

Customer Service = Resolution



**Safeguard**  
Properties

# Assessing Structural Damages

*Please note-this presentation is only intended to be used as a basic educational tool and is by no means all encompassing. Each property should be treated on a case by case basis and vendors will be held responsible for any errors made.*



**Safeguard  
Properties**

## Identifying Structural Damage (ext. and foundation)

### Roof Lines

#### Look for:

Sagging or drooping roof lines

### Foundation

#### Look for:

Failing or missing support structures, large cracks in the exterior of the foundation, and bowed/bulging/leaning ( $> \frac{1}{4}$ " ) foundation walls

In the case of cracks in the foundation or exterior brick work, the interior analysis should begin in the basement or crawl space and work up to the attic.

### Three main types of foundational cracks:

**Vertical cracks** (also called drying cracks) are not normally a problem unless there is evidence of water intrusion. These cracks are vertical or diagonal in direction and  $\frac{3}{16}$ " or less in width over the full length of the crack.

Nothing needs to be done if there is no evidence of water intrusion. If there is evidence of water intrusion or if the crack is  $\frac{1}{4}$ " or more in width then crack needs to be repaired.

**Horizontal cracks** (also called buckling cracks) are serious and need to be addressed immediately. These cracks will run along extensive lengths of a foundation wall and be more or less horizontal.

**Rotational cracks** (also called settling cracks) are caused by one section of a foundation settling while another section is stable. This causes the settling section to "rotate" away from the stable section, as if the bottom of the wall is on a hinge. The cracking will be V shaped from bottom to top with the top of the crack wider than the bottom. This condition will continue to worsen unless correctly dealt with.

**Step cracks** when inspecting a block or stone foundation the cracking involved will usually follow the mortar joints and is called step cracking due to the cracking pattern. Otherwise the cracks will be similar in appearance and pattern to foundation cracks in all other respects.

Always call from site if these conditions are noted to report findings and receive direction on how to proceed.

### Vertical Crack



### Horizontal Crack



### Rotational Crack



### Step Crack



### Attic

Inspect the underside of the roof sheeting, ceiling joists, the top of the interior drywall and inside the soffit/fascia area.

#### Look for:

Water staining, wood that is rotting on the underside of the sheeting or on the rafters, and light coming through the underside of the roof.

If wood rot is suspected, use a screw driver or pen to push into the affected area. If area is soft, then the wood is likely rotted and needs to be addressed by removal and replacement of that area.

When starting in the attic look for damaged rafters, or ceiling joists. To inspect ceiling joists it may be necessary to pull or move insulation out of the way. If the rafters or joists are damaged, it is necessary to replace or add rafters or joists as needed. At each floor of the living space and basement, missing or failed headers need to be identified as a structural issue whether there are roof line or exterior issues or not. Once identified, the correct repair needs to be bid.

### Rooms

Inspect walls, windows, ceilings, floors and doors.

#### Look for:

Bulges, leaning walls, deep cracks in drywall/plaster (especially around door frames), windows/doors that do not close properly or line up incorrectly, sagging/uneven ceilings, cracks in the ceiling and uneven/rolling floors.

### Basement

Inspect basement beams, columns and poured concrete flooring for failure.

#### Look for:

Tilting beams, cracking beams (wood) and sagging due to missing support columns.

If issues are found with a beam, it is usually necessary to jack up the floor system to the needed height and complete any beam repairs.

### Attic Water Damage



### Deep cracking in door frame



## Common Causes

Water intrusion, roof leaks, settling or shifting foundation, humidity and dampness, insect damage, sink holes

## Support structures or headers

Can be caused by foundation cracks, water intrusion, roof leaks.

## Roof line issues

Can be caused by missing/damaged ceiling joists, missing/failing headers, missing/damaged/tilted support beams, missing/damaged/leaning/sinking support columns, or foundation cracks.

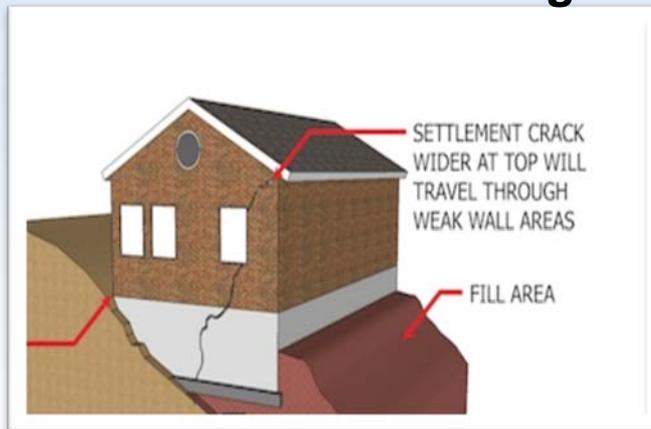
## Missing beams

Can be caused by the removal of beams during remodeling that were not replaced.

## Foundation

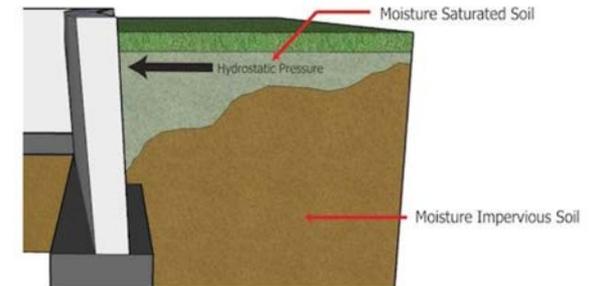
Can be caused by shifts in ground soil, water seeping into the property from the outside, uneven ground soil or issues with initial construction of the property.

## Rotational Cracking



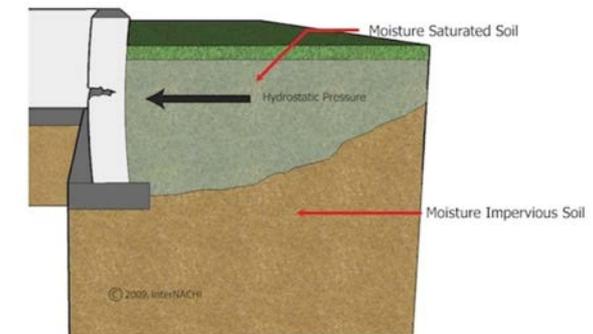
## Leaning Wall

Foundation Cracks:  
Lateral Movement - Side View  
Vertical Cracking



## Buckling Wall

Foundation Cracks:  
Lateral Movement - Side View  
Horizontal Cracking



## Vertical cracks

Can be repaired by epoxy or poly-urethane base products if the hydro-static water pressure from the exterior is 40 PSI or less. If the PSI is more than 40, the work needs to be done from the exterior by excavating down to the foundation footing at the site of the crack and injecting an epoxy or poly-urethane based product into the crack from the exterior side. Although this work can be done by the P&P contractor, the measuring of the hydro-static water pressure should be done by a company specializing in this type of service.

## Horizontal cracks

The cause here is a foundation wall that is about to collapse inward from excessive pressure from the outside. To deal with this type of cracking the interior wall needs to be buttressed (braced) and then the exterior of the wall excavated to relieve the pressure on the wall. Permanent repairs vary according to the situation, but generally the wall needs to be pushed back into place and additional concrete buttressing columns and/or steel strapping need to be poured in place/installed on the inside of the existing wall. This work should be completed by a company specializing in this type of repair.

## Rotational cracks

Patching the crack will fail as the crack will continue to grow in width. The settling section of the foundation needs to be buttressed by concrete or steel column(s) or piers from the exterior. Then the crack can be repaired from the exterior in the same manner as a vertical crack (see above). The columns or piers should be completed by a company specializing in this type of repair.

## Adding Steel Piers



## Interior Repair



## Exterior Repair



## Interior Header

If an interior header is damaged or missing, the drywall or stucco covering the header needs to be removed. The ceiling structure in the affected area needs to be temporarily braced, then any damaged structure removed. New, correctly sized and assembled header and/or support posts are put in place. The temporary bracing is removed and the affected area is dry walled or stucco is applied as needed. Mudding, sanding, painting and trimming of the area are the finishing steps in the process.

## Ceiling Joists

If ceiling joists are damaged/missing, begin by either pulling the tops of the exterior walls together or jacking up the centerline ridge of the affected roof (or both) to bring the roof line up to the correct height. Then add the ceiling joists as needed and remove jacks.

## Support Beams

If a support beam is tilted, it is necessary to return the beam to a plumb (vertical) position. Ensure that the floor system is jacked up to slightly above the correct height, the beam is adjusted to the correct position and the floor lowered onto the corrected beam. It is always necessary to address the underlying cause of the beam issue to ensure that the beam does not tip again. This is often accomplished with blocking or bracing of the beam.

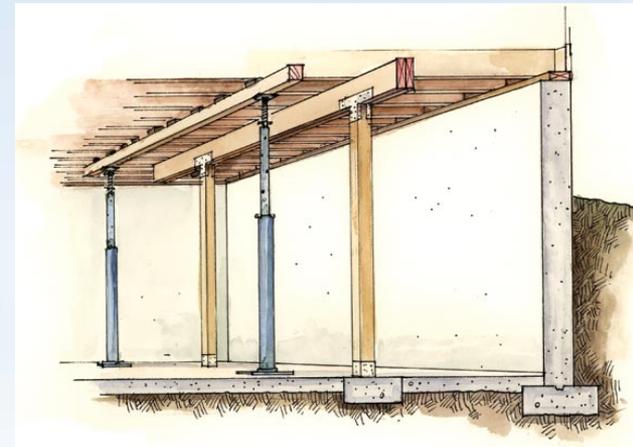
## Wood Support Beam

If wood support beam (micro-lam or joined dimensional lumber) is cracked, the floor system needs to be jacked up to slightly above the correct height. Then the beam needs to be repaired or replaced as needed. Commonly a beam repair is accomplished by adding additional lumber (micro-lam or dimensional) alongside the damaged area with the repair lumber spanning from support structure to support structure and correctly attached to the damaged beam. It is often necessary to add a support column underneath the damaged area. In this case the concrete floor needs to be cut away and an adequate footing poured underneath the column, the column set in place, and new concrete flooring poured to fill in the removed area of the floor. When all repairs are complete the floor system is lowered on to the repaired beam.

## Raising a Floor



## Temporary Bracing



## Steel or Wood Support Column

If a support column is out of plumb (correct vertical position) it is often in conjunction with a tilted support beam. The procedure for returning it to a plumb position is the same as when correcting a tilted beam. Once the column is plumb it may need to be braced or blocked in place to prevent further issues. If the bottom of a wood post is rotted the repair is similar to the floor repair (see below).

## Floor

If the floor below a column is cracked around the perimeter of the base of the column and the floor inside the perimeter of the cracking is lower than the surrounding floor, it is an indication of a failing footing underneath the column. In this case the affected area of flooring above the column needs to be jacked up slightly above the correct height, the affected concrete flooring at the base of the column cut and removed and the column taken out. The failed footing underneath the removed concrete is removed and the fill underneath the footing is inspected for possible issues. Any substrate issue below the footing needs to be addressed. A correct footing base is prepared; then a new, adequate footing is poured and the column is then set in place. The flooring above is lowered into place.

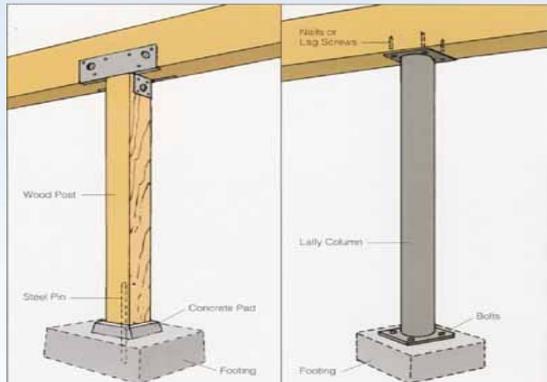
## Cutting Concrete



## Prep for the Footing



## Remodeled Posts



## Installing Rebar





## Bidding Structural Damage

Once the assessment is completed, the bid is used to communicate the assessment to Safeguard. At Safeguard we can only base our bid analysis on the information given. The following items need to be included when putting a bid into the system:

Photos need to be clear (not blurry) and show the damaged area(s). There must be photos showing the issue both at a distance and close up. For example, the close up photos of a foundation crack should include a tape measure to verify the width of a crack. Photos must be correctly labeled with the type of structural damage they show.

All damages must be included and described in detail. Any missing items must be described as well. If a support column has been removed and this resulted in damage to the structure, then all damage must be described. The missing column must be included as the probable cause of the damage.

A complete material list must be included. The list should include anything to be used. For example, a roof replacement cannot be described as 15 sq. ft. of shingles. It must include all roofing felt, water and ice shield, step flashing, wall flashing, drip edge, quantity of staples and gun nails needed as well as any roof sheeting that might have to be replaced.

A complete list of any specialty equipment to be used as well as any supporting documentation is needed. This might include a price list from a rental store for nail guns, hoses and a large capacity compressor to be rented.

### Bid Fields

**Eyeball Estimate:** How much value does the damage take away from the property?

**Bid to Remediate Damage:** How much do you need to repair it?

**Locations:** Where is the damage located?

**Size of Affected Area:** How many square feet does the damage cover?

**Source, Cause:** What is causing the damage? Did termites destroy the support beams? Is there water intrusion?

**Description:** What is the size of the damage in each affected area? What is the width of the crack? How long is the crack? Does it span the entire room? How deep is the crack? Can you see the insulation in the walls? What materials will you need to repair the damage? Are there any missing items? What equipment will you need to rent? Is the repair work within your capabilities?

## Reconvey Example

This property was conveyed to HUD with a front foundation that was crumbling and collapsing due to structural damages in the basement. The basement was filled with water, debris and safety issues. The building commissioner inspected the property, found it to be structurally unsound and deemed it uninhabitable.

Vendor failed to report there was a basement present.

01/26/12 –Winterization completed and basement not reported.

04/21/12 - Securing completed and basement not reported.

06/29/12 –Property condition reported and basement not reported.

11/30/12 - Post sale convey maintenance completed and basement not reported.

12/13/12 - Property condition reported and basement not reported.



## Reconvey Example

Property was acquired with structural damage in the basement

05/06/12 FTV, Structural damage reported

05/18/12 Foundation repair bid for epoxy injection for 8 linear feet, OA submitted and approved

06/19/12 Dry locked basement, filled cracks, photos show some cracks still present after epoxy and dry lock

No new damage reported after these orders, property reported ICC 01/08/13, property conveyed 01/24/13

The repair to the cracks was temporary and did not resolve the underlying issue; therefore, the basement wall continued to crack.



## Reconvey Example

Property was acquired with rotted and unsafe flooring. Vendor failed to report the rotted flooring. There is photo documentation to support the damages were present prior to convey and this is in the FSM's photos.

Floors were described as weak in the mortgagor neglect bid, but it was not submitted as structural damage.

01/30/13 – Initial secure. Property secured, winterized

02/07/13 – CONVEY

02/14/13 – Work per bid. Debris removed. No new damages reported



Appliances fallen through rotten floor



Rotten floor in utility room