SECTION 07 72 00

ROOFTOP FALL PROTECTION AND ACCESSORIES

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\*\* NOTE TO SPECIFIER \*\* Kee Safety, Inc.; pipe railing fittings, safety railing systems, deadweight anchor systems, skylight fall protection, horizontal lifeline systems.
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This section is based on the products of Kee Safety, Inc., which is located at:
100 Stradtman St.
Buffalo, NY 14206
Toll Free Tel: (800) 851-5181
Tel: (716) 896-4949
Fax: (716) 896-5696
Email: info@keesafety.com
Web: http://www.keesafety.com
click Herefor additional information
Kee® Safety is a leading global supplier of components and bespoke systems for railings, barriers, roof edge protection and fall prevention. Established in the UK in 1934, the range has expanded from our original Kee Klamp product into a portfolio of safety equipment, all designed to protect people and prevent accidents.
Kee Safety strives to provide only the highest level of safety solutions and products to every industry and niche around the world. We serve every size customer and client, and provide solutions for every project. From code compliant rooftop safety products such as passive roof edge fall protection and skylight fall protection -- to readily achievable ADA handrails or DDA handrailing and compliant guardrails. No handrail project is too big, or safety railing too small for Kee Safety.
Kee Safety also provides non-welded solutions I-beam clamps, grating clips and floor fixtures for projects where welding is not an option.

1. GENERAL
	1. SECTION INCLUDES

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

* + 1. Free-standing rooftop fall protection systems. (KeeGuard)
		2. Free-standing rooftop fall protection systems. (KeeGuard Contractor)
		3. Fixed rooftop fall protection systems. (KeeGuard Topfix)
		4. Safety railing kits. (Kwik Kit)
		5. Deadweight anchor systems. (Kee Anchor)
		6. Skylight fall protection systems for metal roof skylights. (KeeGuard)
		7. Horizontal lifeline systems. (KeeLine)
		8. Collective free-standing skylight guardrail systems. (Kee Dome)
		9. Rooftop walkway systems. (Kee Walk)
		10. Rooftop hatch safety railing systems. (KeeHatch)
		11. Free-standing warning line systems. (Kee Mark)
		12. Custom rooftop fall protection systems.
	1. RELATED SECTIONS

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

* + 1. Section 05 50 00 - Metal Fabrications.

\*\* NOTE TO SPECIFIER \*\* Roof Edge Protection and Roof Hatch protection only. Delete if not required.

* + 1. Section 07 42 00 - Wall Panels.
	1. REFERENCES

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

* + 1. Americans with Disabilities Act Accessibility Guidelines (ADA).
		2. American National Standards Institute (ANSI):
			1. A 21.1 - Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
			2. A 58.1 - Minimum Design Loads in Buildings and Other Structures.
			3. A 117.1 - Accessible and Usable Buildings and Facilities.
		3. ASTM International (ASTM):
			1. ASTM A 47 - Standard Specification for Ferritic Malleable Iron Castings.
			2. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
			3. ASTM A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
		4. Occupational Safety and Health Administration (OSHA): 1910.23 - Guarding Floor and Wall Openings and Holes.
		5. Underwriters Laboratories (UL): UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's data sheets on each product to be used, including:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.
		3. Shop Drawings: Including but not limited to indication of profiles, sizes, connections, sizes and types of fasteners and accessories; showing fabrication and installation of handrails and guardrails including but not limited to plans, elevations, sections, details of components, anchor details, and attachment to adjoining units of work.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each system specified, two complete sets of color chips representing manufacturer's full range of available finishes.
		2. Verification Samples: For each system specified, two samples, minimum size 6 inches (150 mm) long, representing actual system components and finishes.
	1. QUALITY ASSURANCE

\*\* NOTE TO SPECIFIER \*\* For aluminum and steel railing systems. Delete if not required.

* + 1. Railings Structural Requirements:

\*\* NOTE TO SPECIFIER \*\* The following are typical structural requirements for rails. Modify for the location of your project if required by code or other authorities.

* + - 1. Handrail, wall rail and guardrail assemblies and attachments shall withstand a minimum concentrated load of 200 pounds (90719 g) applied horizontally or vertically down at any point on the top rail.
			2. Handrail assemblies and guards shall be designed to resist a load of 50 pounds per linear foot (0.73 kN/m) applied in any direction at the top and to transfer this load through the supports to the structure.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Infill area of guardrail system capable of withstanding a horizontal concentrated load of 200 pounds (90719 g) applied to one square foot (8165 g/sm) at any point in the system. Load not to act concurrently with loads on top rail of system in determining stress on guardrail.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project 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: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
			1. Install in areas designated by Architect.
			2. Do not proceed with remaining work until workmanship and installation are approved by Architect.
			3. Refinish mock-up area as required to produce acceptable work.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards. Store materials within absolute limits for temperature and humidity recommended by the manufacturer.
		2. Protect finishes from damage.
	2. 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 absolute limits.
		2. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings.
			1. Where field measurements cannot be made without delaying the railing fabrication and delivery, obtain guaranteed dimensions in writing by the Contractor and proceed with fabrication of products to not delay fabrication, delivery and installation.
		3. Coordinate fabrication and delivery schedule of handrails with construction progress and sequence to avoid delay of railing installation.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Kee Safety, Inc., which is located at:100 Stradtman St.Buffalo, NY 14206Toll Free Tel: 800-851-5181Tel: 716-896-4949Fax: 716-896-5696Email: [request info (info@keesafety.com)](https://arcat.com/rfi?action=email&company=Kee%252BSafety%252C%252BInc.&message=RE%253A%2520Spec%2520Question%2520(07720ksi)%253A%2520&coid=33541&spec=07720ksi&rep=&fax=716-896-5696);Web: <http://keesafety.com> | <http://keesafety.ca>

\*\* 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.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. FREE-STANDING ROOFTOP FALL PROTECTION SYSTEMS (KEEGUARD)
		1. Free-Standing Rooftop Fall Protection Systems: KeeGuard as manufactured by Kee Safety Inc.
			1. Description: Permanent, modular, free-standing, roof edge railing system that does not penetrate the roofing system; including but not limited to
			2. Provide components including but not limited to pipe railings, uprights, bases, counterweights, fittings and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Compliance:
				1. OSHA Standard 29 CFR 1910.23.

42 inch (1067 mm) minimum height to provide a pedestrian egress barrier on the roof to withstand a minimum load of 200 lb (90719 g).

* + - * 1. OSHA Standard 29 CFR 1926.501.
				2. OSHA Standard 29 CFR 1926.502.
				3. Canadian National Building Code 4.1.10.1(1)(e), 4.1.10.1(2), 4.1.10.1(4).
				4. Ontario Building Code Section 4.1.10.1(1)(b), 4.1.10.1(2), 4.1.10.1(4).
				5. California Building Code 1710A.3.1.
				6. California Code of Regulations Title 8 Sections 3209 and 3294.
				7. HSG-33 Health and Safety in Roof Work.
				8. HSE Specialist Report No 15.
				9. HSE Sheet 21 "Working on Flat Roofs Protection Against Falls."
				10. BS 6399; Part 2 Wind Code.
				11. EU Directives and CDM Regulations.
				12. BGV A1: 2000, BGG 928 & BGR 184.
				13. Health, Safety and Welfare Regulation 13 "Falls or Falling Objects."
				14. NFE 85-003.
				15. EN ISO 14122: PT3.
				16. EN 13374.
				17. TuV Tested.

\*\* NOTE TO SPECIFIER \*\* Delete system design not required.

* + - 1. System Design: Designed for applications with flat or low slope roof up to 10 degrees.
				1. Counterbalances: With one fixing collar per counterbalance.

Materials: 100 percent recycled PVC.

\*\* NOTE TO SPECIFIER \*\* Delete options for types not required.

Type: As indicated on Drawings.

For slopes up to 5 degrees:

End Counter Balance: CB7 - Seven Weight Counterbalance.

Second Vertical Leg Counter Balance: CB1 - One Weight Counterbalance.

Subsequent Counter Balances: CB1 - One Weight Counterbalance.

For slopes up to 5 degrees:

End Counter Balance: CB4 - Four Weight Counterbalance.

Second Vertical Leg Counter Balance: CB3 - Three Weight Counterbalance.

Subsequent Counter Balances: CB1 - One Weight Counterbalance.

For slopes up to 10 degrees:

End Counter Balance: CB8 - Eight Weight Counterbalance.

Second Vertical Leg Counter Balance: CB1 - One Weight Counterbalance.

Subsequent Counter Balances: CB1 - One Weight Counterbalance.

* + - 1. System Design: Designed to standing seam metal roof applications.
				1. Four S5U clamps bolted to galvanized steel baseplate, and attached to standing seams with set screws without puncturing metal roof.
				2. Kee Klamp Type 62 base fitting affixes to metal baseplates to support uprights.
				3. Horizontal baseplates custom fabricated to for standing seam metal roofs.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - * 1. Kee Klamp Type 69 fitting to accommodate a toeboard.

\*\* NOTE TO SPECIFIER \*\* Delete options for system configuration not required.

* + - 1. System Configuration: As indicated on Drawings.
			2. System Configuration: KeeGuard 13 ft Straight Guardrail Run.
			3. System Configuration: KeeGuard 16 ft 4 inch Straight Guardrail Run.
			4. System Configuration: KeeGuard 21 feet Straight Guardrail Run.
			5. System Configuration: KeeGuard 29 feet 4 inch Straight Guardrail Run.
			6. System Configuration: KeeGuard 9 ft 10 inch Straight Guardrail Run.
			7. System Configuration: Radiused System, length as indicated.

\*\* NOTE TO SPECIFIER \*\* Delete options for nominal pipe size not required.

* + - 1. Pipe Size: As indicated on Drawings.
			2. Top and Intermediate Rails: 1.9 inches outside diameter with 0.109 inch wall thickness.
			3. Cantilever Tubes: 1.66 inches outside diameter with 0.109 inch wall thickness.
			4. Fittings: Galvanized malleable cast iron, ASTM A 47 with ASTM A 153 galvanizing.
			5. Fasteners: Type 304 or 305 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete option for components not required.

* + - 1. Components: As scheduled and indicated on Drawings, as required to match design indicated on Drawings and as required to provide complete installation.
			2. Components:

\*\* NOTE TO SPECIFIER \*\* Delete components not required.

* + - * 1. Upright Assembly: Type KGU135.
				2. Upright Assembly: Type KGU45.
				3. Counterweight Levers: Galvanized tube, 12 gauge, 1-1/4 inch nominal size.
				4. Mounting Bases: Galvanized steel with rubber pad on underside.

\*\* NOTE TO SPECIFIER \*\* Delete option for in-fill panels if not required.

* + - 1. In-fill Panels: Welded wire mesh; up to 48 inches (1219 mm) wide by 72 inches long (1829 mm).

\*\* NOTE TO SPECIFIER \*\* Delete options for material, finish not required.

* + - * 1. Materials, Finish: Steel with galvanized finish.
				2. Materials, Finish: Steel with powder coated finish.

\*\* NOTE TO SPECIFIER \*\* Fill in blank below with RAL color designation as applicable. Delete options for color not required.

Color: \_\_\_\_\_\_\_\_\_\_\_\_.

Color: To match guardrail system.

Color: As indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete options for welded wire mesh size not required.

* + - * 1. Mesh Openings: Standard, 4 inches x 4 inches (102 mm x 102 mm).
				2. Mesh Openings: 2 inches x 2 inches (51 mm x 51 mm).
				3. Mesh Openings: 1 inches x 1 inches (25 mm x 25 mm).

\*\* NOTE TO SPECIFIER \*\* Delete option for in-fill panels if not required.

* + - 1. In-fill Panels: Custom materials, size and finish as indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete option for toeboards if not required.

* + - 1. Toeboards: No drilling required; upright hardware and splice kits for corners and straight sections as required for complete installation.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. FREE-STANDING ROOFTOP FALL PROTECTION SYSTEMS (KEEGUARD CONTRACTOR)
		1. Free-Standing Rooftop Fall Protection Systems: KeeGuard Contractor as manufactured by Kee Safety Inc.
			1. Description: Portable, modular, free-standing, roof edge railing system that does not penetrate the roofing system.
			2. Provide components including but not limited to pipe railings, uprights, bases, weights, fittings and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Compliance:
				1. OSHA Standard 29 CFR 1910.23.

42 inch (1067 mm) minimum height to provide a pedestrian egress barrier on the roof to withstand a minimum load of 200 lb (90719 g).

* + - * 1. OSHA Standard 29 CFR 1926.501.
				2. OSHA Standard 29 CFR 1926.502.
				3. Canadian National Building Code 4.1.10.1(1)(e), 4.1.10.1(2), 4.1.10.1(4).
				4. Ontario Building Code Section 4.1.10.1(1)(b), 4.1.10.1(2), 4.1.10.1(4).

\*\* NOTE TO SPECIFIER \*\* Delete system design not required.

* + - 1. System Design: Designed for applications with flat or low slope roof up to 5 degrees.
				1. Bases: Produced in two halves.

Materials: 100 percent recycled PVC.

\*\* NOTE TO SPECIFIER \*\* Delete options for types not required.

Weights: As indicated on Drawings.

Weights: Four in first bay and return.

Weights: Three in first bay.

* + - 1. System Configuration: As indicated on Drawings.
			2. Top and Intermediate Rails and Vertical Support Rails: 1.9 inches outside diameter with 0.109 inch wall thickness.
			3. Fittings: Galvanized malleable cast iron, ASTM A 47 with ASTM A 153 galvanizing.
			4. Fasteners: Type 304 or 305 stainless steel.
			5. Components: As scheduled and indicated on Drawings, as required to match design indicated on Drawings and as required to provide complete installation.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. FIXED ROOFTOP FALL PROTECTION SYSTEMS (KEEGUARD TOPFIX)
		1. Fixed Rooftop Fall Protection Systems: KeeGuard Topfix as manufactured by Kee Safety Inc.
			1. Description: Fixed, modular, roof edge railing system for metal clad roofing systems.
			2. Provide components including but not limited to pipe railings, uprights, bases, fittings and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Compliance:
				1. OSHA Standard 29 CFR 1910.23.

42 inch (1067 mm) minimum height to provide a pedestrian egress barrier on the roof to withstand a minimum load of 200 lb (90719 g).

* + - * 1. OSHA Standard 29 CFR 1926.501.
				2. OSHA Standard 29 CFR 1926.502.
				3. Canadian National Building Code 4.1.10.1(1)(e), 4.1.10.1(2), 4.1.10.1(4).
				4. Ontario Building Code Section 4.1.10.1(1)(b), 4.1.10.1(2), 4.1.10.1(4).
				5. California Building Code 1710A.3.1.
				6. California Code of Regulations Title 8 Sections 3209 and 3294.

\*\* NOTE TO SPECIFIER \*\* Delete system design not required.

* + - 1. System Design: Designed for applications with flat or low slope roof up to 10 degrees.
				1. Maximum Bay Centers for slopes up to 10 degrees:

First or End Bay Length: 8 inches.

Subsequent Bay Lengths: 8 feet.

* + - * 1. Maximum Bay Centers for slopes up to 5 degrees:

First or End Bay Length: 3 feet 3 inches.

Subsequent Bay Lengths: 6 feet 6 inches.

* + - 1. Top and Intermediate Rails and Vertical Support Rails: 1.9 inches outside diameter with 0.109 inch wall thickness.
			2. Cantilever Tubes: 1.66 inches outside diameter with 0.109 inch wall thickness.
			3. Attachment:

\*\* NOTE TO SPECIFIER \*\* Delete attachment options not required.

* + - * 1. Base Plate: Galvanized steel, riveted to roof.
				2. Non-penetrating WFP6 galvanized steel clamps to clamp on to standing seam.
			1. Fittings: Galvanized malleable cast iron, ASTM A 47 with ASTM A 153 galvanizing.
			2. Fasteners: Type 304 or 305 stainless steel.
			3. Components: As scheduled and indicated on Drawings, as required to match design indicated on Drawings and as required to provide complete installation.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. SAFETY RAILING KITS (KWIK KIT)
		1. Safety Barriers: Kwik Kit safety railing kits as manufactured by Kee Safety Inc.
			1. Provide components including but not limited to pipe, fittings, and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			2. Compliance: Safety barrier system with 42 inches (1067 mm) height to provide a pedestrian egress barrier to withstand a minimum load of 200 lb (90719 g) in any direction to components per OSHA Regulation 29 CFR 1910.23.
			3. Fabrication: Preassembled upright modules.
			4. Pipe: 1.90 inches (48 mm) OD.
			5. Rails and Posts: Safety yellow powder coated finish.
			6. Fittings: Galvanized malleable cast iron, ASTM A 47 with ASTM A 153 galvanizing.
			7. Fasteners: Type 304 or 305 stainless steel.
			8. Post Spacing: 72 inches (1829 mm).

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* + - 1. Type: Steel kit, Kwik SC Steel Corner Kit.
				1. Description: Contains 3 pre-assembled 42 inch uprights and 4 horizontal rails; 3 standard railing base flanges, 2 ninety degree elbows, 2 single socket tees, 1 side outlet elbow, and 1 ninety degree side outlet tee.
			2. Type: Steel kit, Kwik SE Steel Extension Kit.
				1. Description: Contains 1 pre-assembled 42 inch upright and 2 horizontal rails; 1 standard railing base flange, 1 three socket tee, and 1 two socket cross.
			3. Type: Steel kit, Kwik SS Steel Straight Kit.
				1. Description: Contains 3 pre-assembled 42 inch upright and 2 horizontal rails; 1 standard railing base flange, 1 three socket tee, and 1 two socket cross.
			4. Type: Aluminum kit, Kwik AC Aluminum Corner Kit.
				1. Description: Contains 3 pre-assembled 42 inch uprights and 4 horizontal rails; 3 standard railing base flanges, 2 ninety degree elbows, 2 single socket tees, 1 side outlet elbow, and 1 ninety degree side outlet tee.
			5. Type: Aluminum kit, Kwik AE Aluminum Extension Kit.
				1. Description: Contains 1 pre-assembled 42 inch upright and 2 horizontal rails; 1 standard railing base flange, 1 three socket tee, and 1 two socket cross.
			6. Type: Aluminum kit, Kwik AS Aluminum Straight Kit.
				1. Description: Contains 3 pre-assembled 42 inch upright and 2 horizontal rails; 1 standard railing base flange, 1 three socket tee, and 1 two socket cross.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. DEADWEIGHT ANCHOR SYSTEMS (KEE ANCHOR)

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Deadweight Anchor Systems: Kee Anchor WEIGHTANKA as manufactured by Kee Safety Inc.
			1. Description: Non-penetrating, mobile, modular, deadweight anchor system for use on roofs with up to a 5 degree pitch, for use with personal protection equipment.
			2. Provide components and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Permitted Number of Users: Fall restraint for up to 2 workers providing they cannot get to less than 20 inches (508 mm) from the edge or other opening.
			4. Field Fabrication: No on-site welding, bending or threading required; installed with hand tools.
			5. Finish: Galvanized to BS EN ISO 1461.
			6. Rubber Weights: Molded base weights with over 100 suction cups molded into each rubber bonded weight.
			7. Central Pedestal: Raised attachment point to reduce distance of travel during fall arrest event.

\*\* NOTE TO SPECIFIER \*\* Delete system configuration not required.

* + - 1. System Configuration: As indicated on Drawings.
			2. System Configuration: Standard, with 4 rubber molded weights, 6 hot dip galvanized weights; overall weight of 550 lb (250 kg).
			3. System Configuration: Designed for single ply membrane with a smooth flat surface, with 4 rubber molded weights, 8 hot dip galvanized weights; overall weight of 660 lb (300 kg).

\*\* NOTE TO SPECIFIER \*\* Delete optional accessory below if not required.

* + - 1. Accessory: Provide optional protective cover.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Deadweight Anchor Systems for Horizontal Safety Lines: Kee Anchor WIREANKA as manufactured by Kee Safety Inc.
			1. Description: Non-penetrating, mobile, modular deadweight anchor system for flexible safety lines such as KeeLine or manufacturer approved equal.
			2. Provide components and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Finish: Galvanized to BS EN ISO 1461.
			4. Base Weights: Fully encased in rubber molding.

\*\* NOTE TO SPECIFIER \*\* Delete options for system configuration not required.

* + - 1. System Configuration: As indicated on Drawings.
			2. System Configuration: Standard.
				1. Permitted Number of Users:

Fall arrest single user attached to system at any one time.

Fall restraint for up to 2 workers providing they cannot get to less than 20 inches (508 mm) from the edge or other opening.

* + - 1. System Configuration: Custom, to allow for additional users.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. SKYLIGHT FALL PROTECTION SYSTEMS FOR METAL ROOF SKYLIGHTS (KEEGUARD)
		1. Skylight Fall Protection Systems For Metal Roof Skylights: KeeGuard Skylight Screens as manufactured by Kee Safety Inc.
			1. Description: Non-penetrating, skylight fall protection screens for metal roof skylights.
			2. Provide components and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Compliance: OSHA standard 1910.23(a)(4); screen will withstand a load of at least 200 pounds applied perpendicularly at any one area on the screen.

\*\* NOTE TO SPECIFIER \*\* Delete materials not required.

* + - 1. Materials: Stainless steel.
			2. Materials: Galvanized steel.

\*\* NOTE TO SPECIFIER \*\* Delete options for system configuration not required.

* + - 1. System Configuration: As indicated on Drawings.
			2. System Configuration: Designed for curb style skylights.

\*\* NOTE TO SPECIFIER \*\* Standard sizes range from 12 inches (305 mm) by 12 inches (305 mm) to 70 inches (1778 mm) to 120 inches (3048 mm). Fill in blanks below with size indication as applicable. Delete options for size not required.

* + - * 1. Size: Standard size, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
				2. Size: Custom size, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
				3. Size: As indicated on Drawings.
			1. System Configuration: Designed for standing seam metal roof skylights.

\*\* NOTE TO SPECIFIER \*\* Delete options for size not required.

* + - * 1. Size: Standard, 24 inches (610 mm) by 120 inches (3048 mm).
				2. Size: Custom size, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
				3. Size: As indicated on Drawings.
			1. System Configuration: Designed for rib/corrugated metal roof skylights.

\*\* NOTE TO SPECIFIER \*\* Delete options for size not required.

* + - * 1. Size: Standard, 36 inches (914 mm) by 120 inches (3048 mm).
				2. Size: Custom size, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
				3. Size: As indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. HORIZONTAL LIFELINE SYSTEMS (KEELINE)
		1. Horizontal Lifeline Systems: KeeLine as manufactured by Kee Safety Inc.
			1. Description: Horizontal safety line system providing continuous worker attachment, accommodating up to 3 users in fall restraint and 2 users fall arrest situations.
			2. Provide components and accessories as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Compliance:
				1. ANSI/ASSE Z359.1.
				2. CAN/CSA Z259.
				3. OSHA Standard 29 CFR 1910.66.
				4. OSHA Standard 29 CFR 1926.502.
				5. EN795 Class C.
				6. AS/NZS 1891.2.
				7. AS/NZS 1821.
				8. CE marked.
			4. Wire: 5/16 inch (8 mm), grade 316 stainless steel wire.
			5. Hardware: 316 stainless steel electro-polished brackets, 316 stainless steel detachable travelers and powder coated anchors; system incorporates inline shock absorbers.

\*\* NOTE TO SPECIFIER \*\* Delete options for system configuration not required.

* + - 1. System Configuration: As indicated on Drawings.
			2. System Configuration: For use with Kee Anchor WIREANKA; non-penetrating.
			3. System Configuration: KeeLine for Structures.
				1. Provide components including but not limited to extremity brackets, absorbers, line swages, 316 stainless steel extended intermediates and standard intermediate brackets and swage assemblies.
				2. Brackets: Fix directly to steel, concrete, brick or stonework; suitable for horizontal or side-mounted applications.
			4. System Configuration: KeeLine for Roofs; with ' see through' top mount posts.
				1. E1 - extremity assembly (start of system); includes upright post, energy absorber, tension indicator and swage assembly.
				2. E2 - extremity assembly (end of system); includes upright post, energy absorber and swage assembly
				3. EI - extended intermediate assembly; includes upright post and 316 stainless steel intermediate bracket (adjustable up to 15 degrees either side).
				4. I - intermediate assembly; includes upright post and extended 316 stainless steel intermediate bracket.
				5. C - Corner assembly, 90 degrees; includes upright post and 316 stainless steel corner bracket.
				6. C - Corner assembly 135 degrees; includes upright post and 316 stainless steel corner bracket.

\*\* NOTE TO SPECIFIER \*\* Delete options for base plates not required.

* + - * 1. Base Plates: As indicated on Drawings.
				2. Base Plates: Base plates, for metal profiled roofs; attached with rivets, iso-butyl sealing strip to maintain roof integrity, pre-drilled hole centers.
				3. Base Plates: Base plates, for standing seam roofs; fixed with non penetrating S5 clamps, pre-drilled hole centers.
				4. Base Plates: Base plates, for membrane roofs with metal deck; top mounted with toggle bolts and toggle guides to suit range of standard deck profiles.
				5. Base Plates: Base plates, for membrane roofs with concrete deck; top mounted with resin or mechanical anchors.
			1. System Configuration: KeeLine for Roofs; with POSTANKA posts. When attachment of the KeeLine system is required to be mounted directly to the building structure.
				1. E1 - extremity assembly (start of system); includes upright post, energy absorber, tension indicator and swage assembly.
				2. E2 - extremity assembly (end of system); includes upright post, energy absorber and swage assembly
				3. EI - extended intermediate assembly; includes upright post and 316 stainless steel intermediate bracket (adjustable up to 15 degrees either side).
				4. I - intermediate assembly; includes upright post and extended intermediate bracket.
				5. C - Corner assembly, 90 degrees; includes upright post and 316 stainless steel corner bracket.
				6. C - Corner assembly 135 degrees; includes upright post and 316 stainless steel corner bracket.
				7. Posts: Fixed anchor points designed to be installed directly to the building supporting structure.
				8. Attachment: As indicated on Drawings.
				9. Post Finish: Galvanized to BS EN ISO 1461.

\*\* NOTE TO SPECIFIER \*\* Fill in blank below as applicable. Delete options for attachment not required.

* + - * 1. Height Above Beam: \_\_\_\_\_\_\_\_\_\_\_\_.
				2. Height Above Beam: As indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. COLLECTIVE FREE-STANDING SKYLIGHT GUARDRAIL SYSTEMS (KEE DOME)
		1. Collective Free-Standing Skylight Guardrail Systems: Kee Dome as manufactured by Kee Safety Inc.
			1. Description: Collective, free-standing, non-penetrating, modular fall-protection solution for use around skylights, rooflights and domelights up to 78-3/4 inches x 78-3/4 inches (2 m x 2 m) in size and on roofs with a maximum pitch of 5 degrees.
			2. Provide components including but not limited to vertical posts, hand and knee rails, 90 degree corner fittings, and recycled PVC feet with clamping rings as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Modularity: Can be taken down, moved and re-erected.
			4. Fittings: Kee Klamp fittings galvanized to ASTM A 153.
			5. Compliance:
				1. EN 14122.
				2. OSHA Standard 29 CFR 1910.23.
				3. Maximum Permissible Horizontal Load: 300 N/m.
			6. Finish: Galvanized to BS EN ISO 1461.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ROOFTOP WALKWAY SYSTEMS (KEE WALK)
		1. Rooftop Walkway Systems: Kee Walk as manufactured by Kee Safety Inc.
			1. Description: Modular walkway system to provide anti-slip, level surface for demarcated route on roof, uniformly distributes pedestrian load; designed for roof types including metal profile standing seam, and membrane. KeeWalk can accommodate flat, barrel and pitched roofs and is also field-adjustable for sloping roofs up to 35 degrees.
			2. Provide components including but not limited to clips, brackets, walkway modules and accessories with appropriate fasteners as indicated or required to match design indicated on Drawings and to provide complete installation.
			3. Compliance:
				1. EN 516, Class 1-C.
				2. Fire rated to class HB of UL 94 (harmonized with ISO 9772).
				3. Slip Resistance:

OSHA Standard 29 CFR 1910.22.

British Standard BS 4592.

* + - 1. Bearer Bars: Aluminum.
			2. Treads: Fiberglass reinforced nylon; open tread design to allow water drainage.

\*\* NOTE TO SPECIFIER \*\* Delete options for system configuration not required.

* + - 1. System Configuration: As indicated on Drawings.
			2. System Configuration: Traverse configuration; level walking surface mounted onto sub-frame fixed to roof. Two sections joined with hinged brackets at rear of assembly, rotating arms at front to level walking surface.

\*\* NOTE TO SPECIFIER \*\* Delete option for modules not required.

* + - * 1. Modules: As scheduled and indicated on Drawings, as required to match design indicated on the Drawings and as required to provide complete installation.
				2. Modules: WW701ASSY 10ft Traverse Module for Up to 5 Degree Slopes.
				3. Modules: WW702ASSY 5ft Traverse Module for Up to 5 Degree Slopes.
				4. Modules: WW703ASSY 10ft Traverse Module 5 to 10 Degree Slopes.
				5. Modules: WW704ASSY 5ft Traverse Module 5 to 10 Degree Slopes.
				6. Modules: WW705ASSY 10ft Traverse Module 10 to 15 Degree Slopes.
				7. Modules: WW706ASSY 5ft Traverse Module 10 to 15 Degree Slopes.
				8. Modules: WW707ASSY 10ft Traverse Module 15 to 35 Degree Slope.
			1. System Configuration: Longitudinal configuration; factory pre-assembled, 12 treads per 10ft section (3 m); joined together by a 4 inch (102 mm) straight connector attached to bearer bars.

\*\* NOTE TO SPECIFIER \*\* Delete option for modules not required.

* + - * 1. Modules: As scheduled and indicated on Drawings, as required to match design indicated on the Drawings and as required to provide complete installation.
				2. Modules: WW711ASSY 10ft Steps Module 5 to 10 Degree Slopes.
				3. Modules: WW712ASSY 5ft Steps Module 5 to 10 Degree Slopes.
				4. Modules: WW7133ASSY 10ft Steps Module 10 to 15 Degree Slopes.
				5. Modules: WW714ASSY 5ft Steps Module 10 to 15 Degree Slopes.
				6. Modules: WW715ASSY 10ft Steps Module 15 to 25 Degree Slopes.
				7. Modules: WW716ASSY 5ft Steps Module 15 to 25 Degree Slopes.
				8. Modules: WW717ASSY 10ft Steps Module 25 to 35 Degree Slopes.
				9. Modules: WW718ASSY 5ft Steps Module 25 to 35 Degree Slopes.
			1. System Configuration: Free standing configuration; can only be used when angle of roof surface is less than 5 degrees; held in place with the KeeGuard 100 percent recycled PVC counterbalances, does not penetrate the roof surface.

\*\* NOTE TO SPECIFIER \*\* Delete option for modules not required.

* + - * 1. Modules: As scheduled and indicated on Drawings, as required to match design indicated on the Drawings and as required to provide complete installation.
				2. Modules: WW719ASSY 10ft Free Standing Module 0 to 5 Degree Slopes - 75 mph wind.
				3. Modules: WW720ASSY 10ft Free Standing Module 0 to 5 Degree Slopes - 95 mph wind.
				4. Modules: WW721ASSY 5ft Free Standing Module 0 to 5 Degree Slopes - 75 mph wind.
				5. Modules: WW722ASSY 5ft Free Standing Module 0 to 5 Degree Slopes - 95 mph wind.
				6. Modules: WW723ASSY 10ft Raised Traverse Module for Up to 5 Degree Slopes.
				7. Modules: WW724ASSY 5ft Traverse Module for Up to 5 Degree Slopes.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ROOFTOP HATCH SAFETY RAILING SYSTEMS (KEEHATCH)
		1. Rooftop Hatch Safety Railing Systems: KeeHatch as manufactured by Kee Safety Inc.
			1. Description: Safety railing system designed for safe egress/ingress through roof access hatches, and protection while hatch open; integrates with existing openings and ladderways.
			2. Compliance:
				1. OSHA Standards 29 CFR 1910.23.
				2. OSHA Standards 29 CFR 1910.27.
			3. Fittings: Kee Klamp fittings galvanized to ASTM A 153.

\*\* NOTE TO SPECIFIER \*\* Delete options for pipes not required.

* + - 1. Pipes: Nominal 1-1/4 inch pipe, Schedule 40 pipe, galvanized to ASTM A53.
			2. Pipes: Aluminum, nominal 1-1/2 inch pipe.

\*\* NOTE TO SPECIFIER \*\* Delete options for system configuration not required.

* + - 1. System Configuration: Type RHSR-SS-3630 - Standard System; for roof hatches 30 inches (762 mm) by 36 inches (914 mm) with hatchway ladder mounted on 30 inch (762 mm) side of hatch opposite of hatch lid hinge.
			2. System Configuration: Type RHSR-O-3636 - Offset Hatch; for roof hatches with hatchway ladder or stairway mounted opposite of hatch lid hinge and hatch dimension on mounting side exceeds 30 inches (762 mm). Grab handles not to exceed 36 inches (914 mm) spread.
			3. System Configuration: Type RHSR-O-4848 - Offset Hatch; for roof hatches with hatchway ladder or stairway mounted opposite of hatch lid hinge and hatch dimension on mounting side exceeds 30 inches (762 mm). Grab handles not to exceed 36 inches (914 mm) spread.
			4. System Configuration: Type RHSR-FB-3054 - Forward Barrier Hatch; for roof hatches with hatchway ladder or stairway mounted to exit on side of hatch.
			5. System Configuration: Type RHSR-FB-48144 - Forward Barrier Hatch; for roof hatches with hatchway ladder or stairway mounted to exit on side of hatch.
			6. System Configuration: Type RHSR-FB-4854 - Forward Barrier Hatch; for roof hatches with hatchway ladder or stairway mounted to exit on side of hatch.
			7. System Configuration: Type RHSR-FB-4896 - Forward Barrier Hatch; for roof hatches with hatchway ladder or stairway mounted to exit on side of hatch.
			8. System Configuration: Type RHSR-DL-6060 - Double Leaf Hatch.
			9. System Configuration: Type FH-KK62-36X36 - Floor Hatch; for safe egress and ingress through access hatches and protection of opening.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - * 1. Provide lag bolts and lag shields to fix railing bases (Type 62) in place.
			1. System Configuration: Type FH-KK62-48X48 - Floor Hatch; for safe egress and ingress through access hatches and protection of opening.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - * 1. Provide lag bolts and lag shields to fix railing bases (Type 62) in place.
			1. System Configuration: Type FH-KK62-60X60 - Floor Hatch; for safe egress and ingress through access hatches and protection of opening.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - * 1. Provide lag bolts and lag shields to fix railing bases (Type 62) in place.
			1. System Configuration: Type FH-KK66-36X36 - Floor Hatch; use ground socket fittings (Type 66) that are installed flush with concrete for removable system..
			2. System Configuration: Type FH-KK66-40X40 - Floor Hatch; use ground socket fittings (Type 66) that are installed flush with concrete for removable system..
			3. System Configuration: Type FH-KK66-60X60 - Floor Hatch; use ground socket fittings (Type 66) that are installed flush with concrete for removable system..

\*\* NOTE TO SPECIFIER \*\* Delete option for toeboards if not required.

* + - 1. Toeboards: No drilling required; upright hardware and splice kits for corners and straight sections as required for complete installation.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Safety Gates: Provide optional safety gates.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Installation Kit: Provide optional 2 sided kit for floor hatches with backs to the wall.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. FREE-STANDING WARNING LINE SYSTEMS (KEE MARK)
		1. Free-Standing Warning Line Systems: Kee Mark as manufactured by Kee Safety Inc.
			1. Description: Modular, free-standing demarcation/warning line system composed of steel uprights and rubber bases. Perfect for immediate needs and quick setups.
			2. Compliance: OSHA Code 1926.502(f)(2)(iii); erected not less than 6 feet (1.8 m) from the roof edge. resists, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion.
			3. Fittings: Kee Klamp fittings galvanized to ASTM A 153.
			4. Flags: Heavy-duty nylon mesh flags.

\*\* NOTE TO SPECIFIER \*\* Delete options for color not required.

* + - * 1. Color: As indicated on Drawings.
				2. Color: Orange.
				3. Color: Yellow.
			1. Wire Cable: Stainless steel wire cable, vinyl coated in safety yellow; connected to the uprights with stainless steel shackles
			2. Removable Bases: Solid, heavy-duty recycled rubber.
			3. Kit Description

\*\* NOTE TO SPECIFIER \*\* If the application requires just a 20 ft (6.1 m) run, the Kee Mark Base Kit can be used by itself. To cover bigger areas, add as many extension kits to the base kit as needed. Delete options for color not required.

* + - 1. Kit: KMWL20 Kee Mark Warning Line Base 20 feet (6.1 m) Long Kit.
			2. Kit: KMWL20E Kee Mark Warning Lane Extension 20 feet (6.1 m) Long Kit.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. CUSTOM ROOFTOP FALL PROTECTION SYSTEMS
		1. Custom Rooftop Fall Protection System: Provide components and accessories as manufactured by Kee Safety Inc. as indicated or required by Drawings to match design indicated and to provide complete installation.

\*\* NOTE TO SPECIFIER \*\* Delete systems not required.

* + - 1. Systems: KeeGuard.
			2. Systems: Kee Anchor.
			3. Systems: KeeGuard.
			4. Systems: KeeLine.
			5. Systems: Kee Dome.
			6. Systems: Kee Walk.
			7. Systems: KeeHatch.
			8. Systems: Kee Mark.
	1. FABRICATION
		1. Fit and shop assemble components in largest practical sizes for delivery to site.
		2. Upright tops shall be plugged with weather and light resistant material.
		3. Assemble components with joints tightly fitted and secured. Accurately form components to suit installation.
1. EXECUTION
	1. EXAMINATION
		1. Prepare substrates using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
		2. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
		3. Coordinate post setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete and masonry construction.
			1. Coordinate delivery of anchorages to project site.
			2. Coordinate that blocking is in place for all mounting fasteners.
	2. INSTALLATION
		1. Install in accordance with manufacturer's instructions including the following:
			1. Fit exposed connections accurately together to form tight joints. For all connections with Kee Klamp fittings, each set screw is to be tightened to 29 foot pounds (39 N-m) of torque.
			2. Perform cutting, drilling, and fitting required for installation of handrails. Set handrails and accurately in location, alignment, and elevation, measured from established lines and levels.
			3. Set posts plumb within a tolerance of 1/8 inch (3 mm).
	3. PROTECTION
		1. Protect installed products until completion of project.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION