TAMPA ELECTRIC COMPANY
ENERGY SUPPLY
CRANE, HOIST, & RIGGING HARDWARE PROGRAM

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INTENT

This program sets the requirements for “in service,” “prior to use,” monthly, quarterly, and annual inspections for cranes, hoists, and rigging hardware owned or rented by Tampa Electric necessary to meet the relevant requirements of OSHA standards and regulations.

PURPOSE

The practice of inspecting cranes, hoists, and rigging hardware equipment shall assist in identifying defective equipment. This program defines the frequency of inspections, and documentation requirements for defined inspections.

FORMS

Please refer to the following forms, which are located on the Tampa Electric Company (TEC) Energy Supply Safe Work Practices (SWP) & Program website.

A. Mobile Crane Pre-Use Inspection Form

B. Mobile Crane Normal Lift and Rigging Plan Form

C. Mobile Crane Critical Lift Plan Form

D. Manbasket Test Lift and Hydraulic Crane Inspection Form

E. Overhead Crane, Hoist and Tugger Pre-Use Inspection Form

F. Overhead Crane, Hoist and Tugger Lift and Rigging Plan Form

G. Thermal Plant Maintenance Practice Mobile Cranes and Hoist TMP-008

H. Hoist and Rigging Hardware Inspection Form

Contractors may use their own forms/plans as long as they meet or exceed the requirements/guidelines set forth in Tampa Electric’s documents. A TECO supervisor shall review and sign all contractor lift plans prior to making a lift with any type of crane.

SAFE WORK PRACTICES

Please refer to the Energy Supply Safe Work Practices Manual for safe work practices related to mobile crane operations (Safe Work Practices Section 32.2), overhead crane operations (Safe Work Practices Section 32.3), signal persons, and below the hook rigging operations (Safe Work Practices Section 19) associated with the use of hoist and rigging hardware.

Sling Safe Work Practices

A. Use web slings to attach materials to hoisting equipment except for special jobs, in which case the supervisor and crew may approve an alternate means of attachment.

B. The manufacturer's rated lifting capacity shall be identifiable on all slings.

C. Do not exceed the manufacturer's rated capacity of slings.

D. Visually inspect slings prior to each use.

E. Discard or remove from service any slings that exhibit flaws, significant wear, or defects.

F. Do not use any slings that are missing the rated capacity or marking tag.

G. To protect slings, use softeners when lifting objects that could cut or abrade them.

Fiber and Wire Rope Safe Work Practices

A. The working load limit for synthetic or wire ropes slings shall be based on a 5 to 1 design factor (1/5 of the manufacturer's rated breaking strength).

B. The working load limit for synthetic or wire ropes slings when used to support or hoist personnel shall be based on a 10 to 1 design factor (1/10 of the manufacturer's rated breaking strength).

C. Inspect ropes before each use and discard any ropes that exhibit flaws, significant wear, broken wires, crushing or other defects per OSHA and TECO requirements.

Rigging Attachment Safe Work Practices

A. Permanent rigging attachments shall be designed by a TECO civil-structural engineer or designed by a qualified Professional Engineer (P.E.) and approved by a TECO civil-structural engineer.

B. Temporary rigging devices attached to existing structural steel (rigging beam, beam clamp, pad eye, tugger attachments etc.) for self-performed TECO work shall be designed by a TECO civil-structural engineer or a qualified Professional Engineer (P.E.) and approved by a TECO civil-structural engineer.

C. Temporary rigging devices (rigging beam, beam clamp, pad eye, tugger attachments etc.) for contractor work shall be designed by a qualified Professional Engineer (P.E.) and approved by a TECO civil-structural engineer.

D. The engineer responsible for rigging attachments, devices, and structure rating shall specify any required non-destructive inspections and testing prior to any attachments use.

E. A competent person shall evaluate structural members prior to using for anchor points for hoisting loads. Members that will need to support a load of 1,000 pounds or greater, or are otherwise questionable due to their size or condition shall be evaluated and approved by a licensed Professional Engineer or TECO civil-structural engineer prior to use.

F. All temporary lifting attachments (pad eyes) shall be removed upon completion of task to a height of not more than 1/8", and the affected surface area shall be coated for corrosion protection.

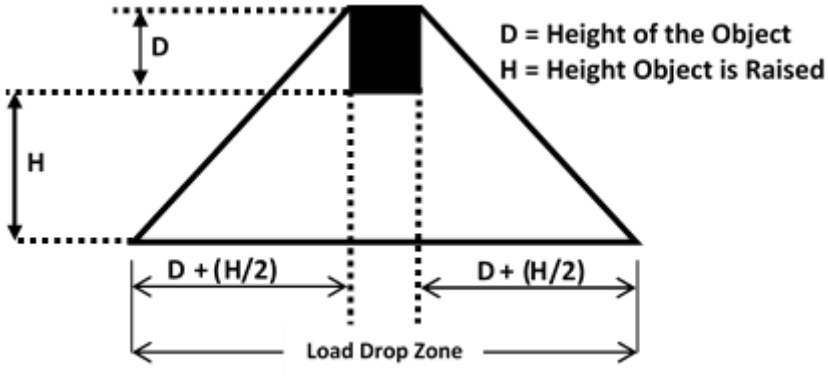
G. All eyebolts shall be inspected before each use to ensure that they are correctly installed with the shoulder tight against the lifting face. Eyebolts shall not be left installed in plant equipment while not in use. A temporary bolt with anti-seize should be put in its place to protect the internal thread from deterioration.

Load Drop Zone

The Load Drop Zone (LDZ), according to OSHA, is the “area (including but not limited to the area directly beneath the load) in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident.” OSHA 1926.1401

A. For suspended loads, the LDZ shall be defined as the area underneath the load and radius from that area equal to the sum of the vertical length of the load and half of the height the load is to be lifted. Refer to the figure below for an illustration on determining the LDZ area.

B. Additionally, the lift team shall consider the fall path if a load were to strike an object, ricochet, or bounce off an existing structure or equipment below the lift and adjust the LDZ accordingly.



C. Personnel are prohibited from entering the Load Drop Zone (LDZ) unless they have specific permission from the rigger in charge to be in the area to carry out required duties for the lift, attend the pre-lift planning meeting, and have signed the lift plan.

D. The following lift precautions shall be observed and established prior to the lift:

   a. The load travel path is verified clear of obstructions and other activities.

   b. Continuous and unobstructed ingress/egress paths are established and verified clear of anyone not allowed in the LDZ for the lift.

   c. Controls for monitoring the boundary of the LDZ are established. Danger Tape (black lettering on red background) shall be used when a physical boundary is required.

   d. While moving a load overhead and where there may be multiple levels/floors, ensure the levels/floor areas are clear of personnel and boundary tape is put in place to ensure no one enters those levels/floors until the load has passed.

      i. A spotter can be used to clear levels/floors of personnel and set up barricade tape. Once the load has passed the LDZ, the barricade tape can be removed by the spotter.

      ii. Where danger barricade tape cannot be used, several spotters should be placed along the load travel path at each level, if necessary, to ensure personnel remain clear of the travel path and LDZ.

Crane Operation Safe Work Practices (Crane Operator Responsibilities)

A. Operate the crane within the manufacturer's specifications and OSHA regulations.

B. Contractor personnel operating cranes shall be NCCCO certified. Personal performing duties such as riggers and signal person shall be qualified.

C. Operators shall comply with the crane manufacturer's crane positioning and setup, load charts, specifications, operating procedures, and operate within its limitations.

D. Only operate cranes that are within their annual inspection period.

E. Only operate a crane upon completion of a satisfactory pre-shift inspection.

F. Attend pre-lift planning meetings.

G. Cell phone use is prohibited while operating a crane.

H. Know the load weight prior to making a lift.

I. No modification shall be made to a crane without manufacturer's written approval and a qualified inspector recommissions the crane.

J. Follow signals while moving a load from a designated and qualified signal person.

K. When moving or backing up a crane always use a spotter/walker.

L. When moving a crane across an extended area, utilize an escort vehicle.

M. During operation, always maintain tension on the cable to prevent sheave misalignment.

N. Do not attempt to make a lift if there is any indication of dangerous weather conditions or other impending dangers.

O. Do not make lifts over personnel or occupied buildings, until the area or building is clear.

P. When working within twenty feet of exposed energized lines or equipment, refer to the Electrical Safety Program, Minimum Safe Operating Distances Near Power Lines document on the TEC Energy Supply Safe Work Practices (SWP) & Program website.

Q. Ensure the load travel path is clear of personnel, materials and any power sources.

R. A critical lift plan is required if:

a. Lifts in excess of 40,000lbs with a mobile crane

b. Lifts requiring the use of multiple cranes

c. Lift weight exceeds 75 percent of the crane's rated capacity at its lift radius

d. Lifts involving the use of a personnel basket to hoist personnel

e. Lifts where load is maneuvered outside of the crane operator's view

f. Lifts made on items identified as high value or that have long lead times for replacement.

Exceptions: Under extraordinary circumstances, lifts may intentionally exceed a crane's rated capacity but *shall* require 3rd party inspection of the crane (i.e., Crane Manufacturer), written approval from the Crane Manufacturer, an engineered lift plan, and the lift must be made under the direction of the 3rd party expert (i.e., Engineer who designed the lift plan and/or crane manufacturer).

Equipment Modifications

A. Modifications or additions that affect the capacity or safe operation of equipment are prohibited unless they meet the requirements of 29 CFR 1926.1434.

INSPECTIONS

Inspection of Cranes & Permanently Mounted Fixed Hoists Prior to Use

General Requirements

A. Crane operators and inspectors are responsible for reporting crane discrepancies; Local plant/site management is responsible for correcting identified discrepancies. The local plant/site may use the services of a certified inspector in correcting discrepancies.

B. Inspections shall cover, at a minimum, the requirements of the appropriate ASME and OSHA codes and regulations, as well as the manufacturer's recommendations. Inspection findings shall be tracked until corrective action has been completed. Documentation of corrective actions taken shall be maintained with the inspection report.

C. Specific control circuit or limit switch set points shall follow the set points recommended by the manufacturer and not be altered unless approved by a qualified engineer after coordinating the alterations with the manufacturer as appropriate. Inspectors and qualified mechanics/maintenance personnel are the only personnel authorized to change a specified set point.

D. All crane equipment failing pre-shift or other required inspections shall be removed from service using the appropriate Hazardous Energy Control (HEC) Lockout Program procedure, and the affected function shall not be used until the identified discrepancy is corrected and recommissioned per the OEM recommendations. Electrically powered cranes shall be cleared for inspection under approved LOTO procedures.

E. Upon completion of mobile crane assembly, a qualified person shall inspect the equipment to ensure that it is configured in accordance with manufacturer equipment design criteria.

Pre-Use Inspections

A. Prior to use of mobile and overhead cranes and hoists, crane operators shall perform and document a pre-use inspection utilizing one of the Pre-Use Inspection Forms listed below:

    a. Mobile Crane Pre-Use Inspection Form

    b. Overhead Crane Pre-Use Inspection Form

        i. This form covers any bridge/gantry crane with manual or electric hoist; cab mounted, pendant, or remote/radio-controlled crane; manual and electrically operated monorail hoist; permanently mounted fixed hoists; and air powered tuggers.

B. The Pre-Use Inspection documents shall be completed prior to each shift, turned into the responsible supervisor at the end of each shift, and stored in the designated SharePoint site for a two (2) year retention period.

Monthly (Frequent)

A. A qualified person must complete an inspection in accordance with OSHA Standard 1926.1412(d) each month equipment is in service. Requirements to be considered a qualified person are listed in the training section of this program.

B. A mobile crane that has been idle for a period of more than (3) months shall be inspected by a qualified person in accordance with the requirements of monthly (frequent) inspection prior to use. OSHA 1926.1412 (h)

C. The Mobile Monthly Crane Inspection Form shall be used to perform and document monthly (frequent) inspections.

D. Inspection documentation shall include actions taken on discrepancies found.

E. Inspection documentation shall be submitted to supervisors upon completion and stored in the designated SharePoint site for a two (2) year retention period.

Quarterly Inspections

A. Overhead cranes shall be inspected quarterly by a qualified third party to ensure cranes are inspected at least every three (3) months.

B. Quarterly Inspection records are required and shall be kept with the vendor conducting inspections, and locally at the plant/site in the designated SharePoint site for a two (2) year retention period.

Annual/Comprehensive Inspections for Mobile and Overhead Cranes, and Hoists

A. Mobile and Overhead Cranes shall be inspected by a qualified third party annually in accordance with the requirements set forth in OSHA 1926.1412 (f).

B. Annual inspection and maintenance reports for overhead, bridge, gantry cranes, and fixed mounted hoist inspections shall be stored on plant specific SharePoint site for a two (2) year retention period.

C. Annual inspection and maintenance reports for mobile cranes shall be stored in Asset Works software system, as well as physically with TECO Fleet Services at Eastern Service Area building “A.”

D. **Note:** Any crane subjected to severe service or weather conditions as determined by the crane operator shall receive an inspection meeting the requirements for an annual inspection prior to any use.

Inspection Requirements for Hoist and Rigging Hardware

General Requirements

A. All hoisting equipment and rigging hardware shall meet applicable regulatory requirements.

B. Hoist and rigging hardware vendors – Suppliers shall provide requested documentation, as appropriate, such as: manufacturer's literature, manuals, proof load test certificates, or material certifications.

C. All rigging equipment and hardware shall be of domestic origin unless previously approved by appropriate TECO civil-structural engineer.

D. When rigging is used for temporary structural supports by use of rigging equipment, such as wire rope lashing, come-a-longs, chain falls, etc., in order to temporarily support, piping, platforms, walkways, and steel members, etc. an emergency work order shall be developed, identified as a safety work order, and a temporary modification shall be implemented on the work order and the rigging shall not be removed until repairs are complete which must be less than 30 days. If the rigging is to stay in place for greater than 30 days, it will require the engineering manager's notification and approval, a qualified rigging inspector, and written documentation using the Hoist & Rigging Inspection form to ensure rigging integrity monthly. The Hoist & Rigging inspection documentation form shall be kept until the temporary rigging is removed. Refer to Hoist and Rigging Hardware Inspection Form for monthly inspections. These hoists and rigging inspections may be required more frequently if environmental extremes (i.e. high heat, corrosive/erosive environments, heavy/critical loads, loads that support personnel) are present. In addition to the requirements for quarterly and annual inspections, as outlined below, the Inspection Team shall conduct a face-to-face verbal debriefing with the designated TECO representative (i.e. warehouse manager, shop supervisor, etc.) at each site prior to departure.

E. A TECO warehouse tool attendant shall review all rigging that has been tagged out of service prior to its removal from service or destruction so that everyone is more knowledgeable why the rigging is not acceptable.

F. Safe operating practices and criteria for the removal from service of rigging hardware shall be displayed on laminated cards at each tool room/warehouse storage location (OSHA 1910.184, ASME B30.9). See Code Reference section of this program for additional information.

Records

A. Inspection records are required and shall be kept with the vendor conducting inspections, and locally at the plant/site in the designated SharePoint site. The TECO warehouse tool room attendant shall review these records annually and check for generic problems or other trends so that timely and appropriate actions can be taken.

B. Documented inventory and inspection records shall indicate, at a minimum, the following:

   a. Specific equipment/type

   b. In service date and date of inspection

   c. Nature and result of inspection or repair(s)

   d. Name of qualified employee(s) / contractor person(s) / contracted vendor corporation conducting the inspections with records for TECO

   e. Record of either “pass” or “fail” for each item inspected and the reasons for any failures

   f. Documentation of compliance for all new equipment placed in service

   g. Documentation of compliance for all in service equipment at annual inspections and testing.

C. Final OSHA Rigging Reports and lists of all inspected equipment from third party vendors for each site shall be submitted within 10 days of completing the inspection to the warehouse manager/supervisor.

D. Upon completion of inspections, a computerized written spreadsheet with the hoist, rigging, and rigging hardware counts for each type/size in stock shall be provided to each location manager/supervisor for their records.

Equipment Identification Labeling for Inspections

A. Each separate piece of lifting equipment: hoists, tuggers, pulley blocks, yo-yos, etc. shall be given an individual serial identification number, which allows for equipment interchange between stations or within the organization.

   a. The number tag shall be firmly attached to or punched onto the surface of the equipment. Include a metal tag when possible with a 1/8th inch cable to attach label to equipment.

   b. The dedicated identification number for condemned or replaced equipment shall not be reused.

c. The safe working load shall be identified on all rigging equipment except eyebolts and other hardware that is not readily identifiable.

Pre-Use Inspection

A. The Tool Room Attendant shall visually inspect all hoist and rigging equipment, affix a dedicated serial number identifier to the equipment, and add the equipment to the inventory list/database initially before putting in service.

B. The Tool Room Attendant shall visually inspect equipment prior to each issue and upon receiving after its use, prior to the equipment being placed back into inventory.

C. A qualified person shall inspect all hoist and rigging equipment prior to each use in accordance with standard rigging practices to determine any defects or unsafe components.

   a. Defective or unsafe components or equipment shall be reported immediately to the tool room attendant and removed from service until such defects are repaired.

   b. After any incident or repair, a qualified person shall inspect and/or test the equipment and document the inspection/testing in the inventory database.

Quarterly Inspections

A. A qualified person shall visually inspect the following hoist and rigging hardware quarterly:

   a. Hoisting equipment:

      i. Manually lever operated hoists: come-a-longs

      ii. Chain hoists; Chain falls

      iii. Air powered Tuggers

      iv. Winches

      v. Block and tackles

      vi. Electric and non-electric hoists

vii. Nylon strap ratchet hoists

viii. Ratchet hoists-link chain style

ix. Hoists, manual or electric, on monorails

b. Rigging Hardware

i. Web slings-Synthetic, Polyester and Nylon, includes round slings

ii. Steel slings-Wire rope (Slings and hoist Rope)

iii. Adjustable rope slings

iv. Alloy Steel Chains

v. Mingle eyes

vi. Wire tension grips

vii. Shackles

viii. Eye bolts

ix. Swivel eyes

x. Spreader beams

xi. Beam clamps

xii. Chain buckets for excess pull/load chains. Stk. # 2057675

B. The quarterly inspections for hoist and rigging hardware shall be documented on the Hoist and Rigging Hardware Inspection Form.

C. OSHA hoist and rigging hardware visual Inspections shall be performed by the 15th day of the first month following the end of each quarter.

D. Each quarterly inspection, a color-coded tag, electrical tape, or zip tie shall be affixed to the hoist and/or rigging hardware/equipment corresponding to the appropriate quarter, as outlined in the table below, in order to identify completion

of the visual inspection by the Tool Room Attendant or another qualified rigging inspector:

Hoist and Rigging Hardware Equipment Inspection Program – Color Codes per Quarterly Completed Inspections		
Month	**Month Tested**	**Color of Tape(s) to apply to equipment**
1-3	January – March	White
4-6	April – June	Green
7-9	July – September	Red
10-12	October – December	Orange

Annual Hoist and Rigging Hardware Inspections

A. The annual inspection program shall be divided into two (2) main categories and inspected in accordance with the following standards:

   a. Rigging Hardware (Below the Hook) – ANSI/ASME B30.09 Slings (latest edition); ANSI/ASME B30.10 Hooks (latest edition); ANSI/ASME B30.20 Below the Hook (latest edition); OSHA 1910 and 1926 Regulations; TECO Safe Work Practices Manual; Original Manufacturer's Recommendations and Generally Accepted Industry Practice.

   b. Hoists – OSHA 1910 and 1926 Safety Standard for the Maintenance and Inspection of O/H Cranes, Gantry Cranes, Monorail, Hoists and Trolleys; ANSI/ASME B30.21 Manually Levered Operated Hoists; ANSI/ASME B30.16 Overhead Hoists (Underhung); TECO Safe Work Practices Manual; Original Manufacturer's Recommendations and Generally Accepted Industry Practice.

B. A qualified person shall conduct standardized annual hoist and rigging hardware inspections through visual examination and by performing required load testing on the listed equipment below. Results shall be documented in the inventory list (Tool Hound).

   a. Come -a-longs (Chain Falls)

   b. Manual lever operated hoist

   c. Electric Hoist

   d. Non-Electric Hoist

e. Winches

f. Tuggers

g. Block and Tackle

h. Beam Clamps

i. Dynamometers

j. Spreader Beams

C. During severe duty use and in special circumstances, non–destructive testing may be required in addition to the visual inspections and proof of load testing. These include:

a. Magnetic Particle Testing

b. Dye Penetrant Inspection

c. Ultrasound Evaluation

D. The Site Representatives (Warehouse Supervisor, Shop Supervisors, Station Maintenance Manager) shall review the results of the annual inspections and any electronic inspection records database for the inspections at least once every 12 months in order to identify opportunities for increased program effectiveness.

TESTING OF CRANES

A. Cranes that undergo major repair or modification must be tested in accordance with manufacturer's recommendations, and applicable OSHA and ASME standards. A qualified person shall make the determination whether a repair is considered major.

B. All new cranes shall be tested, with participation from a certified inspector, to ensure compliance with purchase and/or design requirements. Any discrepancies identified in the test must be corrected prior to acceptance or release.

C. A rated load test shall be performed on mobile cranes when a boom is disassembled, or the crane configuration is changed.

D. Load tests shall be conducted on cranes like bridge cranes, gantry cranes, and fixed mounted hoists when installed new or when disassembled and reinstalled, altered, repaired, or modified.

E. A station representative can request load tests under various circumstances for overhead bridge cranes (i.e. prior to making a lift over of a critical asset, lifting a critical asset, or if the predetermined lift will exceed 100 percent of the crane's maximum lift capacity, requiring an Engineered Lift Plan).

MAINTENANCE OF CRANES, HOISTS AND RIGGING HARDWARE

A. The maintenance of cranes, hoist and rigging hardware is based on the philosophy of preventive maintenance. This program will include designation of responsibilities for the required maintenance, the necessary documentation and procedures, and a record keeping system.

B. Maintenance and contractor personnel shall be qualified to work on any equipment for which they are assigned to service/repair.

C. The Preventive Maintenance (PM) program will include, at a minimum, the following elements:

   a. Management emphasis and support.

   b. Work orders written from planned monthly, quarterly, and annual preventive maintenance inspections, and from documented deficiencies by use of equipment pre-use inspection forms.

   c. Use of a Computerized Maintenance Management System, such as TECO's Workman system, documenting preventive maintenance, deficiencies, and repair history for planning and future reference.

   d. Equipment records management system.

   e. Inspection and Lubrication programs.

D. Before initiating maintenance activities, the following precautions shall be followed:

   a. The crane to be repaired shall be moved to a location where it will cause the least interference with other cranes and operations in the area.

b. Barricades and/or flagging shall be provided to keep personnel clear of the maintenance area beneath the crane.

c. All controllers shall be placed in the off position unless they are required for maintenance.

d. The main power source shall be disconnected and tagged in accordance with site HEC LOTO procedures.

E. All adjustments made on cranes, including brakes, shall be completed in accordance with manufacturer requirements.

F. Original equipment wire rope and replacement wire rope shall be selected and installed in accordance with 29 CFR 1926.1414. Selection of replacement wire rope shall be in accordance with the recommendations of the wire rope manufacturer, the equipment manufacturer, or a qualified person.

RIGGING STORAGE REQUIREMENTS

A. Adequate storage for all rigging equipment shall be in accordance with manufacturer recommendations and as designated in this program.

B. Inventories shall be maintained for all hoist and rigging hardware equipment by TECO Tool Room Attendants in a dedicated tool room/warehouse. The inventory shall be kept in a database accessible to all plants and operating areas (Tool Hound).

C. All storage locations shall be established in areas where all rigging equipment can be protected from mechanical damage, excessive heat, sparks, moisture, sunlight, and corrosive agents.

D. Temperatures shall not exceed 200 degrees Fahrenheit for synthetic slings. In storage areas at risk of experiencing high temperatures (i.e. construction job site, container stored outdoors, etc.), temperature monitoring must be established to ensure synthetic slings are not damaged.

E. Hoist and rigging hardware equipment shall be stored correctly. Chains, slings, chain falls, and lever hoists shall be hung up so that their ropes and chains hang loosely and are not kinked in any way. Rigging Equipment shall be kept off the floor on shelves, hanging hooks, or in bins.

F. No hoists, tuggers, rigging, and rigging hardware shall be stored outside of designated storage locations when not in use in order to help ensure the completion of necessary inspections and testing requirements, confirming their integrity and safety.

G. All satellite storage locations shall be marked with a sign denoting the area as a rigging equipment satellite storage location. The sign shall also indicate the designated owner of the area and the appropriate contact information of the owner.

H. To ensure all rigging equipment conforms to inspection and testing requirements per code and this program, access to designated storage locations outside of a TECO warehouse not attended by a tool room attendant (i.e. Turbine Shop, Boiler Shop) shall be secured by lock and controlled by the shop supervisor to prevent unauthorized use of rigging equipment.

I. Rigging equipment, such as large slings or lifting devices, that require mechanical means to remove from storage is exempt from the secured access requirement, but not from adequate protection and inspections.

J. A capacity chart shall be attached to each sling when purchased reflecting the requirements for the three (3) basic hitches for slings: straight, basket, and choker.

K. An inspection criteria poster shall be posted at all locations where rigging is stored. For example:

    a. Warehouse tool rooms

    b. Rigging satellite storage sites (i.e. turbine deck tool checkout and rigging check in and out area connexes, and in the field such as a project job site where tool rooms and storage boxes may be designated)

L. The following general guidelines always apply to rigging equipment that is checked out of the tool room for use:

    a. Immediately tag out with a defective equipment tag and return to the tool room any hoist and rigging hardware that is damaged. This equipment shall be removed from service, and repaired or, if appropriate, destroyed by the tool room attendant.

    b. All damaged equipment shall be reported to the Tool Room Supervisor to update equipment records (remove serial numbers from the system).

c. Avoid surface damage to stainless steel by preventing direct contact of carbon steel with stainless steel rigging equipment except when attached to lifting lugs, eyes, or pads.

d. TECO contractors shall be responsible for ensuring their rigging equipment meets the technical requirements of this program, including proper control to maintain segregation from TECO rigging equipment.

TRAINING

A. The following training requirements apply to TECO employees who are to be considered qualified to operate and inspect cranes, hoist and rigging hardware prior to use.

REMEMBER: Crane, Hoist and Rigging Accidents Are Preventable with Proper Training and Skill Evaluations

Employee Training

A. Each employee covered in this program is responsible for maintaining their qualification in their specific discipline. Employees, supervisors, and the training department are responsible for coordinating required training as outlined in this program.

B. Training for crane operators, riggers, signal persons, and tool room attendants/rigging inspectors are required because of the high risk associated with hoisting and rigging.

C. To be considered qualified as a crane operator, rigger, signal person, or tool room attendant rigging hardware inspector, the employee must pass a course offered by a third party that administers a written and practical examination for the specific discipline.

D. A qualified instructor, being a subject matter expert, must conduct all training related to crane set up and operation, rigger tasks, signal persons and tool room attendants conducting rigging hardware inspections.

E. Initial training shall be provided to each affected employee prior to the assignment of conducting tasks that require use of cranes, hoist, rigging hardware, performing signal person operations, and conducting inspections prior to use of equipment.

F. Initial training and qualifications are valid for a period of four (4) years. Refresher training shall be completed within the four (4) year period to maintain qualifications.

G. The training records for employee qualifications shall be maintained in Cority.

H. Training shall be accomplished through use of a third-party organization qualified to train personnel and shall meet the applicable standards for OSHA, ASME and all related standards specific to the disciplines. Training can be administered by use of Computer-Based Training, PowerPoint presentations, use of videos, technical manuals or other training materials determined adequate by the organization.

I. Qualified person definition: A qualified person is one who; by possession of a recognized degree, certificate, or professional standing; or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Mobile Crane Operator Training Course

A. Crane operators are required to complete a medical evaluation, written exam, and a practical test demonstrating proficiency in handling a crane, understanding the use of load charts, and understanding federal, local, and state requirements. Responsible for operations above the hook.

B. Medical evaluation should include, per ASME B30.5:

    a. A vision test, with or without corrective lenses

    b. Normal depth perception, field of vision testing

    c. Adequate hearing to meet operational demands evaluation

    d. Strength, endurance, coordination and speed of reaction to meet operations demands, reaction time, manual dexterity, coordination,

    e. No tendencies to dizziness and/or any similar undesirable characteristics.

    f. Evidence of loss of physical control shall be sufficient for disqualification

C. Mobile Crane Operator Qualification Training Course

    a. Initial Course: 80 hours

    b. Meets ASME B30.5, OSHA 1910.180, best industry practices.

D. Mobile Crane Operator Refresher Training

    a. Conducted within 4 years of initial training. 16 Hours

Overhead Bridge-Gantry Crane & Hoist Operating Training Course

A. Complete a medical evaluation, written exam, and a practical test demonstrating proficiency in handling a crane, understanding the use of load charts, and understanding federal, local and state requirements. Responsible for operations above the hook.

B. Medical evaluation should include:

    a. A Vision test, with or without corrective lenses

    b. Normal depth perception, field of vision testing

    c. Adequate hearing to meet operational demands evaluation

    d. Strength, endurance, coordination and speed of reaction to meet operations demands, reaction time, manual dexterity, coordination,

    e. No tendencies to dizziness and/or any similar undesirable characteristics.

    f. Evidence of loss of physical control shall be sufficient for disqualification

C. Overhead Crane Operator Training Course-Includes cab mounted, pendant, remote/radio-controlled operations and all permanently field installed hoists.

    a. Initial Course: 16 hours

    b. Meets ASME B30.2, OSHA 1910.179, and best industry practices.

D. Overhead Crane Operator Refresher Training

    a. Conducted within 4 years of initial training. 8 Hours

Tool Room Attendant-Hoist & Rigging Hardware Inspection Course

A. Rigging Inspection Course: Covers inspection of hoist and rigging hardware upon receiving new equipment from vendors, daily inspection prior to issue to qualified employees, inspection upon return of used equipment, and conducting visual

quarterly and annual inspections to meet program and documentation requirements.

B. Meets ASME B30.10, 30.16, 30.20, 30.21, 30.26, and OSHA 1910.179.

C. Initial training: 16 Hours

D. Refresher training conducted within 4 years of initial training: 8 Hours

Signal Person Qualification Course

A. Signal Person qualification course: Covers requirement to be a qualified signal person

B. Initial training: 8 Hours

C. Refresher training conducted within four (four (4)) years of initial training: 8 Hours

Rigger Qualification Training Course Level 2-Meets OSHA 1910.184

A. Includes training to become a qualified rigger. Course includes rigging gear and sling identification, pre-use inspection, sling hitches, how to rig a load, rope knots and dangers of working with cranes near energized power lines.

B. Initial training: 24 Hours

C. Refresher training conducted within 4 years of initial training: 8 Hours

Management, Supervision, Engineering and Safety Oversight Training Course

A. Course covers crane operations, rigging, lift plans, inspection requirements, regulations and codes, safe work practices, and training requirements.

B. All management associated directly with employees conducting crane, hoist, and rigging operations shall attend a one-time formal management awareness and responsibilities course.

C. All management associated indirectly with employees conducting crane, hoist, and rigging operations should attend a one-time formal management awareness and responsibilities course at the discretion of their supervisor.

D. Electrical, Mechanical and Civil Structural Engineers that may be involved in working near power lines, conducting structural analysis for rigging points from metal structures, performing analysis related to determining ground bearing

pressure requirements and evaluating engineered, normal and critical lift plans shall also attend a one-time formal management awareness and responsibilities course.

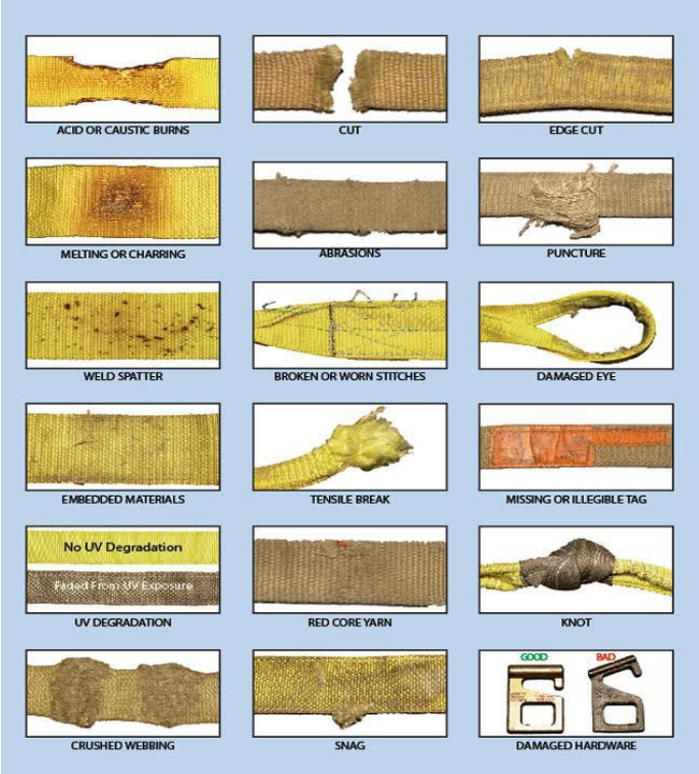
TAMPA ELECTRIC COMPANY
ENERGY SUPPLY
CRANE, HOIST, & RIGGING HARDWARE PROGRAM

REFERENCE MATERIAL

Sling Safety Guidelines

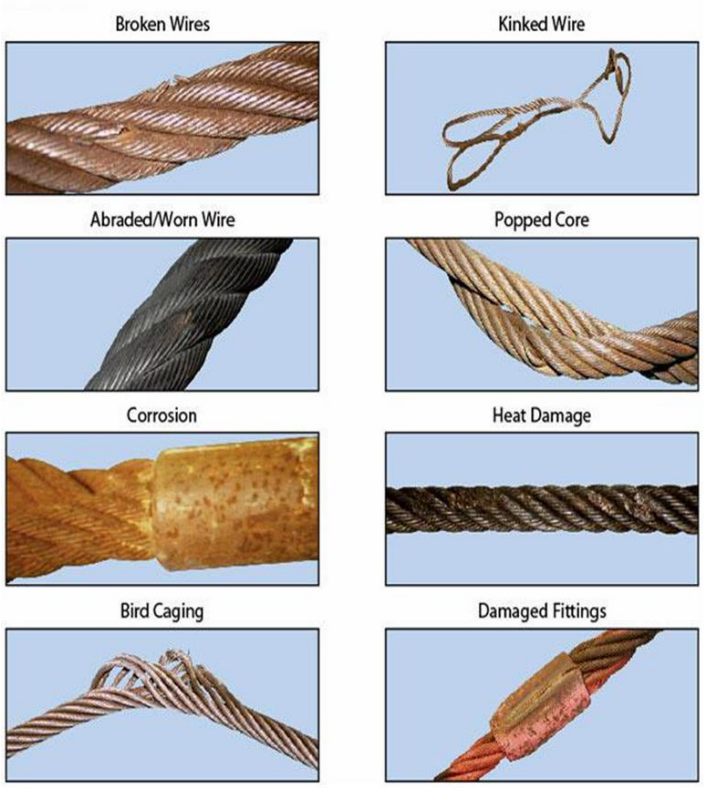
Safe Operating Practices (OSHA 1910.184)

- Slings that are damaged or defective shall not be used.
- Shall not be shortened with knots, bolts or other makeshift devices.
- Sling legs shall not be kinked.
- Sling shall not be loaded in excess or their rated capacities.
- Slings used in a basket hitch shall have loads balanced to prevent slippage.
- Slings shall be securely attached to their loads.
- Slings shall be protected from the sharp edges of their loads.
- Suspended loads shall be kept clear of obstacles.
- Team members shall be kept clear of loads about to be lifted or suspended loads.
- Body parts shall not be placed between sling & its load while the sling is being tightened around the load.
- Shock loading is provided.
- A sling shall not be pulled from under a load when the load is resting on the sling.
- Slings shall not be used without affixed and legible identification markings.



Nylon Web Slings (ASME B30.9)

- Missing or illegible identification.
- Acid or caustic burns.
- Melting or charring of any part of the sling.
- Holes, tears, cuts, or snags.
- Broken or worn stitching in load bearing splices.
- Excessive abrasive wear.
- Knots in any part of the sling.
- Discoloration, brittle or stiff areas on any part of the sling, may mean chemical or UV damage.
- Fitting that ore pitted, corroded, cracked, bent, twisted, gouged, or broken.
- Other conditions, including visible damage, that cause doubt as the continued use of the sling.



Wire Rope Slings (ASME B30.9)

- Missing or illegible sling identification.
- Broken wires.
- Severe localized abrasion or scraping.
- Kinking, crushing, bird caging, or any other damage resulting to damage to the rope structure.
- Evidence of heat damage.
- End attachments that are cracked, deformed, or worn to the extent that the strength of the sling is substantially affected.
- Severe corrosion of the rope, end attachments or fittings.
- Other conditions, including visible damage, that cause doubt as the continued use of the sling.

References for Conducting Inspections

1. Handbook for Riggers; W.G. Newberry; 2nd Edition.
2. Rigging Handbook; Jerry Klinke, 5th edition
3. ITP's Crane and Rigging Handbook. Ronald G. Garby, 5th edition.
4. Crosby's Users Guide for Lifting 03/18
5. OSHA 1910
6. OSHA 1926 subpart CC
7. ASME B30.2 Overhead hoist, gantry and bridge cranes
8. ASME B30.7 Air tuggers and electric winches

9. ASME B30.9 Wire rope and synthetic slings
10. ASME B30.10 Hooks
11. ASME B30.16 Overhead Hoist (Underhung)
12. ASME B30.20 Below the hook lifting devices
13. ASME B30.20 Plate clamps, See Manufactures Specifications and Instructions
14. ASME B30.21 Manually lever operated hoist and chain falls
15. ASME B30.26 Rigging Hardware; shackles, eye bolts, swivel hoist, rings and links
16. ASME B30.30 Rope
17. ASME-American Society of Mechanical Engineers
18. ANSI-American National Standards Institute
19. ASTM-American Society of Testing Materials
20. WRTB-Wire Rope Technical Board
21. NACM-National Association of Chain Manufactures
22. WSTDA-Web Sling Tie Down Association Synthetic Sling Industry Standard