8130 – Interior Systems

1.1 A NOTE ON ILLUSTRATIONS

A. All figures in this chapter section are simplified versions of a possible architectural detail/assembly and are not intended as construction details.

1.2 STEEL STUD AND WALLBOARD

A. Application

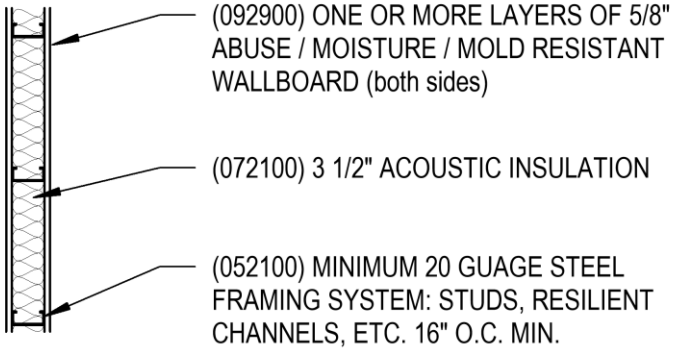
1. Reference Chapter 5 and Chapter 6 space plates to see where use of Steel Stud and Wallboard is acceptable. It should be avoided in areas that will see high abuse, unless it has appropriate wall protection provided.
2. Extend to deck and seal perimeter.

B. Components

a. Screw attached to studs or resilient channels.
b. Fire Resistance rating
c. Acoustic rating
d. Level 4 drywall finish
e. If interactive projectors are involved, a higher level of finish may be required behind the technology, depending on the surface being installed to receive the projection. Confirm requirements with technology products.

C. Performance

1. System shall provide abuse resistance and acoustic separation. Reference Chapter 5 and Chapter 6 Space Plates for acoustic requirements for different room types.
2. Seal all openings and penetrations.
3. **Figure 1.1-A: Steel Stud and Wallboard**



1.3 WALLBOARD PROTECTION GUIDANCE

A. Wallboard Protection Products

1. Corner Guards (on exposed drywall corners)

a. It is recommended to install drywall corner guards at all exposed drywall corners where the corner is jutting out into a space. Schools are built to last for a long time, and exposed corners see wear and tear when exposed to activity. There are clear plastic products that are not too visually intrusive, or metal products that can be considered. Drywall manufacturers continue to develop products that are part of their system as well, so that they are protected from initial installation without being as visible as systems installed after the wall is constructed.

2. Wall Tiling (on “wet walls” in restrooms)

a. If an individual restroom is going to have drywall on the interior, minimally, the wet wall (the wall where the toilet and sink are located) should have wall tiling to protect the wall from the wet environment. The minimum height to be considered is 3'-0". The other exposed surfaces should have an epoxy paint so they can be easily cleaned.

3. Wall Covering/Protection (In Corridors + High Traffic Areas)

a. It is generally not recommended to place drywall finish in corridors or other high traffic areas without also providing wall covering or protection. It has been found that exposed drywall, even when abuse resistant, sees too much wear and tear from student traffic and the amount of activity in a school. Things like bookbags, writing utensils, nearby furniture, and general student activity can lead to a high amount of maintenance for a school district. Therefore, if drywall is considered in a high traffic or high activity area, it is recommended that a wall protection product be considered. Wall protection comes in 4'x8' or 4'x10' panels, so to be economical, a district could consider a 4' tall application in areas where primarily protecting from furniture, or younger grade levels. The 8' or 10' applications are appropriate when a full wall needs to be protected.

1.4 MASONRY WALLS

A. Application

1. Masonry walls are acceptable in all applications.
2. Extend to deck and seal perimeter.

B. Components

1. Concrete Masonry Units.
2. Width can vary depending on the height of the wall, acoustic requirements of a space, and fire resistance rating requirements. These factors could also require that the wall be grouted solid.

C. Performance

1. The system is naturally highly abuse resistant. Thickness and fill can be modified to meet different acoustic and fire requirements.

1.5 MOVABLE WALLS (OPERABLE PARTITIONS / OVERHEAD DOORS)

A. Application

1. These should be considered where it is desired to have the ability to temporarily combine a space. Examples include between classrooms, in a resource room that may want to sometimes function as small group rooms, or where classrooms may want to extend into an extended learning area.

B. Components

1. Acoustical Panel Partitions
2. Frame
3. Accessories

a. Markerboard or Tackboard surfacing
b. Pass through doors (on operable partitions)
c. Windows

C. Performance

1. When closed, the system (including structure and wall above the system) should provide acoustic requirements listed for the space.

1.6 FLOORING TYPES, LIFE CYCLE AND COST COMPARISON

A. Introduction

1. Providing the best possible building at the lowest possible cost is a goal but this often results in the selection of materials based on the lowest initial cost. There is little benefit to a facility if low initial cost materials are selected and the maintenance costs are beyond the facility budget and staffing ability. This often results in the neglect of proper maintenance procedures and the need for more frequent flooring replacement.
2. The true life of a floor can vary by 10 years based on the quality of the maintenance regimen.

B. Primary Concerns

1. Initial Material/Installation Cost
2. Cleanability
3. Aesthetics
4. Acoustical control
5. Indoor Air Quality
6. Overall Life Cycle Decisions
7. Installation Workability
8. Security (slip/fall issues)

C. Curing/Dry Time Following Maintenance

1. Carpeted floors require a minimum of four hours down time after being soiled (45 minutes to clean plus 3 hours to dry).
2. Resilient floors with finish require 2.5 hours down time on a regular basis.
3. Resilient floors without finish require 20 minutes to clean (no “dressing” dry time).

D. Color/Pattern and Wear Considerations

1. Darker floor materials do not tend to fare better than lighter colored floor materials.
2. Mid-range color value floors with a pattern fare the best.
3. Visually active patterns are more likely to hide stains than solid, non-patterned flooring.

E. Resilient Flooring Considerations

1. Floor materials not requiring any added finish will be the least expensive and the most environmentally responsible choice over the life of the installation.
2. Standard VCT is generally not recommended among resilient flooring options because the material is a porous blend of limestone (85%) and vinyl fillers. It is the least expensive resilient flooring material and is one of the most expensive floors after considering life cycle replacement and maintenance costs. The cost to maintain VCT is nearly twice the cost of cleaning other resilient floors materials. The end users of the building, especially the maintenance staff, are exposed to VOC’s released from the finish and strippers. The usable floor surface is the polish, and increasing the number of coats of polish increases the life of the product. It is warrantied for 5 years.
3. VCT with a vinyl content greater than 30%, referred to as enhanced vinyl tile options, can save maintenance costs because these materials generally require fewer coats of polish. These materials still require the same stripping and reapplication of protective floor polish as standard VCT.
4. Linoleum and rubber do not mar easily, nor do they require finishes, strippers or extensive maintenance. Spray buffing may be done if a higher sheen is desired, but it is not required. These floor materials are considered to have acoustical benefits by reducing the sound of foot fall other percussive noises. Both are available as tile or sheet and the sheet product may be flash coved for spaces requiring a continuous floor-to-wall transition. These floor materials are considered to have a 30-year lifespan when properly maintained.
5. Solid vinyl tile is available both as Class I homogeneous and Class III laminated with a decorative wear layer (LVT). Solid vinyl, also available as a sheet material, has a higher PSI rating and requires less maintenance than other vinyl flooring options. LVT must be specified with a commercially-rated wear layer to resist scratching and abrasion. As the wear layer becomes abraded polish may be applied but it commonly requires replacement in 10 years or less. LVT manufacturers suggest that this product should not be installed in high-traffic areas of a building

to maximize its use.

F. Carpet Tile Considerations

1. Carpet tile is easy to install, rotate, modify, and replace. Randomly patterned modular carpet in ashlar installations and quarter turned installations of solid modular carpet draw the eye away from obvious edges, spots replacements and traffic patterns.
2. Quality commercial carpet is engineered to disguise soils and stains. This sometimes masks the need to vacuum and clean on a regular basis. To be truly cost-effective, maintenance must be carried out with systematic frequency over the life of the carpet. A consistent and effective maintenance program can dramatically extend the life of the carpet.
3. The expense of carpet is justified in areas where impact noise and comfort underfoot are considerations. Carpeting has the added advantage of holding allergens until the carpet has been appropriately cleaned, preventing these substances from floating in the air and causing irritation. A moisture barrier and high-quality fiber increases cleanability and reduces the need for replacement.

G. Hard Surface Flooring Considerations

1. There are various ways to achieve more permanent flooring solutions for buildings with hard surface flooring options. Sealed concrete and sealed concrete with a color sealer allow exposure of the concrete substrate without adding a separate floor material. These methods require the floor slab to be protected during construction and require mechanically abrading and reapplication of the topcoat every 5 to 7 years. Mechanically polished concrete offers design opportunities with color stain and scoring patterns. Polished concrete also requires that the slab be protected during construction and it requires yearly mechanical reburnishing as wear patterns quickly become visible. Resinous flooring can be designed with decorative flakes or quartz aggregates, allowing various color and pattern options. Resinous flooring has a low overall maintenance cost but requires sanding and reapplication of the urethane coating every 5-10 years, depending on the foot traffic wear on the floor. Porcelain tile has a low overall maintenance cost and larger format tiles will reduce the number of grout lines. High performance grouts should be specified to keep maintenance costs low and preserve the color of the grout. Epoxy terrazzo has been long-considered an attractive, high-traffic, low maintenance floor material with unlimited options for design and pattern. It has the highest installation cost and will need stripping and resealing every 15-20 years.

H. Protecting Flooring

1. Chair glides, glide covers, casters and caster covers appropriate to the flooring type as well as entrance walk-off mats are essential to maintaining the floor appearance. Glides covers will require replacement and this should be factored into the floor selection process. The minimum recommended entry mat length for LEED is 10 feet and adding up to 30 feet between the exterior (under canopy) and the interior vestibule and entrance path is considered to remove all moisture and debris from occupants' shoes.

I. Life Cycle and Cost Comparison (see table below)

Flooring Life Cycle Cost Study

Material	Material + installation per SF	Warranty in years (varies by manufacturer)	Expected system service life in years	Anticipated number of replacements in 50 years	Recommended Maintenance	Recommended Maintenance Frequency	Finished Sheen	Maintenance per year	Total life cycle cost
RESILIENT FLOORING									
Vinyl Composition Tile (VCT)[4]	$	5	5-10	4-5 [1]	Damp mop 3-5+ coats wax, buff, strip	Daily/weekly 2x per year	Polished	■■	▲▲▲
Enhanced Vinyl Tile Options ≥30% Vinyl, Quartz	$$	10-15	10-15	4-5 [1]	0-2+ coats wax, buff, strip	Daily/weekly 2x per year	Polished	■	▲▲
Linoleum Sheet	$$	10-30	30	1	Damp mop Optional: Spray buff	Daily/weekly 2x per year	Matte Low luster	■	▲
Linoleum Tile	$$	10-30	30	1	Damp mop Optional: Spray buff	Daily/weekly 2x per year	Matte Low luster	■	▲
Luxury Vinyl Tile (LVT)	$$$	10-20	10	4 [2]	Damp mop Optional: May be polished	Daily/weekly 2x per year	Matte Low luster	■	▲▲
Vinyl Tile or Sheet - Homogeneous	$$$	10-25	10+	3	Spray buff or 0-2 coats wax, buff, strip	Daily/weekly 2x per year	Low luster Polished	■	▲▲
Rubber Tile or Sheet, 2.0 mm	$$$	5-15	30	1	Damp mop Optional: Spray buff	Daily/weekly 2x per year	Matte Low luster	■	▲
Rubber Tile or Sheet, 3.0 mm	$$$$	5-15	30	1	Damp mop Optional: Spray buff	Daily/weekly Twice per year	Matte Low luster	■	▲▲
SOFT SURFACE									
Carpet Tile	$$	Lifetime Limited	15+	3	Vacuum Water extract	Daily/weekly 2x per year	-	■	▲
HARD SURFACE									
Sealed Concrete New slab, protect during construction	$	-	40+	0	Damp mop Mechanically scrub Strip, reseal	Daily/weekly As needed 5 years	Low luster	■■	▲
Sealed Concrete with Color Sealer New slab, protect during construction	$$	-	50	0	Damp mop Mechanically scrub Strip, reseal	Daily/weekly As needed 5 years	Low luster	■■	▲
Mechanically Polished Concrete New slab, stained with scored pattern	$$$	-	50	0	Damp mop Mechanically scrub Burnish	Daily/weekly As needed Yearly	Polished 400-800 grit	■■	▲▲▲
Resinous Flooring Decorative flake or quartz	$$$$	-	50	0	Damp mop Mechanically scrub Recoat	Daily/weekly As needed 5-10 years	Low luster or polished	■	▲▲▲
Porcelain Tile	$$$$	-	40+	1	Damp mop Mechanically scrub	Daily/weekly As needed	Matte	■	▲▲
Epoxy Terrazzo[3] 2-3 color pattern	$$$$$	-	50	0	Seal, damp mop Strip, reseal	Daily/weekly 15 years	Low luster or polished	■	▲▲▲

[1] Meeting or exceeding the manufacturer's recommended finish coats may extend the lifespan of the installed product.
[2] Limiting installation areas to low-traffic areas and areas with fixed or no loose furnishings may extend the lifespan of the installed product.
[3] This is not a co-funded floor material; may be acquired through a locally funded initiative (LFI).
[4] A variance is required for this floor material.

KEY	Material + installation per SF
$	lowest
$$	low
$$$	medium
$$$$	high
$$$$$	highest

KEY	Maintenance per SF
■	lowest
■	low
■	medium
■■	high

KEY	Total life cycle cost
▲	low
▲▲	medium
▲▲▲	high

END OF SECTION