INSTRUCTION MANUAL

FRONTLINE®

FALL PROTECTION

USER MANUAL

TRENCH GUARDRAIL SYSTEM

TRG120, TRG72, TRG48

Rev. Jun. 2026

Frontline Fall Protection Inc.
INSTRUCTION MANUAL

Applicable standards and regulations depend on the type of work being done, and also might include state-specific regulations. Refer to local, state, and federal (OSHA) requirements for additional information concerning the governing body of occupational safety regarding ladders, ladder systems and/or Personal Fall Arrest Systems (PFAS).

All users must refer to local, state or federals safety and health regulations before using this equipment. If there's a contradiction between any local, state, federal requirement and/or standard with this manual or within this manual, whichever is the most stringent will apply.
You are required to read and fully understand the user instruction manual BEFORE using this product. Improper use and installation can result in serious injury or death. User manuals occasionally may be updated so for the latest user manual please visit **www.frontlinefall.com/uim.**

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DEFINITIONS: For better use and understanding, the following is some terminology and definitions as referenced by OSHA that may help better understand this user manual. Please refer to OSHA 1910 or 1926 for full details.

Anchorage
A secure point of attachment for lifelines, lanyards, or deceleration devices.
Attachment Point
A loop or "D" ring connected (integrally) to the body support that provides a means for attachment of other components of the fall protection system.
Body Harness
Means straps, which may be secured about the worker in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.
Carabiner
A link with a gate that is normally closed or that automatically closes, and is used to connect components of a personal fall protection system.
Competent Person
Is defined as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them" [29 CFR 1926.32(f)]. By way of training and/or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation and has the authority to correct them.
Connector
A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or D-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).
D Ring
A form of attachment point on body belts and fully body harnesses meant for attachment of other components of a fall protection and positioning system.
Deceleration Device
Means any mechanism that serves to dissipate energy during a fall.
Deceleration Distance
The vertical distance a falling employee travels from the point at which the deceleration device begins to operate, excluding lifeline elongation and free fall distance, until stopping. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.
Fall Arrest System
A fall arrest system means a system used to arrest an employee in a fall from a working level. It consists of an anchor point, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
Fall Prevention System
Those systems and techniques that eliminate the possibility of a fall.
Fall Protection System
Any of the following when used to protect a worker from a fall or minimize the risk from falling: Guardrails, Safety belt or a full body harness with a lanyard and/or lifeline and an anchor, and their related equipment, Safety net, Control zone, Safety monitor with a control zone, and other acceptable procedures.
Fall Restraint System
A work positioning system to prevent a worker from falling from a work position, or a travel restriction system such as guardrails or a personal fall protection system to prevent a worker from traveling to an edge from which the worker could fall.
Free Fall
The act of falling before the personal fall arrest system begins to apply force to arrest the fall.
Free Fall Distance
Vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, lifeline and lanyard elongation, but includes any

deceleration device slide distance or self-retracting lifeline/lanyard extension before the devices operate and fall arrest forces occur.

Full Body Harness

A body support device consisting of connected straps designed to distribute a fall arresting force over at least the thigh, shoulders and pelvis, with provision for attaching a lanyard, lifeline or other components.

Lanyard

A flexible line of webbing, synthetic rope or wire rope that is used to secure a safety belt or full body harness to a lifeline or anchor.

Horizontal Lifeline System

A system composed of a synthetic or wire rope installed horizontally between two anchors, to which a worker attaches a personal fall protection system.

Leading Edge

The edge of a floor, roof, or formwork for a floor or other walking or working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

Lifeline

A synthetic or wire rope, rigged from one or more anchors, to which a worker's lanyard or other part of a personal fall protection system ¡s attached.

Low-Slope Roof

A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Lower Levels

Those areas or surfaces to which a worker can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

Passive Fall Prevention

Refers to a system that is non-dynamic, stationary, and does not move, adapt, or change when in or out of use. Passive systems don't require the use of personal protective equipment or active participation from the worker. Typically, passive systems include netting, handrails, and guardrails.

Personal Fall Arrest System (PFAS)

A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Positioning System (work-positioning system)

A system of equipment and connectors that, when used with a body harness or body belt, allows an employee to be supported on an elevated vertical surface, such as a wall or window sill, and work with both hands free. Positioning systems also are called "positioning system devices" and "work-positioning equipment".

Qualified

A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

Rope Grab

A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking or both (also referred to as a fall arrester).

Self-Retracting Lifeline/Lanyard

A deceleration device containing a drum-wound line, which can be slowly extracted from, or retracted onto, the drum under slight tension during normal worker movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

Shock Absorber

A device intended to limit the deceleration forces exerted on a worker during fall arrest.

Snap Hooks

A connector consists of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.

Unprotected Sides and Edges

Any side or edge (except at entrances to points of access) of a walking or working surface (for

example, floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches high.

Walking/Working Surface

Any surface (whether horizontal or vertical) on which a worker walks or works, including but not limited to floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel; but not including ladders, vehicles, or trailers, on which workers must be located in order to perform their job duties.

Warning Line System

A barrier erected on a roof to warn workers that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body harness, or safety net systems to protect workers in the area.

Working load

Refers to aggregate simultaneous load of personnel, equipment, and/or material to be supported by the equipment or system.

GENERAL STATEMENT AND WARNINGS

For the purpose of this manual, trench guardrail system and guardrail system are consider the same product.

This Trench Guardrail System is meant to be used ONLY by trained personnel in fall protection. This trench guardrail system is ONLY intended for use as part of a complete personal fall protection system. This trench guardrail system has been designed to meet or exceed ANSI Z359.18, OSHA 1926 and/or OSHA 1910.

User MUST read, understand, and follow all safety information contained in these instructions prior to the use of this trench guardrail system. Use in any other applications including, but not limited to, material handling, recreational or sports related activities, or other activities not described in the User Instructions is not approved by Frontline Fall Protection and could result in serious injury or death. This device is only to be used by trained users in workplace applications.

These instructions must be provided to the user of this equipment. Retain these instructions for future reference or you can find a copy of them at www.frontlinefall.com for more information regarding any portion of this user instructions manual please contact us at info@frontlinefall.com.

· Do not use this equipment until proper training, fall protection and rescue programs are in place.
· Do not use this equipment in combination with other components or subsystems other than those described in this manual.
· Do not use this is equipment for other uses other than its original and designed intended use.
· Do not use product that has been impacted to a fall, that does not pass inspection or that the safety and integrity of it is questionable.
· Consult a doctor prior using this equipment to ensure user is in physical conditions to use this equipment and if physical fit in the event there's a fall.
· Pregnant women or minors must not be exposed to a workplace hazard and must not use this equipment.
· Avoid sharp and/or abrasive surfaces and edges as this will compromise the safety of the Personal Fall Arrest System.
· All user must refer to local, state or federals safety and health regulations before using this equipment. Whichever is most stringent shall supersede and apply.
· Avoid moving machinery, thermal, electrical, and/or chemical hazards as contact may cause serious injury or death.
· Avoid swing falls at all times when using Personal Fall Arrest Systems.
· Follow the weight restrictions/limitations in this manual.
· Never alter or intentionally misuse this equipment, always inspect before each use to ensure its compliance and safe use.
· Never connect rebar hooks, large carabiners, large snaphooks or non- approved hooks/connectors to the full body harnesses dorsal D-rings as this may cause a roll-out and/or unintentional disengagement.
· Avoid contact with arc flash welding at all times. Arc flash from arc welding operations, including accidental arcs from electrical equipment, can damage the PFAS equipment resulting in injury or death.

· Always examine the work area and the surroundings to identify hazards that may impact safety and proper functioning of the Personal Fall Arrest System before commencing work.
· Only one fall protection system or positioning system may be attached to an individual connection point.

INSPECTION REQUIREMENTS

This trench guardrail system and any other PFAS shall be inspected BEFORE each use. The program administrator, authorized user and/or rescuer inspecting the product shall have the proper training on the use, maintenance, care and inspection of this product. Additionally, a competent or qualified person other than the user shall conduct thorough safety inspections every 6 months or sooner, when necessary or required by the authorized user or employer. Some of the items that shall be inspected, but not all inclusive, are the following:

· Safety labels/markings/tags that are legible with appropriate OSHA/ANSI markings, product limitations, user capacity and other markings as required by OSHA/ANSI.
· Defects or any imperfections on the products such as; Corrosion, broken, bent, deformed, excessive wear, defects in welded areas or any other evidence of damage or alterations affecting the safety functionality of the system.
· Any other conditions that may question the integrity of the system, shall be put out of service.
· Any product that has been subject to a fall or an impact, shall be put out of service.
· Clean/clear product of any surface contamination such as concrete, stucco, roofing material or other material that may impact the safe use of the product.
· Any damage to the equipment or inadequate maintenance.
· The details of the "Inspection Checklist and Log" at the end of this manual.

Permanently remove equipment from service that does not passes any of these inspection criteria, hasn't undergone preventative service or maintenance requirements or if the equipment is questionable.

As required by ANSI Z359.18 6.1.2/6.1.3, the "The program administrator shall set inspection criteria for the equipment. Such criteria shall equal or exceed the most restrictive of the criteria established by this standard or the manufacturer's user instructions. Keep inspection criteria current in relationship to changing patterns or conditions of use. The program administrator shall maintain documentation of equipment inspections. This documentation shall include, at a minimum, the identity of the equipment, inspection date, name of the competent or qualified person conducting the inspection and the results of that inspection."

These are minimum requirements, and all inspections should be documented for recordkeeping. Any questions regarding the safety inspection of Frontline Fall Protection products please contact us at info@frontlinefall.com.

TRAINING REQUIREMENTS

Before using Frontline Fall Protection product, user and employers must ensure that the person using this equipment has been trained on the proper use, care and maintenance of this product by a competent person qualified in Fall Protection. It is the responsibility of the user of this product to ensure that proper training has been done in addition to reading and fully understanding these user instructions manual.

Additionally, the employer must establish a training program to employees that are exposed to a fall hazard and trained by a competent person qualified in those areas. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

Retraining is necessary when the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill to carry out those duties. Circumstances where retraining is required include, but are not limited to, situations where:

· Changes in the workplace render previous training obsolete.
· Changes in the types of fall protection systems or equipment to be used render previous training obsolete.

· Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.
· Changes in the OSHA regulations or ANSI Standards.

Training must be done in the language that the employee understands and shall be documented and kept as outlined under OSHA recordkeeping regulations. No user or employee shall perform work without the proper training and understanding on how to properly and safely use this product.

GENERAL DISCLAIMER

Frontline has tested their product to comply with OSHA and/or ANSI under a controlled environment and with certain substrates. Frontline cannot and does not guarantee the same performance for different substrates other than the ones mentioned in these user manuals. Frontline anchors will meet or exceed OSHA and/or ANSI requirements, but it's ultimately up the end user/installer/owner of the product to ensure that their specific substrate will resist and withstand the required loads as stated by OSHA and/or ANSI or other governing safety entities. Please contact info@frontlinefall.com if you have any questions regarding this subject matter.

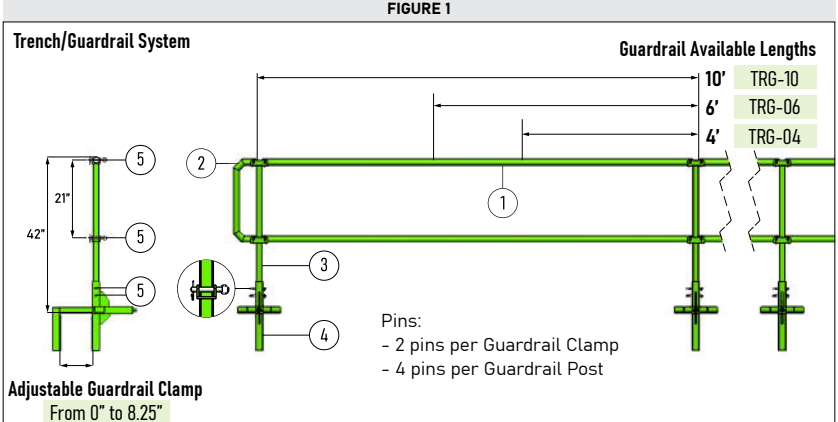
WARNING - When installing the trench guardrail system onto the structure please keep in mind the workers beneath your work area so there's no potential of falling tools, objects or the different equipment. Tether and use other means of protection to protect people/workers from lower levels from overhead hazards.

APPLICATION

This system has been designed to serve as a passive fall prevention system. This system should be set-up anywhere where there's a potential fall hazard on/around a trench or excavation, in conjunction with other safety/protective systems. Refer to state and local safety regulations in case there's a more stringent requirement, as the most stringent will apply. Once the system has effectively been installed, set in place and fall hazard eliminated, the use of active fall arrest systems may not be required. Check with your employer for more details on fall protection compliance if the area is questionable.

Component Names:
In order to help installation guidance, the following are the component names:

FIGURE 1



COMPONENTS PER KIT					
	SKU	ITEM	TRG48 (48 lnft)	TRG72 (72 lnft)	TRG120 (120 lnft)
1	TRG	Guardrail Top/Mid Rail	24 (TRG-04)	24 (TRG-06)	24 (TRG-10)
2	TRG-SDRL	Guardrail Side Rail	4	4	4
3	TRG-POST	Guardrail Post	14	14	14
4	TRG-CLMP	Guardrail Clamp	14	14	14
5	TRG-PIN	Safety Pin	84	84	84

INSTALLATION

Employers must ensure installers are properly trained in fall protection, have a complete fall protection and rescue program in place prior to installation. Don't install 10' from powerline or electrical hazards. Do not install on an incline, on slippery surfaces or other surfaces/finishes that is not completely flat.

A layout plan should be done of the fall hazard exposed area which is being covered prior to installation so that the proper lineal foot amount of guardrail system is accounted for. Once the guardrail system is onsite and ready to be installed, the following steps must be followed:

1. Trenching system must be in place and completely installed. Trench box must be no bigger than 8.25" for system to fit.

2. The perimeter of the work area must be fully installed and/or completely covered with the guardrail system in order to eliminate fall hazard exposure. If not, use the necessary fall protection to avoid fall hazards.

3. Before installing, ensure that employees/users doing the installation have fall protection if exposed to a fall hazard.

4. Position the adjustable clamp between the trench box. The clamp must be in an upright and perpendicular positioned as shown on Figure 2.

5. Use an impact gun with a 7/8" socket or a wrench and turn in a clockwise adjustment nut. This will tighten the clamp in order to obtain a snug fit onto the trench box.

6. Take guardrail post and slide it into the clamp and lock it with the two pins as shown on Figure 3.

FIGURE 2

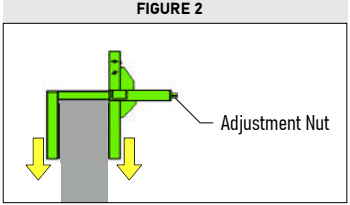
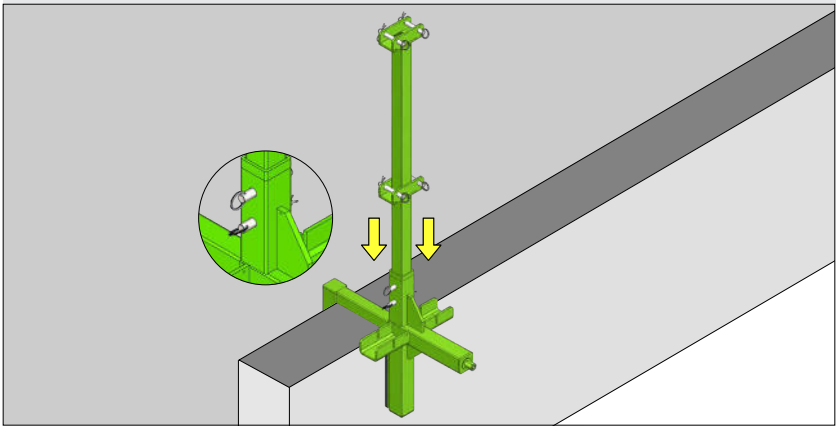
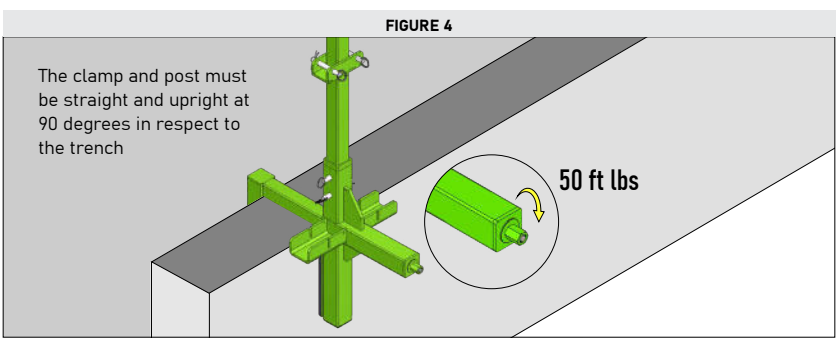


FIGURE 3



7. Once the clamp and post are snug and secured onto the trench box, then use a digital torque wrench and tighten to 50 ft lbs to fully secure to required strength as shown on Figure 4:

FIGURE 4



Note: Turn clockwise to close the clamp and to tighten, turn counter clockwise to loosen and open clamp.

8. Do a slight pull/push test to ensure that the clamp and post is secure. Loose systems are a sign of improper installation.

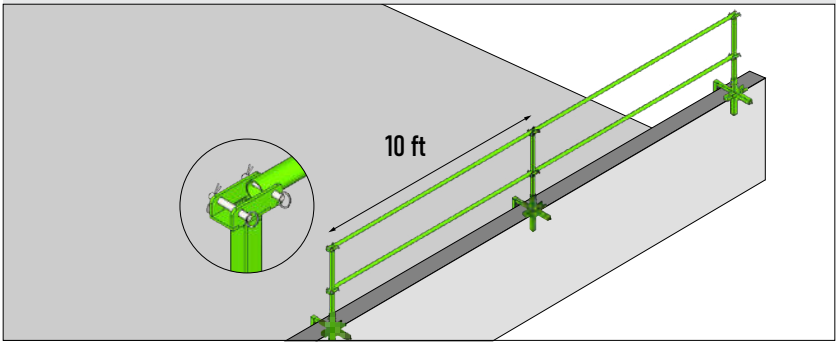
9. Install another clamp and post 10' apart by repeating the same steps listed above.

a. If you have 4' or 6' rail, place accordingly so the rails fall into place with the clamp and post receiver.

10. Insert the mid and top rail between the two posts and secure them with the safety pins as shown on Figure 5.

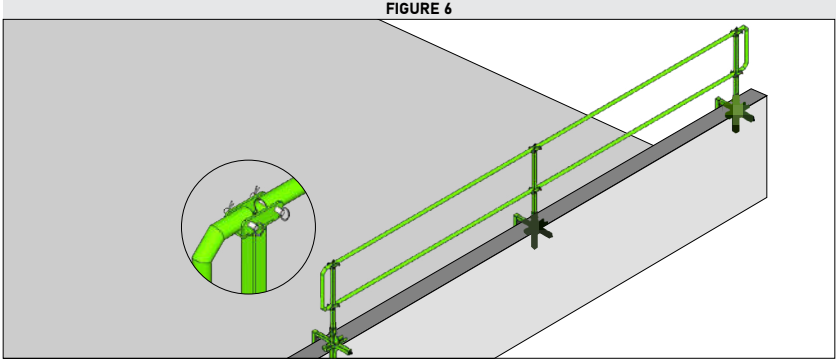
11. Repeat the steps above until the whole trench/excavation is properly covered.

FIGURE 5



12. Install the side rails on the ends and insert the safety pins at the end of the runs as shown on Figure 6.

FIGURE 6



13. Toe boards can be installed and secured with nails or screws by fastening through the toe board plate holes and into the 2"x4" toe boards.

a. The system also comes with slots to fit our fabricated toe boards (GUTO - Figure 7).

14. Have a competent person visually and physically inspect that the guardrail systems are fully and properly installed (Reference Figure 8, where the trench box is covered with a complete guardrail system. If the trench or excavation has walls on the ends, cover that area as well accordingly).

15. If competent person approves installation, system is ready to be used.

FIGURE 7

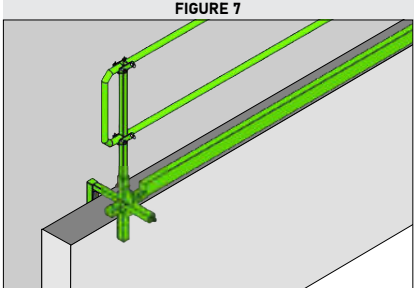
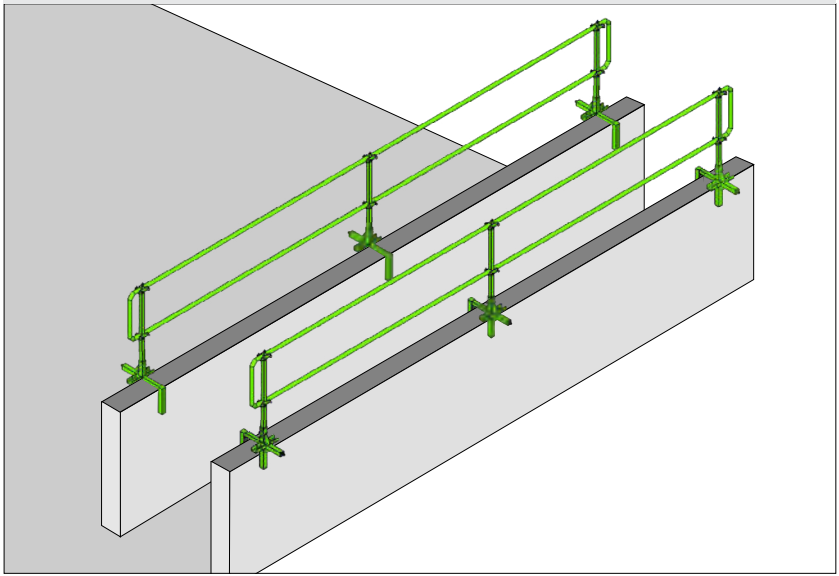


FIGURE 8



(If the trench or excavation has walls on the ends, cover that area as well accordingly).

WARNING: Guardrail Systems must be stable, in the upright position and trench system should be able to hold the minimum 200 lbs of force in each direction as required by OSHA 1910 and 1926.

MAINTENANCE, STORAGE & TRANSPORTATION

MAINTENANCE: Maintenance can be done on site competent person to ensure the system is well positioned and not loose. Competent person also should inspect the wooden 2"x4" guardrails if used as toe boards to ensure that they are well maintained and that their integrity is not compromised. If there's a product that does not pass inspection or is questionable it needs to be taken out of service immediately.

In order to maintain product in good standing, it is necessary to keep them cleaned and in good condition. Avoid surface contamination such as concrete, stucco, roofing material, chemicals or other harmful substances that could accelerate cutting, abrading, damaging and/or rusting/corroding of products. Use warm water and soap to wash any containments and then dry off to help extend the life of the product.

Product that needs to undergo deeper maintenance and repairs outside of cleaning with warm water and soap is not recommended. Any rust preventative measures, chemical exposures repairs/ maintenance and/or other deeper maintenance are in the sole responsibility of the user and must be approved by a qualified person. Frontline assumes and takes no responsibility for maintenance measures outside of light maintenance as described above. Product that does not pass inspection or is questionable needs to be taken out of service immediately.

STORAGE: If products are not temporarily or permanently installed, when possible, all products shall be stored at room temperature in indoor space, lockers or in a clean area away from sunlight, rain and other environmental conditions. Products should be also stored where they are not exposed to chemical, oils, paint, concrete, or other contaminants that might compromise the integrity of the product. Equipment that has been physically exposed such as rain/dirty water, concrete, paint, buildup of other construction material or other surface contamination shall be cleaned and dried before storage.

TRANSPORTATION: Ensure to transport product where it doesn't beat up against other products as this might cause damage to products and terminate the use of them. Product also should not be transported with harmful substances or chemicals as this might also compromised the integrity of the product.

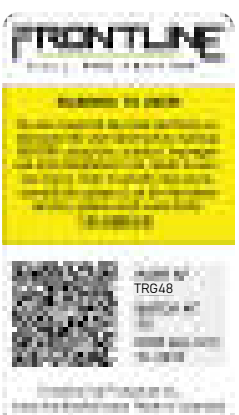
INSPECTION CHECKLIST AND LOG			
MODEL NUMBER:	**DATE OF FIRST USE:**		
INSPECTION:	Prior to installation and prior to each use / Inspection by a competent person is required every 6 months.	**PASS**	**FAIL**
TRENCH SYSTEM	Ensure all guardrail clamps are adjusted to a 50 lbs / ft torque		
	Inspect that the guardrail system is an upright position with no inclination		
	Inspect all safety pins are inserted		
	Inspect that there's no gaps with the guardrail runs		
	Inspect the for damage: Look for cracks, dents, or deformities		
	Inspect labels to ensure they are legible and in place		
	Inspect adjustment bolt to ensure it's working properly		
	Inspect the entire unit for corrosion		
	Inspect for any missing/malfunctioning parts on the guardrail system including it's pins (2 pins per clamp, 4 pins per post)		
	Inspect for permanent deformation		
	Ensure there are no loose guardrail systems		
	Ensure wooden toe boards are in good conditions and can withstand OSHA required loads		
	Inspect for any other unconformity		
LABELS	Inspect the guardrail for legible labels.		
PFAS AND OTHER EQUIPMENT	Additional Personal Fall Arrest System (PFAS) equipment (harness, SRL, etc.) that are used with the Anchorage System should be installed and inspected per the manufacturer's instructions.		

INSPECTION LOG			
COMPETENT PERSON:	DATE OF INSPECTION	PASS	FAIL

LABELS









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