CLIENT	ARCHITECH	LEAD CONSULTANT	MAIN CONTRACTOR
الشركة العقارية القابضة ش.ذ.م.م THE REAL ESTATE HOLDING COMPANY L.L.C	BURO KLING ARCHITECTURAL ENGINEERING CONSULTANTS	Lead Consultant KLING CONSULT	HBC شركة الحكمة لمقاولات البناء ذ.م.م Al Hikma Building Contracting L.L.C

PROJECT: AL KHAWANEEJ AVENUE, PLOT NO.2840506 at AL KHAWANEEJ 2,
RESIDENTIAL PACKAGE DUBAI, UAE

RISK ASSESSMENT FOR SUBSTRUCTURE CONCRETE WORK

1. Scope of Work

This assessment covers delivery and mobilization of concrete equipment, concrete testing and placement, concrete pumping and bucket placement, column/slab concreting, vibrator use, electrical equipment, formwork/back-propping, housekeeping, excavation/soil stability, access, lifting, washout and associated substructure concrete activities.

2. Risk Rating Criteria

Rating	Score	Meaning	Required Action
LOW	1–4	Tolerable with routine controls	Implement/maintain controls; monitor.
MEDIUM	5–12	Further reduction required	Do not start until controls are in place; monitor and improve.
HIGH	15–25	Intolerable without additional control	Do not commence/continue until risk is reduced to an acceptable level; management involvement required.

3. Detailed Risk Assessment

No.	Activity / Task	Hazard	Causes / Sources	Potential Consequences / Impact	Initial Risk P×S=RR	Control Measures	Residual Risk P×S=RR	Accept ?
1	**Delivery & mobilization of equipment**	Vehicle/pedestrian collision	• Unsafe manoeuvring/reversing of concrete trucks • Congested access/poor visibility • Untrained personnel or no banksman	• Fatality or serious injury • Property/vehicle damage • Disruption to site activities	4×4=16	• HSE induction and pre-job briefing for drivers/operators. • Approved truck routes and concrete-pump locations marked before delivery. • Trained banksman/flagman to control manoeuvring and reversing. • Reverse alarms, lights, mirrors/cameras and brakes to be functional. • Segregate pedestrians from vehicle routes; barricade exclusion zone. • Maintain safe following distance and control delivery sequence.	1×4=4	Y

No.	Activity / Task	Hazard	Causes / Sources	Potential Consequences / Impact	Initial Risk P×S=RR	Control Measures	Residual Risk P×S=RR	Accept ?
						• Speed limits and one-way traffic arrangements where practicable. • No unauthorized persons in truck movement areas.		
2	**Concrete testing & placing on slab**	Contact with wet concrete / cementitious material	• Miss-handling during testing/placing • Failure to use PPE • Splashing during discharge/testing	• Skin/eye irritation or chemical burns • Hand injury • Slip hazard	**4×3=12**	• Use suitable chemical-resistant gloves, safety goggles and protective clothing. • Provide training on safe handling of concrete and cementitious materials. • Provide clean water/eyewash for immediate washing after exposure. • Avoid direct skin contact; replace contaminated gloves/clothing promptly. • Maintain good housekeeping around testing and placing areas.	**1×3=3**	**Y**
3	**Pumping concrete**	Pump/hose failure and uncontrolled hose movement	• Mechanical failure • Improperly secured joints/clamps • Unskilled operator • Blocked line or pressure release	• Fatality/serious injury • Hose whip/impact injury • Concrete spill and property damage	**3×4=12**	• Use competent, authorized pump operator with valid competency/licence as applicable. • Inspect pump, hoses, couplings, clamps and safety devices before use. • Use correctly rated hoses and properly secured clamps; never improvise connections. • Establish exclusion zone around discharge hose and pump. • Never stand in front of or over pressurized hose joints. • Follow manufacturer procedure for blockage clearing and depressurization. • Provide spill protection/polythene sheets and remove waste to designated location. • Valid equipment inspection/certification records to be available.	**1×4=4**	**Y**
4	**Concrete placement by bucket**	Dropped load / lifting failure	• Failure of concrete bucket • Overloading beyond SWL • Improper rigging • Uncontrolled suspended load	• Fatality/serious injury • Property damage • Concrete spill	**4×5=20**	• Competent crane operator and qualified rigger/banksman assigned. • Use certified lifting equipment, tackles and third-party certified concrete bucket. • Verify SWL and load weight before lifting. • Pre-use inspection of bucket, hooks, shackles, slings and lifting points. • Use tagline where safe and appropriate to control the load. • Barricade lifting/exclusion zone; no persons beneath suspended loads. • Lift smoothly and avoid sudden starts/stops. • Close supervision during lifting and discharge.	**1×5=5**	**Y**
5	**Placing concrete to columns/slab**	Loss of control of concrete hose / work at height	• Untrained hose handler	• Fatality/serious injury • Fall from height	**3×4=12**	• Only trained personnel to handle pump hose. • Use suitable guiding rope/tagline where appropriate; never wrap rope around body.	**1×4=4**	**Y**

No.	Activity / Task	Hazard	Causes / Sources	Potential Consequences / Impact	Initial Risk P×S=RR	Control Measures	Residual Risk P×S=RR	Accept ?
			• Inadequate barricading during cleaning • Unprotected edges/openings	• Struck-by injury		• Provide edge protection, guardrails and covered/guarded openings. • Use full-body harness with suitable anchorage where required by the work-at-height system. • Barricade the area during pump cleaning and maintenance. • Maintain communication between pump operator and hose handlers. • Stop pump and depressurize before disconnecting or cleaning hose.		
6	**Concrete placement / movement on reinforcement**	Slips, trips, falls and impalement	• Wet concrete/spillage • Poor housekeeping • Uneven reinforcement • Loose materials and hoses	• Fracture/sprain • Puncture/impalement injury • Serious fall injury	**3×4=12**	• Maintain housekeeping continuously; remove spills and obstructions promptly. • Provide safe walkways/temporary platforms over reinforcement where needed. • Tie reinforcement bars securely to prevent movement. • Cap/protect exposed starter bars where impalement risk exists. • Route hoses/cables away from access paths and secure them. • Provide adequate lighting and safe access/egress. • Wear safety footwear with suitable slip resistance.	**1×4=4**	**Y**
7	**Concrete casting – formwork/back-propping**	Formwork or falsework collapse	• Inadequate structural design/load calculation • Insufficient or altered back-propping • Unapproved modification • Overloading during pour	• Multiple fatality/serious injury • Structural/property damage • Concrete collapse/spill	**3×5=15**	• Formwork/falsework and back-propping to be designed/checked by competent personnel. • Verify supporting system is adequate for wet concrete, reinforcement, workers and equipment loads. • Consultant/competent-person inspection and approval before casting. • Keep carpenter/formwork team available during casting to monitor movement and propping. • Do not remove, loosen or alter props without authorization. • Control concrete pour rate and sequence in accordance with approved method/design. • Stop work immediately if abnormal deflection, movement, cracking or instability is observed. • Maintain records of pre-pour inspection and approval.	**1×5=5**	**Y**
8	**Use of concrete vibrator**	Hand-arm vibration / electric shock	• Repeated vibratory equipment use • Incorrect technique • Long exposure duration	• Hand-arm vibration injury • Musculoskeletal fatigue • Electric shock	**3×4=12**	• Use competent/trained operators and manufacturer instructions. • Apply work rotation and limit continuous exposure duration. • Maintain vibrator and inspect before use. • Use low-voltage/RCD-protected electrical supply where applicable. • Keep cables and plugs protected from wet concrete and water. • Do not drag or lift equipment by electrical cable.	**1×4=4**	**Y**

No.	Activity / Task	Hazard	Causes / Sources	Potential Consequences / Impact	Initial Risk P×S=RR	Control Measures	Residual Risk P×S=RR	Accept ?
			• Damaged electrical equipment/cable					
9	**Use of electrical machinery**	Electric shock / electrocution	• Poor maintenance • Damaged cables/plugs • Improper temporary connections • Wet working environment	• Fatality • Burns/electrocution • Equipment damage	**3×4=12**	• Electrical equipment to be inspected and maintained periodically. • Only competent/authorized electricians to make or modify connections. • Use RCD/ELCB protection and suitable earthing. • Inspect cables, plugs and guards before use; remove defective equipment from service. • Protect cables from traffic, sharp edges and wet areas. • Provide proper cable management and prevent trip hazards. • Keep distribution boards secured and protected from water.	**1×4=4**	**Y**
10	**Concreting near excavation / substructure**	Soil or excavation collapse	• Heavy vibration from pumps/vibrators • Plant loads near excavation edge • Inadequate shoring/benching • Poor soil conditions/weather	• Burial/asphyxiation • Fatality/serious injury • Damage to structures/equipment	**3×3=9**	• Confirm soil investigation/geotechnical recommendations. • Provide designed shoring, sloping or other protective system as required. • Keep heavy vehicles, concrete pumps and materials away from excavation edges by approved safe distance. • Inspect excavation before work and after rain, vibration or any change in condition. • Provide safe access/egress and barricade excavation edges. • Do not work in an excavation showing signs of instability.	**1×3=3**	**Y**
11	**Concrete pump line cleaning / blockage clearing**	Sudden release of pressure / hose whip	• Attempting to clear blockage while pressurized • Incorrect cleaning procedure • Poor communication	• Fatality/serious injury • Eye/face injury • Concrete strike	**4×4=16**	• Stop pump, isolate and fully depressurize before opening any connection. • Follow manufacturer's approved blockage-clearing and cleaning procedure. • Barricade the discharge area and keep personnel clear. • Only trained pump crew to perform cleaning. • Use required PPE including face/eye protection and gloves. • Maintain clear communication between pump operator and hose crew.	**1×4=4**	**Y**
12	**Rebar and embedded items during concreting**	Cuts, trips and impalement	• Sharp reinforcement ends • Unsecured reinforcement • Poor access over steel	• Cuts/lacerations • Puncture/impalement • Falls and fractures	**3×4=12**	• Cap/protect exposed reinforcement ends where required. • Provide designated access platforms/walkways over reinforcement. • Secure reinforcement before allowing personnel to work over it. • Wear gloves, safety footwear and suitable protective clothing. • Maintain clear access around column starters and embedded items.	**1×4=4**	**Y**

No.	Activity / Task	Hazard	Causes / Sources	Potential Consequences / Impact	Initial Risk P×S=RR	Control Measures	Residual Risk P×S=RR	Accept ?
13	**Manual handling of hoses, tools and materials**	Manual handling / ergonomic injury	• Heavy hoses/tools • Awkward postures • Team lifting not used • Repetitive handling	• Strains/sprains • Back injury • Hand injuries	**3×3=9**	• Assess weight and handling method before moving equipment. • Use mechanical assistance where practicable. • Use team lifting for heavy/awkward items. • Train workers in safe lifting and handling techniques. • Rotate tasks and provide rest periods for repetitive activities. • Keep access routes clear before moving materials.	**1×3=3**	**Y**
14	**Concrete washout and housekeeping**	Chemical exposure / environmental spill / slips	• Uncontrolled washout • Wet concrete residue • Blocked drains or poor waste segregation	• Chemical burns/skin irritation • Slips and falls • Environmental contamination	**3×3=9**	• Provide designated concrete washout area with containment. • Do not discharge concrete slurry to stormwater drains or unauthorized areas. • Use gloves and eye protection during washout/cleaning. • Remove hardened waste to approved disposal area. • Clean access routes promptly and maintain good housekeeping.	**1×3=3**	**Y**
15	**Hot-weather concreting**	Heat stress / dehydration	• High ambient temperature • Long exposure • Inadequate hydration/rest • PPE and physical exertion	• Heat exhaustion/heat stroke • Dehydration • Loss of concentration and secondary injury	**4×3=12**	• Implement site heat-stress controls and applicable UAE requirements. • Provide cool drinking water and shaded/rest areas. • Schedule strenuous work to cooler periods where practicable. • Monitor workers for heat-stress symptoms and use work/rest arrangements. • Provide acclimatization for new/returning workers. • Stop and seek assistance if a worker shows signs of heat illness.	**2×3=6**	**Y**
16	**Night/low-light concreting where applicable**	Poor visibility / collision / fall	• Insufficient lighting • Glare/shadows • Poorly lit access and work areas	• Trips/falls • Vehicle/pedestrian collision • Incorrect placement or unsafe work	**3×4=12**	• Provide adequate task and access lighting before starting work. • Illuminate pump, truck routes, edges, openings and access/egress points. • Use reflective/high-visibility clothing for traffic interface. • Keep lighting cables protected and out of walkways. • Stop work if lighting is insufficient for safe operation.	**1×4=4**	**Y**

4. Persons at Risk

- Workers undertaking substructure concrete works, pump operators, riggers, carpenters, electricians and supervisors.
- Personnel working or walking near concrete truck routes, pump locations, lifting zones and excavation edges.
- Visitors, subcontractors and other persons who may enter the work area.
- Members of the public and vehicle occupants where site traffic interfaces with public/access roads.

5. Personal Protective Equipment (PPE)

PPE	PPE	PPE	PPE	PPE	PPE
Safety helmet	Safety footwear / gum boots	Chemical-resistant gloves	Safety goggles / face shield	High-visibility vest	Full-body harness where required

6. Information, Induction & Training

- All personnel shall be briefed on the approved method statement, risk assessment and safe system of work before starting.
- Only trained/competent operators shall operate concrete pumps, cranes, vibrators and electrical equipment.
- Drivers, banksmen and lifting teams shall understand site traffic and communication arrangements.
- Workers shall be trained in concrete chemical exposure, emergency response, manual handling, heat-stress prevention and work-at-height controls.
- Daily pre-start/toolbox talks shall cover changes in conditions, weather, access, plant and the day's pour sequence.

7. Emergency Preparedness

- Site emergency arrangements shall cover first aid, rescue from height, excavation incidents, plant incidents and electrical shock.
- Emergency access/egress routes shall remain clear throughout the pour.
- First-aid facilities and trained first-aiders shall be available for the work activity.
- Emergency contact details and communication arrangements shall be posted/available to the work team.
- In case of formwork movement, hose failure, lifting incident or excavation instability: stop work, isolate the hazard, barricade the area and inform the responsible supervisor immediately.
- Provide suitable eyewash/clean water for concrete or cement exposure and seek medical attention for significant exposure.

8. Monitoring & Review

- Foreman/chargehand and HSE personnel shall monitor the work and verify that controls remain effective.
- Reassess the risk assessment when the method, plant, sequence, weather, ground conditions or work area changes.
- Conduct pre-pour inspection of formwork/back-propping, reinforcement, access, pump setup, lifting equipment and electrical arrangements.
- Record inspections and close out unsafe conditions before continuing the pour.
- Stop work where residual risk is not acceptable or required controls are not available.

9. 5 × 5 Risk Matrix

Severity ↓ / Likelihood →	1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
1 Insignificant	1 LOW	2 LOW	3 LOW	4 LOW	5 MEDIUM
2 Minor	2 LOW	4 LOW	6 MEDIUM	8 MEDIUM	10 MEDIUM
3 Moderate	3 LOW	6 MEDIUM	9 MEDIUM	12 MEDIUM	15 HIGH
4 Significant	4 LOW	8 MEDIUM	12 MEDIUM	16 HIGH	20 HIGH
5 Major	5 MEDIUM	10 MEDIUM	15 HIGH	20 HIGH	25 HIGH

10. Risk-Based Control Plan

Risk Level	Score	Action / Timescale
LOW	1–4	Routine controls shall be maintained. Quick/easy improvements should be implemented immediately where practicable. Continue monitoring.
MEDIUM	5–12	Further controls are required. Work shall not start until the identified controls are implemented and the risk is reduced to an acceptable level. Monitor during the activity.
HIGH	15–25	Do not commence or continue the activity until additional controls reduce the risk. Escalate to project management/HSE and formally review the assessment.

11. Review & Approval

Prepared / Assessed By	Reviewed & Approved By	Reviewed & Approved By
SARATH SIDHARTHAN Safety Officer	Eng. ESAM EL DIN MOUSTAFA Project Manager	Consultant / Client Representative
Signature: _____ Date: _____	Signature: _____ Date: _____	Signature: _____ Date: _____