

Title of Training	Horizontal Life Line Cable System		
Equipment Info.	MAKE/TYPE/SIZE/MODEL	60 ft.Secur Span & EZ Line System	
Material Needed	MANUFACTUER/EQUIPMENT		
	MANUAL		

HORIZONTAL LIFE LINE SYSTEMS

One of the most important aspects of personal fall protection systems is fully planning the system before it is put into use. Probably the most overlooked component is planning for suitable anchorage points for tie-off. Such planning should ideally be done before the structure or building is constructed so that anchorage points can be incorporated during construction for use later for window cleaning or other building maintenance. Improper anchor points and improper use of fall arrest equipment presents hazards to personnel which may be avoided by following these guidelines: In some cases, anchorages must be installed immediately prior to use. In many cases, there is a need to devise an anchor point from existing structures. A qualified person should evaluate the suitability of these "make shift" anchorages with a focus on proper strength. Ensure that the anchorage is compatible with your system.

Personnel must be properly trained to use personal fall protection systems. Training should include the following:

- Application limits
- Proper anchoring and tie-off techniques
- Estimation of free fall distance (deceleration and total fall distance)
- Systems use, inspection, and storage (inspections before each use)
- Work-site conditions which may affect system use (weather, wind, etc.)
- Manufacturer's recommendations and instruction **Introduction:** One of the most important aspects of personal fall protection systems is fully planning the system before it is put into use.

Secura Span™ is a fully engineered horizontal lifeline system designed to provide an overhead tie-off point, complete hands-free mobility and unrivaled ease-of-use. Whether your need is for a system that installs to concrete column tops, clamps to an I-beam on a pipe-rack or is welded to a transmission substation, this system can be configured with different bases to provide your fall protection solution.

Let's start with some true and false questions.

1. All anchorage points for HLLs need to meet 5,000 lbs.
2. A system can be rated for more than two users?
3. A competent person can design a HLL system?
4. The horizontal forces are the same as the vertical forces imposed on the user?
5. I always need an inline shock absorber on my HLL system.

I want you to leave with the following after this training:

Trainee Name (print)		Signature of Trainee	
Instructor Name		Date of Training	
Scan To:	Safety/Training/Equipment/Horizontal Life Lines/-YYYY/MM/DD		
Revision # 002-15	Page 1 of 7		

Title of Training	Horizontal Life Line Cable System		
Equipment Info.	MAKE/TYPER/SIZE/MODEL	60 ft. Secur Span & EZ Line System	
Material Needed	MANUFACTURER/EQUIPMENT		
	MANUAL		

1. An understanding what OSHA requires of me.
2. Understand the risks associated with installing a HLL incorrectly.
3. Understanding the requirements needed to install a HLL correctly.



Definition of a Qualified Person:

Means one who, by possession of a recognized degree, certificate, or by professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the project

Definition of a Competent Person

Means one who is capable of identifying existing and predictable hazards in the surroundings of working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

What do they really mean?

- OSHA states that any HLL shall be designed, installed, and used under the supervision of qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two or 2 to 1 safety factor.
 - Do I have a “qualified person” on my staff?
 - 5,000 lb. rule does not apply
 - Loads have to be known every time the system is installed.

What are the biggest problems with DIY systems:

- Understanding end load of anchorages
- Understanding fall clearances
- “Qualified person” is either not involved or not qualified.
- If not, chances are the system does not meet OSHA requirements.

Horizontal Lifeline System DIY Systems Vs Pre-engineered Systems

- Ask yourself the following three questions:
 - Do I want to assume the liability?
 - Do I have the testing capabilities to meet the requirements?
 - Can I go home every night knowing I have my crews in compliance with OSHA standards?

Trainee Name (print)		Signature of Trainee	
Instructor Name		Date of Training	
Scan To:	Safety/Training/Equipment/Horizontal Life Lines/-YYYY/MM/DD		
Revision # 002-15			Page 2 of 7

Title of Training	Horizontal Life Line Cable System	
Equipment Info.	MAKE/TYPE/SIZE/MODEL	60 ft.Secur Span & EZ Line System
Material Needed	MANUFACTUER/EQUIPMENT	
	MANUAL	

▪ **Most Common Mistakes:**

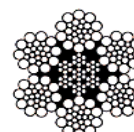
- Under designed end anchors



• **Most Common Mistakes:**

- + Under designed cable terminations

Most Common



Mistakes:
6 x 26

the lifeline

- Pretension in
 - Too much tension
 - Too little tension
 - Constantly changing tension

+ **Most Common Mistakes:**

- No inline shock absorbers incorporated



+ **Most Common Mistakes:**

- Calculating fall clearances
- User equipment
-

Cable Size

- What is the correct size?
-

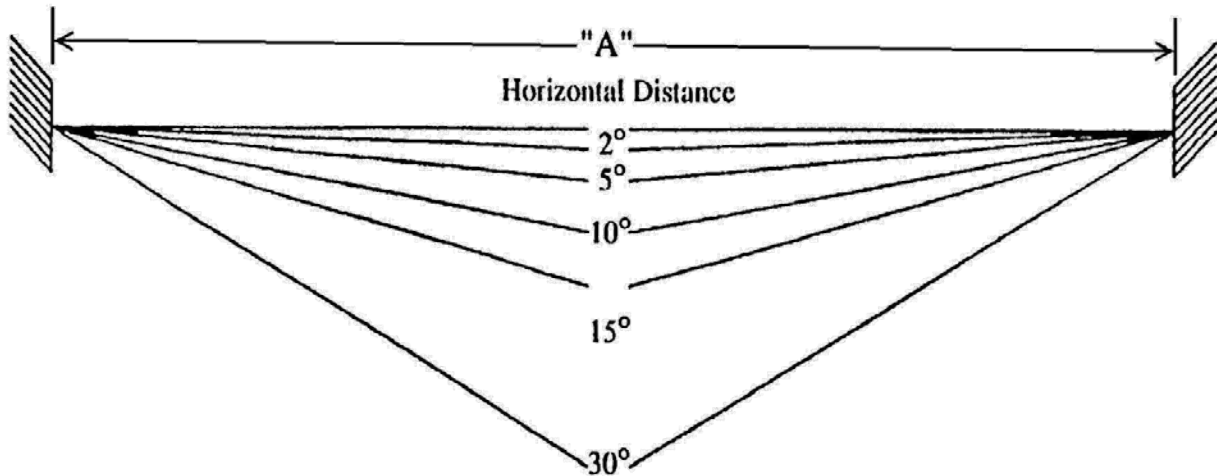
Horizontal Life Lines Loads, how do they work?

- HLLs may depending on their geometry and angle of sag, be subjected to greater loads than the impact load imposed by an attached component. When the angle of a HLL sag is less than 30 degrees, the impact force imparted to the lifeline by an attached lanyard is greatly amplified. For example, with a sag angle of 15 degrees, the force amplification is about 2:1 and at 5 degrees sag it is about 6:1
- HLL end loads are dependent on vertical force, span, pretension in the cable and also cable elasticity.

Trainee Name (print)		Signature of Trainee	
Instructor Name		Date of Training	
Scan To:	Safety/Training/Equipment/Horizontal Life Lines/-YYYY/MM/DD		
Revision # 002-15			Page 3 of 7

Title of Training	Horizontal Life Line Cable System	
Equipment Info.	MAKE/TYPE/SIZE/MODEL	60 ft. Secur Span & EZ Line System
Material Needed	MANUFACTUER/EQUIPMENT	
	MANUAL	

▪



- **For example No: 1**, you are designing a two user system and you are utilizing 900 lb arresting force lanyards. Assume that your pretension yields a 10 degree vertical deflection during a maximum arresting force. The result is an end load amplification 2.9 times the arresting force or $(900 \text{ lbs.} \times 2 \text{ users} \times 2.9) = 5,220 \text{ lbs.}$ Your end anchors or stanchions have to be designed for 10,440 lbs. applying the OSHA standard of 2:1.
- **For example No: 2**, you are designing a two user system and you are utilizing 900 lb. arresting force lanyards. Assume that your pretension yields a 5 degree vertical deflection during a maximum arresting force. The result is an end load amplification 5.7 times the arresting force or $(900 \text{ lbs.} \times 2 \text{ users} \times 5.7) = 10,260 \text{ lbs.}$ Your end anchors or stanchions have to be designed for 20,520 lbs. applying the OSHA standard of 2:1.

Every time a HLL system is installed the following must be known:

- End loads must be calculated and documented by a **qualified person** for end anchorage design requirements.
- Pretension in the HLL must be known and maintained at the same level throughout the job, if not, the end loads could increase dramatically.
- Number of users on the system has to be controlled and maintained throughout the job.
- The appropriate user equipment that the personnel is using has to be controlled and known throughout the job.

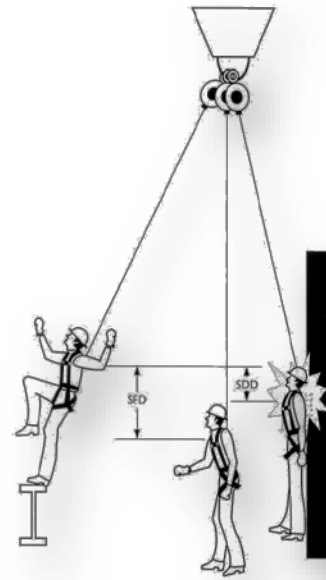
Trainee Name (print)		Signature of Trainee	
Instructor Name		Date of Training	
Scan To:	Safety/Training/Equipment/Horizontal Life Lines/-YYYY/MM/DD		
Revision # 002-15			Page 4 of 7

Title of Training	Horizontal Life Line Cable System	
Equipment Info.	MAKE/TYPER/SIZE/MODEL	60 ft. Secur Span & EZ Line System
Material Needed	MANUFACTUER/EQUIPMENT MANUAL	

How can YOU make figuring the end loads out easier?

Inline shock absorbers

- Controls the end anchor forces to a pre-determined value, every time
- Pretension on the system is not a huge factor when using in-line shocks.
- Number of users can range up to the capacity of the in-line shock absorber.
- Adds deflection of the cable which adds to your total fall distance.



How are they calculated?

- Five main considerations:
 - Cable deflection
 - Braking distance of user equipment
 - Body extension
 - Pendulum effect
 - Free fall

Pendulum effect will add to your total fall distance.

You may be saying:

- ✓ "I am more confused now than before I came."
- ✓ "I need easier solutions."

The manufacturer is the qualified person for the design portion of the standard.

Trainee Name (print)		Signature of Trainee	
Instructor Name		Date of Training	
Scan To:	Safety/Training/Equipment/Horizontal Life Lines/-YYYY/MM/DD		
Revision # 002-15			Page 5 of 7

Title of Training	Horizontal Life Line Cable System	
Equipment Info.	MAKE/TYPER/SIZE/MODEL	60 ft.Secur Span & EZ Line System
Material Needed	MANUFACTUER/EQUIPMENT	
	MANUAL	

- ✓ Usually incorporate inline shock absorbers.
- ✓ Fall clearance charts are provided.
- ✓ Detailed installation instruction manual is provided.
- ✓ Qualified person still has to supervise the installation and use of the system.

SecuraSpan System

- ❖ Attaches to I-beams ranging from 6” to 36” wide and up to 3-3/8” thick.
- ❖ Long systems available, up to 60 ft. spans with bypass brackets.
- ❖ Lightweight and easy to use.
- ❖ Fully tested to OSHA requirements



Important Notice

- ❖ ***This Safety Training Topic (STT) does not necessarily cover all possible hazards associated with this equipment and should be used in conjunction with equipment manual. It is designed as a guide to be used to compliment training in the field at Brieser Construction and as a reminder to users prior to equipment use.***

Trainee Name (print)		Signature of Trainee	
Instructor Name		Date of Training	
Scan To:	Safety/Training/Equipment/Horizontal Life Lines/-YYYY/MM/DD		
Revision # 002-15			Page 6 of 7

Title of Training	Horizontal Life Line Cable System		
Equipment Info.	MAKE/TYPER/SIZE/MODEL	60 ft.Secur Span & EZ Line System	
Material Needed	MANUFACTUER/EQUIPMENT		
	MANUAL		



EMPLOYEE NAME (Print or Type)	EMPLOYEE SIGNATURE	TRADE	DATE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			

Trainee Name (print)		Signature of Trainee	
Instructor Name		Date of Training	
Scan To:	Safety/Training/Equipment/Horizontal Life Lines/-YYYY/MM/DD		
Revision # 002-15			Page 7 of 7