



# Lightweight Subfloor Reduces Structural Dead Load

**Project Summary:** Adaptive Reuse of parking garage

**Use:** Creative Office/Loft Space

**Challenge:** Deep Subfloor Pour with Weight Restrictions

**Location:** Washington, DC

**Solution Components:**

- Keedelath HC
- Platform Primer P360
- Platform L3

Renewal of America's cities involves the adaptive reuse of existing structures and provides unique opportunities to contribute to lifestyle, sustainability and preservation. The approach is noted by Gensler, worldwide architecture and design firm;

*"...adaptive reuse focuses on taking a building that's past its prime and renovating it for new purposes in line with contemporary technological and social needs. If we want to create more sustainable cities, adaptive reuse is one of the most sound strategies we can implement."*

A Gensler Publication: Dialogue 35;  
["Adaptive Reuse Strategies for A Net-Zero Future."](#)  
Todd Heiser and Benjy Ward

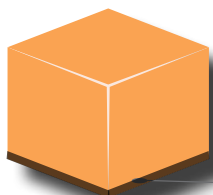
Adaptive reuse (repurposing) creates new living spaces with unique character. Manufacturing sites become urban lofts, parking garages become office spaces, historic sites become mixed office/retail/high end hotel spaces and so much more. While adaptive reuse transforms neglected parts of our communities into vibrant new living spaces, it is not without challenge.

Older structures typically require extensive remodeling and associated structural strengthening to address code, complete repairs and facilitate today's working and living environments. Early in the repurposing process, the loading capacity (dead & live) of the structure will be evaluated and engineered to meet current codes and project requirements. Repurposing a structure with safety, functionality and desirable aesthetics often results in adding unacceptable structural load. Reducing the load (weight) while producing a desirable outcome can be a challenge.

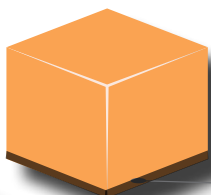
When a build requires weight reduction, the flooring contractor (or associated sub-contractor) is expected to be part of the solution! Addressing uneven substrates of questionable quality, combining several rooms into a larger open area or leveling a severely sloped parking garage implies adding significant weight (dead load) to the existing structure. In these adaptive reuse cases, the subfloor must meet flatness and levelness (FF & FL) specifications, tolerate aged/compromised substrates and address weight loads.

**Typical SLUs:**  
±125 lbs ft<sup>3</sup>

**Lightweight:**  
±70 lbs ft<sup>3</sup>



1" = 10.4 lbs ft<sup>2</sup>



1" = 5.8 lbs ft<sup>2</sup>

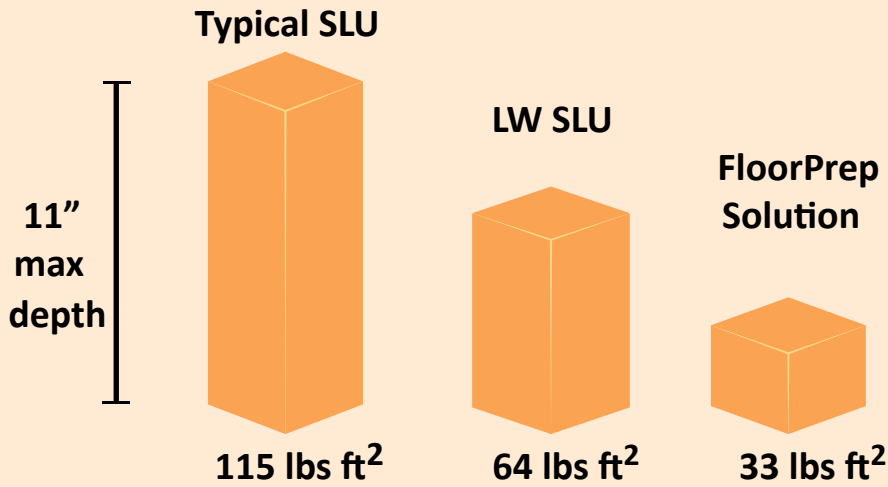
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# Lightweight Subfloor

## REDUCES STRUCTURAL DEAD LOAD

### POUR DETAILS



Flooring contractors often turn to lightweight self-leveling underlayments (SLU's) to smooth the floor and adjust the floor elevation while reducing the weight of a typical SLU by almost 50%! The lightweight SLU's are subsequently capped with 3/8" traditional SLU to ensure adequate surface strength to support finished flooring requirements. Lightweight SLUs are typically adequate when the application thickness is under a couple inches. However, what does one do when the required depth of pour is extreme, or the structure has the most stringent weight limitations? In these cases, a more aggressive approach to reducing the weight of the "subfloor elevation adjustment" is required.

FloorPrep.com was invited to participate in such a project via Advantage Flooring of Hanover, MD. The team developed and installed an innovative system that provided the maximum available weight reduction on the [Bernstein Management Corporation project, 1222-22nd St. NW., Washington, DC](#). The 5 story, 58,000 ft<sup>2</sup> former Capitol Cadillac showroom (circa 1922) and most recently White House vehicle garage (1963-2017), was being repurposed to "creative loft/office space."

Given the nature of the building, subfloor areas required depths of up to 11" to realize design elevations. A conventional SLU installation would add unacceptable dead load to the structure. Utilizing FloorPrep's Lightweight Solution, the 11" lift weighed less than 33 lbs ft<sup>2</sup> or (36 lbs ft<sup>3</sup>), about 50% the weight of a lightweight SLU and 29% the weight of a typical system!

Those who occupy the transformed space will certainly appreciate the excellent example of adaptive reuse. However, they may be unaware that their space represents the cutting edge of adaptive reuse and maximum weight reduction!

FloorPrep.com offers complete subfloor solutions for new construction, renovation, adaptive reuse, sound attenuation, fire ratings, floating or bonded installations, commercial, residential, wood, gypsum, or concrete substrates. Contact FloorPrep.com Technical Services for your project consultation.

