ANSI/ASSE A10.48-2016

CRITERIA FOR SAFETY PRACTICES WITH THE CONSTRUCTION, DEMOLITION, MODIFICATION AND MAINTENANCE OF TELECOMMUNICATION STRUCTURES

ANSI/TIA-322-2016

LOADING, ANALYSIS, AND DESIGN CRITERIA RELATED TO THE INSTALLATION, ALTERATION AND MAINTENANCE OF COMMUNICATION STRUCTURES

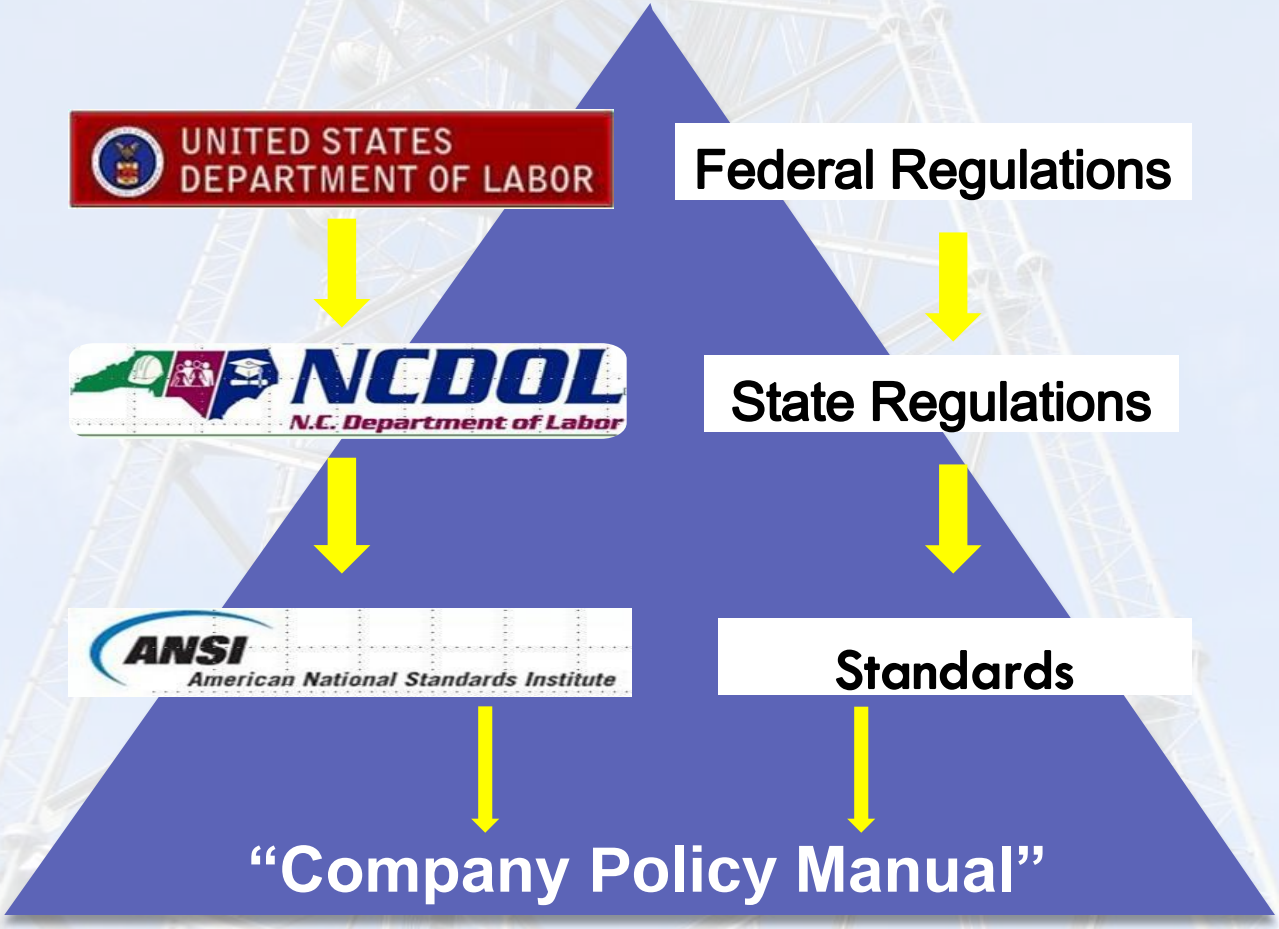
ANSI American National Standards Institute

NATE National Association of Tower Erectors

ASSE

TIA

Regulations versus Standards

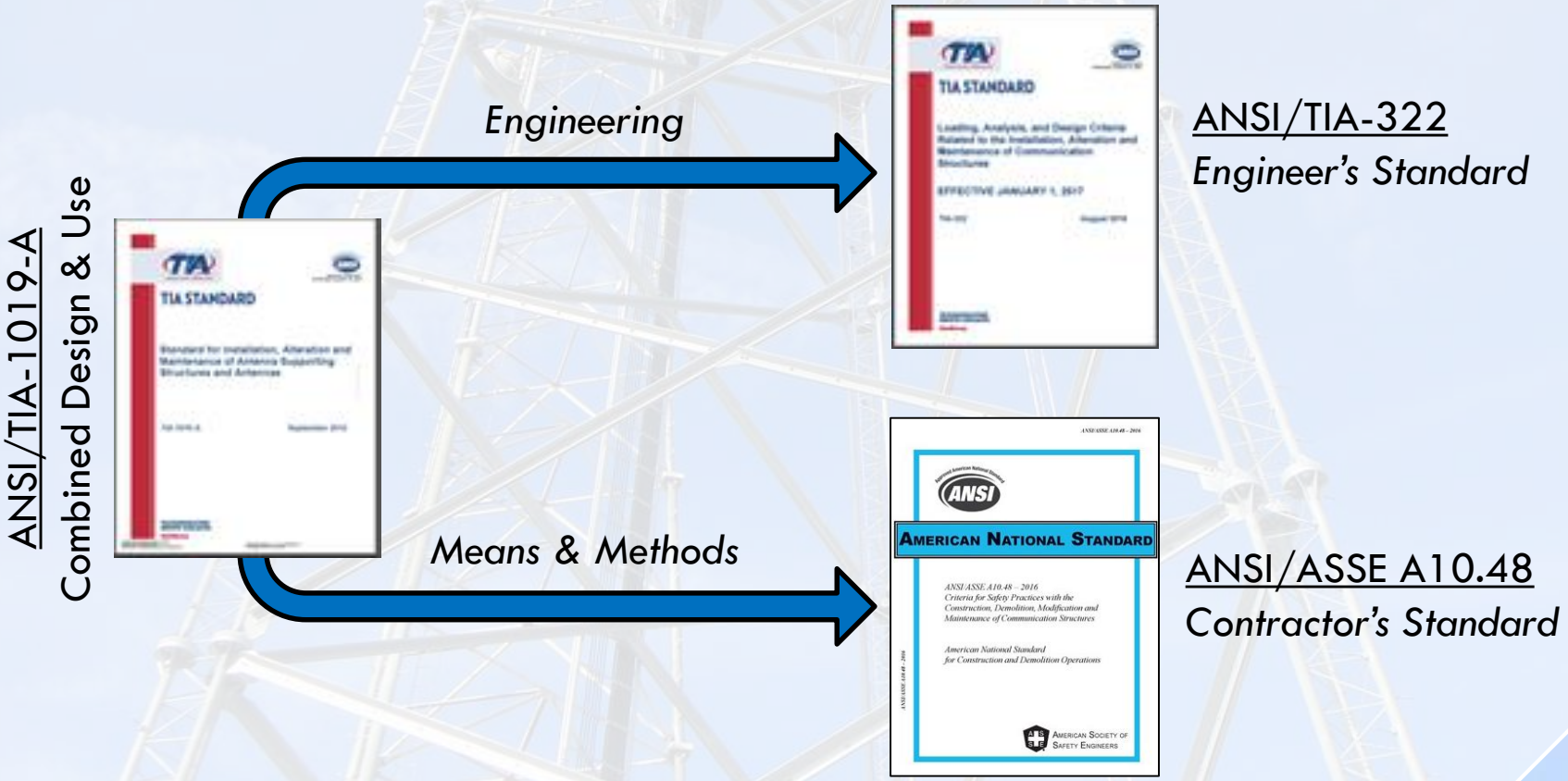


History

- Started discussions in the fall of 1995
  - NATE to develop a Hoist and Gin Pole standard
  - OSHA to write legislation (CPL) (Compliance Legislation)
- OSHA CPL 2-1.29 January 15, 1999; Rev March 26, 2002 (200') Rev CPL 02-01-056 July 2014
- NATE Hoist standard Feb 2, 2001; Rev October 21, 2003
- ANSI/TIA-1019-2004 (Gin Pole Engineering and Use Standard)
- ANSI/TIA-1019-A-2012 (Construction Engineering and Use Standard)
- ANSI/ASSE A10.48-2016 (Construction Use Standard)
- ANSI/TIA-322-2016 (Construction Engineering Standard)

Evolution of ANSI/TIA-1019-A to ANSI/TIA-322 and ANSI/ASSE A10.48

- Effective January 1, 2017, the ANSI/TIA-1019-A will be replaced by the ANSI/TIA-322 and ANSI/ASSE A10.48



Definitions

- Means and Methods: The procedures, sequencing, rigging and techniques used by a contractor throughout the construction process to result in a safe working environment.
- Stakeholders: All contracted parties that have a vested interest, including but not limited to, owners, licensees, engineer of record, contractors and subcontractors.
- Rigging Plan: A systematic and detailed presentation showing the equipment and procedures required for construction in accordance with this standard that will provide for the safety of personnel and for the stability of the structure and lifted components.

Definitions

- **Qualified Engineer:** A registered professional engineer knowledgeable and experienced in the communication structures industry, capable of understanding the contractor's rigging plan, the impact of the scope of work upon the structure and responsible for analyzing the structure's strength and stability while accounting for construction loads in accordance with the ANSI/TIA-322. The qualified engineer does not have the responsibility for field supervision, development of the rigging plan or implementation of the construction means and methods.

- **Qualified Person:** A person knowledgeable and experienced in the communication structures industry trained in the construction aspects of the ANSI/ASSE A10.48, the ANSI/TIA-322 and other applicable standards, and has the ability and experience in communicating the requirements of such standards with other stakeholders. The qualified person shall be capable of developing rigging plans while recognizing construction loading and structure strength and stability concerns requiring engagement of a qualified engineer, and have demonstrated the ability to coordinate construction related to the communication structures industry.

- **Competent Rigger:** A person, who understands the applicable industry standards, has the knowledge, skill and ability with the procedures and equipment common to the communication structures industry and has been trained to identify hazards and is authorized to take corrective measures.

Roles and Responsibilities

- Qualified Engineer
  - Must be engaged by contractor for all Class IV rigging plans
  - Must be registered Professional Engineer
  - Responsible for assessing structure under construction as indicated in contractor's rigging plan
  - Must have understanding of contractor's rigging plan
  - Communicates with Qualified Person or Competent Rigger where needed to clarify construction activities, duration and/or sequencing to ensure accurate supporting structure construction review per ANSI/TIA-322
  - Is not responsible for developing rigging plan or implementing construction means and methods

Roles and Responsibilities

- Qualified Person
  - Must be involved in development of all Class III and IV rigging plans
  - Must possess same level of construction knowledge and understanding as Competent Rigger
  - Has advanced ability to recognize construction loading and/or structure strength and stability concerns requiring engagement of a Qualified Engineer
  - Communicates with Qualified Engineer and Competent Rigger to facilitate rigging plan development and implementation of means and methods
  - Understands scope of work (SOW), construction specifications/requirements, and minimum requirements of ANSI/ASSE A10.48

Roles and Responsibilities

- Competent Rigger
  - Required for **ALL** classes of construction
  - Must be physically onsite (typically the onsite Supervisor)
  - Responsible for safely implementing all construction means and methods
  - Understands and is able to comply with ANSI/ASSE A10.48
  - Has demonstrated rigging knowledge, experience and practical skills
  - Able to calculate all rigging loads on the structure
  - Understands the importance of and applies the proper work sequence for each project
  - Completes project according to the Rigging Plan, and communicates with Qualified Person and/or Qualified Engineer to review/approve any significant deviations prior to implementing changes
  - Understands the information a Qualified Engineer needs to assess the impact on the structure
  - Good communication skills with all stakeholders in construction process

ANSI/TIA-322 Content Overview

Table of Contents

Engineering standard for towers under construction and analysis, design, and fabrication requirements for gin poles

1. General
2. Structural Considerations During Construction
3. Lifting Devices
4. Supporting Structure Loading
5. Analysis and Design of Gin Poles
6. Gin Pole Construction

Annexes:

Annex A	Gin Pole Procurement and User Guidelines (Normative)
Annex B	Gin Pole Stability (Normative)
Annex C	Evaluation of Existing Gin Poles (Normative)
Annex D	Wire Rope End Connections (Normative)
Annex E	References (Informative)

ANSI/TIA-322 Content Overview

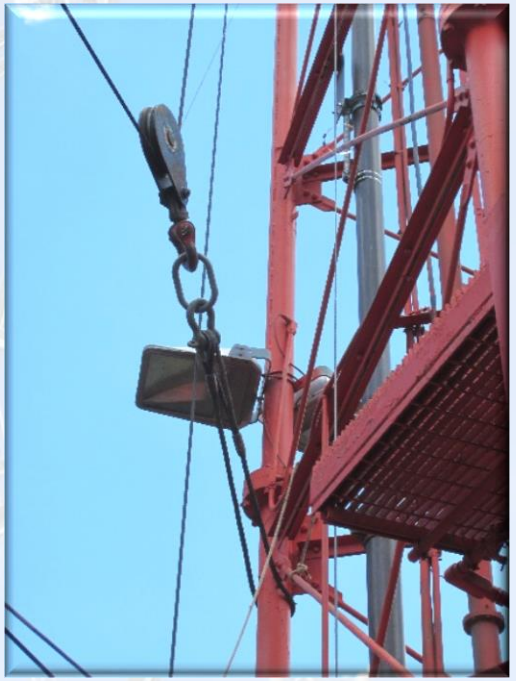
Section 1. General

- Provides definitions for standardized terminology used for setting a common language to facilitate and improve communications between engineers and contractors
- Terms and definitions established to compliment A10.48
  - *Competent Rigger*
  - *Qualified Person*
  - *Engineer of Record*
  - *Qualified Engineer*
  - *Supervising Engineer*
  - *Rigging Plan*
  - *Construction Loads*
  - *Gross Load*
  - *Load Chart*
  - *Crown/Top Block*
  - *Heel/Base Block*
  - *Traveling Block*
  - *Load Control Line*
  - *Tag Line*
  - *Trolley Tag*
  - *Means and Methods*
  - *Panel Point*
  - *Special Engineered Lift*
  - *Strength Efficiency Factor*

ANSI/TIA-322 Content Overview

Section 2. Structure Considerations During Construction

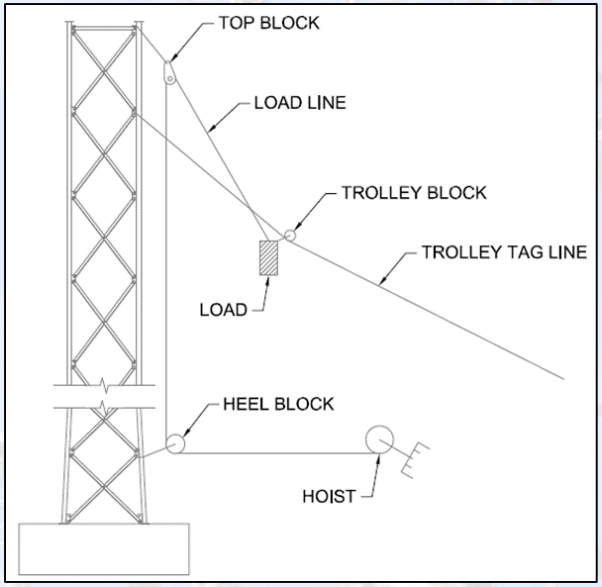
- Provides general strength and stability considerations related to the supporting structure which must be properly identified in the rigging plan and reviewed and certified based on the planned construction activities

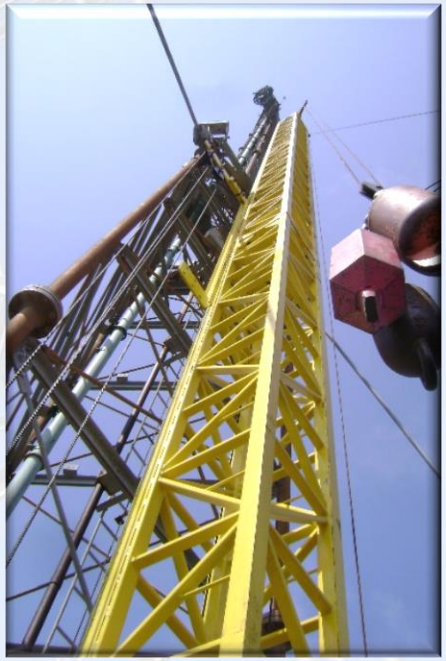


ANSI/TIA-322 Content Overview

Section 3. Lifting Devices

- Provides general information on typical tower lifting configurations along with specific requirements for gin pole load charts and special engineered lifts

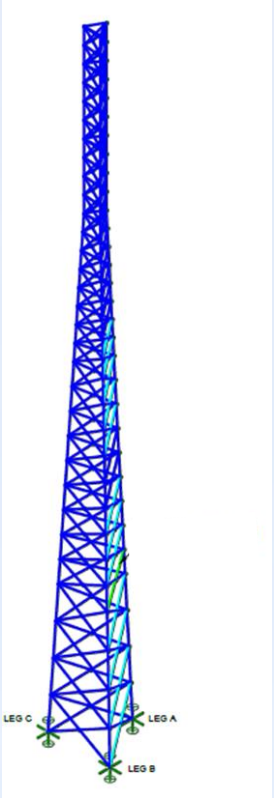




ANSI/TIA-322 Content Overview

Section 4. Supporting Structure Loading

- Provides minimum load and load combination requirements for the supporting structure during construction
- Includes load requirements during both operational (i.e. during active construction) and non-operational (i.e. during breaks in construction) conditions
- Identifies acceptable reduced wind requirements when reviewing specific construction phases based upon the planned activity duration as defined in the rigging plan



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Section 5. Analysis and Design of Gin Poles

- Provides analysis and design methods for all types of gin poles including lightweight gin poles used with synthetic rope to sophisticated and complex heavy lattice gin poles

- Addresses structural requirements for gin poles used in either a vertical to near vertical configuration (i.e. no more than 1.5° tilt) or a tilted configuration (i.e. more than 1.5° tilt)

ANSI/TIA-322 Content Overview

Section 6. Gin Pole Construction

- Specifies structural material requirements, fabrication specifications, and marking/identification requirements for new, repaired, or modified gin poles

ANSI/TIA-322 Content Overview

Annexes

A Normative Annex, is an Annex where the information in the Annex is mandatory and necessary to comply with the Standard.

Annex A	Gin Pole Procurement and User Guidelines (Normative)
Annex B	Gin Pole Stability (Normative)
Annex C	Evaluation of Existing Gin Poles (Normative)
Annex D	Wire Rope End Connections (Normative)
Annex E	References (Informative)

ANSI/ASSE A10.48 Content Overview

Table of Contents

Construction standard specific to the Telecom industry

1. General
2. References
3. Definitions
4. Pre-Job Planning
5. Job Site Conditions
6. Fall Protection
7. RF/EME
8. Base Mounted Hoists
9. Personnel Lifting Accessories and Processes
10. Rigging
11. Gin Poles and Other Lifting Devices
12. Climbing Facilities and Access
13. Structural Construction Loading Considerations
14. Training Program
15. Capstan Hoist
16. Demolition
17. Helicopter Used for Lifting Loads
18. Appendices

ANSI/ASSE A10.48 Content Overview

Chapter 4. Pre-Job Planning

- Scope of Work (SOW)
- Job Hazard Assessment (JHA)
- Pre-Job Meeting
- Multi-employer Work sites
- Competent Person on site
- Emergency Information
- Rescue Plan
- Training

Job Site Work, Hazard Identification and Controls						
To control all work hazards, the workers must first identify hazards and implement the applicable controls.						
Work, Hazards		Controls		Controls		Comments or Descriptions
General Site Access	☐	Site Signage	☐	Site Blocked off	☐	
Climbing to Elevations	☐	FP Equipment	☐	Guard Rails	☐	
Working on Roof Tops	☐	FP Equipment	☐	Warning Lines	☐	
Overhead work	☐	Hard Hats	☐	Signage	☐	
Electrical	☐	Ground Fault	☐	PPE	☐	
Overhead Power Lines	☐	Limit of approach	☐	Signal Person	☐	
Underground Utilities	☐	Call before Digging	☐	Hand digging	☐	
Trash and Debris	☐	Housekeeping	☐	Clean up	☐	
Slips, Trips and Falls	☐	Identify Areas	☐	Housekeeping	☐	
Holes and Trenches	☐	Barricades / Covers	☐	Shoring / Sloping	☐	
Fire Hazard	☐	Fire Watch	☐	Fire Extinguisher	☐	
Mobile Cranes	☐	Cribbing	☐	Inspection	☐	
Rigging	☐	Inspection	☐	Load Secured	☐	
Hoist / Material Handling	☐	Load Secured	☐	Load Control	☐	
Confined Space	☐	Air Monitor	☐	Procedure	☐	
Vehicle Traffic	☐	High Visible Vests	☐	Traffic Controller	☐	
Heat Stress	☐	Potable Water	☐	Exposure Limits	☐	
Cold Stress	☐	Clothing	☐	Exposure Limits	☐	
Noise	☐	Hearing Protection	☐	Procedure	☐	
EME/RF	☐	RF Monitor	☐	Procedure	☐	
Grinding	☐	Eye / Face Protection	☐	Guards	☐	
Manual Lifting	☐	Assistance	☐	Body Positioning	☐	
Ladders	☐	4:1 Set up	☐	3 points contact	☐	
Knives	☐	Gloves	☐	Proper tool	☐	
Hazardous Materials	☐	WHMIS	☐	MSDS	☐	
Power / Hand Tools	☐	Hand Protection	☐	Inspection	☐	
Fiber Optics	☐	PPE	☐	Housekeeping	☐	
	☐		☐		☐	
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ANSI/ASSE A10.48 Content Overview

Chapter 4. Rigging Plans

- Rigging Plan: A systematic and detailed presentation showing the equipment and procedures required for construction that will provide for the **safety** of personnel and for the **stability** of the structure and lifted components.

- Basic Rigging Plan Elements Include:
  - Project/Site Specific Information
  - Key Stakeholders Responsible for Construction Planning and Implementation
  - Construction Class
  - Scope of Work
  - Supporting Structure Information & Site Layout
  - Construction Sequence and Duration
  - Lifting System Details/Info & Lifted Load(s) Information
  - Construction Equipment and Rigging Information Including Size and WLL Capacity, and Attachment/Anchorage Details
  - Any Special Procedures, Details, or Documents Needed to Ensure A Safe Work Environment During Construction
    - *Monitoring requirements, proof testing requirements, etc.*

ANSI/ASSE A10.48 Content Overview

Chapter 4. Class I Rigging Plans

CLASS IV
CLASS III
CLASS II
CLASS I

“Minimum” Required Class For The Following:

- Gross lift loads for lift systems attached to the structure shall not exceed 350 lbs. (excludes cranes or other lifting systems not attached to structure)
- Construction activities do NOT adversely impact the strength or stability of the supporting structure and SOW does not require any special, custom, or unique construction methods.
- Prepared by Qualified Person and/or Competent Rigger

ANSI/ASSE A10.48 Content Overview

CLASS IV
CLASS III
CLASS II
CLASS I

Chapter 4. Class II Rigging Plans

“Minimum” Required Class For The Following:

- Gross lift loads for lift systems attached to the structure shall not exceed 500 lbs. (excludes cranes or other lifting systems not attached to structure)
- Construction activities do NOT adversely impact the strength or stability of the supporting structure and SOW does not require any special, custom, or unique construction methods.
- Prepared by Qualified Person and/or Competent Rigger

ANSI/ASSE A10.48 Content Overview

CLASS IV
CLASS III
CLASS II
CLASS I

Chapter 4. Class III Rigging Plans

“Minimum” Required Class For The Following:

- Gross lift loads for lift systems attached to the structure shall not exceed 2,000 lbs. (excludes cranes or other lifting systems not attached to structure)
- All new structure and foundation construction
- All construction activities involving cranes or other lifting devices not attached to structure
- Construction activities do NOT adversely impact the strength or stability of the supporting structure and SOW does not require any special, custom, or unique construction methods.
- Prepared by Competent Rigger and/or Qualified Person

ANSI/ASSE A10.48 Content Overview

CLASS IV
CLASS III
CLASS II
CLASS I

Chapter 4. Class IV Rigging Plans

- Any planned lift exceeding 2,000 lbs. where the rigging system is directly attached to structure (excludes cranes or other lifting systems not attached to structure)
- Removal of structural members, or any activities involving reduced supporting structure strength or stability (i.e. structural member removal/replacement, guy wire installation/removal/replacement, significant foundation work impacting stability, etc.)
- Removal of unique appurtenances where either imposed construction loading, or supporting structure strength/stability is questioned by Contractor
- SOW involves custom or infrequent construction methods
- Special engineered lifts
- Unique situations
- All tower decom/demolition
- Prepared by Competent Rigger and/or Qualified Person with a Qualified Engineer

ANSI/ASSE A10.48 Content Overview

Chapter 5. Job Site Conditions

OSHA has good information on job site conditions, this chapter is just a summary.

- Housekeeping
- Material handling
- Fire prevention
  - Program applicable to the job
  - Use training
- Adverse weather

ANSI/ASSE A10.48 Content Overview

Chapter 6. Fall Protection

The ANSI Z359 and the ANSI/ASSE A10.32 standards are well defined standards for fall protection along with the NATE CTS/CTP. This chapter clarifies those items specific to of the industry.

- Stakeholder Responsibilities
  - Structure Owner
  - Engineer
  - Contractor
  - Competent Person
- Fall Protection Anchorages
  - Standard anchor
  - Engineered anchor
  - Temporary/work anchor
    - Prior to installation, anchorages must be installed

ANSI/ASSE A10.48 Content Overview

Chapter 6. Fall Protection Title Descriptions

The Fall Protection titles and descriptions were clarified using current industry standards.

- Authorized Ground Based
- Authorized Climber
- Authorized Rescuer
- Competent Climber
- Competent Rescuer

ANSI/ASSE A10.48 Content Overview

Chapter 6. Fall Protection Training

The standard is very specific on the type Fall Protection Training necessary along with the qualification titles.

- Detailed description list of the types of training
- Climber training documentation
  - Annual evaluation
  - Continuing education every two years
- Rescue Training
  - Documented rescue plan
  - Two person crew - minimum one Competent Rescuer and one Authorized Rescuer on site
  - Three or more – minimum two Competent Rescuers
  - Documented rescue practice at least every 12 months

ANSI/ASSE A10.48 Content Overview

Chapter 7. RF/EME

The regulations and standards on RF radiation are very complex and this chapter contains a summary for clarification and emphasis.

- RF safety program
- Hazard identification and controls
- Clarifies ionizing and non-ionizing radiation
- Clarifies training and definitions

ANSI/ASSE A10.48 Content Overview

Chapter 8. Base Mounted Hoists

All the information from the NATE Hoist Standard was moved to this chapter, and enhanced and clarified.

- Design use and inspection for;
  - Lifting personnel
  - Lifting material
- Load chart
- Inspection, maintenance and teardown criteria
- Repair and modifications
- Operator training and requirements
- Rigging plans
- Hoist anchorage
- Communications

ANSI/ASSE A10.48 Content Overview

Chapter 9. Personnel Lifting Accessories

This chapter clarifies the design and use of accessories used for personnel and material lifting.

- Pre-lift meeting
- Trial lift
- Rigging plan
- Personnel platform
- Overhaul ball
- Fall protection
- Communications
- Training

ANSI/ASSE A10.48 Content Overview

Chapter 10. Rigging

This chapter outlines the design and use of rigging equipment on telecommunication structures.

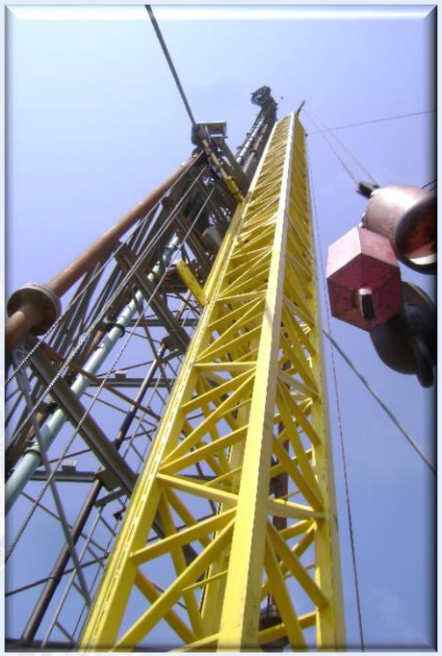
- Definitions and acronyms
- Inspection and maintenance
- Safety factors
- Rigging components:
  - Wire rope and synthetic rope lines
  - Rigging hardware and slings:
    - Wire rope and synthetic slings
    - Chains
    - Hooks and shackles
    - Rigging blocks
  - Overhaul Ball
- Competent Rigger and Qualified Person Training

ANSI/ASSE A10.48 Content Overview

Chapter 11. Gin Poles and Other Lifting Devices

This chapter outlines the use of Gin Poles used for lifting. Design requirements for gin poles is contained in ANSI/TIA-322.

- Components
- Assembly and inspection
- Evaluation and annual inspection
- Load line and jump lines
- Tag lines
- Load chart requirements and parameters
- Acronyms for reading load charts
- Lifting personnel
- Straight and tilted pole use
- Training



ANSI/ASSE A10.48 Content Overview

Chapter 12. Climbing Facilities and Access

This chapter clarifies the best practices for accessing a structure and using fall protection in difficult situations.

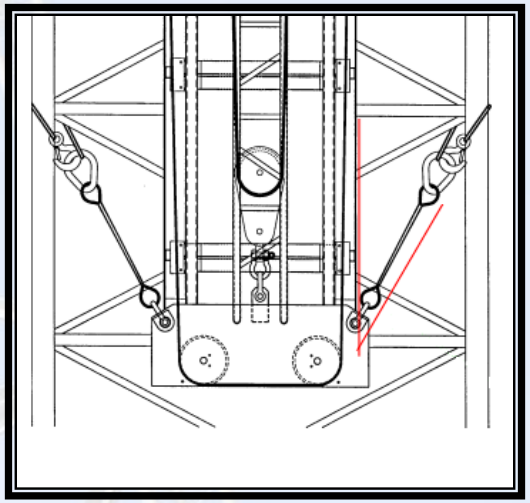
- Pre-climb hazard assessment (JHA)
- Ladder cages
- Obstruction warning signs
- Alternate climbing paths
- Training

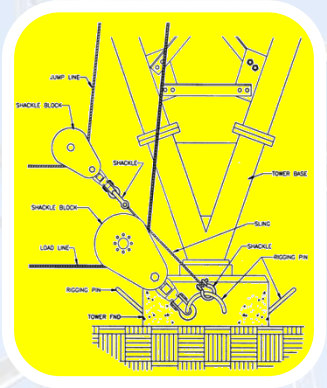
ANSI/ASSE A10.48 Content Overview

Chapter 13. Structural Construction Loading

This chapter clarifies the requirement when applying construction loads on a structure with a direct connection to ANSI/TIA-322.

- Contractor controls means and methods
- Competent Rigger onsite for all classes on construction
- Qualified Person involved in Class III and IV plans
- Qualified Engineer involved in Class IV plans
- Operational and non-operational loading
- Construction equipment loads
- Block and sling loading forces
- Rigging components



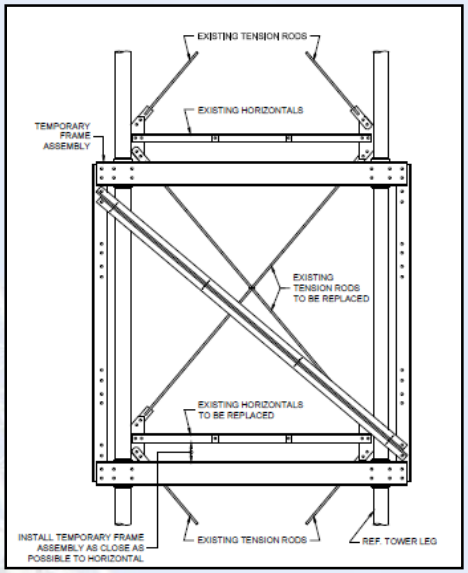


ANSI/ASSE A10.48 Content Overview

Chapter 13. *Continued*

This chapter clarifies the requirement when applying construction loads on a structure with a direct connection to ANSI/TIA-322.

- Structural member removal
- Bolt replacement
- Guy installation
- Guy wire slippage and slip critical connections
- Cantilever length above guy masts
- Foundation and anchorage inspections and alterations
- Dismantling equipment or structures
- Climbing facilities



ANSI/ASSE A10.48 Content Overview

Chapter 14. Training Program

This chapter outlines what a company training program should include, but not the specifics of each topic.

- Based on Z490.1 standard
- Employer's responsibility to have a program
- Training development
- Training environment
- Training competency
- Continuing education
- Refresher training
- Certificates
- Recordkeeping
- Program evaluation

ANSI/ASSE A10.48 Content Overview

Chapter 15. Capstan Hoist

This chapter outlines the minimum guidelines for the inspection, maintenance and use of a Capstan Hoist.

- Inspection
- Anchorage
- Synthetic rope type and use
- Use practices
- Load testing
- Communication
- Training

ANSI/ASSE A10.48 Content Overview

Chapter 16. Demolition

This chapter outlines the minimum criteria for the decommissioning or removing an existing structure. It is not intended to cover the removal of appurtenances.

- Condition assessment
- Class IV rigging plan
- Protection of adjacent structures
- Protection of the public
- Overhead and underground hazards
- Blasting
- Training

ANSI/ASSE A10.48 Content Overview

Chapter 17. Helicopter for Lifting Loads

This chapter outlines the minimum requirements for individuals working with helicopters. This section does not address all requirements of the helicopter operator.

- Pilot responsibilities
- FAA flight plan
- Operational parameters
- Communication system
- Pre-job planning (JHA)
- Documented lift plan
- Tag lines
- Approach distance
- Training

ANSI/ASSE A10.48 Content Overview

Appendix

The appendix provides template forms and drawings companies can use to create their own documents.

- Pre-Job Survey Form
- Emergency Data Sheet
- Rescue Plan
- Rigging Plan
- Job Hazard Assessment (JHA)
- Base Mounted Hoist Inspection and Load Chart
- Gin Pole Inspection and Load Chart
- Sling Angle Calculation Chart
- Tag Methods and Tag Force Chart
- Support Bracing Drawing Examples

Purchase Standards at NATE - ASSE - TIA

ANSI/ASSE A10.48:

http://www.NATEhome.com

http://www.asse.org/standards/

ANSI/TIA 322:

http://www.tiaonline.org/all-standards/committees/tr-14

https://global.ihs.com/home_page_tia.cfm?&rid=TIA

Questions?

Thank you for your time!!

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