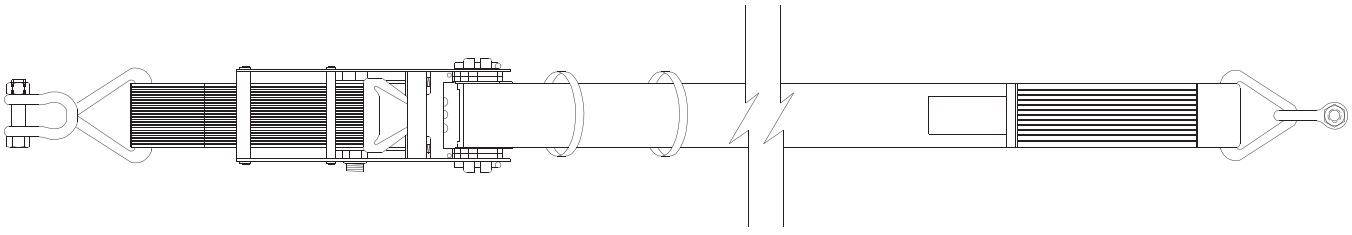
FALL SAFE®

USER INSTRUCTIONS FOR

SKYLINE™ HORIZONTAL LIFELINE SYSTEM

TEMPORARY HORIZONTAL LIFELINE SYSTEM USING 2-IN. RATCHET TENSIONER AND THE WEBBING SHOCK ABSORBER

Model # 6320-30 / 6320-60



SureWerx®

FALL SAFE®
Ph. 1-800-323-7402

Canada labels
SureWerx, 49 Schooner St.
Coquitlam, BC V3K 0B3

USA labels
SureWerx USA Inc.
Elgin, IL USA 60123

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IMPORTANT INSTRUCTIONS!

These instructions must be kept on file and available for the users reference at **all** times. The users must read and full understand these instructions or have the instructions explained in detail before using this equipment. **Failure to observe these instructions could result in serious injury or death.**

Prior to use, all workers must be trained in the proper use of all systems and equipment.

A Training and Instruction review should be repeated at regular intervals.

A rescue plan must be prepared; the workers must be trained in its use, and rescue equipment must be on hand prior to any use of this horizontal lifeline system.

Any questions regarding these instructions should be directed to:

Manufacturer's Name and Address

Fall Safe®
Canada labels
SureWerx, 49 Schooner St.
Coquitlam, BC V3K 0B3

USA labels
SureWerx USA Inc.
Elgin, IL USA 60123

IMPORTANT OSHA REGULATIONS COVERING THE USE OF HORIZONTAL LIFELINE SYSTEMS

OSHA 1910.66 Subpart M – 1926.502 (d)(8):

Horizontal Lifelines shall be designed, installed, and used under the supervision of a qualified person as part of a complete fall arrest system, which maintains a safety factor of at least two.

OSHA 1910.66 (b):

"Qualified Person" means one with a recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation, and specifications in the subject work, project, or product.

OSHA 1910.66 (b):

"Competent Person" means a person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as in their application and use with related equipment

OSHA 1910.66:

Personal fall arrest systems shall be rigged such that an employee can neither free-fall more than 6- ft. nor contact any lower surface.

OSHA 1910.66 (n):

The sag in the lifeline should be minimized to prevent the connecting piece of equipment (self-retracting lanyard or other appropriate personal fall arrest device) from sliding down the lifeline to a position which creates a swing hazard during a fall arrest.

OSHA Standards, Interpretations and Compliance Letters, 02/09/1995-Criteria for personal fall arrest systems:

The free-fall distance is limited to 6 feet. The deceleration distance must not exceed 42 inches; lifeline elongation is not included in deceleration distance; and the total fall distance is unregulated except that the employee cannot make contact with a lower level...The safety factor of two should be applied based on the anticipated maximum arrest force, not the fall energy.

SYSTEM DESCRIPTION

The Skyline™ Horizontal Lifeline System P/N 6320-30 (30-ft. length) and P/N 6320-60 (60-ft. length) is designed for use as a temporary horizontal lifeline system for emergencies or short-term use where speed of installation and lightweight construction are important. Its' lightweight materials allow for easy transportation, installation and removal, yet the rugged construction provides for a long service life. The lifeline is constructed of 2–in. polyester webbing in 30-ft. and 60-ft. lengths and uses a unique combination ratchet load binder and shock absorber for rapid adjustment and secure tensioning of the Skyline™ lifeline system. It is designed to enable the user to attach to an engineered fall arrest system in work areas where no overhead anchor points exist. This system, is a constant arrest force HLL system and, is designed for use by up to 2 persons at the same time and can limit the lifeline anchorage forces to a maximum of 2300-lb. whether 1 or 2 men are attached to the lifeline due to the use of its' unique Skyline™ Webbing Shock Absorber. The Skyline™ Webbing Shock Absorber is a webbing style shock absorber covered by a durable cordura wear sleeve that may be used with horizontal lifelines up to 60-ft. in overall span length. However, span length and number of persons on the system determine input energy (and therefore, final line tension) and not all combinations of span lengths and number of workers are possible. The user may consult the manufacturer for exact system parameters for each installation if those parameters are outside the range of those listed on the ratchet label, or in unique installations that require engineering supervision. System parameters on the ratchet label are based on computer generated load and Minimum Required Clearance (MRC) data that is traceable to our data and test results for each system installation.

The computer-generated designs are prepared from verifiable test data and include a 2 ft. safety factor for Minimum Required Clearance. The user must confirm that the anchorage structure to which this system will attach will support the anticipated HLL tension with a 2 to 1 Safety Factor. For this system, this means that the anchorage structure must be certified to a strength of 4,600-lb. minimum.

This system design is predicated on the use of a full-body harness for the worker, double-action, single- locking snap hooks to attach to the cargo ring on the lifeline, and a shock absorbing vertical lifeline or self-retracting lanyard (SRL) with 900 lb. maximum arrest force. Non-shock absorbing lanyards and retractables that do not have "slip-clutch" type internal shock absorbers with a 900 lb. maximum MAF are **NOT** allowed for use as vertical lifelines on this system. Any attachment to the horizontal lifeline must transfer fall arrest forces to the body through the dorsal d-ring of the full body harness only. Harness side and chest d-rings are not allowable lanyard connection points.

All Skyline™ HLL systems are supplied with an integral shock absorber in the line and no system may be used without one. The three main functions of the shock absorber are:

1. It adds energy capacity to the system to increase the safety of short horizontal lifelines.
2. It adds hysterisis (friction) to the system to absorb rebound energy.
3. It decreases low sag angle amplification by controllably elongating the horizontal lifeline.

When a system is installed, the pre-tension must be set according to the installation instructions. Not all systems are perfectly rigid; therefore, pre-tension may change over time. Prior to each use, the worker must

check the pre-tension of the system and adjust it accordingly. When the pre-tension of a system is closely controlled, the fall distance and final line tension are easily predictable. Knowing that the pre-tension of a horizontal lifeline is set correctly is of utmost importance to the predictability and safety of the system.

ANCHORAGE POINTS

The strength of horizontal lifeline anchorage points must be at least two times the anticipated line tension. This strength must be certified by a qualified person and must be verifiable by either calculation or testing. Anchorage connectors must be selected carefully. Eye bolts should not be used if they will be loaded at an angle to their axis, unless the loads fall within design parameters for such use. Weld-on lugs should not be less than ½ inch in width and should not be made of steel with less than 50,000 PSI yield strength. The proper stress areas and weld areas must be calculated to assure proper safety. If in question, consult Fall Safe staff for proper design requirements.

HORIZONTAL LIFELINE SYSTEM COMPONENTS

The Skyline™ Temporary Horizontal Lifeline System, 30-ft. length (P/N 6320-30) consists of the following standard approved and compatible components:

- 1 ea. Model 6123 Skyline™ Webbing Shock Absorber with Ratchet Tensioner (polyester webbing covered in cordura)
- 2 ea. Model 6062 1/2-in. bow shackles (stainless steel)
- 2 ea. Model 6101 Cargo Rings (zinc plated steel)
- 1 ea. Model 6126 30-ft. Ratchet Strap, 2-in. wide

The Skyline™ Horizontal Lifeline System for Temporary Lifeline 60-ft. length (P/N 6320-60) consists of the following standard approved and compatible components:

- 1 ea. Model 6123 Skyline™ Webbing Shock Absorber with Ratchet Tensioner (polyester webbing covered in cordura)
- 2 ea. Model 6062 1/2-in. bow shackles (stainless steel)
- 2 ea. Model 6101 Cargo Rings (zinc plated steel)
- 1 ea. Model 6128 60-ft. Ratchet Strap, 2-in. wide

The actual selection of components and options for the design of a horizontal lifeline system should only be performed by a Qualified Person, or a state registered Professional Engineer who is experienced in the design and use of safety systems.

The Skyline™ Horizontal Lifeline system is designed for use with the approved, above listed components only. Substitutions or replacements with non-approved components will endanger the system integrity and may affect the safety and reliability of the total system.

PERSONAL FALL ARREST EQUIPMENT USED WITH HORIZONTAL LIFELINES

"It is of utmost importance in the design of horizontal lifelines to be able to predict the vertical fall arrest forces that will be imposed on a lifeline during a fall. Normally the lifeline will elongate under increasing tension until the horizontal lifeline imposes a 900-lbf. Vertical force on the shock absorbing lanyard and then the lanyard will begin to rip out (or extend in the case of a SRL) until all of the fall energy has been absorbed. For multiple persons this force increases as a multiple of 900-lbs. The shock-absorbing lanyard, therefore, is vital in predicting and limiting horizontal lifeline tension. Only shock absorbing lanyards (or SRLs) with 900 lb. maximum arrest force are allowed for use with this system.

Care should also be used in selecting harnesses for use with horizontal lifeline systems. Due to the HLL sag height, additional distance required for clearance when using horizontal lifeline systems is often the limiting factor in determining whether a HLL system can be used for a particular application. Harnesses with sewn down back pads can limit as much as 1 ft. of back pad slippage during fall arrest, giving additional clearance for safety. If the system will be used where a worker could encounter a head first free-fall, a non-secured back pad can slide down the webbing to the small of the back, allowing the worker to fall out of the harness through the top by allowing the harness straps to slip over the shoulders. For utmost safety, we recommend but don't require the use of full body, crossover or pullover type harness with sewn down back pads for all installations.

Most important to the installation of temporary horizontal lifelines is where the lifeline is installed. Under OSHA regulations, the anchorages that lifelines are attached to must be rated at least TWICE as strong as the final line tension in the lifeline during fall arrest. For the Skyline™ Lifeline System, this means that the anchorage MUST be rated and certified able to withstand at least 4,400-lb. (a 2 to 1 Safety Factor over the expected final lifeline tension of 2,200-lb.).

IMPORTANT NOTE: Once suitable anchorages have been identified, care must be taken to ensure that the lifeline is installed at the proper height to ensure that the worker will not be exposed to a freefall greater than 6-ft. In general, this means that the lifeline would need to be installed a minimum of 5-ft. above the walking/working surface. **DO NOT** install lifelines at workers' feet, because this can create a 12-ft. free-fall. Consult a Competent Person trained in fall protection practices to help with lifeline location, or call Fall Safe at (303) 424-8650 with any questions.

INSTALLATION LAYOUT CONSIDERATIONS

Most HLL installations consist of either single-span or multi-span systems. Single-span systems consist of two end anchorages with a single HLL lifeline attached between them. Multi-span systems consist of two end anchorages and multiple intermediate (bypass) supports through which the cable passes, but which it is not attached. Normally the bypasses consist of a structure that will allow a lanyard snap to pass through without allowing the cable to become disconnected. Input energy into an HLL system during fall arrest is usually determined by span length. The longer the span, the farther a person will fall during fall arrest and therefore,

the greater the input energy. The more people that fall on a system at one time, the greater the falling weight and this also increases the input energy. In order to limit input energy into a system, one must limit the number of persons on a system and also limit the span length. On the other hand, the cable, having the greatest energy capacity (or ability to absorb energy) of all the components of a system due to its ability to strain under stress, must be long in order to absorb the greatest amount of energy. Therefore, the safest way to rig and assemble a horizontal lifeline system is to use the longest cable length possible with bypass supports located to reduce sub-span length to as short as possible. Only minimum required clearance limits (MRC) should be used to determine maximum allowable line length.

REQUIRED CLEARANCES

The following Minimum Required Clearances must be observed when using the Skyline™ Temporary Horizontal Lifeline System. All clearance distances listed show the required clearance as measured from the walking/working surface downward to the nearest obstacle or ground when the HLL is mounted a minimum of 5-ft. above the walking/working surface.

	30-ft. HLL, #6320-30	**60-ft. HLL, #6320-60**
1 man w/6-ft. shock-absorbing lanyard	18.5-ft	22.5-ft
2 men w/6-ft. shock-absorbing lanyard	19.1-ft	23.2-ft
1 man w/self-retracting lanyard	14.2-ft	18.2-ft
2 men w/self-retracting lanyard	14.8-ft	18.9-ft

INSTALLATION

Installation of horizontal lifeline systems should be done under the supervision of a Qualified Person trained in their function and use. Use only parts that have been qualified as compatible components by Fall Safe. Install the system only as specified in the system parameter documents prepared by the computer program system. Ensure that the minimum anchorage strength is at least 2 times the anticipated load called out in the system parameter documents. Have the anchorages certified by a qualified person and keep documentation on hand. HLL calculations for minimum required clearance (MRC) are measured below the walking/working surface and assume that the horizontal lifeline is at least 5 ft. above the walking/working surface (unless otherwise specified) in order to limit free-fall to 6 ft. or less as required by OSHA. Always install lifelines horizontally where all end anchorages and bypass supports are at the same elevation. Always install the system per the system parameter documents and NEVER change span length, sub-span length, or number of people allowed on the system. Remember, horizontal lifeline dynamics change with any changes to span length, or number of people allowed on the system. Any changes require a new design, and MUST be approved by a Qualified Person.

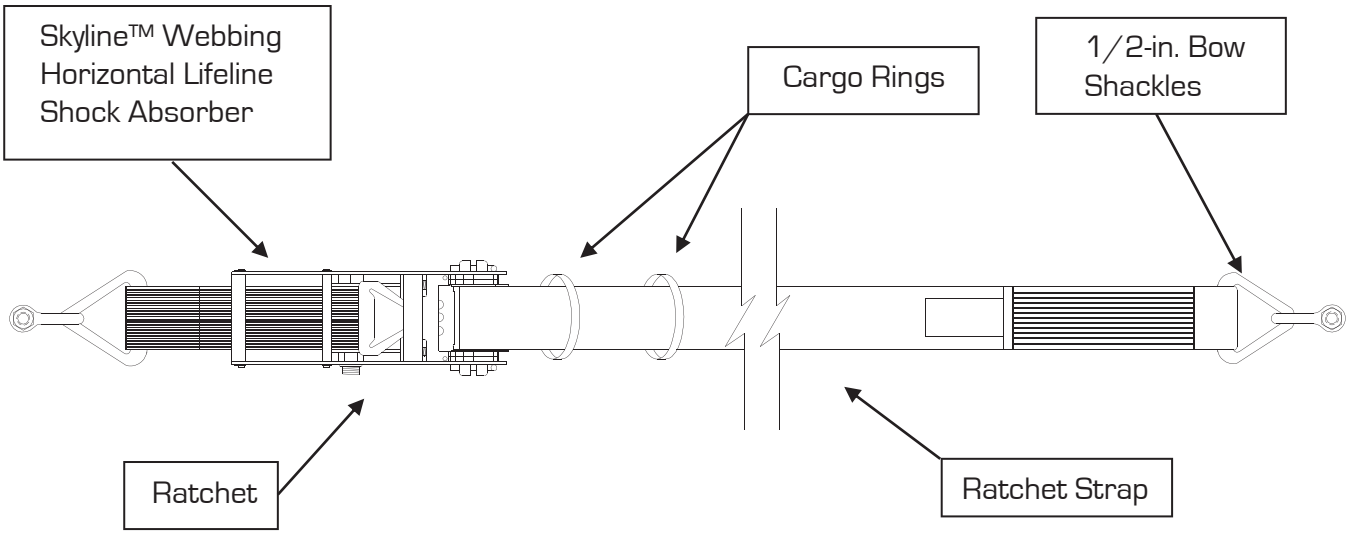


Figure 1

HLL INSTALLATION PROCEDURES

NOTE: Approved fall protection must be worn during Skyline™ lifeline installation at all times. Do not use the horizontal lifeline or its anchorages as personal fall protection anchorages until the system has been completely installed, inspected, and approved for use by a Qualified Person.

1. Attach one 1/2-in. bow shackle through the triangular d-ring of the 2-in. webbing strap, and attach to the anchorage point at one end. Tighten the bow shackle nut and secure with the lock ring.

2. Insert a 1/2-in. bow shackle through the eye of the Skyline™ Webbing Shock Absorber and attach to the other end anchorage point. Secure the bolt with the nut and replace the lock ring.

3. Begin lifting the horizontal lifeline cable assembly to its intended position by passing the free end of the ratchet strap into the slot of the ratchet. Pull the free end of the ratchet strap to help remove slack from the lifeline cable. Make sure both cargo rings are on the Ratchet Strap before tensioning system.

4. While holding the ratchet strap tight, begin tensioning the lifeline, using the ratchet handle.

5. Tighten the ratchet load binder until all the line slack has been removed from the system and the webbing is tight to the touch but do not excessively overtighten. Overtightening could cause the shock absorber to deploy.

6. Check that the webbing of the ratchet strap has made at least one complete revolution on its mandrel before the correct line tension has been reached. If it has not made a full revolution, release the tension, let 5-in. to 7-in. of the ratchet strap to slip back out of the load binder and retighten. The strap should now make at least one full revolution before the lifeline is properly tensioned. At least one full revolution is necessary for the tensioner to overcome the maximum load with out slipping.

7. Inspect the installation for any defects, such as missing parts, damage, proper anchorage strengths and configuration, proper pre-tensioning, proper cable alignment, proper elevation, defective or non-compatible components. **DO NOT** authorize system use if any defects or discrepancies are found. Check system installation parameters with system installation parameter documents to assure that the correct installation has been performed.

8. A separate tag should also be added indicating date of last inspection by the competent person. To remove system, release tension from lifeline using the ratchet tensioner only after verifying all workers are disconnected. The bow shackles may then be removed from their anchor points.

TRAINING

It is the responsibility of the employer to train all workers prior to using this system (per OSHA 1926.503 (a)(1)). The employer shall provide a training program for each employee who might be exposed to fall hazards. 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.

The employer shall assure that, as necessary, each employee has been trained by a competent person qualified in the following areas:

a. OSHA regulations governing the use of horizontal lifelines.
b. Ability to recognize potential fall and workplace hazards.
c. Method of inspection of safety equipment.
d. Rescue procedures.
e. Installation and removal techniques.

PLANNING FOR RESCUE

Prior to system use, a rescue plan must be prepared, the workers must be trained in its use, and the rescue equipment must be on hand to implement it in case of a fall.

Typical rescue plans include (but are not limited to) the following items:

1. List of equipment that must be readily accessible in the event of an emergency and the names of those workers certified to use or operate that equipment.
2. Emergency contact phone numbers (ambulance, hospital, fire department...) and a means to contact them (cell phone, emergency radio).
3. List of employees on the site, and the specific tasks they will perform to effect the rescue.

The equipment that will be used to aid in the rescue of any worker must be attached to structural anchorages independent of those used for the horizontal lifeline system. During installation of horizontal lifeline anchorages, tie-off and equipment attachment hardpoints should be attached, and also clearly marked in such a manner as to provide a means to rescue a worker in any position along the lifeline system.

INSPECTION

Prior to each use, the worker must inspect the system for any physical damage, wear, corrosion, or malfunctioning parts. Check the shock absorber for deployment by looking to see if the black cordura cover has been ripped or if the internal shock absorbing webbing is exposed. Once the shock absorber is deployed, its energy capacity is used up, and it cannot be reused. If the shock absorber deploys, the entire system has seen a fall arrest load and must be removed from service until it is inspected by a competent person who either replaces or repairs and re-certifies the components for use on the system. Once deployed, shock absorbers are not re-usable, and must be replaced. If an inspection reveals a problem or unsafe condition, remove the entire system from service until it can be re-certified by a competent person.

Since this system is a webbing lifeline system and webbing deteriorates from prolonged exposure to sunlight, inspections at least once yearly must take into account UV (ultra-violet radiation) degradation of the system. If in doubt, it must be inspected by a competent person experienced in such inspection or may be returned to the factory for formal load testing of the webbing strap.

The worker, who must also check the pre-tension prior to each use, must inspect all system components. A formal inspection must be carried out a minimum of once each year, and be formally documented and kept on file with the system parameter documents.

SERVICING

A qualified person trained in the inspection and servicing of system components must carry out servicing of this system. The company's safety officer should maintain a record log of all servicing and inspection dates. The system and all components must be withdrawn from service if subjected to fall arrest forces. Those components may be returned to service only after being certified by a qualified person. Only original Reliance Industries equipment or replacement parts are approved for use in this system. Contact Reliance Engineering with questions and when in need of assistance.

WARNINGS AND LIMITATIONS

Proper care should always be taken to visually scan the work area prior to use. Remove any obstruction, debris, and other materials from, and beneath the work area that could cause injuries or interfere with the operation of this system. Be cautious of swing fall hazards if working horizontally to the side of the lifeline. Always use the shortest lanyard length possible to connect to the lifeline. Be aware of the movements of others on the lifeline at the same time, knowing that if they fall, the sudden motion in the lifeline could pull others off balance. When working at a fixed area, tie off to other suitable overhead anchorages if they exist, allowing the lifeline to be occupied by fewer people.

Users should be familiar with pertinent regulations governing the use of this system and its components. Only trained and competent personnel should install and supervise the use of this system.

Do not exceed manufacturers' recommended span length or maximum number of people on the same lifeline as listed on either the tag attached to the specific horizontal lifeline system, or in the lifeline parameter data sheets.

Do not use these components with any other horizontal lifeline material. Only 3/8 – 7x19 IPS or stainless steel wire rope is allowed, due to its high-energy capacity.

Use only Fall Safe supplied or qualified compatible components.

If you have any questions regarding the correct installation or use of this product DO NOT USE. Call Fall Safe at Ph. (303) 424-8650 or Fax (303) 424-8670.

INSPECTION LOG FOR HLL SYSTEMS

Company: _____ Location:_____ Date:_____

Job Site: _____ HLL Log No.: _____ System No.: _____

Is this system used as described in the HLL Log No. _____ to conform to design document criteria?_____

Describe non-conforming conditions in the boxes below:

Inspection Criteria	Missing Parts	Labels Readable	Corrosion	Deformed Parts	Cracked Parts/ Broken wires	Excessive Loading
HLL Identity Tag?						
HLL Shock Absorber Label?						
HLL Shock Absorber?						
Ratchet?						
Ratchet Strap						
Shackles?						
Load Rings?						
Anchorage points?						

Is Shock Absorber pre-tension set correctly _____

Has a Rescue Plan been prepared?_____

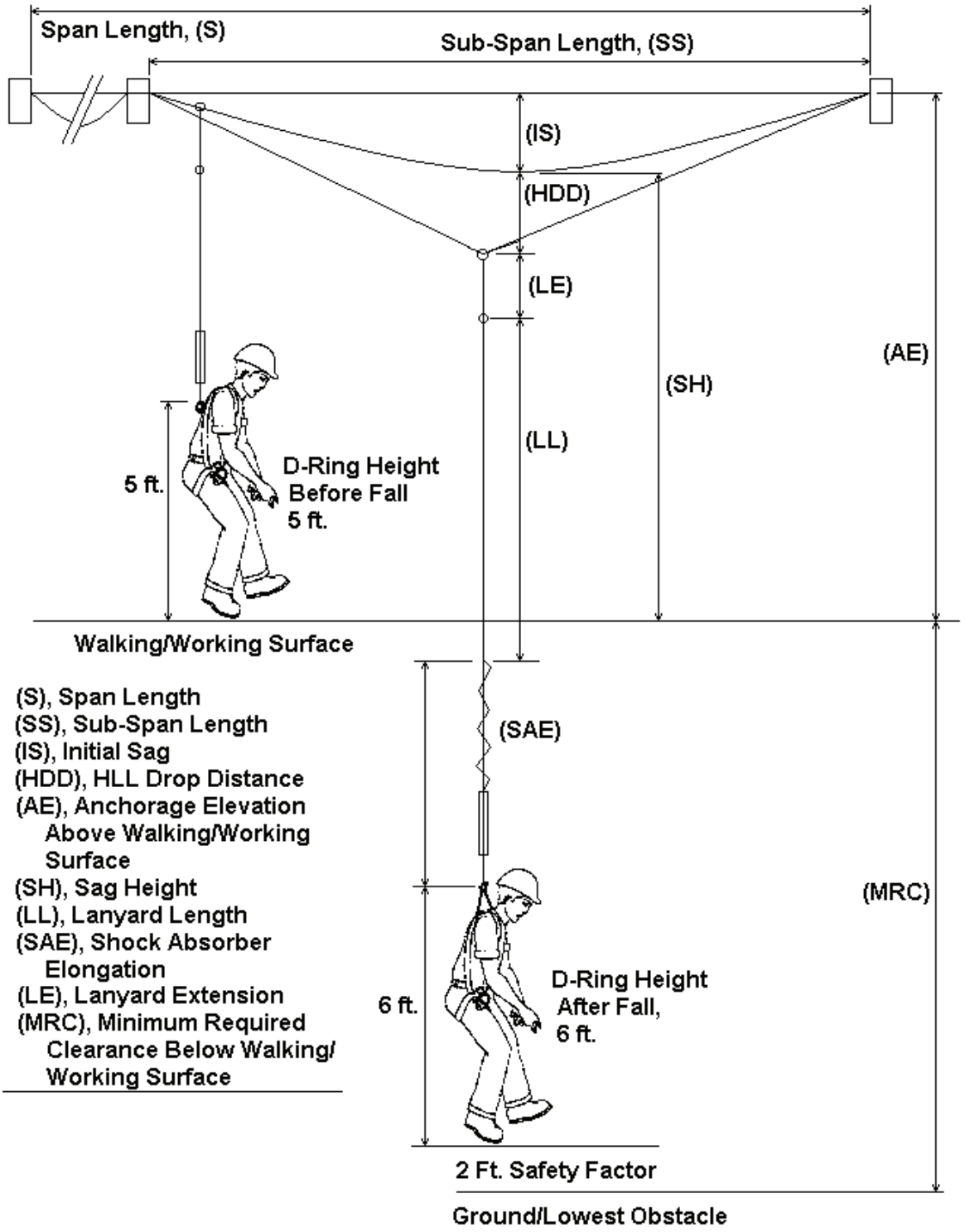
Is Rescue Equipment on hand?_____

Have workers been trained in the Rescue Procedures and been given a copy of the Rescue Plan? _____

_____

Coquitlam, BC V3K 0B3 | Elgin, IL USA 60123
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SKYLINE™ HORIZONTAL LIFELINE DIAGRAM





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