

Subject: Global Infrastructure and Networks guidelines on works at height

Application Areas

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Infrastructure & Networks*

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THE HEAD OF GLOBAL INFRASTRUCTURE AND NETWORKS

Livio Gallo

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1 DOCUMENT AIMS AND APPLICATION AREA

This document aims to define the safety requirements and the organizational measures to be adopted during execution of works at height.

Work at height means work in any place where, according to the following definition, if precautions were not taken, a person could fall a distance liable to cause personal injury.

In addition any other measure deriving from laws and standards of good technique that establish more restrictive rules shall be applied.

This document gives minimal provisions to be adopted and represents the best practices on execution of activities, independently from the specific approach followed at a local level. It is not excluded that existing mandatory local regulations provide requirements higher than this document; however, in case of lack of local laws and regulations or other regulatory requirements, or if the existing mandatory local regulations provide requirements lower than the provisions outlined in this document, the latter shall be implemented and applied.

This document shall be implemented and applied to the extent possible within the Global Infrastructure and Networks Business Line in compliance with any applicable laws, regulations and governance rules, including any stock exchange and unbundling-relevant provisions, which in any case prevail over the provisions contained in this document.

2 DOCUMENT VERSION MANAGEMENT

Version	Data	Main changes description
01	19/04/2016	Issuing of Global Infrastructure and Networks guidelines on works at height
02	24/07/2019	<ul style="list-style-type: none"> • Update Definition and Acronyms (par. 6) • Update Hazard identification and Assessment (par 7.1 – 7.2) • New Focus on “Falling objects during work at height” (par. 7.2.1) • Update Roles and Responsibility (par. 7.3) • Update Protective Equipment (par. 7.4) • Insert new paragraph “Ladders” (par. 7.5) • Insert new paragraph “Poles/Pylons” (par. 7.6) • Insert new paragraph “Bracing system” (par. 7.7)

3 UNITS IN CHARGE OF THE DOCUMENT

Responsible for drawing up the document:

- Global Infrastructure and Networks: Health, Safety and Environment

Responsible for authorizing the document:

- Global Infrastructure and Networks: Head of Quality and Process Transformation Unit
- Global Infrastructure and Networks: Head of People and Organization Unit

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4 REFERENCES

- Organizational Procedure 551 Process-related organizational documents governance;
- The Code of Ethics of Enel Group;
- Zero tolerance of corruption plan (ZTC);
- Enel human rights policy;
- Organization and management model as per Italian legislative decree no. 231/2001;
- Enel Global Compliance Program;
- Global Infrastructure and Networks RACI Handbook;
- ISO 9001: Quality Management Systems – Requirements;
- ISO 14001: Environmental Management Systems– Requirements with guidance for use;
- OHSAS 18001 Occupational health and safety management systems – Requirements;
- OSHA 3146-05R 2015 Fall Protection in Construction;
- OSHA 1910-269 Occupational safety and standard - Appendix D;
- Stop Work Policy.

5 ORGANIZATIONAL PROCESS POSITION IN THE PROCESS TAXONOMY

Value Chain phase / Process Area: Health, Safety, Environment and Quality

Macro Process: Health and Safety

6 DEFINITIONS AND ACRONYMS

Acronym and Key words	Description
Anchorage or Anchorage Point	Secure point of attachment for lifelines, lanyards or deceleration devices previously approved, evaluated in relation to the applying forces also as a result of falling, and evaluated on site. An anchorage point is sometimes referred to as a tie off point.
Collective protection (passive system)	Equipment or any assembly of items—which are mandatory to be used by workers with the aim of executing a specific work activity which can protect one or more than one person and does not require any action to be sure it works.
Experienced person	Person who develop, implement, maintain and evaluate the fall preventive plan for the work required.

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Fall Arrest System	It is a full body harness, lanyard, retractable lifeline, horizontal lifeline or vertical lifeline that is approved by a qualified/expert person and when connected to an anchorage point, is used to keep in control a person's free fall under control after the fall has started. All components of a fall arrest system are designed, tested and certified to function together to arrest a fall or to minimize the chance of potential for compounding injuries.
Fall prevention plan	Site specific plan prepared by a competent person containing the action and elements used to reduce or to eliminate the risk of falls, and including a step by step guide on how to perform the work safely.
Foreman	Person who supervises the work and ensures implementation of instructions issued, ensuring correct job execution by workers in compliance with health and safety regulations, documentation and company rules. This person is a nominated person in control of a work activity, also in order to actuate/verify that the activity is carried out according to the fall arrest plan.
Guardrail	Guardrail system means a barrier erected along an unprotected or exposed side, edge, or other area of a walking working surface to prevent employees from fall. The dimensions respect local rules and laws. Guardrail systems provide simple and easy-to-use leading edge fall protection for a variety of applications, including rooftops, mezzanines, stairs, access platforms, or other area of a walking working surface to prevent employees from fall.
Ladders	Work equipment with rungs or steps on which a person ascend, descend and stand on for short periods of time, which makes it possible to overcome differences in height and reach work positions at height; it can be transported and installed by hand or using mechanical means (simple support ladders with one or more sections, double ladders with one or two ascent sections, extensible ladders, with two uprights with snap-fit elements equipped with fall arrest device and mounting systems for climbing on vertical supports, stacked ladders with platform and wheels that can be moved by hand, ladders with suspended rungs).
Lifeline	Lifeline is a component of a fall arrest system which consists of a flexible or rigid line attached into a vertical or horizontal anchorage point and usually used to connect Personal Protective Equipment or other Equipment to prevent falling. Typically: - a vertical lifeline is connected to an anchorage point located above the walking and working surfaces allowing it to hang vertically - a horizontal lifeline is connected at both ends to anchorage points and is stretched horizontally between the anchorage points and is

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	used for attachment of a lanyard or lifeline device while moving horizontally to generate a triangle of line.
MEWP	Mobile elevating work platforms.
Objects	Tools, devices and other items used during working at height.
Personal Protective Equipment (active system)	Equipment which protects only the user and requires action by the individual, such as properly wearing and adjusting for it to work.
Positioning systems and access with ropes or belt	System comprising at least two separately anchored ropes, one for access, descent and support (the work rope) and the other as an auxiliary device (safety rope) fitted with a suitable support harness, typically type 'Y'.
Practical Training	A series of activities which aim to instruct workers as to the correct use of tools, plant and machinery, substances, devices (including PPE) and work procedures. Practical training must be documented.
Qualification	Formal or legal acknowledgement of the capability to carry out an activity, which is achieved after conducting a specific training and usually passing a final test. A qualification certificate can be issued, if required by law.
Safety Net	Nets supported by a cable on the border, other support devices or combination of these, designed to stop people falling from height.
Scaffolding	Temporary work structure comprising pipes and joints or pre-fabricated frames or prefabricated uprights and crosspieces, decks with wooden or metal planks and other accessories (plates, pins, etc.) with certified elements, to allow the performance of construction and maintenance for working at various heights.
Training	Educational process through which employees are provided with useful knowledge, procedures and skills for carrying out their tasks in safety and with focus for identify, reduce and manage risks. All training activities should be documented and should include a final assessment.
Work at height ¹	All work activities that create a difference of height, equal or above safety height, in which there is a need to control a risk of falling some distance liable to cause personal injury. This regardless of the work equipment being used, the duration of the work at height involved or the height at which the work is performed. Safety height, may be defined as difference of height, normally depending on regional laws and regulations and on site conditions, that in case of working people falling, it is presumed that it can cause limited injuries, normally comparable to damage received from a fall on the flat. Regardless of the Safety height according to local laws/regulations, it may be required to apply all prevention and protection measures

¹The maximum height to be considered is 2 meters if there are no more restrictive laws or regulations. In any case, the identification of fall from height hazards in the activity is important in order to assess whether the same limit should be lowered further.

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	at lower height values depending on the activity specific risk assessment.
Worker	Enel contractor or subcontractor employee that is involved in the execution of activities at height level.

7 PROCESS DESCRIPTION

7.1. Hazard identification

The identification of fall from height hazards and the subsequent evaluation is the obligatory previous step, to manage work at height activities and assessing the risk.

In order to identify fall from height hazard is necessary a workplace assessment, to allow recognizing the specific conditions of the workplace. This workplace assessment shall be executed periodically to avoid the change at workplace concerning from height risk. The periodical time basis should be done, at least, at the beginning of a new activity or during modifications on the structure of the facility with impact with safety and prevention aspect from fall from height.

During the planning of a task that could require to work at height, the following simple rules (taking into account also frequency and duration of the activity) must be considered in advance:

- In the selection of protective equipment, collective protection shall always be considered and preferred over the individual protection / measures (personal protection);
- avoid work at height where it's reasonably practicable to do so, where work at height cannot be easily avoided prevent falls using either an existing place of work that is already safe, or:
 - choose the right type of equipment,
 - minimize the distance and consequences of a fall, by using the right type of equipment or planning in different way the step of the work where the risk cannot be eliminated.

7.2. Assessment

Before starting the activity a specific fall from height assessment shall be done taking into account local legal and standard requirements. The assessment shall be recorded.

A risk assessment of working at height should consider the following issues:

- nature of fall hazard in work areas. Risk evaluation is very important because, regardless of the height according to local laws/regulations, it may be necessary to apply all prevention and protection measures at lower height limits. For example, under certain conditions, pay attention also to the climbing/descending of a ladder from the lowest steps to a height below the limits of the law because the fall "almost flat" can also cause injuries;
- duration of the work;

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- weather conditions and their evolution;
 - compliance with the relevant legislation, in particular the work at height regulations and Management of Health and Safety at work regulations and standards;
 - environment and structural/geological condition and working areas, below, around and above, to take all precautions needed to avoid working on or near fragile or inadequate surfaces, unstable ground, or potentially inadequate structures (including inadequate poles, inadequate metallic structures, etc.), or a reduced distance from electrical active lines or other known risks;
 - competence level of the personnel involved with the work and any additional training requirements;
 - required level of supervision;
 - use of appropriate devices such as:
 - operation of guardrail systems
 - personal fall arrest systems
 - safety nets systems
 - warning line systems
 - designated access
 - zones, and other fall prevention techniques to be used;
 - required personal protective equipment (PPE), such as helmets and harnesses;
 - precautions when working on or near fragile surfaces/instable ground;
 - protection from falling objects;
 - emergency evacuation and rescue procedures;
 - procedures for the handling and storage of equipment and materials and the assembly of overhead protection;
 - procedures for assembly (build or raise), maintaining, disassembling, and inspecting the fall arrest systems to be used;
 - workers can get safely to and from where they work at height;
 - workers can safely execute the activity in all its phases and duration;
 - equipment is suitable, stable and strong enough for the job, maintained and checked with specific frequency according to standards technical sheet or other constrain/laws

Needed documents must be available and verified.

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For each working site the above fall from height assessment shall be done, updating it when conditions change.

Furthermore it shall be ensured that workers and supervisors know all the **emergency procedures to be defined in fall from height workplace**.

Moreover, before starting the activity a pre-job check must be carried out in order to check all the conditions.

In order to execute this check in a systematic and structured way, it is necessary to do a “pre job check” that is a list of verification points for identifying the hazard of falling at different level and for checking if the schedule is correct. This list can be integrated by each Country in order to identify specific local conditions.

7.2.1. Falling objects during work at height

Work at height exposes workers to the risk of falling tools, devices and other items (named “objects” for brevity). The falling of objects can cause damages to workers who are improperly located in the underlying vertical projection area (named “impact area” for brevity), even if the worker wears correctly PPE provided for the activity.

The risk of falling objects must be reduced to the minimum level possible, adopting the necessary technical and management measures in compliance with the current legislation and standards.

The purpose of this chapter is to define the minimum general and specific preventive measures to be applied.

7.2.1.1. Planning

The risk identification during work at height and its evaluation before execution are important not only to assess the risk but also to manage work activities during the execution.

No activity/work must be carried out unless previously authorized and after checking all elements indicated in this document.

Before starting activities, plan in detail the activity and inform all the subjects involved about risks, defining exactly roles and responsibilities.

In Chapters 7.2.1.2 and 7.2.1.3 general and specific measures to be taken are summarized.

Furthermore, to proceed with the activity, it is necessary to carry out a preliminary and a workplace assessment (pre job check) as defined in chapter 7.2.

In order to execute this check in a systematic and structured way, it is necessary to have a reference that helps in this task; therefore Annex 1 “pre job check” (used for working at height) is a list not exhaustive of verification points in order to identify also this risk.

7.2.1.2. General preventive measures

In the presence of falling objects during work activities carried out at height, the following preventive measures are recommended but not exhaustive

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- before starting activity (preliminary):
 - plan the activity in detail and inform all those involved of the risks, defining exactly roles and responsibilities
 - check the elements used (ropes, slings, chains, pulleys, etc.) are in good condition, do not show any signs of breakage and/or corrosion and spoiled and make sure that the legal and obligation checks have been carried out;
- signal the impact area with mobile obstacles (e.g. cones, belt) in order to prevent crossing;
- start the activity only when the impact area is free of persons/machinery/vehicles;
- foreman and the workers on the ground must supervise so that in the impact area there is no transit or permanence of persons/machinery/vehicles;
- as far as possible, the upward or downward movement phase of objects must be carried out by the operator on the ground, positioned outside the impact area;
- the weight of object to move must be known in advance in order to use the most suitable lifting accessory /machinery according to data label system;
- make sure that the objects are correctly locked before starting their movement;
- during the upward or downward movement phase, the workers involved in the activity do not have to carry out other activities; handling must be treated as an exclusive activity;
- take into consideration the transit areas of third parties, indicating alternative passages as indicated in the work prevention plan.

7.2.1.3. Specific preventive measures

Further specific measures to be adopted in the work plan are described below .

Case 1: use of a container

- during the upward or downward movement phase it is necessary to use a container of dimensions, material and resistance suitable for the weight of objects transported;
- the container must be secured to the handling rope with a suitable snap-on carabiner;
- if a pulley is used, it must be fixed to a suitable structure by means of a ring/hook of adequate resistance of effort, and must be moved by an operator on the ground positioned outside the potential impact area; this operator must supervise, jointly with the Foreman, so that in the same area there is no transit or permanence of persons/machinery/vehicles;

Case 2: use of crane trucks or other special lifting equipment

- in the event that a container cannot be used due to the size and weight of the items to be handled, a crane or other special vehicle must be used as a means of lifting or, in case that this cannot be

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used, machines compound for manual lifting must be used, fixed at the top by a ring loop of adequate resistance for the maximum evaluated effort (weight of the load, height, etc.);

- in both cases the loads to be handled must be anchored to the lifting hooks through slings of suitable characteristics.

Case 3: use of equipment against falling objects

- when objects are to be used for work at height, depending on their weight they can be:
 - transported by the worker himself;
 - fixed and lifted by auxiliary systems;
 - lifted with the assistance of another worker remaining at safety distance from the vertical of the objects;
- as far as possible, the equipment used to carry out work in elevation must be connected at anchor points;
- during the ascent or descent, the worker must bring smaller tools and equipment insured into storage bags or tool belts designed for the purpose;
- if a carrying rope is used, in the case of handling heavier loads, fixing systems shall be provided.

7.3. Roles and Responsibility

Experienced person(s) shall be appointed to develop, implement, maintain and evaluate the fall prevention plan.

Foreman and those in control of any work at height activity must make sure work is properly planned, supervised and carried out by competent person.

This responsibility includes:

- to ensure that falling from height assessment has been done;
- to evaluate the need to work at heights;
- to ensure that all reasonably practicable measures and work methods are taken to eliminate potential falling from heights hazards;
- to verify that all workers are properly trained in the use, maintenance and care of personal fall prevention and arrest equipment and the recognition of hazards related to their use;
- to supervise the activity;
- to check personal and collective equipment.

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All workers shall have sufficient skills, knowledge and experience to perform the task, and they shall work under the supervision of somebody competent to do it.

For using machinery the qualification of the operator shall be demonstrated by a valid specific certificate, assuring the adequate training according to the local law/regulation.

The aptitude of workers for working at height shall be preventively evaluated according to the "Working at Height Health Protocol". The protocol (medical test and periodicity) will be defined according to the local laws and under responsibility of occupational doctors. Therefore, each country must define its own medical protocol for working at height activities.

7.4. Protective Equipment

In the selection of protective equipment, collective protection will be prefer compared to the singular personal protective equipment (PPE).

In the same way, during the selection of collective or personal protective equipment, equipment that avoids the falls shall be preferred to equipment that protects in case of fall.

Collective protective equipment is effective independently of the worker, for example:

- scaffolding;
- Mobile Lift Platform;
- edge protection;
- safety net;
- mechanical access plant.

If a collective protection cannot be implemented, it is necessary to use PPE, like a harness system that requires the individual to act for it to be effective.

These systems enable a person to be positioned and supported safely at a work site during the task being undertaken at height.

The most common harness systems include:

- total restraint systems;
- fall arrest systems;
- flexible or rigid anchor line, which is the anchoring point for the fall arrest system; also used as a part of injured rescue device;
- hook stick with flexible anchor line or flexible anchor line only; the flexible anchor line is the anchoring point for the fall arrest system and is also used as a part of injured rescue device;

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- work positioning systems and access with ropes or belt;
- lifelines.

Most of the time this equipment needs to be assembled or installed according to the manufacturer's instructions and documentation to respect the standard of construction.

It's mandatory to regularly maintain all protective equipment in compliance with manufacturer's or designer instruction. Any working platform used for construction work and from which a person could fall, shall be inspected at least:

- after assembly in any position;
- after any event liable to have affected its stability;
- in any case too much time cannot run from an inspection to another.

Checks carried out must be recorded.

Fall Arrest:

A fall arrest system provides ergonomics aspect and maximum comfort and flexibility of movement for workers to conduct their work. The system is designed to allow the person to either effect a self-rescue or be rescued in the event of a fall in accordance with emergency plan.

Fall Restraint:

A fall restraint system allows a person to perform his duties but precludes the worker to reach a point where a fall could occur. Restraint systems are generally suitable if the person needs to work at the edge of a hazard, e.g. where there is a need to maintain gutters along the edge of a roof, or if there are other potential fall hazards such as a fragile/breakable roof, roof lights or air vents.

	COLLECTIVE PROTECTION	PERSONAL PROTECTION / HARNESS SYSTEM	
	Fall prevention	Fall restraint	Fall arrest
	Scaffoldings, edge protections, safety nets, mechanical access devices	Rope access Lanyards Flexible or rigid anchor line	Lifelines Harnesses Anchorage / Anchor Points Connectors / Hook
How does it protect?	Prevents people from reaching the fall hazard by creating a barrier between it and the worker	Prevents people from reaching a fall hazard through a tie off system	Stops a fall that is in progress through a tie off system
Equipment Needed	No individual equipment	Custom fitted equipment	Custom fitted equipment

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Training Needed	None	Yes, extensive and ongoing	Yes, extensive and ongoing
Inspection	After installation and annually	Every use by the individual	Every use by the individual
Maintenance	Annually	Must be inspected and cared before and after every use	Must be inspected and cared before and after every use
Potential for Injury	None	Mild	High
Costs	Higher upfront costs.	Lower initial costs; but hidden costs might be training, equipment maintenance and setup time.	Lower initial costs; but hidden costs might be training, equipment replacement and setup time.
Burden to Worker	Little to none.	Must inspect and properly wear their equipment.	Must inspect and properly wear their equipment.

Tab 1 - Comparative table Collective Protection vs Personal Protection

Consequently, the points mentioned above to guarantee a correct implementation are described in the Operating Instruction “Work at height” of each Countries.

7.5. Ladders

Portable ladders are working equipment where a person is allowed to work at height for a short period.

Ladders must be certified according to local requirements or to recognized international standards.

The use of ladders for working at heights must be limited to those circumstances in which the use of other types of safer work equipment (e.g., bucket truck) is not possible.

7.5.1. Type of ladders

There are various types of ladders, such as simple rigid ladders, step ladders hinged in the middle, extension ladders, folding ladders, sectional ladder and turntable ladders. They are generally made of wood, steel, aluminum or synthetic materials (glass fiber).

The first thing to consider before using a ladder is the type of work to be done.

Ladders must be positioned and have a sufficient length to work at height in an ergonomic way.

It has to be avoided to climb on the three top rungs of a ladder. If it is necessary to proceed beyond the top of the ladder (for example to carry out activities on the support crosspiece), in order to overcome any obstacles

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or to make horizontal movements it is necessary to use the fall arrest lanyard with energy absorber, hooked to the sternal attachment of the fall arrest harness and to a suitable anchoring point (e.g. ring tape).

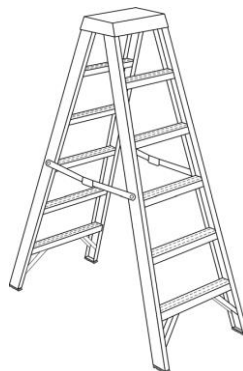
7.5.1.1. Single ladder

Single ladders, also known as “single-section” or “one-section” ladders, are a type of non-self-supporting portable ladder. They have two rails connected by rungs used for climbing. Since single ladders have no moving parts, they are well suited for situations where they need to be lowered into position such as in excavations and trench boxes. Single ladders can be used up to 8 meters.



7.5.1.2. Double ladder

Stable self-ladder, which when ready for use, is self-supporting, resting the two trunks on the ground, allowing the ascent, depending on the type, on one side or both.



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7.5.1.3. *Extension ladder*

Extension ladders offer the greatest length in a general-purpose ladder. The ladder consists of two or more sections that travel in guides or brackets, allowing adjustable lengths. Each section must overlap its adjacent section a minimum distance, based on the ladder's overall length. The maximum extended length is determined by the lengths of the individual sections, measured along the side rails, minus the required overlap.


7.5.1.4. *Sectional ladder*

Sectional ladders, sometimes called stack ladders, offer the reach of single ladders. They are capable of being stored and transported in small spaces such as vehicles and elevators, sectional ladders can be taken apart and transported as individual pieces (sections), then reassembled at the job site to reach the target work zone. Sectional ladders consist of a base section, middle sections, and a top section that mate together using special coupling hardware. Up to four sections can be mated together.

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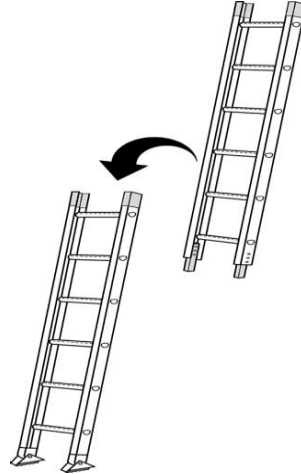
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7.5.1.5. Combination ladder

Combination ladders, based on how they are set up, are either self-supporting or non-self-supporting. As a multipurpose ladder, combination ladders can be used as a stepladder, single ladder, or extension ladder. Some combination ladders can be set up as a trestle ladder.



7.5.1.6. Triangular staircase with galvanized steel hook

Suitable for work on trellis poles of power lines, non-slip rungs. Hook galvanized tubular steel suspension with safety chain. It can be used by two operators simultaneously.

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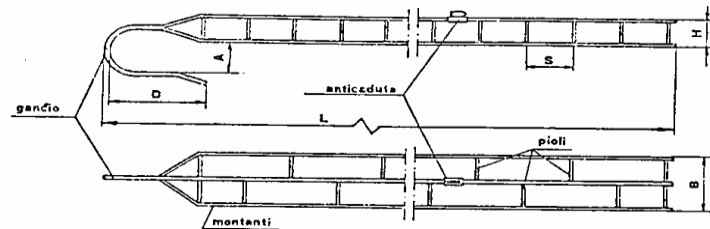
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7.5.1.7. Bunk staircase or platform ladders

Self-supporting staircase with solid support base, with a climbing trunk equipped with a handrail, and with a large parking platform equipped on three sides with a normal parapet, are useful when repetitive, hands-free work needs to be accomplished on a ladder at a predetermined working height.



7.5.1.8. Ladder with pluggable trunks

It is composed of a modular structure that allows the composition of the staircase according to specific needs. In fact, it is made with plug-in elements to reach the desired height.

It can be used to climb tubular poles with a height of up to 25 m from the ground.

The main elements are (see figure below):

- 1) Support element and distance from the tubular pole;
- 2) Fixing system designed to keep the ladder solid;

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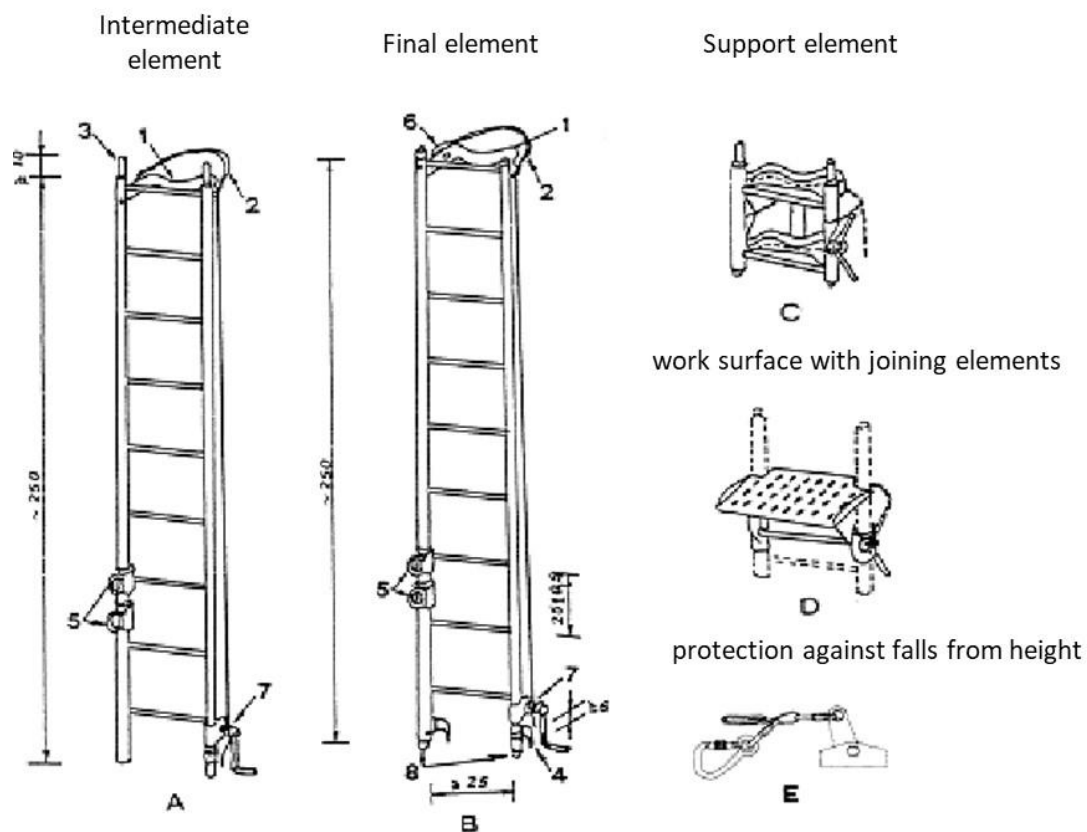
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Service Function: -

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- 3) Joining device;
- 4) Stacker for intermediate stairs;
- 5) Fall closure with power absorption type;
- 6) Hooks for fixing systems;
- 7) The tensioner;
- 8) PVC or rubber closing plugs



During the ascent phase, for the assembly of the modular elements, the operator must always remain bound, through the attachment of the harness, to the fall arrest device of the guided type by interposing the energy absorber. Once the operator has reached the appropriate position for the insertion of additional elements, he must secure the support with the belt positioning lanyard.

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The worker shall:

- make sure that during the development of the ladder, each element is at a safe distance from bare overhead lines that are not visibly grounded and short-circuited;
- place the self-supporting base element against the support slightly raised from the ground and secure it by means of the anchor chain. If the basic element is of the long type, the assembly will be like the intermediate section, obviously resting it on the ground;
- place the top of the first intermediate element close to the support, wrap the supplied rope around the support and fix it to the appropriate ring without putting it in traction;
- lift the above element by sliding it along the support, engage it on the base element and tie it by pulling the rope by means of the crank;
- climb always with your face facing the ladder, clinging alternately to the rungs and not grasping the uprights.
- remain always bound, during the ascent for the assembly of the following modular elements, through the attachment of the harness, to the fall arrest device of the guided type by interposing the energy absorber. Once the operator has reached the appropriate position for the insertion of additional elements, he must secure the support with the belt positioning lanyard;
- lift the second intermediate element by means of a service rope and, proceeding as for the first element, engage it on the first element and secure it to the support, release the positioning belt lanyard from the support and proceed with the ascent and assembly of additional elements;
- attach himself to the support with the positioning belt after reaching the mounting position of the head element;
- proceed to the assembly of the head element;
- disconnect the fall arrest device of the type guided by the intermediate trunk and connect it to one of the fall arrest devices located on the head element guide before climbing on the head element, and before releasing from the support;
- untie the positioning belt lanyard and start the ascent;
- use the lanyard of the positioning belt to secure the support and, if required, further fasten the head element with the appropriate chain or webbing, once the ascent has been completed.

Once the work has been completed, follow the following rules:

- make sure that the safety harness is attached to the fall arrest device of the head element, disconnect the positioning belt lanyard from the support and start the descent;
- if it is planned to release the chain or the webbing for fixing to the support of the head element up to a height suitable for transfer, continue the descent up to a height suitable for transfer on the fall arrest device of the last intermediate section, which must be carried out after having secured to the support;

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- unhook the lanyard of the positioning belt and continue the descent, once you have reached a position useful for disassembly of the head element, bind to the support through the lanyard of the positioning belt, loosen the lanyard of the head element, disengage the element from the element below and slide it down along the support until you have in front of the top of the element, release the restraint rope and lower the trunk to the ground using the service rope;
- these operations must be repeated for all intermediate logs to be removed;
- before laying the foot on the ground, the operator must ensure that the surface is clear;
- once on the ground, the operator releases the basic element from the support.

7.5.2. Use

- ladders and appropriate accessories (ladder levelers, jacks or hooks) are not to be used for any other purpose than those for which they have been built;
- the state of the ladder must be checked before each use. Be sure that all locks on an extension ladder are properly engaged;
- ladders must be free of any slippery material on rungs, steps or feet;
- before getting on the ladder, it is necessary to check that also the soles of footwear are clean and, in particular, free of grease, oil or any other slippery substance;
- the ladder must stick out at least 1 m above the upper point of support when accessing high places;
- if the operator's position can cause damage in the event of fall, use a safety harness anchored to a solid, resistant point or a previously installed life-line;
- a ladder cannot be used simultaneously by more than one person;
- when using step ladders, you should not pass from one side to the other over the top nor work "on horseback", i.e. with one foot on each side of the ladder;
- climbing up and down a ladder must always be done facing it, by means of both hands free and using them to climb up or down the rungs;
- always maintain a three-point (two hands and a foot, or two feet and a hand) contact on the ladder when climbing. Keep your body near the middle of the step and always face the ladder while climbing (see figure below);

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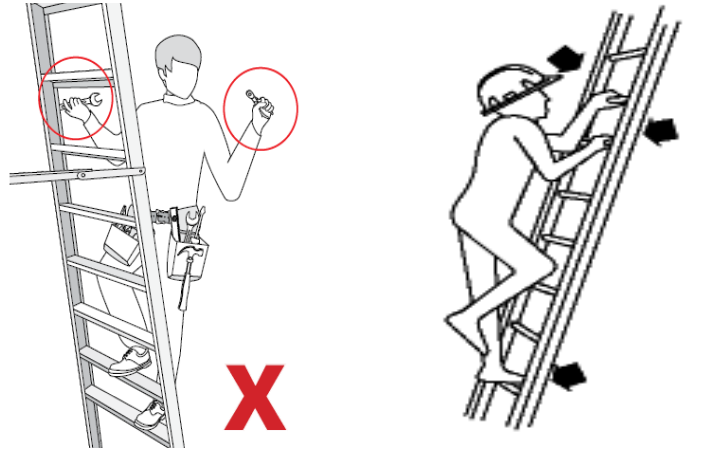
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- any object to transport must be hung from the body or the waist;
- in case tools are necessary, it is preferable to hoist them with a dedicated rope;
- do not stand on the three top rungs of a straight, single or extension ladder. Do not use the top step/rung of a ladder as a step/rung, unless it was designed for that purpose;
- double ladders must not be used as simple ladders. They are not to be used horizontally as bridges, gangways or platforms, or used as supports for scaffolding;
- a ladder must never be moved with a worker on it;
- do not use a self-supporting ladder (e.g., step ladder) as a single ladder or in a partially closed position;
- do not exceed the maximum load rating of a ladder. Be aware of the ladder's load rating and of the weight it is supporting, including the weight of any tools or equipment;
- after using a ladder, clean it of any substance that might have fallen on it. Then, check the ladder; if you find any kind of defect that might affect its safety, put on sign on its prohibiting its use and send it to be replaced.

To access a ladder, a worker must wear, in addition to equipment required by the specific work, safety helmet, safety shoes, safety gloves to protect against mechanical risks.

7.5.3. Set-up Area

- do not position it in a place of transit in order to avoid the risk of pedestrians or vehicles colliding with it. In all cases, mark it with cones, protect it from knocks and impede people from passing below it; or place a person there to warn of the circumstance, when necessary;
- clear away any objects in the vicinity of the place where the ladder is to rest;

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- place the ladder in such a way that the point of operation can be easily accessed without having to stretch or hang out. Do not hesitate to change the placement of the ladder to access another point of operating;
- look for overhead power lines before handling a ladder;
- the set-up area requires an evaluation of the physical environment below, around, and above. To prevent dangerous overreaching when working from a ladder, locate set-up areas immediately below or slightly to the side of the target work zone;
- the conditions of the set-up area may limit which ladder style you can select, if any at all;
- when working on a ladder make sure that no one stations below unless strictly necessary.

7.5.3.1. Support points

Before ladder is erected, you must ensure a sound foundation is available to support the ladder and the ladder's surroundings will be free from hazards.

When selecting an appropriate surface to place a ladder, be aware of slopes, surface level changes, soft ground, and conditions that may lead to an unstable ladder.

Compare the ladder's footprint and design style to the proposed set-up area.

Determine if the ladder's feet will rest upon a firm foundational surface.

This foundational surface is known as the lower-supporting surface and applies to both supporting and non-self-supporting ladders. After a ladder has been erected, make sure it doesn't rock or wobble, or is out of alignment (plumb).

When a ladder's feet are not placed on level ground, trouble for the user may not be far away. Never use books, blocks, or loose materials to compensate for uneven lower-support surfaces.

Self-supporting ladders have a tendency to rock or wobble when one of the four feet is not on the same level.

Non-self-supporting ladders will not be plumb if both feet are not on the same level. Hint: Place a bubble level on a rung or step for a quick check.

After you determine that the lower-supporting surface is sufficiently level, determine if it is firm enough to support the working load.

In case of non-self-supporting ladders, also the element that will be the upper support (pole, tree, wall etc.) shall be evaluated. In particular it must be verified either that the supporting point is geometrically compatible with the ladder and the choose set-up position either that it is firm enough to support the load that will be transferred to the support during the activity.

7.5.3.2. Safety shoe / Foot of the ladder

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- make sure that the surface where the ladder is placed is appropriate, both on top and at the foot;
- before using a ladder, make sure that it is stable. The bottom must have a solid base;
- the surface on which it rests must be flat, horizontal, resistant and non-slip. In case of absence of any of these conditions, adjustable safety shoe/foot have to be used to guarantee that the rungs are in the horizontal position;
- a ladder shall not be placed on unstable or mobile elements (crates, drums, etc.);
- do not place a ladder on boxes, barrels or other unstable bases to obtain additional height;
- the safety shoe/foot on the ladder must be anti-slip and be in good condition.

7.5.3.3. Inclination of the ladder

- the single ladder inclination must be such that the distance from the foot of the ladder to the vertical line passing through its vertex is between one quarter and one third of its length, which corresponds to an inclination of between 75.5° and 70.5° (floor-ladder);
- the maximum angle at which a step ladder can be open is 30°, with the cord that joins the two planes extended or with the locking mechanism that limits its opening blocked.

7.5.3.4. Securing

- It is advisable to immobilize the top of the ladder by means of a rope or cord;
- if the ladder can't be secured, it is necessary that a worker hold the ladder at its base;
- the tensor on Double ladder has always to be in a perfect state of repair and completely extended when working;

It is recommended to install fall protection system in order to protect the worker against the falling risk while ascending, descending and rest on the ladder.

7.5.4. Inspect ladders

Ladders shall be always inspected before their use, the following points are to be checked for when inspecting ladders:

- loose, poorly assembled, broken or cracked rungs, or rungs that have been unduly substituted by bars or fastened with wire or rope;
- defects in auxiliary elements (e.g., cords) needed to extend some kinds of ladders.

Transport ladders by yourself only if they have a limited weight or space. For limits refer to local regulations.

When faced with any of the aforementioned defects, the ladder should be removed from use.

7.5.5. Handling ladders

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- carry ladders to the work place by hand;
- put them down, do not throw them down;
- do not use them to transport materials;
- one single person must not transport the ladder horizontally, it should be carried with the front end downward;
- transport step ladders folded;
- extension ladders are to be transported with their locking devices activated;
- do not drag the cords on ladders along the floor.

7.5.6. Conservation and storing

- store in a well-ventilated area protected from physical damage;
- keep all ladders away from corrosive materials;
- keep all ladders away from heat sources such as stoves, steam pipes, welding areas, and radiators;
- store wood and fiberglass ladders away from excessive moisture, humidity, and sunlight;
- store non-self-supporting ladders in flat racks or on a sufficient number of wall brackets that will prevent them from sagging;
- store self-supporting ladders in a closed position, orientated vertically to reduce the risk of sagging or twisting;
- ladders stored in a vertical orientation should be secured to prevent tipping over. Use suitable means such as rope, chain, ladder racks, or hanging brackets;
- do not place materials on ladders while they are stored.

7.6. Poles/Pylons

This section describes the inspections to be carried out on wooden, concrete and metal poles/pylons. In case of poles/pylons with different materials, an inspection plan shall also be defined before starting the activity in order to verify their stability.

7.6.1. Stability

Before starting any activity on lines/poles/pylons, their integrity, mechanical requirement and stability must be verified on site.

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When workers are to perform work on a pole, it is important to determine the condition of the pole before a worker climbs it. The weight of the worker, the weight of equipment to be installed, and other working stresses (such as the removal or tensioning of conductors) can lead to the failure of a defective pole or a pole that is not designed to handle the additional stresses. For these reasons, before climbing a pole, the worker shall inspect the pole condition in order to ascertain that it is capable of sustaining the stresses of the work.

If the pole is found unsafe to climb or to work from, it must be secured so that it does not fail while a worker is on it. The employer can secure the pole by a bracing system.

The inspection results, as well as the stabilization measure adopted, shall be recorded.

7.6.2. Inspecting Wood Poles

A qualified employee should inspect wood poles for the following conditions:

- general condition: Buckling at the ground line or an unusual angle with respect to the ground may indicate that the pole has rotted or is broken;
- cracks: Horizontal cracks perpendicular to the grain of the wood may weaken the pole. Vertical cracks, although not normally considered to be a sign of a defective pole, can pose a hazard to the climber, and the employee should keep his or her gafts away from them while climbing;
- holes: Hollow spots and woodpecker holes can reduce the strength of a wood pole;
- shell rot and decay: Rotting and decay are cutout hazards and possible indications of the age and internal condition of the pole;
- knots: One large knot or several smaller ones at the same height on the pole may be evidence of a weak point on the pole;
- depth of setting: Evidence of the existence of a former ground line substantially above the existing ground level may be an indication that the pole is no longer buried to a sufficient depth;
- soil conditions: Soft, wet, or loose soil around the base of the pole may indicate that the pole will not support any change in stress;
- burn marks: Burning from transformer failures or conductor faults could damage the pole so that it cannot withstand changes in mechanical stress.

7.6.3. Inspecting Concrete Poles

A qualified employee should inspect concrete poles for the following conditions:

- check support state. Check that there are no cracks;
- check that there are no cracks in the support (flaking, crumbling) or no iron rods protruding;
- check pole verticality and stability, exercising an appropriate pressure on the sides in order to verify that the support can support the weight of the worker;

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- if it exists, verify pole insertion depth, by measuring the insertion plate identification;
- when it is verified that a support is in a bad state, it will not be promoted to the next level and the incident shall be reported to the person responsible for the installation;
- whenever work is to be carried out that modifies its state of equilibrium (i.e., when the imbalance occurs due to tensioning, cutting, or untying of conductors, to removing or installing any conductor or connection , etc.) support stability must be maintained;
- assess which can be the best bracing system (simple or combined and/or the use of cable-stayed with winds that compensate unbalanced efforts of torsion that may result in the support) in order to prevent possible support breakage.

7.6.4. Inspecting Metal Pole/Pylons

- check support state paying special attention to their status in the case of work with welded profile supports;
- when it is verified that a support is in a bad state, it will not be promoted to the next level and the incident shall be reported to the person responsible for the installation;
- whenever work is to be carried out that modifies its state of equilibrium (it is i.e., when the imbalance occurs because it is to be tensioned, cut, or to untie conductors, to remove or install any conductor, connection or (e.g., bypassing the network, replacing a strut, etc.) support stability must be maintained.
- so, assess which can be the best bracing system (simple or combined and/or the use of cable-stayed with winds that compensate unbalanced efforts of torsion that may result in the support) in order to prevent possible support breakage;
- check that angulars are joined, that the thymes that join them are not broken or loose and the strength of the angular chosen;
- check that all the elements are present, joined and that all the bolts are present and efficient;
- check that there are no structure ore elements deformations.

7.7. Bracing

If a worker needs to climb a pole, the correct installation of a bracing system may have a crucial importance in guaranteeing a safe execution of the work.

If the pole is too bad and it is estimated that even the bracing is not sufficient, then it is forbidden to climb onto the pole.

7.7.1. Characteristics of the bracing

With reference to following figure, a bracing system has the following basic components:

- A. The fixing system to the support;

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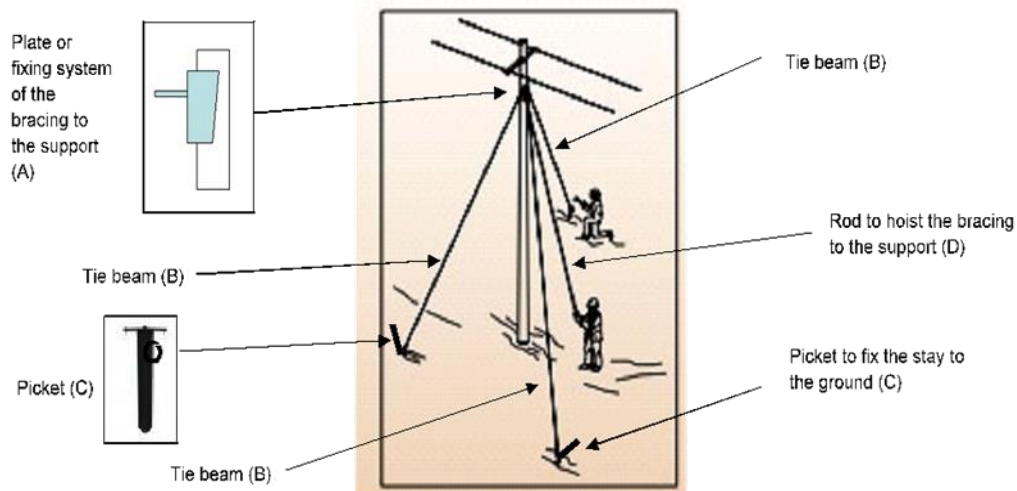
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- B. Three tie beams, each of them has:
- to an end, a system to link the stray to the fixing system (A);
 - to the other end, a fixing system (e.g., a ratchet) to the picket (C) to be inserted in the ground;
 - a tensioning system;
- C. pickets to fix the bracing to the ground;
- D. a hoisting rod. This rod allows to slide the fixing system into the support on the pole, in order to hoist it until the fixing position.



7.7.1.1. Preventive measures

- Evaluate and prevent, if any, the electrical risks of the installation of the bracing;
- Evaluate the actual use possibility of the bracing;
- Delimitate the work area, unless it is deemed not necessary;
- Possibly join the lifting rod along a tie beam, to not leave it on the ground;
- In every case, comply with the constructor's instructions.

7.7.1.2. Bracing Installation

The fixing system of the bracing has to be installed on the pole to a maximum height of 9 m from the ground. The three tie beams have to be put at 120 degrees one from each other. The pickets have to be inserted in the ground at about 8 m from the pole to be climbed.

The following procedure has to be followed:

- free the steel rope from the collar and link the three bracing ropes to the device;

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- lay the collar to the pole to be braced, at man height, orienting the rings in the pickets' direction;
 - wrap the steel rope around the support, pass it in the guides and on the pulley and, finally, in the drag slider clamp;
 - pull the rope, leaving about 2 cm from the support;
 - using the rod, hoist the device up to the desired height – in any case within 9 m from the ground;
 - by rotating the rod, close the steel rope until it is blocked to the support;
 - strongly fix the tie beams to the pickets' rings, paying attention to not create unbalanced efforts on the support.

Once the work is carried out, to recover the bracing it's necessary to invert this procedure: recover the pickets, free and wrap the ropes, clean all the equipment and insert it into the boxes.

8 RELATED ORGANIZATIONAL DOCUMENTS TO BE IMPLEMENTED AT COUNTRY LEVEL

According to the provisions of this Policy and within the corresponding geographical perimeter, each I&N Country shall issue, under the supervision of Global I&N Health, Safety and Environment Unit, organizational documents and also possible additional safety measures in accordance with the local mandatory requirements.

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ANNEX
Annex 1 – Pre job check

PRE JOB CHECK					
Enel Team					
Contractor					
Contract Number					
Foreman					
Activity					
Area:					
Zone:					
Data:					
Check carried out by:					
PRELIMINARY CHECK					
	Risk of falling for personnel or objects has been analyzed	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Activity has been authorized	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	The interference management has been coordinated and it is documented	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Possible interferences with third parties were assessed and the related risk management measures were implemented	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	The working area has been defined	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Number of people who carry out the activity has been defined and they are all authorized	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	The foreman has been identified	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Activity risks have been described to the workers	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Working area is in the expected condition	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	The weather conditions are those expected	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Procedures/working methods are available	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
GENERAL CONSIDERATION					
	All personal and collective protective devices are available and controlled	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	The area in which there is falling object risk is delimited and well defined	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Tools/machinery have been checked, they are in good conditions	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
ACTIVITY ON MORE THAN ONE LEVEL					
	The use of service ropes has been envisaged for multi-level activity	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	For work on several levels, bags, sacks or instrument belts have been provided	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
MANUAL HANDLING OF LOADS					
	The manoeuvre of handling loads with machines has been planned correctly	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	The slings and latches of the hooks are in good condition and are suitable for the load	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Appropriate ropes, staples or elements are used to guide suspended loads	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	The load handling machines are suitable and placed in solid areas with the use of stabilizers	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
	Visual/acoustic systems are used to signal movement according to activity planning	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA	
OTHER FALL RISK SITUATIONS					
		<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NP	