

**RISK / IMPACT ASSESSMENT FOR GRIT BLASTING AND PAINTING**

**Project:** **MOZOOK TOWERS PROJECT**

Contact Details

**RISK ASSESSMENT PREPARED BY:** Adeoye Adeyemi

Sign & Date

Position: Snr. HSE Officer

**Project Director:** Engr. Waleed Al Masri

Sign & Date

Risk Assessment Number

**OE/SWAG-MT-ARCH-HSE-0020**

Process / Activity	HAZARD	RISK & IDENTIFY OF PERSON WHO MIGHT BE HARMED	INITIAL RISK/IMPACT			CONTROL MEASURES TO REDUCE THE RISK	RESIDUAL RISK			ACTION TAKEN BY & WHEN
			Consequence	Likelihood	Rating		Consequence	Likelihood	Rating	
Work Permit Procedure	<ul style="list-style-type: none"> <li>* Wrong type of work permit used</li> <li>*Wrong information about work required on the permit</li> <li>* Failure to recognise the hazards where work is carried out</li> <li>* Failure to hand-over in safe condition on completion of work/cancelling of work permit</li> <li>* Unauthorised staff performing work permit functions</li> <li>* Insufficient monitoring of the work permit system.</li> </ul>	Staff / Visitor / Site Workers Property damage	4	3	12	<p>No work activity must be initiated without obtaining proper work permit.</p> <p>All relevant staff must be made aware of the requirements of the safe system of work prior to the task being undertaken.</p> <p>The authorized person will include sufficient safety information, maintenance instructions, correct PPE and equipment for use along with the safety induction documents provided to all employees who are to undertake the task.</p> <p>All work permits <u>must be duly closed and handed back to HSE personnel on completion of work activities or at shift end.</u></p> <p>TBT/Instructions must be given to all involved to explain about the importance of PTW.</p> <p><u>Only authorized person to issue and sign permit.</u></p>	4	1	4	Construction manager, Site Engineer and Safety Officer before work commences.

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Transportation of materials by means of truck and forklift (Preparatory Works)	Loose / poorly secured Load / poorly stacked load. Large awkward loads, Overloaded Equipment	Driver / Operator, Site Workers, Damage to equipment & structures, Serious Injury, Fatalities	4	3	12	<ul style="list-style-type: none"> <li>*Ensure that materials are properly secured / tied down effectively to prevent falling materials during transportation.</li> <li>*Ensure the inspection is carried out for loaded truck before take off.</li> <li>*Over loading should be avoided.</li> <li>*TBT must be given to involved persons.</li> <li>*Monitoring and Supervision is a must.</li> <li>*Area must be cleared from any individuals and vehicles.</li> <li>*Provide proper PPEs (such as hard hat, vest and safety shoes) which must be worn while exiting the vehicle.</li> <li>*Use of seat belt and prohibition of phone use while driving must be mandatory.</li> <li>*A banks man/signaller must be provided on site.</li> <li>*Pedestrian walkways for the workers must be clearly marked and barriers provided.</li> <li>*Private vehicle must be prohibited on site unless it gets approval from client and consultant.</li> <li>*Strictly no parking on work site, unless in designated areas.</li> </ul>	4	1	4	Lifting Supervisor / Logistics team / Storekeeper / Driver / Operator

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Unloading or lifting materials (Continued on next page)	<ul style="list-style-type: none"> <li>*Strong Wind.</li> <li>*Dropped Loads.</li> <li>*Incompetent Lifting team personnel (Lifting supervisor, crane operator, rigger, monorail operator).</li> <li>*Damaged and/or defective lifting accessories and/or equipment.</li> <li>*Overloading of lifting accessories.</li> <li>*Overloading of Crane</li> <li>*Failure of lifting points.</li> <li>*Human error.</li> <li>*Load striking rigger and/or other workers.</li> </ul>	Serious injury Fatalities, Damage to property, Minor injury. Site workers, Visitors.	5	4	20	<ul style="list-style-type: none"> <li>*All Lifting team personnel (Lifting Supervisor, Riggers and Operators) should be trained and certified by recognized 3rd party certifying bodies.</li> <li>*Lifting accessories and equipment must have valid 3rd party certificates issued by a recognized 3rd party certifying body.</li> <li>*Lifting accessories and equipment must be visibly marked with their respective Safe Working Load (SWL).</li> <li>*Lifting accessories and equipment must be used within the limits of their respective SWL.</li> <li>*The weight of each material to be lifted must be known and indicated before lifting is planned and carried out.</li> <li>*Always double check the lifting points before loads are lifted off the truck.</li> <li>*Lifting accessories and equipment must undergo daily pre-use visual inspection.</li> <li>*The daily visual inspection of Crane is to be done using a checklist.</li> <li>*Ensure that lifting accessories are subjected to monthly inspection by competent person.</li> <li>*Damaged lifting accessories must be removed from the project site immediately.</li> </ul> <p>(Continued on next page)</p>	5	1	5	Construction manager. Lifting supervisor, Supervisor and HSE Officer before work commences

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Unloading or lifting materials (Continued from previous page)	<ul style="list-style-type: none"> <li>*Workers caught between load and structure.</li> <li>*Improper use of PPE.</li> <li>*Use of wrong PPE.</li> <li>*Unstable lifts and/or Incorrect lifting points.</li> <li>*Workers coming in contact with pinch points.</li> </ul>		5	4	20	<ul style="list-style-type: none"> <li>*Damaged lifting equipment must not be put to use until it is repaired and re-inspected and re-certified by a recognized 3rd party certifying body.</li> <li>*No lifting activity should be carried out without implementing project PTW procedure.</li> <li>*Exclusion zone to be maintained around lifting area when lifting activity is ongoing. (Ensure area is hard barricaded with multiple signage.)</li> <li>*Full time watch man to be supervise barricaded area to <b>ensure no unauthorized entry</b> into this exclusion zone when lifting is ongoing.</li> <li>*Weekly TBT for the lifting team must include reminders on the right procedure to follow.</li> <li>*Activities must be adequately supervised by HSE officer and Supervisors.</li> <li>*Tag line of sufficient length must be used to control loads.</li> <li>*Ensure load is balanced before lifting.</li> <li>*Provide proper PPE and ensure that workers use them appropriately.</li> <li>*All Lifting activities forbidden and stopped when wind get over 35km/h or as per crane manufacturer's recommendation.</li> </ul>	5	1	5	Construction manager. Lifting supervisor, Supervisor and HSE Officer before work commences

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Handling of material manually	<p>Slips, trips and fall</p> <p>Sustained awkward posture</p> <p>Broken glass and/or damaged spider due to fall impact</p> <p>Dropped glass and/or spider striking workers' legs.</p>	<p>Minor injury</p> <p>Site Workers</p> <p>Damage to equipment and structures</p> <p>Property damage</p>	4	4	16	<p>*Use mechanical handling where possible.</p> <p>*PTW must be implemented prior to start of any work activity.</p> <p>*TBT must be conducted to explain about potential hazard.</p> <p>*Manual handling training must be provided.</p> <p>*Ensure proper manual handling / lifting technique is used.</p> <p>*Restrict weight to 20KG per person to avoid excessive use of force.</p> <p>*Provide and enforce use of proper PPE - most especially hand gloves - when carrying glass materials.</p> <p>*Monitoring/Supervision is a must - explain hazard prior to starting any manual handling.</p> <p>*Check materials or items size, shape and weight.</p> <p>*Avoid excessive reaching, pushing and pulling.</p> <p>*Do not give the force to the spine, instead lift load with force on the legs; keep spine straight and head up.</p> <p>*Check for pinch points while unloading/placing materials.</p> <p>*Workers shall not be allowed to lift loads beyond their capabilities.</p> <p>*Ensure team lifting when lifting heavy object.</p> <p>*Access and aggress shall be clear from the obstruction and/or spillage.</p> <p>*Loads must NOT be lifted in such a way that the front view of the worker carrying it is blocked.</p>	4	1	4	<p>Construction manager, Site Safety and Supervisor. Before work commences and during work activities.</p>

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<b>Lifting Operation:</b> Working with Crane and Forklifts during transportation and installation.	Strong Wind.									
	Dropped Loads.									
	Incompetent Lifting team personnel (Lifting supervisor, crane operator, rigger).									
	Incompetent Forklift Operator.	Serious injury								
	No banks man and/or incompetent banks man.	Fatalities,								
	Damaged and/or defective lifting accessories and/or equipment.	Damage to property,								
	Overloading of lifting accessories.	Minor injury.								
	Overloading of Crane / Monorail.	Site workers, Visitors.								
	Failure of lifting points.									
			5	4	20	*No lifting activity should be carried out without implementing project PTW procedure. *All Lifting team personnel (Lifting Supervisor, Riggers and Operators) should be <u>trained and certified by recognized 3rd party certifying bodies.</u> *Lifting accessories and equipment must have <u>valid 3rd party certificates issued by a recognized 3rd party certifying body.</u> *Lifting accessories and equipment must be <u>visibly marked with their respective Safe Working Load (SWL).</u> *Lifting accessories and equipment must be used <u>within the limits of their respective SWL.</u> *The weight of each material to be lifted must be known and indicated before lifting is planned and carried out. *Always double check the lifting points before loads are lifted off the ground. *Lifting accessories and equipment must undergo daily pre-use visual inspection. *The daily visual inspection of Monorail is to be done using a <u>checklist.</u> *Ensure that lifting accessories are subjected to monthly inspection by competent person. *Damaged lifting equipment must not be put to use until it is repaired and re-inspected and re-certified by a recognized 3rd party certifying body. <b>(Continued on next page)</b>	5	1	5	Construction manager. Lifting supervisor, Supervisor and HSE Officer before work commences

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<b>Lifting Operation:</b> Working with Crane and Forklifts during transportation and installation. (Continued from previous page)	Human error.  Load striking rigger and/or other workers.  Workers caught between load and structure.  Improper use of PPE.  Use of wrong PPE.  Unstable lifts and/or Incorrect lifting points.  Workers coming in contact with pinch points.		5	4	20	<p>(Continued from previous page)</p> <p>*Damaged lifting accessories must be removed from the project site immediately.</p> <p>*Forklift shall have valid third party certificate.</p> <p>*Forklift Operator shall hold valid third party certificate.</p> <p>*Equipments shall be maintained in good repair.</p> <p>*Competent banks men to control the vehicles movements around the site.</p> <p>*Operators shall obey all site traffic control signages and site traffic rules</p> <p>*Forklifts must be used within the limits of their respective SWL.</p> <p>*The weight of each material to be lifted must be known and indicated before lifting is planned and carried out.</p> <p>*Forklift must undergo daily pre-use visual inspection.</p> <p>*The daily visual inspection of Forklift is to be done using a checklist.</p> <p>*Damaged forklift must not be put to use until it is repaired and re-inspected and re-certified by a recognized 3rd party certifying body.</p> <p>*Good communication must be maintained between lifting team and affected workers.</p> <p>*Exclusion zone to be maintained around lifting area when lifting activity is ongoing.</p> <p>*No unauthorized entry into this exclusion zone when lifting is ongoing.</p> <p>(Continued on next page)</p>	5	1	5	Construction manager. Lifting supervisor, Supervisor and HSE Officer before work commences

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<b>Lifting Operation:</b> Working with Crane and Forklifts during transportation and installation. <b>(Continued from previous page)</b>			5	4	20	<b>(Continued from previous page)</b> *Supervisors must explain all possible hazards (STARRT talk). *Weekly TBT for the lifting team must include reminders on the right procedure to follow. *Activities must be adequately supervised by HSE officer and Supervisors. *Tag line of sufficient length must be used to control loads. *Ensure load is balanced before lifting. *Provide proper PPE and ensure that workers use them appropriately. *All Lifting activities forbidden and stopped when wind get over 35km/h.	5	1	5	Construction manager. Lifting supervisor, Supervisor and HSE Officer before work commences



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Work at Height (SCAFFOLDING) (Continued on next page)	Falls from height; Falling and flying objects; Debris on platform; Overloading work platform; Slip and trip. Adverse weather conditions like strong wind, sand storm, poor visibility, heavy rain or thunder storm. Lone working Poor or no lighting	Site Workers. Serious injury; breathing problem; adverse lungs disease. Property Damage	4	4	16	*PTW must be implemented prior to start of work. *Ensure scaffoldings are installed and modified by trained, competent and 3rd party certified scaffolders only. *Scaffolding must carry "green" tag, duly signed by a competent Scaffolding Inspector before it can be allowed for use by workers. *Ensure work is carried out by <u>only trained and competent workers.</u> *Safe work platform with edge protection & safe means of access & egress to be provided. *Avoid loading of work platform beyond recommended load bearing capacity. *Provide & enforce use of <u>personal fall arrest system (PFAS) with 100% tie off.</u> *Work is prohibited on work platforms cluttered with debris *Waste/debris to be removed on timely basis from platform & not allowed to accumulate to become slip and/or trip hazards. *Work platform must be inspected <u>daily before start work and after any incident which could negatively impact platform integrity.</u>	4	1	4	Construction manager, Supervisor & Safety Officer before work commences

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Work at Height (SCAFFOLDING) (Continued from previous page)			4	4	16	<ul style="list-style-type: none"> <li>*<u>Lone working must not be allowed.</u></li> <li>*<u>Do not carry out work operations in poorly lit areas. Provide additional lighting when required.</u></li> <li>*Regular weekly thorough inspection of platform to ensure safe condition.</li> <li>*Exclusion zone to be created using barricade with appropriate signages - and well monitored - both above and beneath work area.</li> <li>*<u>Tools &amp; materials to be properly secured at height with tools lanyards.</u></li> <li>*Work platform should be fully boarded with toe boards fitted.</li> <li>*Safe and adequate means of access and egress must be provided.</li> <li>*Suspend work at height during adverse weather condition and ensure no work is recommenced until it is certain that safe normal condition has returned.</li> <li>*Adequate monitoring of the activity by Supervisors and Safety officers.</li> <li>*Provide proper PPE.</li> <li>*Work to be done under the supervision of line foreman and safety officer.</li> <li>*TBT must be conducted before start of work.</li> <li>*<u>Use of right tool/equipment for the job.</u></li> </ul>	4	1	4	Construction manager, Supervisor & Safety Officer before work commences

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Working with Mobile Plants - Elevated Work Platforms (Continued on next page)	Collision with other vehicular traffic;  Arcing or contact with overhead cables and/or other overhead obstructions;  Fall of operative from platform;  Slip and trips of operatives on the platform;  Materials falling from platform;  Entrapment of persons in moving parts or mechanism;  Overturning.  Lone working.  Poor or no lighting.	Minor and major injuries;  Possible fatality.  Operators, Banks man, Site Workers.  Visitors.  Property damage.	4	4	16	<p>*The MEWP operators must be trained, competent and certified by approved third party.</p> <p>*The MEWPs must be third party certified.</p> <p>*The MEWPS must not be loaded above the Safe working loads (SWL) stated by the manufacturer and/or 3rd party.</p> <p><b>*Daily preuse inspection of MEWPs with approved checklists must be carried out by a competent operative before work commences</b></p> <p>*MEWPs must be provided adequate preventive and corrective maintenance.</p> <p>*PTW must be implemented prior to start of work.</p> <p>*TBT must be conducted before start of work.</p> <p>*Exclusion zone to be created using barricade with appropriate signages - and well monitored - both above and beneath work area.</p> <p>*Tools &amp; materials to be properly secured at height with tools lanyards.</p> <p>*Materials must not be allowed to accumulate on platform.</p> <p>*Guards and fencing on moving parts must always be in place.</p> <p>*MEWPs to be used only on firm, flat or well compacted, stoned out surfaces.</p> <p><b>*Ensure work is carried out in adequate lighting only.</b></p> <p>(Continued on next page)</p>	4	1	4	Construction manager, Supervisor & Safety Officer before work commences and during work activities.

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Working with Mobile Plant - Elevated Work Platforms (Continued from previous page)			4	4	16	<p><b>*Lone working must not be allowed.</b></p> <p>*MEWP must only be used on suitable surfaces and operatives must be in possession of necessary information (manual) etc. to enable safe operation of MEWP.</p> <p>*Suspend work at height during adverse weather condition and ensure no work is recommenced until it is certain that safe normal condition has returned.</p> <p>*Adequate monitoring of the activity by Foremen, Supervisors and Safety officers.</p> <p>*All operatives must wear a full body harness that must be clipped onto the cage at all times by a lanyard.</p> <p>*All operatives' helmets must be equipped with chin strap, use of which is mandatory while working at height.</p> <p>*Provide proper PPE as required by the work activity being carried out from the platform.</p> <p>*Each MEWP must have a functional dry chemical extinguisher in the platform cage at all times.</p> <p>*Emergency contact numbers must be displayed within the platform.</p> <p>*Ensure all required documents (TPC, License, Insurance e.t.c.) is approved and certified.</p> <p><u>*Follow approved method statement and work procedure.</u></p> <p><u>*Assign full time watch man to avoid unauthorized entry into exclusion zone.</u></p>	4	1	4	Construction manager, Supervisor & Safety Officer before work commences and during work activities.

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Grit blasting	<p>Toxicity if swallowed</p> <p>Allergic skin reaction</p> <p>Skin irritation</p> <p>Fire/Explosion</p> <p>Environmental hazard</p>	<p>Site Workers / Storekeeper</p> <p>Property damage</p> <p>Adverse diseases on skin and in lungs</p> <p>Eye irritation</p> <p>Environmental degradation</p>	4	4	16	<p>*Appropriate PPE as contained in MSDS shall be worn.</p> <p>*Copy of MSDS shall be made available at testing location.</p> <p>*Content of the MSDS shall be discussed during STARRT briefing.</p> <p>*Measures shall be taken to avoid release to the environment.</p> <p>*In case of spill or adverse exposure by workers, response shall be as per the MSDS.</p> <p>*Control of substances hazardous to health (COSHH) program, HAZCOM and HAMZAT must be familiar to all workers.</p> <p>*Proper storage and labelling must be provided</p> <p>*Ventilation and air circulation must be at acceptable level</p> <p>*Spill kits and fire extinguishers must be present at site</p> <p>*Fire/emergency plan and training must be explained to employees</p> <p>*Fire watcher/marshalls must check the area frequently and 30 minutes after work completion.</p> <p>*Removal of combustible materials/waste from chemical storage area.</p> <p>*Escape routes must be clearly marked and free from obstructions.</p> <p>*Permissible exposure limits must be observed</p> <p>*Proper disposal of chemical must be observed.</p> <p>*TBT and supervision is a must prior to use or handling of silicon.</p>	4	1	4	<p>Construction manager, Site Safety and Supervisor. Before work commences and during work activities.</p>

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Surface Preparation & Painting (Continued on next page)	Exposure to harmful vapor  Fire & Explosion hazards  Contaminated clothing  Unattended equipment/tools  Unsafe storage of paint and thinner  Airborne particles	Personal injury  Property damage  Adverse lung diseases  Environmental impact	3	2	6	*Painter shall be provided with standard PPEs *No hot works allowed (at immediate area) *Flammable liquids shall be stored and dispensed only from approved type container *MSDS & COSHH for the paint shall be made available at the work location *Do not eat or smoke wearing paint soaked coverall/gloves *Clean/dispose safely the paint soaked coverall/gloves *Wash hands/body properly before consuming food after working with paint *Provide eye wash station near by the painting yard *Avoid working in poor or awkward position for long *Take frequent breaks to avoid continuous long working *TBT prior to the commencement of activity *Storage quantity should be restricted to minimum required for the job in small cans *Ventilation/ air circulation in work area must be at acceptable level *Drip trays to avoid ground contamination *Ensure that fire fighting equipment is present and clearly marked *Fire plan and emergency plan must be familiar to all workers *Permit to work is a must prior to start of work. *Empty paint and thinner tins to be considered hazardous materials and properly disposed of *Storage area must be kept away from any source of ignition and adequately ventilated with proper signages displayed	3	1	3	Construction manager, Site Safety and Supervisor. Before work commences and during work activities.

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Housekeeping	<p>Trip and Falls caused by scattered empty containers</p> <p>Fire / explosion</p>	<p>Injury</p> <p>Eye Irriation.</p> <p>Site Workers.</p> <p>Property damage.</p>	4	3	12	<p>*Proper housekeeping practice shall be maintained in work area.</p> <p>*Whenever working with silicone, housekeeping must be in accordance with Control of substances hazards to Health (COSHH) procedure and manufacturer's instructions as contained in the MSDS.</p> <p>*Routine housekeeping to be implemented to ensure that dusts do not accumulate on surfaces, as as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.</p> <p>*Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).</p> <p>*Provide proper PPE to those who deal with waste disposal.</p> <p>*TBT regarding housekeeping must be given to all workers.</p>	4	1	4	Foreman and Supervisor while work is ongoing and at completion of work.

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Material Storage (Non-hazardous substances)	<p>Fall of workers while climbing on stacked materials</p> <p>Falling objects due to poor stacking</p> <p>Material damage</p> <p>Trips and slips</p>	<p>Site workers / Storekeeper</p> <p>Property damage</p> <p>Serious injury</p> <p>Eye irritation</p>	4	3	12	<p>*Restricted access. Store to be locked except when in use.</p> <p>*Stacking area must have adequate ventilation.</p> <p>*Material stacking area must be pre-inspected to ensure all stacks are on level and firm base.</p> <p>*Proper stack should be made and height should be limited to ease subsequent handling and avoid toppling of materials.</p> <p>*No one should be allowed to climb up on materials.</p> <p>*Sufficient illumination should be provided inside the store.</p> <p>*Maintain proper housekeeping at storage area.</p> <p>*Access routes should be clearly identified and marked.</p> <p>*Workers must be aware about fire prevention plan.</p> <p>*Provide appropriate and adequate fire extinguishers in the storage area.</p> <p>*Provide mandatory PPE for handlers.</p> <p>*Fire plan/Emergency plan must be familiar to all workers.</p> <p>*Escape route must be clearly marked and free from obstacles.</p> <p>*Proper housekeeping must be maintained</p> <p>*TBT regarding waste segregation and housekeeping routinely given to workers</p> <p>*Proper PPE shall be provided to workers responsible for waste disposal.</p> <p>*Emergency contact details must be displayed.</p>	4	1	4	Construction manager and Storekeeper.



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Material Storage (Hazardous substances)	Flammable substances Fire and explosion	Property damage Environmental degradation Serious injuries Site Workers / Staff / Visitors	4	3	12	<p>Keep quantity you need at the moment for each activity.</p> <p>MSDS must be visible on the storage area.</p> <p>Fire extinguisher must be available.</p> <p>Ventilation/air condition must be fixed as per the manufacturer guidelines</p> <p>Proper disposal must be observed.</p> <p>TBT and supervision is a must prior to start of work.</p> <p>"No smoking" policy must be implemented and "No smoking" signs must be displayed.</p> <p>Removal of combustible materials on daily basis.</p> <p>Emergency contact details must be displayed</p> <p>Maintain chemical storage inspection checklist on daily basis.</p> <p>Only authorized persons allowed to inspect the storage area.</p>	4	1	4	Construction manager and Storekeeper.

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