# **|** **Suggested Specifications | Section 07 95 00**

# **Expansion Control**

1. **General**
	* + 1. **Related Documents**
				1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			2. SUMMARY
				1. This Section includes the following:

Adjust list below to suit Project.

Architectural joint systems for building exteriors. *(delete if not required)*

* + - * 1. Related Sections include the following:

List below only products that the reader might expect to find in this Section but are specified elsewhere.

Retain first subparagraph below if cast-in frames are included in Project. Coordinate with Part 2 joint system articles.

Division 03 Section "Cast-in-Place Concrete" for cast-in architectural-joint-system frames furnished, but not installed, in this Section.

Division 04 Section "Unit Masonry" for masonry wall joint systems.

Division 07 Section "Sheet Metal Roofing" for sheet metal roof joint systems.

Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal wall joint systems.

Division 07 Section "Fire-Resistive Joint Systems" for liquid-applied joint sealants in fire-resistive building joints.

Division 07 Section "Joint Sealants" for liquid-applied joint sealants.

* + - 1. **Definitions**

Retain definitions and terms that remain after this Section has been edited.

* + - * 1. Maximum Joint Width: Widest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.
				2. Minimum Joint Width: Narrowest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.
				3. Movement Capability: Value obtained from the difference between widest and narrowest widths of a joint.

Definition in paragraph below is from UL 2079.

* + - * 1. Nominal Joint Width: The width of the linear opening specified in practice and in which the joint system is installed.
			1. **Submittals**
				1. Shop Drawings: Provide the following for each joint system specified and obtain approval prior to fabrication and shipment of materials to the job site:

Placement Drawings: Include line diagrams showing plans, elevations, sections, details, splices, blockout requirement, entire route of each joint system, and attachments to other work. Where joint systems change planes, provide isometric or clearly detailed drawing depicting how components interconnect.

* + - * 1. Product Data: Submit copies of manufacturer’s latest published literature for materials specified herein for approval, and obtain approval before materials are fabricated and delivered to the site. Data to clearly indicate movement capability of cover assemblies and suitability of material used in exterior seal for UV exposure.

Retain subparagraph and associated subparagraphs below for large and complex projects or projects with multiple expansion joints.

* + - * 1. Samples for Initial Selection: For each type of joint system indicated.

Include manufacturer's color charts showing the standard range of colors and finishes available for each exposed metal and elastomeric seal material.

Delete paragraph and subparagraph above if colors and other characteristics are preselected and specified or scheduled. Retain first paragraph and subparagraph below with or without above.

* + - * 1. Certificates – Material test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of fire-rated expansion joint assemblies with requirements indicated.
			1. **Quality Assurance**

Usually delete paragraph below unless factory training for installers is offered by manufacturer and will result in increased warranty.

* + - * 1. Installer Qualifications: Approved by manufacturer and having experience installing joint systems that are similar in design complexity.

Retain paragraph below where aesthetics are of primary concern or if fire-resistance-rated systems are required.

* + - * 1. Source Limitations: Obtain all architectural joint systems through one source from a single manufacturer.

Retain paragraph and subparagraph below to allow drawing details based on one manufacturer's product to establish requirements and still allow competition. Coordinate with Division 01 requirements.

* + - * 1. Product Options: Drawings indicate size, profiles, and dimensional requirements of architectural joint systems and are based on the specific systems indicated. Refer to Division 01 Section "Product Requirements."

Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

* + - * 1. Loading Characteristics: Standard loading refers to covers that are capable of withstanding up to 500 lb. point loads. Heavy duty refers to covers that are capable of withstanding up to 2000 lb. point loads.

Retain paragraph below for floor joint systems.

Delete paragraph and subparagraph below if no fire-resistance-rated assemblies are required. See Evaluations for discussion of fire-resistance test methods.

* + - * 1. Fire-Test-Response Characteristics: Where indicated, provide architectural joint system and fire-barrier assemblies identical to those of assemblies tested for fire resistance per UL 2079 and/or ASTM E 1966 by a testing and inspecting agency acceptable to authorities having jurisdiction. Fire rating not less than the rating of adjacent construction.
				2. Manufacturer to provide 5 year warranty for all joint covers.

**Delete subparagraph below if Project does not contain wall-to-wall or wall-to-ceiling assemblies.**

* + - 1. **Coordination**

Delete this Article if exterior joint systems are not part of Project.

* + - * 1. Coordinate installation of exterior wall joint systems with roof expansion assemblies to ensure that wall transitions are watertight.

1. **Products**
	* + 1. **Materials**

Delete materials in this Article that are not required.

* + - * 1. Aluminum: ASTM B 221, Alloy 6063-T5, 6063-T6, 6063-T52, 6061-T5, 6061-T6, 6061-T51, 6105-T5, 6105-T6, 6005-T5, 6005A-T5, 6005A-T61 for extrusions; ASTM B 209, Alloy 6061-T6, 3003-H14, 5005-H34 for sheet and plate.

Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.

Retain finishes in subparagraphs below to suit Project. Coordinate with Part 2 joint system articles. Verify availability of finishes with manufacturer before specifying. Revise if custom finish is required.

Mill Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

Select clear or color anodic finish and class from subparagraphs below. Class II is standard finish with many manufacturers. Class I is thicker; verify availability before specifying.

Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

Class II, Color Anodic Finish: AA-M12C22A32/A34 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, integrally colored or electrolytically deposited color coating 0.010 mm or thicker) complying with AAMA 611.

Subparagraph below references AAMA standards for high-performance organic coatings on extrusions and panels. Revise if specific products are required.

High-Performance Organic Finish (Two-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2604 and with coating and resin manufacturers' written instructions.

* + - * 1. Stainless Steel: ASTM A167, A240A, A240M - Type 304 for plates, sheet, and strips.

Retain finish in subparagraph below to suit Project. Coordinate with Part 2 joint system articles. Verify availability of finishes with manufacturer before specifying. Revise if custom finish is required.

Finish: No.4, directional satin.

Retain two subparagraphs below if directional finishes are required.

Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

In first two paragraphs below, the term "brass" refers to copper alloys that have a brassy-yellow color, and the term "bronze" refers to alloys that are darker in color, similar to "architectural bronze"; none are true tin-bronzes.

* + - * 1. Brass: ASTM B 36/B 36M, UNS Alloy C26000 for half hard sheet and coil.
				2. Bronze: ASTM B 455, Alloy C38500 for extrusions; Alloy C28000 Muntz Metal for plates.
				3. Elastomeric Seals: Preformed elastomeric membranes or extrusions to be installed in metal frames.
				4. Compression Seals: ASTM D2000; preformed rectangular elastomeric extrusions having internal baffle system and designed to function under compression.
				5. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist the passage of flame and hot gases through a movement joint and to meet performance criteria for required rating period.
				6. Moisture Barrier: 7-ply laminate reinforced Polyethylene.
				7. Accessories: Manufacturer's standard anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.
			1. **Architectural Joint Systems, General**
				1. General: Provide architectural joint systems of design, basic profile, materials, and operation indicated. While specified joint systems establish the function and aesthetic intent, it may be necessary for the manufacturer to modify the joint systems to accommodate the movement requirements as scheduled in the contract documents. Such modifications should be made without significant changes to the aesthetic or functional intent of the joint systems. Provide units with capability to accommodate variations in adjacent surfaces.
				2. Design architectural joint systems for the following size and movement characteristics:

Nominal Joint Width: *[As indicated on Drawings] [As scheduled] <Insert width>.*

Retain first two subparagraphs below, or delete both and retain third subparagraph.

Maximum Joint Width: *[As indicated on Drawings] [As scheduled] <Insert width>.*

Minimum Joint Width: *[As indicated on Drawings] [As scheduled] <Insert width>.*

Lateral Shear Movement Capability: *[As indicated on Drawings] [As scheduled] <Insert movement capability>.*

Retain one option in subparagraph below. Thermal joint systems move in two directions to accommodate seasonal temperature fluctuations. Seismic joint systems move in multiple directions to accommodate earthquake events.

Refer to the tables for architectural joint systems at the end of the Evaluations for a list of manufacturers' products. Use these tables in combination with manufacturers' catalog or product data to insert series, type, model, and designations of other characteristics.

* + - 1. **Joint Systems for Building Interiors**

See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers and products. Retain one of three paragraphs and list of manufacturers below. See Division 01 Section "Product Requirements."

* + - * 1. Construction Specialties, Inc., 6696 Route 405 Highway, Muncy, PA, shall manufacture expansion joint cover assemblies specified herein and indicated on the drawings. Other manufacturers may be accepted as substitutions only if the manufacturer can demonstrate product compliance with the requirements of the contract documents. Substitution requests must be reviewed prior to bid and must include the following information:

Details

ASTM- E1399 test reports

Mock-ups

Reference list of projects with similar products as those specified herein.

Sample of written 5 year warranty

Retain paragraphs and subparagraphs remaining in this Article if Project contains only one type and size of architectural joint system for each location. For projects with multiple joint systems, consider providing a schedule, or distinguish between systems by giving each a number designation, such as "AJS-1" and "AJS-2," and creating an additional set of requirements and products for each variation.

* + - * 1. Architectural Joint Systems for Exterior Walls: *(delete if not required)*

Basis-of-Design Product: Construction Specialties, Inc. model *XLP, XLPC*

Retain one of two "Type" subparagraphs and associated subparagraphs below. See Evaluations for discussion.

Type: Pan.

Exposed Metal: Aluminum.

Retain one of three "Finish" subparagraphs below.

Finish: Mill.

Finishes in subparagraph below are for aluminum only. Mill finish is most durable and is standard finish for most aluminum floor joint systems. Color finishes are not recommended for traffic-bearing joint systems.

Retain one of two subparagraphs below or delete both if no cover-plate options are available. Serrated covers contain grooves or ridges to resist slipping.

Cover-Plate Design: Recessed to accept factory applied 1/8” aluminum plate.

Retain one of two subparagraphs below with last subparagraph above.

Finish: Mill.

Retain one of two subparagraphs below with last subparagraph above.

Coordinate attachment method in subparagraph below with Part 3 installation requirements. If retaining second option, verify that Division 03 concrete Section is referenced in Part 1.

Attachment Method: Mechanical anchors with continuous hinge to support panel and permit full range of movement. Use of centering/tensioning bar assemblies is not permitted as they limit lateral movement. System to be secured in nominal position with minimum (2) 400# pull magnets per 10’ assembly, and counterweighted to self-close following a seismic event.

Retain one of two subparagraphs and associated subparagraphs below. Categories in first subparagraph vary according to manufacturer.

Delete subparagraph below if fire-resistance ratings are not required.

Fire-Resistance Rating: Provide joint system and fire-barrier assembly with a rating not less than that of adjacent construction. *(delete if not required)*

Moisture Barrier: 7-ply laminate reinforced Polyethylene.

**Delete subparagraph below if gutter is not required.**

* + - 1. **Finishes**
				1. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
				2. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
				3. Appearance of Finished Work: Noticeable variations in same piece are not acceptable.
1. **Execution**
	* + 1. **Examination**
				1. Examine surfaces and blockoutswhere architectural joint systems will be installed for installation tolerances and other conditions affecting performance of work.

Proceed with installation only after unsatisfactory conditions have been corrected.

* + - 1. **Preparation**
				1. Prepare substrates according to architectural joint system manufacturer's written instructions.
				2. Repair concrete slabs and blockouts using manufacturer's recommended repair grout of compressive strength adequate for anticipated structural loadings.
				3. Coordinate and furnish anchorages, setting drawings, and instructions for installing joint systems. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of joint systems.

Delete paragraph below if no cast-in frames. Coordinate with products in Part 2.

* + - * 1. Cast-In Frames: Coordinate and furnish frames to be cast into concrete.
			1. **Installation**
				1. Comply with manufacturer's written instructions for storing, handling, and installing architectural joint assemblies and materials unless more stringent requirements are indicated.
				2. Metal Frames: Perform cutting, drilling, and fitting required to install joint systems.

Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.

Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation. Notify Architect where discrepancies occur that will affect proper joint installation and performance.

Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.

Locate in continuous contact with adjacent surfaces.

Retain one or both of first two subparagraphs below to suit Project.

Standard-Duty Systems: Shim to level where required. Support underside of frames continuously to prevent vertical deflection when in service.

Heavy-Duty Systems: Repair or grout blockout as required for continuous frame support and to bring frame to proper level. Shimming is not allowed.

Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.

Delete paragraph and subparagraphs below if not applicable.

* + - * 1. Seals in Metal Frames: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.

Provide in continuous lengths for straight sections.

Seal transitions according to manufacturer's written instructions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.

Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.

Retain paragraph below for compression seals.

* + - * 1. Compression Seals: Apply adhesive or lubricant adhesive as recommended by manufacturer before installing compression seals.

Retain paragraph below for foam seals.

Retain first paragraph below for epoxy-bonded seals.

* + - * 1. Terminate exposed ends of joint assemblies with field- or factory-fabricated termination devices.

Delete first paragraph and subparagraph below if no fire-resistance-rated assemblies.

* + - * 1. Fire-Resistance-Rated Assemblies: Coordinate installation of architectural joint assembly materials and associated work so complete assemblies comply with assembly performance requirements.

Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and field splices.

* + - * 1. Water Barrier: Provide water barrier at exterior joints and where called for on Drawings. Provide drainage fittings where indicated.
			1. **Protection**
				1. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
				2. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over joints. Reinstall cover plates or seals prior to Substantial Completion of the Work.

END OF SECTION 07 95 00