



## Horizontal Lifelines

**The safety of workers deploying the telecommunications networks is of critical importance to all involved.** Use of properly designed, installed and maintained fall protection equipment by trained workers enables the safe and effective deployment of these networks across the country.

Our industry is very familiar with temporary vertical lifelines and vertical safety climb systems installed as a part of climbing facilities on the antenna supporting structures that are utilized to provide telecommunications service throughout the country.

Another option that many are not as familiar with is the use of horizontal lifelines.

This PAN intends to focus on horizontal lifelines (HLL), the standards and processes that govern them, as well as considerations for when they are to be a part of an overall fall protection plan. Inspection requirements are a critical component that will be discussed as well.

A threshold consideration is whether to use a temporary or a permanent HLL. Both have distinct advantages and disadvantages, but inspection and training is mandatory for either type. Temporary lifelines are typically owned by the contractor utilizing them who therefore have greater control over the care and maintenance of these lifelines. This typically means the users are familiar with the products' use and rescue operations. However, the install can become a concern from one site to another. The contractor shall ensure that the structure which the lifelines are being attached to can support the potential loads and provide the required fall clearance based on configured HLL (span length, number of users, free fall, etc.). This may require the creation of a rigging plan compliant

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with ANSI/ASSP A10.48 that is then reviewed by a qualified engineer in accordance with ANSI/TIA-322 to ensure the structure can support these loads. They shall also ensure that the fall protection plan addresses any unique considerations.



*Large SSV with antenna or lighting install at mid-point.*

Permanent HLL's have the advantage of being in place all the time. Permanent HLLs are typically owned and maintained by the structure/building owner. These applications are great time savers and there can be a significant advantage to the fall protection planning phase since the strength of the structure supporting the HLL has already been assessed at the time of install. However, significant consideration shall be given to the inspection and awareness for the crew members who may utilize the lifeline, as well as to some means of limiting their use to competent personnel only. The competent personnel shall meet the requirements laid out in the OSHA definition of a competent person (29 CFR 1926.32(f)). Users will need to be trained on the system(s) use to ensure component compatibility, system(s) user capacity limits, and rescue plans in accord with the overall fall protection plan. As with any type of fall protection plan, it is not permitted for personnel to use the fall protection system without having received proper training on appropriate PPE and attachment components (harness, attachment hardware, lanyard, etc.). The HLL is just another part of the structure that turns into a safety component when properly assessed and attached to with the other required components as intended by the manufacturer while being utilized as part of an overall fall protection plan.

Self-supporting structures are commonly utilized for the deployment of telecommunications infrastructure. In the past, much of the equipment was installed at the top or towards the top of these structures where

they are much narrower and the transition from one side to another is not a complex task. However, as the lower elevations of these structures are assessed for maintenance or installation of additional equipment, the span between legs can grow from 5' to 35'+. Think of crossing from one tower leg to another with a 35' span and only a 3.5" pipe to support you. This is where the use of an HLL system can truly become a life saver as well as a time saver.



*Worker using an HLL.*

Roof tops and leading-edge issues are another area where the proper use of an HLL system can benefit all involved. Roof tops are often ideal locations for the install of the telecommunications equipment, but little consideration is given to the access of this equipment for maintenance, upgrade or repair. The deployment of an HLL in this application can help to simplify the fall protection planning and enable the great men and women who install this equipment to do so in a safe and efficient manner. The presence of an HLL can positively impact the quality of work on a site because the workers engaged are able to more effectively ensure their safety.

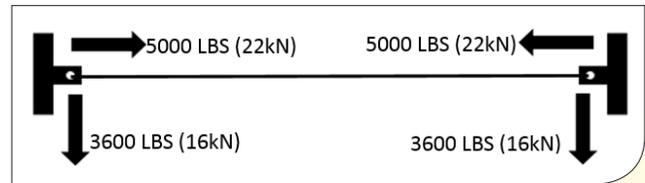
As the industry continues to develop, it is necessary to consider other types of infrastructure to allow for the installation of telecommunications equipment. These structures, in many cases, have nontraditional access means where vertical and horizontal lifelines can be solutions to be considered as a part of the initial install or maintenance work to allow for an improvement in the safety, quality and overall efficiency of work on the site.

Many are familiar with the towers that are available and used for the deployment of telecommunication equipment. Traditional antenna supporting structures are designed utilizing the ANSI/TIA 222 Standards. The good news is the industry not only has a design standard but also has two other critical standards that

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can be used to assess the antenna supporting structures' ability to support the forces generated by the static HLL and the engaged HLL systems. These standards are the ANSI/ASSP A10.48 and the ANSI/TIA 322. By working with a manufacturer that provides HLL systems that meet OSHA and ANSI standards, these manufacturers can provide the predicted loads/forces that can be generated by the HLL. This data can then be provided to a qualified engineer who can review the structure designed in compliance with the ANSI/TIA 222 and 322 to determine if the structure can support the static and dynamic loads. When working with a structure that may have reduced capacity, a contractor who desires to utilize an HLL system can prepare a rigging plan using the forces generated by the HLL in compliance with the ANSI/ASSP A10.48. A qualified engineer can then review this plan in compliance with the ANSI/TIA 322, taking into consideration the reductions for duration and wind speed that are allowed in these standards.

Rooftop applications can create difficulties in assessing the structure and anchor points for mounting and support of the forces generated by the HLL system. This issue is simplified when a permanently installed HLL or existing roof anchors, certified to ANSI Z359.18 and/or anchors intended and rated for tie-back/suspended access, are provided. In instances where a permanent HLL is present, it is important the users have proper training and authorization to ensure that the use will be compliant with the compatible connecting subsystem, user limits, and other specifications as detailed by the system documentation provided by the manufacturer or owner. For installed roof anchors, the requirements for the HLL shall be verified against the ratings of the existing anchors by a qualified engineer. If no anchors are present, a qualified engineer will need to review anchoring options for the HLL, factoring in the site and roof substrate specifics. This can become somewhat complex due to the HLL loading and the variation in roof construction. Even with this complexity, it may be advantageous to consider the use of an HLL as it allows a reduction in time for maintenance and change out work on a roof now having these items documented.



*Graphic showing the forces generated - Typical anchorage requirements for a 2-user single span HLL for use with 5000 lbf rated OSHA/ANSI rated anchorage connectors.*

When working with a client, it is important to help them understand why it makes good business sense to recommend HLLs in the proper application(s). It is important to give good guidance and to help the client understand the benefits of using an HLL. Secondly, it is important for the client to understand the difference between a temporary and permanent HLL installation. Quite simply, when a person is knowledgeable and confident that they are in a safe work environment they are able to focus on the implementation of the work plan, thereby ensuring safety and quality which ultimately should lead to a more efficient work environment.

Remember that when working on some structures with upgrades or installs, the development of a rigging plan can include the use of an HLL as part of the fall protection plan for the work if properly trained on the HLL. This rigging plan should note the loads and duration of use for the HLL if the qualified person determines that it is a Class IV rigging plan. This will allow the qualified engineer to assess the structure for the loads induced by the HLL as a part of the work.

In closing, the intent of this PAN is to provide an overview of another tool that may be considered to assist with the safe and efficient deployment of telecommunications infrastructure. There are a number of manufacturers in the industry who can provide product-specific guidance and support compliance with the proper standards. ■