Guidelines for the development of the transport works safety instructions

Introduction

The guidelines contain recommendations based on the minimum requirements set out in the Transport Works Safety Instructions (IBPT, pl. *Instrukcja Bezpieczeństwa Prac Transportowych*). These instructions are required by the Health and Safety Regulation when operating self-erecting tower cranes.

The guidelines contained herein should be treated as a support during planning, executing and documenting works.

Before planning the works, you should familiarize yourself with the standards of the Agreement on Safety in Construction Industry available at http://www.porozumieniedlabezpieczenstwa.pl/.

In particular, the following reference documents are recommended:

11.0 "Assembly works"
11.1 "Assembly of steel structures"
11.2 "Assembly of prefabricated structures".
11.4 "Auxiliary assembly equipment: hooks, slings, traverses, braces".
11.5 "Safety signs and signals. Riggers and Bx "

Rules for the preparation of the Transport Works Safety Instructions

The Transport Works Safety Instructions (IBPT) can be prepared as a uniform document attached to the Safety and Health Protection Plan or separate instructions.

The instructions should be updated according to the needs of the construction site.

The IBPT should contain information relevant to the task. Avoid any additional information that is unnecessary from the user's point of view, i.e. people performing and supervising the works. The criterion for selecting information should be its usefulness for the actual performance of the work. The lack of application of this criterion leads to excessive lengthiness of the document, lack of transparency and thus lack of usefulness for the user.

The (graphic) form of the instructions should be simple and easy to use when working at the construction site. It is absolutely necessary to avoid references to other documents, unclear abbreviations etc. The information should be formulated in a legible manner and not leaving any doubts or scope for interpretation.

The basis for preparing the instructions are the following information and documents:

- construction site layout plan
- method statement prepared by the crane supplier
- instructions for operating crane in collision
- information on work processes carried out in the immediate vicinity of the planned works
- crane operating instructions (operation and maintenance manual)
- occupational risk assessment for the position, task
- guidelines contained in regulations or internal standards
- information about loads and their properties important in the lifting and transport process,
- information about the equipment used in the lifting and transport process
- other

The transport service provider and the Site Manager are equally responsible for the preparation of the Transport Works Safety Instruction (IBPT). Employees who will carry out tasks related to material handling, including a crane operator or operators when there are more cranes at the construction site, banksmen and persons responsible for coordinating works involving material handling should be involved in the preparation of the document.

Elements of the Transport Works Safety Instructions (IBPT)

The points below are guidelines – some of them are of an instructional nature, others should be developed and specified in accordance with the specifics and conditions at the construction site and the nature of transport works carried out.

1. Formal requirements conditioning the crane's approval for carrying out transport works at the construction site.

This section should describe the legal requirements and internal standards regarding the sequence of actions related to the beginning of the operation of cranes at the construction site.

1.1. Acceptances

In order to proceed with the assembly and proper operation of the crane, the crane supplier should agree on details related to the location of the foundation, power supply and grounding, as well as the place for assembly and operation of the crane.

Describe the arrangements made with the crane supplier regarding the organization of assembly work that involves the need to provide a truck crane for crane assembly and possible reorganization of traffic.

The general contractor is obliged to provide a statement on the strength of the foundation on which the crane structure will be founded. If a side anchor is used, the statement on the transfer of lateral forces through the structure of the object - ("Foundation statement"), must be provided.

The crane must be assembled strictly in accordance with the requirements of the Safe Assembly Instructions and the guidelines of the assembling company. The crane must be assembled taking into account the existing power grids, possible collisions with other objects (tall buildings in the vicinity, other cranes, arm reaching outside the construction site zone).

After completing the crane assembly, the service provider is required to provide:

- *"Crane assembly protocol"*
- *electrical measurements - protocols from the measurements of electrical circuits insulation resistance, effectiveness of electric shock protection and lightning protection.*

The assembled crane is subject to the acceptance by the Office of Technical Inspection which issues:

- *a decision of the Office of Technical Inspection authorizing the operation of the equipment,*
- *a protocol from the performance of technical supervision activities by the UDT inspector.*

It should be agreed whether the report will be issued in a form of an e-document. Please note that the UDT inspector may make comments in the protocol.

If more than one handling device is operating, collision instructions must be drawn up. The crane supplier should consult it with the Site Manager or Transport Works Coordinator.

Information about cranes working on site is a part of IBPT entitled the "Transport Works Plan".

1.2. Crane documents

This section should describe the documents that will be required at the construction site, such as:

- *Operation/maintenance instructions in Polish*
- *Acceptance documents listed in section 1.1*
- *Documents from inspections listed in section 1.3*
- *Valid documents allowing the sling (chain) which is a part of the crane*
- *Copy of the 1Ż crane operator's license issued by UDT*

- *Health and safety documentation of the crane operator/operators (periodical and on-the-job training as well as appropriate medical certificates). The operator should perform a night vision test once a year.*

1.3. Crane inspections

This section should describe all inspections that will be carried out at the construction site and the manner of their recording:

- *Crane maintenance log - inspections at least each 30 days by an authorized person, unless otherwise indicated in the instructions*
- *Daily crane checklist - checklist completed by the operator before commencing the shift*.

Construction site management may oblige the crane supplier to provide a crane checklist for the maintenance worker.

Indicate the date and conditions related to any subsequent interim crane operating tests (new UDT decision together with the protocol of technical inspection activities for the same location of foundation).

1.4. Crane start-up after a failure

Describe the manner of reporting and registering crane failures - you will find an example attached to these guidelines. A reminder to make mandatory entries regarding the failure removal in the maintenance log is necessary.

The instructions should indicate the situations in which it is required to issue a new UDT decision and to prepare a protocol on the actions taken, e.g. replacement of ropes or crane structure elements.

1.5. Persons involved in transport - tasks and responsibilities of those involved in transport works (this section may be partially included in further sections; only formal requirements may remain here)

This section should describe in detail the formal tasks and responsibilities of persons taking active part in transport, including the ones arising directly from the regulation:

- *Transport Works Coordinator*
- *Banksman*
- *Rigger*
- *Crane operator*
- *Delivery vehicle driver*

The Site Manager is obliged to appoint a Transport Works Coordinator, responsible for coordinating the activities of all persons involved in carrying out transport works using a crane. This obligation should be entrusted in writing.

The Site Manager accepts and approves persons designated to perform the functions of riggers and banksmen. These may be persons indicated by subcontractors. The acceptance and approval can be obtained after the requirements related to knowledge and skills necessary to perform the tasks are met and the duties are entrusted in writing.

To facilitate the work of the Site Manager, describe how the knowledge and skills of riggers and banksmen will be confirmed. It is recommended to verify the knowledge and skills of riggers and banksmen on the basis of qualification requirements developed by the Agreement on Safety in Construction Industry.

Specify how the instructions will be communicated and how it will be confirmed.

2. Requirements for organizing the construction site

2.1. Zones

The following zones or places should be indicated on the site layout plan in this section:

- *for material storage (load lifting locations)*
- *for unloading materials from transport units*
- *collision zones, including collisions with external objects*
- *zones of vertical collisions of cranes*
- *parking position after completion of works if it is not in free circulation*
- *crane position during short stop (during operation)*
- *zones over which there is a ban on transport, e.g. traffic routes, social facilities, etc.*
- *If additional information graphically distorts the understanding of data, it is recommended to prepare a separate ZPT for vertical transport in A0 format.*

2.2. Lighting

The instructions should specify the type and location of lighting necessary for the safe operation of the crane and people working at the construction site.
Lighting installed on the crane structure should be approved by the crane supplier. It should be installed by an authorized person, and the measurements should be carried out. The lighting ought to be moved always in accordance with the same principle.
Supplier's approval of the additional lighting installation should be attached to the instructions.

2.3. Organization of places where the load will be lifted

Describe the conditions for such a designated place

- *danger zone fenced during the lifting*
- *manner of illuminating the lifting area*
- *the principles of material storage described - passages/access points (Agreement instructions)*

Lifting points should be located in PZT

2.4. Organization of places where the load will be stored or placed (destination)

as above
This section of the instructions should describe the deviations or special storage conditions.

2.5. Designed/planned transport routes.

In this section, specify in detail:

- *the number of banksmen - depending on the ground conditions and construction site characteristics, two banksmen may be needed for one crane,*
- *number of the riggers - at least two for one crane.*

If it is necessary to carry out transport over normally excluded places, to which the ban on transfer applies, please describe the rules to be followed in this event, e.g. locating "spotters" at two ends of pedestrian routes.

2.6. Access routes

At each stage of construction process, access to the crane must be ensured for the crane operator and maintenance worker, enabling them to climb the crane and the crane foundation. It is necessary, among others, to assess the technical condition of the foundation and the bottom elements of the crane. Access to the crane by specialized emergency services and rescue equipment must be ensured at every stage of the construction process.

Ensuring safe access to the crane is one of the reasons for updating the instructions.

Describe how to prepare access to the crane if an evacuation needs to be carried out.

3. Rules for safe lifting and transport

3.1. Characteristics of the materials or objects moved (also define what is considered a large-size load)

Prior to the commencement of the service, the Site Manager together with the Service Provider are responsible for defining the loads which will be considered as large-size loads at the construction site. The criteria should be developed to help define what is a large-size load, e.g. weight, area, type of load, technical limitations of the crane, etc.).

Examples:

- *they do not have designated attachment points (steel structures, tanks, reinforcing bundles),*
- *formwork with an area of over 8m2,*
- *loads with large dimensions - to be agreed with the formwork supplier, e.g. loads above 75% or 95% of the permissible crane capacity.*

This section should describe the rules for using deflection/stabilization lines (when one line or more should be used) and whistles.

3.2. Selection of lifting equipment and methodology for monitoring its technical condition

Describe the requirements for documenting the condition of slings and hooks:

- *inspection card for chain slings,*
- *other slings should be visually inspected by a rigger unless the instructions for the use of the slings state otherwise.*

We recommend introducing a sling logbook for registering and entering visual inspections:

- *list of registered slings,*
- *entries of weekly inspections,*
- *persons authorized to collect the slings.*

Indicate the inspection guidelines for slings and hooks in a form of an attachment (checklist).

Describe the method of checking the technical condition of the slings:

- *Interim/everyday inspections,*
- *Periodic - introduction of color coding is recommended.*

Describe how the slings will be stored on the site and how they will be effectively taken out of service.

3.3. Putting into operation after exposure to weather and other phenomena that may affect the safety of crane operation.

The manual should describe the rules of operator's behavior in the case of:

- *low temperature (risk of icing) - to de-ice the crane's moving parts, the operator moves the crane in a "dry run" before starting work over a designated safety zone, according to the "first move up" principle,*
- *after strong gusts of wind and longer stops – the operator should inspect the crane according to the checklist and additionally check the elements not listed and exposed to the wind (electrical cabinet, marking, electric cables, additional lighting installed on the crane).*

The reference point should be the crane's safety instructions and practical knowledge, including the operator's knowledge and experience. Please note that limitations may result from the surroundings and the specifics of the construction site. Therefore, critical conditions may be specific for a given construction site or construction process.

4. Collisions in the work zone - safety rules

4.1. Collisions with other cranes - this section is developed and described as a part of the instruction "Cranes operation in collision" (according to section 16.1 of the Regulation)

Collision work instructions must be prepared and the independent communication between operators must be ensured (additional collision radios and ensuring exclusive access to a channel free of other communication are recommended). For works in collision each time a work permit for the operation of cranes in collision must be issued.

4.2. Collisions with permanent objects and collisions with existing objects at the construction site (railway lines, power lines, trees, buildings, structures etc.)

The instructions must be developed and consulted with UDT and the line operator for works in collision with power and railway lines. This refers mainly to the rules of switching off the line or the installation of devices limiting the rotation of the crane.

Buildings, trees, permanent objects should be included in section 3.1

4.3. Collisions with variable-size machines (e.g. wheeled cranes, concrete pumps)

In this section describe the rules of the coordination of works for which the transport works coordinator is responsible, such as:

- *agreement on the location of the machine and scope of work within this range. The operator must be informed before starting work with an additional machine,*
- *determining the priority of works and the working method (directions of rotation, safety zones, crane stops).*

It is recommended to issue a work permit in which the topics mentioned above are indicated and agreed on, and the issue of using the so-called collision radio is addressed.

5. Coordination of transport works (who, where, when and how, communication, technical means of communication, consultations, meetings, arrangements)

Describe the rules for informing persons involved in vertical transport on a daily basis:

- *identification of companies/entities using/in need of cranes on a given day,*
- *specification of the characteristics of lifted loads - the type of lifted loads, including loads from the lifting plan, order/priorities of transport, weather conditions according to forecasts for a given day,*
- *reminder of basic emergency manual signals,*
- *expected collisions on a given day with other devices such as concrete pumps, another mobile crane,*
- *obtaining feedback about the condition of the slings.*

As a part of the coordination activities, the hazards related to crane operations should be identified. If a hazard occurs, it must be included in the risk assessment for vertical transport.

6. Critical conditions for transport, taking into account the type of load transported as well as environmental and weather conditions.

This section should describe any restrictions of the crane's operation, including: wind force, gusts of wind, low/high temperature, visibility restrictions (haze), etc. The reference point should be the crane's safety instructions and practical knowledge, including the operator's knowledge and experience. Please note that limitations may result from the surroundings and the specifics of the construction site. Therefore, critical conditions may be specific for a given construction site or construction process.

7. Actions forbidden during crane operation

Each construction site defines this scope due to the nature of the project as above.

8. Emergency procedure (crane failure, collision of cranes, threat to life and health, the need to evacuate the operator, etc.)

The procedure in the event of crane failure, taking into account the following scenarios, must be determined:

- *load suspended on a hook,*
- *no power,*
- *collision of cranes (tangled lines, damaged mechanisms or structure),*
- *finding defects, lack of covers and safety devices of the crane's equipment,*
- *incorrect operation of crane equipment that can be life-threatening.*

If you need to provide first aid to any other employee in or outside the transport area, please follow the general first aid instructions.

For the purpose of first aid or operator evacuation, separate instructions should be drawn up with guidelines on how to evacuate the operator from the crane cabin

Appendix no. 1 List of persons familiar with the Transport Works Safety Instructions

I, the undersigned, declare that I have read these instructions and I undertake to comply with the provisions contained herein.

Crane number	Full name	Position/Function	Company	Date	Signature