Durability by Design:

The Application and Benefits of Targeted Wall Protection

Architectural Products

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Introduction

Architects and interior designers pour their hearts into creating beautiful spaces. Facility owners and managers want their new buildings to look good long after the ribbon is cut. How can durability be built into the initial design?

This paper offers an in-depth examination of the materials and systems used for all levels of wall and door protection in interior applications. It also presents placement strategies for effective protection based on damage potential, and argues that first-cost value engineering ends up costing building owners more in the long run.

Through this white paper, we'll help you:

1. Explore how the proper installation of wall protection materials – when specified with standard wall construction options – determines their effectiveness in interior applications.
2. Recognize when to specify wall cladding vs. targeted wall protection.
3. Examine the best-practice options for achieving effective and aesthetically pleasing interior protection.
4. Discover strategies to successfully design for the long term by avoiding the trap of first-cost value engineering.

Let's begin by talking about what it means to design for the long term.

Developing a long-term mindset

Decisions made every day about interior protection elements have a lasting impact on how the facility will look after it's occupied.

Unless the real costs of those elements are factored into the decision making process, facility owners will continue to trade long-term performance for short-term savings.

A common practice in new construction and renovation projects is to focus on first costs. Sure, we realize every construction or renovation project has a budget, and keeping the project within that budget is an important element of ensuring a successful project.

However, the following real-life example shines a light on how a first-cost focus is harmful in the long run.

A major retail chain did not dial interior protection into their construction standards for their new stores. Almost like clockwork, about six months after the grand opening, the

store manager calls to complain of battered checkout lanes, scratched walls and halls in the fitting rooms, etc. The manager's tale of woe inevitably ends with: "I need some corner guards, wall guards and cart bumpers."

The application of life-cycle costing vs. first-time costs enhances user satisfaction, while reducing costs over the long term.

Walls take impact – what's behind counts, too

As experts on wall protection, we are often called in after a project has been completed, and once the evidence of abuse and damage to the walls & corners is apparent in cases of heavy abuse, our recommendations often include replacing sections of drywall and adding wall protection. The cost is higher to retrofit than it would have been as part of the initial project, so consideration of wall construction options is appropriate here.

It's important to think "behind the pretty" … meaning what's behind the paint or wall covering or wall cladding plays a vital role in overall resistance to impact. The four common interior sub-wall products are:

Drywall – baseline wall construction.

Cement Board – offers increased resistance to higher level of abuse, may be used in moisture applications. Often used in selected areas requiring moisture resistance.

Fire-rated Plywood – offers increased resistance to higher level of abuse & more secure fastening of mechanical systems to wall, i.e. handrail, wall guard. Used in targeted areas to increase protection from known or anticipated heavy abuse.

CMU wall systems, (Concrete Masonry Unit) – *2 hour fire rated walls in school gymnasiums & mechanical rooms.* May be clad with wall protection to reduce painting or soften the look aesthetically. Must be sanded to matte finish with a thin coat of compound applied first to prevent telescoping through extruded plastics. Adhesive takes longer to set up because it cannot evaporate as readily as with the other substrates listed.

A word about Blocking and Strapping

In certain healthcare applications, especially in bariatric treatment facilities, it may be necessary to install a heavy duty form of support – either metal strapping or wood blocking. These materials reinforce the mechanical attachment of handrails & wall guards to the wall. Note that metal strapping may eliminate issues with local fire ordinances versus using wood.

What is Metal Strapping?
20-gauge metal framing with vertical studs spaced 16" on center. Horizontal metal strapping to be 16 gauge x 6" wide. A layer of ½" plywood to be mechanically fastened to the metal framing followed by 5/8" gypsum board

What is Wood Blocking?
20 gauge metal framing with vertical studs spaced 16" on center. Horizontal wood strapping to be 2x6 board. A layer of ½" plywood to be mechanically fastened to the metal framing followed by 5/8" gypsum board.

Elements of Targeted Wall Protection

We're now going to turn our attention to the individual elements of targeted wall protection, and we need to define the terms:

Targeted Wall Protection is a set of specific products designed to absorb impact and protect the underlying wall. These products cover only part of the wall, but provide a higher level of impact resistance – for example: corner guards, wall guards, etc.

The other set of materials falls under the name Wall Cladding – think of applying materials to protect large areas over the entire face of the wall.

When starting in on a new construction or renovation project, it is wise to do some prediction and planning when it comes to preventing damage, specifically identifying the potential causes and levels of abuse and then matching the targeted wall protection based on its size, impact absorption, weight bearing (for handrails) and the aesthetic desired.

Be mindful of the profile – consider the product's protrusion from wall - from flush to 3"+ -- and consider the traffic flows– both pedestrian as well as equipment and carts moving through the space.

And as we mentioned above, consider the protection product's combined strength with wall construction. We might add that in higher abuse potential spaces, a combination of wall cladding and targeted wall protection may be warranted.

We'll take a look now at the individual product families in Targeted Wall Protection.

Wall Guards

As the name implies, that's what this product does … it guards the wall. Sometimes these are also called Crash Rails, and the two most-common forms are:

Wall guards are designed to take impact dead on the face of guard. Cover materials include all extruded plastics, and some may contribute to LEED® credits. They offer long service life with durable cover and end caps, which can be replaced.

The retainer mechanically fastens to wall and is available in 12' lengths. An alternative fastening method is a series of 2" retainer clips that eliminate cutting aluminum retainers on site. Some wall guard systems can be factory formed to create a radius.

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Rub Rails

These flush-to-the wall panels are made from extruded plastic, come in many colors and textures, and are installed with adhesives. Rub Rails offer a long lifecycle and are easy to clean.

Chair Rails

As their name implies, Chair Rails are designed to prevent the back of a chair from rubbing on the wall behind it. Multi-component chair rails include a retainer, end caps & extruded plastic cover – like the wall guards shown earlier. They are generally installed 32"-36" above the finished floor.

Chair rails designed for minor impact applications can also come in molded wood shown here) or Medium Density Foam (MDF) boards that can be painted or stained. Do note that the wood and foam board options can show scratches and dents over time and may require repair and repainting.

Handrails

The following illustration shows the two, most-common types of handrails:

Multi-component handrails are often dual purpose: They offer a leaning and support function of a handrail, with the addition of a wall guard component to prevent wall damage. Important factors for these handrails include:

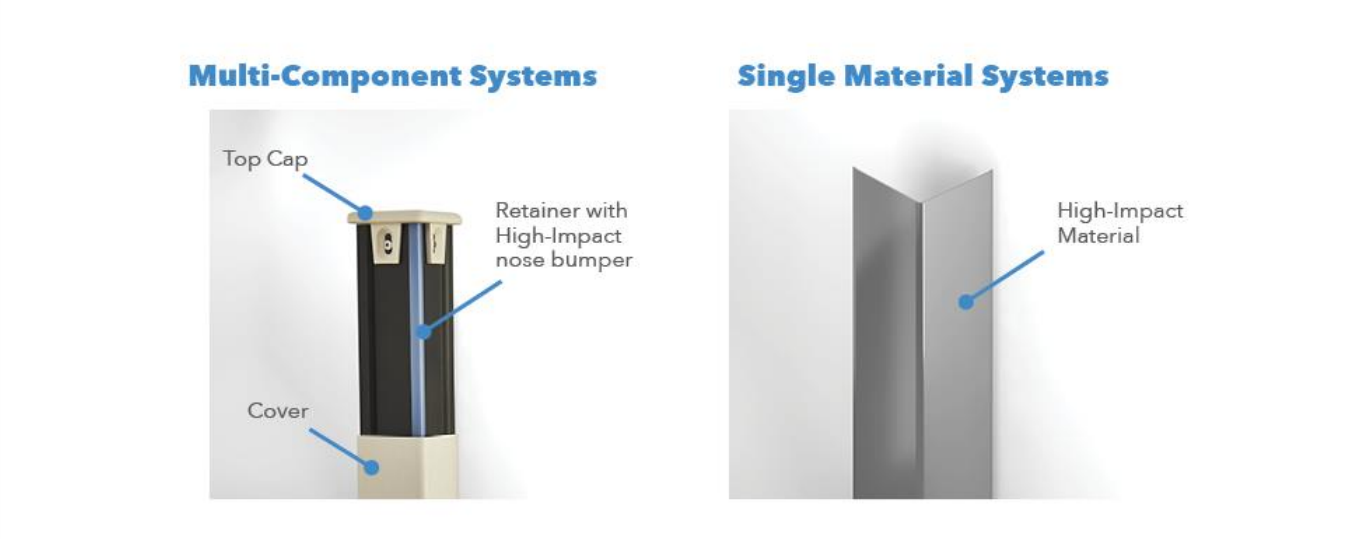
- Availability in various shapes, colors and combinations
- Aluminum retainer, molded plastic brackets & returns with extruded covers
- Brackets mechanically fasten to the wall
- Returns ***stabilize the system*** – some screw into the wall to provide additional support
- Class A or UL fire rated
- ADA compliant height = 34"-38" above finished floor
- Covers/returns may be replaced to update color or texture
- Separate bumper portion *may* extend out beyond top rail to protect rail from abuse

A Best Practice when specifying handrail installation with wall cladding is the returns must sit flush against vertical surface to prevent any potential for snagging – think like a women's purse strap. – and they cannot straddle different thicknesses.

Corner Guards

They are considered to be the unsung heroes of interior protection – the humble corner guard. And this is why you need them … Corners in corridors are some of the most vulnerable places in a building, frankly because they're … well, corners. They stick out … sort of. And that makes them highly susceptible to damage.

Here are the two most-common forms of corner guards:



The common form of corner guard is surface mounted. It can have an aluminum or extruded plastic retainer. Covers can come in a rainbow of colors, patterns and woodgrains. Top caps finish the look of the guard, and prevent dust and debris from getting behind the guard.

Single-material systems can come in: extruded plastic, metals – most often stainless steel, and heavy-duty materials like rubber, mainly for back of house, loading docks and warehouses.

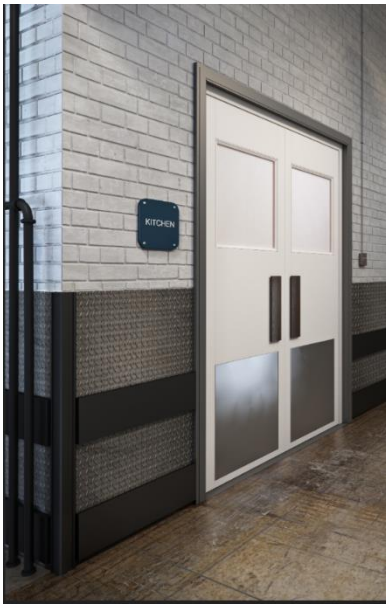
Most corner guards are affixed either mechanically with hardware or by adhesive. Single-material corner guards can also come with pressure-sensitive tape – think: peel and stick.

A word about tape-on corner guards … what we can tell you from our experience is this: Go cheap and you're asking for trouble. Sure, it's easy to run down to the local home improvement megastore and buy inexpensive, clear polycarbonate corner guards. They sell them by the barrelful … and there's reason. They often get smashed or rip off the wall … we wouldn't be surprised to learn that at least half of the cheap corners guard purchased are replacements.

Stainless steel corner guards are some of the best options when heavy-duty protection is needed. But … they also can provide a striking aesthetic the fits the designer's vision for the décor, as shown here at left. These metal guards can deliver brawn and beauty.

For kitchen and food prep areas, 304 and 430 stainless conforms to NSF standards for direct food contact.

Stainless steel corner guards are more expensive on a first-cost basis, but they deliver years of durable service.



Surface mount rubber corner guards withstand very heavy abuse – think of spaces like this restaurant kitchen (at right). They have a very long lifecycle.

Rubber corner guards are also an excellent choice for service corridors with high traffic and higher damage potential.

Best Practices …

when specifying surface mount corner guard installation, it's an aesthetic decision...

Corner Guards may stop above the base trim...

or they may extend to the floor, which also reinforces the wall base.

Single material tape-on corner guards

Earlier we talked about tape-on corners guards, and the truth is, they do work in many cases, but … and this is important …they work where the abuse risk is low to moderate.

These corner guards offer a much better aesthetic than clear polycarbonate, which tends to yellow. Another unsightly problem with clear poly is that dust, debris, even insects can get trapped behind them …and is then "on display."

Extruded plastic corner guards come in various wing sizes & lengths, and both 90 & 135 degree bull nose types are available.

Flush Mount Corner Guards

The use and installation of flush mount corner guards is usually reserved for new construction or major renovation. That's because the design of the product is for the metal bead "wings" of the corner guard to rest along drywall, thus allowing the plane of the corner guard to be flush with the wall, as opposed to surface mount guards that protrude a bit.

Features and benefits of flush mount corner guards include:

- Provides high impact protection - generally floor to ceiling
- Various wings sizes & angles
- One hour & two hour fire rating is an option
- Long life cycle – covers may be changed to update colors

Conclusion

No matter …

- What type of building
- Which area within the building
- The type of wall construction …

There's a good chance it will need some type of protection from wear and tear. The important thing to remember is if you want your interiors to make and impact … it matters how well your walls can take an impact!

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