SECTION 1.0

TOWER CLIMBING SAFETY

TOOLS AND CHECKLISTS

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# APPENDIX A - GUIDE FOR WORKING IN DROP ZONE

1. **Scope**

All ALU Employees, Contractors and Authorized Visitors (i.e. Customer or Government Representatives), with special attention for those employees executing installation work at the site and within the drop zone.

1. **Roles and Responsibilities**

All employees have the responsibility of adhering to the more stringent safety guidelines at the site, and to comply with all ALU, local, legal and regulatory, and customer requirements.

1. **Definitions and Acronyms**

ALU - Alcatel-Lucent

Drop Zone - is the area into which items dropped from overhead are likely to land.  Drop zones are used for determining hard hat areas.  The drop zone of a tower while climbers are on the tower, can be determined by measuring the radius out from the tower base, at least one-half of the tower climbers height (e.g., if a climber is up 30.5 meters (100 feet) on the tower, the drop zone is a circle with a 15 meters (50 foot) radius from the base of the tower).

Authorized Visitor - Any individual with a business need to be within the drop zone and that will be allowed to enter to it provided adequate Safety Awareness and PPE have been provided by their Employer.

1. **Referenced and Supplementary Documents**

|  |  |
| --- | --- |
| Section/Appendix | Document Title |
| Section 1.0 | Tower Climbing Safety |
| Section 6.0 | Personal Protective Equipment |

**5 Process Flow Diagram**

Not applicable

1. **Work Instruction / Guidelines**

6.1 North America Requirement

Alcatel-Lucent (ALU) employees shall not work at sites where cellular towers are being erected/ constructed.

6.2 General Requirement

Whenever possible, ALU employees shall not work inside the drop zone at a site when tower climbing operations are taking place.  Work outside the designated drop zone is permitted.

But if there are real business needs for ALU Employees, Contractors and Authorized Visitors to remain within the drop zone, the Safety Provisions referred to in item 6.3.shall be implemented before entry is cleared.

DROP ZONE IS THE AREA INTO WHICH ITEMS DROPPED FROM OVERHEAD ARE LIKELY TO LAND.  DROP ZONES ARE USED FOR DETERMINING HARD HAT AREAS.  THE DROP ZONE OF A TOWER WHILE CLIMBERS ARE ON THE TOWER, CAN BE DETERMINED BY MEASURING THE RADIUS OUT FROM THE TOWER BASE, AT LEAST ONE-HALF OF THE TOWER CLIMBERS HEIGHT (E.G., IF A CLIMBER IS UP 30.5 METERS (100 FEET) ON THE TOWER, THE DROP ZONE IS A CIRCLE WITH A 15 METERS (50 FOOT) RADIUS FROM THE BASE OF THE TOWER).

* 1. Maintenance Activities

When maintenance activities are taking place on the tower, the ALU field operations requiring access to the drop zone **MUST** be postponed or rescheduled unless the job assignment is an emergency and all other conditions listed below are met.  To resolve scheduling conflicts contact your Supervisor, Project Manager or the customer’s Point of Contact.

If an ALU employee is required to work inside the drop zone **(i.e., emergency situations)** when tower climbing operations are taking place, **ALL** the following conditions **MUST** exist to allow access to the drop zone:

Their job can't be postponed/rescheduled until after tower climbing operations are complete,

ALU employees will be working inside the cell hut,

ALU employees must wear hard hats at all times,

The Tower Climbing Contractor permits access to the drop zone,

The Tower Climbing Contractor is able to accommodate ALU employees need for access to the drop zone (Note: The potential to repeatedly exit and reenter a cell hut to use a cellular phone and/or to retrieve additional equipment from the vehicle must be communicated to the contractor),

ALU employees have complied with all requirements stipulated by the Tower Climbing Contractor in order to enter their drop zone,

The Tower Climbing Contractor agrees to stop the operation until ALU employees below are in the clear (i.e., inside the cell hut or outside of the drop zone),

ALU employees get confirmation from the contractor that tools are tethered/secured,

ALU employees get confirmation from the contractor that all equipment is secured,

ALU employees get confirmation from the contractor that climbers are connected to the tower 100% of the time,

**and** ALU employees have asked themselves if after all listed conditions have been satisfied they believe it is safe to proceed.

**7 Prior to Work - Contact**

Please contact your EH&S representative and supervisor prior to accessing an area where tower contraction or maintenance activities are being conducted.

**8 Measures**

 Not applicable

**9 Records**

Job records are to comply with the [Alcatel-Lucent Retention Schedule](http://records.lucent.com/) – local, legal and regulatory and contractual customer requirements.

End of Document Text

# APPENDIX B - MANUAL RIGGING AND HOISTING

**1 Purpose**

The purpose of this document is to establish the minimum Manual Rigging and Hoisting contents and the Safety Controls for operations that involve manual rigging and /or hoisting of tools, material and equipment on Telecommunications Towers, Poles and other structures. Alcatel-Lucent Operations having the need for adopting or implementing controls for such tasks can either adopt provisions set forth in this document or develop their own localized program based on these provisions.

**2 Scope**

This document sets forth the minimum contents and the safety provisions for rigging and / or hoisting of tools, materials and equipment being lifted on Telecommunications Towers, Poles and other structures and that are being performed by Alcatel-Lucent Technicians and / or by Subcontractors hired by Alcatel-Lucent to deliver Contract commitments with Alcatel-Lucent Customers.

This document does not include program elements for the utilization of cranes or other equipment to lift tools, equipment and material.

**3. Roles and Responsibilities**

**Contractor Supervisor or Crew Chief;** coordinates execution of site tasks with ALU Installation Supervisors; assures that Contractor personnel adhere to established safety rules; addresses any discrepancies/items in need of improvement or concerns identified by ALU Installation Supervisors and/or PMs in regards to –among other matters- Safety.

**EHS Professional or Correspondent;** provides assistance in the identification of EHS Risks in project activities; supports Line Management in the identification and delivery of needed EHS Training and performs site inspections to verify adherence to established Safety Rules.

**Installation Technicians or Authorized Persons (or in some cases Qualified Persons)**; follow established rules and maintain consistency in safe work habits. This includes attend to all required training and adequately wear all provided PPE.

**Installations Supervisor;** ensuring that all personnel adhere to established Safety Rules and acts as Site Safety Representative; performs site inspections and initiates action to address any identified gap.

**Roll out Manager;** ensuring that all personnel working in tasks and sites that represent EHS Risks are aware of risks, receive adequate training and PPE and adheres to established Safety Rules.

**Project Manager;** ensuring that Safety Rules are communicated and adhered to by all ALU Employees and Contractor Personnel. This includes assurance of financial means considered in Project IPIS to address these mentioned Safety Rules.

1. **Definitions and Acronyms**

**Authorized Person:** An individual approved or assigned by ALU and / or Contractor to perform a specific type of duty or duties or to be at a specific location or locations at the job site.

**Competent Person:** An individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate problems.

**Conductor:** A material, usually in the form of a wire, cable or bus bar, suitable for carrying an electric current.

**Contractor:** An individual or Company hired by Alcatel-Lucent to partner in Contract Delivery Tasks and that is expected to have his/their own safety programs concurrent with those of ALU and / or Customer as applicable.

**Crew Chief:** An individual who is authorized, designated, deemed competent and qualified by ALU and / or the Contractor as applicable.

**Drop Zone** is the area into which items dropped from overhead are likely to land.  Drop zones are used for determining hard hat areas.  The drop zone of a tower while climbers are on the tower, can be determined by measuring the radius out from the tower base, at least one-half of the tower climbers height (e.g., if a climber is up 30.5 meters (100 feet) on the tower, the drop zone is a circle with a 15 meters (50 foot) radius from the base of the tower).

**Gin Pole:** A device attached to the tower used to raise sections of tower steel or equipment into position.

**Maximum Intended Load:** The total load of all tools, materials, equipment, load lines and other loads reasonably anticipated to be applied to the hoist apparatus when these are lifted.

**Qualified Person:** an individual who, by possession of a recognized degree, certificate or professional standing or extensive knowledge, training and / or experience, has successfully demonstrated the ability to prevent and resolve problems relating to the subject matter, the work or the project.

**Rated Capacity of the hoisting equipment:** Is specified in the hoisting equipment load charts provided by the manufacturer, this includes pulleys, lifting ropes (primarily fiber rope), Gin Poles and tools.

**Tagline:** Ropes or lines of durable fiber having sufficient strength and quality to withstand force or tension applied: normally used to control position or guide a suspended load.

**Training;** Before an employee is allowed to perform any job related to hoisting or lifting for tower work, the employee shall receive adequate training on safe practices.

1. **Referenced and Supplementary Documents**

A number of ALU Professionals and external references were consulted and taken into consideration for the development of this document. Nevertheless this document is a standalone reference by itself for ALU Employees and subcontractors to adhere or as a baseline for the development of their own particular concurrent documents.

 **.**

1. **Process Flow Diagram**

Not applicable.

**7 Process/ Procedure/ Work Instruction**

These are the mandatory Program Elements and their corresponding Safety Provisions that shall be followed when manually rigging and /or hoisting of tools, material and equipment on Telecommunications Towers, Poles and other structures for Alcatel-Lucent.

1. **All Personnel climbing to Towers, Poles and Structures shall be adequately trained** and provided with and required to use PPE as per the Tower Climbing Safety Program and applicable local and national requirements.
2. **All equipment and tools to be used for rigging /lifting shall be in good shape and inspected** (inspection is to be documented) prior to each lift. Also Installation/maneuvers crew shall have on hand or be aware of documented rated capacities (and limitations) of hoisting/lifting equipment and tools and make sure that these capacities are consistent with the loads to be hoisted/lifted. Where manufacturers' specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a registered professional engineer.
3. **Pre Lift Safety Meeting previous to actual maneuvers** shall be attended by the hoist /lifting System Operator (Competent Person), all Crew members (Authorized Persons)and the Crew Chief to address the specific EHS risks associated with the hoist/lift that will be performed;
4. **Trial Lift or Simulation shall be made immediately prior to any other task** in order to identify possible obstacles and risks and to determine that all systems, controls and safety devices are activated and functioning properly. This Trial Lift or Simulation does not need to be performed with actual load; its purpose is to verify that routes, obstacles, risks and controls are adequately addressed.

Visual inspection of the hoist, rigging, ladders, base support and other tools being used shall be made by a competent person immediately after the trial lift to determine whether testing has exposed any defect or adverse effect upon any component of the structure.

1. **Hoisting / Lifting Plan including emergency / rescue procedures.** A Hoisting / Lifting Plan shall be documented with identified Safety Precautions applicable to the specifichoist/lift activity that will be performed.
2. **Isolation and posting of Drop Zone.** A Drop Zone determined for each operation must be established from the radius out from the tower base, and at least one-half of the height where the Crew on the tower will be working. Adequate posting and labeling shall be placed such as yellow/red isolation tape and “Warning, potential for objects falling from heights” labels at visible places along the perimeter of the regulated access area.
3. **Use of Hand lines, Drop lines and Tag lines.** When any work is to be performed on a tower or structure which requires the raising or lowering of materials:
	1. a hand line shall be carried aloft and securely fastened,
	2. precaution shall be taken to see that the line does not become entangled or caught by a moving vehicle. Never clip a line to the tool loop or D-ring on a personal fall protection kit,
	3. materials and tools shall not be thrown to employees working aloft, these shall be raised and lowered with a hand line or drop line,
	4. large items being raised or lowered with a hand line shall be tied securely,
	5. small items shall be raised and lowered in a canvas bag,
	6. taglines shall be used to steady and guide hoisted materials around or over crossarms or other protruding construction and as a positive means of control when equipment is being moved near energized apparatus,

 **Warning: hand lines and drop lines shall not be suspended from primary or secondary conductors.**

1. **Actual Hoisting / Lifting / Rigging** with at least two Competent Persons in the base, performing the actual Hoisting/lifting/Rigging and two Competent Persons in the Tower/Pole/Structure –properly equipped- that will perform the fixing or servicing maneuvers at the specific site.

 If lifting will involve manually carrying of Material, Equipment and Tools by Authorized Persons using carrying equipment, special care shall be put to avoid overloading the carrying equipment.

**Warning: Authorized persons shall never be under a suspended load or in the potential route of equipment being carried during a failure (i.e. in stairs or ramps).**

**8 Measures**

Aim is to complete all these Hoisting / Lifting / Rigging Maneuvers with ZERO Incidents. Effectiveness of this program will be measured through Site Safety Reviews **and/or** Corporate EHS Audits of Operations involving work in Towers –included lifting / hoisting / rigging materials and equipment- and the closure of action items found in need of improvement.  The frequency of Site Safety Reviews will be conducted in line with local requirements.

**9 Records**

- Inspection Logs of Hoisting / Lifting / Rigging Equipment one Inspection Log per equipment per maneuver.

- Manufacturer’s specifications for rated capacity of Hoisting / Lifting / Rigging Equipment

- Hoisting / Lifting Plan included emergency / rescue procedures; one per maneuver.

End of Document Text

# APPENDIX C –RISK ASSESSMENT / TOWER CLIMBIG WORK PLAN

|  |  |  |  |
| --- | --- | --- | --- |
| LOCATION ADDRESS      | TOWER IDENTIFICATION NUMBER       | NAME OF COMPETENT PERSON/TEAM LEADER       | DATE OF EVALUATION      |
| TYPE OF TOWER[ ]  Self-Support [ ]  Guyed[ ]  Monopole [ ]  Other \_\_\_\_\_\_\_\_\_ | ACCESS TO WORK AREA[ ]  Fixed Ladder System[ ]  Step Bolts[ ]  Other \_\_\_\_\_\_\_\_\_\_\_\_ | DESCRIPTION OF WORK TO BE PERFORMED | TOWER HEIGHT      WORK HEIGHT       |

**List of Employees Onsite** (All employees must be certified in tower climbing and rescue. Some of the roles and responsibilities can be done by the same employee.)

|  |  |  |
| --- | --- | --- |
| **Responsibility** |  **Name** | **Signature** |
| **Competent Person / Team Leader** |  |  |
| **Ground Support / Designated Rescuer(s)** |  |  |
| **Tower Climber(s)** |  |  |

**Potential Hazards**

|  |
| --- |
| **Environmental Hazards** [ ]  Sun [ ]  Rain [ ]  Snow [ ]  Heat [ ]  Cold   [ ]  Ice [ ]  Night Work [ ]  Windy or Gusty [ ]  Other [ ]  Non applicable  |
| **Physical Hazards** [ ]  No ladder safety system [ ]  No Step Bolts [ ]  Climb Path Obstructions [ ]  Wet or Slippery Surfaces [ ]  Other [ ]  Non applicable  |
| **Other Recognized Hazards**  [ ]  Birds [ ]  Reptiles [ ]  Insects [ ]  Electrical Equipment   [ ]  RF Exposure [ ]  Mechanical Equipment [ ]  High Crime Area [ ]  Noise   [ ]  Electrical Power Lines [ ]  Other [ ]  Non applicable  |

**Hazard Controls**

|  |
| --- |
| **Equipment/supplies available onsite:** First Aid Kit [ ]  Yes [ ]  No Hydration liquid [ ]  Yes [ ]  No  |
| **Lockout/tagout equipment to de-energize antennas or equipment: Required Available** [ ]  Yes [ ]  No [ ]  Yes [ ]  No  |
| **RF Radiation Monitoring Device: Required Available** [ ]  Yes [ ]  No [ ]  Yes [ ]  No  |
| **Have all tower climbing and rescue employees been trained? Training certifications must be checked.** [ ]  Yes [ ]  No [ ]  Tower Climbing and Rescue [ ]  First Aid and CPR with Bloodborne Pathogens information  |
| **Has a drop zone of 50% of the height where work will be performed been established/barricaded off?** [ ]  Yes [ ]  No |
| **Do climber and designated rescuer have appropriate climbing equipment to perform required activities?** [ ]  Yes [ ]  **No**  |
| **Has equipment and tower base been inspected?** Tower base must be inspected by Competent Person prior to any climbing. Tower shall be inspected as it is ascended to the elevation point where work is being performed. [ ]  Yes [ ]  No |
| **Has a pre-job briefing been conducted and was it attended by all employees onsite?** [ ]  Yes [ ]  No |
| **Were the following topics covered during the pre-job briefing?** [ ]  Employees Responsibilities  [ ]  Hazard Assessments and Work Plan [ ]  Equipment Configuration [ ]  Emergency/Rescue Plan  |

**Tower Climbing Work Plan (All climbers shall be connected 100% of the time while climbing, descending and working on the tower.)**

|  |
| --- |
| **Personal Protective Equipment / Safety Equipment** [ ] Hard Hat with tether [ ]  Safety Glasses [ ]  Fall Protection [ ]  Hearing Protection [ ]  Gloves [ ]  RF Monitors [ ]  **Other**  |
| **Fall Protection to be Used** [ ]  Full Body Harness [ ]  Rope Grab [ ]  Horizontal Lifeline [ ]  Vertical Lifeline [ ]  Self Retracting Lifeline [ ]  Descenders [ ]  Bypass Lanyards [ ]  Anchorage Straps [ ]  Fixed Ladder Safety System  |
| **Method of Hoisting Used** [ ]  Winch [ ]  Block and Tackle [ ]  Capstan [ ]  Manual [ ]  Crane [ ]  Boom Truck [ ]  Other |
| **Other Requirements** [ ]  Lift Plan [ ]  Excavation Permit [ ]  Burn Permit [ ]  Other |

**Equipment Inspection** YES NO

|  |  |  |
| --- | --- | --- |
| **Is equipment within inspection cycle? Indicate next inspection due date:**  | **[ ]**  | **[ ]**  |
| **Harness inspected and suitable for use? No frayed, torn straps or soft ties,** [ ]  No frayed/torn/damaged straps [ ]  No damaged/corroded D-rings [ ]  No damaged /corroded **buckles**  | **[ ]**  | **[ ]**  |
| **Lanyards inspected and suitable for use?** [ ]  No frayed/torn/damaged straps [ ]  No damaged/corroded D-rings [ ]  Connecting devices working properly  | **[ ]**  | **[ ]**  |
| **Rope Grab inspected and suitable for use?** [ ]  Operating correctly [ ]  No signs of damage/corrosion  | **[ ]**  | **[ ]**  |
| **Ropes/lifelines inspected and suitable for use?**[ ]  Not frayed/torn/damaged [ ]  No signs of mildew  | **[ ]**  | **[ ]**  |
| **All other components (e.g., carabiners, Fisk Descenders, etc) inspected and suitable for use?**[ ]  Operating correctly [ ]  No signs of damage/corrosion | **[ ]**  | **[ ]**  |
| **Has any component been subjected to a shock load? WARNING: Any component subjected to a shock load (a fall) shall be removed from service until inspected by the manufacturer and replaced as necessary.** | **[ ]**  | **[ ]**  |
| All equipment must be inspected prior to use. Rescue equipment must be inspected prior to starting tower climbing operations. Employees inspecting equipment must sign below:**Climber (s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_****Climber (s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_****Climber (s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_** **Print Name / Signature** | **[ ]**  | **[ ]**  |

**Tower Climbing Emergency / Rescue Plan**

|  |
| --- |
| **Are cellular phones functional? ( i.e., charged, working signal)** [ ]  Yes [ ]  No  |
| **If cellular phones are not functional, are other means of communication available**? [ ]  Yes [ ]  No [ ]  Radio [ ]  Land Line Phone [ ]  Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_  |
| **Rescue Equipment has been inspected and is available for use.** [ ]  Yes [ ]  No |
| **Rescue Procedure:** [ ]  Manual [ ]  Outside Services [ ]  Winch [ ]  Ascending/Descending [ ]  Other  |
| **Directions to Location:**  |
| **Designated Rescuer(s) will need additional assistance in the event of a high angle rescue operation.** [ ]  Yes [ ]  No **If yes, please complete the following:** **Local Fire/Rescue Department notified of the:** **tower climbing operation** [ ]  Yes [ ]  No  **location of the tower** [ ]  Yes [ ]  No **type of tower** [ ]  Yes [ ]  No  **height climbers will be working at** [ ]  Yes [ ]  No  **Local Fire/Rescue Department will be able to assist:** [ ]  Yes [ ]  No |
| **Predicted Outside Services Response Time:**  |
| **Ambulance/Paramedics Emergency Phone Number:**  |
| **Location and Phone Number of closest Medical Facility:**  |
| **Fire/ Rescue Emergency Phone Number:**  |
| **Police Emergency Phone Number:**  |
| **Should a fall occur: All items listed below must be satisfied** |
|  **[ ]  Local Fire/Rescue Department will be contacted prior to starting rescue procedures.** |
|  **[ ]  Employee will be rescued as quickly as possible if able to do so without putting other employees at risk.** |
|  **[ ]  Equipment involved in the fall will be taken out of service, tagged with a “Do Not Use” label and retain for evaluation.** |
|  **[ ]  EHS representative will be notified of the fall. Name and Phone Number of EHS representative:**  |
|  **[ ]  An incident/accident report will be completed.**  |

# APPENDIX D - TOWER CLIMBING EQUIPMENT SPECIFICATIONS

The following list is provided for information purposes only. Other equipment may be required to meet specific local climbing needs.

The following specifications (except for Fisk Descender, and Miller Self-Retracting Lifeline) are based on products manufactured by Surety Manufacturing and Testing, LTD for MSA.

For European Union countries all equipment shall have a CE-marking.

**Anchor Sling**

* Steel cable
* Eyes on both ends
* 1.2 m (4 ft)
* 0.4 kg (0.9 lb)

**Y Shock Absorbing Lanyard/Bypass Lanyard**

* Elasticized webbing which expands under tension to 1.8 m (6.0 ft)
* Relaxed state 1.2 m (49 in)
* 3 locking snap hooks with 6.4 centimeter (2 ½ in) opening, drop forged, proof load 2,268 kg (5,000 lb), each weighing 0.65 kg (23 oz)
* Length 244 mm (9 5/8 in)

**Carabiner**

* Steel, auto locking
* 0.3 kg (0.7 lb)

**Tie-Off Sling**

* 4.45 cm (1 3/4 in) nylon web
* Length 45.7 cm (18 in)
* “D” ring stamped 2,268 kg (5000 lb)

**Positioning Lanyard**

* Manual, closed body
* 1.6 cm x 1.8 m
* Sure-D-Braid or Kernmantle rope
* Locking swivel snap hook
* 1.4 kg (3.0 lb)

**Fisk Descender (or equivalent)**

* Stainless steel
* Weight 0.8 kg (1.8 lb)
* Weight Capacity 200 kg (440 lb)

**Full Body Harness – Applicable size**

* Designed for fall arrest, ladder climbing, descent control, positioning and rescue
* Includes a saddle and shoulder padding
* Belt is padded and includes tool loops
* Meets ANSI Z359.1 or equivalent
* Belt and strap – 4.45 cm (1 ¾ in) nylon
* D-rings - drop forged, zinc chromate finish, individually proof loaded to 1630 kg (3600 lb)
* Buckles – quick connect, stamped steel, chromate finish
* Load-bearing box stitch pattern, bonded thread, 18 stitches per cm (7 stitches per in)
* Plastic components resist brittleness down to minus 50 oC (minus 58 oF)
* Minimum web breaking strength 3855 kg (8,500 lb)
* Minimum D-ring breaking strength 2,720 kg (6,000 lb)
* Safe working load 135 kg (300 lb)

**Hand Ascender (Left & Right)**

* Aluminum alloy with steel cam assembly
* Accepts ropes from 7 mm (¼ in) to 12 mm (½ in)
* Strength 11 kN (2500 lb)
* Weight 365 g (13 oz)
* Left/Right

**Sure-Line Horizontal Lifeline System with Tote Bag**

* 10 mm (3/8 in) steel cable lifeline
* Flemish eye splice/steel swaged sleeve
* Adjustable combination clamp and thimble
* Energy absorber
* Captive carabiners
* 18 m (60 ft)
* 8.0 kg (17.7 lb)

**Rope Grab**

* Automatic/manual
* Open body
* 4.4 cm x 0.9 m (1 ¾ in x 3 ft)
* Shock absorber
* Locking snap hook

**Self Retracting Lifeline**

* 2.5 cm (1 in) polyester webbing
* Length 9 m (30 ft)
* Maximum working load 140 kg (310 lb)

**Spreader Snap**

* 2 locking snap hooks with 6.4 cm (2 ½ in) opening
* Drop forged, proof load 2,268 kg (5,000 lb)
* Weight 1.7 kg (50 oz)
* Length 51 cm (20 in)

**Rope Termination Plate**

* Steel
* Breaking Strength 268 kg (5,000 lb)
* 1.56 cm (5/8”) diameter for lifeline
* 1.25 cm (½”) diameter for descend control line





# APPENDIX E - TOWER CLIMBING PROGRAM ASSESSMENT

|  |  |
| --- | --- |
|  |  **Alcatel-Lucent Tower Climbing - Program Assessment** |
| **Objective** | This checklist was designed by the Services EHS Integration Business Team (SEBIT) to assist the user in undertaking a review of their local Tower Climbing program to test the level of alignment with The Alcatel-Lucent tower climbing program (EHS-L2-446-01 TOWER CLIMBING SAFETY PROGRAM). This checklist will help to identify weaknesses in the local program and develop a remedial plan to ensure full compliance. |
| **General** | **Country:**  |
|  | **Date Completed:** |
|  | **Name of Person completing checklist:**  |
| **Background** | **Work performed by: ALU Contractors ALU Employees (circle as appropriate)** |
|  | **Number of Tower Climbing Contractors:**  |
|  | **Number of ALU employees climbing towers:**  |
|  | **Number of ALU employees trained in Tower Climbing Safety & Rescue:**  |
| **Number** | **Tower Climbing Safety Program Requirements** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **1** | Is the Services Tower Climbing Safety Program (EHS-L2-446-01) followed, and if not followed, is a local documented program that meets the requirements sections of the subject Services Tower Climbing Safety Program in place and available for review? |   |   |   |   |
| **2** | Have all deviations from the Services Tower Climbing Safety Program been reviewed and approved by the EHS Regional Director |   |   |   |   |
|  |  **Tower Climbing Contractor** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **3** | Are contractors approved by the local/regional Supply Chain / Procurement organization? |   |   |   |   |
| **4** | Is a documented Tower Climbing Program available for review, with policies and procedures that at a minimum comply with local and national legal requirements? |   |   |   |   |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  **General** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **5** | Is a competent person/team leader responsible for safety and health designated for on site activities? |   |   |   |   |
| **6** | Risk of falling objects. Are safety measures in place that address the need of employees to access the drop zone during climbing and/or rigging operations? |   |   |   |   |
| **7** | Is exposure to radio frequency (RF) energy assessed, and adequate control measures implemented to mitigate the risk of exposure? |   |   |   |   |
| **8** | When location(s) where high-voltage lines and other electrical hazards are present, are these locations identified and marked? |   |   |   |   |
| **9** | In situations where antennae are located on High Voltage pylons, are persons working in and around pylons trained to do so? |   |   |   |   |
| **10** | Is hoisting and rigging carried out according to local and national legal requirements? (Reference: EHSMS-L4-446-01) |   |   |   |   |
|  | **Physical and Mental Fitness for Duty** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **11** | Are tower climbers medically assessed to ensure they are fit to perform activities related to tower climbing operations?  |   |   |   |   |
|  |  **Training** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **12** | Does Tower Climbing training include tower climbing safety from an approved and recognized training source? |   |   |   |   |
| **13** | Does Tower Climbing training include rescue procedures from an approved and recognized training source? |   |   |   |   |
| **14** | Does training include Cardio Pulmonary Resuscitation (CPR) from an approved and recognized training source? |   |   |   |   |
| **15** | Does training include First Aid procedures from an approved and recognized training source? |   |   |   |   |
|  | **Equipment**  | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **16** | Is the full list of approved equipment documented and available for review?  |   |   |   |   |
| **17** | Are the components of the fall protection system and equipment compatible with one another and utilized in accordance with the manufacturer’s recommendations? |   |   |   |   |
| **18** | Is tower climbing safety and rescue equipment inspected by each user prior to each climb? |   |   |   |   |
| **19** | Is equipment inspected at least once per year by a competent individual or manufacturer's representative (other than the equipment user)? |   |   |   |   |
| **20** | Is the inspection documented and available for review? |   |   |   |   |
| **21** | Is defective equipment removed from service immediately, rendered unusable, tagged as "defective" and discarded? |   |   |   |   |
| **22** | When equipment is subjected to impact loading (such as a fall), is it immediately removed from service, rendered unusable, tagged as "defective" and only returned to service following inspection and testing? |   |   |   |   |
|  | **Clothing and Personal Protective Equipment**  | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **23** | Are certified tower climbers provided with suitable personal protective equipment (PPE) which at a minimum shall include full body harness with shock absorbing lanyards that provide the means to properly attach to the structure and a hard hat with a chin strap? |   |   |   |   |

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|  | **Pre-Climb Risk Assessment** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **24** | Are Pre-Climb Risk Assessments undertaken? |   |   |   |   |
| **25** | Does the risk assessment meet the following minimum criteria?- evaluates new equipment, materials, and processes for hazards before they are introduced into the workplace;- identifies appropriate equipment and tools to be used for the job;- identifies meteorological conditions (such as but not limited to wind, rain, lightning, snow or ice) that could affect work during tower climbing operations;- identifies any existing hazards at the site;- identifies and implement corrective measures. |   |   |   |   |
| **26** | Prior to each climb, does the climbing team meet to define safety procedures and emergency response arrangements? |   |   |   |   |
|  | **Pre-Climb Tower Inspection** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **27** | Is the tower inspected by a competent person prior to each climb?(Inspection to include the base of the tower for damage, deterioration, structural deficiencies and functionality of safety features and anchorages.) |   |   |   |   |
| **28** | In the event of finding defects, is the crew instructed not to climb the tower until the problem is corrected by a qualified tower construction professional? Examples of defects: - loose structures, missing bolts, broken parts or signs of vandalism; cracks, bends, loose connections or metal fatigue; rust or buckling due to water freezing in pipe supports; guy wires that are broken, frayed or not in tension; tower is not plumb (i.e., twisted, crooked or leaning). |   |   |   |   |
|  | **Pre-Climb Equipment Inspection** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **29** | Does the designated competent person/team leader ensure that all fall protection equipment is inspected by the certified climbers prior to each use for wear, damage, defect or other deterioration? |   |   |   |   |
| **30** | In the situation where ladder safety systems and related support systems for fixed ladders are utilized, does the competent person/team leader ensure that the climbers have tested the ladder safety system for proper operation and that all components utilized with the ladder safety system are compatible? |   |   |   |   |
|  | **Safe Climbing Procedures** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **31** | Is there a requirement that any work at height is only carried out when the weather conditions do not jeopardize the safety and health of workers? |   |   |   |   |
| **32** | Are climbers required to comply with all of the following? **While climbing, certified tower climbers:** wear an approved full-body harness with shock absorbing lanyards that provide the means to properly attach to the structure; wear appropriate clothing and personal protective equipment; use the appropriate fall protection system if the tower is equipped with a climbing protection system; remain attached to the tower at all times; maintain three points of contact with the tower during climbing (i.e., two legs & one hand, or two hands & one leg) at all times; maintain 100% fall protection when positioning device systems and their components are used. |   |   |   |   |
| **33** | Is climbing by a certified climber forbidden when any of the following conditions exist? **Conditions:** without at least one other certified climber; while intoxicated or under the influence of mood-altering drugs (prescription or not); during an illness or when suffering from such physical symptoms as dizziness, weakness, abdominal pains, and/or muscle cramps; when precipitation will interfere with the safe performance of assigned tasks; during snow, hail, thunderstorms, hurricanes, typhoons, or while tornado warnings are in effect; when the tower is covered with ice and/or snow unless it can be removed without endangering the climbers or the people on the ground; during periods of wind 6 beaufort(45 kph, 28 mph) or greater and during periods of fog that is dense enough to interfere with the safe performance of assigned tasks. |   |   |   |   |
| **34** |  Do certified tower climbers observe the following? - DO NOT allow the lanyard length to permit a free fall greater than 2 meters; - DO NOT attach lanyards to coaxial cables, antennas or antenna mounting supports; - DO NOT slide lanyards over sharp metal tower members; - DO NOT attach tools or equipment to their harness; - DO NOT climb, rest or work directly underneath a suspended load |   |   |   |   |
|  | **Working at Night** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **35** | Is working on towers at night only undertaken when: it is not possible to re-schedule the work to daylight hours, it is allowed by local laws/procedures, AND the additional measures listed below are taken?- all climbers maintain contact with each other at all times, and when ground support is provided, maintains radio contact with ground crew at regular intervals; - the climbing path and the working environment are sufficiently illuminated. Note: Sufficiently illuminated means hard shadow-free and glare-free illumination provided by a stationary lighting meeting minimum local/national specified illumination levels when one exists. |   |   |   |   |
|  | **Measures** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **36** | Are Site Safety Reviews conducted to evaluate effectiveness of the local Tower Climbing Operations and items found to be in need of improvement are tracked until closure? |   |   |   |   |
|  | **Records** | **Select from drop down menu** | **Action Taken** | **Owner** | **Due Date dd/mm/yy** |
| **37** | Is proper documentation for the following records maintained in accordance with local laws and regulations? Medical Records, Credentials of Training Provider, Training Records, Certifications, Equipment Procurement Records and Risk Assessment/Tower Climbing Safety Plan |   |   |   |   |
|  | **NOTE: Some documentation may be requested for review.** |

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|  | **Additional Comments:** |
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