SECTION 08 60 00

ROOF WINDOWS AND SKYLIGHTS AND RETRACTABLE ATTIC STAIRS

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\*\* NOTE TO SPECIFIER \*\* FAKRO AMERICA, LLC; attic ladders, roof windows and Skylights.
This section is based on the products of FAKRO AMERICA, LLC, which is located at:39 W. Factory Rd.Addison, IL 60101Tel: 630-543-1010 Fax: 630-543-1011Email: [request info (sales@fakrousa.com)](https://arcat.com/rfi?action=email&company=FAKRO%252BAMERICA%252C%252BLLC&message=RE%253A%2520Spec%2520Question%2520(08600fak)%253A%2520&coid=46915&spec=08600fak&rep=&fax=630-543-1011)
Web: <http://www.fakrousa.com>
 [ [Click Here](https://arcat.com/company/fakro-america-llc-46915) ] for additional information.
FAKRO is a private, family owned company which employs over 3300 workers all over the world. Established in 1991 by Ryszard Florek in Nowy Sacz, FAKRO has become the most dynamic and fastest growing company of skylights and attic ladders in the world, with products sold in such countries as UK, Austria, Spain, the Netherlands, Ireland, Germany, Poland, Russia and Hungary. It is no wonder that FAKRO is one of the top distributors of attic ladders and skylights in the world, always improving and updating technologies.
In order to meet our own high standards, we put a lot of pressure on the importance of health, safety, security, environmental impact as well as cost efficiency of our products.
We would like to introduce to you the full range of quality products available from Fakro. To satisfy your individual requirements, not only do we offer a wide variety of quality standard sized skylights and windows, but we also can design and build custom non-standard sizes and shapes depending on your particular needs. Fakro offers many interesting solutions for your needs - each one guaranteeing complete safety and comfort in your architectural loft or attic space. The superior technical qualities, practical features, and elegant designs of our products allow us to make them available not only in Europe but also in America and around the world.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Skylights:
			1. Deck mounted. (FX) (FV) (FVE) (FVS)
			2. Curb mounted. (FXC) (FXR)
		2. Roof Windows:
			1. Top hung and pivot windows.(FPP-V) (FTP-V P2)
			2. Highly energy-efficient windows. (FTT U6) (FTT U8)
			3. High pivot. (FYP-V U3 proSky) (FDY-V U3 Duet proSky)
			4. "L" shaped combination window. (BDR, BDL) (BXP P2) (BXP P5) (BVP P2) (BVP P5)
			5. Energy efficient fixed roof windows. (FNP U5) (FNP P5)
		3. Flat Roof Skylights and Hatches:
			1. Deck mounted. (DEF) (DMF) (DXF)
			2. Roof access. (DRF DU6)
			3. Insulated access door. (DRL)
			4. Walkable Skylight. (DXW DW6)
		4. Flashings for deck mounted skylights. (EL) (EL-T) (EL-AT)(EH-A) (EH-AT) (EH/A-AT)
		5. Deck mounted balcony windows. (FGH-V P2 Galeria)
		6. Roof access windows. (FWU)
		7. Control Systems.
			1. Radio controls.
			2. Manual controls.
		8. Accessories for Skylights and Roof Windows:
			1. Internal accessories for skylights and roof windows. (SRP) (ARP) (SRF) (ARF)
			2. External accessories for skylights and roof windows. (SMZ) (AMZ) (AMZ/F)
			3. Manual accessories.(SZS) (SZK)
		9. Light tunnels:
			1. Rigid. (SR Series)
			2. Flexible. (SF Series)
		10. Attic Ladder and Doors:
			1. Fire-rated attic ladders. (LWF) (LSF) (LMF)
			2. Special attic ladders. (LML) (LMP)
			3. Thermo insulated attic ladders. (LWT)
			4. Premium attic ladders. (LMS) (LST) (LWP)
			5. Basic attic ladders. (LWN) (OWN)
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 07 50 00 - Membrane Roofing.
		2. Section 07 60 00 - Flashing and Sheet Metal.
		3. Section 07 91 23 - Backer Rods.
		4. Section 08 83 13 - Mirrored Glass Glazing..
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
			1. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
		2. European Standards (EN):
			1. EN 13501-2 - Fire classification of construction products and building elements. Classification using data from fire resistance tests, excluding ventilation services.
			2. EN 14351-1 - Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian door sets.
			3. EN 14975 - Loft ladders. Requirements, marking and testing.
		3. German Institute for Standardization (DIN):
			1. DIN 5034-1 - Daylight In Interiors - Part 1.
		4. International Residential Code (IRC):
			1. IRC Section R310 - Egress/Rescue Opening Code Requirements for One- and Two-Family Dwellings.
			2. IRC Section R 310.1.1 - Emergency Escape and Rescue Required.
			3. IRC section R 310.1.2 - Minimum Opening Height.
			4. IRC section R 310.1.3 - Minimum Opening Width.
			5. IRC section R 310.1.4 - Operational Constraints.
		5. National Fire Protection Association (NFPA):
			1. NFPA 288 - Standard Methods of Fire Tests of Horizontal Fire Door Assemblies Installed in Horizontal Fire Resistance-Rated Assemblies
	1. DEFINITIONS
		1. Roof Window: A skylight that is accessible and can be opened.
	2. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data:
			1. Manufacturer's data sheets on each product to be used.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern and color.
		2. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
		2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
		3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
			1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
			2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
			3. Retain mock-up during construction as a standard for comparison with completed work.
			4. Do not alter or remove mock-up until work is completed or removal is authorized.
	1. PRE-INSTALLATION CONFERENCE
		1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
		2. Protect from damage due to weather, excessive temperature, and construction operations.
	3. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
	4. WARRANTY
		1. Manufacturer's standard limited warranty unless indicated otherwise.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: FAKRO AMERICA, LLC, which is located at:39 W. Factory Rd.Addison, IL 60101Tel: 630-543-1010 Fax: 630-543-1011Email: [request info (sales@fakrousa.com)](https://arcat.com/rfi?action=email&company=FAKRO%252BAMERICA%252C%252BLLC&message=RE%253A%2520Spec%2520Question%2520(08600fak)%253A%2520&coid=46915&spec=08600fak&rep=&fax=630-543-1011);Web: <http://www.fakrousa.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
	1. GENERAL CHARACTERISTICS FOR SKYLIGHTS AND ROOF WINDOWS
		1. General Characteristics:
			1. Finished wooden frame; pressure-treated, double coated with water-based clear acrylic lacquer.
			2. Energy Star, Low-E, UV filtering glass; laminated or tempered glazing.
			3. Single or double chamber filled with thermal-regulating inert argon gas.
			4. Perimeter seal and sturdy wooden frame for "warm" roof boarding-skylight frame joint.
			5. Bracket-free, one-person installation (skylights only).
			6. Type EL step or EH-A high profile flashing required.
			7. Template and installation hardware included.
		2. Leaks and Condensation:
			1. Deck Mounted Skylights: Lined on underside with a gasket. When skylight is placed in rough opening, this gasket creates a seal against the roof deck. Water and ice shields waterproof the skylight, making it impermeable to moisture.
			2. Skylights are installed without the use of metal components. Provided screws drill directly through the frame of the skylights into the roof joists eliminating the need for brackets on the outside of the skylight's frame.
			3. On the inside of the home, a channel built into the inner frame of the skylight collects moisture and drains it to the outside. This channel is set deep into the frame of the skylight where the glass meets the skylight's frame, so the channel is not visible once the skylight is installed.
	2. SKYLIGHTS
		1. Premium Deck Mounted Skylights:
			1. Model FX: Fixed.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed on the Drawings from manufacturer's standard range.
				3. Roof Pitch: 15 to 85 degrees
				4. Glazing: Low-emission and heat-reflecting double-paned.
				5. Frame: Vacuum treated, lacquered timber.
				6. Warm spacer increases condensation resistance.
				7. Perimeter Gasket: Underneath frame.
				8. Internal Gasket System: To collect and drain any possible condensation water to the outside.
				9. Model FX G3: Skylight with tempered-tempered glazing.

Glazing: U-Value; 0.18 btu/hr sq ft F (1.0 W/sq m K).

Single Chamber Solar Factor Glazing Unit: 4HT - Tg16Ar - 4H.

Skylight U-Factor: 0.42 btu/hr sq ft F (2.38 W/sq m K).

Solar Heat Gain Coefficient (SHGC): 0.23.

Air Leakage: 0.025 cfm per sq ft at 1.57 psf.

Tested Size: 24 x 70 inch (610 x 1778 mm).

Visible Transmittance: 0.45.

Condensation Resistance: 54.

Water Penetration Resistance Per Test Pressure: 0.106 psi (730 Pa).

Design Pressure: Tested Size: 27 x 70 inch (686 x 1778 mm).

Positive: 0.51 psi (3520 Pa).

Negative: 0.49 psi (3360 Pa).

* + - * 1. Model FX G31: Skylight with tempered-laminated glazing.

Glazing U-Value; 0.19 btu/h sq ft F (1.1 W/sq m K).

Single Chamber Solar Factor Glazing Unit: 4HT - Tg14Ar - 33.2.

U-Factor, Skylight: 0.41 btu/hr sq ft F (2.33 W/sq m K).

Solar Heat Gain Coefficient (SHGC): 0.23.

Air Leakage: 0.025 cfm per sq ft at 1.57 psf.

Tested Size: 24 x 70 inch (610 x 1778 mm).

Visible Transmittance (VT): 0.43.

Condensation Resistance: 54.

Water Penetration Resistance/Test Pressure: 0.106 psi (730 Pa).

Design Pressure: Tested Size: 27 x 70 inch (686 x 1778 mm).

Positive: 0.51 psi (3520 Pa).

Negative: 0.49 psi (3360 Pa).

* + - 1. Model FV: Manual venting.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed on the Drawings from manufacturer's standard range.
				3. Roof Pitch: 15 to 85 degrees
				4. Glazing: Low-emission and heat-reflecting double-paned.
				5. Frame: Vacuum treated, lacquered timber.
				6. Warm spacer increases condensation resistance.
				7. Perimeter Gasket: Underneath frame.
				8. Seals: Double seals between frame and sash.
				9. Mosquito screen.
				10. Internal Gasket System: Collects and drains condensation water to the outside.
				11. Operation: Operating crank or control rod.
				12. Model FV G3: Skylight with tempered-tempered glazing.

Glazing U-Value; 0.18 btu/hr sq ft F (1.0 W/sq m K)

Skylight U-Factor: 0.44 btu/hr sq ft F (2.50 W/sq m K)

Solar Heat Gain Coefficient (SHGC): 0.21.

Air Leakage: 0.06 cfm per sq ft at 1.57.

Tested Size: 24 x 70 inch (610 x 1778 mm).

Visible Transmittance: 0.41.

Condensation Resistance: 54.

Water Penetration Resistance Per Test Pressure: 0.106 psi 730 Pa.

Design Pressure: Tested Size: 27 x 70 inch (686 x 1778 mm).

Positive: 0.44 psi (3040 Pa).

Negative: 0.35 psi (2400 Pa).

* + - * 1. Model FV G31 : Skylight with tempered-laminated glazing.

Glazing U-Value; 0.19 btu/hr sq ft F (1.1 W/sq m K)

U-Factor, Skylight: 0.44 Btu/hr sq ft F (2.50 W/sq m K)

Solar Heat Gain Coefficient (SHGC): 0.21.

Air Leakage: 0.06 cfm per sq ft at 1.57.

Tested Size: 24 x 70 inch (610 x 1778 mm).

Visible Transmittance (VT): 0.39

Condensation Resistance: 53

Water Penetration Resistance/Test Pressure: 0.106 psi (730 Pa).

* + - 1. Model FVE: Electric Operated and Vented.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed on the Drawings from manufacturer's standard range.
				3. Roof Pitch: 15 to 85 degrees.
				4. Glazing: Low-emission and heat-reflecting double-paned.
				5. Frame: Vacuum treated, lacquered timber.
				6. Warm spacer increases condensation resistance.
				7. Perimeter Gasket: Underneath frame.
				8. Seals: Double seals between frame and sash.
				9. Mosquito screen.
				10. Internal Gasket System: Collects and drains condensation water to the outside.
				11. Integrated rain sensors.
				12. Remote Control: Z-wave radio control system, allowing smart home system integration.
				13. Model FVE G31: Electric Operated Skylight with tempered-laminated glazing.

Glazing U-Value; 0.18 btu/hr sq ft F (1.0 W/sq m K)

Single Chamber Solar Factor Glazing Unit: 4HT - Tg14Ar - 33.2.

U-Factor, Skylight: 0.45 Btu/hr sq ft F (2.50 W/sq m K)

Solar Heat Gain Coefficient (SHGC): 0.21.

Air Leakage: 0.04 cfm per sq ft at 1.57.

Tested Size: 27 x 70 inch (686 x 1778 mm).

Visible Transmittance (VT): 0.38.

Condensation Resistance: 54.

Water Penetration Resistance/Test Pressure: 0.106 psi (730 Pa).

Design Pressure: Tested Size: 27 x 70 inch (686 x 1778 mm).

Positive: 0.51 psi (3520 Pa).

Negative: 0.17 psi (1200 Pa).

* + - 1. Model FVS: Solar operated vented.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed on the Drawings from manufacturer's standard range.
				3. Roof Pitch: 15 to 85 degrees
				4. Glazing: Low-emission and heat-reflecting double-paned.
				5. Frame: Vacuum treated, lacquered timber.
				6. Warm spacer increases condensation resistance.
				7. Perimeter Gasket: Underneath frame.
				8. Seals: Double seals between frame and sash.
				9. Mosquito screen.
				10. Internal Gasket System: Collects and drains condensation water to the outside.
				11. Integrated rain sensors.
				12. Remote control.
				13. Integrated solar panel.
				14. Z-wave radio control system, allowing smart home system integration.
				15. Model FVS G31: Solar operated vented Skylight with tempered-laminated glazing.

Glazing U-Value; 0.19 btu/hr sq ft F (1.1 W/sq m K)

U-Factor, Skylight: 0.44 Btu/hr sq ft F (2.50 W/sq m K)

Solar Heat Gain Coefficient (SHGC): 0.21.

Air Leakage: 0.04 cfm per sq ft at 1.57 psi.

Tested Size: 27 x 70 inch (686 x 1778 mm).

Visible Transmittance (VT): 0.39

Condensation Resistance: 53

Water Penetration Resistance/Test Pressure: 0.106 psi (730 Pa).

* + 1. Curb Mounted Skylights:
			1. Model FXC: Premium Curb Mounted Skylights.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed on the Drawings from manufacturer's standard range.
				3. Roof Pitch: 0 to 60 degrees.
				4. Frame: PVC. Internal frame to overlap drywall. Seals: 2.

Allows installation of internal blinds.

Condensation channels trap moisture and drains it outside.

* + - * 1. Internal gasket system protects from condensation.
				2. Orientation: Horizontal or vertical; 360 degree rotation.
				3. Model FXC G33: Fixed Skylight Laminated Glazing.

U-Factor, Skylight: 0.46 btu/hr sq ft F (2.61 W/sq m K)

Solar Heat Gain Coefficient (SHGC): 0.22.

Inert Gas Between Panes: Argon.

Internal Glass: Laminated (safe), anti-burglary glass, Class P2A,

Visible Transmittance: 0.42.

Condensation Resistance: 62.

Water Penetration Resistance Per Test Pressure: 720 Pa.

* + - 1. Model FXR: Standard Curb Mounted Skylights.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed or scheduled on the Drawings.
				3. Roof Pitch: 0 to 60 degrees.
				4. Frame: PVC. Internal frame to overlap drywall.

Condensation channels trap moisture and drains it outside.

* + - * 1. Warm spacer increases condensation resistance.
				2. Orientation: Horizontal or vertical; 360 degree rotation.
				3. Model FXR G31: Fixed Skylight Laminated Glazing.

U-Factor, Skylight: 0.49 btu/hr sq ft F (2.78 W/sq m K)

Solar Heat Gain Coefficient (SHGC): 0.26.

Inert Gas Between Panes: Argon.

Visible Transmittance: 0.51.

* 1. ROOF WINDOWS
		1. Top Hung and Pivot Windows:
			1. Model FPP-V preSelect MAX: Deck mounted top hung and pivot roof window:
				1. Size: 30 x 46 inches (762 x 1168 mm).
				2. Size: 30 x 55 inches (762 x 1397 mm).
				3. Color: As detailed on the Drawings from manufacturer's standard range.
				4. Roof Pitch: 15 to 55 degrees.
				5. Opens Methods: Complete sash stability, in top hung and pivot positions.

Outwards from Top: Sash opens in any position from 0 to 45 degrees.

Center Pivot: Sash rotates 180 degrees.

* + - * 1. External Profile Covering Window: Roll formed.
				2. Double-Glazed: P2 Single chamber. U value: 0.23 btu/hr sq ft F (1.3 W/sq mK).
				3. Triple-Glazed: U5 Double chamber. U Value: 0.18 btu/hr sq ft F (1.02 W/sq mK).
				4. Construction: Pine wood, vacuum pressure impregnated and finished with two coats of acrylic lacquer. Seals: Four. Handle: Elegant.
				5. Air Inlet: V40P.
				6. Air Inlet Air Flow: Up to 28.84 cfm (49 cu m per hr).
				7. Operation: Handle positioned on lower part of sash.

Opening method: Sliding switch in frame, accessible when the window is open.

* + - * 1. Glazing: FPP-V U5 preSelect.

Window U-Value: 0.18 btu/hr sq ft F (1.02 W/sq m K).

Glazing U-value: 0.09 btu/hr sq ft F (0.51 W/sq m K).

Acoustic Insulation Rw: 33 dB.

Glazing Unit: 4HT-10-4H-10-4HT.

Inert Gas Filled Panes: Krypton.

External Glass: Tempered.

* + - 1. Model FTP-V P2 preselect: Deck Mounted Pivot Roof Window:
				1. Size: 30 x 46 inches (762 x 1168 mm).
				2. Size: 30 x 55 inches (762 x 1397 mm).
				3. Color: As detailed on the Drawings from manufacturer's standard range.
				4. Roof Pitch: 15 to 90 degrees.
				5. Opens Methods: Complete sash stability, in pivot positions.

Center 2-Part Pivot: Sash rotates 180 degrees.

* + - * 1. Double-Glazed: Single chamber.
				2. Construction: Pine wood, vacuum pressure impregnated and finished with two coats of acrylic lacquer. Seals: Four. Handle: Elegant
				3. Air Inlet: Automatic V40P.
				4. Air Inlet Air Flow: Up to 28.84 cfm (49 cu m per hr).
				5. Operation: Handle positioned on lower part of sash.
				6. Glazing: FTP-V P2 preSelect.

Window U-Value: 0.23 btu/hr sq ft F (1.3 W/sq m K).

Glazing U-value: 0.19 btu/hr sq ft F (1.1 W/sq m K).

Acoustic Insulation Rw: 35 dB.

Glazing Unit: 4HS-14-33.1T.

Inert Gas Filled Panes: Argon.

External Glass: Tempered.

internal Glass: Laminated, anti-burglary glass class P2A.

* + 1. Highly Energy-Efficient Windows - FTT U6, FTT U8 Thermo,
			1. Model FTT U6: Deck Mounted Center Pivot Thermo Window.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed on the Drawings from manufacturer's standard range.
				3. Roof Pitch: 15 to 70 degrees.
				4. Opens Methods: Complete sash stability, in pivot positions.

Center 2-Part Pivot: Sash rotates 180 degrees.

* + - * 1. Triple-Glazed: Double chamber.
				2. Construction: Wood, vacuum pressure impregnated and finished with two coats of acrylic lacquer. Seals: Five. Handle: Elegant
				3. Frame: Wooden frame with wider profile minimizing thermal bridges and improving thermal insulation.
				4. Quintuple sealing system.
				5. Locking Mechanism: When handle is turned, sash is locked at both sides of frame.
				6. Sash: Stops in open position in range from 0 to 45 degrees assisted by supporting mechanism.
				7. Glazing: FTT-U6 Thermo

Window U-Value: 0.14 btu/hr sq ft F (0.8 W/sq m K)

Glazing U-value: 0.09 btu/hr sq ft F (0.5 W/sq m K)

Acoustic Insulation Rw: 38 dB

Window R-Value: 7.1

Glazing Unit: 6HT-18-4H-18-33.2T

Inert Gas Filled Panes: Argon.

External Glass: Tempered.

internal Glass: Laminated, anti-burglary glass class P2A

* + - 1. Model FTT U8: Deck Mounted Center Pivot Thermo Window.
				1. Size: As detailed or scheduled on the Drawings.
				2. Color: As detailed on the Drawings from manufacturer's standard range.
				3. Roof Pitch: 15 to 70 degrees.
				4. Opens Methods: Complete sash stability, in pivot positions.

Center 2-Part Pivot: Sash rotates 180 degrees.

* + - * 1. Quadruple-Glazed: Triple chamber.
				2. Construction: Wood, vacuum pressure impregnated and finished with two coats of acrylic lacquer. Seals: Five. Handle: Elegant
				3. Frame: Wooden frame with wider profile minimizing thermal bridges and improving thermal insulation.
				4. Quintuple sealing system.
				5. Locking Mechanism: When handle is turned, sash is locked at both sides of frame.
				6. Sash: Stops in open position in range from 0 to 45 degrees assisted by supporting mechanism.
				7. Glazing: FTT-U8 Thermo

Window U-Value: 0.10 btu/hr sq ft F (0.58 W/sq m K)

Glazing U-value: 0.05 btu/hr sq ft F (0.3 W/sq m K)

Acoustic Insulation Rw: 36 dB

Window R-Value: 9.8

Glazing Unit: 4H-12-4HT-12-4HT-12-4HT

Inert Gas Filled Panes: Krypton.

External Glass: Tempered.

* + 1. High Pivot:
			1. Raised rotation axis above the center of the window.
				1. Complies with DIN 5034-1 when installed on a roof pitch between 39 and 43 degrees.
				2. Size: As detailed or scheduled on the Drawings.
				3. Color: As detailed on the Drawings from manufacturer's standard range.
				4. Roof Pitch: 20 to 65 degrees.
				5. Construction: High quality pine wood, vacuum impregnated. Double-coat wood with an ecological acrylic lacquer. Finished in a natural wood color.
				6. Lower Sash: Acts as a top hung window. Upper Sash: An additional daylight source. Supporting Mechanism: Allows opening from 0 to 45 degrees.
				7. Operation: Handle located at bottom of the sash. Equipped with a two-level ajar function for ventilation.
				8. Sash Rotation: 160 degrees. Locks in place by a bolt to easily reach exterior glass for cleaning.
				9. Air Inlet: Automatic V40P.
				10. Burglary Resistance: TopSafe system.
				11. Glazing: Model FYP-V U3 proSky.

Window U-Value: 0.23 btu/hr sq ft F (1.3 W/sq m K).

Glazing U-value: 0.18 btu/hr sq ft F (1.0 W/sq m K).

Acoustic Insulation Rw: 32 dB.

Glazing Unit: 4H-16-4T.

Inert Gas Filled Panes: Argon.

External Glass: Tempered.

* + - * 1. Glazing: Model FDY-V U3 Duet proSky.

Window U-Value: 0.23 btu/hr sq ft F (1.3 W/sq m K).

Glazing U-value: 0.18 btu/hr sq ft F (1.0 W/sq m K).

Acoustic Insulation Rw: 32 dB.

Glazing Unit: 4H-16-4T.

Inert Gas Filled Panes: Argon.

External Glass: Tempered.

* + 1. "L"Shaped Combination Window:
			1. Tilt and turn opening system.
			2. Connects with vertical windows or roof windows or any FAKRO design.
			3. Safety Glazing: P2 or P5.
			4. Construction: Pine wood, vacuum impregnated. Double coated wood with ecological acrylic lacquer. Seals: Two.
			5. Installation Range: 15 to 55 degrees.
				1. Opening: Left or right side.
				2. Handle: One handle located in side of sash for opening tilt and turn.
				3. Model MDR, BDL P2:

Window U-value: 0.23 btu/hr sq ft F (1.31 W/sq m K).

Glazing U-value: 0.19 btu/hr sq ft F (1.08 W/sq m K).

Acoustic insulation Rw: 37 dB.

Glazing unit: 4HS-14-33.1T.

Inert gas filled panes: Argon.

External Glass: Tempered. Easy maintenance layer.

Internal Glass: Laminated (safe). Anti-burglary,

* + - * 1. Model MDR, BDL P5:

Window U-value: 0.16 btu/hr sq ft F (0.91 W/sq m K).

Glazing U-value: 0.09 btu/hr sq ft F (0.51 W/sq m K).

Acoustic Insulation Rw: 38 dB.

Glazing Unit: 4HS-10-4HT-8-33.2T.

Inert Gas Filled Panes: Krypton.

External Glass: Tempered. Easy maintenance layer.

Internal Glass: Laminated (safe). Anti-burglary

* + - 1. Model BXP P2: Non-Opening.
				1. Single-chamber secure glazing unit with internal laminated glass, anti-burglary class P2A. In the event of damage to laminated glazing, glass pieces remain glued together with the foil.

Window U-value: 0.23 btu/hr sq ft F (1.31 W/sq m K).

Glazing U-value: 0.19 btu/hr sq ft F (1.08 W/sq m K).

Acoustic Insulation Rw: 37 dB.

Glazing Unit: 4HS-14-33.1T.

Inert Gas Filled Panes: Argon.

External Glass: Tempered. Easy maintenance layer.

Internal Glass: Laminated (safe).

* + - 1. Model BXP P5: Non-Opening.
				1. Two-chamber, super-energy-saving and anti-burglary glazing unit with an easy-washable coating.

Window U-value: 0.16 btu/hr sq ft F (0.91 W/sq m K).

Glazing U-value: 0.09 btu/hr sq ft F (0.51 W/sq m K).

Acoustic Insulation Rw: 38 dB.

Glazing Unit: 4HS-10-4HT-8-33.2T.

Inert Gas Filled Panes: Krypton.

External Glass: Tempered. Easy maintenance layer.

Internal Glass: Laminated (safe). Anti-burglary.

* + - 1. Model BVP P2: Tilt opening.
				1. Opening of Sash: Approximately 4.33 inches (110 mm).
				2. Handle with Key Lock: Located at top of sash.
				3. Window U-value: 0.23 btu/hr sq ft F (1.31 W/sq m K).
				4. Glazing U-value: 0.19 btu/hr sq ft F (1.08 W/sq m K).
				5. Acoustic Insulation Rw: 37 dB.
				6. Glazing Unit: 4HS-14-33.1T.
				7. Inert Gas Filled Panes: Argon.
				8. External Glass: Tempered. Easy maintenance layer.
				9. Internal Glass: Laminated (safe).
			2. Model BVP P5: Tilt opening.
				1. Opening of Sash: Approximately 11 cm.
				2. Handle with Key Lock: Located at top of sash.

Window U-value: 0.16 btu/hr sq ft F (0.91 W/sq m K).

Glazing U-value: 0.09 btu/hr sq ft F (0.81 W/sq m K).

Acoustic Insulation Rw: 38 dB.

Glazing Unit: 4HS-10-4HT-8-33.2T.

Inert Gas Filled Panes: Krypton.

External Glass: Tempered. Easy maintenance layer.

Internal Glass: Laminated (safe). Anti-burglary.

* + 1. Energy Efficient Fixed Roof Windows:
			1. Model FNP Non-opening windows mounted in the roof.
			2. Size: As detailed or scheduled on the Drawings.
			3. Roof Pitch: 15 to 90 degrees.
			4. Air Inlet Type: V10.
			5. Sash: Permanently fixed in frame by screws. No possibility of opening.
			6. Seals: Four.
			7. Model FNP U5: Highly energy efficient.
				1. Window U-value: 0.17 btu/hr sq ft F (0.97 W/sq m).
				2. Glazing U-value: 0.09 btu/hr sq ft F (0.51 W/sq m).
				3. Acoustic Insulation Rw: 33 dB.
				4. Glazing Unit: 4HT - Tg10Kr - 4H - Tg10Kr - 4HT.
				5. Inert Gas Filled Panes: Krypton.
				6. External Glass: Tempered.
				7. Internal Glass: Tempered.
			8. Model FNP P5: Anti-burglary glass.
				1. Window U-value: 0.17 btu/hr sq ft F (0.97 W/sq m).
				2. Glazing U-value: 0.09 btu/hr sq ft F (0.51 W/sq m).
				3. Acoustic Insulation Rw: 37 dB.
				4. Inert Gas Filled Panes: Krypton.
				5. External Glass: Tempered.
				6. Internal Glass: Laminated (safe). Anti-burglary.
	1. FLAT ROOF SKYLIGHTS AND HATCHES

\*\* NOTE TO SPECIFIER \*\* Can be used with TPO, PVC, EPDM single ply or torched down membrane roofing.

* + 1. Flat Roof Deck Mounted Skylights:
			1. Size: As detailed or scheduled on the Drawings.
			2. Roof Pitch: 2 and 15 degrees.
			3. Frame: Multi-chamber PVC profiles filled with insulation material. Seals: Two.

\*\* NOTE TO SPECIFIER \*\* Delete green roof base if not required.

* + - 1. Green Roof Base: XRD. Height: 5-7/8 inches.
			2. Model DEF: Electric venting with wireless radio system.
				1. Built-in sensor automatically activates sash closing when it rains.
			3. Model DMF: Manual venting.
			4. Model DXF: Fixed.
			5. Glazing Unit: DU6. Triple-glazed.
				1. R-value: 11.36
				2. Sound Value: 34 dB.
				3. Structure: 6H - Tg18Ar - 4HT - Tg18Ar - 44.2T.
			6. Glazing Unit: DU8. Quadruple-glazed.
				1. R-value: 14.19.
				2. Sound Value: 33 dB.
				3. Structure: 6H - Tg10Kr - 4HT- Tg12Kr - 4HT - Tg12Kr - 33.2T.
		1. Roof Access Skylight: Model DRF DU6.
			1. Size: As detailed or scheduled on the Drawings.
			2. Roof Pitch: 2 to 15 degrees.
			3. Frame: Multi-chamber PVC profiles filled with insulation material. Seals: Two.
			4. Window U-Value: 0.13 Btu/hr sq ft F (0.74 W/sq m).
			5. Window R-Value: 7.7.
			6. Base: Can be mounted on XRD base with height of 6 inches (15 cm) for installation in green and living roofs.
			7. Glazing Unit: Triple-glazed. DU6 with a Class P2A anti-burglary inner pane per EN14351-1:2006+A2:2016.
				1. Glazing U-value: 0.09 btu/hr sq ft F (0.51 W/sq m).
				2. Glazing R-value: 11.36.
				3. Glazing Unit: 6H -18 - 4 H T-18 - 4 4. 2T, 6H-16-4HT-18-55.2T.

Glazing unit structure for size 47-1/4 x 47-1/4 inch (1200 x 1200 mm)

* + - * 1. Inert Gas Filled Panes: Argon.
				2. External Glass: Tempered.
				3. Internal Glass: Laminated (safe).
		1. Flat Roof Insulated Access Door: Model: DRL.
			1. Size: As detailed or scheduled on the Drawings.
			2. Fully factory assembled product.
			3. Roof Pitch: 0 to 5 degrees.
			4. Frame: Multi-chamber PVC profiles filled with insulation material.
			5. Sash: Insulated. Rubber seal thermal break ensuring thermal insulation performance.
				1. Opening: Up to 80 degrees. Gas springs facilitate opening and closing. Sash can be left open.
			6. Anti-Slip Tape: On base.

\*\* NOTE TO SPECIFIER \*\* The lock and XRD base are optional Delete options not required.

* + - 1. Lock: ZBR lock. Protects against accidental closure of sash; optional.
			2. Base: Can be mounted on XRD base with height of 6 inches (15 cm) for installation in green and living roofs.
			3. Hatch R-Value: 8.33.
			4. Hatch U-Value: 012 btu/hr sq ft F (0.68 W/sq m K).
		1. Walkable Skylight: Model DXW DW6. Fully walkable surface.
			1. Profiles clamp covering material and facilitate finish of window connection with roofing material.
			2. Load capacity: 1100 psf (52.668 kPa).
			3. Size: As detailed or scheduled on the Drawings.
			4. Non-slip coating.
			5. Roof Pitch: 0 to 15 degrees.
			6. Frame: Multi-chamber PVC profiles filled with insulation material.
			7. Window U-Value: 0.12 btu/hr sq ft F (0.68 W/sq m K).
			8. Glazing: Passive, double-chamber glazing.
				1. Heat Transfer Coefficient: 0.088 btu/hr sq ft F (0.5 W/sq m K).
				2. Glazing U-Value: 0.082 btu/hr sq ft F (0.466 W/sq m K).
				3. Glazing Unit: 888.44(1xESG, 2xTVG)-Tg16Ar-4HT-Tg18Ar-66.2T.
				4. Inert Gas Filled Panes: Argon.
				5. External Glass: Toughened.
	1. FLASHINGS FOR DECK MOUNTED SKYLIGHTS

\*\* NOTE TO SPECIFIER \*\* To be used with FX, FV, FVE, FVS deck-mounted only.

* + 1. Model EL: For skylights installed with flat roofing materials such as shingles, plain-tile, double-lap roofing and slates. Side elements of flashing are laid alternately with roofing material.
			1. Roofing Material Thickness: 5/16 inch (8 mm) maximum.
			2. Bottom Section of Flashing: Equipped with butyl strip.

\*\* NOTE TO SPECIFIER \*\* To be used with FX skylights only.

* + 1. Model EL-T: Thermo flashing for use on insulated roofs. Eliminates "cool areas" that sometimes occur between roof deck and skylight causing condensation on interior drywall. The underside of Thermo flashing has flexible insulating material, creating a barrier by tightly sealing skylight frame. For skylights installed with flat roofing materials such as shingles.

\*\* NOTE TO SPECIFIER \*\* To be used with FV, FVE, FVS deck mounted skylights only.

* + 1. Model EL-AT: Thermo flashing for use on insulated roofs. Eliminates "cool areas" that sometimes occur between roof deck and skylight causing condensation on interior drywall. The underside of Thermo flashing has flexible insulating material, creating a barrier by tightly sealing skylight frame. For skylights installed with flat roofing materials such as shingles.

\*\* NOTE TO SPECIFIER \*\* To be used with with FX, FV, FVE, FVS deck mounted skylights only.

* + 1. Model EH-A: For profiled and high-profiled corrugated materials. Joins skylight with roofing materials such as tiles, corrugated and standing seam metal sheets. A wider and longer lower section allows a tighter joint with high profiled roofing material (
			1. Height of Profile 1-1/4 to 3-1/2 inches (32 to 89 mm). A butyl strip holds down the bottom section of flashing.

\*\* NOTE TO SPECIFIER \*\* To be used with FX skylights only.

* + 1. Model EH-AT: Thermo flashing to better insulate the connection of skylight frame and roof decking. Minimizes thermal bridges and condensation effect. Underside of Thermo flashing has flexible insulating material, creating a barrier by tightly sealing the skylight frame.

\*\* NOTE TO SPECIFIER \*\* To be used with FV, FVE, FVS skylights only.

* + 1. Model EH/A-AT: Thermo flashing to better insulate the connection of skylight frame and roof decking. Minimizes thermal bridges and condensation effect. Underside of Thermo flashing has flexible insulating material, creating a barrier by tightly sealing the skylight frame.
	1. DECK MOUNTED BALCONY WINDOWS
		1. Balcony Window: Model FGH-V P2 Galeria. Roof window that opens into a balcony.
			1. Roof Pitch: 35 to 55 degrees.
			2. Size: 30 x 100 inches (762 x 2540 mm).
			3. Size: 37 x 100 inches (940 x 2540 mm).
			4. Upper and Lower Sash: Equipped with laminated glazing unit P2.
			5. Upper Sash: Opens upwards while lower sash opens forward creating a balcony bay.
				1. Window Stays: Open anywhere along the 0 to 45 degree opening range.
			6. Handle: Located at bottom of upper sash which has a two-point locking mechanism.
			7. Automatic Air Inlet: V40P. Adjusts air pressure in room to compliment air pressure outdoors.
			8. Material: Pine wood, vacuum impregnated. Double-coated with ecological acrylic lacquer, finished in a natural wood color.
			9. Seals: Four.
			10. Burglary Resistant: TopSafe system.
			11. Window U-Value: 0.26 btu/hr sq ft F (1.5 W/sq m K).
			12. Glazing Units: P2.
				1. Glazing U-Value: 0.19 btu/hr sq ft F (1.1 W/sq m K).
				2. Acoustic Insulation (Rw): 35 dB.
				3. Glazing Unit: 4HS-14-33.2T.
				4. Inert Gas Filled Panes: Argon.
				5. External Glass: Toughened.
				6. Internal Glass: Laminated (safe). Anti-burglary.
	2. ROOF ACCESS WINDOW
		1. Deck Mounted Roof Access Egress Window:
			1. Model FWU. Easy access to the roof, escape egress in an emergency. For rooms where building codes require two methods of escape.
				1. Roof Pitches: 15 to 55 degrees.
				2. Swing Direction: Choice of right or left opening.
				3. Size (WxH): 24 x 38 inches (610 x 956 mm).
				4. Size (WxH): 24 x 46 inches (610 x 1168 mm). Certified Fire Exit roof window.

Tested per IRC section R 310.1.1, R 310.1.2, R 310.1.3, R 310.1.4.

* + - * 1. Size (WxH): 37 x 46 inches(940 x 1168 mm).
				2. Glazing: Low-emission, heat-reflecting double glazed glass. G3 tempered-tempered.
				3. Frame: Factory finished. Adopted for internal blinds installation.
				4. Handle Position: Halfway up sash.
				5. internal Gasket System: Collects and drains condensation to the outside.
				6. SHGC: 0.20.
				7. U-factor: 0.41 btu/hr sq ft F (2.33 W/sq m K).
				8. Visible Transmittance (VT): 0.39.
				9. Condensation Resistance (CR): 54.
				10. Air Infiltration: 0.18 cfm per sq ft (2.83 cu m per hr /sq m)
				11. Water Penetration: 0.106 psi (730 Pa).
				12. Uniform Load Deflection: 20.1 psf / -20.1 psf (962.4 Pa /-962.4 Pa).
				13. Uniform Load Structural: 60 psf / -60 psf (2872.8 Pa / -2872.8 Pa).
	1. CONTROL SYSTEMS
		1. Radio Control System: Radio waves sent from a controlling device (e.g. remote control).
			1. Wireless protocol used for communication between household appliances combining compatible devices into a single network.
				1. Electric Devices: Lighting, thermostats, alarms, computers, telephones, air conditioning, electric windows, and blinds.
			2. Does not require control units or fitting wires between electronic devices.
			3. For new and existing construction.
			4. There is a set route in which commands reach the correct device and performs the function sent. Confirmation and reception of command completes the command.
			5. Accessories:
				1. Remote Control: ZWP10 US. Enables radio control of compatible electrical devices. Operates 10 receivers individually and up to 231 receivers in groups.
				2. Remote Control: ZRH 12. For FAKRO electric or solar powered skylights and blinds. Creates up to 12 device groups and controls up 12 receivers per group.
				3. Wall Switch: ZRW 7 US. Multi-channel keyboard remotely controls radio-electrical skylights and blinds. Operates up to 10 receivers separately or 231 accessories in groups.
		2. Manual Control System:

\*\* NOTE TO SPECIFIER \*\* For FV series skylights, manual blackout blinds, SRF-M series, and light reducing SRP-M\_ series blinds.

* + - 1. Telescopic Control Rod: Model SZS. Consists of three sections.
				1. Minimum Length: 5 ft (1524 mm). Maximum Length: 10 ft (3048 mm).
				2. The last section is equipped with a metal ball for operating opening mechanisms of skylights and blinds.

\*\* NOTE TO SPECIFIER \*\* Delete For FV series skylights. Delete if not required.

* + - 1. Hexball Adaptor: Cranks on skylights installed out of reach can be replaced by a hexball adaptor to allow operation with SZS control rod.
	1. ACCESSORIES FOR SKYLIGHTS AND ROOF WINDOWS
		1. Internal Accessories:

\*\* NOTE TO SPECIFIER \*\* Available for FX and FV Series skylights. Not available for flat roof windows.

* + - 1. Roller Blinds: Model SRP for Skylights: Retracts up and down side rails stopping any point along skylight.
				1. Compatible with curb and deck mounted skylights.
				2. Up to 90 percent light filtration when closed.
				3. Controls: Electrical. 24 VDC. Wall switch or remote control.
				4. Controls: Manual. Telescopic Control rod or by hand.

Control Rod Length: 46-3/4 to 130 inches (1187 to 3302 mm).

* + - * 1. Fabric and Color: As determined by Architect from Manufacturer's range.
			1. Roller Blinds: Model ARP for Roof Windows: Retracts up and down side rails stopping any point along skylight.
				1. Compatible with curb and deck mounted skylights.
				2. Up to 90 percent light filtration when closed.
				3. Controls: Electrical. 24 VDC. Wall switch or remote control.
				4. Controls: Manual. Control rod or by hand.
				5. Fabric and Color: As determined by Architect from Manufacturer's range.

\*\* NOTE TO SPECIFIER \*\* Available for FX and FV Series skylights, roof windows, and flat roof windows.

* + - 1. Roller Blackout Blinds: Model SRF: Retracts up and down side rails stopping any point along skylight.
				1. Compatible with curb and deck mounted skylights.
				2. Up to 90 percent light filtration when closed.
				3. Controls: Electrical. 24 VDC. Wall switch or remote control.
				4. Controls: Manual. Control rod or by hand.
				5. Fabric and Color: As determined by Architect from Manufacturer's range.
			2. Roller Blackout Blinds: Model ARF for Roof Windows: Retracts up and down side rails stopping any point along skylight.
				1. Compatible with curb and deck mounted skylights.
				2. Up to 90 percent light filtration when closed.
				3. Controls: Electrical. 24 VDC. Wall switch or remote control.
				4. Controls: Manual. Control rod or by hand.
				5. Fabric and Color: As determined by Architect from Manufacturer's range.
		1. External Accessories:
			1. Awning Solar Blinds: Powered by solar batteries. Up to 8 times more effective protection from overheating compared to internal blinds.
				1. Fabric and Color: As determined by Architect from Manufacturer's range.

Fabric is roller mounted. Motor is fitted inside aluminum casing installed at top of window.

Fabric Edges: Special tape maintains appropriate fabric tension between guides and prevents fabric from falling out of the guides.

Fabric Transparency:

Group I: 10 percent relative fabric transparency.

Group II: 1 percent relative fabric transparency.

Withstands Wind Gusts: 75 mph (120 km per hr)

Withstands Side Wind Speed: 137 mph (220 km per hr).

* + - * 1. Controlled by remote control.
				2. Model SMZ: Solar powered electric awning blind for skylights.
				3. Model AMZ: Solar powered electric awning blind for roof windows.
				4. Model AMZ/F: Solar powered electric awning blind for flat roof windows.
		1. Manual Accessories:
			1. Extendable Control Rod: 5 to 10 ft (1524 to 3048 mm). Anodized aluminum tube.
				1. Flexible Tip: Tip with gimbal joint allows various angles of use.
			2. Mini Control Rod: Length: 20 inches (508 mm). For use on manually operated blinds and manual or electrical Skylights within reach.
			3. Crank: For manual venting skylights within reach.
	1. LIGHT TUNNELS
		1. Rigid Flat Light Tunnel: Model SR Series.
			1. Roofing Element: 0.16 inch (4 mm) thick toughened glass bonded into a frame.
				1. Frame: Aluminum sheet metal.
				2. Frame: Organic glass for additional illumination.
			2. Light Transmitting Tube: Aluminum, covered with highly reflective silver based layer.
				1. High Efficiency Light Reflective Factor: Over 98 percent.
				2. Tube Length: Up to 39 ft 4.44 inches (12 m). Telescopic design. Push one section inside the other to attain proper tube length.
				3. Fitted to inside profile of roofing element frame and integrated with flashing.
			3. Finish: Grey-brown RAL 7022.
			4. Ceiling Frame: Organic glass. Equipped with built-in light diffusing element.
			5. Interior Cover: High-impact polystyrene in a white opaque color.
			6. Installation Pitch: 15 to 60 degrees.

\*\* NOTE TO SPECIFIER \*\* The following three paragraphs are optional. Delete paragraphs not required.

* + - 1. Rigid Elbow: Changes angle of light transmitting tube anywhere between 0 to 65 degrees.
			2. Rigid Light Tunnel Extension: Extends tunnels by 2 ft (610 mm). Each extension includes a connecting ring, adhesive tape, and straight rigid tube.
			3. Light Kit: Alternative source of light after dark. Hardwired and installs inside the light tunnel tube. Light Bulbs: LED A19 or conventional 40 watt bulbs.
		1. Flexible Flat Light Tunnel: Model SF Series.
			1. Roofing Element: 4 mm thick toughened glass bonded into a frame.
				1. Frame: Aluminum sheet metal.
				2. Frame: Organic glass for additional illumination of attic.
			2. Flexible Light Transmitting Tube: Metallized polyester reinforced with metal wire producing a robust and flexible light transmitting tube for installation over short distances where structural obstacles must be bypassed.
				1. Tube Diameter: 14 inch (350 mm). Tube Length: Up to 13.1 ft (4 m).
				2. Tube Diameter: 22 inch (550 mm). Tube Length: Up to 19.7 ft (6 m).
				3. Fitted to inside profile of roofing element frame and is integrated with flashing.
			3. Finish: Grey-brown RAL 7022.
			4. Ceiling Frame: Organic glass. Equipped with built-in light diffusing element.
			5. Interior Cover: High-impact polystyrene in a white opaque color.

\*\* NOTE TO SPECIFIER \*\* The following two paragraphs are optional. Delete paragraphs not required.

* + - 1. Flexible Light Tunnel Extension: Extends tunnel 4 ft (1219 mm). Each extension includes a connecting ring, adhesive tape, and flexible tube.
			2. Light Kit: Alternative source of light after dark. Hardwired and installs inside the light tunnel tube. Light Bulbs: LED A19 or conventional 40 watt bulbs.
	1. ATTIC LADDERS AND DOORS
		1. Fire-Rated Attic Ladders:
			1. Model LWF: Wooden, Folding, and Insulated.
				1. Hatch: Sandwich type, insulated, fire resistant, and no lock. Color: White.

Thickness: 3-1/8 inches (79 mm).

Thermal insulation thickness: 2-7/8 inch (73 mm).

Unloading Mechanism: Automatically presses hatch to box, opening with use of control rod.

Gasket: 3 pieces. Expands under extreme heat.

* + - * 1. Frame: Material: Pinewood. Height: 8-5/8 inches (219 mm).
				2. Ladder: Material: Pinewood. Width: 15 inch (381 mm). Stringer height: 31-1/8 inch (791 mm). Distance Between Steps: 9-7/8 inch (251 mm).
				3. Steps: Material: Pinewood. Anti-slip profile. Step Width: 3-1/8 inch (79 mm). Thickness: 7/8 inch (22 mm). Length: 13-1/4 inch (337 mm).
				4. Maximum loading: 300 lbs (136.1 kg).
				5. Heat transfer coefficient R-value: 9.5.
				6. Fire rating: ASTM E119 43 min. NFPA 288 30 min.
				7. Ceiling Height: 7 ft 5 inches to 8 ft 11 inches (2261 to 2718 mm).

Rough Opening: 22-1/2 x 47 inch (572 x 1194 mm).

Rough Opening: 25 x 47 inch (635 x 1194 mm).

* + - * 1. Ceiling Height: 7 ft 11-1/2 inch to 10 ft 1 inch (2426 x 3073 mm).

Rough Opening: 2-1/2 x 54 inches (64 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Accessories:

Handrail in red color.

Plastic ends.

Control rod for opening the hatch.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Metal handrail.

Installation Brackets: Maximum ceiling 17 inch (432 mm).

Trim: 30 x 54 inches (762 x 1372 mm). Smaller sizes have to be cut.

Material: Wood.

Material: PCV.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (44 mm).

* + - 1. Model LSF: Metal, Scissor, and Insulated.
				1. Hatch: Insulated and fire-resistant with lock. Color: White.

Thickness: 2-1/8 inch (54 mm).

Thermal Insulation Thickness: 1-1/8 inch (29 mm).

* + - * 1. Frame: Metal ladder box, metal trim, and quick-installation brackets.

Height: 5-1/2 inches (140 mm).

* + - * 1. Ladder: Metal scissor ladder.
				2. Steps: Metal, equipped with anti-slip profile. Step Width: 3-1/8 inch (79 mm).

Length: 11-7/8 inch (302 mm).

Length: 12-5/8 inch (321 mm).

* + - * 1. Control rod for opening the hatch.
				2. Ceiling Height: 8 ft 10-1/8 inch to 9 ft 10 inches (2696 x 3251 mm).

Rough Opening: 22 x 47 inch (559 x 1194 mm).

Rough Opening: 25 x 47 inch (635 x 1194 mm).

* + - * 1. Maximum Loading: 300 lbs (136.1 kg).
				2. Fire Rated per EN 13501-2: EI2 is 60 min.
				3. Accessories:

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Additional step for increasing ladder length.

\*\* NOTE TO SPECIFIER \*\* The LMF60 model is a new generation attic ladder that provides access to unused space in the attic, and at the same time functions as a fire protection for 60 minutes; 1 hour rating in accordance with NFPA 288 and ASTM E119-14.

* + - 1. Model LMF: Wooden, Folding, and Insulated.
				1. Hatch: Sandwich type, insulated, fire resistant, and no lock. Color: White.

Thickness: 3-3/8 inches (86 mm).

Thermal insulation thickness: 3-1/8 inch (79 mm).

Unloading Mechanism: Automatically presses hatch to box, opening with use of control rod.

Gasket: 3 pieces. Expands under extreme heat.

* + - * 1. Frame: Material: Pinewood. Height: 8-7/8 inches (225 mm).
				2. Ladder: Material: Metal. Width: 15 inch (381 mm). Stringer height: 3-1/8 inch (79 mm).

\*\* NOTE TO SPECIFIER \*\* Delete ceiling height option not required.

Ceiling Height: 10 ft 1 inches (3073 mm).

Distance Between Steps: 9-7/8 inch (251 mm).

Ceiling Height: 11 ft 10 inches (3607 mm).

Distance Between Steps: 9-1/2 inch (241 mm).

* + - * 1. Steps: Material: Metal. Anti-slip profile. Step Width: 3-1/8 inch (79 mm). Step Length: 13-3/8 inch (340 mm).
				2. Maximum Loading: 350 lbs (158.7 kg).
				3. Heat Transfer Coefficient R-value: 8.9.
				4. Fire Rating: ASTM E119 and NFPA 288: 60 min.

\*\* NOTE TO SPECIFIER \*\* Delete ceiling height and rough opening options not required.

* + - * 1. Ceiling Height: 8 ft 1 inches to 10 ft 1 inches (214 to 267 mm).

Rough Opening: 22-1/2 x 54 inches (64 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Ceiling Height: 9 ft 7-1/2 inch to 11 ft 10 inch (255 x 3607 mm).

Rough Opening: 25 x 56-1/2 inches (635 x 1435 mm).

Rough Opening: 30 x 56-1/2 inches (762 x 1435 mm).

* + - * 1. Accessories:

\*\* NOTE TO SPECIFIER \*\* Delete ceiling height option not required.

Ceiling Height: 10 ft 1 inches (3073 mm).

Handrail: Metal.

Control Rod: For opening hatch.

Ceiling Height: 11 ft 10 inches (3607 mm).

Handrail: Metal with unloading mechanism.

Control Rod: Teloscopic rod to open hatch and unfold the ladder.

Handrail in red color.

Plastic ends.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Metal handrail.

Installation Brackets: Maximum ceiling 15-3/8 inch (390.5 mm).

Trim: 30 x 56.5 inches (762 x 1435 mm). Smaller sizes have to be cut.

Material: Wood.

Material: PCV.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (44 mm).

* + 1. Special Attic Ladders:
			1. Model: LML: Metal, Folding, and Insulated. 3-section, piston-assist.
				1. Complies with EN 14975.
				2. Loading: 350 lbs (159 kg)
				3. Hatch U Value: 0.19 btu/ hr sq ft F (1.08 W/sq m K).
				4. Hatch Thickness: 1-3/8 inch (35 mm).
				5. Insulation thickness: 1-1/8 inch (29 mm).
				6. R-Value: 5.2.
				7. Ceiling Height: 9 ft 2-3/4 inches. (2913 mm).

Rough Opening: 23-1/2 x 47 inch (597 x 1194 mm).

Outside Frame: 23 x 46-3/4 inches (584 x 1187 mm).

Internal Frame Dimensions: 21-5/8 x 44-7/8 inches (549 x 1140 mm).

Projection: 65 inch (1651 mm).

Landing Space: 47-1/4 inch (1200 mm).

Approximate Weight: 119 lbs (54 kg).

* + - * 1. Ceiling Height: 10 ft (3048 mm).

Rough Opening: 27-1/2 x 51 inch (698 x 1295 mm).

Outside Frame: 27 x 50-5/8 inch (686 x 1286 mm).

Internal Frame Dimensions: 5-1/4 x 48-7/8 inches (133 x 1241 mm).

Projection: 69-1/2 inch (1765 mm).

Landing Space: 51-1/4 inch (1302 mm).

Approximate Weight: 128 lbs (58 kg).

* + - * 1. Folded Ladder Height: 12-1/2 inch (317 mm).
				2. Frame Height: 12-1/2 inch (317 mm).
				3. Step Length: 13-3/4 inch (349 mm).
				4. Step Width: 5-1/8 inch (130 mm).
				5. Distance Between Steps: 9-7/8 inch (251 mm).
			1. Model: LMP: Metal, Folding, and Insulated. 3-section, unloading mechanism hidden in handrail.
				1. Loading: 350 lbs (159 kg)
				2. Hatch U Value: 0.19 btu/ hr sq ft F (1.08 W/sq m K).
				3. Hatch Thickness: 1-3/8 inch (35 mm).
				4. Insulation thickness: 1-1/8 inch (28 mm).
				5. R-Value: 5.2
				6. Ceiling Height: 9 ft 10 inches to 12 ft. (3251 to 3658 mm).

Rough Opening: 22-1/2 x 56-1/2 inch (572 x 1435 mm).

Outside Frame: 22 x 56 inches (559 x 1422 mm).

Approximate Weight: 102 lbs (46.3 kg).

Rough Opening: 25 x 56-1/2 inch (635 x 1435 mm).

Outside Frame: 24-1/2 x 56 inches (622 x 1422 mm).

Approximate Weight: 108 lbs (49 kg).

Rough Opening: 30 x 56-1/2 inch (762 x 1435 mm).

Outside Frame: 29-1/2 x 54-3/8 inches (749 x 1381 mm).

Approximate Weight: 114 lbs (51.7 kg).

* + - * 1. Projection: 77-1/8 inch (283 mm).
				2. Landing Space: 57-1/8 inch (1451 mm).
				3. Folded Ladder Height: 12-5/8 inch (321 mm).
				4. Frame Height: 7-1/8 inch (181 mm).
				5. Step Length: 13-5/8 inch (346 mm).
				6. Step Width: 3-1/8 inch (79 mm).
				7. Distance Between Steps: 9-1/2 inch (241 mm).
		1. Thermo Insulated Attic Ladders:
			1. Model: LWT: Wooden. Folding, and Insulated. 3-section. frame perimeter lines withtrip[le seal system and lid is double sandwich insulated.
				1. Complies with ANSI 14.9.
				2. Loading: 350 lbs (159 kg).
				3. R-Value: 12.5.
				4. Hatch U Value: 0.09 btu/ hr sq ft F (0.51 W/sq m K).
				5. Hatch: Sandwich type, insulated, with lock. Color: White.

Thickness: 3-1/8 inches (79 mm).

Thermal insulation thickness: 2-7/8 inch (73 mm).

Gasket: 3 pieces.

* + - * 1. Frame: Material: Pinewood. Height: 8-5/8 inches (219 mm).
				2. Ladder: Material: Pinewood. Width: 15 inch (381 mm). Stringer height: 3-1/8 inch (79 mm). Distance Between Steps: 9-7/8 inch (251 mm).
				3. Steps: Material: Pinewood. Anti-slip profile. Step Width: 3-1/8 inch (79 mm). Thickness: 7/8 inch (22 mm). Length: 13-1/4 inch (336 mm).
				4. Ceiling Height: 7 ft 5 inches to 8 ft 11 inches (2261 to 2718 mm).

Rough Opening: 22-1/2 x 47 inch (572 x 1194 mm).

Rough Opening: 25 x 47 inch (635 x 1194 mm).

* + - * 1. Ceiling Height: 7 ft 11-1/2 inch to 10 ft 1 inch (2426 to 3073 mm).

Rough Opening: 22-1/2 x 54 inches (572 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Accessories:

Handrail in red color.

Plastic ends.

Control rod for opening the hatch.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Metal handrail. Mounts to either left or right side of ladder.

Installation Brackets: Maximum ceiling 17 inch (432 mm).

Trim: 30 x 54 inches (762 x 1372 mm). Smaller sizes have to be cut.

Material: Wood.

Material: PCV.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (197 mm).

* + 1. Premium Attic Ladders:
			1. Model LMS: Metal, Folding, Insulated with Lock. 3-sections. Color: Beige.
				1. Complies with ANSI 14.9.
				2. Loading: 350 lbs (159 kg)
				3. Hatch U Value: 0.19 btu/ hr sq ft F(1.08 W/sq m K)
				4. Hatch Thickness: 1-3/8 inch (35 mm).
				5. Insulation thickness: 1-1/8 inch (29 mm).
				6. R-Value: 5.2
				7. Hatch: Insulated and fire-resistant with lock. Color: White.

Thickness: 1-3/8 inch (35 mm).

Thermal Insulation Thickness: 1-1/8 inch (29 mm).

Gasket: 1 piece.

* + - * 1. Frame: Pinewood ladder box. Height: 5-1/2 inches (140 mm).
				2. Ladder: Metal

Width: 15 inches (381 mm).

Stringer Height: 3-1/8 inch (35 mm).

Distance Between Steps: 9-7/8 inches (251 mm)

* + - * 1. Steps: Metal, equipped with anti-slip profile. Step Width: 3-1/8 inch (35 mm).

Length: 13-1/4 inch (336 mm).

* + - * 1. Control rod for opening the hatch.
				2. Ceiling Height: 7 ft 2 inches to 8 ft 11 inches (2184 x 2718 mm).

Rough Opening: 22 x 47 inch (559 x 1194 mm).

Rough Opening: 25 x 47 inch (635 x 1194 mm).

* + - * 1. Ceiling Height: 7 ft 11 inch to 10 ft 1 inch (2413 x 3073 mm).

Rough Opening: 22-1/2 x 54 inches (572 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Accessories:

Plastic ends.

Control rod for opening the hatch.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Metal handrail. Mounts or left or right side of ladder.

Installation Brackets: Maximum ceiling 17 inch (432 mm).

Trim: 30 x 54 inches (762 x 1372 mm). Smaller sizes have to be cut.

Material: Wood.

Material: PCV.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (197 mm).

* + - 1. Model LST: Metal, Scissor, and Insulated.
				1. Complies with EN 14975.
				2. Loading: 350 lbs (159 kg).
				3. R-Value: 5.2
				4. Hatch U Value: 0.19 btu/ hr sq ft F (1.08 W/sq m K).
				5. Hatch: Insulated and fire-resistant, no lock. Color: White.

Thickness: 1-3/8 inch (35 mm).

Thermal Insulation Thickness: 1-1/8 inch (29 mm).

Unloading Mechanism: Automatically presses the hatch to the box.

* + - * 1. Frame: Pinewood with metal trim and quick-installation brackets.

Height: 7-5/8. Inch (194 mm). Gasket: 1 piece.

* + - * 1. Ladder: Metal scissor.
				2. Steps: Metal, equipped with anti-slip profile. Step Width: 3-1/8 inch (79 mm).

Length: 15 inch (381 mm).

* + - * 1. Control rod for opening the hatch.
				2. Accessories:

White metal trim.

Installation brackets.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (197 mm).

Additional Step: To increase the length of the ladder.

* + - 1. Model LWP: Wooden, Folding, and Insulated:
				1. Hatch Type: Sandwich, insulated, with lock Color: Beige.

Thickness: 1-3/8 inches (35 mm).

Thermal Insulation Thickness: 1-1/8 inch (29 mm).

* + - * 1. Frame: Material: Pinewood. Height: 5-1/2 inches (140 mm). Gasket: 1 piece.
				2. Ladder: Material: Pinewood. Width: 15 inch (351 mm). Stringer height: 31-1/8 inch (791 mm). Distance Between Steps: 9-7/8 inch (251 mm).
				3. Steps: Material: Pinewood. Anti-slip profile. Step Width: 3-1/8 inch (791 mm). Thickness: 7/8 inch (22 mm). Length: 13-1/4 inch (336 mm).
				4. Maximum Loading: 300 lbs (136 kg).
				5. Heat Transfer Coefficient R-Value: 5.9.
				6. Ceiling Height: 7 ft 5 inches to 8 ft 11 inches (2261 x 2718 mm).

Rough Opening: 22-1/2 x 47 inch (572 x 1194 mm).

Rough Opening: 25 x 47 inch (635 x 1197 mm).

* + - * 1. Ceiling Height: 7 ft 10 inch to 10 ft 1 inch (2388 to 3073 mm).

Rough Opening: 2-1/2 x 54 inches (64 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Ceiling Height: 8 ft 8-1/2 inch to 10 ft 8 inch (2654 to 3251 mm).

Rough Opening: 2-1/2 x 54 inches (64 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Accessories:

Handrail in red color.

Control rod for opening the hatch.

Plastic ends.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Metal handrail.

Installation Brackets: Maximum ceiling 13-3/4 inch (349 mm).

Trim: 30 x 54 inches (762 x 1372 mm). Smaller sizes have to be cut.

Material: Wood.

Material: PCV.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (197 mm).

* + 1. Basic Attic Doors:
			1. Model: LMB: Wooden and Folding. 3-section.
				1. Loading: 300 lbs (136 kg).
				2. Hatch: Sandwich type, insulated. Color: Beige. Paintable

Hatch Thickness: 1 inch (25 mm).

Unloading Mechanism: Automatically presses hatch to box, opening with use of control rod.

* + - * 1. R-Value: 3.7.
				2. Frame: Material: Pinewood. Height: 4-3/8 inch (111 mm).
				3. Ladder: Material: Pinewood. Width: 15 inch (381 mm). Stringer height: 3-1/8 inch (79 mm). Distance Between Steps: 9-7/8 inch (251 mm).
				4. Steps: Material: Pinewood. Anti-slip profile. Step Width: 3-1/8 inch (79 mm). Thickness: 7/8 inch (22 mm). Length: 13-1/4 inch (336 mm).
				5. Ceiling Height: 7 ft 10 inch to 10 ft 1 inch (2388 to to 3073 mm).

Rough Opening: 22-1/2 x 54 inches (571 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Accessories:

Plastic ends.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Metal handrail. Mounts to either left or right side of ladder.

Installation Brackets: Maximum ceiling 12-1/2 inch (317 mm).

Trim: 30 x 54 inches (762 x 1372 mm). Smaller sizes have to be cut.

Material: Wood.

Material: PCV.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (197 mm).

* + - 1. Model: LMB: Metal and Folding. 3-section.
				1. Loading: 350 lbs (160 kg)
				2. Hatch Sandwich type, insulated. Color: Beige. Paintable.

Hatch Thickness: 1 inch (25 mm).

Equipped with recessed hook.

* + - * 1. Frame: Material: Pinewood. Height: 4-1/2 inch (114 mm).
				2. Ladder: Metal. Width: 15 inch (381 mm). Distance Between Treads: 9-7/8 inch (251 mm).
				3. Steps: Metal. Anti-slip profile. Tread Width: 3-1/8 inch (79 mm). Length: 13-1/4 inch (337 mm).
				4. Control Rod for opening hatch.
				5. Ceiling Height: 7 ft 8 inch to 10 ft 3 inch (2413 to 3073 mm).

Rough Opening: 22-1/2 x 54 inches (571 x 1372 mm).

Rough Opening: 25 x 54 inches (635 x 1372 mm).

Rough Opening: 30 x 54 inches (762 x 1372 mm).

* + - * 1. Accessories:

Plastic ends.

Control rod for opening the hatch.

Ladder Balustrade: 30 x 54 inches (762 x 1372 mm) for all attic ladders.

Metal handrail. Mounts to either left or right side of ladder.

Installation Brackets: Maximum ceiling 12-1/2 inch (317 mm).

Trim: Wood. 30 x 54 inches (762 x 1372 mm). Cut for smaller sizes.

Box Extension: 4 inches (102 mm).

Upper Hatch: Height: 7-3/4 inch (197 mm).

1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly constructed and prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
	3. INSTALLATION
		1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
	4. FIELD QUALITY CONTROL
		1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction. Delete if not required.

* + 1. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
	1. CLEANING AND PROTECTION
		1. Clean products in accordance with the manufacturers recommendations.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION