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TECHNICAL SERVICES & OVERLAY

# Health & Safety Guide

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## Introduction

This guide addresses UEFA suppliers and companies, below contractor (incl. subcontractor) and their employees providing, installing and operating event technology structures, tents, scaffolds or other temporary installations to UEFA. It determines protective objectives in order to avoid hazards for participants and guests.

This Health & Safety Guide (H&SG) is a supplement to national regulations of the host country and general obligations and liabilities of the involved companies and their employees. It does not replace any national regulations, general obligations and liabilities. It describes general and accepted industry safety standards which are expected by all stakeholders providing any services for UEFA.

The H&SG contains and combines regulations from the following sources:

- European Industrial Safety Legislation
- European Industrial Safety Guidelines
- Domestic Law at sites of UEFA
- Domestic Law of the contractors' countries
- Rules and regulations of the insurance provider
- European Standards
- Recommendations of the World Health Organization (WHO)
- Industry Standards
- Accredited rules of technology

The practical implementation of European regulations for occupational health and safety will be described as "best practice" and in an exemplary manner.

Alternative individual solutions (to those provided in the (H&SG) are not necessarily to be excluded their safety needs to be demonstrated in each individual case.

The H&SG shows how to run a production in an unimpeded manner. It supports companies motivating their employees to work safely. Essential requirements of health and safety at work have been summarized briefly and in accordance with best-practices in order to demonstrate how to work safely and in conformity with the law.

## Part I: Organisational structure

The attached Appendix 1 "**Documents of the Safety and Health Coordination Plan (SHCP)**" is part of the H&SG. Contractor requested by UEFA / will complete the SHCP:

- Contractors starting with on-site installation before DATE (tbd) are requested to submit the SHCP minimum 15 days (tdb) before the date they appear the first time on-site for set-up;
- Contractors starting with on-site installation from DATE (tbd) up or later are requested to submit the latest on DATE (tbd).

The completed SHCP documentation (as pdf binder) must be uploaded to the announced platform (tbd) by each project into the folder 'SHCP'.

### 1. Organisation

All contractors working at official sites of UEFA comply with local job protection laws and comply with the principles of European Industrial Safety Guidelines.

These principles are based on the definition of integrated health as defined by the World Health Organization (WHO).

All contractors will nominate their subcontractors and freelancers to UEFA. The contractors ensure that their subcontractors and freelancers observe the rules of the H&SG.

During the planning process, the contractors will create risk assessments for each craft, trade or process. The conclusions of these risk assessments will influence the choice of equipment and personnel.

Before and during production strict prohibition of intoxicants for all employees should be enforced. Employees violating this prohibition are to be removed from the site.

#### 1.1 Responsibility

A main contact person, the **Health & Safety Coordinator** will be allocated to each site in order to coordinate the work, to avoid potential hazards incurred by the cooperation of different companies and to ensure a smooth and effective production.

Accepting the assignment each participating company also accepts the responsibilities related to health and safety at work:

## Part 1: Organisational structure

- Responsibility for establishing organizational structures, the creation and implementation of provisions and requirements, the information and instruction of employees;
- Responsibility for selecting employees according to their competence and the building of teams;
- Responsibility for supervising, supporting and monitoring of production processes;
- Responsibility for competent application of expert knowledge and professional experience, for the enforcement of safe and responsible working practices, for the recognition of potential hazards and for the implementation of correct procedures in the workplace.

### 1.2 Instruction

Each contractor arriving on-site will receive an H&S briefing by UEFA / Health & Safety Coordinator in English language (approx. 30 min) before starting their work. Briefings will be held daily (8:30-9:00). It is under the contractor's responsibility to book a briefing slot via the **announced medium (tbd)**.

The employer ensures that the employees will be instructed according to the H&S briefing and operating instruction about occurring hazards and adequate precautionary measures. Content and time of the instruction has to be documented and confirmed by the signatures of the instructed employees.

All employees will be instructed how to use working appliances and the inherent risks which may arise. Where necessary, this will be aided by the implementation of operating instructions.

Operating instructions are to be available at the job location at all times. All operating instructions are to be available in documented form.

### 1.3 Administration, supervision

All branches of production will be managed by capable professionals with appropriate skills in leadership. The areas of responsibility will be distinctly defined and delineated. So too will the power to give commands and the authority to make decisions be distinctly determined and communicated.

Before work begins, all employees are to be briefed on the specificities of the site.

### 1.4 Qualification of persons in charge

Depending on the scope of technology used for managing the production process, a specially qualified person, a stage professional, will be appointed. This is necessary when using machinery, mobile stages or rigging equipment. Due to his or her knowledge and experience, a stage professional is able to evaluate the assigned work and recognize potential hazards. These are e.g. professional personnel, master carpenter or engineers who have achieved relevant qualifications.

## Part 1: Organisational structure

Those professionals charged with the planning, construction and operation of energy supplies and electrical systems will be in possession of a recognized qualification in the relevant electro-technical field.

Contractors will select professional personnel, appoint them to positions requiring qualifications and verify their qualifications if applicable.

### 1.5 Risk assessment and SHCP (Safety & Health Coordination Plan)

Contractors requested by UEFA create written risk assessments via the SHCP for each field of activity. Conduct and misconduct of participants, spectators and other members of the public is to be considered.

Contractors requested by UEFA may create the SHCP in the form given with the Appendix 1 which includes the following:

- Detailed description of potential hazards;
- Appointment of personnel involved;
- Evaluation of consequences incurred by an accident and the severity of damage;
- Risk assessment including level of risk;
- Measures taken to reduce risk, their implementation and supervision.
- Description of the work and procedures of the company exported to other companies
- Description of the specific risks of the business and procedures
- Constraints of the site and its environment

## Part 1: Organisational structure

Example:

<b>Hazard</b>	<b>People involved</b>	<b>Consequences</b>	<b>Level of risk</b>	<b>Control Measures</b>
Electric shock from equipment failure	Individual, Crew	Major-Fatality	Medium	Safety Briefing visual inspection of equipment before use all equipment to be PAT tested location of cut switches emergency procedures First Aid available

General pattern to ascertain measures of risk reduction (TOP):

### **Technical solution**

Technical solutions which insure that hazards do not even occur are always to be favored, e.g. securing a high workplace with a railing will technically prevent the risk of falling from heights.

### **Organizational solutions**

Organizational solutions will come into effect when technical solution are not feasible, e.g. if for specific reasons (like a camera angle) it is not possible to construct a safety railing, safety may be achieved through organizational solutions, such as prohibition, labeling and instruction.

### **Personal protective equipment**

Personal protective equipment is to be used when the workplace cannot be secured by technical or organizational measures, e.g. safety harness to prevent falling from heights.

## Part 1: Organisational structure

### 1.6 Provision of personal protective equipment

For work involving risk of injury or health damage, the contractor will provide appropriate personal protective equipment in sufficient quantity. The use of personal protective equipment is dependent on the specific hazard, i.e.:

- A protective helmet will be used in areas where head injuries may occur due to falling objects or collision with obstacles e.g. during construction, dismantling or during simultaneous work on multiple levels;
- Safety footwear will be worn in areas where foot injuries may occur, e.g. construction, dismantling or transport;
- Protective gloves will be worn during all activity where there is a risk of hand injury;
- Eye protection is to be worn whenever there is a risk of eye damage, e.g. when there are flying splinters, wood-chips, dust or corrosive materials, gasses, vapors, fluids or radiation;
- Breathing apparatus will be worn while handling of hazardous or toxic substances, e.g. impregnator, dissolver, cryogen, paints, adhesive or powder;
- Ear protection to be used during all activities which may involve the risk of hearing impairment caused by noise, e.g. the assembling of truss systems with conical-connectors.

The contractor provides appropriate personal protective equipment and through monitoring ensures their use.

During the construction phase, the contractor provides at least safety footwear and protective helmets to be used depending on existing hazards.

PPE will be provided for work at heights. Safety harnesses will always include a chest harness.

Trouser belts are not in any way suitable. All those working at heights must be secured. Contractors assigned for rigging will provide a high-altitude rescue concept describing how they will ensure the rescue of incapacitated or even unconscious workers in less than 20 minutes.



PPE Height-Safety Harness

Image 1, hebezone

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## Part II: Technical expert information

### 2. Protection from falling objects

Non-stationary objects such as spotlights, speakers, monitors, set-decorations etc. which are installed by means of G-Clamps, TV-Spigots and other means and which may be disengaged without the use of additional tools must be additionally secured against falling. Add-on parts like Barndoors-Screens, color changers etc. which are not firmly connected to these devices will be additionally secured against falling.

Steel cables are usually suitable for security. These safety cables will have a length of 1m and will be installed in such a way that the drop-distance is limited to max. 20cm.

Safety cables should adhere to the EN 13414 standard. The calculated breaking strength of lines is 1770N/mm<sup>2</sup>.

Dimensioning of safety bonds:

Load to be secured	Cable diameter
Up to 8 kg	3mm
Up to 15 kg	4mm
Up to 25 kg	5mm
Up to 35 kg	6mm
Up to 60 kg	8mm
Up to 100 kg	10mm

The safety cable is to be fixed to the manufacturer's designated point of attachment.

#### 2.1 Lifting accessories

Lifting accessories are designed and sufficiently dimensioned to cope with the special hazards and loads which occur during operation.

A special hazard exists if, for example, operational reasons require persons to be situated below suspended and moving loads.

Lifting accessories include the parts, e.g. screw links, shackles, ropes, slings made of synthetic fibres, which connect the load-bearing line and the load.

## Part 2: Technical expert information

Lifting accessories, such as ropes and webbings, carry no higher loads than a tenth of the breaking strength, calculated including the dynamic processes during operation. The load on other lifting accessories must not exceed half of the load capacity specified by the manufacturer (WLL or SWL).

When using inflammable lifting accessories, e.g. slings made of natural or synthetic fibres, a steel cable must be applied to additionally secure the load. This steel cable will be fixed so that the load cannot drop down, e.g. this can be achieved by using an additional chain with a chain shortener.

### 2.2 Wire-Cables

Steel cables are manufactured according to EN 13414. The calculated breaking strength of lines is 1770N/mm<sup>2</sup>.



6x19 Steel cable

Image 2, photo Ingo Witthuhn

Please note the max load-bearing capacity as follows:

Rope diameter	Max. load-bearing capacity used as attachment line	Max. load-bearing capacity used as security line*
3	35 kg	8 kg
4	65 kg	15 kg
5	100 kg	25 kg
6	160 kg	35 kg
8	285 kg	60 kg
10	445 kg	calculation required
12	640 kg	calculation required
14	870 kg	calculation required

\*For security lines of non-stationary equipment only, e.g. spotlights, speakers. Security lines have a length of one meter and will be installed in a way that the load cannot drop more than 20cm.

Synthetic coated steel cables may not be used.

## Part 2: Technical expert information

### 2.3 Cable ends

Connecting cables are made as follows:

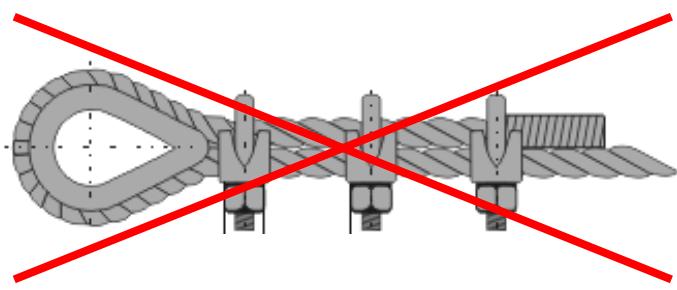
A thimble is inlaid in the eye of the cable loop. The cable end is finished with a cable clip. The unmounted end overhangs about a half diameter of the cable. Cable clips for cables wider than 8mm in diameter are marked with the load bearing capacity.



Fixed cable-ends

Image 3, photo Ingo Witthuhn

Cable ends with cable clamps are not safe and therefore unsuitable for use.



Cable end with clamps

Image 4, hebezone

Cable clamp

Image 5, hebezone

Detachable cable ends are finished with a cable lock. Both asymmetrical and symmetrical models are used. A cable clip at the loose end of the cable prevents the load from slipping through.

## Part 2: Technical expert information



Asymmetric rope lock  
Image 6, photo Ingo Witthuhn



Symmetric rope lock  
Image 7, photo Ingo Witthuhn

When using certificated wire cable holders for stage operations, it must be ensured  
That:

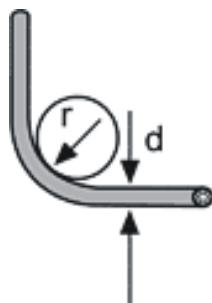
- they will not be stressed dynamically
- they will not be stressed by sudden loads
- they will be used only in pairs
- they will not come in contact with water
- the load cannot be twisted.



Cable holder  
Image 8, photo Ingo Witthuhn

## Part 2: Technical expert information

It is prohibited to pull steel cables over sharp edges. When the cable is fully loaded, the radius of the edge must exceed the diameter of the cable by at least a factor of three.

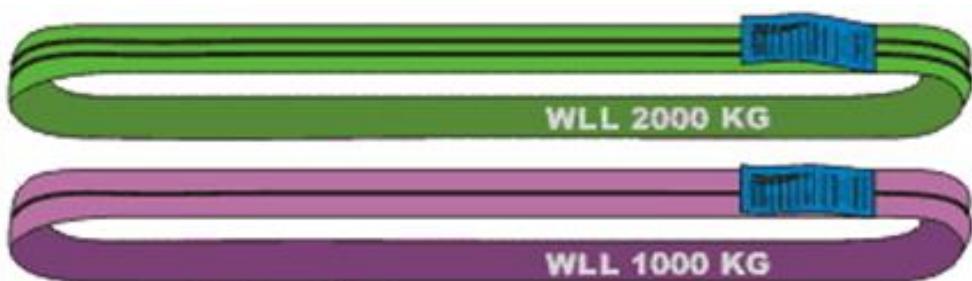


Sharp Edge  
Image 9, hebezone

### 2.3 Polyester slings, Steelflex

Lifting belts and round slings made of synthetic fibres are often used when installing truss systems. They are labeled with a blue or green label indicating the max permitted industrial payload. If the label is missing the belts and slings are not suitable for use.

The belts and slings will be stressed with max 50 % of the load capacity specified by the manufacturer (WLL). As belts and slings are not fireproof, they are always additionally secured by a steel rope or chain.



Round Slings  
Image 10, hebezone

## Part 2: Technical expert information

The following table shows different load variants with permissible load capacities:

Jacket- color	WLL										
		Straight	Laced	Parallel	$\beta > 0-45^\circ$	$\beta > 45-60^\circ$	$\beta > 0-45^\circ$	$\beta > 45-60^\circ$	$\beta > 0-45^\circ$	$\beta > 45-60^\circ$	
Violet	1000 kg	500 kg	400 kg	1000 kg	700 kg	500 kg	700 kg	500 kg	560 kg	400 kg	
Green	2000 kg	1000 kg	800 kg	2000 kg	1400 kg	1000 kg	1400 kg	1000 kg	1120 kg	8000 kg	
Yellow	3000 kg	1500 kg	1200 kg	3000 kg	2100 kg	1500 kg	2100 kg	1500 kg	1680 kg	1200 kg	
Grey	4000 kg	2000 kg	1600 kg	4000 kg	2800 kg	2000 kg	2800 kg	2000 kg	2240 kg	1600 kg	
Red	5000 kg	2500 kg	2000 kg	5000 kg	3500 kg	2500 kg	3500 kg	2500 kg	2800 kg	2000 kg	

Lashing straps (tension belts) are not considered attachment gear and are therefore not suitable for use.

It is prohibited to pull lifting belts and round slings over sharp edges and to knot or to string them into each another.

Round slings with inlaid wire cable slings (Steelflex) may be used without additional steel cables or chains for additional safety.

### 2.5 Shackles and quick connectors

Only shackles and quick connectors marked with a maximum payload by the manufacturer are suitable. They are to be loaded with no more than 50 % of the load capacity specified by the manufacturer (WLL)

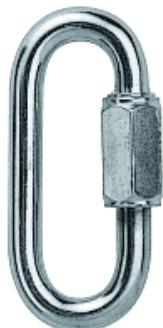


Shackle, stationary loads  
Image 11, photo Ingo Witthuhn



Shackle, moving loads  
Image 12, photo Ingo Witthuhn

## Part 2: Technical expert information



Quick connector  
Image 13, photo Ingo Witthuhn



Kettbiner  
Image 14, photo Ingo Witthuhn

Carbines and also screw-carbines are not safe and therefore not suitable for use.



Screw-Carbine  
Image 15, photo Ingo Witthuhn



Carbine  
Image 16, photo Ingo Witthuhn

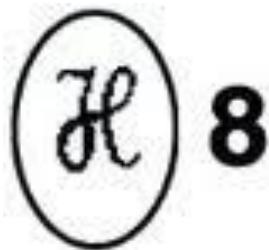
In case of risk that shackle bolts may become unlocked, e.g. due to vibration of attached speakers, they must be additionally secured.

### 2.6 Chains

Chains are to be of the short linked variety and manufactured according to EN 818-2, quality category 8. Chains must carry a manufacturer's mark indicating maximum payload and are to be loaded with max 50 % of the load capacity specified by the manufacturer (WLL).

Only chain-shorteners which have backup against inadvertent unhooking are suitable for use.

## Part 2: Technical expert information



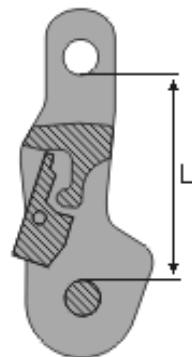
Chain stam  
Image 17, hebezone



Labelling badge  
Image 18, hebezone



Chain shortener  
Image 19, hebezone



### 2.7 Inspection and documentation

All lifting accessories are visually checked prior to use.

Lifting belts, round slings and chains are annually inspected by an instructed person. The results will be documented in writing.

## 3. Truss systems

Truss systems used in event technology are usually made of aluminum. They are welded constructions, alloyed of AlMgSi 0,5 F22 or AlMgSi 1 F28-32. In relation to its mass aluminum has a high traction. This allows light-weight constructions for high payload.

## Part 2: Technical expert information

But there are also material characteristics that have to be observed:

- Material cracking and groove sensitivity; aluminum truss systems with small cracks or grooves are to be taken out of service. Drilling holes or screws directly into the aluminum is prohibited.
- Bending sensitivity; re-straightening deformed or twisted aluminum trussing is prohibited.
- Thermal sensitivity; welding aluminum truss is prohibited. Subsequently added welding seams considerably debilitate (weaken) the payload.

Safety has to be proven prior to the use of truss systems. As per specification, the manufacturer confirms to be qualified for welding aluminum constructions according to Eurocode 9.

Painted trusses are not suitable as a visual surface check for fine cracks is not possible.

### 3.1 Selection and labelling

As truss systems carry high overhead payloads, the selection of each element is very important. The following criteria are to be determined:

- The static system, i.e. single-span beam or multi-span beam;
- The distance between the support points;
- Static and dynamic payload (dead load + travelling load) for mounting with lifting gear;
- Travelling load, i.e. wind or snow;
- Load balancing (of point-load or distributed load);
- Additional loads caused by technicians working on the truss;
- Additional loads caused by safety elements ("lifeline").

For all loads not specified in the documentation of the manufacturer a separate certificates of statics must be issued.

Truss systems have different pipe diameters. Standard is 48,3mm but there are also 50mm systems available. A combination of both systems is possible only by using special clamps. Standard clamps cannot be used on 50mm systems.

There are also different connectors available, e.g. yoke-connectors, screw-connections or conical-connectors. The connectors are not standardized and therefore not combinable.

### 3.2 Fitting of truss systems

Fitting of truss and truss systems will be carried out by qualified personnel according to the construction manual and information provided by the manufacturer.

Safety and load capacity must be observed at all times.

## Part 2: Technical expert information

If connecting two truss systems, the static frame must be maintained. Truss elements with vertical brace-endings may be mounted asymmetrically, but only in the correct position.

Tools for mounting truss systems are e.g. non-rebounding plastic- or copper hammers, torque spanners, box wrenches and open-end spanners.

Lifting accessories will be positioned as close as possible to truss joints in order to prevent unnecessary bending.

Truss systems are connected to a consolidated potential equalization. A green/yellow copper-cored cable (16mm profile) is used for this.

### 3.3 Inspection and documentation

All elements (truss elements, connectors etc.) are visually checked prior to use. Truss systems or elements with apparent defects, e.g. deforming or attrition at main belts and braces, cracks near to weld seams, elongated holes at joins or their attachments will no longer be used.

Truss systems and accessories will be annually inspected by a qualified person. The results will be documented in writing.

## 4. Lifting equipment / Chain hoists

Electric chain hoists and round steel chains are used as suspension elements in event engineering. The electric chain hoist is mainly used as a self-climbing hoist.

Chain hoists are subject to Machinery Directive (2006/42/EG). The directive determines safety requirements for conception, building and installation of load suspension devices. It additionally describes requirements for lifting and moving persons. The user manual provided by the manufacturer will adhere to the principles of EN 62079. Only load suspension devices according to the Machinery Directive are deemed suitable. When moving overhead loads, only chain hoists covered by the German accident prevention regulation DGUV V 17/18 (former BGV C1) are suitable. Please refer to the SQ P2 standard, also available in English.

### 4.1 Selection of suitable Chain hoists

A risk assessment during the planning phase is always the base for chain hoist selection. The following requirements are fundamental:

- Presence of persons under the load;
- Kind of loads;
- Operating mode;
- Timetable considerations.

## Part 2: Technical expert information

Types of use of electric chain hoists in the presence of persons under the load:

Design / Use	DGUV V 54	V 54 with secondary safety backup.	D8 Plus	DGUV V 17/18
<b>Holding of loads</b>	prohibited	permitted	permitted	permitted
<b>Set-up, dismantling or installation</b>	prohibited	prohibited	prohibited	permitted
<b>Scenic movement</b>	prohibited	prohibited	prohibited	permitted

Design varieties of suitable chain hosts (according to German standards):

Design / Labeling	DGUV V 54	D 8 Plus	DGUV V 17/18
Prevailing regulation, rule, standard	DGUV V54 Machinery Directive	Machinery Directive SQ P2	DGUV V 17/18 DIN 56 950
Person below hoovering loads	prohibited	permitted if load is not moving	permitted
Group of mechanism minimum	3M (ISO 4301-1) 400 h full load	3M (ISO 4301-1) 400 h full load	400 h full load
Working coefficient Load bearing equipment	at least 5	at least 10	at least 10
Brakes	1	2	2; independently operating
alternatively:	<i>Brakes with self-retaining transmission</i>		
operational limit switch	conventional	conventional	Yes
emergency limit switch	No	No	Yes
Overload monitoring	Over 1000 kg load: Alert and deactivate	Over 1000 kg load: Alert and deactivate	Always: Alert and deactivate

## Part 2: Technical expert information

	Otherwise slipping clutch	Slipping clutch only on statically designated systems; if applicable load measurement on statically undesignated systems	Downwards free; if applicable load measurement on statically undesignated systems
Slack rope switch; Underload monitoring	No	No	Yes; Upwards free
Deactivate on overspeed	No	No	At 1,2 times nominal speed
Safety-related function if computer controlled	None	None	EN 61 508: SIL 3 (Safety-Integrity-Level)

Statically undesignated systems need a load measurement. This is not necessary if there is no hazard of overload of single components.

Statically designated loads are e.g.:

- Loads on single chain hoists;
- Line loads on two chain hoists;
- Articulated linked truss on more than two chain hoists;
- Area loads on three chain hoists.

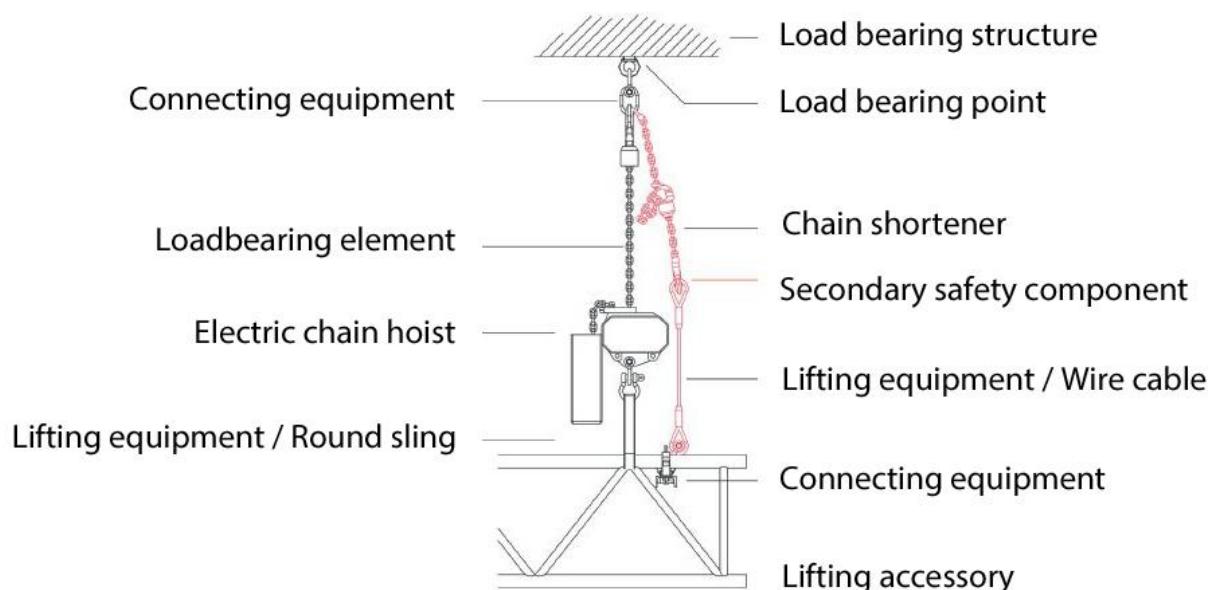
Statically undesignated loads are e.g.:

- Line loads on more than two chain hoists;
- Area loads on more than two chain hoists;
- Guided loads.

## Part 2: Technical expert information

### 4.2 Safety back-up

Using chain hoists that are not explicitly designed and approved for holding overhead loads, the load must be secured with a steel rope or a chain with additional chain shortener.



Chain hoist with secondary safety component

Image 20, photo BGI 810

### 4.3 Operating principles

Chain hoists will be used only as intended by the manufacturer and not overloaded.

The operator is at least aged 18 and familiar with the system. The operator has been instructed in its operation and the user manual is available.

All operations will be completed so that nobody is endangered. There is a line of sight and communication between the operating desk and the moving load. If multiple hoists will be combined it must be ensured that enough persons are available to monitor and stop the operation if necessary. During operations no-one should be under the moving load. The area under the load will be released for persons only after the secondary safety or back-up has been attached.

## Part 2: Technical expert information

Unintentional movement is to be avoided. A key-operated switch will be used to prevent the use of the operating desk by unauthorised persons.

Usually the plug of the electricity cable of the electric chain hoist has 4 poles, L1, L2, L3 and PE. This prevents accidental plugging into a CEE socket which may cause the unintentional movement of a single hoist.

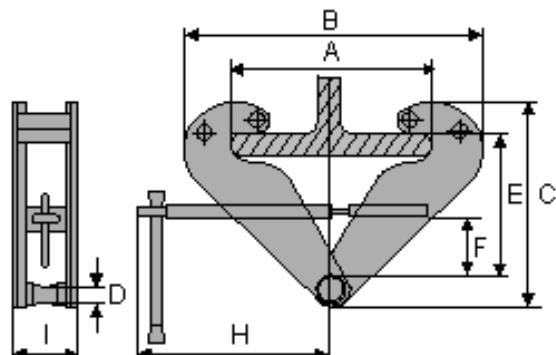
### 5. Suspension / rigging points on buildings

Suspension points on primary structures have to be sufficiently secured. The load capacity of suspension points within the building will be provided by the operator or owner of the building. The ceiling load capacity is usually not designed for twice nominal load. The load capacity indications generally refer to inactive loads effecting the load capacity perpendicularly downwards. Due to this, the suspension-points should be loaded with no more than 50 % of the load capacity if a dynamic load cannot be ruled out.

Lifting accessories (clamps or load-eyelets) are used to mount loads on buildings. Flameproof coatings on supporting structures must not be damaged when using attachment gear.



Clamp  
Image 21, hebezone



## Part 2: Technical expert information

### 6. Overhead camera systems

The use of UAV's (unmanned aerial vehicles) at the location is prohibited.

Only industrially tested and proven systems are suitable to be used with overhead cranes or cables. Test certificates must be available for inspection and the operation manual available at the location. The installation will be carried out in accordance with regulations and as specified by the manufacturer.

Programming the blocked area of flying camera systems is very important. The operating range of the cables is limited upwards by a predefined angle of 10° which must not be less. To ensure player's safety there is also a downwards limitation. Lateral areas are blocked by programming too. If the camera moves into these areas it will be completely deactivated according to the concept of an emergency limit switch. Area boundaries within the blocked areas can also be programmed as operating boundaries according to the concept of an operational limit switch. The programming will be tested during an on-site acceptance test and demonstrated if requested.

#### 6.1 Winches

The technical safety requirement of suitable winches is according to the requirement for hoists already described in chapter 3 (DGUV V 17/18). The steering complies to EN61 508, SIL3 (safety integrity level). Winches will be positioned in such a way that the cable can run freely in the upper deflection roller. Winches are secured against dislocation but due to the high dead load there is no need to anchor them.

#### 6.2 Installation of rigging points

The suspension of deflection rollers is another very important issue. They must be designed for twice the maximum capacity of the cable (as a general rule a workload of max 1 KN) and at an angle of 45 ° in an average case. Tensioning straps are not suitable for fixing deflection rollers. Please refer also to chapter 5 "Suspension / rigging points ".

#### 6.3 Operation

Overhead cameras systems will be used only as intended by the manufacturer and are not to be overloaded. The operator is at least aged 18 and familiar with the system, has been instructed in its operation and the manufacturer user manual is available.

A camera will not be moved prior to programming, testing and documenting the operating and blocked areas.

## Part 2: Technical expert information

All motion sequences will be performed in a way to avoid any hazards to persons. There is a line of sight between the operating desk and the camera.

Unintentional movements are to be excluded. A key-operated switch will be used to prevent the use of the operating desk by unauthorized persons.

### 7. Temporary or mobile constructions

Temporary or mobile constructions such as mobile roofed stages or tents are constructed in such a way as to prevent hazards and to resist severe weather conditions, i.e. storms.

Constructions is based on the following standards: EN 1991-1-4, EN 13782 and EN 13814

A reduction of the accepted wind load according to the above mentioned standards is suitable, if the tarpaulins can be unrigged at wind force 8 (Beaufort scale) respectively 20 m/s. Unrigging must be possible within 15 minutes and without any working at heights. Operating instructions describing all essential working steps must be available at the location. Once unrigged, the construction must be able to withstand the conditions.

In case of the availability of severe weather warnings, the unrigging will already have begun before wind force 8 has been reached.

For all temporary or mobile constructions at the UEFA event sites, documents containing at least the following information will be available:

- A structural engineering calculation (provided by an authorized organization);
- A detailed design description;
- Detailed information about guy, wind bracing and minimum ballast weights;
- Information about the maximum wind forces the construction has been designed to resist.

Current wind velocity will be monitored by wind gauges at the top of the construction.

Contractors put responsible and contactable persons in charge of the safety of the construction and the implementation of necessary measures in case of serve weather conditions.

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## Part 2: Technical expert information

### 8. Camera- and lighting scaffolds

Collapsible platforms, frames, and ramps are suitable for the construction of camera and lighting scaffolds up to a height of 3m. These platforms must be able to withstand at least 250 kg/m<sup>2</sup>. For higher structures, scaffolding systems must be used.

Working platforms will be situated on level, solid ground. Using folding stage elements to build working platforms they should be both steady and slip-resistant. This can be achieved e.g. by fastening the elements together. Working platforms will be secured in such a way that unauthorized persons cannot climb or move them. If necessary they will have to be secured by event stewards. Industrially tested scaffolding systems and platforms will be assembled, operated and later disassembled by trained stage personnel only.

Special scaffolds or platforms will be constructed according to relevant, verified and certificated standards. They must not be used prior to completion.

Mobile scaffolds will not be used until they are secured against unintentional movement. They may be moved only when unoccupied.

Working areas on scaffolds, towers, roofs or other elevated places higher than 1m should be backed with a safety railing of 1m height or with a knee and foot rail of 10cm height. If these railings interfere with cameras or spotlights on working platforms, they may be replaced by vertically adjustable railings or high-tension steel cables.

Persons working on elevated places without railings must be secured by a safety net or personal protective equipment (PPE)

#### 8.1 Ascents

Safe access to workplaces in high-altitude areas will be provided. Exits will be provided by means of fixed ladders from working platform towers above min 1m if no other device gives safe grip.

For working platforms and accessible cable bridges up to a falling height of 3m a back protection will be installed. Above 5m an offset interior ascent should be used.

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## Part 2: Technical expert information

### 9. Electrical cable

Cables will be installed in a way to prevent hazards. This may be achieved, for example, by the following measures:

- Vertically installed cables are to be fixed with mooring ropes;
- Cables have to be protected against sharp edges and creasing;
- Cables above thoroughfares will be at an adequate height (5m) and are secured by a guy wire;
- Cables will be installed in an adequate distance from other electrical power lines;
- Cables will be protected by stable cable bridges or other adequate coverings;
- Areas of where there is a danger of stumbling are to be clearly marked;
- Areas of significant stumbling danger will be marked by protection posts. Cable within audience or public areas will be installed at a height of at least 2,5m;
- Water spray protected plug connections will be installed outdoors only if they are enclosed or otherwise safe so that no water can reach the plug.

Cable will not be installed at safety-relevant and other important locations such as evacuation routes, doors, emergency exits, fire extinguisher, hydrants, fire alarms, switchboards and emergency switches, trigger of safety installations and controlling devices for air-conditioning and ventilation systems.

### 10. Electrical safety

Safety first is the general principle for all operations.

To ensure a suitable standard for all locations and applications UEFA takes the

- IEC (e.g. IEC 60364) regulations with latest release and
- State of the art as basis.

#### 10.1 Condition of equipment and regular maintenance

Every electrical equipment needs to be tested according the acknowledged rules of technology.

These tests and the regular maintenance should be documented.

##### **Best practice:**

- Establish a test and maintenance process according the IEC regulations and the individual hazard analysis with a full documentation;
- Label each proper tested component.

## Part 2: Technical expert information

### 10.2 Protection against indirect contact

The fundamental rule of protection against electric shock is provided by the document IEC 61140 which covers both electrical installations and electrical equipment.

Hazardous live-parts shall not be accessible and accessible conductive parts shall not be hazardous.

This requirement needs to apply under normal conditions and single fault condition.

Protection against indirect contact hazards can be achieved by automatic disconnection of the supply if the exposed-conductive-parts of equipment are properly earthed.

Two levels of protective measures exist:

- 1st level: The earthing of all exposed-conductive-parts of electrical equipment in the installation and the constitution of an equipotential bonding network;
- 2nd level: Automatic disconnection of the supply of the section of the installation concerned, in such a way that the touch-voltage / time safety requirements are respected for any level of touch voltage  $U_c$ .

### 10.3 Cables: types, conductor sizing and protection

Adequate flexible cable for the temporary installation must perform all requirements like heavy duty use, high isolation standard, high flexibility.

#### **Best practice:**

- Use of high flexible heavy duty rubber isolated cables like H07 RN-F or equivalent.

The cabling and its protection at each level must satisfy several conditions at the same time, in order to ensure a safe and reliable installation, e.g. it must:

- Carry the permanent full load current, and normal short-time overcurrent;
- Not cause voltage drops likely to result in an inferior performance of certain loads, for example: an excessively long acceleration period when starting a motor, etc.;
- Laying of cables according the rules for emergency exits and fire protection; proper mechanical protection passageways and crossings with cable ramps or other suitable measures.

## Part 2: Technical expert information

Moreover, the protective devices (circuit-breakers or fuses) must:

- Protect the cabling and busbars for all levels of overcurrent, up to and including short-circuit currents;
- Ensure protection of persons against indirect contact hazards, particularly in TN- and TT- earthed systems, where the length of circuits may limit the magnitude of short-circuit currents, thereby delaying automatic disconnection.

### 10.4 Equipotential connections

Earthing and equipotential networks are designed to fulfill a number of functions.

They can be independent or operate together to provide one or more of the following:

- Safety of persons with respect to electrical hazards;
- Protection of equipment with respect to electrical hazards;
- A reference value for reliable, high-quality signals;
- Satisfactory EMC performance.

Any temporary metal construction like cable bridges, scaffold structures, camera platforms, tent frame structures, show rig systems etc. must be equipped with supplementary equipotential connections on all exposed-conductive-parts and all extraneous-conductive-parts simultaneously accessible.

Bonding conductors may be metal strips, flat braids or round conductors, all connection must be executed under consideration that they are able to be disconnected using tools only – pluggable connections are not allowed.

If mobile constructions are erected outside the primary Lightning Protection Zone (IEC 62305-4 / LPZ 0A) of a building all bonding conductors must be capable of carrying partial lightning currents, waveform 10/350  $\mu$ s.

#### Best practice:

- Use of isolated flexible copper conductor 16 mm<sup>2</sup> cross section, color coding yellow/green for standard equipotential bonding; connection via bolts or suitable clamps.
- Connection points to existing system in consultation with site / house electrician and grid operator.
- In case of issues with interference to primary Lightning Protection Zone special arrangements with building electrical engineer and UEFA TECH Services are necessary.

## Part 2: Technical expert information

### 10.5 Electromagnetic Compatibility (EMC)

Any electrical installation must observe the principles of EMC.

The system earthing arrangement is generally designed and installed in view of obtaining a low impedance capable of diverting fault currents and HF currents away from electronic devices and systems.

For professional temporary and fixed installations, a common bonding network (CBN) is useful to ensure better EMC performance with respect to the following points:

- Digital systems and broadcast technologies;
- Compliance with the EMC requirements of EEC 89/336 (emission and immunity);
- The wide number of electrical applications;
- A high level of system safety and security, as well as reliability and/or availability.

It is now recognized that independent, dedicated earth electrodes, each serving a separate earthing network, are a solution that is not acceptable in terms of EMC, but also represent a serious safety hazard.

### 10.6 Initial test of installation before handover

Before handover of an installation to UEFA, strict pre-commissioning electrical tests and visual inspections must be satisfied.

These tests are made according to IEC regulations by the respective installation contractor..

IEC 60364-6-61 and related standards are based on an international consensus for such tests, intended to cover all the safety measures and approved installation practices normally required for residential, temporary, commercial and (the majority of) industrial buildings.

The pre-commissioning electrical tests and visual-inspection checks for installations include, typically, all of the following:

- Insulation tests of all cable and wiring conductors of the installation, between phases and between phases and earth;
- Continuity and conductivity tests of protective, equipotential and earth-bonding conductors;
- Resistance tests of earthing electrodes with respect to remote earth;
- Verification of the proper operation of the interlocks, if any;
- Check of allowable number of socket-outlets per circuit;
- Cross-sectional-area check of all conductors for adequacy at the short-circuit; levels prevailing, taking account of the associated protective devices, materials and installation conditions (in air, conduit, etc.);

## Part 2: Technical expert information

- Verification that all exposed- and extraneous metallic parts are properly earthed;
- Check of phase rotation of three-phase sockets;
- Check of correct voltage and frequency.

The result of the test is a declaration of conformity of the respective system issued by the installation company.

### **Best practice:**

- Use of semi-automatic multi installations testers with automatic memory and report function;
- Preparation of single-line circuit diagram for easy identification of the measurement points.

## 10.7 General requirements

Any temporary electrical installation should observe:

- Protection against penetration by solid bodies;
- Protection of persons against access to live parts;
- Protection against the ingress of dust;
- Protection against the ingress of liquids.

The degree of protection provided by an enclosure is indicated in the IP code, recommended in IEC 60529 – minimum IP 44 is essential.

- Explicit labeling of individual circuits, outlets, components, breakers;
- Meaningful single line diagrams of the general installation;
- Sufficient strain relief at cable outlets; made out of non-ferromagnetic material when using single conductor cables;
- Cabinets, control elements lockable with key cylinder especially in public areas to prevent unauthorized access;
- Connections of single conductor cables via Powerlock devices furnished with key lockable covers; especially in public areas.

## Part 2: Technical expert information

### 11. Fire prevention

Fire prevention may be achieved as follows:

- Reducing the possibility of fire as far as possible by using appropriate measures;
- Ensuring that, in case of fire, any personal and economic damage will be as low as possible.

#### 11.1 Application of materials

All technical facilities and textiles should be at least B, flame-resistant. The dropping behavior is according to d0, d1 or d2, the smoke development according to max s2.

<b>Euro classification</b>	<b>Requirement</b>
A1	Non-flammable; not oxidizing
A2	Negligible oxidizing
B	Flame resistant; delimited oxidizing
C	flammable; limited oxidizing
D	Flammable; acceptable oxidizing
E	Flammable; acceptable fire performance
F	Highly flammable; no performance certifiable
<b>Smoke development</b>	
s1	negligible
s2	low
s3	strong
<b>Dropping behaviour</b>	
d0	No burning dropping behavior within first 10 minutes
d1	No burning dropping behavior with flame spread > 10 sec within first 10 minutes

#### 11.2 Provision of fire extinguishers

The contractors will provide suitable fire extinguishers regardless of the fire prevention concept of the stadium operator. Carbon dioxide (CO2) extinguishers will be placed near dimmers, amplifiers and light- and sound control panels.

Fire extinguishers and first aid material will be provided at the beginning of construction.

All technical employees are familiar with the use of fire extinguishers.

## Part 2: Technical expert information

### 11.3 Evacuation and rescue routes

The evacuation and rescue routes must be kept unobstructed at all times. Placing items or objects in stairwells and landings is prohibited. Corridors may not be blocked or narrowed by equipment or other objects. This applies to the entire length of the corridors.

### 11.4 General rules of conduct

All fire-protection appliances, e.g. fire-extinguishing equipment, fire- and smoke doors, smoke and heat exhausting systems / installations will be maintained in a proper and functional condition. Ascertained defects will be reported immediately.

Indicating labels on fire-protection appliance, evacuation and rescue route signs will not be obscured.

### 11.5 Required behavior in case of fire

The most important rules are:

- Remain calm and avoid panic!
- Safety is better than speed!

Agitated persons are to be pacified and escorted out of the danger area. In order to avoid panic, no-one may neither run nor move too slowly.

### 11.6 Reporting fires

Anyone noticing the outbreak of a fire will immediately alert the fire brigade. If a fire alarm system is available the alert will be executed via fire alarm or telephone. Activating a fire alarm is not a substitute for the verbal reporting of a fire via telephone. Even with an automatic alarm, the fire will should be reported via telephone.

Stick to the following pattern:

• WHO	reports?
• WHERE	did it happen?
• WHAT	happened?
• HOW MANY	persons are involved / injured?
• WAIT	for further queries.

## Part 2: Technical expert information

### 12. Forklifts

Only forklifts according to generally relevant and accepted engineering rules are suitable. A manufacturer user manual must be available. All persons operating forklifts, wheel loader, wheeled hydraulic lifts at UEFA event sites have an accredited qualification. The certificate should be available for inspection upon request.

Forklift trucks must be used in accordance with regulations and operation instructions.

The following rules are applicable:

- Checks prior to daily use
  - Service- and fixing brake;
  - Forklift fork (condition and fixture);
  - Lift mast;
  - Steering play;
  - Hydraulics (fill level and leakage);
  - Wheels and tires;
  - Alarm.
- At load pick up
  - No exceeding of load capacity;
  - Load always positioned at fork crown;
  - Secure cargo to prevent slipping;
  - Keep eye-contact with the roadway.
- When driving with load
  - Use a restraining device;
  - Keep the load at a low level;
  - Drive slowly around corners;
  - Note load capacity of transport routes, loading bridges and covering panels;
  - On gradients or descents, always keep the load on the uphill-side;
  - Drive in reverse if the load exceptionally exceeds the height and obstructs the view.
- When carrying passengers
  - Carry passengers only when specifically instructed to;
  - Passenger seat and holding grip must be available;
  - Lift persons only when a working platform with railing has been fixed on the forks.
- When parking the forklift
  - Use fixable brake;
  - Lower the fork;
  - Remove ignition key;
  - Keep escape and rescue routes clear

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## Appendix 1

### Documents of Safety & Health Coordination Plan (SHCP)

#### **UEFA Contractor**

Company name	
First day at the job location	
Address	
Zip, City	
Country	
Phone no.	
Fax	
E.-Mail	

#### **Person in charge at the job location**

Name	
Mobile phone	

Documents of Safety & Health Coordination Plan (SHCP)

## **List of subcontractors at the job location**

Please number consecutively.

---

## Documents of Safety & Health Coordination Plan (SHCP)

### Subcontractor

Number	
Construction part	
Company name	
First day at the job location	
Address	
Zip, City	
Country	
Phone no.	
Fax	
E.-Mail	

### Person in charge at the job location

Name	
Mobile phone	

Copy this sample form if necessary!

Documents of Safety & Health Coordination Plan (SHCP)

## **List of operating instructions at the job location**

Please number consecutively and attach the instructions to this list.

Copy this sample form if necessary!

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## Documents of Safety & Health Coordination Plan (SHCP)

### Documentation of operating instruction

Based on operating instruction(s) the following employees have been verbally instructed about

- Occurring hazards
- Adequate precautionary measures

for the following task assignment: \_\_\_\_\_

Number	
Place/date	
Subject	
Instructed by	

### Participants

I have been informed verbally about occurring hazards and adequate precautionary measures:

Name	Signature

Copy this sample form if necessary!

Documents of Safety & Health Coordination Plan (SHCP)

## **List of risk assessments at the job location**

Please number consecutively and attach the assessments according to this list.

Copy this sample form if necessary!

Documents of Safety & Health Coordination Plan (SHCP)

## Documents of Safety & Health Coordination Plan (SHCP)

### Description of the work and procedures of the company exported to other companies

Tasks	Risks	Precautions
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

### Description of the specific risks of the business and procedures

Tasks	Risks	Precautions
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

### Constraints of the site and its environment

(Site activity - public - hold on street - traffic - etc ...)

Site - Environment	Risks	Precautions
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

### Safety instructions for supplier with low risk works

## Documents of Safety & Health Coordination Plan (SHCP)

These instructions are addressed to all employee working at the UEFA sites without a separate safety briefing.

Please read this instruction carefully. If you have any questions do not hesitate to contact your local supervisor or send an e-mail to [xxx@xxxx](mailto:xxx@xxxx). We will reply as soon as possible. In preparation for the UEFA many mobile halls and stages, tents, and scaffolds have been build and taken into operation. In order to ensure the safety of all present the organizers assigned a health and safety coordinator to all companies working on site.

All companies perform the risk assessments and implement a Safety and Health Coordination Plan (SHCP). This aligns the workflow, ensure a smooth and effective production and prevent risks may arise due to the cooperative work of many different companies on site. Employees working in exposed areas have to be instructed accordingly. Personal protective equipment (PPE) will be provided on demand, and must be worn at work.

In addition we advise you to comply with the following follow general safety regulations when you are on site.

### General remarks

- We expect you to act responsibly to safety, health and environment regulations. As an executive you have to set the prerequisites for responsible action and set an example.
- Follow the instructions of safety advisors.
- Pay attention to prohibition, mandatory actions and warning signs.
- Do not enter restricted areas.

### Demeanor on site

- Use the marked and safe pedestrian lanes. Keep traffic and transport routes clear. Entering the site with a private vehicle is prohibited.
- Vehicles may only be parked in marked areas.
- Pay attention to special-purpose vehicle at any time. They have precedence.

## Documents of Safety & Health Coordination Plan (SHCP)

- Keep an adequate safety distance to shunting trucks. Be aware to the often limited view of the truck drivers, and always assume not to be seen.
- Keep an adequate safety distance to shunting forklifts. Be aware to the often limited view of the forklift drivers, and always assume not to be seen.
- Keep an adequate safety distance to cranes. It is prohibited to stay in the slewing range of cranes. Never walk below suspended load.
- Look for surface irregularities and tripping hazard.
- Do not use any stairs, scaffolds etc. still under construction.
- Do not walk under construction areas. Pay attention to work and cable bridges.
- Keep escape and emergency routes clear.

### Rules for your operations

- An essential basis for safety at work is tidiness. Every employee is obliged to return equipment and tools after use to the allocated space. Leaving equipment and tools lying around must be avoided. Waste materials have to be disposed by the causer in an environmentally responsible way.
- Every employee is obliged to check equipment and tools visually prior to use. Defective tools must be reported and must not be used.
- Pay attention to all safety signs like signs for fire extinguishers, first aid kits. This must not be covered or blocked.
- Use working materials that are assigned to you by your supervisor. This applies especially for ladders and hand tools. You can use only if you have been instructed and trained in safe handling.
- The consumption of alcohol and drugs is prohibited during work. It is also prohibited to start work after use of alcohol and drugs.
- Following this safety instructions you will actively contribute to the safety of UEFA . Consider these instructions at your workplace!

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## Documents of Safety & Health Coordination Plan (SHCP)

Confirmation:

I hereby confirm to have read and understood the aforementioned safety notes. I commit myself to observe this notes in my work for the UEFA.

Name: \_\_\_\_\_

First name: \_\_\_\_\_

Date: \_\_\_\_\_

Place: \_\_\_\_\_



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UEFA  
ROUTE DE GENÈVE 46  
CH-1260 NYON 2  
SWITZERLAND  
TELEPHONE: +41 848 00 27 27  
TELEFAX: +41 848 01 27 27  
[UEFA.com](http://UEFA.com)

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