

HEALTH & SAFETY METHOD STATEMENT COVER SHEET

RAMS No WHS/LUL/TW/005

METHOD STATEMENT FOR LIFT PLAN Tower Cranes TC 1 AND TC 4

| Prepared By | Date | Checked By | Date |
|---------------|--------------|---------------|--------------|
| Paul Phillips | 08 July 2014 | Gerard Brooks | 08 July 2014 |

| APPROVED BY | | | | |
|-------------|------|--------|--------|------|
| Revision | Date | Status | Client | Date |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Reviewed By | Date |
|------------------------------|--------------|
| Gerard Brooks | 08 July 2014 |
| Contact Details 07812 997632 | pp G Brooks |

| Issued To | Date | Sign & Return Top Copy |
|-----------------------------|--------------|------------------------|
| Nigel Moore Mott Mac Donald | 08 July 2014 | |



Tower Cranes Consultants Ltd

7B High Street, St Neots, Cambridgeshire PE19 1BU • VAT Registration No 899 2238 67 • Tel - 01480 475309 Email – towercranes@btinternet.com or sue.pease-towercranes@btconnect.com

LIFT PLAN

Dated 7th July 2014

Prepared by Paul Phillips (Appointed Person)

on behalf of

Tower Cranes Consultants Ltd

for –

O'Hare & McGovern Limited

| Project | West Hampstead Square Project | |
|--------------|--|--|
| Site Address | O'Hare & McGovern Limited, West End Lane, West Hampstead, London. NW6 2LJ | |
| | | |

Unauthorized use and/or duplication of this document are strictly prohibited, unless express and written permission has been provided by the author and/or owner.

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 1 of 17 | Revision: 01 Date: 7/07/2014 | |

| 1. | Preface | .3 |
|-----|--|----|
| 2. | Tower Crane Details | .3 |
| 3. | Lifting tackle and accessories | .5 |
| 4. | Post Erection procedures prior to tower cranes commencing operations | .5 |
| 5. | Aircraft Warning Beacons (AWB) Units | .6 |
| 6. | Tower Crane's – Zoning System | .6 |
| 7. | Tower Crane's - Anti Collision System | .6 |
| 8. | Placing the Tower Cranes in Safe Out of Service condition | .7 |
| 9. | Mobile Crane Use during Tower Crane deployment | .7 |
| 10. | Responsibilities | .7 |
| A | ppointed Person | .7 |
| С | rane Lifting Operations Supervisor | .8 |
| Т | ower Crane Operator | .8 |
| L | ead and other Slinger/Signallers | .8 |
| 11. | Maintenance and Inspections | .9 |
| 12. | Chains and other Lifting Equipment | .9 |
| 13. | Maximum Safe Working Load (SWL) | .9 |
| 14. | Tandem Lifts | .9 |
| 15. | Use of Man Riders/Stretcher Carriers on Tower Cranes | 10 |
| 16. | Operator Recovery Arrangements | 10 |
| 17. | Slinging of Loads | 10 |
| 18. | General Lifting – Considerations | 11 |
| 19. | General Lifting Operations – Risk Assessment | 11 |
| 20. | Cranes Out of Service/Not In Use | 12 |
| 21. | Personnel Training | 12 |
| 22. | Common Lifts | 12 |
| 23. | Statutory Legislation and Industry Codes of Practice | 14 |
| 24. | Resident Personnel Names and Qualifications | 14 |
| 25. | Confirmation of Receipt and Understanding of this Lift Plan | 16 |
| Арр | endix 1 Load Details of Common Lifts | 19 |
| Арр | endix 2 Pre-lift Information and Requirements | 20 |
| Арр | endix 3 Lift Assessment | L7 |

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|-----------------------------------|----------------------------------|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan f | or West Hampstead Square Project |
| Page 2 of 17 | Revision: 01 | Date: 7/07/2014 |

1. Preface

The following plan outlines the methods and procedures to be adopted during the use of lifting appliances generally, but specifically during the use of the tower cranes deployed by **O'Hare & McGovern Ltd** on the above named Project.

The tower cranes will be utilised for the purposes of false-work installation, material off loading/distribution, concrete placement and any other lifting applications undertaken within the parameters of this **Lift Plan**.

This Lift Plan relates to all lifting activities on the above Project by O'Hare & McGovern Ltd or their authorised trade contractors or sub-contractors.

In addition to the generic plan document, with details of "common lifts", individual lift assessments will be conducted for all non-typical lifts. Lift assessments will be completed with the aid and advice of the tower cranes manufacturer's load/radii specification, with input from the operator of the crane and the Crane & Lifting Operations Supervisor (CLOS), to confirm and ensure that both the tower crane's duties and available lifting equipment and tackle, are suitable for the planned lifting operations.

All slinging and banking operations will remain the responsibility of the hirer, who undertakes to provide trained and qualified personnel that are competent and familiar with the contents of this Lift Plan and the equipment being deployed.

2. Tower Crane Details

The Tower Cranes shown below as TC1 through TC4 will all be erected mounted on Hi Tensile Steel foundation anchors, cast into reinforced concrete pile caps. A temporary works design has been prepared using loadings obtained from the crane's manufacturer, by a Structural Engineer, independently checked and signed off by another Structural Engineer. They will be constructed by the Contractor in accordance with the design, and confirmed as having reached the required cube test strengths. All the above facts will be confirmed by the issue to the erection company of a base sign-off certificate for the tower crane and installation, before its erection commences.

It has been confirmed; following investigations by site management, using details and drawings provided by the Principal Contractor, that there will be requirements for compliance with Network Rail and LUL published procedures involving selection, location, deployment, and operation of suitable tower cranes to be used on this Project. Details of these requirements are contained in the Good Practice Guide published by the CPA after consultation with Network Rail, a copy of which is retained on site, and that has been used to develop the tower crane scheme for the Project. The requirements include the de-rating of lifting duties at defined hook radii by 25%, and the increasing of foundation loadings for the selected tower cranes and their required configurations by 33%, with these increased foundation loadings being used in the base designs for each crane, with each design being independently design checked to a Cat 3 standard.

The tower cranes will be hired to O'Hare & McGovern Ltd, by HTC Plant Ltd, who will erect, and dismantle, the deployed tower cranes, providing full Method Statements and Risk Assessments for each operation, in sufficient time for the user to check, and if necessary, query any unclear aspect of the documentation.

Note that the cranes will be subject to a 100% proof load test, and a 125% test load, before being set at the required 75% of the rated capacity for the maximum radius and maximum load limits.

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 3 of 17 | Revision: 01 Date: 7/07/2014 | |

| Title | TC1 Tower Crane | |
|-------------------------------------|---|--|
| Description | Wolff - Luffing Jib, Top Slew, Tower Crane, model WK100B, | |
| | which is hired to the Project by HTC Plant Limited, and is configured | |
| | as detailed below | |
| Maximum Hook Radius | 40 metres | |
| Maximum Safe Working Load | SWL @ 40 metres hook radius is 1950kgs (Reeved in 4 fall hoist | |
| (SWL). All lifting duties have been | rope configuration). | |
| de-rated by 25% as required by | Max. SWL = 4500kgs @ 23.1 metres hook radius (Reeved in 4 fall | |
| Network Rail | hoist rope configuration), | |
| Height of Mast | (Above spigot base on which it is erected) = 22.5 metres. | |
| Base Type | Mounted on Foundation anchors (4 no.) cast into a Reinforced | |
| | concrete pile cap base, designed, independently checked, and | |
| | installed by the Contractor. | |
| | T | |
| Title | TC2 Tower Crane | |
| Description | Wolff - Luffing Jib, Top Slew, Tower Crane, model WK100B, | |
| | which is hired to the Project by HTC Plant Limited, and is configured | |
| | as detailed below | |
| Maximum Hook Radius | 35 metres | |
| Maximum Safe Working Load | SWL @ 35 metres hook radius is 2625kgs (Reeved in 4 fall hoist | |
| (SWL. All lifting duties have been | rope configuration). | |
| de-rated by 25% as required by | Max. SWL = 4500kgs @ 23.1 metres hook radius (Reeved in 4 fall | |
| Network Rail | hoist rope configuration), | |
| Height of Mast | (Above spigot base on which it is erected) = 40.5 metres. | |
| Base Type | Mounted on Foundation anchors (4 no.) cast into a Reinforced | |
| | concrete pile cap base, designed, independently checked, and | |
| | Installed by the Contractor. | |
| Title | TC2 Towar Grond | |
| Description | Wolff Luffing lib Ton Slow Tower Crons. model WK100P | |
| Description | which is hired to the Project by HTC Plant Limited, and is configured | |
| | as detailed below | |
| Maximum Hook Radius | 40 metres | |
| Maximum Safe Working Load | SWL @ 40 metres book radius is 1950 kgs (Reeved in 4 fall boist | |
| (SWI) All lifting duties have been | rone configuration) | |
| de-rated by 25% as required by | Max. SWI = 4500 kgs @ 23.1 metres hook radius (Reeved in 4 fall | |
| Network Rail | hoist rope configuration). | |
| Height of Mast | (Above spigot base on which it is erected) = 40.5 metres. | |
| Base Type | Mounted on Foundation anchors (4 no.) cast into a Reinforced | |
| | concrete pile cap base, designed, independently checked, and | |
| | installed by the Contractor. | |
| | · · · · · · · · · · · · · · · · · · · | |
| Title | TC4 Tower Crane | |
| Description | Wolff - Luffing Jib, Top Slew, Tower Crane, model WK100B, | |
| | which is hired to the Project by HTC Plant Limited, and is configured | |
| | as detailed below | |
| Maximum Hook Radius | 40 metres | |
| Maximum Safe Working Load | SWL @ 40 metres hook radius is 1950kgs (Reeved in 4 fall hoist | |
| (SWI) All lifting duties have been | rope configuration). | |
| | | |
| de-rated by 25% as required by | Max. SWL = 4500kgs @ 23.1 metres hook radius (Reeved in 4 fall | |

Height of Mast(Above spigot base on which it is erected) = 31.5 metres.Base TypeMounted on Foundation anchors (4 no.) cast into a Reinforced

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 4 of 17 | Revision: 01 Date: 7/07/2014 | |

| concrete pile cap base, designed, independently checked, and installed by the Contractor. |
|---|
| |

3. Lifting tackle and accessories

The tower cranes will be mobilised with specific lifting tackle and accessories, with these to be listed in Addendum 2 (attached to this Lift Plan), to be revised by deleting/adding new items of lifting tackle or accessories, as the deployment proceeds. This Addendum will be used to assist in the compliance of the LOLER required weekly inspections and registers. The listings will be updated by the Crane Lifting Operations Supervisor (CLOS) as and when the need arises.

4. Post Erection procedures prior to tower cranes commencing operations

It is assumed that the pre and post erection statutorily required procedures will be correctly carried out, as evidenced by the documentation (available for inspection in the Project's lifting files), prepared by and being maintained by **O'Hare & McGovern Ltd.'s** Project Management, and regularly checked by the Project's CLOS (Crane Lifting Operations Supervisor).

For information purposes and to ensure the users have knowledge of the procedures carried out, they are detailed below:

- Following the tower crane's erection to the above configuration, using the signed-off Method Statements, Risk Assessments, and COSHH Assessments, the tower crane must be subjected to a full pre-test examination / inspection by the erection supervisor. If in order a safe working load at both maximum load, and maximum radius load, is carried out, followed by a 125% over-load test at both the Maximum safe working load radius and the Maximum hook radius, following which its load radii characteristics will be set in accordance with the Network Rail and LUL requirements, which require the standard SWL loads to be reduced by 25% at both maximum hook radius and maximum load.
- This will be followed by the issue of a hand written test certificate issued by the erection supervisor, which will be followed by a formal test certificate issued to the project by HTC Plant Ltd within 14 days.
- An independent LOLER Thorough Examination will then have been carried out, by a suitably qualified Independent Inspector, and if all is in order he will issue a hand written draft Thorough Examination certificate, with the crane then qualified to commence operations. This will be followed by a formal typed copy within 14 days.
- It is no longer a requirement for either the owner or user of the tower crane to complete an HSE Thorough Examination registration procedure, as this requirement was statutorily removed from the 20th of April 2013
- It is a requirement that an induction of the TC Operator, to be used and who operate the make and models of tower cranes deployed, be organised as an integral part of the erection and hand over process of the tower cranes. Documentary evidence being provided to the Project by HTC Plant Ltd, to substantiate this induction, which will include confirming their abilities and competency to both operate, place out of service, carry out statutory daily and weekly checks, and complete any required lubrication etc.
- It is also a requirement for the deployed TC Operators, whether provided through HTC Plant Ltd, or by the hirer, that a current and compliant CPCS card and medical certificate / letter be supplied and

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|-----------------|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 5 of 17 | Revision: 01 | Date: 7/07/2014 |

copies retained in the lifting file, confirming that they are suitably qualified and fit for the duties they will provide / perform.

- It is also necessary for a Zoning System and Anti-Collision System, to be installed in accordance with the plans provided by the user, to the installer, with a joint check carried out after installation completion, to ensure correct parameters have been installed.
- The Lift Plan briefing by the Project's Appointed Person, including the signing of the Lift Plan, by the Project's lifting team, must take place before operations commence.
- Additional Thorough Examinations, by an Independent Inspector, will be required every 6 months.

5. Aircraft Warning Beacons (AWB) Units

If a requirement is identified, following checks with the CAA (Civil Aviation Authority) and local Airport Management, for the tower cranes be fitted with Red continuously illuminated AWB units, of a rating (in Candelas) determined by the CAA, these must be illuminated during the hours of darkness, at all times, as determined by the nationally published lights on/off times. These AWB units would be fitted to the highest points of the tower crane (considered to be the tip of the tower crane's main jib) and fitted to be visible through 360 degree arcs.

It should be noted that if required and if the tower crane is to be generator powered, supplementary arrangements would be put in place by the hirer, to ensure the AWB units remain illuminated at all times during the hours of darkness.

6. Tower Crane's – Zoning System

An SMIE Zoning System, model AC 30 that will prevent the tower crane from over-sailing the site boundary, will be fitted, and commissioned before the tower crane is allowed to enter service, with the erection personnel having been instructed not to over-sail the site perimeter during each tower crane's erection, and with the tower cranes operators being instructed not to over-sail the site boundary, whilst in operation, and not to rely on the electronic system. The electronic zoning system fitted will be a SMIE model AC 30 combined Anti-collision and Zoning System, that operates with sensors fitted to the luffing, hoisting, and slewing motor / gearbox units, all of which provide signals to and receive instructions from Central Processing Unit (CPU), which is fitted to each crane deployed. The System operates on a fail-safe basis that will not allow any crane to function if the System malfunctions.

7. Tower Crane's - Anti Collision System 8.

A SMIE model AC 30 integral Anti-Collision System (Secondary System) will be fitted to all tower cranes before they commence lifting duties and revised every time an additional tower crane is added to the scheme or removed from the scheme. It operates by each crane fitted to the system transmitting radio signals to the adjacent crane's CPU which have all been programmed to recognise and respond to adjacent crane's locations and motion movements. It is also a fail-safe system, that will cease all crane activities if one crane's motion limiting device fails.

Each crane is also operating under a primary Anti-clash arrangement which is an Anti-Clash radio system based facility where the operators of all deployed tower cranes are issued with an additional radio on a discreet channel and must advise adjacent crane operators when they are slewing or luffing into air space potentially occupied by the adjacent tower crane. This is launched by Tool-box talk and signed by all concerned, acknowledging understanding and agreement to work within the defined parameters

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 6 of 17 | Revision: 01 Date: 7/07/2014 | |

9. Placing the Tower Cranes in Safe Out-of-Service condition

No tower crane should be vacated by its operator, either overnight or at any other time, particularly when the **maximum permitted operational wind speed of 38 miles per hour** is being approached or exceeded, without adopting the following procedure:

- The crane must always be left in free slew when out of service.
- The crane must not have a load or lifting tackle left on the hook.
- The hook must be raised to close to its maximum height and be parked at the out of service hook radius (as defined specifically for the make and model of crane deployed) which is 13.0 metres, or the largest hook radius that will not allow the hook block to over-sail the site boundary when in free slew.

Note: Procedures will be in place, and administered by site management, to ensure all tower cranes are in free slew when the TC Operator leaves his cab, there is no load on the hook, the crane is at the defined hook radius, and the security arrangements preventing unauthorised access to the crane is in place, with a site managed procedure ensuring this is always carried out.

10. Mobile Crane Use during Tower Crane deployment

Should a requirement exist for mobile cranes to be utilised, to supplement the tower crane on site, reference should be made to a separate guidance note that would be issued to the project, and the following guidance also recognised and adhered to:

The mobile crane deployment should only be permitted following -

- An assessment of its planned location.
- Acceptance of all outrigger loadings and outrigger mats if necessary.
- Preparation of a specific method statement/risk assessment for its use.
- A review of the rigging and de-rigging method statements for the mobile crane.
- Satisfactory completion of all pre entry checks of the crane, the operator and the crane's lifting tackle.
- Checks made to ensure that no potential jib clashes can occur between the mobile crane, and the tower crane.

A slinger/signaller must be allocated to work with the mobile crane. This slinger/signaller must be issued with an anti-clash radio (on the same frequency as those issued to the tower cranes operators). The CLOS must conduct a toolbox talk to all operators covering the anti-clash procedure. Following the toolbox talk all operators must sign a document to confirm they understand and will use the procedure.

An additional detailed lift specific Lift Plan must be produced.

11. Responsibilities

Appointed Person

The Appointed Person (AP) for the project is Paul Phillips, who will check the selection of personnel and their qualifications/experience. Additionally the AP will ensure that all relevant personnel understand the Lift Plan and the AP's availability as required (recognising he will not be permanently resident on site).

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | | |
|-----------------------------|--|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | | |
| Page 7 of 17 | Revision: 01 Date: 7/07/2014 | | |

The Appointed Person (AP) will nominate a Crane Lifting Operations Supervisor (CLOS) who will be resident on site during all lifting operations and always communicate with the AP if operations are outside the scope of the Lift Plan or incidents or queries arise.

Crane Lifting Operations Supervisor

The AP has nominatedto be the project Crane Lifting Operations Supervisor (CLOS), who will manage, co-ordinate and police the overall site operations appertaining to construction activities which involve all lifting operations on or adjacent to, but associated with, the site.

The AP/CLOS will ensure that the project specific Lift Plan is in place and understood (prior to lifting operations commencing) and is being fully implemented. Additionally the AP/CLOS will ensure that all involved personnel are informed when amendments or additions are required and implemented.

Note: a deputy CLOS may be appointed to deputise for the CLOS during any absences, with this being considered by Project management and provisions put in place, as appropriate, recognising that no lifting should take place without either an AP or CLOS being in attendance.

Tower Crane Operators

The tower crane will be manned by designated operators who have been inducted in the make and model of tower crane being deployed and operated. This induction must be documented & copies of this documentation retained on site (in the tower crane file). These operators must possess a current CPCS (Construction Plant Competence Scheme) card for the tower crane type being operated (i.e. Luffing jib, top slew type). Additionally the operator must provide documentation to confirm that he/she has undergone a medical to confirm their 'fit for purpose' status.

The name of the operator (and any relief operators where applicable), together with details of their qualifications, will be documented within this Lift Plan with amendments being made should changes in personnel take place.

Lead and other Slinger/Signallers

A Lead Slinger/Signaller will be allocated to the tower crane. They will manage the tower crane's lift operations and will ensure that the load details conform to those stated in the common lift schedule, or the load specific assessment.

Ground control of the tower crane will be the responsibility of the designated Lead Slinger/Signaller only and he/she shall be identified by an orange, high-visibility vest and/or helmet (or another suitable means of identification which is easily recognisable).

Where more than one Slinger/Signaller is required (one at high level and one at ground level, or due to distance, obstruction, or any other factor) an additional Slinger/Signaller will be appointed. It is the responsibility of the Lead Slinger/Signaller to inform the TC Operator of the change from one to the other specific Slinger/Signaller directing the lift (he/she may choose to introduce a radio call sign system). At no time should the TC Operator take instructions from more than one Slinger/Signaller at the same time.

The name of the Lead Slinger/Signaller and any additional Slinger/Signaller on this Project (plus any additional relief or needed additions) will be detailed on an attachment to this Lift Plan.

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | | |
|-----------------------------|--|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | | |
| Page 8 of 17 | Revision: 01 Date: 7/07/2014 | | |

12. Maintenance and Inspections

All lifting appliances (Tower cranes and lifting tackle) will be thoroughly examined and re-certificated by an independent competent examiner every 6 months (as required by the current LOLER requirements) with copies of all records/certificates being kept in the Tower Crane files by the CLOS.

In addition (as required by LOLER regulations) daily and weekly visual inspections will be carried out on the crane and all lifting equipment/accessories. A record of these inspections (together with details of any identified faults) will be entered on the LOLER Register. Any identified faults will be rectified & signed-off the register as having been rectified.

The persons carrying out the inspections on this project are listed below:-

- Tower Crane Operator is responsible for inspection of the individual tower crane he is operating.
- Designated Lead Slinger/Signaller per tower crane is responsible for inspection of Chain Packs, Strops, Shackles, brick & block forks and nets, skips, etc., and any subsequent additions, for the crane he is working with.

The CLOS is responsible for ensuring that these inspections take place & that records of these inspections are kept up to date.

The persons identified above are responsible for reporting any defects or faults and for carrying out any routine maintenance, such as oiling/greasing. Should any defects or faults be found, then the lifting appliance/accessory will be taken out of service immediately and site management informed.

It is also a requirement that such defects are detailed on the site's LOLER register, with a second entry made to confirm when the items are again fit for purpose, and returned to use.

It is recommended that the crane is serviced at regular intervals (to be agreed by/with the owner or his representative) by designated suitably trained/experienced personnel. Records of maintenance/work carried out (with details of any findings following examination) will be left on site with the CLOS, who is responsible for - (a) following up on actions identified during the service activities (b) placing all associated work sheets in the appropriate Tower Crane's File.

13. Chains and other Lifting Equipment

All chains used on this project will be fitted with hooks with spring loaded safety catches. When in use, the angles between sling legs must be less than 90 degrees. At angles greater than this the strain on each leg increases rapidly to a point where they could break.

14. Maximum Safe Working Load (SWL)

The Maximum SWL must be clearly stamped on all lifting equipment, together with a discreet identifying mark or number. This load must never be exceeded, under any circumstances. (It must also be remembered that the SWL of chains/ strops is drastically reduced if the angle between any two legs of the chains/strops exceeds 90 degrees. See Chains/Lifting equipment section).

15. Tandem Lifts

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 9 of 17 | Revision: 01 Date: 7/07/2014 | |

Tandem lifts will not be permitted for any lifting on this project.

16. Use of Man Riders/Stretcher Carriers on Tower Cranes

In the event that, as part of the site's First Aid procedures, a Stretcher Carrier is retained on site, the following guidance should be noted.

The Man Rider/Stretcher Carrier is not to be used as a work platform or for lifting or carrying materials. It must have its identification markings and safe working load clearly identified and have been constructed in accordance with statutory guidance. A current test certificate must be retained on site.

In the event personnel are being raised or lowered using the Man Rider/Stretcher Carrier, they should be wearing suitable harnesses during the lift. These harnesses must be certificated and have been examined within the statutory period (with the register detailing these examinations being retained on site). All appropriate personnel should have been instructed in the use of the harness, with documentation detailing this instruction also be retained on site.

When the Man Rider/Stretcher Carrier is utilised the personnel involved must have connected the lanyard (which should be an integral part of the certificated harness they are wearing) to anchorage points strategically located and identified on the Man Rider/Stretcher Carrier, or the tower crane's hook.

Use of Man Riders/Stretcher Carriers should be undertaken in accordance with existing site lifting procedures, with care being taken to ensure the assembly is lowered onto a secure level area at the completion of the lift. Any recommendations in relation to variations in wind speed should be noted and adhered to.

It is very important to ensure that the wind conditions allow safe use of a Man Rider/Stretcher Carrier and that if considered necessary the lift is carried out using a tag line to ensure it is safe execution.

17. Operator Recovery Arrangements

Should a medical emergency occur, involving the TC Operator or any other Service Technician or Inspector, whilst they are up the tower crane, recognising that the emergency services must not be considered as the primary means of recovery, a proprietary recovery system is be available on site, and used where appropriate, with a rescue team being appointed and training for its use, to a standard identified as acceptable to the instructor (with certificated evidence of competency being retained for future inspection), with this to take place before deployment of the approved certificated and statutorily compliant system/equipment (recognising the need for frequent refresher training courses at recommended statutory intervals).

This requirement has been identified to the Principle Contractor who will ensure the systems and training arrangements have taken place immediately the first tower crane has been commissioned and available. The CLOS will maintain the appropriate documentation and certification, in relation to both the system and the training of the site recovery team members, in the Tower Cranes lifting files.

18. Slinging of Loads

All proprietary plant and equipment will be fitted with lifting eyes or lifting points which must be used at all times.

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 10 of 17 | Revision: 01 Date: 7/07/2014 | |

Specific details of lifting points, of expected standard lifts, are shown in the schedule contained within this Lift Plan. These include machinery, False-work tables etc. Any lifts not covered in this schedule are to be clarified and documented before undertaken.

The standard method of slinging general loads (such as re-bar, timber and scaffold tube) will be with single choker, but if considered necessary (and at the discretion of the Lead Slinger/Signaller) the double choker will be used.

19. General Lifting – Considerations

- Ensure that the designated **maximum permitted operational wind speed (38mph)** is not being reached or exceeded and that the wind speed is appropriate for size of lift being organised. Note that the wind speed is displayed on a digital display within the Operator's cab.
- Ensure tag lines are being used to help control and stabilise large or awkward loads.
- Ensure that all loads are landed on timber battens to prevent any damage to slings and chains.
- Ensure that the angle between chain / sling legs is less than 90 degrees. Any angle greater than this could overload the leg of the lifting equipment.
- Ensure that all loads are stable with centre of crane's hook block being over centre of gravity of the lift being carried out.

20. General Lifting Operations – Risk Assessment

In addition to the guidance and control measures detailed within this Project Lift Plan (recognising the requirement for all members of the Lifting Team to be qualified to perform the duties being undertaken) there is a need to define general Hazards, Risks, and Control Measures. All personnel should be continuously vigilant & recognise the need to identify risks (and take appropriate action in accordance with their training and experience). The importance of feedback (and reporting of dangerous occurrences) to management should also be noted.

Likely Hazards may be identified involving the following areas:

- 1. Plant and Machinery
- 2. Failures of Lifting equipment
- 3. Falling materials
- 4. Free falling loads
- 5. Heavy and abnormally shaped loads
- 6. High winds
- 7. Unscheduled and non-assessed lifts
- 8. Close proximity of other lifting equipment, structures, and public amenities
- 9. Other lifting equipment, out of service or otherwise incapacitated

Likely Risks associated with the above Hazards:

- 1. Injury to personnel
- 2. Damage to structures, buildings, lifting or other equipment and injuries or fatalities to personnel
- 3. Failure of Lifting Equipment and/or Machinery
- 4. Instability and/or loss of control during lifting operations
- 5. Entanglement leading to loss of integrity of load
- 6. Collisions between cranes or other lifting appliances

Control measures that should contribute to the avoidance of the above events:

1. All plant and machinery to be inspected and serviced regularly, as per the PUWER and LOLER Regulations and industry Best Practice Guides (copies can be provided if required).

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 11 of 17 | Revision: 01 Date: 7/07/2014 | |

- 2. All lifting tackle and equipment is to be certificated and inspected regularly, as per the LOLER Regulations.
- 3. All lifts are to be carried out by competent trained Slinger/Signallers, with a method statement having been prepared and risk assessment carried out if outside the scope of the generic details contained in this Lift Plan.
- 4. Daily inspections and checks are to be carried out by the Crane Operators, to ensure that the carne or other lifting appliance remains safe, fit for purpose and operable.
- 5. Visual assessments are to be carried out by the CLOS at regular intervals to ensure that (a) the Slinger/Signallers are using the correct lifting tackle in the correct way, (b) tag lines are being used where necessary and (c) the lift expectations are within the capacity of the lifting equipment being deployed.
- 6. Wind speeds within the site (and at the level of the pick point and placement point) are being monitored to ensure that all lifting operations are being carried out, not only within the defined wind speed, but also at a speed dictated by the shape and wind attack areas of the items being lifted.
- 7. Regularly check that no unauthorised or unqualified persons are carrying out any lifting operations, by regularly checking their CSCS and/or CPCS cards for compliance (ensuring that cards are valid & have not expired).
- 8. Regularly check that safe systems of work continue to be used, ensuring that the risk of collision is eradicated, and that the Primary system of Anti Collision provisions involving Clash Radios remains in use, with the Electronic Secondary system, remaining as a back-up, as considered appropriate by the HSE.

21. Cranes Out of Service/Not in Use

All tower cranes (or visiting mobile crane or lifting devices) are to be removed from operation when either the defined out of service wind speed is recorded, which is 38mph for tower cranes and 22mph for mobile cranes, or as considered appropriate following a review between the Crane Operators and the CLOS.

If the tower crane is to be removed from service, either due to the excessive wind or the end of a shift / working day, the loads and lifting tackle must be removed from the hook, the hook block raised to its full height under hook and the crane set at its out of service hook radius, before being placed in free slew, as identified in the crane's operator instructions.

Upon reaching the tower crane's base the operator must switch off the crane and ensure the access door/gate or other anti-vandal arrangements, are locked preventing unauthorised access to the tower crane and, if in the hours of darkness, ensure the Aircraft Warning Beacon (AWB) units are illuminated. If they are not, he must immediately inform the CLOS and site management.

22. Personnel Training

The personnel named in this document are all competent personnel with appropriate experience working with tower cranes. Training certificates are listed later in this Lift Plan.

23. Common Lifts

The term "common lift" is given to all pre-planned lifts where the crane size, type and position can be determined (as can the load type, size, weight and lifting characteristics) and the radii of the pick-up and drop-off points.

For the purposes of this assessment the "common lifts" shall include, but not be limited to, the following items:

1. False-work materials packed in bundles or in stillages

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 12 of 17 | Revision: 01 Date: 7/07/2014 | |

- 2. Plywood decking materials in sheet form, packed in bundles
- 3. 4" x 3" softwood timber in 4.8m lengths, packed in standards
- 4. Pre-formed column formwork panels, in ply & softwood
- 5. Pre-formed wall formwork panels, in ply & softwood
- 6. Reinforcement bars, packed in bundles
- 7. 2 m³ column pour skip including concrete and skip weight
- 8. Single Side Shutters with 'A' Frames
- 9. Double sided plate girder wall shutters
- 10. Plate girder core wall jump formwork
- 11. Perimeter Wall Shutter consisting of SGB LOGIK 60 Panels
- 12. Scaffold tubes & fittings, packed in stillages
- 13. Mini excavator TB125
- 14. Mini excavator TB 145
- 15. Pre-Cast Manhole Rings
- 16. Steel Containers (Office & Stores)
- 17. Precast concrete pipes
- 18. Pallets of packaged Plaster Boards
- 19. Precast concrete stairs
- 20. False-work Tables
- 21. Gass False-work Tables
- 22. Core shaft formwork
- 23. Drainage Pipes (Clay & Plastic)
- 24. Stillages of General items such as clips and drainage accessories.
- 25. Muck or rubbish skips with marked SWL (certified for lifting and tipping)
- 26. Portable Compressor
- 27. Extra-guard Panels (Edge Protection)
- 28. 2000 litre Bunded diesel Bowser
- 29. Concrete Pump
- 30. Structural steel members/sections, either individually or in bundles not exceeding 2.5 tonnes in weight.
- 31. Glass Pods
- 32. Packaged pallets of Glass
- 33. Bunded diesel fuel bowser
- 34. TI, DDA, and Retro Pods

Where a load, falls outside of the "common lift" criteria, the suppliers must provide load specific details relating to weight, size and centre of gravity and advise an appropriate method of slinging.

An individual lift assessment will then be conducted, based upon the above details, to confirm that the lift details accord with the performance of the attendant crane.

Where the lift is identified as being in excess of the crane's load/radius specification, the load will be either safely subdivided into manageable proportions, or will be returned to the supplier for delivery in manageable proportions.

It is important to confirm the delivered weight of a given material prior to lifting. Additionally it is important to ensure that the radius of the crane hook is established, by the means fitted to the crane, to ensure that the load/radii is not likely to be exceed, before lifting from the bed of the delivery lorry. Where the predetermined lift weight does not accord with the common lift schedule, an individual assessment will be carried out.

If there is a requirement that the lifting points provided by the supplier / manufacturer require the use of a spreader or other special lifting beam or other aid, guidance should be provided to the lifting team, in the form of a Tool Box Talk, delivered by either the AP or an appropriately briefed member of the management team. All team members attending the briefing must sign the Toolbox Talk, to confirm both attendance and

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|-----------------|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 13 of 17 | Revision: 01 | Date: 7/07/2014 |

understanding of the system being deployed. Copies of all certificates confirming compliance of the lifting spreader and any chain attachments must also be on site and checked to confirm the serial numbers are correct and the SWL is shown on the tackle.

The load calculations or pre-determined load sizes are shown in the table in Appendix 1.

The required "pre-lift" information is shown in Appendix 2.

A typical individual lift assessment is shown in Appendix 3.

24. Statutory Legislation and Industry Codes of Practice

The Following documents have been considered in the preparation of this Lift Plan plus all other Construction Industry Guidelines:

- Health and Safety at Work Act 1974
- Lifting Operations and Lifting Equipment Regulation 1998 (LOLER)
- Provision and Use of Work Equipment Regulations 1998 (PUWER)
- BS7121 Parts 1 through 5 Safe Use of Cranes
- CIRIA Stability of Cranes

Site specific health, safety, and welfare issues are assumed to have been covered by the project's construction management or their sub contractor's management team.

25. Resident Personnel Names and Qualifications

| Title | Name | CPCS Reg. No & Expiry Date |
|--------------------------------|------|----------------------------|
| Project Management | | |
| Representative | | |
| | | |
| Health & Safety Representative | | |
| | | |
| Crane Lifting Operations | | |
| Supervisor (CLOS) | | |
| Deputy CLOC (if eppeinted) | | |
| Deputy CLOS (II appointed) | | |
| | | |
| TC1 Crane Operator | | |
| | | |
| TC1 Relief Crane Operator | | |
| | | |
| | | |
| TC1 Lead Slinger/Signaller | | |
| | | |
| Additional Slinger/Signaller | | |
| | | |
| | | |
| Additional Slinger/Signaller | | |

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|-----------------|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 14 of 17 | Revision: 01 | Date: 7/07/2014 |

| Additional Slinger/Signaller | |
|------------------------------|--|

| TC2 Crane Operator | |
|------------------------------|--|
| | |
| TC2 Relief Crane Operator | |
| | |
| TC2 Lead Slinger/Signaller | |
| | |
| Additional Slinger/Signaller | |
| | |
| Additional Slinger/Signaller | |
| | |
| Additional Slinger/Signaller | |
| | |
| | |

| TC3 Crane Operator | |
|------------------------------|--|
| | |
| TC3 Relief Crane Operator | |
| TC3 Lead Slinger/Signaller | |
| Additional Slinger/Signaller | |
| Additional Slinger/Signaller | |
| Additional Slinger/Signaller | |

| TC4 Crane Operator | |
|----------------------------|--|
| | |
| TC4 Relief Crane Operator | |
| | |
| TC4 Lead Slinger/Signaller | |
| | |

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|--|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project | |
| Page 15 of 17 | Revision: 01 Date: 7/07/2014 | |

| Additional Slinger/Signaller | |
|------------------------------|--|
| | |
| | |
| Additional Slinger/Signaller | |
| | |
| | |
| Additional Slinger/Signaller | |
| | |
| | |

The original hard copies of the above certificates/cards have been witnessed. Copies are retained in the site management offices.

26. Confirmation of Receipt and Understanding of this Lift Plan

Note - Please ensure all of the following personnel understand that they must have read and fully understood the Lift Plan before signing to acknowledge receipt and confirm their understanding of its contents.

| Title | Name | Signature | Date |
|--------------------------|------|-----------|------|
| Project Management | | | |
| Representative | | | |
| Health & Safety | | | |
| Representative | | | |
| Crane Lifting Operations | | | |
| Supervisor (CLOS) | | | |
| Deputy CLOS (if | | | |
| appointed) | | | |
| TC1 Crane Operator | | | |
| | | | |
| TC1 Relief Crane | | | |
| Operator | | | |
| TC1 Lead | | | |
| Slinger/Signalier | | | |
| Additional | | | |
| Singer/Signalier | | | |
| Additional | | | |
| Slinger/Signalier | | | |
| Additional | | | |
| Slinger/Signaliers | | | |

| TC2 Crane Operator | | |
|--------------------|--|--|
| | | |

| Author: Paul Phillips | Client: O'Hare & McGovern Limited | |
|-----------------------------|-------------------------------------|----------------------|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hamps | stead Square Project |
| Page 16 of 17 | Revision: 01 Date: 7/07/20 | 14 |

| TOO Dallaf Orana | | |
|--------------------|--|--|
| IC2 Relief Crane | | |
| Operator | | |
| | | |
| TC2 Lead | | |
| Slinger/Signaller | | |
| eniger, eignaner | | |
| | | |
| Additional | | |
| Slinger/Signaller | | |
| | | |
| Additional | | |
| Slinger/Signaller | | |
| Omigen/Orginalier | | |
| | | |
| Additional | | |
| Slinger/Signallers | | |
| | | |
| | | |
| | | |
| TOO O | | |
| 1C3 Crane Operator | | |
| | | |
| | | |
| TC3 Relief Crane | | |
| Operator | | |
| Operator | | |
| | | |
| TC3 Lead | | |
| Slinger/Signaller | | |
| 0 0 | | |
| Additional | | |
| | | |
| Slinger/Signalier | | |
| | | |
| Additional | | |
| Slinger/Signaller | | |
| 0 0 | | |
| Additional | | |
| | | |
| Slinger/Signallers | | |
| | | |
| | | |
| | | |
| TC4 Crane Operator | | |
| | | |
| | | |
| | | |
| TC4 Relief Crane | | |
| Operator | | |
| | | |
| TC4 Lead | | |
| | | |
| Singer/Signalier | | |
| | | |
| Additional | | |
| Slinger/Signaller | | |
| | | |
| Additional | | |
| | | |
| Sunger/Signaller | | |
| | | |
| Additional | | |
| Slinger/Signallers | | |
| | | |
| | | |

Lift Plan prepared & submitted by the Non Resident Appointed Person, Paul Phillips, following a detailed site review with the Site Management representative, CLOS, Tower Crane Operators and all

| Author: Paul Phillips | Client: O'Hare & McGovern Limited |
|-----------------------------|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project |
| Page 17 of 17 | Revision: 01 Date: 7/07/2014 |

Slinger/Signallers (Project Lifting team members). All statutorily required documentation/certification has been checked, by site management, to establish that it is current and fit for purpose. The original documentation/certificates (or copies) are retained on site.

Signed by the Appointed Person, confirming Lift Plan launch

| Name | Signature | Date |
|---------------|-----------|---------|
| Paul Phillips | | 07-2014 |
| | | |

| Author: Paul Phillips | Client: O'Hare & McGovern Limited |
|-----------------------------|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project |
| Page 18 of 17 | Revision: 01 Date: 7/07/2014 |

Appendix 1 Load Details of Common Lifts

Note – for mobile cranes allow 0.35 tonne for hook block & accessories, for tower cranes only allow for the lifting/slinging accessories, as the hook weight is included in the crane's load/radii characteristics.

Note - Slinger/Signallers to refer to main and subcontractors – Securing of Loads (Best Practice Slinging Guide), retained on site.

| 1False-work materials packed in bundles or in stillagesSpecified as stillages at < 1.0 ton | No | Load details | Calculation method | Max weight |
|--|----|---|--|------------------|
| bundles or in stillages1.2m x 2.4m x 18mm x 50 N° at 1.5 tonnes per/bundle1.85 tonnes2Plywood decking materials in sheet form packed in bundles.1.2m x 2.4m x 18mm x 50 N° at 1.5 tonnes per/bundle1.85 tonnes34" x 3" softwood timber in 4.8m lengths packed in standards600 linear metre bundle at 3.0 tonnes / bundle3.325 tonnes per pack4Pre-formed wall formwork panels in ply & softwood2.4 x 3.0 m panel of ply / 10 x 3m rails of 4"x3" (0.75t ply + 0.15t 4"x3") = 0.9 t1.25 tonnes5Pre-formed column formwork in ply & s/wood0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t0.55 tonnes6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | 1 | False-work materials packed in | Specified as stillages at < 1.0 ton | 1.35 tonnes |
| 2Plywood decking materials in sheet form packed in bundles.1.2m x 2.4m x 18mm x 50 N° at 1.5 tonnes1.85 tonnes34" x 3" softwood timber in 4.8m lengths packed in standards600 linear metre bundle at 3.0 tonnes / bundle3.325 tonnes per pack4Pre-formed wall formwork panels in ply & softwood2.4 x 3.0 m panel of ply / 10 x 3m rails of 4"x3" (0.75t ply + 0.15t 4"x3") = 0.9 t1.25 tonnes5Pre-formed column formwork in ply & s/wood0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t0.55 tonnes6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | | bundles or in stillages | | |
| form packed in bundles.per/bundle34" x 3" softwood timber in 4.8m lengths packed in standards600 linear metre bundle at 3.0 tonnes / bundle3.325 tonnes per pack4Pre-formed wall formwork panels in ply & softwood2.4 x 3.0 m panel of ply / 10 x 3m rails of 4"x3" (0.75t ply + 0.15t 4"x3") = 0.9 t1.25 tonnes5Pre-formed column formwork in ply & s/wood0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t0.55 tonnes6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | 2 | Plywood decking materials in sheet | 1.2m x 2.4m x 18mm x 50 N° at 1.5 tonnes | 1.85 tonnes |
| 34" x 3" softwood timber in 4.8m lengths packed in standards600 linear metre bundle at 3.0 tonnes / bundle3.325 tonnes per pack4Pre-formed wall formwork panels in ply & softwood2.4 x 3.0 m panel of ply / 10 x 3m rails of 4"x3" (0.75t ply + 0.15t 4"x3") = 0.9 t1.25 tonnes5Pre-formed column formwork in ply & s/wood0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t0.55 tonnes6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | | form packed in bundles. | per/bundle | |
| lengths packed in standardspack4Pre-formed wall formwork panels in ply & softwood2.4 x 3.0 m panel of ply / 10 x 3m rails of 4"x3" (0.75t ply + 0.15t 4"x3") = 0.9 t1.25 tonnes5Pre-formed column formwork in ply & s/wood0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t0.55 tonnes6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | 3 | 4" x 3" softwood timber in 4.8m | 600 linear metre bundle at 3.0 tonnes / bundle | 3.325 tonnes per |
| 4Pre-formed wall formwork panels in ply & softwood2.4 x 3.0 m panel of ply / 10 x 3m rails of 4"x3" (0.75t ply + 0.15t 4"x3") = 0.9 t1.25 tonnes5Pre-formed column formwork in ply & s/wood0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t0.55 tonnes6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | | lengths packed in standards | | pack |
| ply & softwood(0.75t ply + 0.15t 4"x3") = 0.9 t5Pre-formed column formwork in ply & s/wood0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t0.55 tonnes6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | 4 | Pre-formed wall formwork panels in | 2.4 x 3.0 m panel of ply / 10 x 3m rails of 4"x3" | 1.25 tonnes |
| 5 Pre-formed column formwork in ply & s/wood 0.4 x 3.0m ply, 12m 4"x3" (0.13t ply + 0.06 4"x3") = 0.2 t 0.55 tonnes 6 Reinforcement bars, packed in bundles Weights indicated from bar schedules 2.50 tonnes 7 2 m ³ column pour skip including Skip weight known as 0.5t, Concrete density 5.00 tonnes | | ply & softwood | (0.75t ply + 0.15t 4"x3") = 0.9 t | |
| & s/wood(0.13t ply + 0.06 4"x3") = 0.2 t6Reinforcement bars, packed in bundlesWeights indicated from bar schedules2.50 tonnes72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | 5 | Pre-formed column formwork in ply | 0.4 x 3.0m ply, 12m 4"x3" | 0.55 tonnes |
| 6 Reinforcement bars, packed in bundles Weights indicated from bar schedules 2.50 tonnes 7 2 m³ column pour skip including Skip weight known as 0.5t, Concrete density 5.00 tonnes | | & s/wood | (0.13t ply + 0.06 4"x3") = 0.2 t | |
| bundles 5.00 tonnes 7 2 m ³ column pour skip including Skip weight known as 0.5t, Concrete density 5.00 tonnes | 6 | Reinforcement bars, packed in | Weights indicated from bar schedules | 2.50 tonnes |
| 72 m³ column pour skip includingSkip weight known as 0.5t, Concrete density5.00 tonnes | | bundles | | |
| | 7 | 2 m ³ column pour skip including | Skip weight known as 0.5t, Concrete density | 5.00 tonnes |
| concrete and skip weight $2.45t/m^3$ (0.5+(2.45x2)) | | concrete and skip weight | 2.45t/m ³ (0.5+(2.45x2)) | |
| 84.5m x 8.2m Single Side WallTotal weight of Single Side Wall SGB Shutter with4.313 tonnes | 8 | 4.5m x 8.2m Single Side Wall | Total weight of Single Side Wall SGB Shutter with | 4.313 tonnes |
| Shutter with 'A' Frames. 'A' Frames | | Shutter with 'A' Frames. | 'A' Frames | |
| 9 Perimeter Wall Shutters consisting Total weight of 3.15m x 3.3m Perimeter Wall 0.932 tonnes | 9 | Perimeter Wall Shutters consisting | Total weight of 3.15m x 3.3m Perimeter Wall | 0.932 tonnes |
| of panels up to. 3.15m x 3.3m Shutter with lifting hooks 0.607 + 0.325 | | of panels up to. 3.15m x 3.3m | Shutter with lifting hooks 0.607 + 0.325 | |
| 10Scaffold tubes & fittings packed inSpecified as stillages at < 1.0 ton2 tonnes | 10 | Scaffold tubes & fittings packed in | Specified as stillages at < 1.0 ton | 2 tonnes |
| stillages | | stillages | | |
| 11 Large Mini Excavator Manufacturers Spec. 5 tonnes | 11 | Large Mini Excavator | Manufacturers Spec. | 5 tonnes |
| 12 Small Mini Excavator Manufacturers Spec. 2 tonnes | 12 | Small Mini Excavator | Manufacturers Spec. | 2 tonnes |
| 13Pre-Cast Manhole Rings1.2m dia. @ 1m deep1.25 tonnes | 13 | Pre-Cast Manhole Rings | 1.2m dia. @ 1m deep | 1.25 tonnes |
| 14 Steel Containers Stamped at 1.0 ton un-laden 2.00 tonnes | 14 | Steel Containers | Stamped at 1.0 ton un-laden | 2.00 tonnes |
| 15Pre-cast concrete Pipesspecified at 550m dia, 2450tn/m³1.3 tonnes | 15 | Pre-cast concrete Pipes | specified at 550m dia, 2450tn/m ³ | 1.3 tonnes |
| 16Pre-Cast Concrete StairsApprox 3t (TBC)3.35 tonnes | 16 | Pre-Cast Concrete Stairs | Approx 3t (TBC) | 3.35 tonnes |
| 17False-work TablesSpecified at 2.5t2.85 tonnes | 17 | False-work Tables | Specified at 2.5t | 2.85 tonnes |
| 18Pallets of Plaster Boards2.44m x 1.44m x 1.0m x 1000kgs1.10 tonnes | 18 | Pallets of Plaster Boards | 2.44m x 1.44m x 1.0m x 1000kgs | 1.10 tonnes |
| 19Drainage Pipes (Clay and Plastic)Delivered in Max1 ton bundles.1.35 tonnes | 19 | Drainage Pipes (Clay and Plastic) | Delivered in Max1 ton bundles. | 1.35 tonnes |
| 20 Stillages Containing Sundry False- Various assume max 1t 1.35 tonnes | 20 | Stillages Containing Sundry False- | Various assume max 1t | 1.35 tonnes |
| work clips and drains | | work clips and drains | | |
| 21 6 Cubic Yard Certified Skip Certified & Stamped 5 ton SWL 5.00 tonnes | 21 | 6 Cubic Yard Certified Skip | Certified & Stamped 5 ton SWL | 5.00 tonnes |
| 22 Portable Compressor Stamped 0.9 ton 1.25 tonnes | 22 | Portable Compressor | Stamped 0.9 ton | 1.25 tonnes |
| 23 Extra-guard Panels 50 @ 25kgs = 1.25 ton 1.65 tonnes | 23 | Extra-guard Panels | 50 @ 25kgs = 1.25 ton | 1.65 tonnes |
| 24 2000 litre Diesel Bowser 2.5ton 2.85 tonnes | 24 | 2000 litre Diesel Bowser | 2.5ton | 2.85 tonnes |
| 25 Concrete Pump Manufacturer Spec5 t 5.00 tonnes | 25 | Concrete Pump | Manufacturer Spec5 t | 5.00 tonnes |
| 26 Structural steel Single bundles, up to 4.0m long weighing 30kgs / m Up to 2.5 tonnes | 26 | Structural steel | Single bundles, up to 4.0m long weighing 30kgs / m | Up to 2.5 tonnes |
| 27 Glass Pods Delivered on pallets TBA | 27 | Glass Pods | Delivered on pallets | TBA |
| 28 2 cu m boat skip Self weight 540kgs; 2.4 t/cu m. 5.00 tonnes | 28 | 2 cu m boat skip | Self weight 540kgs; 2.4 t/cu m. | 5.00 tonnes |
| 29 Plate girder d/s wall shutter Total Weight 4.2m x 9.5m @ 90kgs/ m2 3.3 tonnes | 29 | Plate girder d/s wall shutter | Total Weight 4.2m x 9.5m @ 90kgs/ m2 | 3.3 tonnes |
| 30 Packaged Glass Delivered packaged on pallets TBA | 30 | Packaged Glass | Delivered packaged on pallets | ТВА |
| 31 TI, DDA, & Retro Pods Weights advised 920kgs, 1020kgs, & 1150kgs 1.25 tonnes | 31 | TI, DDA, & Retro Pods | Weights advised 920kgs, 1020kgs, & 1150kgs | 1.25 tonnes |

| Author: Paul Phillips | Client: O'Hare & McGovern Limited |
|-----------------------------|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project |
| Page 19 of 17 | Revision: 01 Date: 7/07/2014 |

Appendix 2 Pre-lift Information and Requirements

- 1. Provision of a certified Slinger/Signaller
- 2. Lift/load information common lift or individual assessment
- 3. The radial distances at pick up & drop off points
- 4. Crane lift/excavator specifications and load charts
- 5. Known weight of the lifting accessories and crane block, if appropriate
- 6. Crane statutory test and inspection certification
- 7. Crane Operators CPCS certification
- 8. Crane Operators inspection register
- 9. Crane Operators lifting accessories certification
- 10. Agreement on the method of signalling and directing to lift

| Author: Paul Phillips | Client: O'Hare & McGovern Limited |
|-----------------------------|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project |
| Page 20 of 17 | Revision: 01 Date: 7/07/2014 |

Appendix 3 Lift Assessment

In the event that other lifts are required, that are not listed within the generic lifts / loads shown above, an assessment needs to be satisfactorily conducted using the format defined below.

No lift should be undertaken unless it is either covered within the generic details or the above procedure has been carried out.

| Project | Name | Project No | Specify |
|----------|----------------|-------------|---------|
| Section | Name | L/A No | Specify |
| Date | Specify | Assessed By | Name |
| Duration | Number of Days | From | Date |

Preparation

| Lead Slinger/Signaller | Appointed Person | Hard- Standing | Safety Zone | Overhead Cables | Adjacent Structures | Radios |
|---------------------------|---------------------|-------------------|----------------|--------------------|------------------------|--------|
| | | | | | | |
| | | | | | | |

Load details

| Туре | Н | W | L | Ø | Max Weight |
|------|---|---|---|---|------------|
| | | | | | |

Crane Lift Details (radial/SWL details must be obtained)

| Туре | Max SWL | At Radial (m) |
|------|---------|---------------|
| | | |

| CPCS Operator | Crane certificate | LOLER (daily | Lifting accessory |
|---------------|-------------------|-----------------|-------------------|
| certificate | | pre-use checks) | certificates |
| | | | |

| Radius at pick up | Radius at drop off | Max SWL at greatest radial |
|-------------------|--------------------|----------------------------|
| | | |

Description of method and any special conditions/plant requirements i.e. contract lift, spreader bar, C hook

| Author: Paul Phillips | Client: O'Hare & McGovern Limited |
|-----------------------------|--|
| CPCS Card Holder 03914194/1 | Reference: Lift Plan for West Hampstead Square Project |
| Page 21 of 17 | Revision: 01 Date: 7/07/2014 |



ANTICOLLISION AND ZONING SYSTEM

SMIE AC30

INSTRUCTIONS FOR USE





I. INDEX.

| | | Page |
|------------------------------------|--|-----------------------|
| | Presentation of the system | |
| . . V. V. VI VI | Composition of the Anticollision system <i>AC30</i> . General Safety recommendations. Functionality of the <i>AC30</i> . Installation scheme of the <i>AC30</i> on a tower crane. Interconnection scheme. Crane operator information device <i>TB30</i> . | 3 3 4 5 6 |
| | Functioning principles on construction site | |
| VIII. IX. X. | Principle of zoning (work area limitation) function. Principle of Anticollision function. Safety features (fixed cranes). | 7 8 |
| | - 1 Situation of a high crane in free slewing. | 9 |
| | Situation of a low crane in free slewing. | 10 |
| | - 2 Situation of an internal fault | 12 |
| | - 4 Situation of an overridden crane. | 13 |
| | Safety features (travelling cranes). | |
| | - 1 Situation of a high crane in free slewing. | 14 |
| | Situation of a low crane in free slewing. | 15 |
| | - 2 Situation of an external fault. | 16 |
| | - 3 Situation of an internal fault. | 17 |
| хı | - 4 Situation of an overhouen crane. | 10 |
| XII | Specific case of interference "iib / mast" | 20 |
| XIII. | Overriding of the system. | 21 |
| | Technical specifications and warranty | |
| XIV. | Standard technical specifications. | 22 |
| XV. | Warranty. | 22 |





- Page : 2/22



II. COMPOSITION OF THE ANTICOLLISION SYSTEM AC30.

Each standard AC30 is composed of :

.

- \bigcirc a central unit UC30 with power plug to be connected.
- 2 a display dashboard TB30.
- 3 a machine interface IM30 with crane cabinet wiring loom and override plug.
- 4 a flashing light SL30 with 10-metre cable.
- (5) a slewing sensor BROR30 with set of standard gears (see corresponding commercial document).
- 6 a high connection box BJ30H.
- 0 a low connection box BJ30B.
- 8 Two 5-metre cables (red ring).
- Integen Three 10-metre cables (green ring).

Options which can be added to the AC30 system are :

- Trolley sensor BRCH with analogue digital conversion module CANANA and 20-meter cable (yellow ring). ന
- 2 Travelling sensor BRTN with conversion module CANANA or CAD40 and 5-meter cable (red ring).
- 3 Gyrometer sensor GYRO with conversion module CANANA and 5-meter cable (red ring).
- (4) Angle sensor CAPANG with conversion module CANANA and 10-meter cable (green ring).
- (5) Radio transmission TSC / RAC1 / RAC2 with cables.

III. GENERAL SAFETY RECOMMENDATIONS.

The installation of the AC30 system must be performed by a qualified person, specially trained by SMIE, otherwise SMIE declines any responsibility. For training installation and servicing of the AC30, contact SMIE.

Inside the system there is no element that can be repaired by the user himself.

Switching off of the system AC30:

- Disconnect the plug of crane cabinet wiring loom and connect the override plug. 1.
- Disconnect the power plug of the AC30. 2.

ATTENTION : This product belongs to category A. In a residential environment this product can create radio interference, in which case users may have to take appropriate measures.

IV. FUNCTIONALITY OF THE AC30.

The function of the anti-collision system AC30 is to solve problems due to :

- **interference** between cranes on work sites with several cranes.
- protection of areas sensitive.

In France, the system enables work sites to conform to the Regulation of the French Ministry of Work and Professional Training dated 6th March 1991.

The AC30 controls interference areas jib/jib and jib/counter-jib by creating a safety area around the trolley of the high crane, and the jib, the counter-jib and the mast of the low crane. The system takes over by prebraking/decelerating and/or automatic stopping of the crane when a collision risk is detected (see section X).

A standard system can control up to 20 cranes and manage quintuple interfering areas (5 cranes operating on the same working area).





1.1.1.1

н.

Anticollision and zoning system : AC30

V. INSTALLATION SCHEME OF THE AC30 SYSTEM ON A TOWER CRANE.





- Page : 4/22

7, Rue de la Chapelle – ZI les Richardets – 93160 NOISY-LE-GRAND - France Phone : +33 (0)1 55 85 90 40 – Fax : +33 (0)1 43 03 34 03





INSTRUCTION FOR USE.

Anticollision and zoning system : AC30

VI. INTERCONNECTION SCHEME.







VII. CRANE OPERATOR INFORMATION DEVICE **TB30**.

The illuminated indicators inform the crane operator about the movements controlled by the AC30:



| Pictogram | Function | Red light ON | Green light ON | Note |
|---------------------|-----------------------------|-----------------|-------------------|--|
| <mark>↓</mark> → | Trolley forwards | Off | Free | |
| | Trolley backwards | Off | Free | |
| \bigcirc | Slewing right | Off | Free | |
| Ģ | Slewing left | Off | Free | |
| A | Travelling forwards | Off | Free | |
| A | Travelling backwards | Off | Free | |
| | Not used | | | |
| Ŷ | Overriding | Overridden | In Service | |
| Â | Fault | Fault | In Service | A sound signal accompanies the fault indicator. |
| | Angular position of the jib | | | |
| 25 m | Trolley position on the jib | | | The indicator will display 2 small lines if a trolley sensor is not installed (low crane). |





........

Anticollision and zoning system : AC30

VIII. PRINCIPLE OF ZONING (WORK AREA LIMITATION) FUNCTION.

The *AC30* system intervenes automatically in the control system of the crane in order to ensure its complete immobilization :

The slow-down angle of slowing (noted β on the figure) depends on the angle necessary for the jib to stop, when this one is working at top speed in the most unfavourable conditions (wind, load).

To overcome its inertia, the stopping of the jib is achieved by initially reducing the slewing speed.

In practice, the AC30 adapts the slowing angle according to the slewing speed.

The safety distance (2m minimum) is added to the area to be protected, it is variable according to the risks and specific requirements of the construction site.







IX. PRINCIPLE OF ANTICOLLISION FUNCTION.

The AC30 system intervenes automatically in the control system of the crane in order to ensure its complete immobilization in a safety area (noted α on the figure) :

- □ For a low crane (noted **G1** on the figure), the safety area « protects » the jib as well as the counter-jib.
- □ For a high crane (noted **G2** on the figure), the safety area « protects » only the hoisting cable.

The slow-down angle (noted β on the figure) depends on the angle necessary for the jib to stop, when working at top speed in the most unfavourable conditions (wind, load).

To overcome its inertia, the stopping of the jib is achieved by initially reducing the slewing speed.

In practice, the AC30 adapts the slowing angle according to the slewing speed.



X. SAFETY FEATURES.

The AC30 is a Driver Support System and not a Full-fledged Safety System.

It does not replace the operator's vigilance or responsibility, but offers him a valuable help and assistance in order to avoid dangerous occurrence. Operators are not meant, in any circumstance, to drive carelessly or in a reckless manner.

Although it has many failsafe features, in some very rare circumstances faults may occur that will remain undetected by the system until such time that a check identifies them for correction.

However, many defect states are identified by the system and are described hereafter:

- □ Free slewing (crane not powered)
- □ External fault (communication fault between systems).
- Internal fault (system failure or not powered).
- Overriding.



- Page : 8/22



Situation of a crane in free slewing on the worksite. (fixed crane) (crane not powered but the AC30 still on).



| | CRANES POWERED ON (TC1) | CRANES POWERED OFF (TC2) | Νοτε |
|-----------------|---|--|---|
| Outside signals | Flashing Light Off | Flashing Light Off | In most cases, a crane not powered can be comparable with a crane in free slew. |
| Inside signals | | | |
| Consequence | The crane can't work in the area : anymore. | The <i>AC30</i> is not active anymore. | When the high crane is not powered, the trolley position defines a circle which forbids the crossing of the low crane's jib. |





Situation of a crane in free slewing on the worksite. (fixed crane) (crane not powered but the AC30 still on).



| | CRANES POWERED ON (TC2) | CRANES POWERED OFF (TC1) | Νοτε |
|-----------------|---|--|---|
| Outside signals | Flashing Light Off | Flashing Light Off | In most cases, a crane not powered can be comparable with a crane in free slew. |
| Inside signals | | | |
| Consequence | The crane can't work in the area : anymore. | The <i>AC30</i> is not active anymore. | |



- Page : 10/22

7, Rue de la Chapelle - ZI les Richardets - 93160 NOISY-LE-GRAND - France
 Phone : +33 (0)1 55 85 90 40 - Fax : +33 (0)1 43 03 34 03



Situation of an external fault on the worksite. (fixed crane) (communication between the AC30 interrupted).





| | INTERFERING CRANES (TC1 AND TC2) | Νοτε |
|-----------------|--|---|
| Outside signals | Flashing Light On | This situation may result from loss of communication between cranes either by cable or radio. |
| Inside signals | | |
| Consequence | The cranes can't work in the areas : anymore. | |





Situation of a crane with internal fault on the worksite. (fixed crane) (AC30 breakdown).



| | C RANES IN FAULT | INTERFERING CRANES | Νοτε |
|-----------------|------------------------------------|------------------------------------|--|
| Outside signals | Flashing Light On | Flashing Light On | For example, the internal fault can be : - <i>AC30</i> power supply fault. - Sensor fault or cable disconnected. - Flashing light defective or disconnected. |
| Inside signals | | | |
| Consequence | The crane can't work in the area : | The crane can't work in the area : | |





Situation of an overridden crane on a worksite. (fixed crane)

No-

TC1



| | OVERRIDDEN CRANE | INTERFERING CRANES | Νοτε |
|-----------------|-------------------------|---|--|
| Outside signals | Flashing Light On | Flashing Light On | |
| Inside signals | | | |
| Consequence | The crane is free. | The crane can't work in the area anymore. | If the crane is already in the zone when the area is activated, this one will be able to leave it at low speed. |



TC2



Situation of a crane in free slewing on the worksite. (travelling crane) (crane not powered but the AC30 still on).



| | CRANES POWERED ON (TC1) | CRANES POWERED OFF (TC2) | Νοτε |
|-----------------|------------------------------------|--|---|
| Outside signals | Flashing Light Off | Flashing Light Off | In most cases, a crane not powered can be comparable with a crane in free slew. |
| Inside signals | | | |
| Consequence | The crane can't work in the area : | The <i>AC30</i> is not active anymore. | When the high crane is not powered, the trolley position defines a circle which forbids the crossing of the low crane's jib. |



- Page : 14/22



Situation of a crane in free slewing on the worksite. (travelling crane) (crane not powered but the AC30 still on).



| | CRANES POWERED ON (TC2) | CRANES POWERED OFF (TC1) | Νοτε |
|-----------------|---|--|---|
| Outside signals | Flashing Light Off | Flashing Light Off | In most cases, a crane not powered can be comparable with a crane in free slew. |
| Inside signals | | | |
| Consequence | The crane can't work in the area : anymore. | The <i>AC30</i> is not active anymore. | |





Situation of an external fault on the worksite. (travelling crane)

(communication between the AC30 interrupted).



| | INTERFERING CRANES | Νοτε |
|-----------------|--|---|
| Outside signals | Flashing Light On | This situation may result from loss of communication between cranes either by cable or radio. |
| Inside signals | | |
| Consequence | The cranes can't work in the areas : anymore. | |





Situation of a crane with internal fault on the worksite. (travelling crane) (AC30 breakdown).



| | CRANES IN FAULT | INTERFERING CRANES | Νοτε |
|-----------------|------------------------------------|------------------------------------|---|
| Outside signals | Flashing Light On | Flashing Light On | For example, the internal fault can be : - AC30 power supply fault. - Sensor fault or cable disconnected. - Flashing light defective or disconnected. |
| Inside signals | | | |
| Consequence | The crane can't work in the area : | The crane can't work in the area : | |





Situation of an overridden crane on a worksite. (travelling crane)



| | OVERRIDDEN CRANE | INTERFERING CRANES | Νοτε |
|-----------------|-------------------------|---|--|
| Outside signals | Flashing Light On | Flashing Light On | |
| Inside signals | | | |
| Consequence | The crane is free. | The crane can't work in the area anymore. | If the crane is already in the zone when the area is activated, this one will be able to leave it at low speed. |





XI. OPERATING PROCEDURE FOR TRAVELLING CRANES.

On some worksites, one or more cranes can be mounted on rail tracks. In order to take account of the movement of the crane on its track, it is necessary to equip it with a specific travelling sensor set on one of the crane's bogies.

The reliability and the function of the travelling sensor depends entirely on the condition of the crane's travelling system.

To correct an error caused by wheels slipping on the track, the sensor is equipped with one or two re-adjustment cells.

Each re-adjustment cell is activated by passing a metallic « flag » set on the crane track and marked in red.

The flags must remain in good condition and in their original positions.

For each modification of the crane's rail tracks (to shorten or lengthen the tracks), it is necessary to contact After-Sale Service in order to evaluate the measures to be taken.

Too much « slipping » of the travelling measurement can mean a major malfunction of the anticollision and zoning functions.

It is therefore imperative that the crane operator checks the re-adjustment flag(s) at least twice a day.

Simplified scheme :









XII. SPECIFIC CASE OF INTERFERENCE « JIB / MAST ».

The management of the interference between jib and counter-jib of a low crane with the mast of a high crane is a standard function of the *AC30*.

The example below represents 2 cranes on a same travelling track (fig1).

By activating the *AC30*'s function « jib / mast », the devices permanently measure the distance between both cranes and stop the dangerous movements in order to prevent the low crane's jib from entering the « opposite area » of the high crane (fig2).

The minimum distance between both cranes (fig3) will be equal to the length of the low crane's counter-jib plus the distance of the safety area applied (see section IX).



| | LOW CRANE | HIGH CRANE | Νοτα |
|-------|------------------------------------|---|---|
| Fig1. | The crane is free. | The crane is free. | |
| Fig2. | The crane can't move in the area : | The crane can't travel towards the low crane. | |
| Fig3. | The crane can't move in the area : | The crane can't travel towards the low crane. | The figure represents the minimum distance between both cranes. |





- Page : 20/22

7, Rue de la Chapelle – ZI les Richardets – 93160 NOISY-LE-GRAND - France Phone : +33 (0)1 55 85 90 40 – Fax : +33 (0)1 43 03 34 03





XIII. OVERRIDING OF THE SYSTEM.

Overriding at the bottom of the crane by key.



In some specific cases (depending on mounting requirements), you can use the "shunt key" of the *BJ30B* located generally at the bottom of the crane in order to override the *AC30* system.

In "green" position the system is operating (key may be removed), in "red" position the system is neutralized.

<u>Note</u>: the overriding with BJ30B can be insufficient in case of a major breakdown of the AC30. Therefore, it will be necessary to use the "shunt plug" (see procedure below) in order to complete the function.

Worksite's management can decide to use the overriding part of the system placed at the bottom of the crane on the low connection box *BJ30B* for one reason only : To discriminate between crane and safety system failure.

Once the crane is overridden, its movements are unrestricted. There is no more interference control nor forbidden areas on the concerned crane. In order to ensure maximum safety on the worksite, the systems of other cranes consider the whole area where the overridden crane could enter as forbidden but keeps managing other interference areas (see pages 13 and 18).

Overriding by shunt plug.



To override the AC30, disconnect the plug (2) from its base (3), then connect the "shunt plug" (1) on the base (3).

The override plug can only be used in the following cases :

- 1. installation and dismantling of the safety system,
- 2. setting of the safety system,
- 3. discriminating between crane and safety system failure.

For both overriding cases, the flashing light is activated.

At the end of each installation, the override key and the shunt plug are given to the worksite's manager.



- Page : 21/22



XIV. STANDARD TECHNICAL SPECIFICATIONS.

| Power supply : | | 230/400 VAC ± 10% - 50/60 Hz | | | | |
|----------------------|--------------------|------------------------------|-------------------------|------|-------------|--|
| Consumption : | | 160 W max. | | | | |
| | | | | | | |
| | Weight | Protection | Temperature | | Storage and | |
| Equipment : | | | In use | | forwarding | |
| | | | | | Temperature | |
| UC30 : | 10 kg | IP 33 | -05℃ to | 40℃ | -20℃ to 50℃ | |
| TB30 : | 800 g | IP 33 | -20℃ to | 45℃ | -30℃ to 70℃ | |
| IM30 : | 3,6 kg | IP 33 | -33℃ to | 55°C | -40℃ to 70℃ | |
| SL: | 2,2 kg | IP 65 | -33℃ to | 55℃ | -40℃ to 70℃ | |
| BROR30 : | 3,4 kg | IP 33 | -20℃ to | 55°C | -40℃ to 70℃ | |
| CANANA : | 200 g | IP 33 | | | | |
| BJ30H : | 1,2 kg | IP 33 | -33℃ to 55℃ -40℃ to 70℃ | | | |
| BJ30B : | 1,2 kg | IP 33 | | | | |
| Cables : | es : - IP 33 -33°C | | | | -40℃ to 70℃ | |
| | | | | | | |
| Data Updating Freque | | 100 ms | | | | |
| Data Updating Freque | mission : | | 333 ms | | | |

The *AC30* and its components must be stored in a clean and dry place. When the system is not in use, screw the plug caps on the corresponding socket.

The AC30 system conforms to the European Machine Directive and is labelled CE.

XV. WARRANTY AND SERVICE.

Warranty on SMIE products includes all production defects, according to our General Sales conditions and Specific Conditions for each product.

For more Information :

+33 (0)1 55 85 90 40.
 +33 (0)1 43 03 34 03.
 E-mail smie @smie.com.





- Page : 22/22



INSTRUCTIONS FOR USE MANUAL

Anemometer AN41

AN41

Instructions for Use And Installation





A010208 Manuel d'Utilisation AN41.doc - Pa

7, Rue de la Chapelle – ZI les Richardets – 93160 NOISY-LE-GRAND Phone : +33 (0)1 55 85 90 40 – Fax : +33 (0)1 43 03 34 03



II. PRINCIPLE OF USE.

The **AN41** is designed to measure wind speed, to display it and to activate different alarm levels. Consequently the **AN41** display is normally installed in the driver's cabin of the crane.

AN41

An optional second display or a logger can be placed wherever needed on site, for instance at the base of the crane or in a site office to display or record the wind speed.







AN41

III. COMPOSITION AND BASIC FUNCTION.



The AN41 is designed to measure wind speed, to display it and to activate different alarm levels.

Display :

- 10 segment bargraph from 0 to 100km/h.
- digital at 2 ¹/₂ digits from 0 to 160km/h.

Two alarm thresholds are set as standard to 50 and 72 Km/h* (According to CNAM Recommendation from 15-11-1995).

the first threshold (pre-alarm) activates :

- □ the flashing of the yellow alarm light on the display.
- □ the internal buzzer.
- □ the orange flashing light of the *KS41*.

The second threshold (alarm) also activates :

- □ the flashing of the red alarm light on the display.
- the red flashing light and the siren of the KS41.

* or adjusted to other values in factory.



The *indication kit* **KS41** is delivered with a 10-metre cable provided with the connector to plug into the display RAN41.



The sensor TR41/TR42 is delivered with a 20-metre cable provided with the connector to plug into the display RAN41.



Optionally, a relay **INT41** box can be mounted to enable and / or disable with the thresholds pre-warning and alarm, external elements.

It connects instead of indication kit KS41 and why is supplied with a cable with a form to allow fast on the housing RAN41 display.

It is therefore impossible to simultaneously connect a indication kit KS41 and a relay box INT41.





3.1 Positive security :

In case of a damaged or disconnected cable of the sensor *TR41/TR42*, the pre-alarm and alarm are activated, and after few seconds the digital display of the *RAN41* indicates a value higher than 160km/h.

AN41

3.2 The test button :

A test button on the RAN41 checks the correct operation of the RAN41 display and the KS41 indicator:

- □ by activating the alarm lights and siren on the front face of the **RAN41** and on the **KS41**.
 - □ by lighting the bargraph.
 - □ by lighting all segments of the digital display.

3.3 Setting up the thresholds :

Thresholds can be modified by the user by selecting the switches ① in the bottom left of the **RAN41**, then by adjusting the potentiometers ③ and ④ with a screwdriver :

| FUNCTIONS | S 1 | S2 | S 3 | S4 | 0 | SETTINGS |
|------------------|------------|-----|------------|-----|---|--|
| In operation | ON | OFF | OFF | ON | $ \begin{array}{c} \text{ON} \\ 1 \\ 2 \\ 3 \\ 4 \end{array} $ | Working mode position. |
| Pre-Alarm ② | OFF | ON | OFF | (*) | $\bigcup_{1}^{ON} \bigoplus_{2}^{ON} \bigoplus_{3}^{ON} \bigoplus_{4}^{ON}$ | Adjust potentiometer ③ from 15 to 50km/h. |
| Alarm ⑤ | OFF | OFF | ON | (*) | $ \begin{array}{c} \text{ON} \\ 1 \\ 2 \\ 3 \\ 4 \end{array} $ | Adjust potentiometer ④ from 23 to 72km/h. |
| Buzzer désactivé | (*) | (*) | (*) | OFF | | Simply switch S4 to OFF. |



(*) ON or OFF



A010208 Manuel d'Utilisation AN41.doc - Page : 4/9



AN41

IV. INSTALLATION AND CONNECTION.

4.1 Installation :

The installation must be done according to the regulations in force.

Because it is a measurement tool, we recommend to have an annual check in order to verify that the system is working properly.

All components of the anemometer must be accessible safely in order to allow maintenance and possible disassembling of the system.

The sensor **TR41/TR42** must be mounted in a position exposed to the maximum wind strength and unobstructed from all directions. The best performance is generally achieved by mounting the sensor at the highest point of the crane. The sensor axis **must be perfectly perpendicular** to the wind flow.

The *indication box KS41* must be positioned to be visible to personnel on the ground.

It must be fixed on a piece of steel (a thickness of 1mm minimum and maximum 0.8 mm of painting) with flat and smooth surface using all of the magnetic area.

It must be positioned vertically (see self-adhesive on the side of the apparatus) and sheltered from wind when the crane is in free slew.

The *display* **RAN41** must be positioned for the crane operator to be able to check the wind speed evolution from his place. It is provided, as standard, with different types of fixing fitting all different situations: magnetic fixing or on bar of Ø22mm.

<u>Nota</u>: The cable length allowed between the **TR41/TR42** and the receptor (**RAN10**, **RAN41**) must be lower than 500 m with a wire of 0,22 mm². If several receptors are connected to the **TR41/TR42** with a junction box, the maximum length of cable allowed between the **TR41/TR42** and each receptor is equal to the 500 m allowed above divided by the number of receptors.



A010208 Manuel d'Utilisation AN41.doc - Page : 5/9



4.2 Standard connection :

The three parts of the **AN41** are linked by cables with keyed connector.

The **RAN41** power supply uses the *Amphénol* connector included. It must be connected as described below. Voltage can be taken from the crane electrical cabinet with the required protections.



Principe of wiring :





A010208 Manuel d'Utilisation AN41.doc - Page : 6/9



4.3 Advanced connection :

An optional second display or a logger can be placed wherever needed on site, for instance at the base of the crane or in a site office to display or record the wind speed.

For this, It is necessary to use a junction box and an additional connector as shown below :





A010208 Manuel d'Utilisation AN41.doc - Page : 7/9



4.4 Connetion of the relay box :



The relay K1 is activated by the pre-threshold alarm. The relay K2 is activated by the alarm threshold.

4.5 Internal fuse protection :

To power off the system, unplug the power supply connector

Changing the fuses :

- Prior to work on the anemometer, disconnect the power supply connector.
- Open the box and identify the broken fuse (F1 or F2).
- Remove the protective cover and replace the broken fuse. (specification ^{STD}: 250V 160mA, 5x20mm, **slow-blow**)
- □ Re-install the fuse protective cover and then the RAN41 cover. Take care to well position the gasket. Re-connect the power supply.









AN41

V. TECHNICAL SPECIFICATIONS.

| DISPLAY BOX | RAN41 | | |
|---------------------------------|---------------------------|--|--|
| Pre-alarm threshold* | 50 km/h | | |
| Alarm threshold* | 72 km/h | | |
| Accuracy** | ± 7% at 72km/h at 25°C | | |
| Input voltage (standard) *** | 400 VAC - 50/60 Hz | | |
| Maximum consumption (with KS41) | 18W | | |
| Operating temperature | -0°C / +60°C | | |
| Storage temperature | -20°C / +70°C | | |
| Dimensions | 160x120x80 | | |
| Weight | 1.2kg | | |
| Protection | IP65 | | |
| Mounting | Box equipped with magnets | | |
| СЕМ | Conform to CEM 89/336/CEE | | |

* other thresholds available on request.

** 1% with special calibration.

*** other voltages on request (230 VAC 50/60Hz, 120 VAC 60Hz, 55 VAC 60Hz, 24 VDC).

| INDICATION KIT | KS41 | | |
|----------------------------|---------------------------|--|--|
| Siren | 110dB à 1m | | |
| Flashing light | 75-90 flashes/minute. | | |
| Input voltage (Un) | 10-15 VDC | | |
| Maximum consumption | 13W | | |
| Operating temperature | -20°C / +55°C | | |
| Storage temperature | -30°C à +70°C | | |
| Dimensions | 230x160x80 | | |
| Weight (box + TR + cables) | 1.5kg | | |
| Protection | IP55 | | |
| Mounting | Box equipped with magnets | | |
| SENSOR | TR41 | | |
| Operating temperature | -30°C / +60°C | | |
| Storage temperature | -30°C à +70°C | | |
| Dimensions | Ø100x290 | | |
| Weight (box + TR + cables) | 1kg | | |
| Protection | IP33 | | |

VI. WARRANTY AND SERVICE.

 \mathbf{I}

=

SMIE warrants its products to be free from defects in materials and workmanship in accordance with its standard conditions and the special conditions for each product.

Technical support :

+33 (0)1 55 85 90 59. +33 (0)1 43 03 34 03. E-mail f.visserot @ smie.com.

