### ***CONCRETE PUMPING OPERATION PLAN***

### ***PROJECT NAME – CONTRACT No.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Document Reference No: CONSTRUCT 01 | | Document Status | Tick Applicable Box | |
| Draft |  |
| Live |  |
| **Authorised By:** | **Name:** | | **Signature:** | |
| Pumping Operation Manager |  | |  | |
| Batching Plant Manager |  | |  | |
| Project Manager |  | |  | |
| Pump Supervisor / Site Manager |  | |  | |
| Health & Safety Manager |  | |  | |

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| --- | --- | --- | --- |
| Issued to: (name & company) | | | |
| Response required by (date): | | Plan Approved/Agreed by: | |
| **Plan Approved/Agreed Status**:*(Indicate by circling relevant option)* | **Yes** *(Accepted, ready for implementation.)* | | **NO** *(Rejected, work cannot commence, must be amended & resubmitted.)* |

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| **Revision Records** | | | | |
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*Note*: The latest issue will be retained by the Project Manager. All signatures must be collected on a hard copy of this document & kept in the Site Safety Files. Acceptance sheets issued by the client or principal contractor are to be attached to the hard copy

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| **Relevant Legislation, Standards & Guidance** |
| The Provision and Use of Work Equipment Regulations 1998 (PUWER) |
| Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) |
| The Manual Handling Operations Regulations 1992 |
| The Construction (Design and Management) Regulations 2015 |
| BS 847:2007 “Code of Practice for the safe use of concrete pumps” |
| Safe Use of Concrete Pumps a CPA Good Practice Guide |

**DATE WORKS TO COMMENCE:**

1. **SCOPE OF WORKS**

**BRIEF DESCRIPTION:** Pumping …… concrete with an ………………….. over a maximum horizontal distance of ……….. and maximum vertical distance of ………….

**PUMP CLASSIFICATIONS:**

*Tick below boxes as appropriate:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Truck Mounted** | **Trailer Mounted/Static** | **Specialised** | **Truck Mixer** |
| **✓** |  |  |  |

**PUMPING STRATEGY:**

All pumping operations will be undertaken in accordance with …………………. to ensure that we meet our obligations under PUWER 98 & LOLER 98, as well as BS 8476:2007 Code of Practice for the safe use of concrete pumps.

**APPOINTED PERSON – PUMPING OPERATION MANAGER (Concrete Pumping Operation)**

The Appointed Person, who has prepared this document, carries full responsibility for the safe completion of all works carried out during the pumping operation(s). The Appointed Person must ensure that the Pump Supervisor is adequately briefed on the contents of this document.

**PUMP OPERATION SUPERVISOR:**

Prior to the start of any works, the Pump Supervisor must ensure that all site personnel are adequately briefed on the contents of this document and risk assessments. They must liaise with the Appointed Person should site circumstances require any change to the methods employed during pumping operation(s).

1. **COMPETENCY COMPLIANCE**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forename | Surname | Role | Competency[[1]](#footnote-1) | | | | | Remarks |
| NVQ | A06 | A44 | A72 | Other |
|  |  |  |  |  |  |  |  |  |
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1. **PUMPING EQUIPMENT DETAILS**

*Identify items in table below.*

| **The Pump** | |
| --- | --- |
| **Make and Model** |  |
| **Registration/Plant Number** |  |
| **12 Monthly Thorough Examination Certificate** |  |
| **Details of last service** |  |
| **Dimension(s)** |  |
| **Weight** |  |
| **Boom Chart Attached** |  |
| **Boom Reach Height** |  |
| **Boom Radius** |  |
| **Unusual Features, Boom & Other Restrictions** |  |
| **Mechanical or Electronic Restrictions** |  |
| **Fitted Safety Device (VECTOR etc, short rigging)** |  |
| **Outriggers** | See Guidance at Appendix D |
| Outrigger Loads |  |
| Max Outrigger Point Load |  |
| Type of Outrigger Mats |  |
| Mat Area Provided |  |
| Resulting Ground Pressure |  |
| Temporary Works Load Bearing Capacity |  |
| Additional Mats Required |  |

| **The Pump Lines** | |
| --- | --- |
| Type of pipe |  |
| QC Testing |  |
| Pipe dimension(s) |  |
| Maximum pump length |  |
| Maximum Elevation |  |
| Permissible Hose Attachments |  |
| Cleaning Method |  |
| Protection Required |  |
| Pipeline Couplings |  |

1. **ASSOCIATED EQUIPMENT**

|  |  |  |
| --- | --- | --- |
|  | **PLACING BOOM** | **DELIVERY VEHICLE** |
| Make & Type |  |  |
| 12 Monthly Thorough Examination Certificate |  |  |
| Owned by (Contact No.) |  |  |

Equipment must have a current 12 monthly thorough examination certificate.

Copies of statutory test certification and inspection reports will be available for inspection prior to any pumping taking place and are attached at Appendix A.

1. **HAZARD IDENTIFICATION/RISK ASSESSMENT**

**Hazard Identification**. The table below indicates the type of hazards usually applicable to the operation. Where applicable there must be mitigation put in place to reduce the risk to as low as reasonably practicable (ALARP).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hazard Type** |  | | | | |
| Applicable to Plan | Risk Assessed | Risk Rating | | |
| Low | Medium | High |
| Overhead Cables |  |  |  |  |  |
| Contact with End-Placing Hose |  |  |  |  |  |
| Contact with pipes, hoses and sponge balls |  |  |  |  |  |
| Obstructions |  |  |  |  |  |
| Ground Conditions – Pump Lifting Position |  |  |  |  |  |
| Underground Services |  |  |  |  |  |
| Underground Voids / Vaults |  |  |  |  |  |
| Traffic  Site and Public |  |  |  |  |  |
| Manual Handling |  |  |  |  |  |
| Delivery line route (interaction with TW, other equipment and people) |  |  |  |  |  |
| Operator/Gang fatigue due to over-run. |  |  |  |  |  |
| Tower/Mobile Cranes |  |  |  |  |  |
| Vibration |  |  |  |  |  |
| Surplus Concrete/  Spillage |  |  |  |  |  |
| Noise |  |  |  |  |  |
| Equipment Cleaning |  |  |  |  |  |
| Enabling Works |  |  |  |  |  |
| Communication (radio – visual) |  |  |  |  |  |
| Lighting |  |  |  |  |  |
| Wind |  |  |  |  |  |
| Fumes |  |  |  |  |  |
| Other Hazard(s) |  |  |  |  |  |

Please see relevant risk assessments in Appendix B and the Pump Layout Plan in Appendix C.

1. **WEATHER CONDITIONS**

Pumping restrictions are implemented based on guidance from the manufacturer &/or Operators Manual and those detailed in the risk assessment.

* Operations will take place in wind speeds up to XX metres per second.
* Pumping operations must stop during storms, or when there is a risk of lightning strikes.

The Appointed Person, Pump Supervisor or Operator may stop pumping operations due to weather conditions at a lower wind speed than specified above or for other weather-related safety reasons.

1. **TRAINING, INFORMATION AND INSTRUCTION**

Suitable and sufficient training must be provided to ensure workforce competency. Any unusual requirements that are out of the normal parameters of the pumping operation must be identified and if other trades are included in this work then their competency must be verified. Information such as vehicle operating envelope charts must be legible and checked for accuracy. The AP must provide written and verbal instructions as to the hazard mitigation and the safe running of the operation.

1. **SUPERVISION AND RESOURCES**

Supervision of the operation will be required at the point of pumping and placement. The supervisors listed at paragraph 2 should be present at all times that the pump is in operation which includes cleaning and carry a duty of care to stop the operation at any point.

1. **COMMUNICATION**

Tick below boxes as appropriate:

|  |  |  |
| --- | --- | --- |
| **Hand Signals** | **Two-way Radios** | **Second Banksman** |
|  |  |  |

The use of hand signals should be confirmed between all operatives including Traffic Marshals that may be otherwise involved with secondary tasks within a logistics area. Frequencies for radio use may need to be authorised in sensitive areas such as Airports and secure areas.

There should be sufficient information provided to others working in the area that are not directly involved with the pumping operation. The supporting plan drawings within this document should be placed in an area for others to see. Out of bounds areas must be conveyed during morning safe start briefings.

A method statement / pumping operation plan briefing session will take place prior to starting any work.

1. **ACCESS AND EGRESS**

Access and egress planning must cover the traffic route to/from the site and all internal vehicle manoeuvring areas in addition to pedestrian walkways. The installation of pumping equipment should not interfere with safe access for others to conduct their daily work but if this cannot be averted then suitable control measures must be put in place and risk assessed.

1. **EMERGENCY ARRANGEMENTS**

The emergency arrangements should be no different from those identified in the Construction Phase Plan. Emergency arrangements are to be conveyed to the workforce and should be exercised periodically. There will be a requirement to produce a rescue plan to deal with the safe transport of an injured/incapacitated person from the place of incident to the emergency vehicle. This could include the use of a crane and suitable personal transport. This operation must be exercised periodically under the control of the AP.

**APPENDIX A -**

**THOROUGH EXAMINATION CERTIFICATES**

To be held in this section.

**APPENDIX B - RISK ASSESSMENTS**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Hazard** | **Relevant to Task** | | **Activity** | **Population at Risk** | **Control Measures** | **Risk Rating** | | |
| **Yes** | **No** | **Low** | **Medium** | **High** |
| Overhead Cables |  |  | Pump set up |  |  |  |  |  |
|  |  | Placement  Boom set up |  |  |  |  |  |
|  |  | Boom operation |  |  |  |  |  |
| Contact with End-Placing Hose |  |  | Starting to pump a new load of concrete |  |  |  |  |  |
|  |  | Grouting Up |  |  |  |  |  |
| Contact with pipes, hoses and sponge balls |  |  | Clearing lines with compressed air |  |  |  |  |  |
| Obstructions |  |  | Pump set up |  |  |  |  |  |
|  |  | Placement  Boom set up |  |  |  |  |  |
|  |  | Boom operation |  |  |  |  |  |
| Ground Conditions |  |  | Set up pumping equipment |  |  |  |  |  |
|  |  | Vehicle Access |  |  |  |  |  |
|  |  | Pedestrian Access |  |  |  |  |  |
| Underground Services |  |  | Set up pumping equipment |  |  |  |  |  |
| Underground Voids / Vaults |  |  | Set up pumping equipment |  |  |  |  |  |
| Traffic  Site and Public |  |  | Vehicle movement to/from site |  |  |  |  |  |
|  |  | Vehicle  Manoeuvring on site |  |  |  |  |  |
|  |  | Interaction with public highway |  |  |  |  |  |
| Manual Handling |  |  | Handling of pumping equipment including steel lines and ancillary items. |  |  |  |  |  |
|  |  | Control of flexi-hose at point of placement. |  |  |  |  |  |
| Concrete delivery line (interaction with TW, Equipment and operatives) |  |  | Setting up delivery lines and equipment |  |  |  |  |  |
|  |  | Pumping concrete |  |  |  |  |  |
|  |  | Access/Egress (walkways) |  |  |  |  |  |
|  |  | Demobilise delivery lines and equipment |  |  |  |  |  |
| Operator/  Gang fatigue due to over-run. |  |  | Pumping concrete |  |  |  |  |  |
|  |  | Finishing concrete |  |  |  |  |  |
|  |  | Driving to – from site |  |  |  |  |  |
| Tower/Mobile Cranes |  |  | Set up pumping equipment |  |  |  |  |  |
|  |  | Operating boom |  |  |  |  |  |
|  |  | Operating crane |  |  |  |  |  |
|  |  | Demobilise pumping equipment |  |  |  |  |  |
|  |  | Demobilise crane |  |  |  |  |  |
| Vibration (include potential to disturb ground) |  |  | Compacting concrete |  |  |  |  |  |
|  |  | Pumping concrete |  |  |  |  |  |
| Surplus Concrete/  Spillage |  |  | Pumping concrete |  |  |  |  |  |
|  |  | Wash out |  |  |  |  |  |
| Noise |  |  | Concrete pumping |  |  |  |  |  |
| Equipment/  Deck Cleaning |  |  | Using compressed air for deck clearing. |  |  |  |  |  |
|  |  | Cleaning out delivery lines. |  |  |  |  |  |
| Enabling Works |  |  | Ground stabilisation |  |  |  |  |  |
|  |  | Isolation of services |  |  |  |  |  |
| Communication (radio – visual) |  |  | Set up pumping equipment |  |  |  |  |  |
|  |  | Pumping operation |  |  |  |  |  |
|  |  | Demobilise pumping equipment |  |  |  |  |  |
| Lighting |  |  | Operation of Pump |  |  |  |  |  |
|  |  | Placing/finishing concrete |  |  |  |  |  |
| Wind |  |  | Operation of boom |  |  |  |  |  |
| Fumes |  |  | Operation of Pump Engine |  |  |  |  |  |
| Other Hazard(s) |  |  |  |  |  |  |  |  |

**APPENDIX C - PUMP LAYOUT PLAN**

| **PUMP LAYOUT PLAN** |
| --- |
| This drawing shows the agreed position of Pump & delivery line travel paths where necessary. It should be completed in plan and elevation, detailing secondary hazards.  *Note: This hand-drawn document can be replaced by an electronic Site Layout Drawing if available.* |

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**APPENDIX D –**

**General guidance for calculating outrigger pad size**

For very large mobile concrete pumps, or special situations or where the ground conditions are not straight forward (e.g. layered strata, paved areas etc) the foundation must be specially designed by a geotechnical engineer.

The tables below have an in-built Factor of Safety 2 (FOS)



**APPENDIX E - Daily - Weekly Checks and Inspections Record**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Name:* |  | *Depot or Site Address:* |  | *Fleet No.:* |  | *Week Ending:* |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Daily Pre-use Checks** | | **M** | **T** | **W** | **T** | **F** | **S** | **S** |
| 1. | Engine oil level(s) |  |  |  |  |  |  |  |
| 2. | Fuel level/Leaks |  |  |  |  |  |  |  |
| 3. | Coolant level |  |  |  |  |  |  |  |
| 4. | Hydraulic Oil Level |  |  |  |  |  |  |  |
| 5. | Hydraulic System Leaks |  |  |  |  |  |  |  |
| 6. | Tyre Pressures and Condition |  |  |  |  |  |  |  |
| 7. | Wipers, Washers |  |  |  |  |  |  |  |
| 8. | Lights and Indicators |  |  |  |  |  |  |  |
| 9. | Horn and Cab instruments |  |  |  |  |  |  |  |
| 10. | Wheel Nuts and Studs |  |  |  |  |  |  |  |
| 11. | Operation of Hand or Foot Brake |  |  |  |  |  |  |  |
| 12. | Hopper Grill and Safety Interlock |  |  |  |  |  |  |  |
| 13. | Delivery Hoses |  |  |  |  |  |  |  |
| 14. | Outrigger Support Plates/Timbers |  |  |  |  |  |  |  |
| 15. | Grease Pump Unit |  |  |  |  |  |  |  |
| 16. | Accumulator Pressure |  |  |  |  |  |  |  |
| 17. | Boom Pins and Keyways |  |  |  |  |  |  |  |
| 18. | Ground Lines Pipes,Flex's & Clips |  |  |  |  |  |  |  |
|  | *Further model specific checks as specified by manufacturer* | | | | |  |  |  |
| 19. |  |  |  |  |  |  |  |  |
| 20. |  |  |  |  |  |  |  |  |
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| 28. |  |  |  |  |  |  |  |  |

**Weekly Servicing Checks**

1. Battery and Water Level
2. Windscreen Washer Reservoir
3. Grease Boom
4. Transmission Levels
5. Brake and Clutch Levels
6. Hydraulic Oil Level & Filters
7. Hydraulic Hoses
8. Check A/C Belt
9. Grease Slew Ring
10. Hydraulic Fan
11. Pumping Piston Fixing
12. Tyre Condition
13. Operation of Boom
14. Prop Shaft Belts
15. Outriggers for Cracks
16. Boom & Boom Pipes for Cracks

*Further model specific checks as specified by manufacturer*

Q.

R.

S.

T.

U.

V.

W.

X.

Y.

Z.

AA.

BB.

|  |  |
| --- | --- |
| **Daily Site Checks** | **M T W T F S S** |

Ground Conditions

Overhead Power Cables

Washout Facility

Protection for Nearby Cars/Property

Customer Provided Method Statement

**Defect Report**

(All defects must be reported. Those affecting safe operation must be reported and repaired immediately)

*Description:*

|  |  |  |
| --- | --- | --- |
| *Reported to:* |  | *Date:* |
|  |  |  |
|  |  |  |
| *Description:* |  |  |
|  |  |  |
| *Reported to:* |  | *Date:* |
|  |  |
|  |  |  |
|  |  | |
| *Engine Hrs* | *Chassis Miles* | |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Operator's observations, requirements for oil, grease etc:* | |  |  | *Repairs Completed or Comments:* |  |
|  |  |  |  | *Fitter's Signature:* | *Date:* |
| *Operator's Signature:* | *Date:* |  |  | *Manager's Signature:* | *Date:* |
|  |  |  |  |  |  |

**APPENDIX F – Copy of Concrete Mix Design**

To be held in this section.

1. NVQ 2-Specialist Plant and Machinery Operations Concrete Pumping (QCF). A06-Truck Mounted Boom Concrete Pump. A44-Trailer Mounted Boom Concrete Pump. A72-Static Concrete Placing Boom. [↑](#footnote-ref-1)