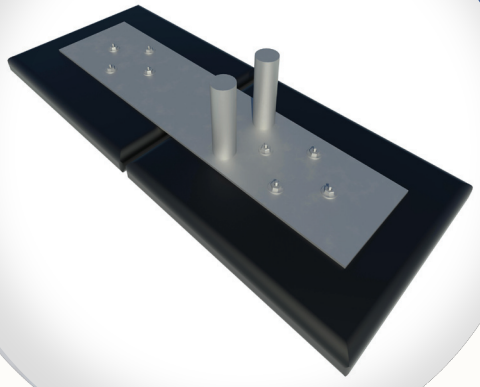
RTS

Rooftop Support Systems®

A Division of Eberl Iron Works, Inc.

1 (800) 285-3056



FALL PROTECTION

Railing System Installation Manual

rooftopsupportsystems.com

Rooftop Support Systems®

Rooftop Fall Protection
Railing System

Installation Manual

WARNING

Serious injury may result from misuse of product or improper installation. Installer(s) must read and understand all instructions and precautions. Eberl Iron Works, Inc. rejects any liability from injury, damage, or other loss resulting from the improper installation or use of this product.

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Assembly Requirements

When assembled per the following instructions, the Rooftop Support Systems Fall Protection Railing System meets OSHA Compliance for (Standard 29-CFR) 1910.29, (Standard 29-CFR) 1926.502, and IBC 2002 requirements.

- Top rail loading of 200lbs in downward or outward direction
- Mid rail loading of 150lbs in any downward or outward direction
- 1.66” outside diameter round pipe
- Top Rail 42” +/- 3” above walking surface
- Mid Rail at 21” above walking surface

Parts List

RTSFPBASE – Fully assembled RTS Fall Protection base

RTSRAIL48-PC – 48” OD Railing powder coated safety yellow

RTSRAIL72-PC – 72” OD Railing powder coated safety yellow

RTSRAIL96-PC – 96” OD Railing powder coated safety yellow

RTSRAIL120-PC – 120” OD Railing powder coated safety yellow

RTSRAIL48-HDG – 48” OD Railing hot dip galvanized

RTSRAIL72-HDG – 72” OD Railing hot dip galvanized

RTSRAIL96-HDG – 96” OD Railing hot dip galvanized

RTSRAIL120-HDG – 120” OD Railing hot dip galvanized

RTSSWGATE – Adjustable swing gate for use at ladder locations

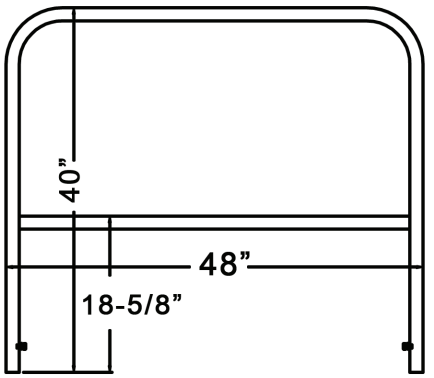
RTSLADDER – Ladder for elevated access per project requirements

RTSSPLICE – Splice kit for all railing, used to shorten standard sizes during installation

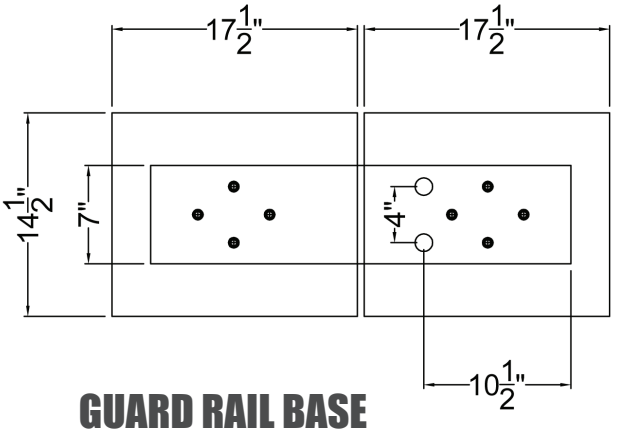
RTSINSTUBE – Instruction tube containing installation and safety guidelines and an allen wrench for assembly

RTSTOEKICK – OSHA compliant steel toe kick plates to prevent objects from falling to lower levels

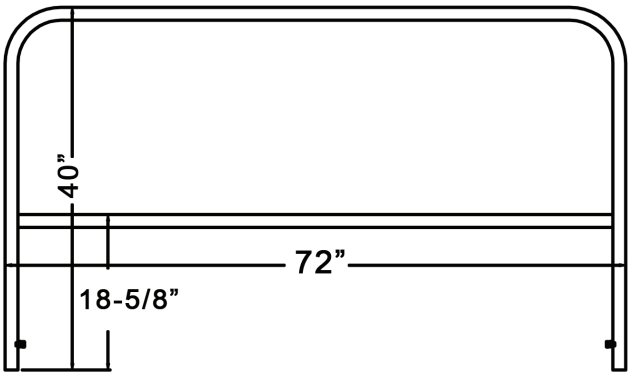
Parts Drawings



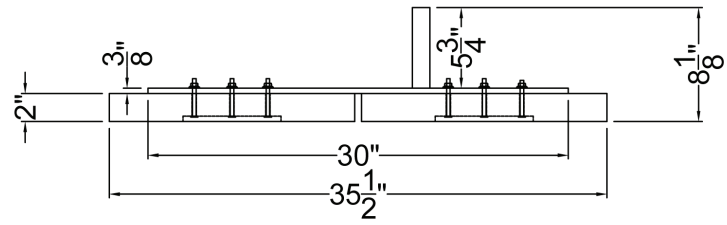
4’ GUARD RAIL

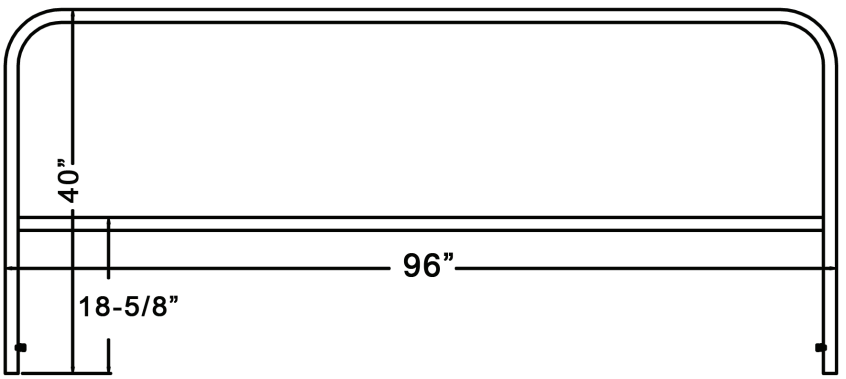


GUARD RAIL BASE

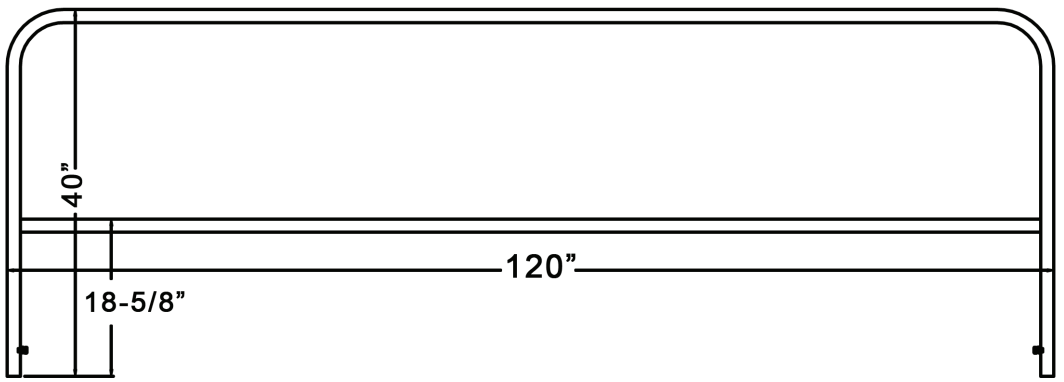


6’ GUARD RAIL





8’ GUARD RAIL



10’ GUARD RAIL

Preinstallation Considerations

1. RTS Safety Railing applications should be approved by an RTS Safety Representative.

2. Verify the load limit of the application site to ensure it can support the Railing system and any personnel required for installation.

3. RTS Safety Railing is designed to be installed on reasonably flat areas (No more than 1”:12” slope) free of debris.

4. Never install RTS Safety Railing on slippery surfaces.

5. Never use railing to support any job material or equipment.

6. Never install near power lines. Be sure to keep railing a minimum of 10 feet from electrical.

7. Orientation of bases is critical to the performance of the system. Be sure to install the bases correctly per the installation instructions to follow and any supplied project documents.

8. Outriggers are required at both ends of every installation and must be installed at a 90º angle from the leading edge.

9. Baseplates should be placed a minimum of 18 inches from the leading edge of a building and can be placed directly against a short parapet wall if present.

10. Annual visual inspections are strongly recommended. Any damaged items found should be replaced immediately.

Assembly Instructions

Step 1: Arrange bases to achieve desired configuration. Keep bases 18” from leading edge.

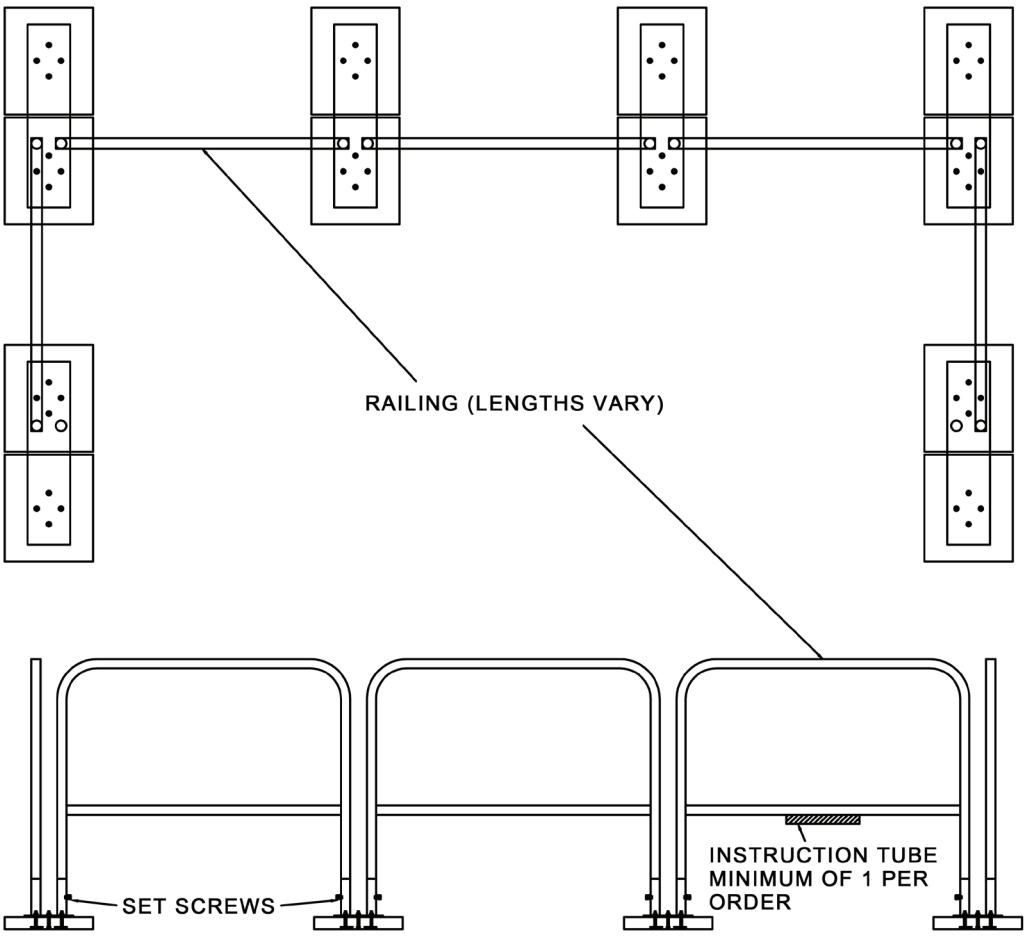
Step 2: Check spacing to ensure railing will fit between adjoining bases.

Step 3: Attach railing to bases by sliding railing over round bar on bases and securing with the supplied set screw. Always work from one end of the installation to the other to avoid having to move a large assembly.

Step 4: Outrigger sections can be added at the end of installation to ensure fit. Be sure that they are installed at 90º from the leading edge.

Step 5: Attach Instruction Pod (Min 1 per installation required) to one of the mid rails. Insert Instruction Manual and Allen Wrench, and close with supplied end caps.

General Installation Diagram



OSHA Standard 1926.501

"Duty to Have Fall Protection"

1926.501(a)(1)

This section sets forth requirements for employers to provide fall protection systems. All fall protection required by this section shall conform to the criteria set forth in 1926.502 of this subpart.

1926.501(a)(2)

The employer shall determine if the walking/working surfaces on which its employees are to work have the strength and structural integrity to support employees safely. Employees shall be allowed to work on those surfaces only when the surfaces have the requisite strength and structural integrity.

1926.501(b)

1926.501(b)(1)

"Unprotected sides and edges." Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.

1926.501(b)(2)

"Leading edges."

1926.501(b)(2)(i)

Each employee who is constructing a leading edge 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan which meets the requirements of paragraph (k) of 1926.502.

Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a fall protection plan which complies with 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.

926.501(b)(2)(ii)

Each employee on a walking/working surface 6 feet (1.8 m) or more above a lower level where leading edges are under construction, but who is not engaged in the leading edge work, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

1926.501(b)(3)

"Hoist areas." Each employee in a hoist area shall be protected from falling 6 feet (1.8 m) or more to lower levels by guardrail systems or personal fall arrest systems. If guardrail systems, [or chain, gate, or guardrail] or portions thereof, are removed to facilitate the hoisting operation (e.g., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and materials, for example), that employee shall be protected from fall hazards by a personal fall arrest system.

1926.501(b)(4)

"Holes."

1926.501(b)(4)(i)

Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet (1.8 m) above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes.

1926.501(b)(4)(ii)

Each employee on a walking/working surface shall be protected from tripping in or stepping into or through holes (including skylights) by covers.

1926.501(b)(4)(iii)

Each employee on a walking/working surface shall be protected from objects falling through holes (including skylights) by covers.

1926.501(b)(5)

"Formwork and reinforcing steel." Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet (1.8 m) or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.

1926.501(b)(6)

"Ramps, runways, and other walkways." Each employee on ramps, runways, and other walkways shall be protected from falling 6 feet (1.8 m) or more to lower levels by guardrail systems.

OSHA Standard 1926.502

“Fall Protection Systems Criteria and Practices”

1926.502(a)

“General.”

1926.502(a)(1)

Fall protection systems required by this part shall comply with the applicable provisions of this section.

1926.502(a)(2)

Employers shall provide and install all fall protection systems required by this subpart for an employee, and shall comply with all other pertinent requirements of this subpart before that employee begins the work that necessitates the fall protection.

1926.502(b)

“Guardrail systems.” Guardrail systems and their use shall comply with the following provisions:

1926.502(b)(1)

Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.

Note: When employees are using stilts, the top edge height of the top rail, or equivalent member, shall be increased an amount equal to the height of the stilts.

1926.502(b)(2)

Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches (53 cm) high.

1926.502(b)(2)(i)

Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level.

1926.502(b)(2)(ii)

Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports.

1926.502(b)(2)(iii)

Intermediate members (such as balusters), when used between posts, shall be not more than 19 inches (48 cm) apart.

1926.502(b)(2)(iv)

Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches (.5 m) wide.

1926.502(b)(3)

Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge.

1926.502(b)(4)

When the 200 pound (890 N) test load specified in paragraph (b)(3) of this section is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches (1.0 m) above the walking/working level. Guardrail system components selected and constructed in accordance with the Appendix B to subpart M of this part will be deemed to meet this requirement.

1926.502(b)(5)

Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds (666 N) applied in any downward or outward direction at any point along the midrail or other member.

1926.502(b)(6)

Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

1926.502(b)(7)

The ends of all top rails and midrails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.

1926.502(b)(8)

Steel banding and plastic banding shall not be used as top rails or midrails.

1926.502(b)(9)

Top rails and midrails shall be at least one-quarter inch (0.6 cm) nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high-visibility material.

1926.502(b)(10)

When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

1926.502(b)(11)

When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole.

1926.502(b)(12)

When guardrail systems are used around holes used for the passage of materials, the hole shall have not more than two sides provided with removable guardrail sections to allow the passage of materials. When the hole is not in use, it shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges.

1926.502(b)(13)

When guardrail systems are used around holes which are used as points of access (such as ladderways), they shall be provided with a gate, or be so offset that a person cannot walk directly into the hole.

1926.502(b)(14)

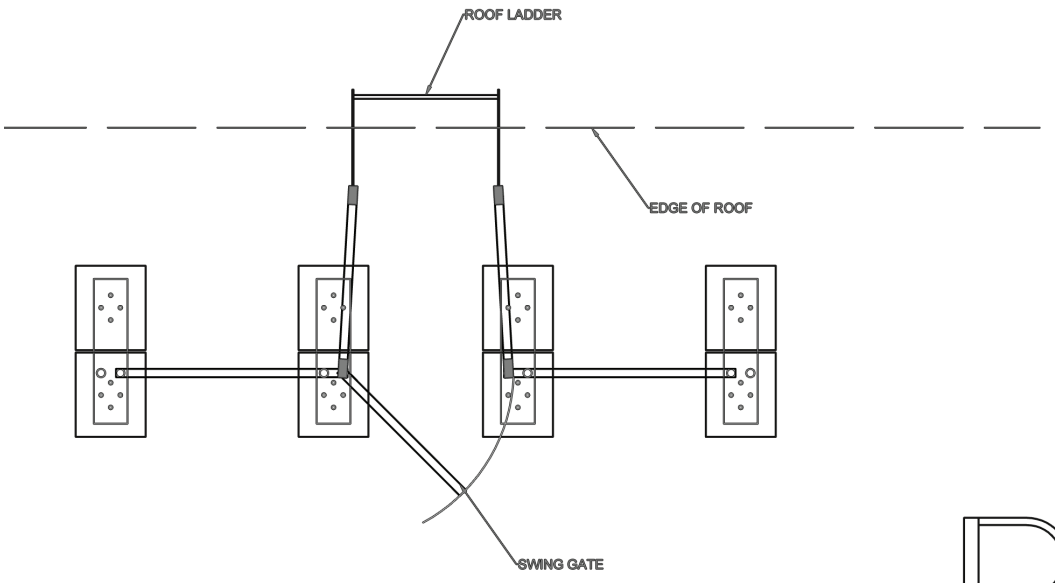
Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge.

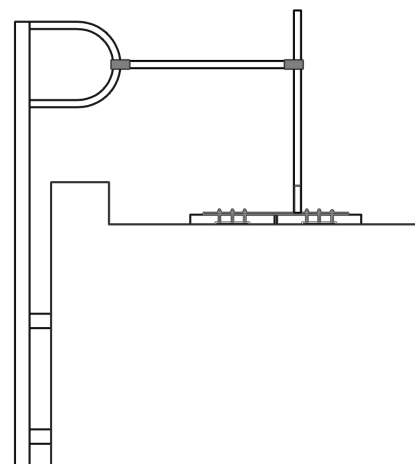
1926.502(b)(15)

Manila, plastic or synthetic rope being used for top rails or midrails shall be inspected as frequently as necessary to ensure that it continues to meet the strength requirements of paragraph (b)(3) of this section.

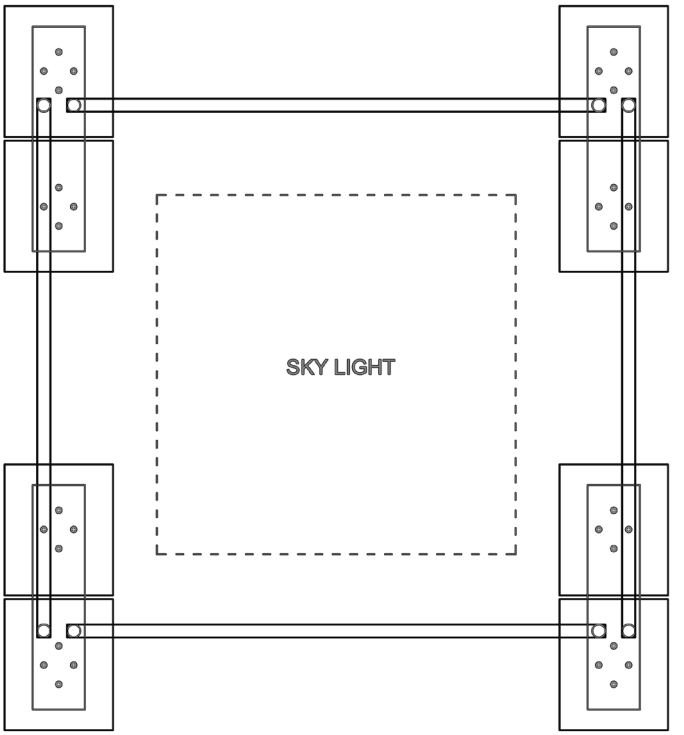
Application Specific Layouts

Ladder

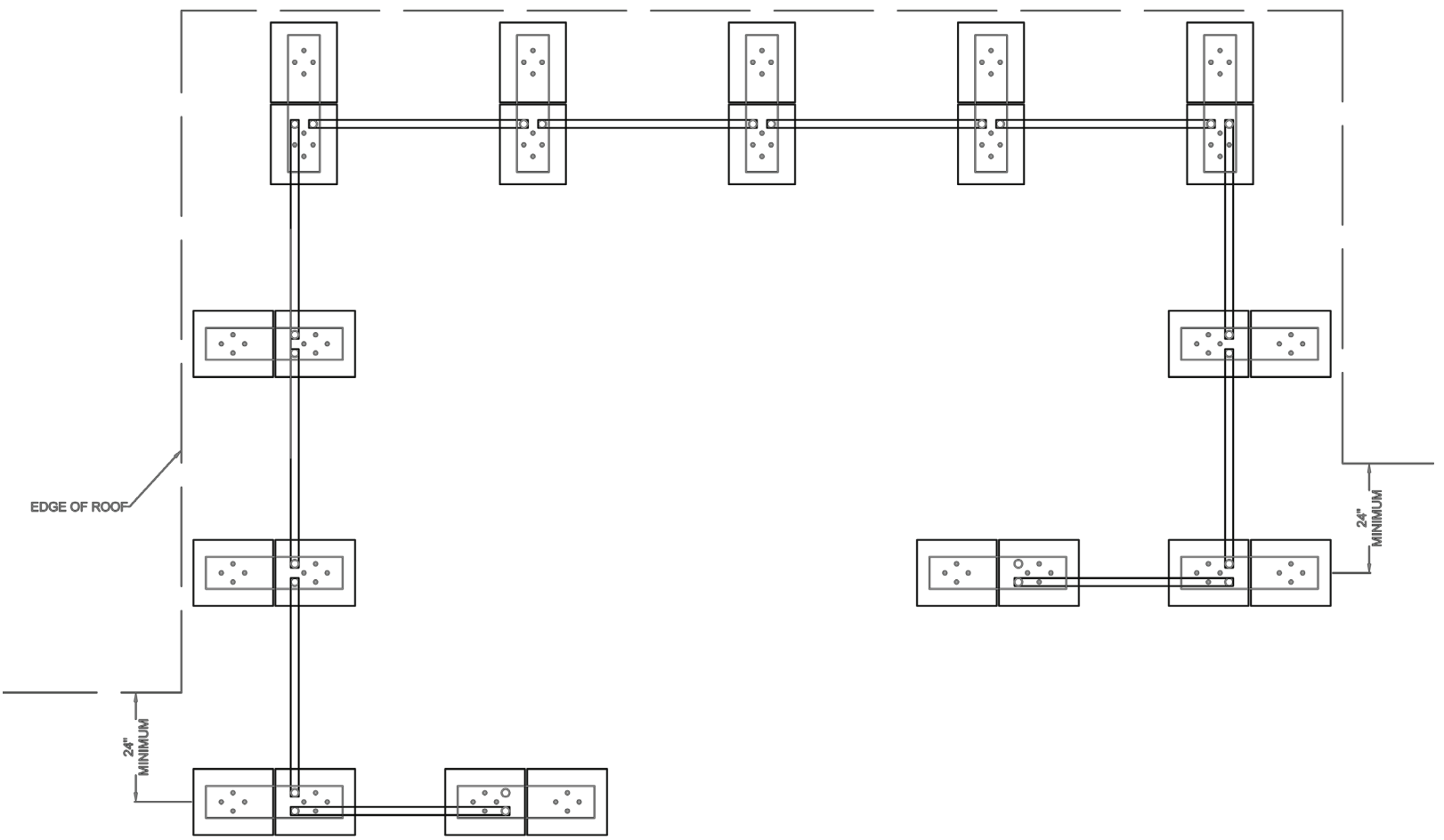




Skylight / Roof Hatch

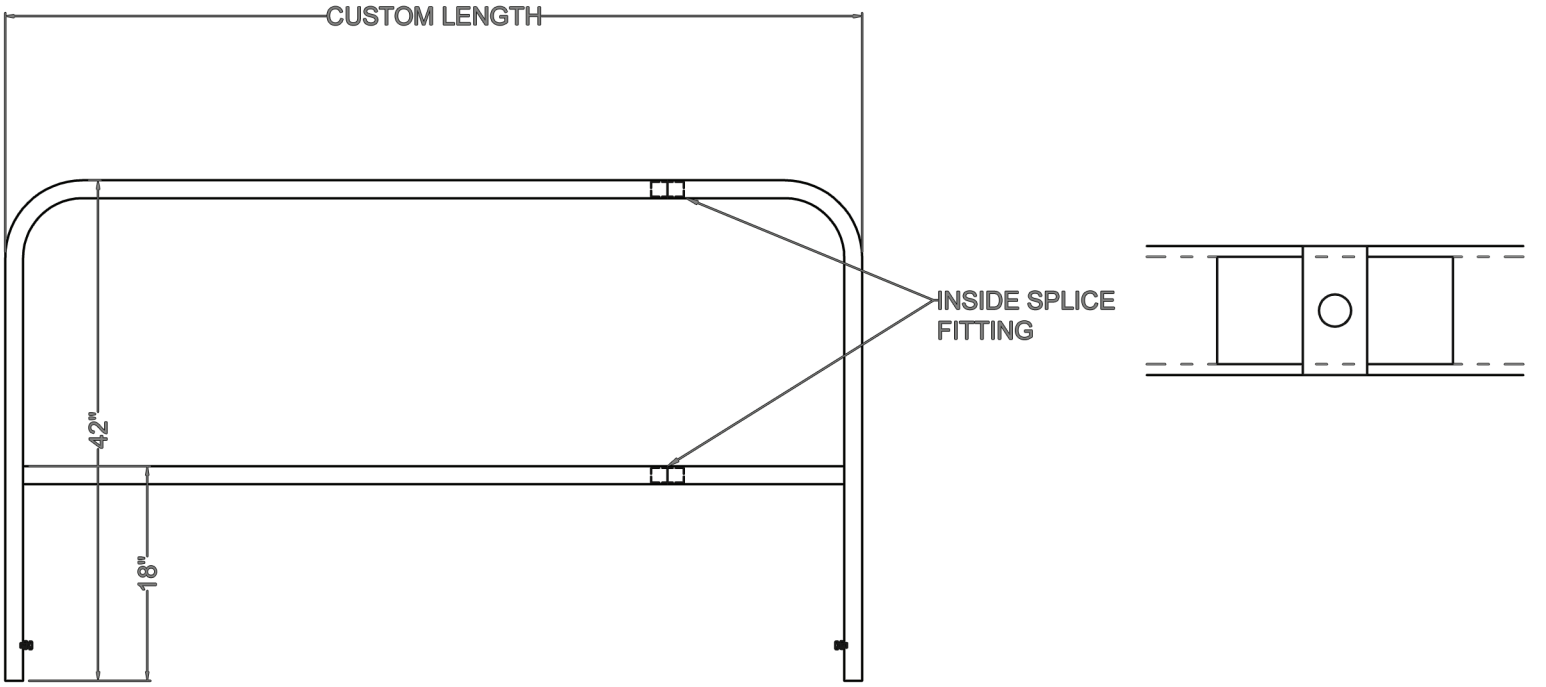


Multiple Direction



Specialty Items

Splice Fittings



Toeboard Usage and Compliance