SECTION 210517 – SLEEVES, SEALS, AND ECUTCHEONS FOR FIRE PROTECTION PIPING

Latest Edition 09-09-2021 See Underlined Text for Latest Edits

(Engineer shall edit specifications and blue text in header to meet project requirements. This includes but is not limited to updating Equipment and/or Material Model Numbers indicated in the specifications and adding any additional specifications that may be required by the project. Also turn off all "Underlines".)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section and all other sections of Division 21.

1.2 SUMMARY

A. This section includes the requirements for pipe sleeves, sleeve seals, and escutcheons for fire protection penetrations in floors, ceilings, interior walls/partitions, exterior walls, and the roof using the following:

1. Pipe sleeves.
2. Fire stops & smoke seals for wall & floor sleeve applications.
3. Stack sleeve fittings.
4. Sleeve seal system.
5. Sleeve seal fittings.
6. Grout.
7. Escutcheons.
8. Floor plates.

1.3 ACTION SUBMITTALS

A. Product Data: For each specified product, include manufacturers cut sheets, material descriptions, dimensional data, performance data, installation details, specified options, and warranty information.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Include a copy of the approved submittal for each product and material along with any applicable maintenance data in the project operation and maintenance manual.

1.5 QUALITY ASSURANCE

A. All sleeves, escutcheons, and accessories shall be installed using new materials designed and built in accordance with the best practices of the industry standards for the intended application. Each major item or material shall bear the manufacturer's name, serial number, UL label, maintenance instructions, etc., if applicable.

B. Each item shall be capable of performing its function over an extended period of time with a minimum of attention and maintenance.

1.6 WARRANTY/GUARENTEE

A. See Division 21, Specification Section "Basic Fire Protection Requirements" for warranty and guarantee requirements.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT REQUIREMENTS

A. Equipment Design and Selection: Pipe sleeves, sleeve seals and escutcheons shall be designed and selected, for the intended use, in accordance with the details on the drawings and the requirements of this specification.

B. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one (1) of the following:

1. Sleeve Seal Systems:
   a. Advance Products & Systems, Inc.
   b. CALPICO, Inc.
   c. Metraflex Company (The).
   d. Pipeline Seal and Insulator, Inc.
   e. Proco Products, Inc.

2.2 PIPE SLEEVES

A. Steel Pipe Sleeves: Steel pipe sleeves shall be standard black steel pipe Type E, Grade B, with plain ends conforming to ASTM A53/A53M.

B. Cast Iron Pipe Sleeves: Cast iron pipe sleeves shall be standard weight cast iron pipe with plain ends conforming to ASTM A74 and CISPI – 301.

2.3 FIRE STOPS & SMOKE SEALS FOR WALL & FLOOR SLEEVE APPLICATIONS

A. General: Provide fire stops, and smoke sealant materials for all fire protection services penetrating through rated assemblies. See Architectural Specification Division 07, Section "Penetration Firestopping" for sealant material requirements. Services include:

1. Fire protection penetrations including piping.

B. New Construction: All new penetrations shall be provided with a pipe sleeve and sealant materials.

C. Existing Construction: All new service penetrations through existing rated assemblies shall be provided with a pipe sleeve and sealant materials. All existing unsealed penetrations for services passing through existing rated assemblies within the project area shall be provided with sealant materials.

D. Project Area: The project area shall include the finished spaces and related sections of the utility shafts within the project area footprint.

E. Wall Pipe Sleeve Applications: Pipe sleeves shall be required for all new pipe penetrations through rated wall assemblies and non-rated CMU walls. Where pipe sleeves are installed in non-rated CMU walls fire rated sealant materials are not required. Provide acoustical caulking to seal the annular spaces between the sleeve and the bare pipe or pipe insulation on each end with one half (1/2) inch caulking all around the annular space.

F. Floor Pipe Sleeves Applications: Pipe sleeves are required for all new pipe risers passing through floor slabs.

2.4 STACK-SLEEVE FITTINGS

A. Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flushing.

1. Underdeck Clamp: Clamping ring with set screws.

2.5 SLEEVE SEAL SYSTEMS

A. Modular sealing element unit, designed for field assembly, for filling annular space between piping and sleeve. <Edit for Project>

1. Sealing Elements: [EPDM-rubber] [NBR] interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Steel.
3. Connecting Bolts and Nuts: Carbon of length required to secure pressure plates to sealing elements.

2.6 SLEEVE SEAL FITTINGS

A. Manufactured plastic, sleeve type, waterstop assembly made for imbedding in concrete slab or wall. Unit has plastic or rubber waterstop collar with center opening to match piping outer diameter.

2.7 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5,000-psi, twenty eight (28) day compressive strength.

D. Packaging: Premixed and factory packaged.

2.8 ESCUTCHEONS <Edit for Project>

A. One (1) Piece, Cast-Brass Type: With [polished, chrome-plated] [and] [rough-brass] finish and setscrew fastener.

B. One (1) Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

C. One (1) Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.

D. Split-Casting Brass Type: With [polished, chrome-plated] [and] [rough-brass] finish and with concealed hinge and setscrew.

E. Split-Plate, Stamped-Steel Type: With chrome-plated finish, [concealed] [and] [exposed-rivet] hinge, and spring-clip fasteners.

2.9 FLOOR PLATES

A. One (1) Piece Floor Plates: Cast-iron flange. [with holes for fasteners].

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 GENERAL

A. Install all fire protection system sleeves, escutcheons, and associated components as required in accordance with the applicable codes and the best practices of the industry.

B. Install accessories that do not corrode or soften in either a wet or dry state.

3.2 INSTALLATION – PIPE SLEEVES

A. Fire Rated Walls: Where new and/or existing fire protection piping passes through rated walls provide pipe sleeves with required fire sealant materials to maintain the rating of the wall assembly.

1. Use standard weight steel pipe for pipe sleeves. Where sleeves are installed in load bearing walls, use only standard weight steel pipe for pipe sleeves.

2. Provide a minimum of one half (1/2) inch annular space clearance around the entire circumference of the pipe passing through the sleeve and between the pipe sleeve and the surface of the core drilled hole.
3. Center pipe passing through sleeve.
4. The entire annular spaces must be sealed with fire and waterproof sealant.
5. Sleeves in walls must be installed flush with both finished wall surfaces.
6. In finished areas provide an escutcheon plate around the bare pipe or insulated pipe passing through the assemblies to conceal the sleeve and sealant.

<Engineer Note: Where openings in walls for pipe sleeves are large enough to require additional structural supports such as lintels the A/E team shall coordinate the additional wall supports with structural engineer>

B. Fire Rated Floors: Where new and/or existing fire protection piping passes through rated floors provide pipe sleeves with required fire sealant materials to maintain the rating of the floor assembly. Floor sleeves are not required for fire protection pipe risers installed in stairwells. <Delete if not required>

1. Use standard weight steel pipe for pipe sleeves.
2. Provide a minimum of one half (1/2) inch annular space clearance around the entire circumference of the pipe passing through the sleeve and between the pipe sleeve and the surface of the core drilled hole.
3. Center pipe passing through sleeve.
4. The entire annular spaces must be sealed with fire and waterproof sealant.
5. Sleeves must be installed with top of sleeve one (1) inch above the finished floor surface. The bottom of the sleeve must be flush with the finished surface of the underside of the floor assembly.
6. In finished areas provide an escutcheon plate around the bare pipes passing through the assemblies to conceal the sleeve and sealant. If a riser clamp is in place, omit the escutcheon.

C. Sealant Requirements: Comply with requirements for sealants specified Architectural Specification Section "Joint Sealants".

D. Fire-Barrier Penetrations: Comply with requirements for firestopping specified in Architectural Specification Section "Penetration Firestopping".

E. Non-Fire-Rated Sound Proof Partition Penetrations: Where pipes pass through interior partitions with sound proofing provide a pipe sleeve. Seal the annular spaces between construction openings, the sleeve, the pipe and/or pipe insulation with sound proof insulation material equal to the width of the opening. The sound proof insulation shall match the insulation in the partition. <Delete if not required>

3.3 STACK-SLEEVE-FITTING INSTALLATION

A. Install stack-sleeve fittings in new slabs as slabs are constructed.

1. Install fittings that are large enough to provide one quarter (1/4) inch annular clear space between sleeve and pipe or pipe insulation.
2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Architectural Specification Section "Sheet Metal Flashing and Trim."
3. Install section of cast-iron soil pipe to extend sleeve two (2) inches above finished floor level.
4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
5. Using grout, seal the space around outside of stack-sleeve fittings.

B. Fire Barrier Penetrations: Maintain indicated fire rating of floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Architectural Specification Section "Penetration Firestopping."

3.4 SLEEVE SEAL SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve inside diameter or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.5 SLEEVE SEAL FITTING INSTALLATION

A. Install sleeve seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Using grout, seal the space around outside of sleeve-seal fittings.

3.6 ECUTCHEONS INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping: <Edit for Project>

   a. Piping with Fitting or Sleeve Protruding from Wall: One (1) piece, deep pattern type.
   b. Chrome-Plated Piping: One (1) piece, cast-brass [or split-casting brass] type with polished, chrome-plated finish.
   c. Insulated Piping: One (1) piece, stamped-steel [or split-plate, stamped-steel type with concealed hinge] [or split-plate, stamped-steel type with exposed-rivet hinge].
   d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One (1) piece, cast-brass [or split-casting brass] type with polished, chrome-plated finish.
   e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One (1) piece, stamped-steel type [or split-plate, stamped-steel type with concealed hinge] [or split-plate, stamped-steel type with exposed hinge].
   f. Bare Piping at Ceiling Penetrations in Finished Spaces: One (1) piece, cast-brass [or split-casting brass] type with polished, chrome-plated finish.
   g. Bare Piping at Ceiling Penetrations in Finished Spaces: One (1) piece, stamped-steel type [or split-plate, stamped-steel type with concealed hinge] [or split-plate, stamped-steel type with exposed-rivet hinge].
   h. Bare Piping in Unfinished Service Spaces: One (1) piece, cast-brass [or split-casting brass] type with [polished, chrome-plated] [rough-brass] finish.
   i. Bare Piping in Unfinished Service Spaces: One (1) piece, stamped-steel type [or split-plate, stamped-steel type with concealed hinge] [or split-plate, stamped-steel type with exposed-rivet hinge].
   j. Bare Piping in Equipment Rooms: One (1) piece, cast-brass [or split-casting brass] type with [polished, chrome-plated] [rough-brass] finish.
   k. Bare Piping in Equipment Rooms: One (1) piece, stamped-steel type [or split-plate, stamped-steel type with concealed hinge] [or split-plate, stamped-steel type with exposed-rivet hinge].

2. Escutcheons for Existing Piping: <Edit for Project>

   a. Chrome-Plated Piping: Split-casting brass type with polished, chrome-plated finish.
   b. Insulated Piping: Split-plate, stamped-steel type with [concealed] [or] [exposed-rivet] hinge.
   c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.
   d. Bare-Piping at Wall and Floor Penetrations in Finished Spaces: Split-plate, stamped-steel type with [concealed] [or] [exposed-rivet] hinge.
   e. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.

f. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-plate, stamped-steel type with [concealed] [or] [exposed-rivet] hinge.
g. Bare Piping in Unfinished Service Spaces: Split-casting brass type with [polished, chrome-plated] [rough brass] finish.
h. Bare Piping in Unfinished Service Spaces: Split-plate, stamped-steel type with [concealed] [or] [exposed-rivet] hinge.
i. Bare Piping in Equipment Rooms: Split-casting brass type with [polished, chrome-plated] [rough-brass] finish.
j. Bare Piping in Equipment Rooms: Split-plate, stamped-steel type with [concealed] [or] [exposed-rivet] hinge.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with inside diameter to closely fit around pipe, tube, and insulation of piping and with outer diameter that completely covers opening.

1. New Piping: One (1) piece, floor-plate type.
2. Existing Piping: Split-casting, floor-plate type.

3.7 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 210517