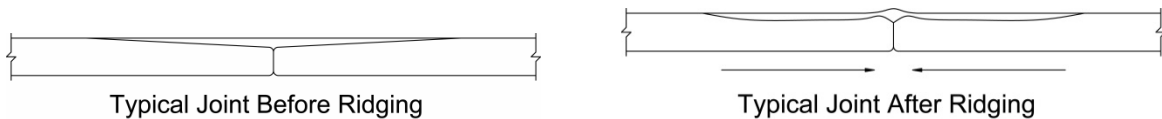


GA-221-2017

CAUSES, PREVENTION AND REPAIR OF JOINT RIDGING AND CENTERLINE CRACKING

Joint ridging, also called beading, is a uniform, fine linear deformation occurring at the joint between two gypsum panels. Centerline cracking is a crack that forms at the centerline of the joint between two gypsum panels and can simultaneously occur with joint ridging.



CAUSES

Environmental Conditions

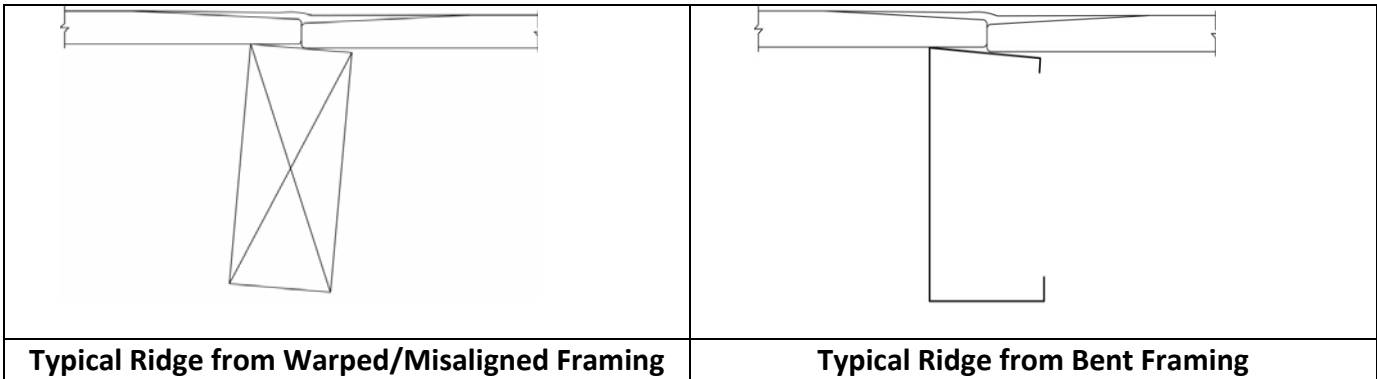
While there can be numerous causes for centerline ridging and cracking, environmental conditions are a frequent cause. Virtually all ridging and cracking occurs at panel joints.

Ridging can result from the gypsum panel joint being forced together as a result of wood framing members shrinking. Centerline cracking can result from stress being exerted on the gypsum panel joints due to wood framing members swelling or shrinking from exposure to periods of high or low temperature and humidity fluctuations.

Changes in the building temperature and humidity during construction through occupancy can lead to component movement. This results in a crack or a ridge forming at the joint of the gypsum panels. Maintaining stable indoor conditions in the building during and after construction will minimize joint ridging and cracking.

Workmanship

- Improper application of gypsum panels is another cause of centerline ridging and cracking. In many, but not all cases, the ridges and cracks from improper installation are visible soon after all of the joints have dried or cured.
- Fastening gypsum panel products to warped or misaligned studs is a significant cause of ridging and cracking.
- Improper fastening of gypsum panel products to steel studs can bend the stud and cause a ridge.
- Improper preparation and finishing of butt joints can cause ridges or cracks.
- Panels installed at door frames and windows with joints located closer than 12" (30 cm) to the corner are prone to cracking.
- The practice of "Belly Banding" is another cause of ridging and cracking.



PREVENTION

Environmental

Large loads need to be in place prior to initiating the finishing of joints to minimize the potential for ridging and cracking:

- Roofing materials should be evenly distributed on the roof framing
- Large plumbing items such as bathtubs should be in place.
- Heavy mechanical assemblies such as heating equipment and air conditioners should also be installed,

Room temperature shall be maintained at not less than 40°F (4°C) when mechanically attaching gypsum panel products. Room temperature shall be maintained at not less than 50°F (10°C) for adhesive application of gypsum panel products and during the application of joint treatment, texturing, and decoration. When a temporary heat source is used, the temperature shall not exceed 95°F (35°C) in any given room or area. Provide adequate and continuous ventilation in the work area to control humidity during installation and drying or curing of joint compounds.

When taping and finishing of gypsum panel products is completed, room temperature shall be maintained above 50°F (10°C) and below 95°F (35°C) to minimize movement of building materials.

Workmanship

Inspection of framing for warped or twisted studs, proper alignment, and proper spacing will identify areas with the potential for ridging or cracking. Proper procedures and workmanship during installation of framing and during installation of gypsum panels will minimize issues due to misaligned framing.

The use of resilient channel in ceiling construction allows the underlying studs and trusses to move without transferring compression and expansion forces directly to gypsum panel products.

CAUSES, PREVENTION AND REPAIR OF JOINT RIDGING AND CENTERLINE CRACKING

Joints between the tapered edges of adjacent gypsum panels will typically be more crack-resistant than end (butt) joints. Gypsum panel edges, are tapered and designed to be filled with joint compound and tape, while cut ends (whether field-cut, or factory-cut) are essentially square ends. End joints can be strengthened and minimize cracking by beveling adjoining panel ends before installation. Bevel panel ends approximately 1/8" (3 mm) at a 45 degree angle using a sharp utility knife and remove any loose paper prior to installation. Gypsum panel ends should be in moderate contact. Prefill any gap with joint compound and allow to dry or prefill with setting compound and allow to set. Apply compound and joint tape in the same manner as for tapered joints.

“Belly Banding”

The widespread use of “belly bands,” also referred to as “rips” should be avoided. Belly bands are typically used in walls over 8 feet (2.4 m) in height where two courses of gypsum panels are applied horizontally at right angles to the studs. One course is applied tight to the ceiling and the second course is applied to the bottom of the wall, resulting in a horizontal gap at mid-height. The width of the gap varies with the height of the wall and the width of the panels used. This gap is filled with a strip of gypsum panel cut from a full panel which creates a joint with a tapered edge against a cut edge for which there is no recommended procedure for finishing.



Typical Ridging at Taper-to-Square

The panel layout should be such that all joints intended to be finished are with a tapered edge against a tapered edge, or a cut edge against a cut edge. The use of belly bands is not recommended. For walls exceeding 8 feet (2.4 m) in height, consideration should be given to using wider widths of gypsum panels. If the use of narrow strips of gypsum panels is unavoidable, they should be located at the top or bottom of the wall with the tapered edge of the strip forming a joint against a tapered edge of the adjacent gypsum panel.

REPAIRS

In order to allow a wall or ceiling system to stabilize, it is recommended that repairs not begin until the building has gone through at least one complete heating/cooling cycle, typically one year. Repairs should only be undertaken in a warm, dry environment. Repairs to drywall tape and joint compound are subject to re-cracking or re-ridging if:

- the building is not properly conditioned during the repair period,
- the building is left unconditioned for extended periods of time, or
- the underlying source of movement is not properly mitigated.

If a structure has been properly conditioned and ridges or cracks appear again after repairs, please consult with industry professionals in your area to discuss alternate repairs beyond drywall finishing products which are cosmetic in nature.

Repair of Ridging

If the ridge is due to continuing expansion and contraction or structural movement of the building, a control joint or alternate repair may be required. Lightly sand the ridge down, taking care not to damage the embedded joint reinforcing tape. Apply joint compound to the area being treated, feathering as wide as necessary to create an essentially flat surface. *If the joint tape is damaged, the damaged tape and joint compound must be removed and the joint re-taped and finished as an end joint, feathering as wide as necessary to create an essentially flat surface* (See Finishing).

Repair of Cracking

If the crack is due to continuing expansion and contraction or structural movement of the building, a control joint or alternate repair may be required. Widen the crack remove any loose tape and chipped compound. Sand the area to remove any residual loose materials. Prefill the crack with joint compound and allow to dry or prefill with setting compound and allow to set. Apply compound and joint tape in the same manner as for end joints, feathering as wide as necessary to create an essentially flat surface (See Finishing).

Finishing

After the joint compound is dry, sand lightly and feather the edges, removing any tool marks. Examine the sanded area to determine if the ridge or crack has been eliminated. If examination indicates it has not been adequately concealed, additional application and feathering of joint compound may be required. Allow drying-type joint compound to dry completely before proceeding. Setting-type joint compound must be set before applying the next coat of joint compound and must be dry before painting. Refer to manufacturer's specifications for setting times of various setting-type joint compounds.

The repaired joint should be painted with drywall primer and allowed to dry thoroughly prior to application of final decoration.

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