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The Telecommunications Industry Foundation (TIF) is pleased to announce publication of the following TIF White Paper.

Safe and Compliant to Code and Standards Cable Hoisting Practices

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Beware of Unsafe Installation Practices and Counterfeit Products with hoisting grips in Wireless Infrastructure

Executive Summary

As wireless networks continue to densify and tower loading increases, the integrity of passive infrastructure components and installation practices have become mission critical. Counterfeit products, improper component selection, inadequate documentation, and unsafe hoisting methods increase the risk of structural damage, outages, and serious safety incidents. For generations, manufacturers such as ANDREW* and others have provided hoisting and support grips have been deployed globally and proven through testing and field use. This paper emphasizes planning, compliance with standards, material verification, competent installation personnel, photo documentation, and proper support methods.

Proper Construction Planning Is Critical

Effective planning should follow ANSI/ASSP A10.48 principles by clearly defining the roles of the competent person and the qualified person, scope of work, structure type. When the work involves installing cables (transmission lines), the cable type, manufacturer requirements, attachment methods, messenger cable requirements, bend-radius considerations, and documentation expectations should also be considered in the construction plan. The grip manufacturer's instructions need to convey the grip capacity and spacing. Monopole installations should evaluate positive closure or protection of grips. Grip placement, seating, and attachment locations should be documented as part of the ANSI/ASSP A10.48 construction plan and the project closeout as well as the specific grip model selected.

Proper planning should explicitly address the following critical questions:

- Who is a competent person? 29 CFR 1926.32 defines a Competent Person as "one who is capable of identifying existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them". The key is the planning and the authorization to take prompt corrective action and that is where the use of an ANSI/ASSP A10.48 Construction plan can support the communication and provide the competent person with a means to escalate to the qualified person if there are issues and they are unsure what proper actions should occur. The qualified person can then determine if they require a qualified engineer or if the issue requires communication with other stakeholders. The qualified engineer must meet the requirements outlined in ANSI/TIA 322 and may or may not be the design EOR (Engineer of Record). The crew on site is required to have a competent and qualified person meeting the requirements of ANSI and OSHA.
- What is the Scope of Work (SOW)? The SOW defines the tasks to be performed, installation methods to be used, sequencing of work, and safety requirements. A clearly defined SOW reduces ambiguity, improves quality and prevents unsafe field decisions.

- What is the tower or structure type? Understanding whether the site is a monopole, guyed tower, self-support structure, or rooftop installation is critical, as each structure type has unique loading, access, and may have owner's attachment requirements.
- What is the line type, and what are the requirements for hoisting and supporting the line? Cable type, diameter, weight per foot, and configuration (coaxial, fiber, hybrid, power) directly impact hoisting grip selection (lace up or pre laced), spacing, hoisting, anchoring methods, and support strategies. Best practice is that the line manufacturer provides grip specifications which includes the capacity and spacing.
- What are the Mobile Network Operators (MNOs) and structure owner requirements for line support? MNOs and structure owners may have specific requirements for attachment points, approved hardware, and documentation that must be incorporated into the plan. The competent person as a part of their ANSI/ASSP A10.48 Construction plan shall determine the location where the grip is to be installed, based upon the load and location; if necessary, the competent person can engage with their qualified person, if necessary, a qualified engineer or other stake holders to determine what is necessary.
- What are the cable and grip manufacturer's requirements? Manufacturer installation bulletins and guidelines define approved methods, spacing limits, and safety considerations. These requirements must be integrated into the ANSI/ASSP A10.48 construction plan and followed by installation crews.

When performing work on telecommunications structures, thorough planning ensures the correct components are selected, responsibilities are clearly assigned, and installation practices align with both industry standards and manufacturer requirements, significantly reducing risk before work begins.

All contractors shall plan their work meeting the minimum requirements of the ANSI/ASSP A10.48 standard. They should also document hoisting grip locations, grip seating, attachment method, messenger cable usage (if applicable), and photographic verification. This information should be retained as part of the permanent site record to support future maintenance, inspections, and modifications. Remember to include the cable bends at the top in weight calculation.

The Growing Risk of Counterfeit and Unqualified Products

Counterfeit or non-industry specific products often lack required testing, material strength, dimensional tolerances, corrosion resistance, and fatigue performance. Potential consequences include cable performance reduction, slippage, deformation, corrosion, fatigue failure, structural damage, injury, and inadequate installation documentation.

These should be confirmed via a BOM from a reputable manufacturer / supplier.

Failures associated with counterfeit/ non-industry specific hoisting and support grips can result in:

- Line performance issues
- Cable slippage or uncontrolled movement during installation
- Permanent deformation or loss of gripping strength over time
- Damage to tower structures, line support ladder mounts or dedicated grip anchors
- Severe injury or fatality to installation crews
- Severe corrosion
- Fatigue failure
- Lack of effective documentation for proper use and installation

MNO's, Contractors, Engineers, and others engaged should treat hoisting and support hardware as network and safety-critical structural components, not commodities. Best practice is to have the line manufacture provide the grip with instructions on the capacity and spacing.

Recommended best practices for MNO's and contractors require Bills of Materials (BOMs) for Verification and Planning

BOMs should identify manufacturers, part numbers, cable manufactures grip requirements, and quantities. Photo documentation of the installation is strongly recommended. Records support future maintenance, ANSI/TIA-222 maintenance and condition assessment programs, troubleshooting, and upgrade planning.

- Manufacturer name and part number for all load-bearing components.
- Confirmation that parts are qualified and approved for the specific cable type and diameter (specification sheets).
- Quantities and placement locations for hoisting and support grips, shackles, and anchors, A&E drawings should require red lines for locations of the hoisting grips.

Beyond verification, maintaining accurate BOM records supports future planning by enabling:

- Consistent maintenance and inspection programs
- Faster troubleshooting and replacement using known, approved parts
- Improved forecasting for upgrades or additional loading

This documentation becomes part of the permanent site record, reducing risk throughout the asset lifecycle.

The Importance of Competent and Qualified Installation Personnel

Competent and qualified crews shall understand cable transmission line load paths, tension management spool control, bend-radius requirements, messenger cable applications, manufacturer instructions, and attachment-point evaluation. Hoisting grips are permanent load-bearing components and should never be reused after overload or damage. Competent person shall comply with the OSHA and ANSI/ASSP A10.48 requirements for safe working environments.

Competent crews bring:

- Knowledge of proper load paths and tension management, including not lowering via load line and winch.
- Familiarity with manufacturer-recommended installation steps
- abatement of safety risks related to loss of tension, improper anchoring, or reuse of grip.
- Understanding of spool control, line handling, and placement requirements during hoisting operations.
- Hoisting grips shall not be subjected to shock loading and the construction plan shall ensure that rigging does not create a shock load on the grip.
- Understanding of cable bend-radius limitations and how tower geometry affects installation methods.
- Ability to evaluate when messenger cable systems are required and ensure proper load transfer methods are followed.
- Understanding of placement for cable grounding kits above the hoisting grip not directly below the grip.
- Tail spacing from the grip to the end termination of the line.

Hoisting and support grips are designed to be permanent parts of the installation and when installed properly they can serve as the primary support for cable weight. They must be installed correctly, kept under tension, and anchored to adequate structural attachment points. The competent person may need to consult with the qualified person to determine where the hoisting grip is going to be installed on the structure. To do this they must use the manufacturers' installation instructions as a starting point, the ANSI/ASSP A10.48 for planning addressing the rigging, weight, and communication. In addition, any special tower owner or MNO requirements may apply (if known the A&E should have these requirements on the drawings or provide direction on where to find this information.). If necessary, the qualified person could engage a qualified engineer or other impacted stakeholder who could review the ANSI/ASSP A10.48 construction plan considering the ANSI/TIA 322 standard. Improper handling or shortcuts during installation can dramatically increase risk to personnel, infrastructure reliability, and long-term maintenance.

Hoisting grips shall only be used in accordance with the cable and grip manufacturer's installation instructions and intended purpose. Hoisting grips shall never be used for personnel lifting, lowering cable assemblies, supporting unintended loads, or applications outside their

specified design criteria or purpose. It is important to have hangers installed on lines that do require hangers as an example on the waveguide ladder of a self-supporting tower.

Hoisting grips that have been overloaded, shock-loaded, visibly damaged, deformed, or otherwise compromised shall be removed from service and replaced. The authors of this paper are not aware of any manufacture that allows for a grip to be reused after a load event.

Best Practices for Cable Hoisting and Support

Use multiple grips as required and follow cable or grip manufacturer spacing recommendations. Messenger cables should be evaluated for long vertical runs and must not create adverse bend-radius conditions. Cable hangers stabilize cables but should not carry primary cable weight. Inspection programs should monitor corrosion, fatigue, deformation, and slippage:

- **Use multiple hoisting and support grips as required:** Hoisting and support grips shall be installed at appropriate intervals to manage cable weight safely. Grips are intended to be permanent, load-bearing components and shall never be overloaded or used to support multiple cables. Remember to include loops at the top of the tower in weight calculation of the line as considered in the ANSI/ASSP A10.48 Construction plan
- **Adhere to manufacturer spacing guidelines:** Hoisting and support grips must be installed within recommended maximum spacing based on cable weight and type. As an example, for the manufacture ANDREW [Hoisting and Support grips](#) the recommended standard for maximum spacing is 200 feet, reduced to 150 feet for heavier cables exceeding approximately 2.0 lb/ft. In unique or non-typical applications the line and grip manufacture should be consulted. Proper spacing reduces mechanical stress, prevents slippage, and maintains long-term gripping strength.
- **Use a messenger cable where appropriate:** Messenger cables help distribute mechanical loads and reduce strain on the primary cable, particularly in vertical tower more than 250 feet installations or as defined by the cable or grip manufacturer. If the competent person is not clear on the purpose of the messenger cable they should consult with the hoisting grip manufacturer. The messenger cable must carry the line weight without causing an adverse bend radius on the line being hoisted. In addition, the messenger cable shall be sufficient for all intended loads and required safety factors as a part of the ANSI/ASSP A10.48 construction plan. Generally best practice when the line is hoisted is to seat the top grip and have the top grip, take weight and then work the way down the messenger cable seating each hoisting grip until the line is off the messenger cable.

In addition to hoisting and support grips, cable hangers must be installed to manage wind and environmental loads. **Cable hangers are not intended to carry the primary cable weight of the installed line;** instead, they stabilize the cable once it is properly supported. Typical installations require cable hangers to be fastened to the structure at 3-5-foot intervals depending on the hanger, various wind speed, and ice conditions, or as otherwise specified by the

manufacturer and site conditions. Here is an example of manufacture ANDREW's [Hanger Spacing Guidelines](#). Proper use of cable hangers improves long-term reliability and protects both the cable and supporting structure.

Dedicated Attachment Points and Structural Safety

Attachment points should satisfy structure-owner requirements and support static and dynamic loads. Dedicated anchors should be considered where existing members were not designed for imposed loads, including monopoles, hybrid cable deployments, concentrated loading conditions, and certain guyed-tower applications:

- Have been evaluated by the contractor's Qualified Person in accordance with ANSI/ASSP A10.48, applicable manufacturer requirements, and structure-owner requirements. Where installation conditions exceed established criteria or introduce unusual loading conditions, review by a Qualified Engineer or other stakeholder may be warranted.
- Meeting the structure owner's guidelines
- Can support the applied static and dynamic loads

Using improvised or shared attachment points increases the risk of load transfer to non-designated members, potentially compromising the structure. The use of dedicated hoisting grip anchors, such as [ANDREW Hoisting Grip Anchors](#), or equivalent solutions, should be specified by the contractor's competent person or the Engineer of Record (EOR) for sites where:

1. Monopoles with internal attachment points that were never intended for the load IE: J-hooks that were designed for coaxial cables but were NEVER intended to support the weight of hybrid lines.
2. Small member guyed towers where one or more lines may have to be installed at an elevation and the weight of the lines could cause damage.
3. When there are multiple lines that must be installed at one elevation and the combined weight would not allow for safe installation without damage to the underlying structure
4. In events when the contractors ANSI/ASSP A10.48 construction plan defines loads that the qualified person requires to be verified by a qualified engineer.

Best Practices

- Grips used in monopoles will require some type of positive closure of the bottom of the grip to protect it from other activities at the site.

- Grips can only be used for their proper and intended purpose and shall never be used to lower cable assemblies,
 - Grips shall never be used for personnel hoisting.
 - Grips can protect lines from damage during hoisting and over the lifetime of the installation.
 - Never use a grip that has been overloaded for any reason
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Conclusion

By combining verified materials, pre-work due diligence, qualified installation practices, proper documentation, and manufacturer-approved support methods, Mobile Network Operators, tower owners, contractors, engineers of record, regulators, authorities having jurisdiction, and infrastructure operators can improve safety, compliance, asset life, and network reliability.

Quality manufactures rigorously test and guarantee that their products meet requirements for a safe and secure installation when properly utilized by a competent person in compliance with the ANSI/ASSP A10.48 standard.

Multiple manufactures, contractors and other parties supported the authors of this White Paper and their support was instrumental to the authors.

The following publications by TIF may further inform the reader of this white paper.

[https://tifonline.org/wp-content/uploads/2024/01/60.-PAN ANSI-ASSP-A10.8 Vol1 2024.pdf](https://tifonline.org/wp-content/uploads/2024/01/60.-PAN_ANSI-ASSP-A10.8_Vol1_2024.pdf)

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APPENDIX A – EXAMPLES



Example of a poorly selected anchor point



Improper use of grip – Grip was not used to hoist the line and too many lines at one location.



Too many lines at one location the Competent person should engage a qualified engineer if uncertain what a member will support.



improper hosting of lines can damage the lines, expose people to hazards, and lead to warranty issues

AUTHORSHIP CONTRIBUTIONS

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Authors:

- Marcus Ash - Manager, Product / Heliix Accessories
- Darin Piburn - Chief Operating Officer, Rosenberger Site Solutions
- Scott Kisting - EVP PTS Advisors

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