

SECTION 07844

FIRE-RESISTIVE JOINT SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the Work of this Section, including but not limited to fire-resistive joint systems for the following:
1. Floor-to-floor joints.
 2. Floor-to-wall joints.
 3. Head-of-wall joints.
 4. Wall-to-wall joints.
 5. Perimeter fire-resistive joint systems consisting of floor-to-wall joints between perimeter edges of fire-resistance-rated floor assemblies and exterior curtain walls.
- B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Section 07841 - PENETRATION FIRESTOPPING for firestopping.
 2. Section 07920 - JOINT SEALANTS for standard joint sealers.
 3. Division 15 - FIRE PROTECTION for fire-suppression piping penetrations.
 4. Division 15 - PLUMBING for piping penetrations.
 5. Division 15 - HEATING, VENTILATING AND AIR CONDITIONING for duct and piping penetrations.
 6. Division 16 - ELECTRICAL for cable and conduit penetrations.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly in which fire-resistive joint systems are installed.
- B. For fire-resistive systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each fire-resistive joint system, show each kind of construction condition in which joints are installed; also show relationships to adjoining construction. Include fire-resistive joint system design designation of testing and inspecting agency acceptable to authorities having jurisdiction that demonstrates compliance with requirements for each condition indicated.
 - 1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each fire-resistive joint system configuration for construction and penetrating items.
- C. Product Certificates: For each type of fire-resistive joint system, signed by product manufacturer.
- D. Qualification Data: For Installer.
- E. Field quality-control test reports.
- F. Research/Evaluation Reports: For each type of fire-resistive joint system.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Either a firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors" or a firm experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction of a minimum of five projects with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements.
- B. Installation Responsibility: Assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.
- C. Source Limitations: Obtain fire-resistive joint systems, for each kind of joint and construction condition indicated, through one source from a single manufacturer.
- D. Fire-Test-Response Characteristics: Provide fire-resistive joint systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:
 - 1. Fire-resistance tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for fire-resistive joint systems acceptable to authorities having jurisdiction.

2. Fire-resistive joint systems are identical to those tested per methods indicated in Part 1 "Performance Requirements" Article and comply with the following:
 - a. Fire-resistive joint system products bear classification marking of qualified testing and inspecting agency.
 - b. Fire-resistive joint systems correspond to those indicated by referencing system designations of the qualified testing and inspecting agency.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fire-resistive joint system products to Project site in original, unopened containers or packages with qualified testing and inspecting agency's classification marking applicable to Project and with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials for fire-resistive joint systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilate fire-resistive joint systems per manufacturer's written instructions by natural means or, if this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- B. Coordinate sizing of joints to accommodate fire-resistive joint systems.
- C. Do not cover up fire-resistive joint system installations that will become concealed behind other construction until Owner's inspecting agency and building inspector of authorities having jurisdiction have examined each installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, fire-resistive joint systems that may be incorporated into the Work include, but are not limited to, those systems indicated in the Fire-Resistive Joint System Schedule at the end of Part 3.
1. Hilti, Inc.
 2. BioFireShield; RectorSeal Corporation.
 3. 3M; Fire Protection Products Division.
 4. Or approved equal.

2.2 FIRE-RESISTIVE JOINT SYSTEMS

- A. Compatibility: Provide fire-resistive joint systems that are compatible with joint substrates, under conditions of service and application, as demonstrated by fire-resistive joint system manufacturer based on testing and field experience.
- B. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing and inspecting agency for systems indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of work.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.

2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from fire-resistive joint system materials. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates or damaging adjoining surfaces.

3.3 INSTALLATION

- A. General: Install fire-resistive joint systems to comply with Part 1 "Performance Requirements" Article and fire-resistive joint system manufacturer's written installation instructions for products and applications indicated.
- B. Install forming/packing/backing materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
- C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
1. Fill voids and cavities formed by openings and forming/packing/backing materials as required to achieve fire-resistance ratings indicated.
 2. Apply fill materials so they contact and adhere to substrates formed by joints.
 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 FIELD QUALITY CONTROL

- A. Inspecting Agency: Engage a qualified independent inspecting agency to inspect fire-resistive joint systems and prepare inspection reports.
- B. Testing Services: Inspecting of completed installations of fire-resistive joint systems shall take place in successive stages as installation of fire-resistive joint systems proceeds. Do not proceed with installation of joint systems for the next area until inspecting agency determines completed work shows compliance with requirements.

- 1. Inspecting agency shall state in each report whether inspected fire-resistive joint systems comply with or deviate from requirements.
- C. Remove and replace fire-resistive joint systems where inspections indicate that they do not comply with specified requirements.
- D. Additional inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- E. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and fire-resistive joint systems comply with requirements.

3.5 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to joints as Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.6 TESTED (DYNAMIC) JOINT FIRESTOP SYSTEM SCHEDULE

JOINT TYPE	F-RATING	UL-CLASSIFIED SYSTEM NUMBER					
		JOINT WIDTH LESS THAN OR EQUAL TO 2"			JOINT WIDTH LESS THAN OR EQUAL TO 6"		
		HILTI	3M	BIO-FIRESHIELD	HILTI	3M	BIO-FIRESHIELD
CONCRETE FLOOR-TO-FLOOR	1	see note 2	FF-D-0002	N/A**	FF-D-1026, FF-D-1039	FF-D-1002, FF-D-1003, FF-D-1004	N/A**
	2	see note 2	FF-D-0002	N/A**	FF-D-1026, FF-D-1039	FF-D-1002, FF-D-1003, FF-D-1004	N/A**

	3	see note 2	N/A**	N/A**	FF-D-1026, FF-D-1039	N/A**	N/A**
EDGE OF CONCRETE FLOOR SLAB-TO-WALL (also see CURTAIN WALLS & note 1))	1	see note 2	-	N/A**	FW-D-1011, FW-D-1012, FW-D-1013, FW-D-1021	FW-D-1002, FW-D-1003, FW-D-1009	FW-D-1023
	2	see note 2	-	N/A**	FW-D-1011, FW-D-1012, FW-D-1013, FW-D-1021	FW-D-1002, FW-D-1003, FW-D-1009	FW-D-1023
	3	see note 2	-	N/A**	FW-D-1011, FW-D-1021	FW-D-1002, FW-D-1009	N/A**
CONCRETE OR BLOCK WALL TO FLAT CONCRETE SLAB FLOOR (TOP-OF-WALL)	1	HW-D-0097	HW-D-0023, HW-D-0029	HW-D-0114	HW-D-1008, HW-D-1009	HW-D-1003	HW-D-1023
	2	HW-D-0097	HW-D-0023, HW-D-0029	HW-D-0114	HW-D-1008, HW-D-1009	HW-D-1003	HW-D-1023
	3	see note 2	-	HW-D-0114	HW-D-1008	HW-D-1002, HW-D-1007	N/A**
CONCRETE OR BLOCK WALL TO CONCRETE OVER FLUTED METAL DECK (TOP-OF-WALL)	1	HW-D-0080, HW-D-0081, HW-D-0098, HW-D-0181	HW-D-0022, HW-D-0030, HW-D-0040HW-D-0013	HW-D-0200	HW-D-1037 HW-D-1041	HW-D-	N/A**
	2	HW-D-0080, HW-D-0081, HW-D-0098, HW-D-0181	HW-D-0022, HW-D-0030, HW-D-0040HW-D-0013	HW-D-0200	HW-D-1037 HW-D-1041	HW-D-	N/A**
	3	N/A**	N/A**	N/A**	N/A**		N/A**

GYPSUM WALL TO FLAT CONCRETE SLAB FLOOR (TOP-OF-WALL)	1	HW-D-0082, HW-D-0083, HW-D-0097	HW-D-0012, HW-D-0021	HW-D-0180	N/A**		
	2	HW-D-0082, HW-D-0083, HW-D-0097	HW-D-0012, HW-D-0021	HW-D-0180	N/A**		
	3	N/A**	N/A**	N/A**	N/A**		
GYPSUM WALL TO CONCRETE OVER FLUTED METAL DECK (TOP-OF-WALL)	1	HW-D-0042, HW-D-0049, HW-D-0076, HW-D-0264	HW-D-0011, HW-D-0020, HW-D-0031	HW-D-0033	N/A**		
	2	HW-D-0042, HW-D-0049, HW-D-0076, HW-D-0264	HW-D-0011, HW-D-0020, HW-D-0031	HW-D-0033	N/A**		
	3	HW-D-292	N/A**	N/A**	N/A**		
CONCRETE WALL-TO-WALL	1	WW-D-0017, WW-D-0032	-	WW-D-0009	WW-D-1011, WW-D-1012	WW-D-1003, WW-D-1004, WW-D-1010	N/A**
	2	WW-D-0017, WW-D-0032	-	WW-D-0009	WW-D-1011, WW-D-1012	WW-D-1003, WW-D-1004, WW-D-1010	N/A**
	3	-	-	WW-D-0010	WW-D-1011	WW-D-1003, WW-D-1010	N/A**
<i>CURTAIN WALLS (see note 1)</i>		JOINT WIDTH LESS THAN OR EQUAL TO 6"			JOINT WIDTH LESS THAN OR EQUAL TO 8"		

EDGE OF FLOOR TO NON-RATED ALUMINUM & GLASS CURTAIN WALL	2 hr Integrity Rating	CW-D-2027			CW-D-2026, CW-D-2027	CW-D-2019, CW-D-2015
EDGE OF FLOOR TO NON-RATED CONCRETE/STONE SPANDREL	2 hr Integrity Rating	CW-D-1001			CW-D-2025	CW-D-2017

** CONTACT MANUFACTURER FOR CURRENT UL-CLASSIFIED SYSTEM OR ENGINEER JUDGEMENT DRAWING

NOTES:

1. EDGE OF SLAB, CURTAIN WALL SYSTEMS ARE ALSO TESTED BY OMEGA POINT LABS. CONTACT MANUFACTURER FOR ADDITIONAL LISTINGS.
2. CLASSIFIED SYSTEMS FOR 2" - 6" WIDE JOINTS MAY BE USED FOR JOINTS 2" WIDE AND LESS.
3. CONFIRM THAT MOVEMENT CAPABILITIES OF THE SELECTED UL SYSTEM MEETS OR EXCEEDS THE SPECIFIED MOVEMENT RANGE OF THE PARTICULAR JOINT.
4. SYSTEM PERFORMANCE MAY BE AFFECTED BY FACTORS SUCH AS METAL STUD WIDTH, JOINT WIDTH OR THE PRESENCE OF FIREPROOFING MATERIALS WITHIN THE JOINT.

CONSULT INDIVIDUAL DETAILS FOR SPECIFICATIONS & LIMITATIONS.

5. HEAD-OF-WALL SYSTEMS SPECIFIED ONLY FOR 2- OR 3-HR SYSTEMS MAY NOT BE SUITABLE FOR MASONRY WALLS OR GYPSUM WALL ASSEMBLIES WITH LOWER HOURLY RATINGS.

CONTACT THE FIRESTOP MANUFACTURER FOR CLARIFICATION

END OF SECTION