FIRE RESISTIVE GYPSUM SYSTEMS

FCIA Webinar
Nestor Sanchez, USG

7-19-16
MAIN GOAL

– Optional Construction Details
  – To deal with retrofits and repairs

– Repair of Fire Rated Gypsum Walls
MAIN OBJECTIVES

- Fire Resistive Properties of Gypsum
- Basic Gypsum Systems
- Types of Rated Board
- System Details
CONSTRUCTION DETAILS
COLUMN BY PASS DETAIL
Upgrading Existing Fire Resistive Walls

1 Hour Base Wall (U419, U465)

2 layers 5/8” Type X

First Layer 1-5/8” S Screws at 12” o.c.

Face Layer 2-3/8” S Screws

U408
OUTSIDE CORNER

Shaft wall

20 Gage Plate

Insulation in gap
FASTENER SPACING
1 HOUR WALL

STUDS 24” O.C.

SCREW SPACING 8” oc

SCREW SPACING 12” oc
FASTENER SPACING
2 HOUR WALL

STUDS 24” O.C.

SCREW SPACING 16” O.C
EDGE & FIELD
BASE & FACE LAYER
OFFSET FIRST LAYER BY 8”.
(UL DESIGN U 419)
ALLOWABLE GAPS IN ADJACENT GYPSUM PANELS

4.6.7 When gaps occur at gypsum panel product joints, they shall be not greater than 1/4 in. (6 mm) and shall be prefilled with joint compound as specified in Sections 4.6.7.1 and 4.6.7.2.

4.6.7.1 Gaps not greater than 1/8 in. (3 mm) shall be prefilled with either ready-mix or setting-type joint compound.

4.6.7.2 Gaps greater than 1/8 in. (3 mm) shall be prefilled with setting-type joint compound.

Taken from GA 216-2007
EDGE GAPS EXCEEDING 1/8”

NOTE! Pre-fill gaps with SHEETROCK Brand FIRECODE Compound
Liner Panel Replacement

Click to start animation
February 3, 2004

Mr. Jerry Lewis
USG Corporation
700 N. Highway 43
Libertyville, IL 60048

Our Ref.: File R1319, Project 04NK4459

Subject: LAC-USC Medical Center Replacement Project, Los Angeles, CA

Dear Mr. Lewis:

This is to confirm our conversation with Mr. Naecon Sanchez on January 30, 2004, relative to the repair of holes in the liner panels of 1- to 3 hr fire rated shaftwalls constructed in accordance with Design No. U415. Specifically, 4 in. by 4 in. or smaller holes accidentally made, or 4 in. diameter holes or smaller made for pipes or tubes which were never installed or were removed.

It is our judgment that holes of that size can be repaired using a 6 in. by 6 in. piece of USG's UL Classified SHEETROCK® Brand Gypsum Liner Panels, centered over the hole, laminated with joint compound to the existing liner panel, attached to the existing liner panel with 1-1/2 in. long Type C steel screws (one at each corner and one centered between the corner screws) at a minimum of 3/8 in. from the edges of the piece being applied, as shown below.

![Diagram of hole repair process]

An independent organization working for a safer world with integrity, precision, and knowledge.
FLUSH PATCH - SMALL

EXISTING GYPSUM PANEL

CUT-OUT 6 " MAX.

STUD

ELEVATION
FLUSH PATCH - SMALL

- PATCH
- EXISTING GYPSUM PANEL
- RUNNER
- TYPE S SCREW

INSTALLATION DETAILS
SECTION A-A

EXISTING GYPSUM PANEL

RUNNER

EXISTING GYPSUM PANEL

TAPE & FINISH WITH USG FINISH SYSTEM
FLUSH PATCH - LARGE

PARTIAL ELEVATION - 1
FLUSH PATCH - LARGE

PARTIAL ELEVATION - 2

EXISTING GYPSUM PANEL

USE METAL RUNNER FOR BLOCKING

LINE OF PATCH REMOVAL

SEE DETAIL 714
FLUSH PATCH - LARGE

STUD

TAPE & FINISH JOINTS

PATCH

TYPE S SCREWS

PARTIAL ELEVATION - 3

STUD

TYPE S SCREWS
MEDICINE CABINET

- Five sided enclosure
PARTITION ADJACENT TO BEAM
What to do?

- Follow a UL or Intertek classified Head-of-wall Joint System
  - Tested per ASTM E1966 (UL2079)
PARTITION ADJACENT TO BEAM

10” MIN

FASTEN GYPSUM BOARD FULL HEIGHT AS PER FIRE TEST

Click to start animation
DETAIL – PARTITION UNDER BEAM

20 GA. CONTINUOUS ANGLE FASTEN 2’ O.C.

RUNNER TRACK AT VERTICAL JOINTS

20 GA. Z-CLIP 2’ O.C. FASTEN BEFORE SPRAY

24” MAX LENGTH
DETAIL – SHAFT WALL OFFSET

J-RUNNERS

USG ACOUSTICAL SEALANT

14 GA. CONTINUOUS PLATE ATTACHED TO BEAM 2’ O.C.
FireProofed Beams Through Fire Rated Walls
What to do?

• Follow a UL or Intertek classified head-of-wall joint system
  – Tested per ASTM E1966 (UL 2079)
REFERENCE MATERIALS

- UL Fire Resistance Directory
- GA 225-08 Repair of Fire Rated Gypsum Board Systems, Gypsum Association
- Repairing Gypsum Fire Resistive Assemblies, Life Safety Digest
- Building Materials and Structures, Report BMS 92; National Bureau of Standards, 10/7/1942
- Fire Ratings of Archaic Materials & Assemblies; NIBS, February 2000
SUMMARY

- Newer Construction Options
- Repair Options
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