What is the leading cause of residential structural failures? Did you guess expansive soils? Soft organic soils? Improper drainage? Low-strength concrete? Poor framing practices? Nope, none of those. What may surprise you is that the leading cause of structural failures is avoidable. Warnings to avoid this significant construction liability are found in project specifications, common codes, and industry standards. What then is this real hazard that is misunderstood and overlooked? Improperly compacted structural fill material.

2-10 Home Buyers Warranty® (2-10 HBW®) is the national leader in new home structural warranties, with nearly 40 years of forensic analytics and investigations that concludes fill material is the leading cause of residential structural failures. These failures can occur anywhere that existing or new fill material is used to support a foundation. Since 80% of all structural failures are due to soil movement beneath the foundation, proper use of structural fill is every bit as critical as determining building location, selecting trade partners, and a sellable home design.

Structural fill material must be of sufficient quality and density, or else it can consolidate causing excessive settlement which may result in damage to foundations, framing, and interior finishes. Structural distress resulting from improper fill is likely to begin soon after construction is completed. Due to common over irrigation of the new landscaping and concentrated roof drainage, the fill quickly consolidates under the new foundation load and it is saturated and further weakened. Less than a one foot thickness of improper fill may cause serious distress. The damage caused by fill is typically more severe and costly to repair than other causes of structural failures. This is because the entire foundation is commonly underlain by fill. The average cost to investigate and repair a qualifying fill claim is about $50,000. This does not include the cost of the home builder’s reputation for quality construction practices.

To avoid structural failures caused by fill material, builders should confirm that prospective land to be developed with “existing” fill was properly compacted and tested. Developers typically sell land “as is”, leaving the home builder liable for any existing fill. “New” structural fill to be placed by the home builder should be properly compacted and tested to verify the density. This is an industry standard practice, and a requirement of the local, state, and International Building Codes, the building department, plans and

![Land for Sale](image_url)

**Unearth the No. 1 Cause of Structural Failures**

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Dozers and loaders spread their weight over wide tracks or tires to avoid getting stuck, and are not designed to impart sufficient compactive effort like a true soil compactor.

if proper compaction has been achieved to protect the home builder’s liability.

Home builders can rely on the expertise of a geotechnical engineer as needed in order to identify existing undocumented fill, specify proper cut and fill methods, specify fill quality and compaction criteria, identify onsite and offsite fill sources, and test for proper fill density. The engineer can also assist the home builder to avoid other common problems associated with improperly compacted fill such as slope failures, retaining wall failures, and drainage problems.

In summary, diligent practices regarding structural fill material include:
1. Check prospective land for existing undocumented fill
2. Check fill quality and use proper fill placement methods
3. Use the proper equipment for fill compaction
4. Test and document fill density
5. Utilize a geotechnical engineer as needed

Structural failures caused by fill material are avoidable. Proper fill placement will help protect a home builder’s liability and hard-earned reputation.