



Clark County Building and Fire Prevention Field Inspection Division FIELD INSPECTION GUIDELINE

Division:	Inspections	Policy & Procedure:	FIG-B-007
Subject:	Repair of Fire Assemblies	Effective Date:	01/05/2011
Code:	2018 IBC Chapter 7	Revised Date:	10/01/2020
Proposed:	Matthew Brewer	Approved:	Sam Palmer

Scope:

Fire-resistance assemblies constructed of gypsum panel assemblies used for wall, shaft, or ceiling repairs shall restore the original fire-resistive structural integrity of the assembly. Repairs shall utilize approved assemblies.

All replacement or patching gypsum panels must be equivalent to the original material of equal thickness and number of layers.

Repair of Fire-Resistance-Rated Gypsum Assemblies:

1. Single-layer, 1-hour, fire-resistance-rated wall or ceiling assembly

- Membrane or through-penetrations up to 6 inches in any dimension, and not exceeding 36 square-inches in total area, may be patched by the attachment of a flush patch secured in place by attaching to a section of runner track/backing secured to the wall assembly on each side of the patch area. All joints are to be taped.
- Membrane or through-penetrations not greater than 12 inches in any dimension, and not exceeding 144 square-inches in total area, may be repaired by fastening runner track/backing to the inside of all edges of the hole, then attaching the patch along all sides. Fasteners are to be spaced a maximum of 8 inches apart, and all joints are to be taped.
- Membrane or through-penetrations greater than 12 inches in any dimension, and exceeding 144 square-inches in total area, shall be cut back to the framing members, adding horizontal runner track/backing to the inside edge of the hole and the patch attached to the framing members. Fasteners are to be spaced a maximum of 8 inches apart, and all joints are to be taped.
- A patch layer may be applied directly over the first layer to cover the hole/damage in the first layer. The patch shall be attached to the framing members, with fasteners spaced a maximum of 8 inches apart.
- When applying a second layer directly over the first layer, this patch may be split down the middle to go around pipes and conduits, but both halves shall be secured to the framing members on each side, and the penetrations shall be sealed per listed penetration requirements. The patch shall be attached to the framing members with fasteners to be spaced a maximum of 8 inches apart.

2. Multiple-layer, fire-resistance-rated wall or ceiling assembly

- Multiple-layer assemblies require the joints between the layers to be staggered. Repair of these assemblies requires that the face layer of gypsum board to be removed beyond the base layer joints to retain the staggered joint specification.
- Therefore, the base layer shall be repaired by methods 1.1 through 1.5. The face layer of gypsum is to be removed to the adjacent framing members. The patches shall be attached to the framing members. Fasteners are to be spaced a maximum of 8 inches apart, and all joints are to be taped.
- 2.2 Membrane or through-penetrations greater than 12 inches in any dimension, and exceeding 144 square-inches in total area, require the base layer to be cut back to the nearest framing member, with the patch being attached to the framing. The top layer shall be cut back to the second-nearest framing member. Framing in the area to be repaired shall be replaced and inspected without increasing the original framing spacing. Fasteners are to be spaced a maximum of 8 inches apart, and all joints are to be taped.

NOTE: Repairs detailed by a registered design professional and approved by plans examination shall supersede these required repairs.



GA-225-2019 REPAIR OF FIRE-RATED GYPSUM PANEL PRODUCT SYSTEMS

Fire-rated gypsum panel product systems may be damaged during the life cycle of buildings. To maintain the required fire-rated separation between occupancies or areas, damaged systems must be repaired so that they are restored to their original fire-resistive condition. The repair procedures should be dictated by the severity of the damage.

Small holes (such as those caused by a doorknob) can be repaired by patching (see Figure 1). To maintain the integrity of the surface membrane, a gypsum panel product patch must be mechanically secured to blocking in the opening; attachment with joint compound material only is not acceptable. The patching material should be cut from type X or proprietary type X gypsum panel product of a thickness equal to the original panel so that the patch is in the same geometric shape as, but slightly larger than, the damaged area. The damaged area is then further enlarged to match exactly the size of the patch (see Figure 2). Use caution when cutting or fastening into stud cavities to avoid electrical shock or causing water leaks. Insulation, if present, must be restored. Metal runner track is secured to the edges of the frame opening (see Figure 3). The patch is screw-attached to the exposed face of the runner track with fasteners a maximum of 8 in. (200 mm) on center (see Figure 4). The patch should be treated with tape and joint compound to restore appearance, fire-resistance qualities, and acoustical performance (see Figures 5 and 6).

NOTE: Overlapping of joint tape can result in finishing problems.

Proprietary clip products are available that provide mechanical support for patching. Manufacturers of these products should be contacted for information.

If damage covers more than 100 in.² (700 cm²) in 100 ft² (10 m²) of wall or ceiling area, all materials in the damaged area must be removed back to the original framing to make the repair. Framing in the area to be repaired should be inspected and replaced if necessary without increasing original framing spacing. Replacement panels should be cut to fill the opening and mechanically attached to the framing. Ends and edges of the panel that are not backed by framing materials should be supported with metal runner track. The repaired area should be finished with tape and joint treatment compound as necessary.

Multiple-layer systems typically require that joints be staggered between layers. Proper repair of multiple-layer systems requires that face layers of panels be removed beyond the base layer joint to retain the staggered joint feature.

To improve the appearance of large areas that are structurally sound but aesthetically unacceptable, a new layer of regular or type X gypsum panel may be installed with mechanical fasteners without adversely affecting the fire-resistance rating or acoustical performance.

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REPAIR OF FIRE-RATED GYPSUM PANEL PRODUCT SYSTEMS



Figure 1: Damaged Gypsum Panel



Figure 2: Square Off Damaged Area



Figure 3: Frame Opening



Figure 4: Apply Gypsum Panel Patch



Figure 5: Tape and Finish Patched Area



Figure 6: Redecorate Repaired Area