



Prefabricated Interior Wall Panels for Blast and Spall Protection Life Shield® LS-RF/URF Series

SECTION _____

Part 1 - General

1.01 Work Included

A. Furnish all necessary material, labor, and equipment required to prepare designated areas and install the Prefabricated Protective Interior Wall Panels.

1.02 Related Work

A. All drawings and general provisions of contract including General and Special Conditions and Division I, excepting special Submittal and Quality Assurance provisions in this section.

B. Prefabricated Protective Interior Panels are installed on the "interior" of a wall and mechanically attached to opposing sides of the structure (ceiling and floor or columns). Verify the engineering documents obtained correspond to the required sections to be protected below.

(Select Sections that apply to your specific project.)

CEILING – Section _____

FLOOR – Section _____

DRYWALL- Section _____

CAST-IN-PLACE CONCRETE- Section _____

UNIT MASONRY- Section _____

(OTHER)- Section _____

The Prefabricated Protective Interior Panels may have a "finish" applied directly to the surface of the panel per section 3.02 or may be covered with drywall.

1.03 Quality Assurance

A. Manufacturer's Qualifications

Obtain Prefabricated Protective Interior Panels from a single manufacturer with verifiable field test data for protection from the effects of blast events.

B. Contractor's Qualifications

Installation must be performed by a manufacturer-certified contractor and must be approved in writing by the manufacturer of the Prefabricated Protective Interior Panels. This is mandatory to meet the requirements if the Department of Homeland Security SAFETY Act provisions.



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1.04 Warranty

A. The manufacturer shall furnish a standard manufacturing warranty for the Prefabricated Protective Interior Panels of 10 years and the certified contractor shall provide a guarantee or warranty pertaining to the installation.

B. Installation sub-contractor shall provide a _____ year limited joint warranty on a single document against defects of material and workmanship. Warranty shall commence on the Date of Substantial Completion.

C. Any defective work discovered during the _____ year warranty period shall be corrected by the installation sub-contractor in accordance with the manufacturer at no additional expense to the Owner.

D. The _____ year warranty excludes failure caused by moisture vapor emissions (MVE), negative-side moisture migration, movement exceeding 1/8", failure of the substrate, abuse, conditions that exceed the limitations of the materials, sufficiency of the design, incidental and consequential damages, and other causes beyond the installation sub-contractor's control.

1.05 Submittal

A. Product Data

Submit manufacturer's specifications on the Prefabricated Protective Interior Panels for blast and spall protection, including physical properties and performance properties and all tests described in part 2.01 B in this section. For any of these tests not listed in the manufacturer's standard nationally published data, the manufacturer must supply the missing data from an independent test laboratory tested according to the referenced standard. Furnish _____ sets of this information.

B. Contractor Experience

The installing contractor must be approved by the manufacturer of the Prefabricated Protective Interior Panels or provide a list of _____ projects using either specified material or another material pre-approved for this project that they have installed during the last _____ years. Information shall include: project name, square footage, and contact name with owner address and phone number. Also, the contractor shall furnish resumes detailing the experience of key project personnel including supervisors and technicians.

C. It is the intention of this Section to provide the products as named. Substitutions will be considered only when received by the Architect, Engineer or Protective Design Professional through a bidding Prime Contractor at least ten days prior to the date set for receipt of bids. Upon receipt of any such submission, the Architect, Engineer or Design Professional will determine whether or not the proposed product is an approved equal. In the event the Architect, Engineer or Design Professional determines that a proposed system is an approved equal, he will issue an addendum and notify all bidders at least 48 hours prior to receipt of bids. No substitutions will be considered after contract bid date.

D. The contractor shall submit a copy of the manufacturer's packing slip, tagged for this specific job, along with calculations, signed by an officer of the primary material supplier demonstrating that the quantity of material furnished for the project will achieve the specified coverage and mil thickness.



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- E. Contractor will acknowledge the manufacturer's terms and conditions of sale
- F. The contractor must submit shop drawings prepared by or under the supervision of a qualified professional engineer detailing the installation and mechanical attachment to the specific structural components at the ceiling and floor specific to the level of protection required.

1.06 Material Delivery, Handling and Storage

- A. Prefabricated Protective Interior Panels shall be delivered in the original manufacturer's packaging.
- B. Contractor will provide equipment and personnel to handle the materials by methods that prevent damage.
- C. The contractor shall promptly inspect direct jobsite material deliveries to assure that quantities are correct, comply with requirements and are not damaged.
- D. The contractor shall be responsible for materials furnished by him, and he shall replace, at his own expense, such materials that are found to be defective in manufacture or that have become damaged in transit, handling or storage.
- E. Store material(s) in accordance with manufacturer's instructions. Maintain temperatures within the required range.

1.07 Job Conditions

- A. The contractor shall visit the jobsite prior to beginning the installation of the Prefabricated Protective Interior Panels to evaluate substrate condition, including the extent of repairs required, if any. Cost of repair of the substrate cannot be predicted prior to inspection, and therefore is not encompassed within the installation estimates. Any damp conditions or water leakage should be resolved prior to application of the panels. A completely sealed installation in these conditions may lead to mold growth.
- B. The contractor should exercise care during system installation to protect surrounding substrates and surfaces, as well as in-place equipment. The contractor shall use his discretion as to the physical means used for protection. Any costs incurred for resultant damage from negligence or inadequate protection shall be the sole responsibility of the contractor.
- C. Maintain lighting at a minimum uniform level of 50 or more foot candles in all areas where the Prefabricated Protective Interior Panels is being installed. It is the recommendation of the manufacturer that the permanent lighting be in place and working during the installation.

Part 2 - Products

2.01 Materials

- A. System Overview
The Prefabricated Protective Interior Panels shall be Life Shield® Pre-Fabricated Protective Panels including standard mechanical fasteners.



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B. Performance Properties

Performance of the Protective Interior Panels is dependent upon the properties of the base components. The polymer panel system shall meet the following standards:

[select the appropriate Panel for the desired level of protection.]

Typical Physical Properties						
Thickness	100mils	120 mils	140 mils	180 mils	140 mils	180 mils
Reinforcement	None	None	None	None	Para Aramid	Para Aramid
Color	Translucent	Medium Gray	Medium Gray	Medium Gray	Medium Gray	Medium Gray
Shore D Hardness ASTM D 2240	>65	>45	>45	>45	>45	>45
Tensile Strength ASTM D 638	>6,200psi	>1,600 psi	>1,400psi	>1,400psi	>1,200 psi	>1,200 psi
Elongation ASTM D 638	>280%	>400%	>390%	>310%	>220%	>229%
Tear Strength ASTM D638	>950 pli	>350 pli	>350 pli	>380 pli	>350 pli	>450 pli
Energy at Break	>20,000mJ	>20,000mJ	>20,000mJ	>20,000mJ	>20,000mJ	>20,000mJ
Blast Reflective Pressure¹	>50psi	>40psi	>80psi	>80psi	>80psi	>80psi
Blast Reflective Impulse¹	>250psi-msec	>250psi-msec	>250psi-msec	>250psi-msec	>250psi-msec	>250psi-msec

¹Reflective blast pressure and impulse performance results are minimum requirements demonstrating capacity of the products independent of engineered attachment or anchoring design

C. Performance Test Results:The Prefabricated Protective Interior Panel and the engineered attachment system must have passed live blast tests under a variety of load and stand off conditions. Submit test results as required.



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Part 3 - Execution

3.01 Installation

A. General

Apply the Prefabricated Protective Interior Panels in compliance with manufacturer's written installation guidelines. It is expected that contractors or installers will utilize their expertise and experience to fine-tune the installation to jobsite requirements. There will always be a certain amount of craftsmanship required to achieve the final appearance that the customer expects.

B. Mechanically attach Prefabricated Protective Interior Panels to structural elements (ceiling and floor slabs, columns) in compliance with engineered drawings.

C. Overlap each Prefabricated Protective Interior Panel and affix in compliance with manufacturer's written instructions.

D. Cut, shape and adhere custom size Prefabricated Protective Interior Panels to conform with building design in accordance with shop drawings.

3.02 Finish Application

A. Comply with manufacturers written installation procedures and individual product data sheet application bulletins.

B. To prepare the surface of the opaque gray Prefabricated Protective Interior Panels only for subsequent finishing with interior and exterior paints, a light solvent wipe with isopropyl alcohol or denatured alcohol should be performed.

C. If the opaque gray Prefabricated Protective Interior Panels only are heavily soiled, a light sanding followed by a light solvent wipe with isopropyl alcohol or denatured alcohol should be performed.

D. For LS-URF-100 translucent Prefabricated Protective Interior Panels, cleaning should take place with a water-based cleaner and lint-free cloth

E. Apply materials in accordance with the following material coverage:



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<u>Products</u>	<u>Thickness (mils dft)</u>
<i>Blast and Mitigation Product</i> ¹	
LS-URF-100 100mil(2.4mm) Life Shield unreinforced translucent panel. Nominal 5ft (1.54m)x 8ft to 14ft(2.5m to 4.3m)	100 +/- 10%
LS-URF-120 120mil(3.0mm) Life Shield unreinforced gray panel. Nominal 5ft (1.54m)x 8ft to 14ft(2.5m to 4.3m)	120 +/- 15%
LS-URF-140 140mil(3.6mm) Life Shield unreinforced gray panel. Nominal 5ft (1.54m)x 8ft to 14ft(2.5m to 4.3m)	140 +/- 15%
LS-URF-180 180mil(4.6mm) Life Shield unreinforced gray panel. Nominal 5ft (1.54m)x 8ft to 14ft(2.5m to 4.3m)	180 +/- 15%
LS-RF-140 140mil(3.6mm) Life Shield gray panel completely reinforced with para-aramid fabric. Nominal 4.6ft (1.42m)x 8ft to 14ft(2.5m to 4.3m)	140 +/- 15%
LS-RF-180 180mil(4.6mm) panel completely reinforced with para-aramid fabric. Nominal 4.6ft (1.42m)x 8ft to 14ft(2.5m to 4.3m).	180 +/- 15%
Other: As required	

Thickness as required by third-party engineer for protective design

LS-1075¹ Fast Cure Seam Adhesive 30sec. work life
LS-2075¹ Seam Adhesive 10min work life
LS-Tape Elastomeric Seam tape

Interior Finish Coat Options

Flame Control 2020 Intumescent Fire Retardant Latex Coating	5.5 minimum
Duration, Cashmere, Harmony Latex Paint ¹	1.4-1.7

Exterior Finish Coat Options

Acrolon 218 HS	3-6
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¹ Panels and Coatings meets or exceeds the criteria set forth by the U. S. Green Building Council LEED-CI Version 2.0 and and/or LEED-NC Version 2.2. All results have been verified by our ISO 9001 Laboratory.

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