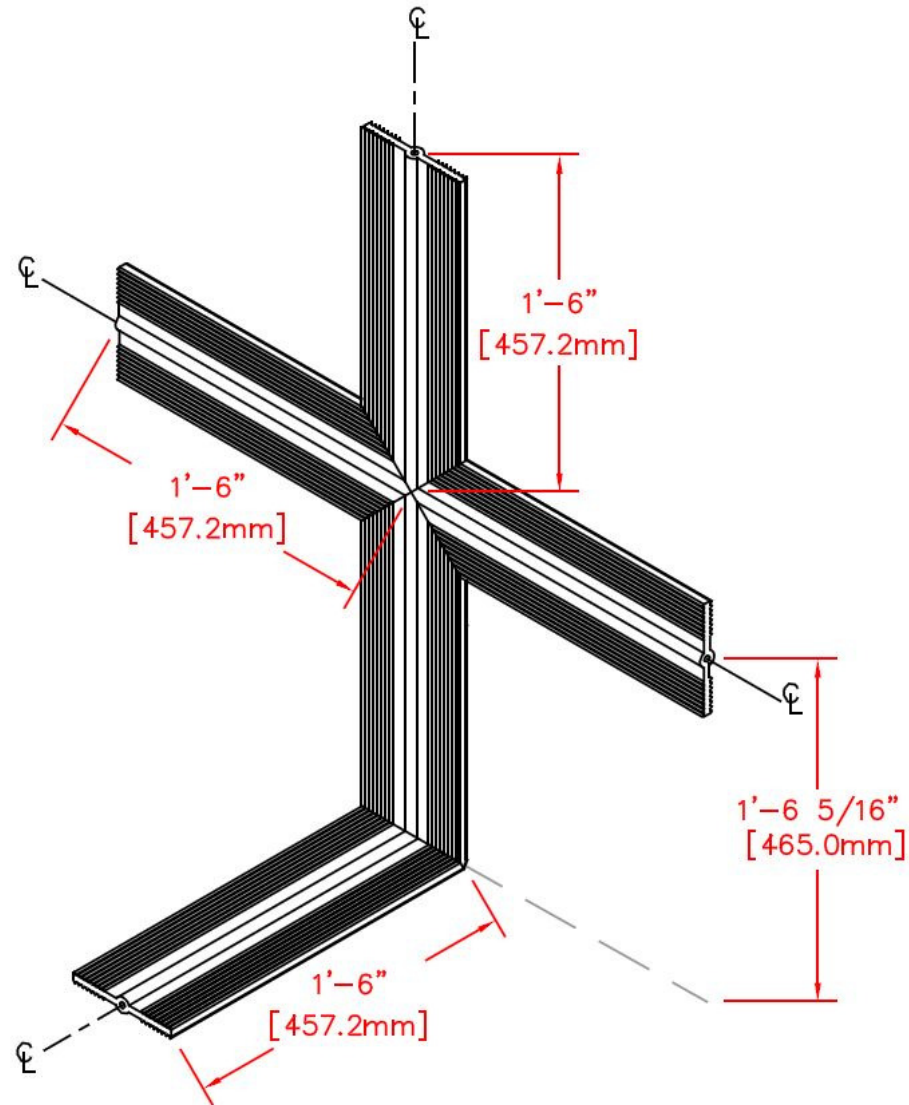


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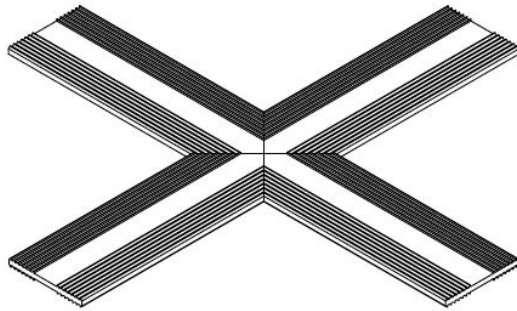
Gaps in Waterstop Design



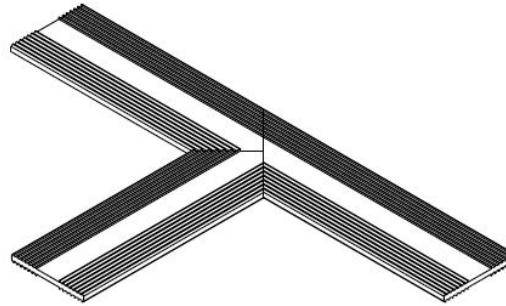
Gaps in Waterstop Design



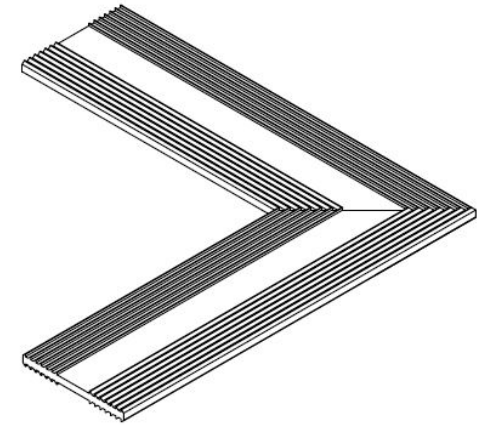
Standard Factory Fabrications



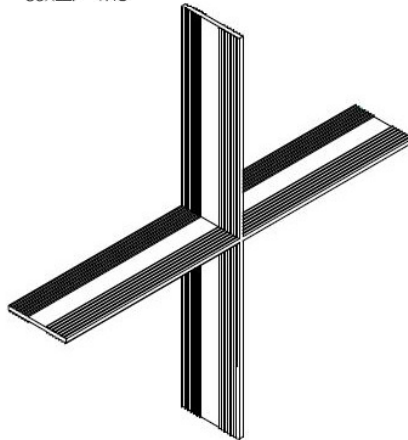
FLAT CROSS
SCALE: NTS



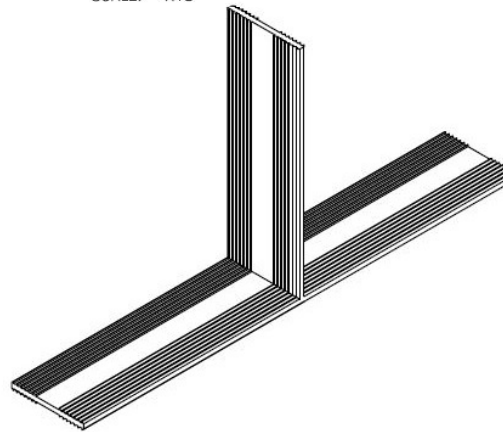
FLAT TEE
SCALE: NTS



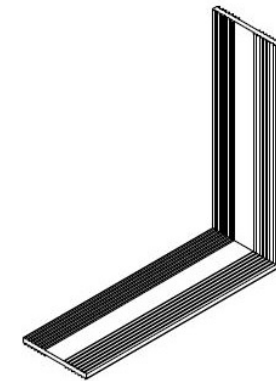
FLAT ELL
SCALE: NTS



VERTICAL CROSS
SCALE: NTS



VERTICAL TEE
SCALE: NTS



VERTICAL ELL
SCALE: NTS

Factory Fabrications

Complex fabrications made in the shop leave only butt welds to be performed in the field



Incorrect corner splice



Incorrect fabrication

