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Introduction to Expansion Joints

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Agenda

Expansion Joint and Movement Basics

Expansion Joint Systems

Identifying Expansion Joint Locations

Joint Sizing as it Relates to Temperature

Expansion Joint Basics

Why are they needed?

As one of the most **overlooked items** on a building project, Expansion Joints **allow structures to move freely** without disruption to pedestrian and vehicular traffic while **protecting the surrounding substrates** from damage





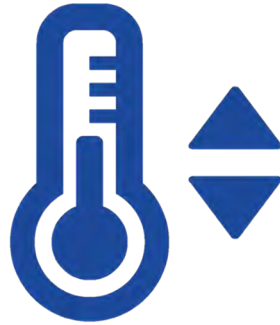
Wind



Soil Settlement



Seismic Activity



Temperature



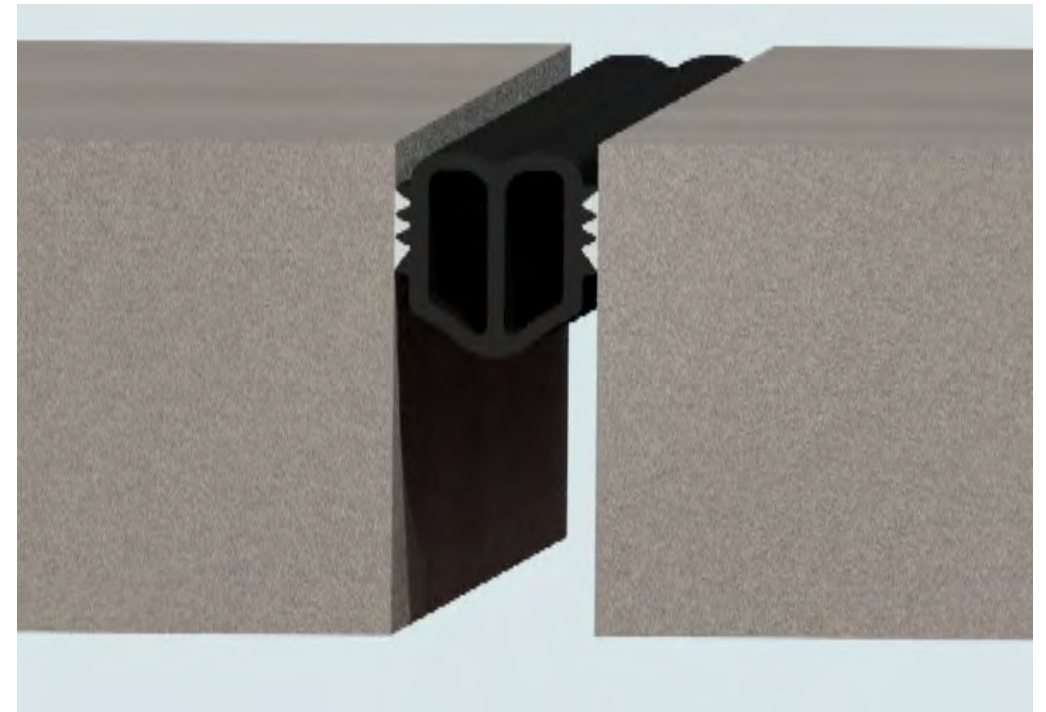
Weight Displacement



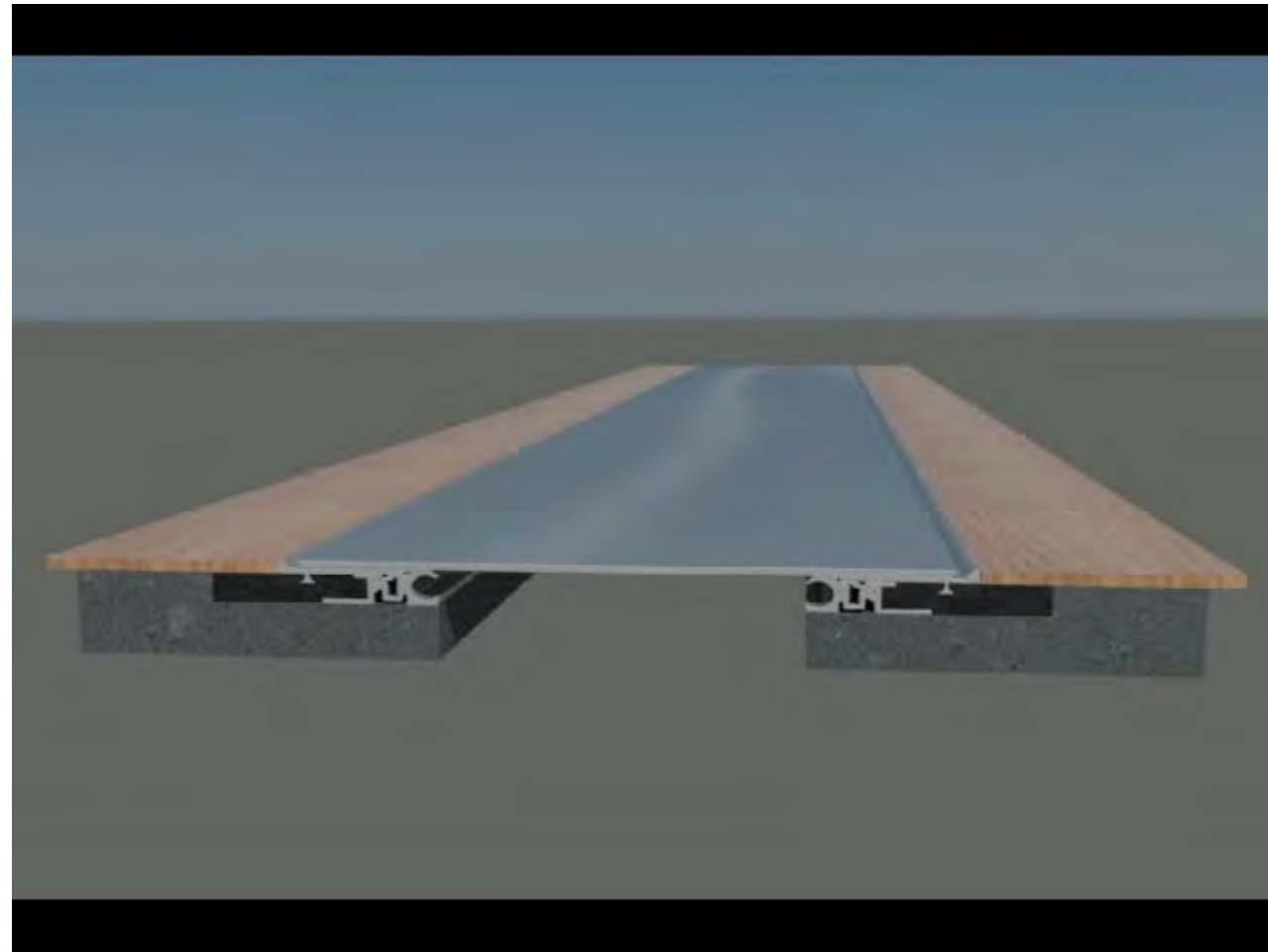
Creep and Shrinkage

What Causes a Structure to Move?

Types of Movement



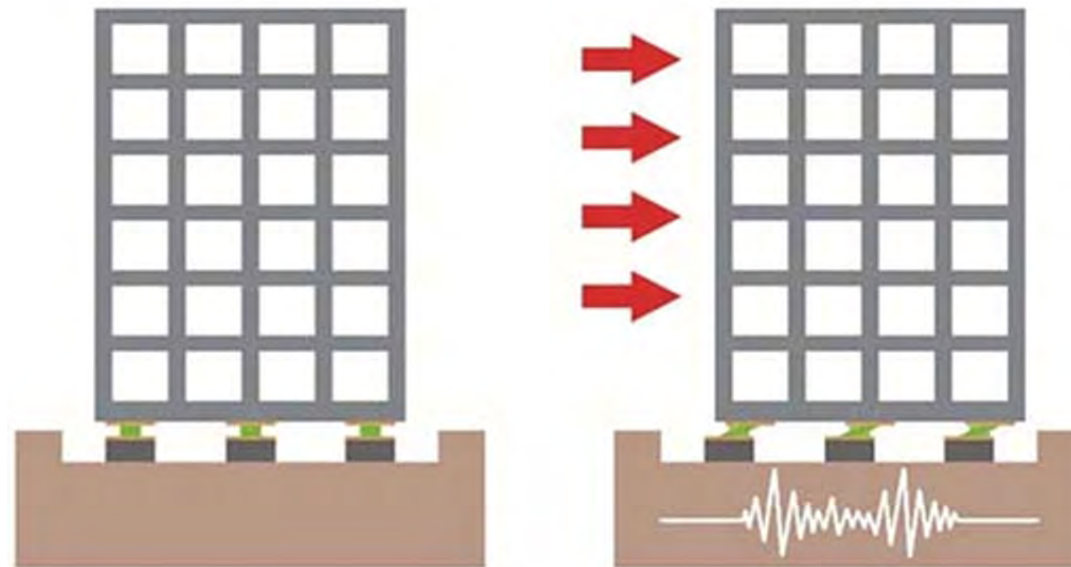
How They Move



Seismic Movements

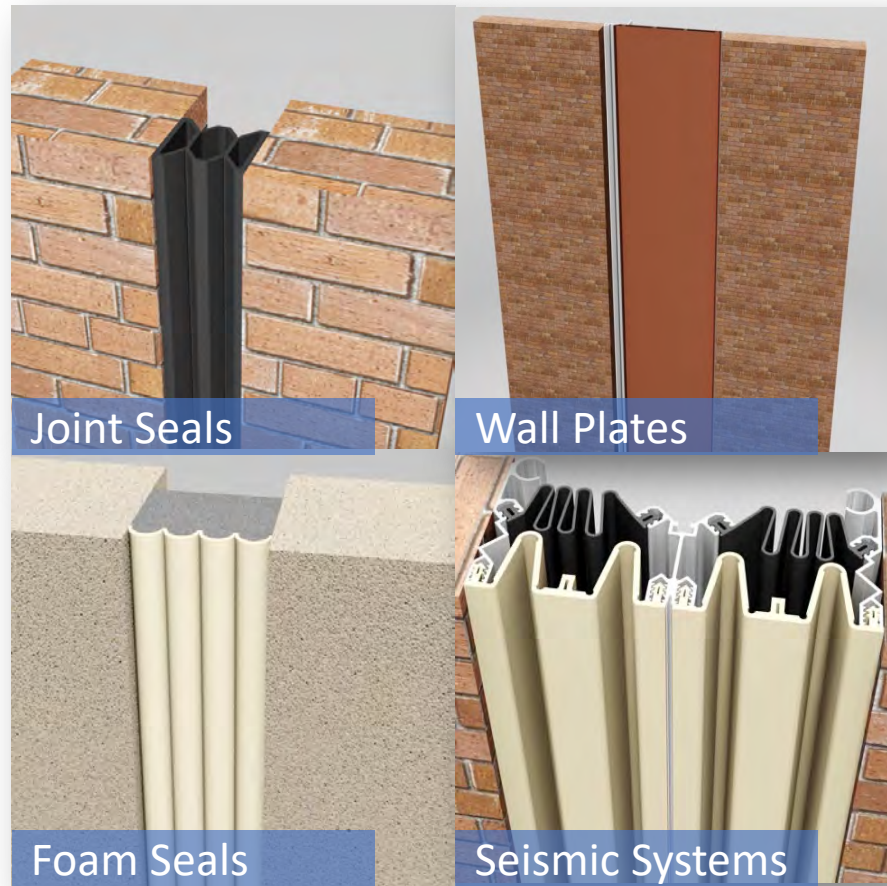
Base Isolation Safeguards People and Building Contents

Isolated Building
Seismic Response

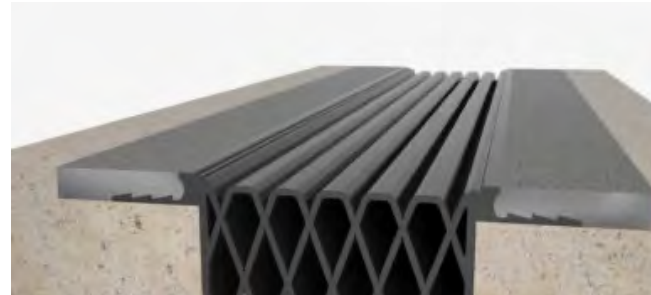
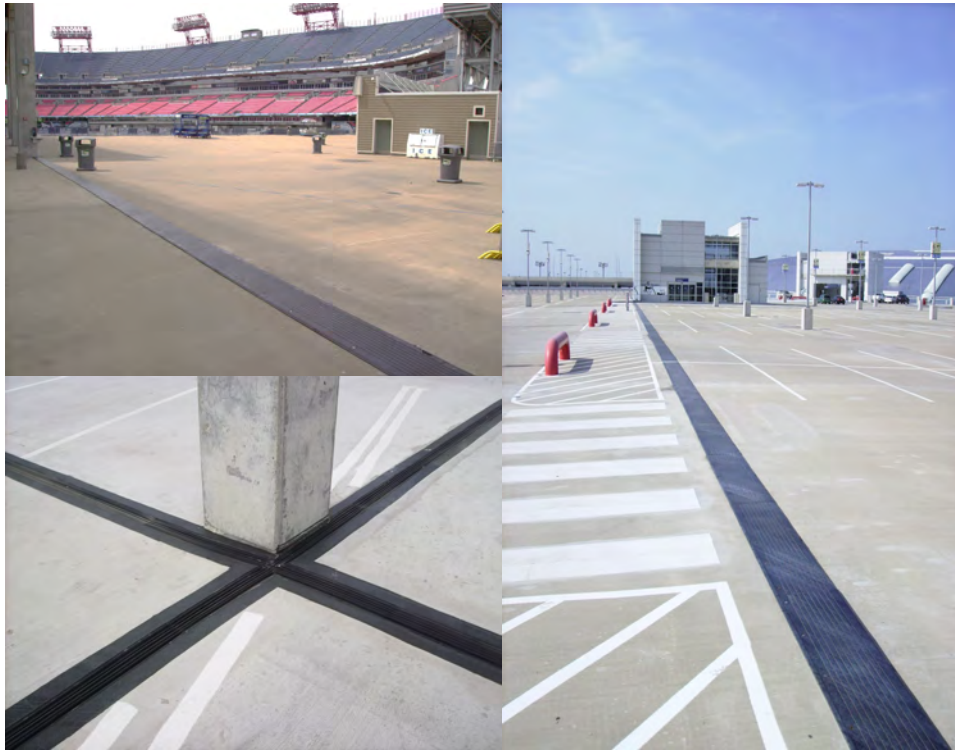


Systems to accommodate movement, provide weather proofing and aesthetics to your architectural building project

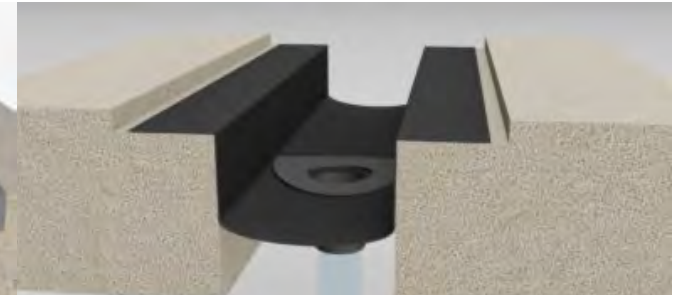
Vertical Joint Systems



Horizontal Expansion Joint Systems



Elastomeric Membrane Systems



Gutter Systems



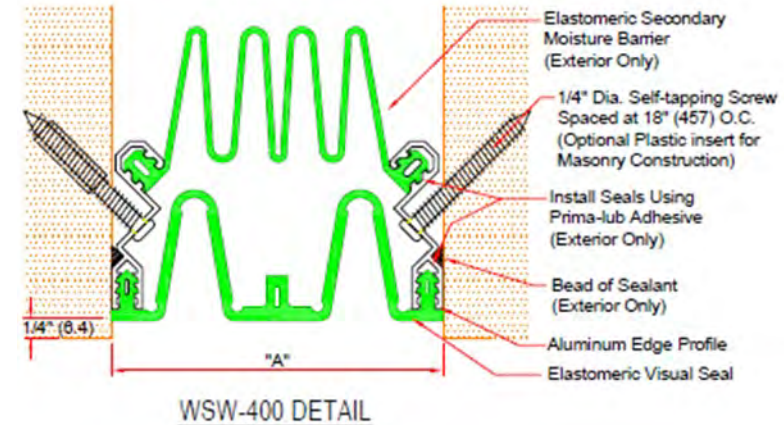
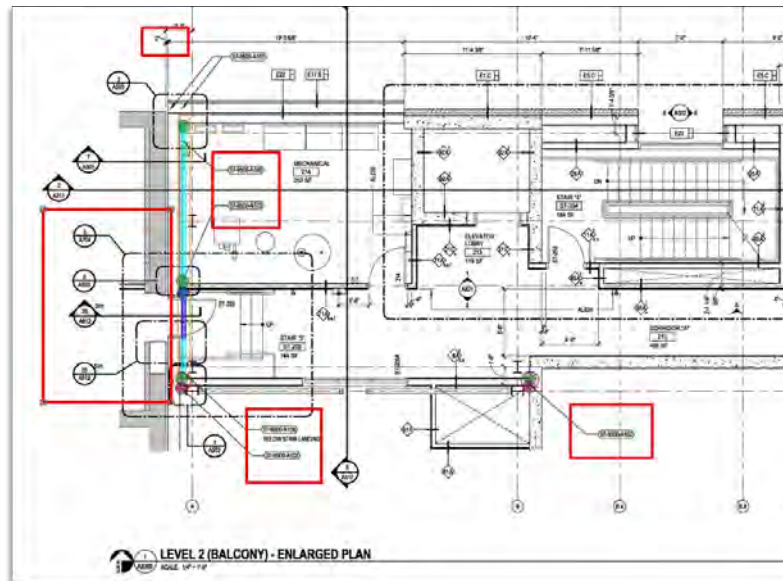
Rubber Encapsulated Plate Systems



Waterproofing Membrane Systems

Creating the Specification

Manufacturers should have Expansion Joint details and CSI written specifications on hand. Items to consider when creating a project spec include clearly marked joint paths, transition locations, details matching the spec, the tie into other surrounding materials, and whether a fire barrier should be required



Expansion Joint Specifications

What to Consider:

- Movement
- Size of the opening
- Location – Path you want it to Travel
- Single Source Manufacturing
- Traffic, Loading, Egress and ADA
- Fire Rating
- Aesthetics
- Installation
- Maintenance

06 20 23	Interior Finish Carpentry	90CD	01.29.16
06 40 00	Architectural Woodwork	90CD	01.29.16
06 41 16	Plastic Laminate Faced Architectural Cabinets	90CD	01.29.16
06 64 00	Plastic Paneling	90CD	01.29.16
DIVISION 07 – THERMAL AND MOISTURE PROTECTION			
07 18 00	Traffic Coatings	90CD	01.29.16
07 84 46	Fire Resistive Joint Systems	90CD	01.29.16
07 92 15	Joint Sealants	90CD	01.29.16
07 95 00	Expansion Control	90CD	01.29.16
DIVISION 08 – OPENINGS			
08 11 13	Hollow Metal Doors and Frames	90CD	01.29.16
08 12 16	Aluminum Frames	90CD	01.29.16
08 14 16	Flush Wood Doors	90CD	01.29.16
08 31 13	Access Doors and Frames	90CD	01.29.16
08 33 13	Coiling Counter Doors	90CD	01.29.16

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SECTION 07 95 00 - EXPANSION CONTROL

PART 1 - GENERAL

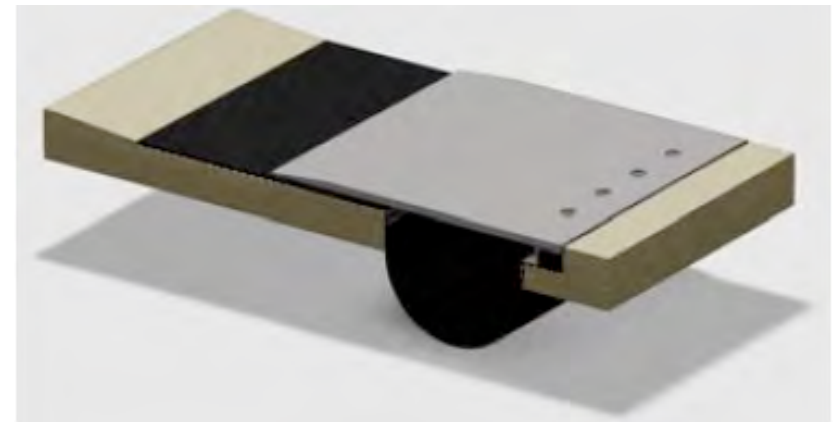
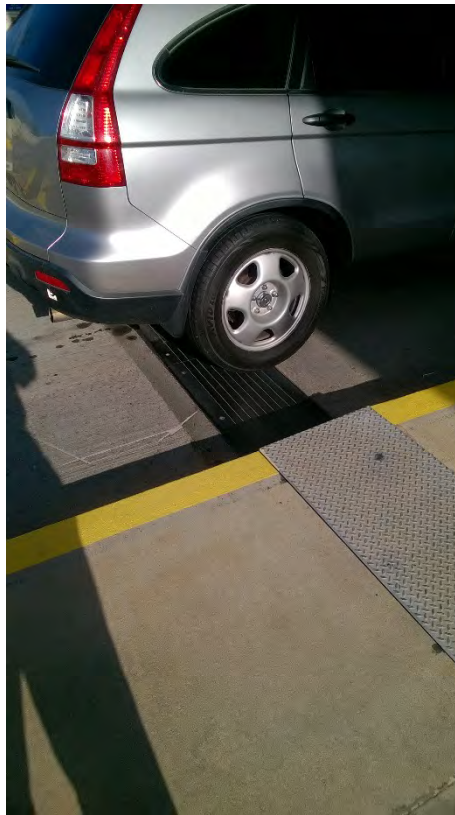
1.1 RELATED DOCUMENTS

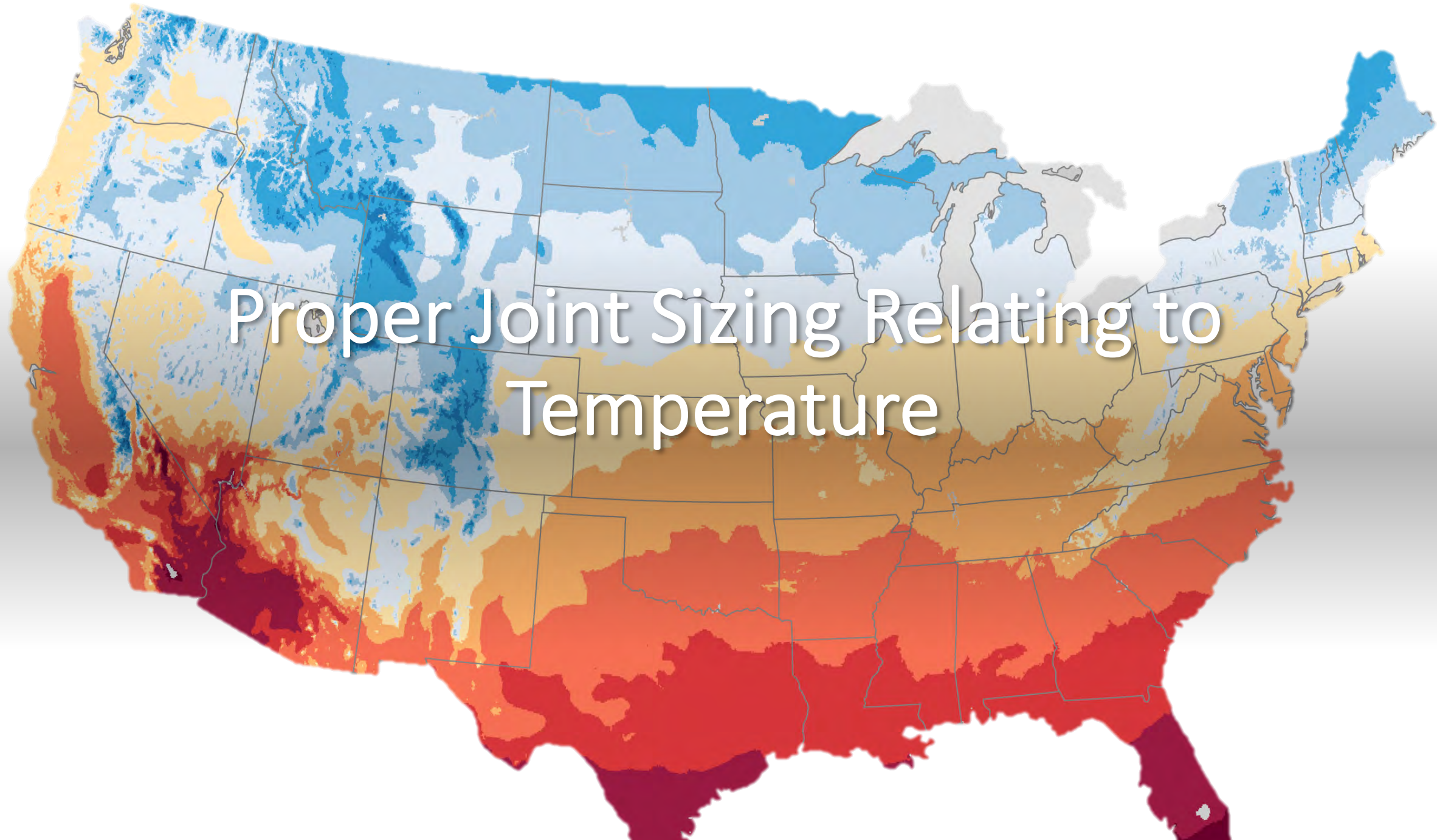
- Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- Section Includes:
 - Vertical and Horizontal expansion control systems throughout the project, interior and exterior conditions.
- Related Requirements:
 - Division 07 Section "Joint Sealants" for joint sealants and for elastomeric sealants without metal frames.

Traffic, Loading, Egress and the Americans with Disabilities Act (ADA).





Proper Joint Sizing Relating to Temperature



Cold Weather





Warm Weather



Temperature Adjustment Table

Always Recommended on Contract Drawings

Mean Temperature

$4\frac{7}{8}$	$4\frac{9}{16}$	$4\frac{1}{4}$	$3\frac{15}{16}$	$3\frac{5}{8}$	$3\frac{5}{16}$	3	$2\frac{11}{16}$	$2\frac{3}{8}$	$2\frac{1}{16}$	$1\frac{3}{4}$
0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°

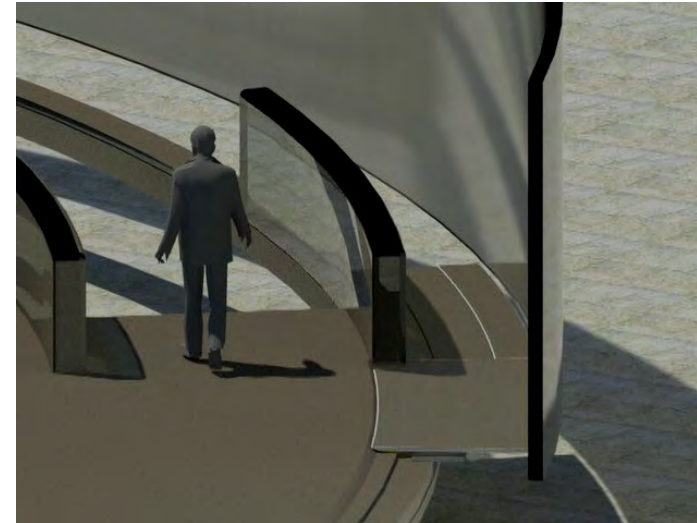
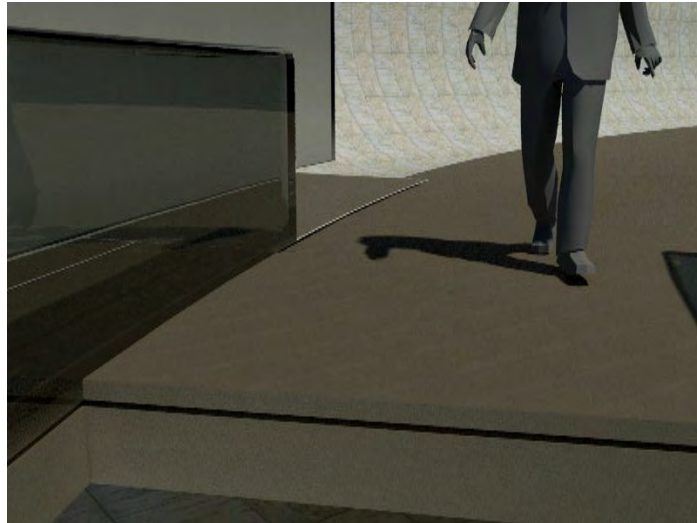
Total Temperature Range

Proper Expansion Joint Selection

- Determine the size, location and number of joints for each level of the structure
- Select method of sealing the structural opening
- Volume, type and speed of vehicular traffic
- Select system based on service need
 - ADA compliance (near walkways / stair towers)
 - Fire ratings
 - Seismic and thermal movement criteria
 - Snow plow protection (top level)
 - Waterproofing

New and Interesting

As Architects and Engineers push the bounds of unique design, *Seismic Moat Covers* have become very important. Design of moats during overall project design is crucial.



Summary

- Expansion joints ensure the sustainability of a structure and should not be an afterthought
- Top-functioning expansion joints can be aesthetically pleasing – do not sacrifice performance!
- A good manufacturing partner will work with you from initial design and will follow through with contractor to post-inspection

Questions?

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