

**FCIA
Webinar
Series**

**Protecting
Recessed Boxes
in Fire-Resistive
Construction**

**Bill McHugh, Executive Director of FCIA
Rich Walke, CTI, Consultant to FCIA**

FCIA – Firestop Contractors International Association



- **Fire Exits??**
- **Housekeeping....Phones, Hands off Keyboard!**
- **Thanks to FCIA Members**
 - Firestop Contractors
 - Manufacturers, Consultants
 - Firestop Distributors, Reps, Friends
- **FREE PDF MOP/ Word Doc Spec - Specifiers @**
Architect/Engineering firms, Independent Specifiers, AHJ's with
Municipality Jurisdictions, More

FCIA – Firestop Contractors International Association

- **FREE Life Safety Digest**
- **UL/ULC, FM 4991 Contractor Programs, DRI's**
- **IAS AC 291 Inspection Agency Program**
Responsible Individuals / Competence
- **ASTM Inspection Standards – ASTM E2174 & ASTM E2393**
 - **High Rise, Category III & IV, R>250 ('21), NFPA 1, NFPA 101 Appx. Specs Worldwide**
- **Tools @ FCIA.org** for Specifiers, AHJ's, Building Owners, Firestop Contractors & Inspection Agencies
- **Watch FCIA.org for Webinar Announcements!**



FCIA Actions - 2022

- Conferences - HYBRID
 - FCIA ECA @ Nashville, USA – May 18-20
 - FCIA ME @ Doha, Dubai – June 19-25
 - FCIA CAN @ VANCOUVER – Early Oct.
 - FCIA FIC @ Amelia Island, FL – Nov. 2-4
- Webinars & Symposiums
- Code Development & Standards Discussions
- Committee Action
- International Discussions
- ***NEW Education for Careers in Firestopping!!***
 - ***FCIA's Firestop Certificate of Achievement & Education Program***

Systems & Materials....



- ***NEW Education for Careers in Firestopping!!***
 - ***FCIA's Firestop Certificate of Achievement***
 - ***4 Levels***
 - ***Level 1 – General Knowledge Certificate***
 - ***Level 2 – In Depth Materials & Systems Certificate***
 - ***Level 3 – SOON***
 - ***Level 4 - SOON***
 - ***Career Path Education***
 - ***FCIA Education Respected Worldwide***

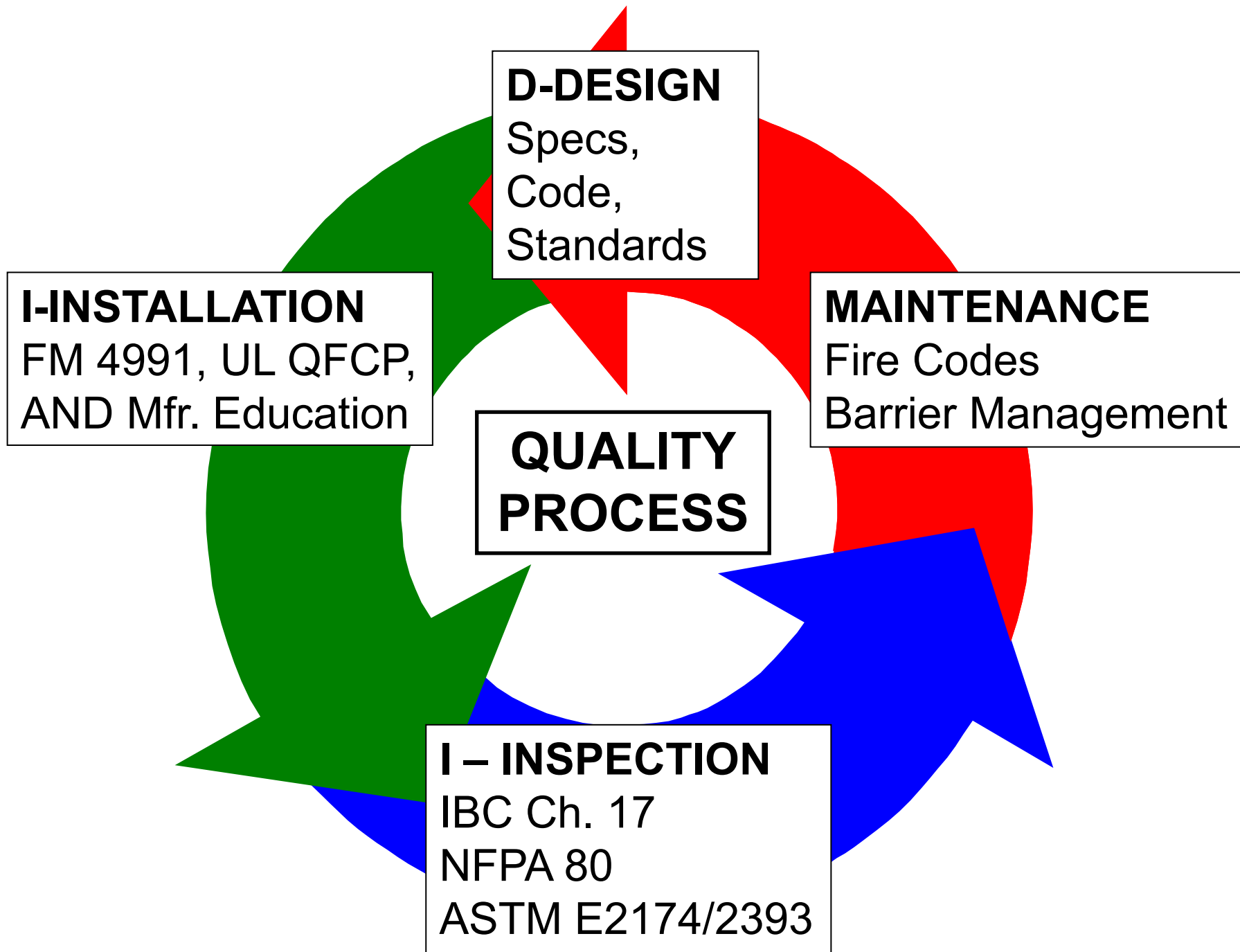
FCIA – Firestop Contractors International Association



- **Thanks FCIA Members**
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“TOTAL FIRE PROTECTION”

- Effective Compartmentation
 - Fire Barriers, Fire Walls / Floors, Smoke Barriers
 - Firestopping, Fire Dampers, Swinging and Rolling Fire Doors, Fire Rated Glazing
- Detection & Alarm Systems
- Sprinkler Suppression Systems
- Education & Egress –
 - Building Owners & Managers, Building Occupants and Firefighters

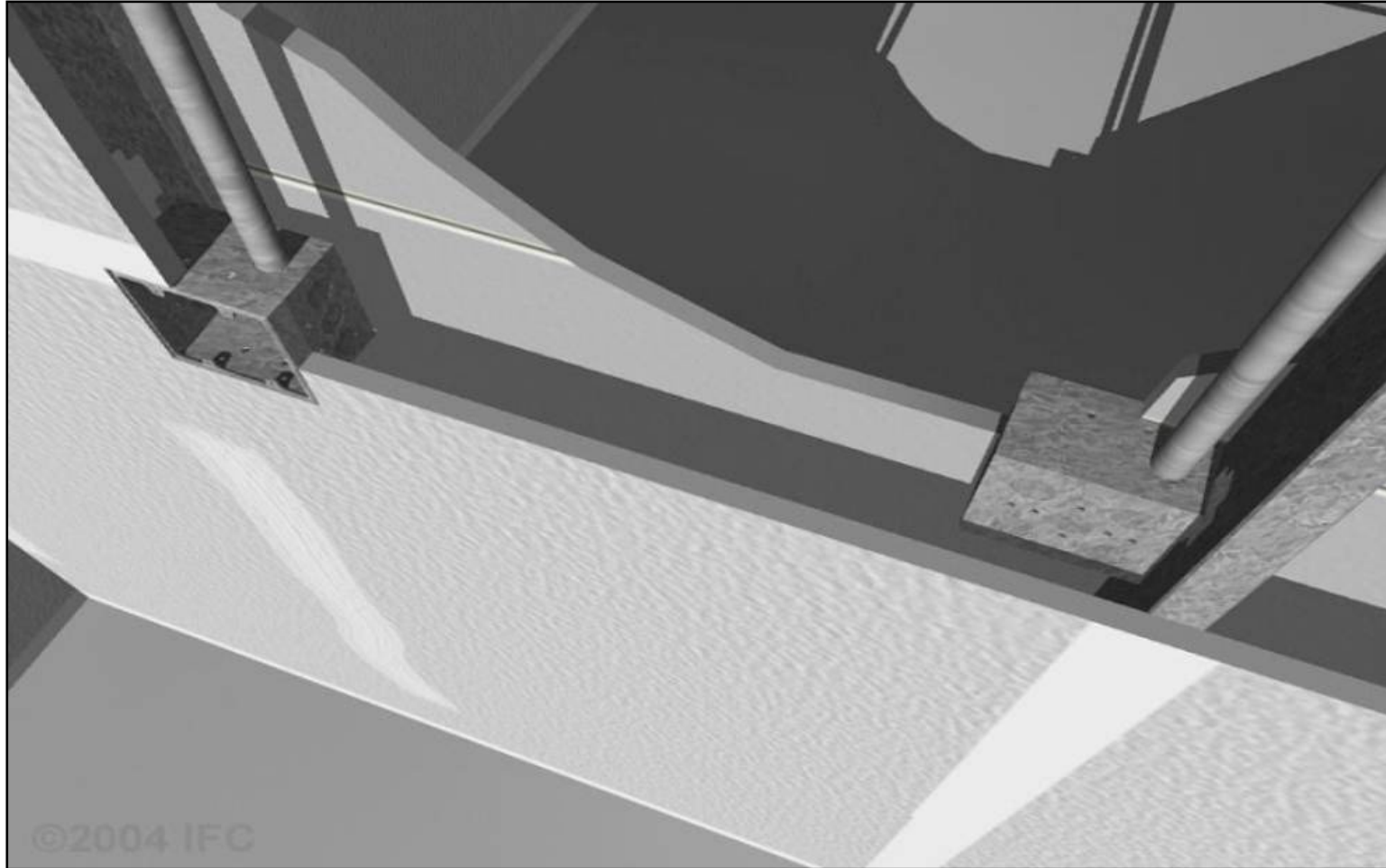


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**Protecting
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Construction**

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Recessed Box Penetrations



Code Requirements for Recessed Boxes

- **Wall Assemblies**
 - **Section 714.4.2** of the 2021 IBC
 - Covers metallic and nonmetallic electrical boxes
 - Boxes other than electrical boxes
- **Horizontal Assemblies**
 - **Section 714.5.2** of the 2021 IBC
 - Covers metallic and nonmetallic electrical boxes
 - Boxes other than electrical boxes
 - Luminaires or luminaire protected by *listed* materials

Prerequisites to Installation of All Electrical Boxes

- Electrical boxes must be electrically *listed*
- Where IBC Sections **714.4.2** and **714.5.2** refer to *listed* boxes, intent is *listed* to fire-resistance requirements
 - Metallic boxes are never *listed* to fire-resistance requirements
 - Nonmetallic boxes are always required to be *listed* to fire-resistance requirements
- *Listed* boxes and *listed* protection materials shall be installed in accordance with their manufacturer's installation instructions and their *listing*

Code Requirements

Wall Assemblies

- Section 714.4.2 of the 2021 IBC
- **714.4.2 – Membrane penetrations.** *Membrane penetrations* shall comply with Section 714.4.1. **Where walls or partitions are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced.**

Code Requirements

Wall Assemblies

- **714.4.2 Cont.**

- Exceptions:

1. Metallic electrical boxes ≤ 16 sq in., installed per prescriptive information, or as protected using tested and *listed* methods
2. *Listed* electrical boxes of any material, installed based on prescriptive information, or as protected with putty pads or other tested and *listed* methods
3. Electrical boxes of any size or type installed as protected using wall opening protective materials

Code Requirements

Wall Assemblies

- **714.4.2 Cont.**

- Exceptions:

4. Boxes other than electrical boxes, protected with membrane firestop system having an F and T Rating not less than rating of wall
6. Metallic electric boxes > 16 sq in., protected by *listed* putty pads or other tested and *listed* methods

Metallic Electrical Boxes in Walls

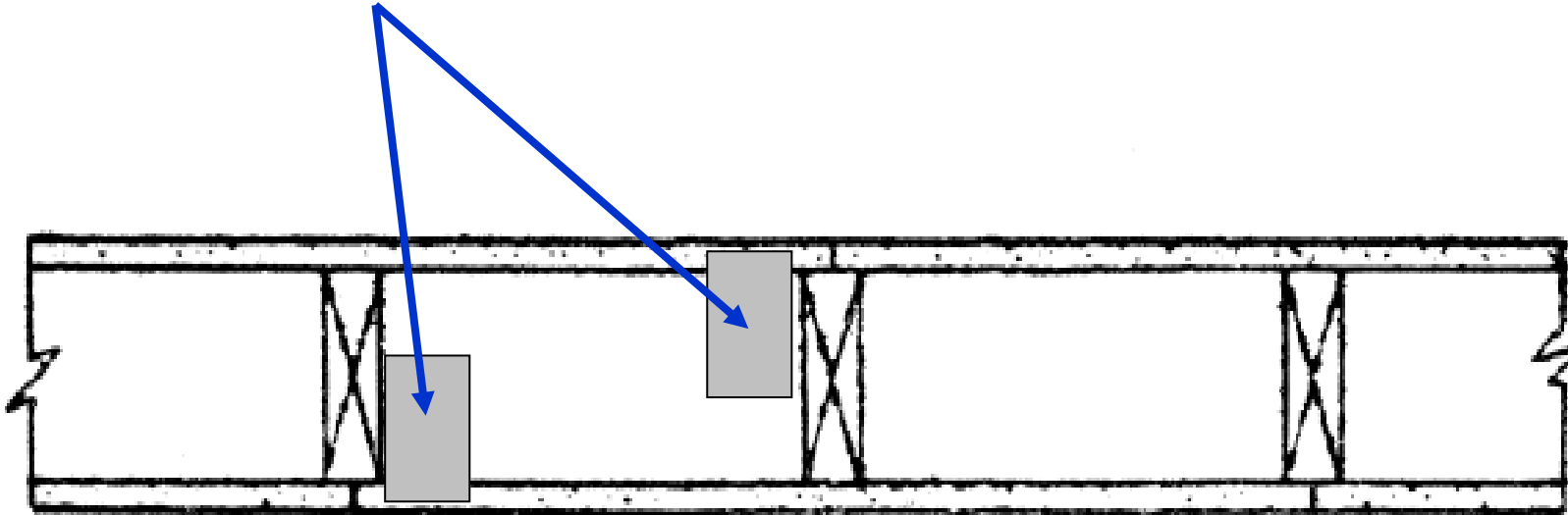
Exception 1

- Metallic boxes installed per prescriptive code
 - Maximum 16 sq in. electrical box
 - Maximum 100 sq in. of opening on each side of wall per 100 sq ft of wall area
 - Maximum 1/8 in. annular space between wall membrane and box
 - Boxes on opposite sides of wall shall be either separated horizontally by minimum 24 in., or protected by some type of heat barrier

Metallic Electrical Boxes ≤ 16 sq in. in Walls

Exception 1 – Less than 24 in. Spacing

Electrical Boxes

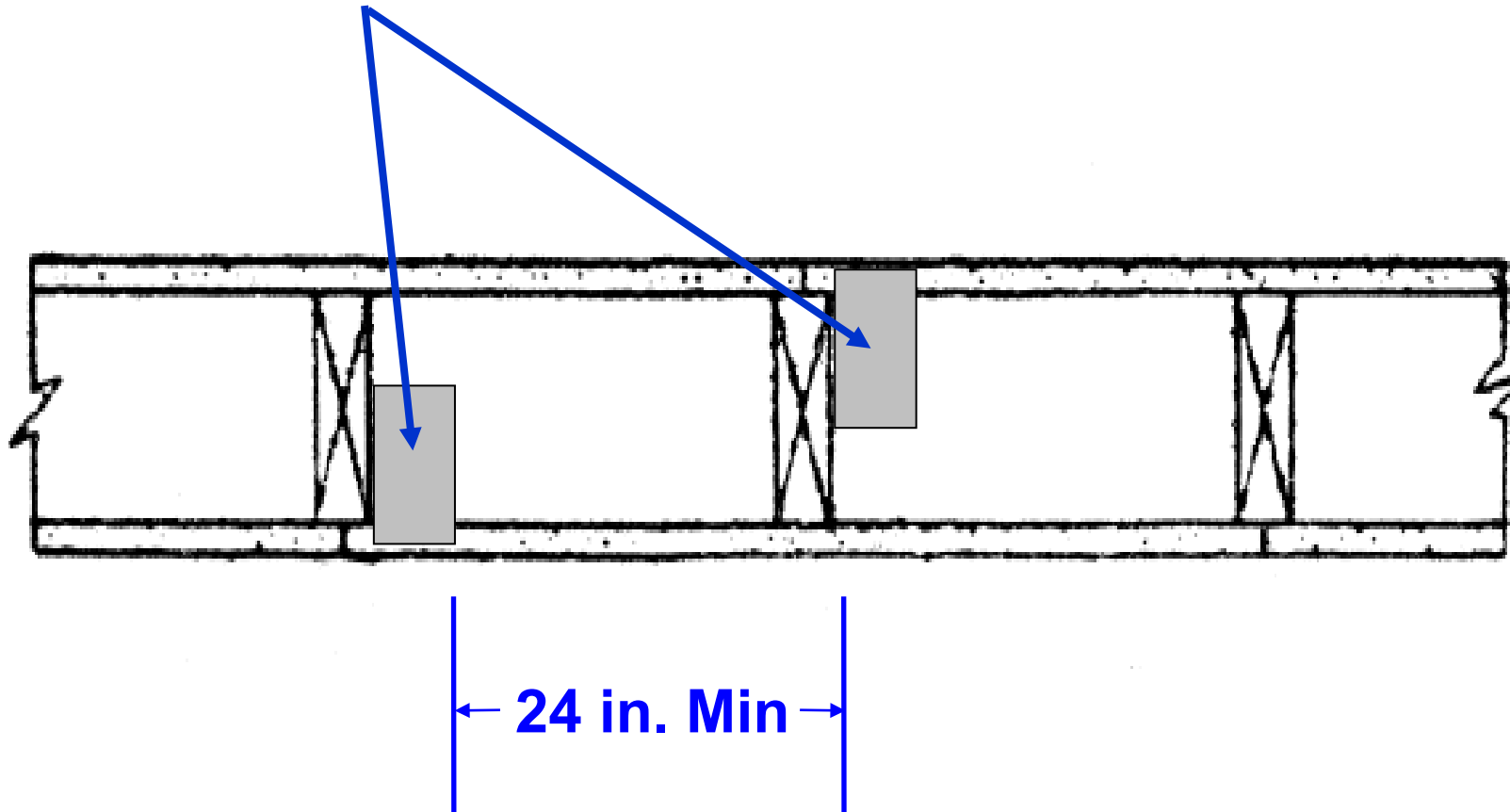


Non-Compliant

Metallic Electrical Boxes ≤ 16 sq in. in Walls

Exception 1 – Not Less than 24 in. Spacing

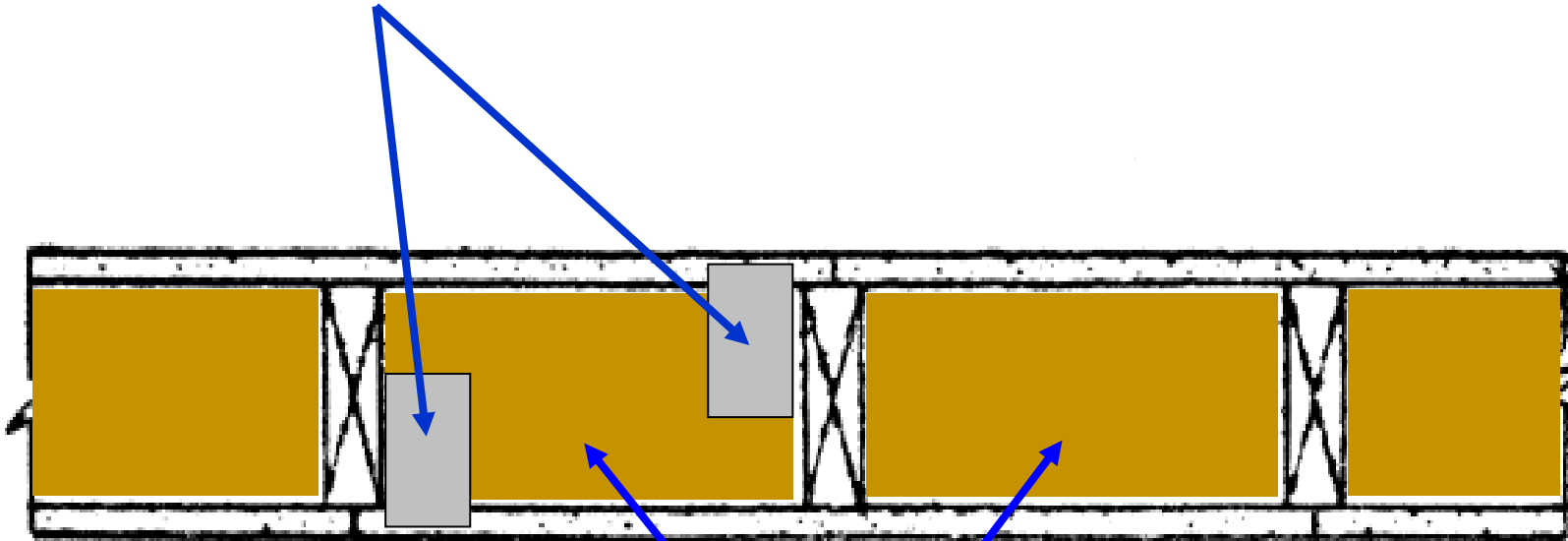
Electrical Boxes



Metallic Electrical Boxes ≤ 16 sq in. in Walls

Exception 1 – Cavity Filled with Insulation

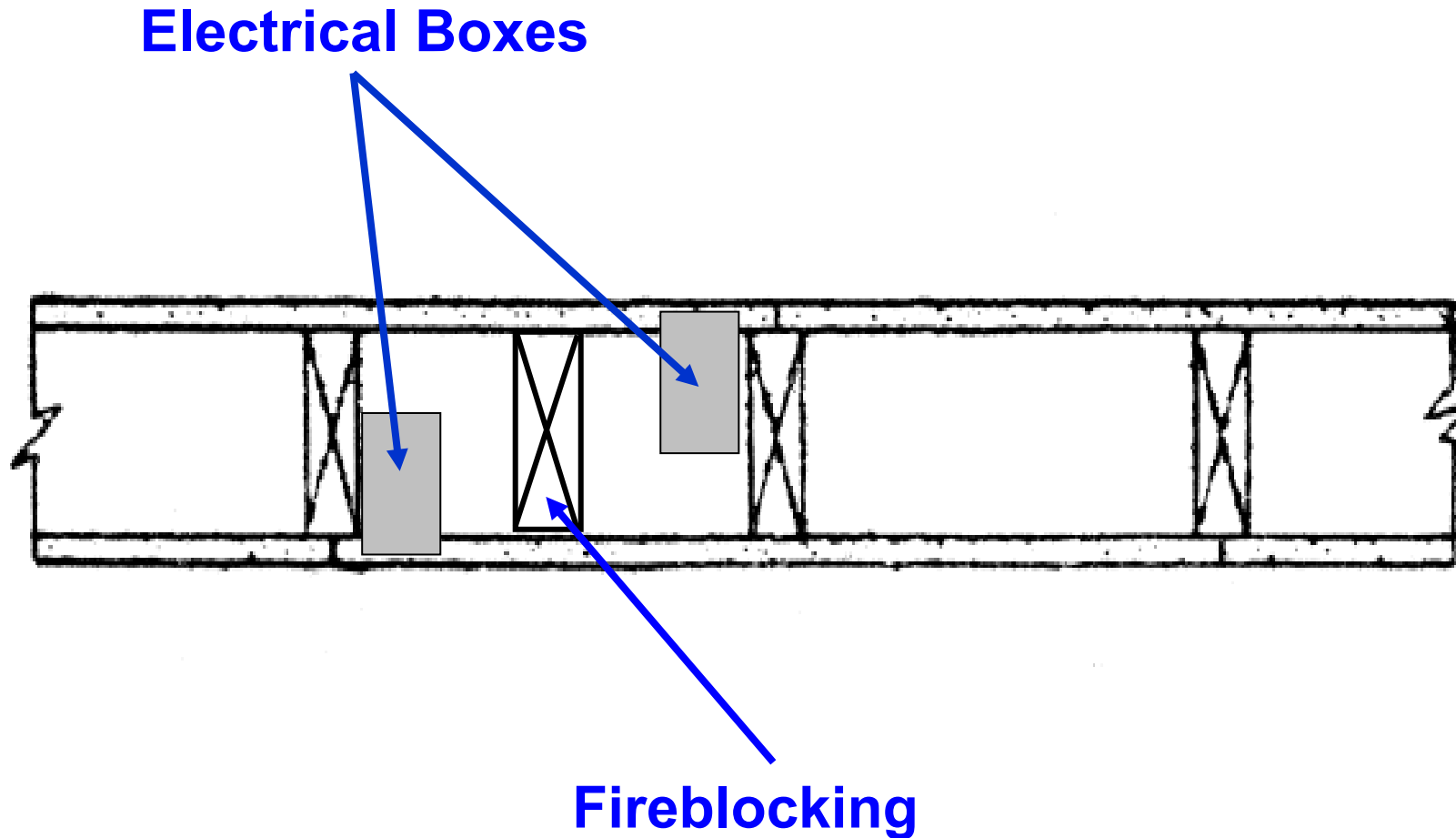
Electrical Boxes



**Insulation – Cellulose loose fill, rockwool
or slag mineral wool**

Metallic Electrical Boxes ≤ 16 sq in. in Walls

Exception 1 – Fireblocking



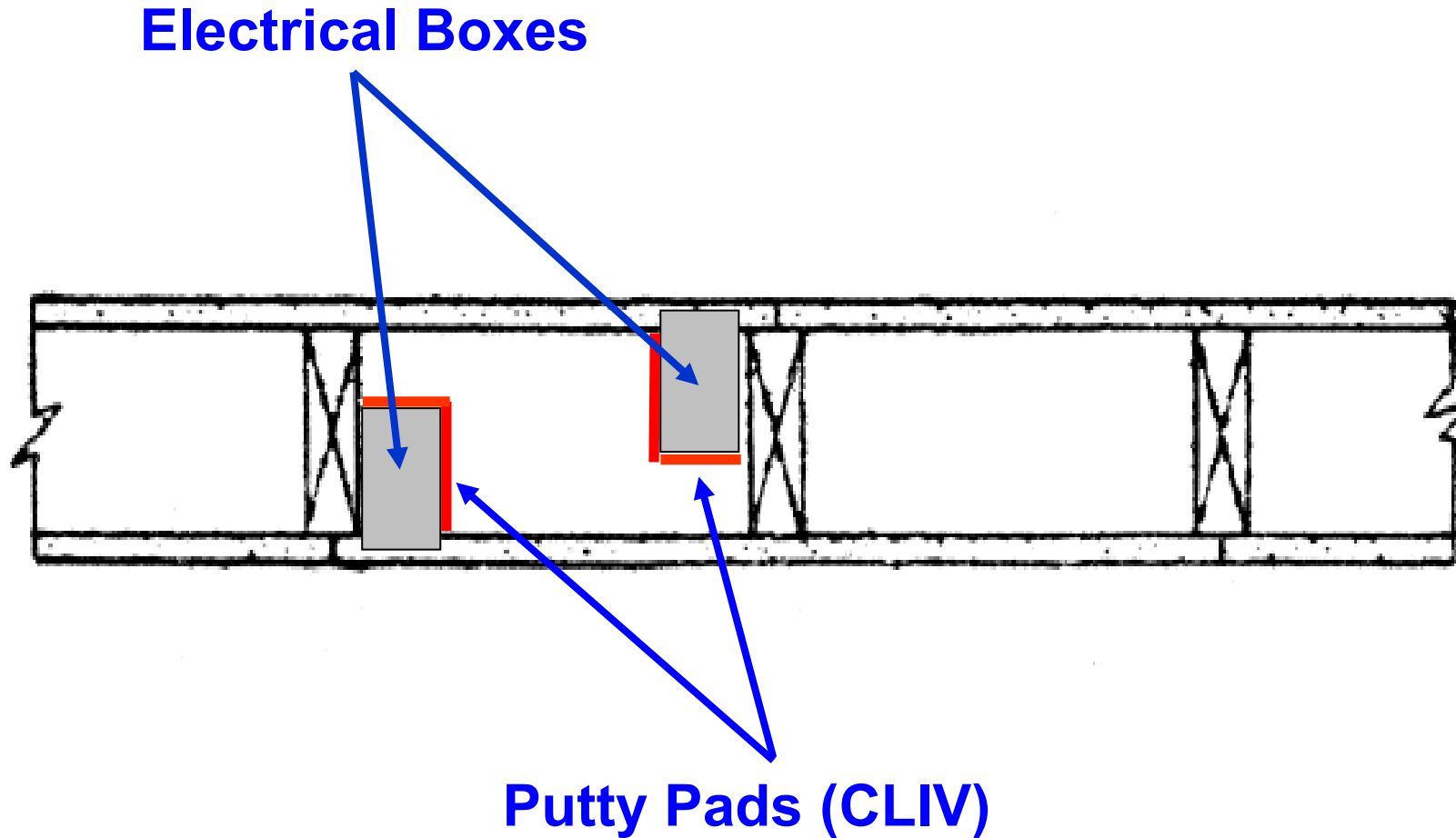
Metallic Electrical Boxes \leq 16 sq in. in Walls

Exception 1

- Installation not complying with these prescriptive requirements shall be installed as tested and *listed*

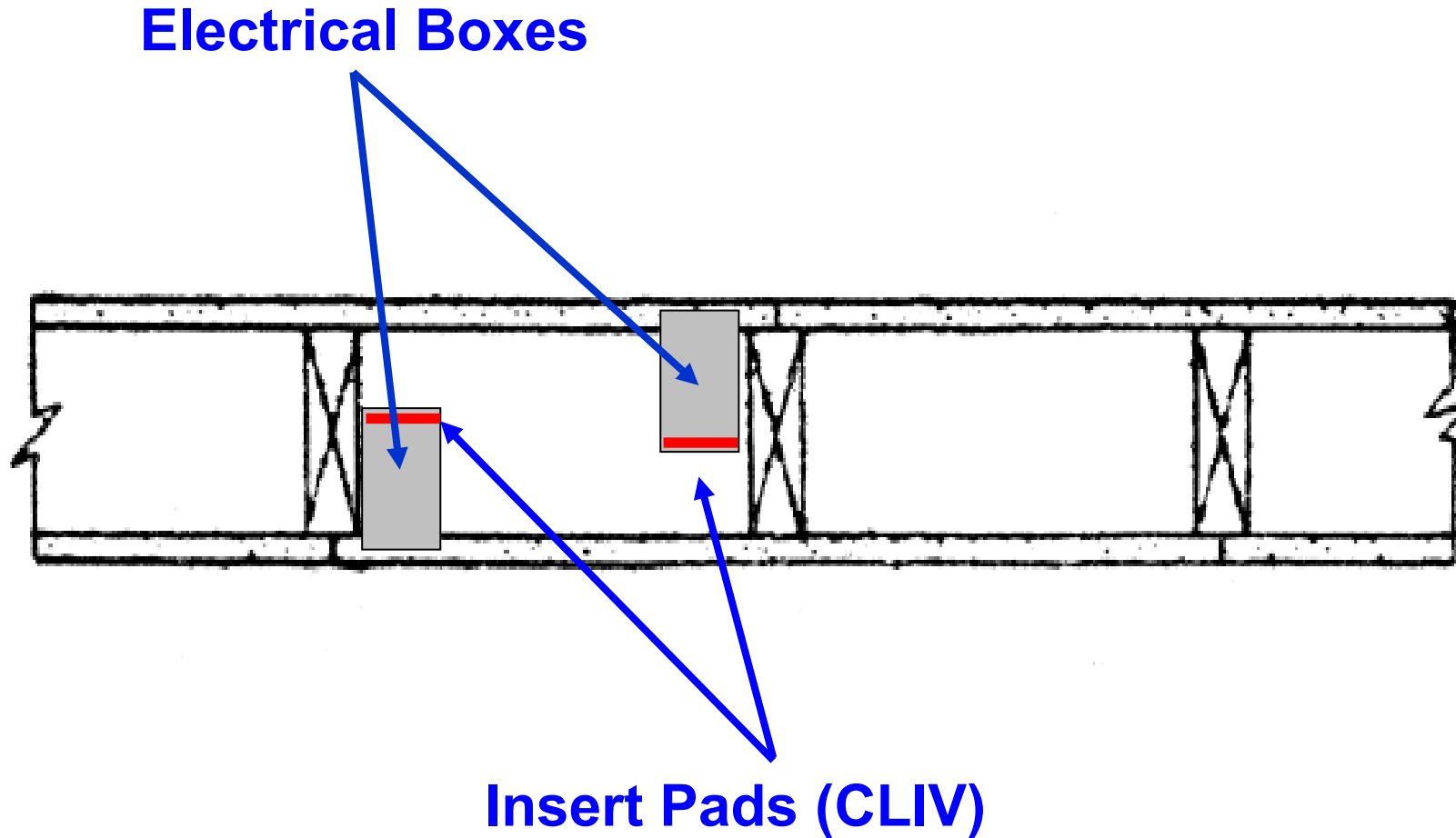
Metallic Electrical Boxes ≤ 16 sq in. in Walls

Exception 1 – *Listed* Putty Pads



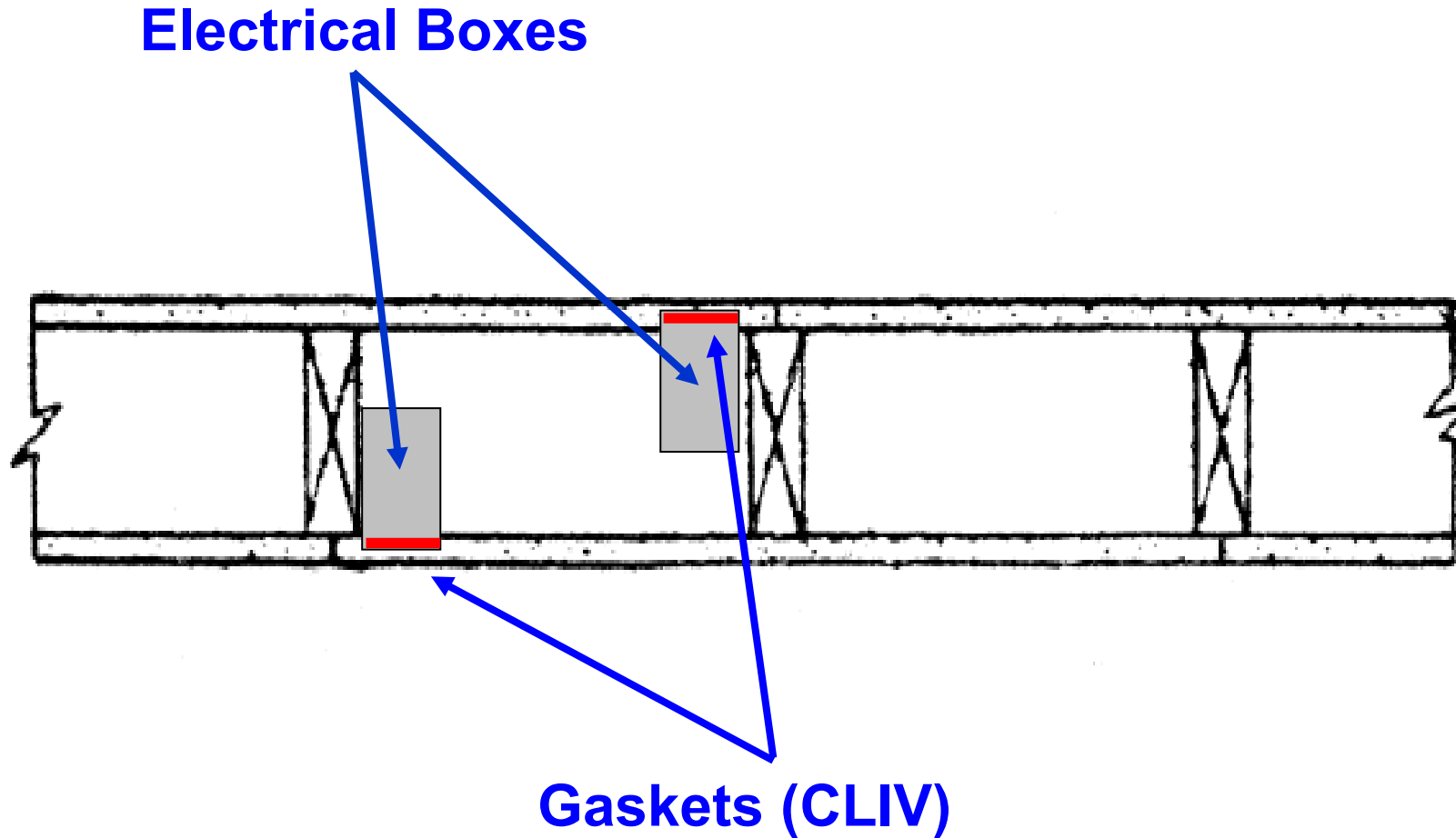
Metallic Electrical Boxes ≤ 16 sq in. in Walls

Exception 1 – Other *Listed* Materials or Methods



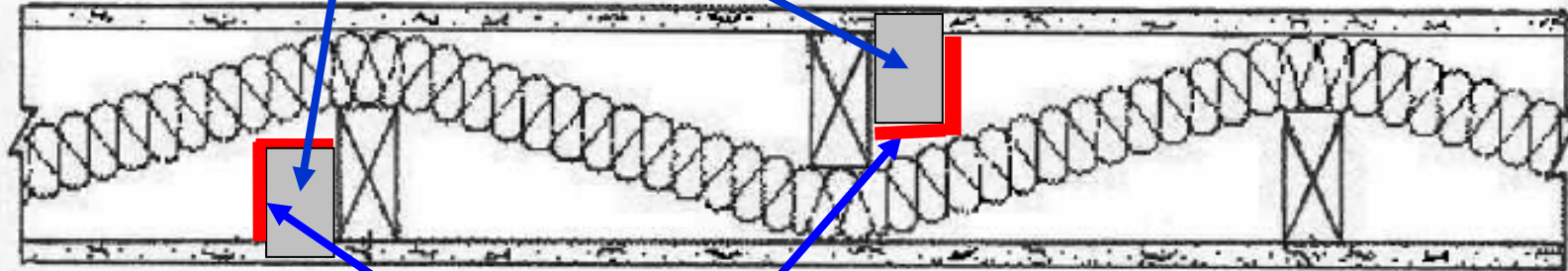
Metallic Electrical Boxes ≤ 16 sq in. in Walls

Exception 1 – Other *Listed* Materials or Methods



Metallic Electrical Boxes ≤ 16 sq in. in Staggered Stud Walls – Exception 1 with Protection per Listing

Electrical Boxes



**Insulation, Fireblocking, Putty Pads,
Insert Pads or Gaskets (CLIV)**

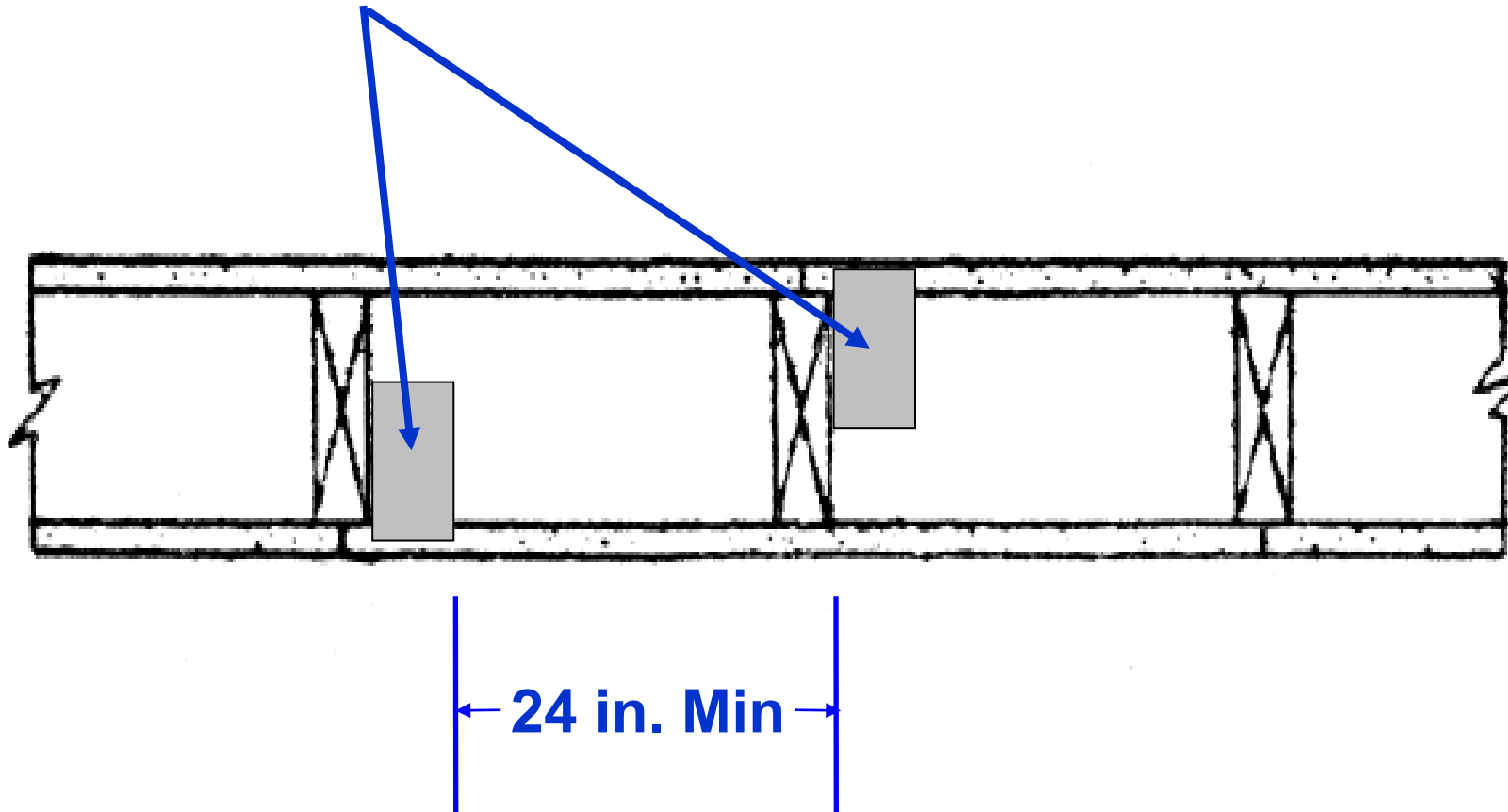
***Listed* Electrical Boxes of Any Material in Walls**

Exception 2

- *Listed* boxes of any material installed per code
 - Installed in accordance with *listed* box manufacturer's installation instructions and *listed* protection material manufacturer's instructions if provided with supplemental protection
 - Maximum 1/8 in. annular space between wall membrane and box
 - Boxes on opposite sides of wall need to be either separated horizontally per their listing, or protected by some type of heat barrier

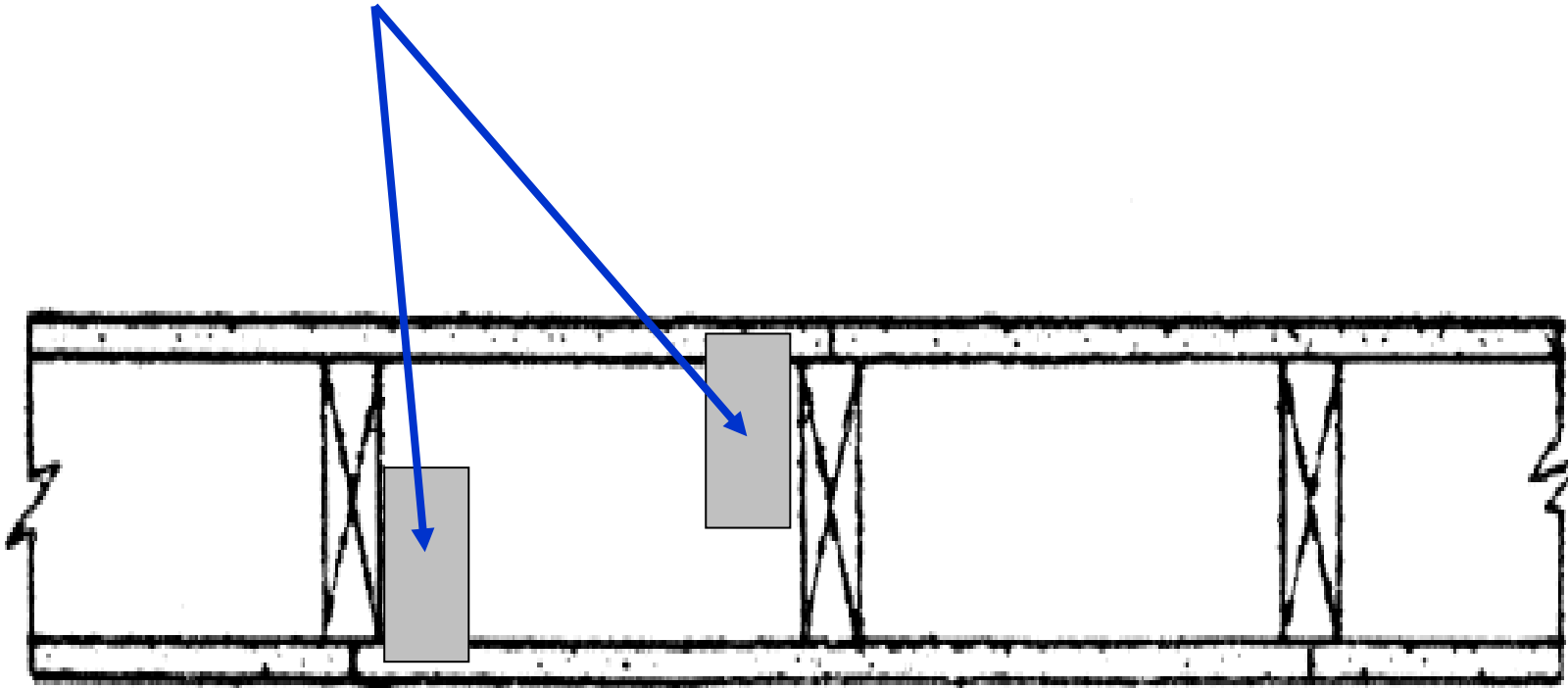
***Listed* Electrical Boxes of Any Material in Walls Exception 2 – Min 24 in. Spacing per Listing**

Electrical Boxes

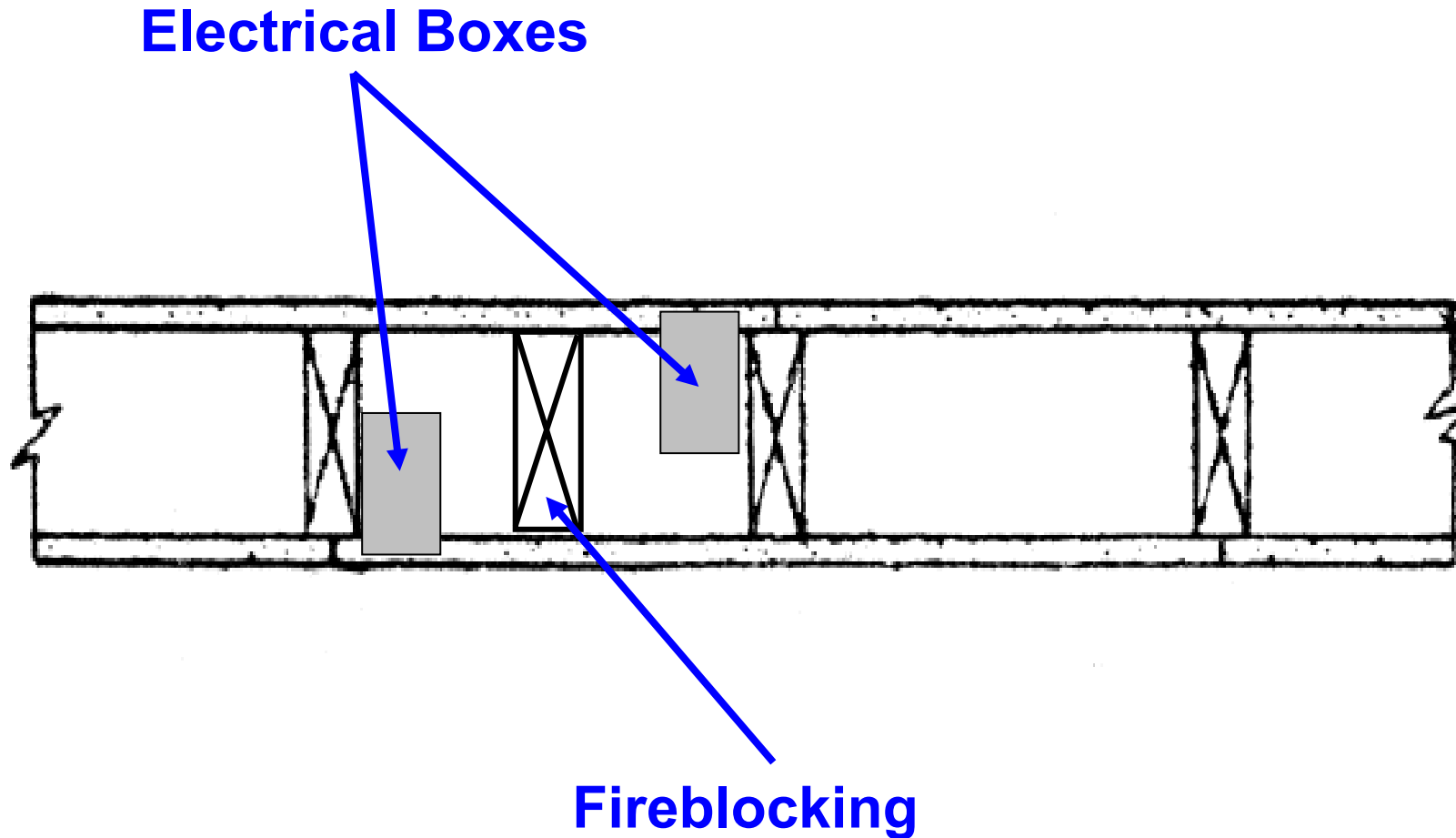


***Listed* Electrical Boxes of Any Material in Walls Exception 2 – Reduced Spacing per Listing**

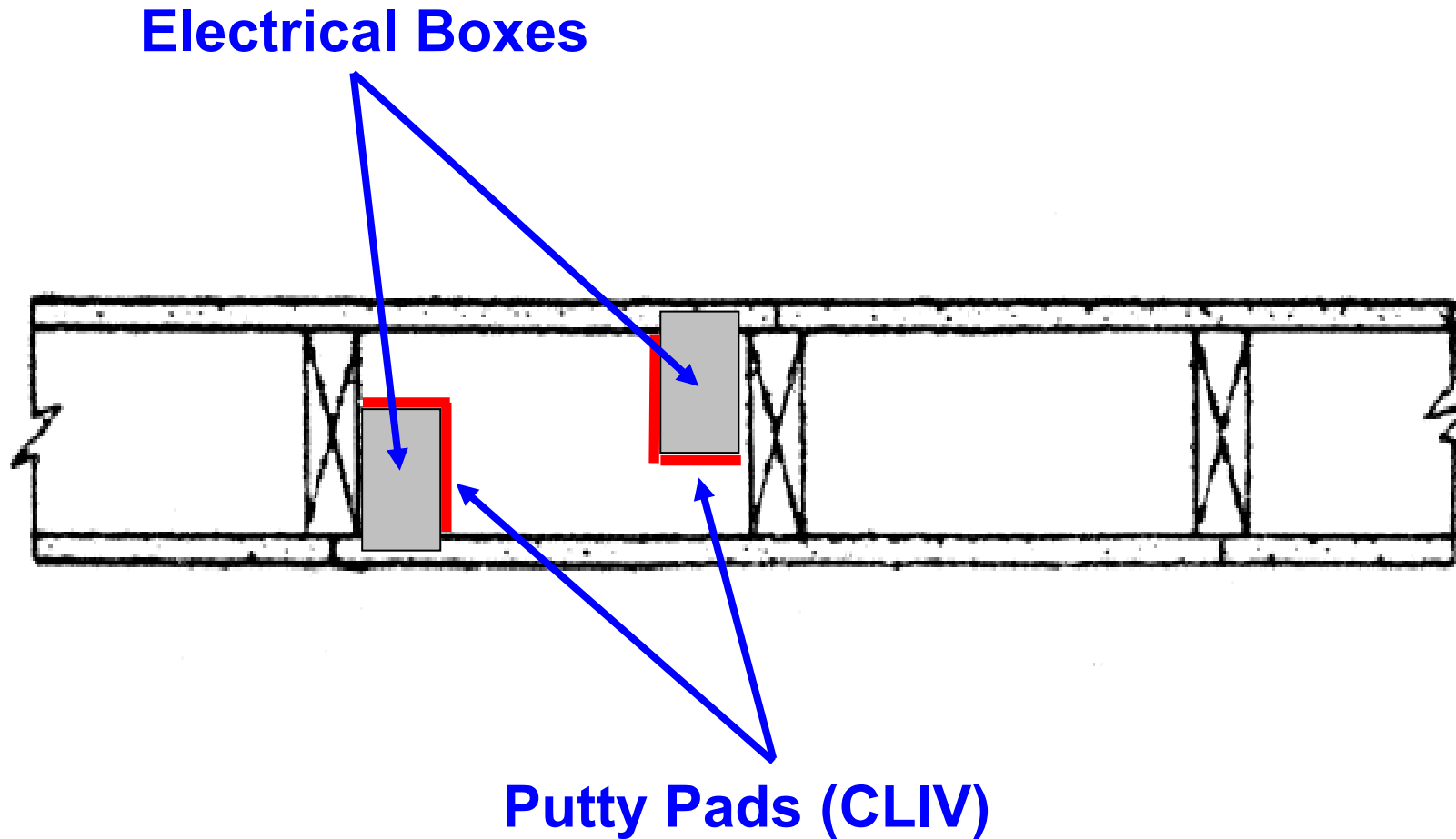
Electrical Boxes



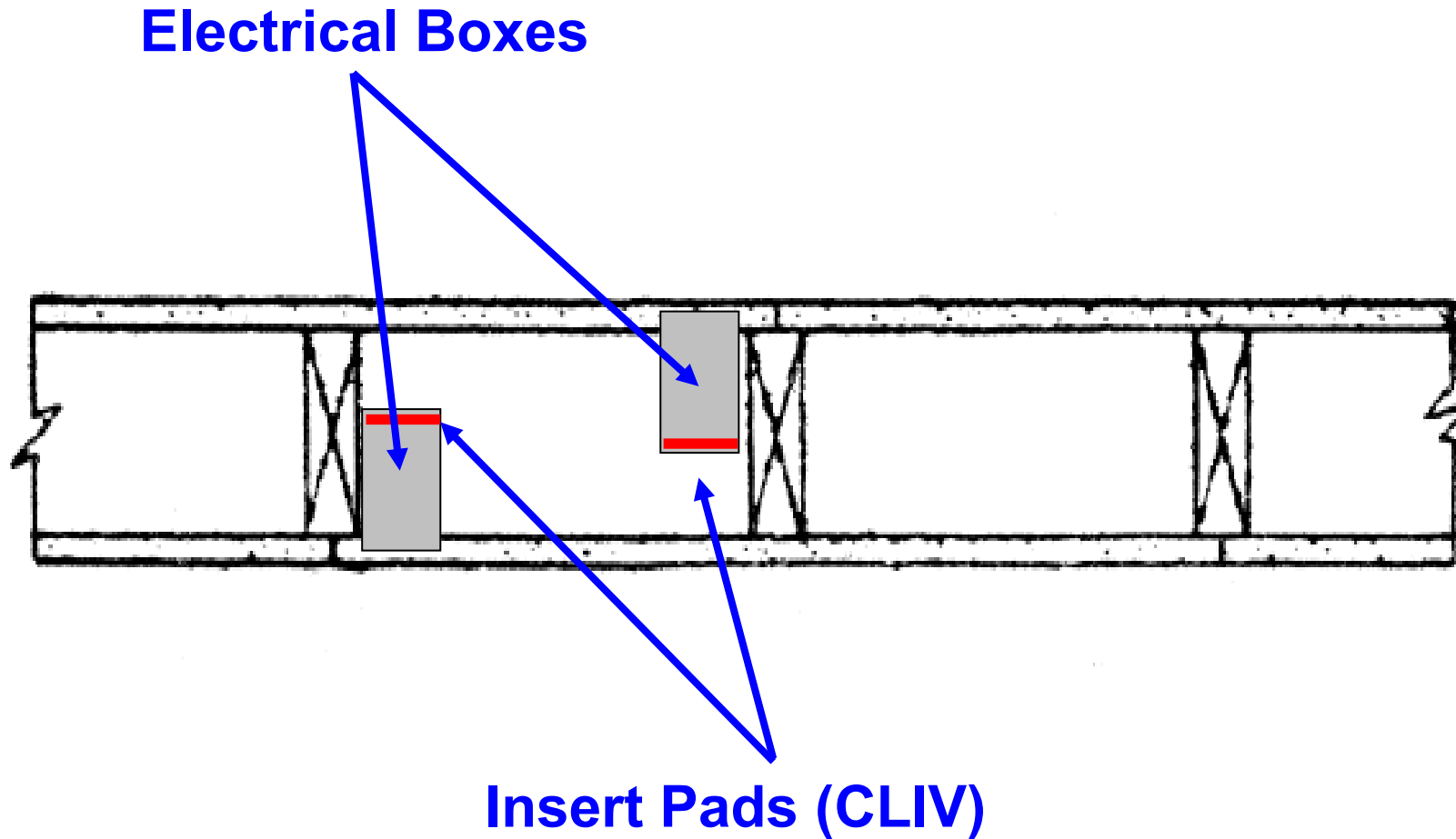
***Listed* Electrical Boxes of Any Material in Walls** **Exception 2 – Fireblocking**



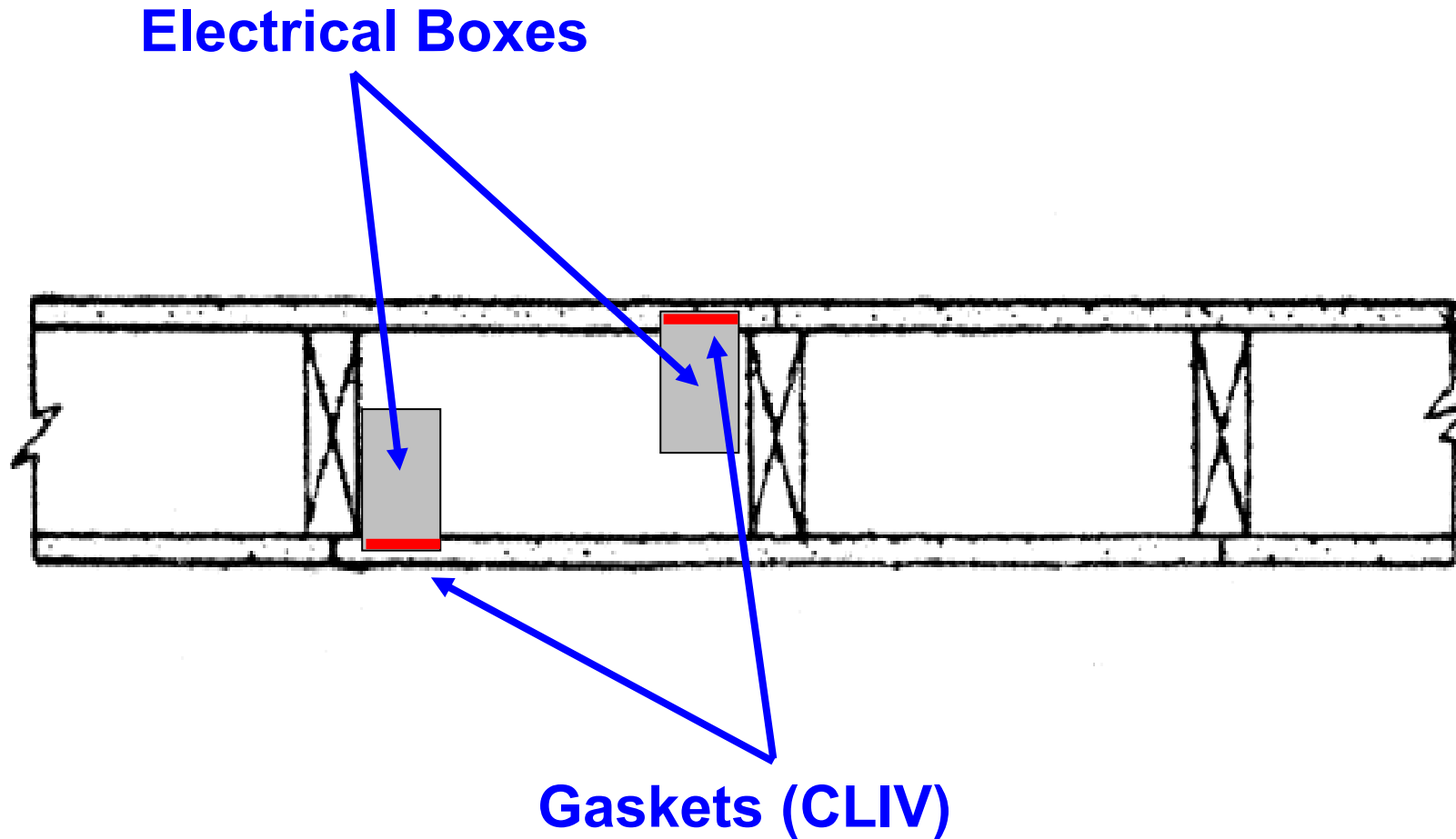
***Listed* Electrical Boxes of Any Material in Walls** **Exception 2 – *Listed* Putty Pads**



***Listed* Electrical Boxes of Any Material in Walls Exception 2 – Other *Listed* Materials or Methods**

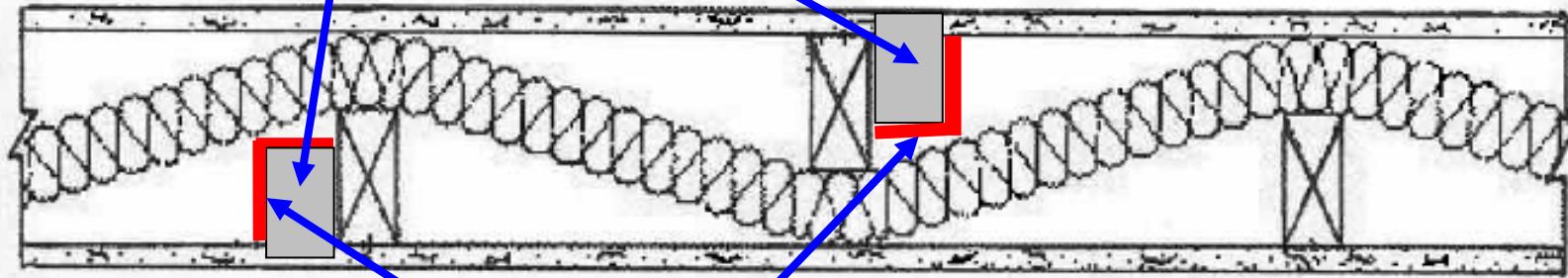


***Listed* Electrical Boxes of Any Material in Walls Exception 2 – Other *Listed* Materials or Methods**



Listed Electrical Boxes of Any Material in Staggered Stud Walls – Exception 2 – With Protection per Listing

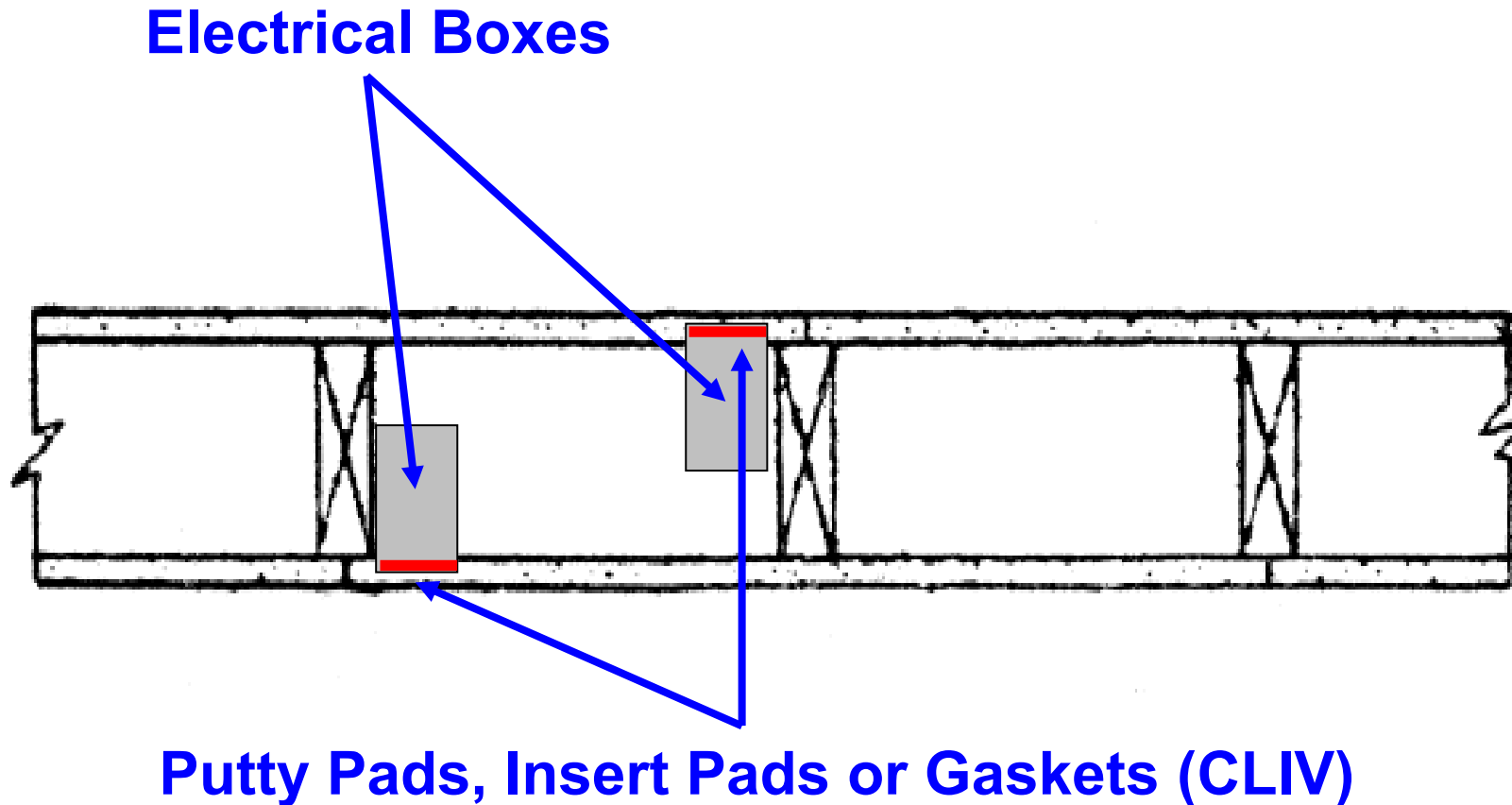
Electrical Boxes



Putty Pads, Insert Pads or Gaskets (CLIV)

Electrical Boxes of Any Size or Type in Walls

Exception 3 – Wall Opening Protective Materials



Boxes Other than Electrical Boxes in Walls

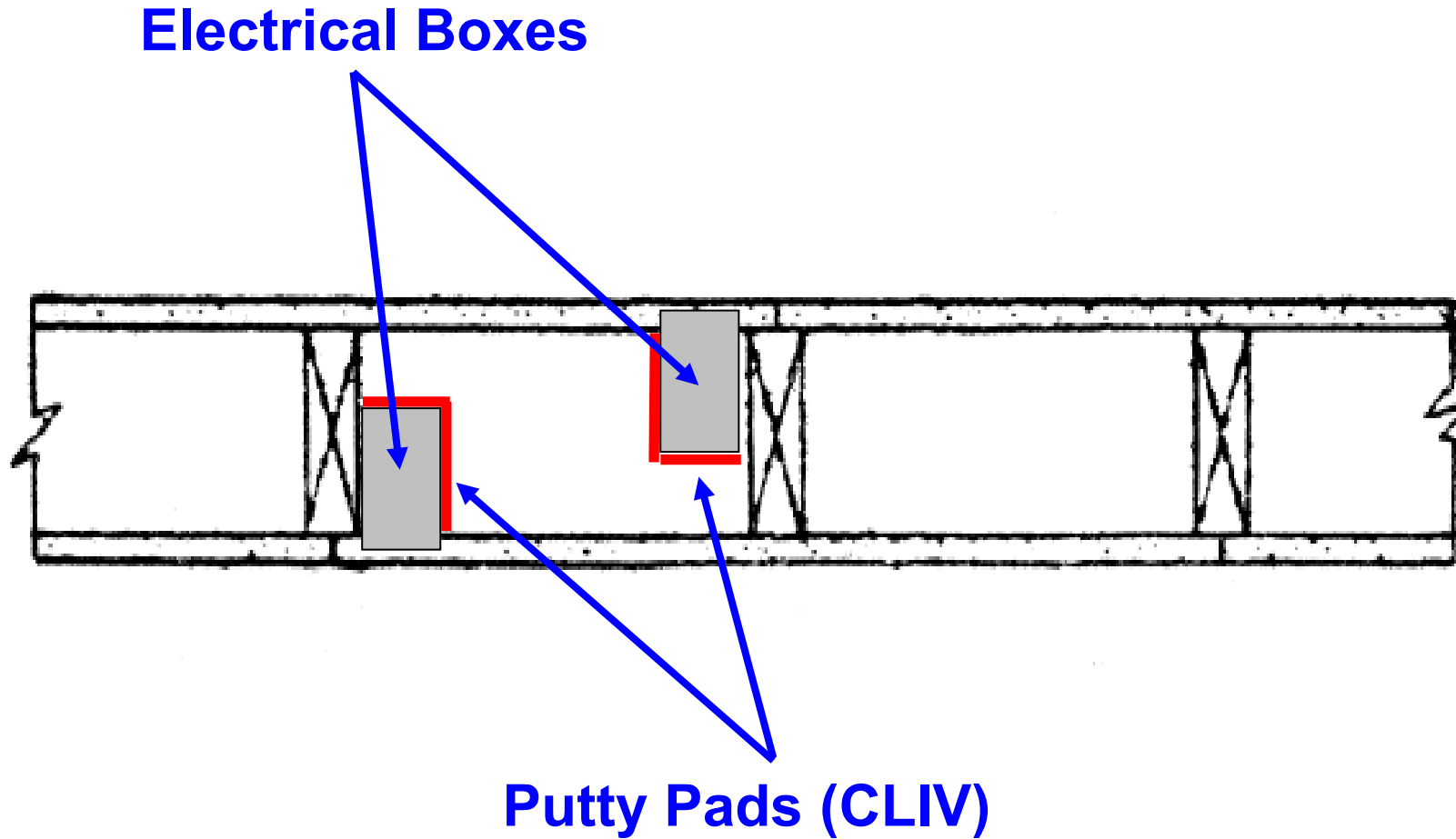
Exception 4 – Requires F and T Ratings



Examples of UL Firestop Systems:
W-L-7004, W-L-7005, W-L-7129, W-L-7167, W-L-7168, W-L-7193, W-L-7207, W-L-7249, etc.

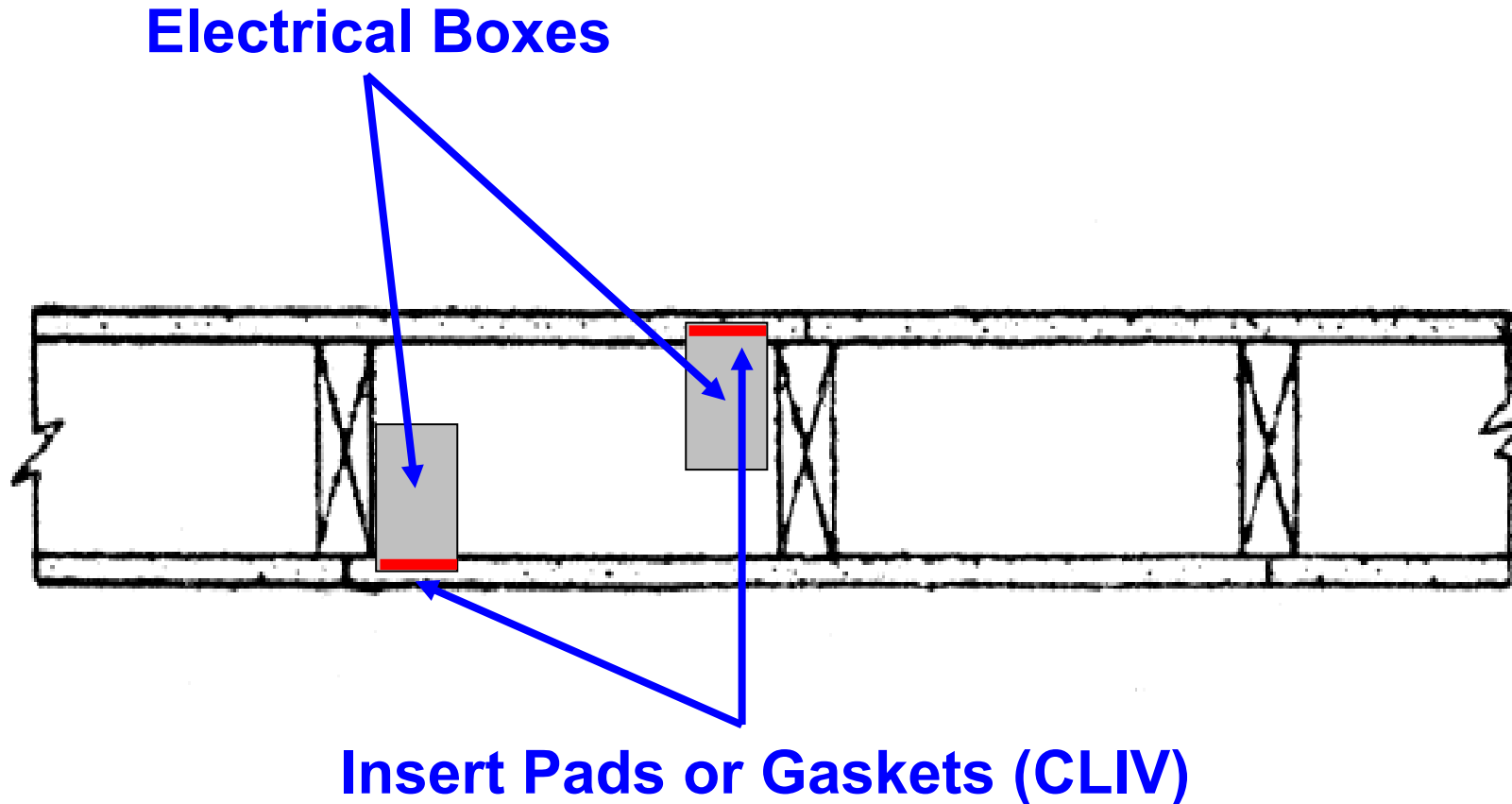
Metallic Electrical Boxes > 16 sq in. in Walls

Exception 6 – Putty Pads



Metallic Electrical Boxes > 16 sq in. in Walls

Exception 6 – Other *Listed* Materials or Methods



Code Requirements

Horizontal Assemblies

- Section 714.5.2 of the 2021 IBC
- **714.5.2 – Membrane penetrations.** Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.5.1.1 or 714.5.1.2. **Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced.**

Code Requirements

Horizontal Assemblies

- **714.5.2 Cont.**

- Exceptions:

2. Metallic electrical boxes ≤ 16 sq in., installed per prescriptive information
3. Electrical boxes of any size or type installed as protected using opening protective materials
4. *Listed* electrical boxes of any material, installed in accordance with *listing*
8. Ceiling membrane penetrations by *listed* luminaires or luminaires protected with *listed* materials tested for fire-resistance

Metallic Electrical Boxes in Ceilings

Exception 2

- Metallic boxes installed per prescriptive code
 - Maximum 16 sq in. electrical box
 - Maximum 100 sq in. of opening per 100 sq ft of ceiling area
 - Maximum 1/8 in. annular space between ceiling membrane and box
- Installation not complying with these prescriptive requirements shall be installed as tested and *listed*

Electrical Boxes of Any Size or Type in Ceilings

Exception 3 – Wall Opening Protective Materials

- Electrical boxes of any size or type
 - Protected using *listed* opening protective materials
 - Putty pads
 - Insert pads
 - Gaskets
 - Installed in accordance with *listed* protection materials manufacturer's installation instructions

***Listed* Electrical Boxes of Any Material in Ceilings – Exception 4**

- *Listed* boxes of any material installed per code
 - Installed in accordance with *listed* box manufacturer's installation instructions and *listed* protection material manufacturer's instructions if provided with supplemental protection
 - Maximum 1/8 in. annular space between wall membrane and box

***Listed* Luminaires or Luminaires Protected with *Listed* Materials – Exception 8**

- Tested for use in fire-resistance-rated assemblies
- Installed in accordance with the *listed* luminaire or *listed* protection material manufacturer's installation instructions

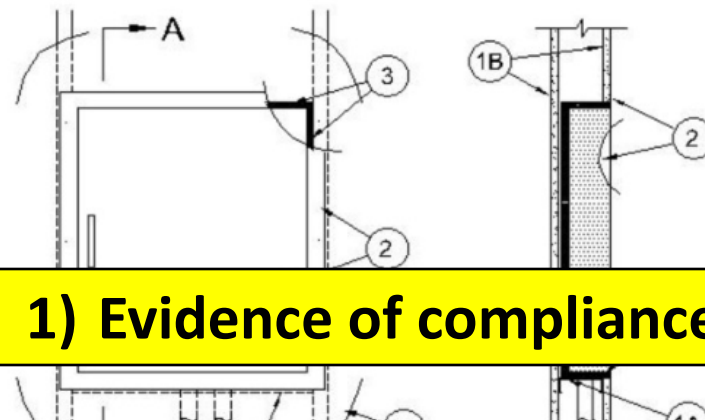


For the Contractor

System No. W-L-7190

December 05, 2013

F Ratings — 1 and 2 Hr (See Item 1)	UL System or Listing serve two roles:	2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)		2 Hr (See Item 1)
		FH Ratings — 1 and 2 Hr (See Item 1)
		FTH Ratings — 1 and 2 Hr (See Item 1)



1) Evidence of compliance

2) A set of build-instructions

1. **Wall Assembly** — The 1 or 2 hr fire rated framed gypsum board wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

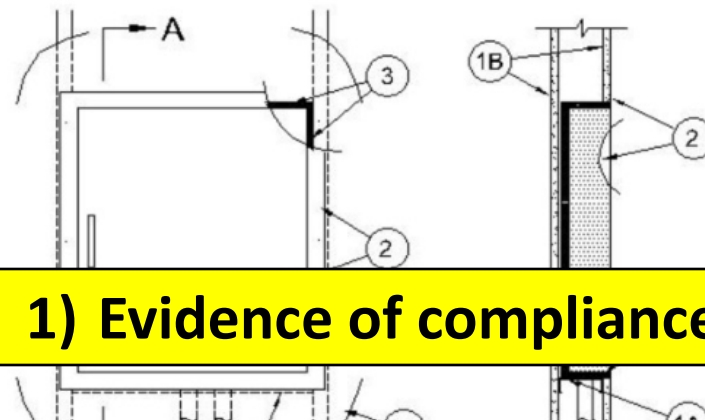
A. **Studs** — Wall framing shall consist of steel channel studs or wood studs. Steel studs to be min 6 in. (152 mm) wide and spaced max 24 in. (610 mm) OC. Wood studs to be nom 2 by 6 in. (51 by 152 mm) or larger and spaced max 16 in. (406 mm) OC. An additional framing member shall be used to form a shelf within the wall cavity to support the steel box (Item 2) and mat fill material (Item 3). The framed opening is to be 1 in. (25 mm) wider than the width of the steel box.

For the Code Official

System No. W-L-7190

December 05, 2013

F Ratings — 1 and 2 Hr (See Item 1)	UL System or Listing serve two roles:	2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)		2 Hr (See Item 1)
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		FTH Ratings — 1 and 2 Hr (See Item 1)



1) Evidence of compliance

2) Document by which to inspect

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Questions??



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