

SPECIAL PROJECT DOCUMENTS Lifts & Escalators

HO / SPD / JSA / 2020

Rev: 000

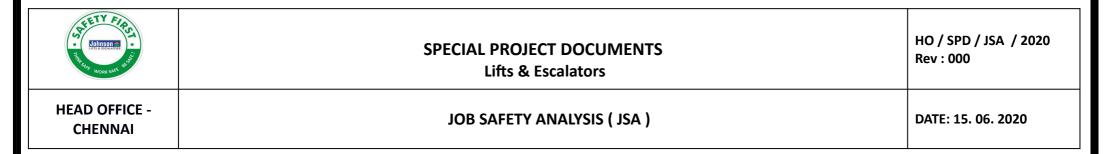
HEAD OFFICE -CHENNAI

JOB SAFETY ANALYSIS (JSA)

DATE: 15. 06. 2020

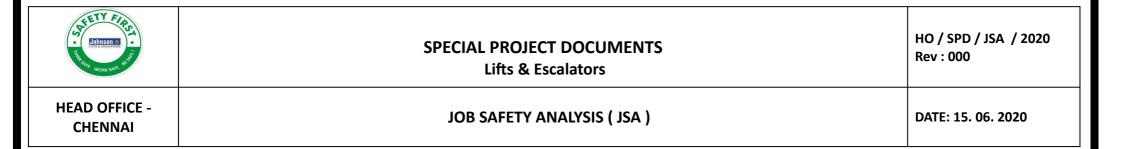
SL No	Activity	Hazard	Control Measures	Responsible Person	Remarks
1	Transportin g the elevators materials by trucks/van/auto from site entrance to the store location	 Unplanned movement of vehicles Collision with pedestrians/ope ratives Collision with structures Collision with other vehicles Falling of people Overturning Overloading and falling objects 	 Designated area should be allocated for vehicle parking and offloading of materials. Ensue that a space and firmed pathway to truck delivery is available at site Banks men should be appointed to guide the vehicle driver and to ensure that no pedestrians/operatives are near by the vehicle Visiting drivers should be briefed about the site details through visitor induction prior to taking to site at the entrance Supervisor must ensure the clear route planned and maintained till off loading point Vehicle driver should always wear seat belt whole driving in site. Ensure that driver adhere to Speed limits at site No speed turn taken at site. Avoid taking reverse at site Load should be assessed prior to taking in to site. 	Sit e Supervisor/ ESPD /Site engineer	

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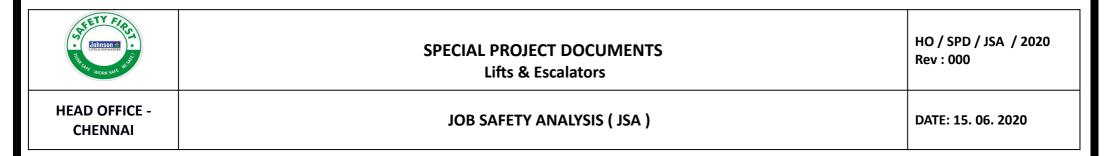
lift r by r and 2 stag the mat desi	floading the materials manually d later ge shifting e elevator aterials at sired ation/floor	 The loads slip, trip sharp edges (uneven floor) Improper manual handling Slip, Trip& Fall / falling objects from over head Strains /Sprains due to heavy lifting 	 Supervisor must present at all times to ensure employees/workers are adhering to manual handling safe working instructions Ensure that clear access & egress is available at the off loading area. Must wear suitable PPE i.e Hand gloves. Employees are provided with the correct lifting / handling techniques. Frequent breaks should be given to employees during the off loading works Minimize the repetitive works. Manual off loading activity should be carried out where over head falling hazards are minimized Heavy or frequent manual handling tasks should be carried out by several people. The amount that is handled should be reduced or the load split into smaller ones. 	Sit e Supervisor/ ESPD /Site engineer	
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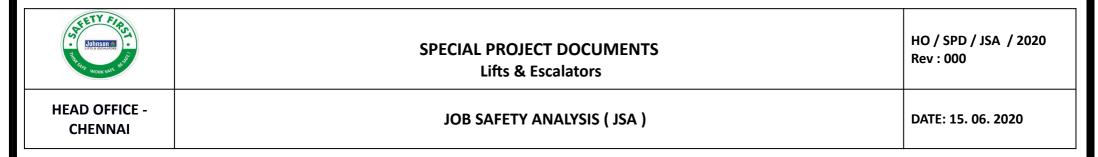
3	Offloading or shifting the elevator materials by mechanical equipment i.e.Hydra, Cranes etc	 Failure of mechanical lifting equipment's Over loading/exceeding SWL Incompetent/untrained operator Failure of lifting tools& tackles i.e wire ropes/web slings etc, Hydra Toppling at tandem lifting 	 Need to designate the area for unloading the materials, assigned lifting equipment's (crane/hydra) should not place at un-leveled /ramp ground surfaces Thoroughly inspections should be carried by operator. Ensure that the machine is not exceeding the SWL by close monitoring by the supervisor. Try to engage the fitted ASLI machine for the lifting activity. Only a valid driving license/3rd party competency operator should be assigned for the job. Work Place at Tandem lift area should be well leveled and compacted lifting loads should be assessed and special Lifting plan should be prepared by considering the both machinery and load data. All the lifting tools and tackles should have valid 3rd party certificates prior to use at site. 	Banks Man/ Supervisor/Route engineer	
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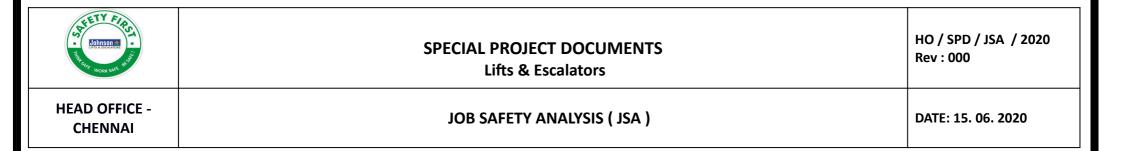
04	Scaffolding Erection& Dismantling	people fall from height Stuck against sprains, strains ,over exertion in shoulders, arms and crushed fingers for repeated works activity Poor lighting, collapse of scaffolding structure Failure of usage	 Supervisor must be present during the erection progress Scaffolding erection area should be isolated and proper signage to be placed to ward nearby people about the activity Unauthorized entry to be avoided and limited persons to be allowed at erection area Unwanted materials should not be stacked on the scaffold. Employees working for scaffolding erection & Dismantling must wear the Full body harness and anchored to a rigid point always. While shifting the standards and ledgers to erect the scaffold ensure that proper communications and coordination in between the team. Employees are provided with the correct lifting / handling techniques. Frequent breaks should be given to employees during the off loading works. Minimize the repetitive works. Adequate lighting arrangements must be done in the lift shaft prior to start the works The required supports should be provided to prevent collapse the scaffolding. Scaffolding working platform should not be over loaded. Approved and standard scaffolding standards and ledger Only approved Full body harness should be used Basic checks should be conducted by user before starting the works in each shift. 	Site supervisor/ESPD/R oute engineer	
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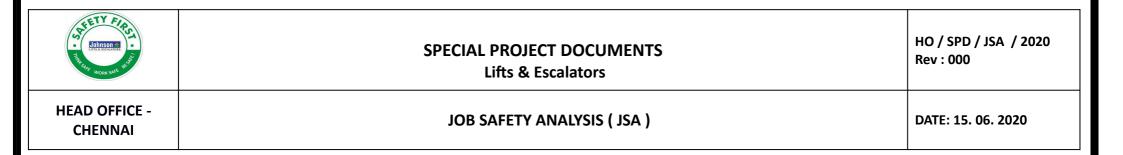
5 Templa Fixing		 Ensure that scaffold structure to be erected and supported rigidly. Full platform to be provided at top floor and ensure no gap on working platform. Permit to Work must be obtained prior to start the works(if applicable) Safety harness is mandatory for all personal whoever entering inside of lift shaft. Never allowed any one to work above and below floor at a time. Make sure all hand tools to be secured with guide rope properly. Never stack any loose material on the working platform. Provide tools box to keep all loose materials on it. Make sure plumb lines are fastening by the taping screws and sent down to the bottom floor. Standardize anchor fastener to be used to fix the brackets. Make sure all the entrance/access to the lift shaft is closed during fixing templates. 	Sit supervisor/Route engineer	
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6 Bracket	 Fall of materials and person from height Brackets may come out or fall from fixed location Defective power tools used for task/Electrical shock 	 Need to fix the brackets with spring, plate washers and nut properly. Ensure the horizontal brackets are placed over the wall brackets and fix with "C" clamp at both ends. All electrical tools should be inspected by site safety team and to be tagged with relevant color code if any . 	Sit e supervisor/ route engineer/Safety officer	
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7	Guide Rail Hoisting & Alignment	 Fall of rails due to rope cut /failure, Man fall from height 	 members mandatory during the works activity Ensure sufficient manpower to be engaged for this rail hoisting including one supervisor. Ensure no parallel work in below or top levels. Check and estimate the guide rail weight prior to hoisting. 	Sit supervisor / Route engineer	
8	Landing sill & Frame fixing	 Fall men or material in lift shaft Electric shock by power tools 	 Make sure adequate working platform. Safety harness must be wear by employees and anchor to rigid point Ensure frames clamps fixed properly. Ensure that power tools are double insulated Do not handle electricity in wet environments / wet hands / oily hands Ensure power tools pre use inspection done before using it. only trained employees permitted to use electrical tools Do not tamper any guards Use task specific PPE i.e Hand gloves, Eye protection 	Sit supervisor / Route engineer	

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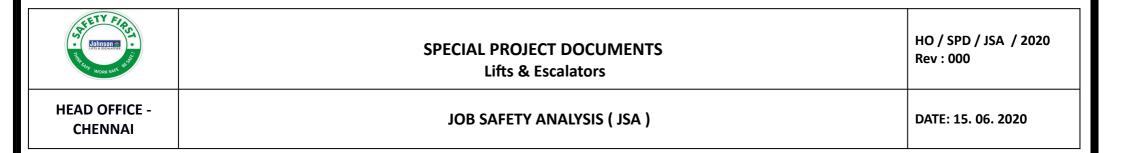
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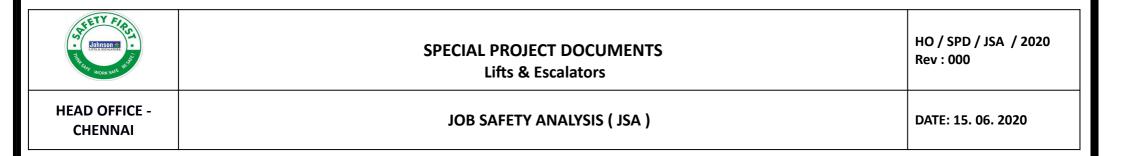
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9	Fixing of Chain pulley on load hook	 Failure of load hook Defective chain pulley block/chain pulley failure 	 Ensure design approved load hook installed on slab for lifting point. Ensure lifting hook should be free from any damage. Ensure standardize certified chain pulley using for task. Ensure all chain pulley physically inspected prior to anchor by clinet Ensure SWL clearly mention on chain pulley block. 	Sit supervisor / Route engineer	
10	Lifting of heavy materials like machine drive unit , counter weight frame, car sling by using chain pulley block.	 Fall of material due to failure of chain pulley, Man fall from Height 	 Ensure standardize inspected chain pulley block using for task. Ensure design approved lifting point provided for chain pulley hanging. Ensure the lifting load should not exceed the SWL of chain pulley. Ensure competent person physically inspected chain pulley block Ensure underneath the lifting area should be barricaded to prevent unauthorized personal entry Ensure all lifting tools& Tackles should be inspected and have certificate at site. Ensure material properly secured before lifting. Ensure no one stand underneath or nearby lifting load area. Ensure supervisor engaged for the task. 	Sit supervisor / Route engineer	

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11	Buffer Installation	 slip, trip sharp edges of the civil works 	 Ensure job specific PPEs shall be used. Work place should be clean and tidy Use Ladder for access to the pit. 	Sit supervisor / Route engineer
12	Fixing of Traveling Cable	 Fall of person and cable from height 	 Ensure proper working platform with suitable access Ensure suitable fall arrester system with suitable anchoring point. Ensure no one stand underneath the cable fixing area. Ensure trained person with competent supervisor engaged for the task. Ensure all workers are using job specific PPEs(Hand glove, Harnessetc.) 	Sit supervisor / Route engineer
13	Car Frame Assembly	 Material falling & contact with rough edges Fall of car/frames on to the working crews 	 Access to working platform to be provided. All workers to use safety harness, safety goggle and hand gloves Ensure proper method to be adopted for manual handling Ensure that the personnel are not positioned in corners. Ensure the car platform hooked with chain pulley and tied with additional rope. Supervisor must be in work place Make sure engaged persons follow safe manual handling practices and good communication. Provide safe working platform and access on car top. 	Sit supervisor / Route engineer

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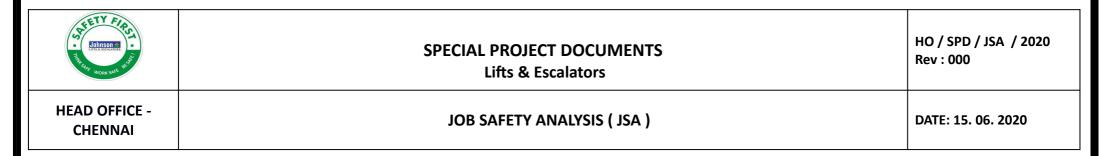
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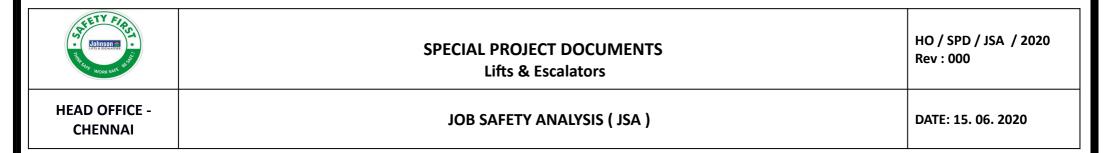
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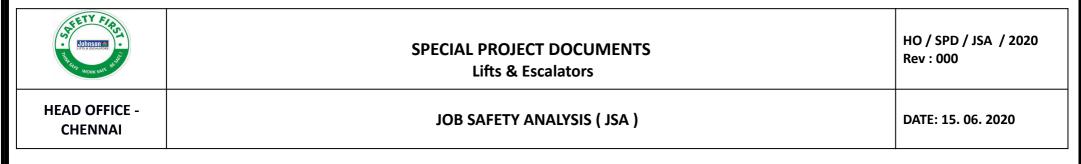


14	Roping	Fall of personal materials from the following terms of the foll	assembly location inside of Sufficient counter weight platform, scaffold platform	ng platform be provided in below frame of lift shaft. to be placed to bear the load/weight of car n, canopy & working crews, etc. narness, safety goggle and hand gloves	Sit supervi	sor / Route
	Koping	height	 Make sure proper commu Make sure roping should Don't stack any material r 	inication to be maintained be done as per manufacture instruction near to edges of working platform and gloves, safety goggles and safety harness.	engi	ineer
15	Landing Door Fixing	 Fall of person fall of mater through open improper fix entrance do Fall of door 	 Adequate working platfor All persons to use safety has separate ledgers. Make sure door frame to properly. Door frame install and condesign. Permit system to be followed in the condesign. Only one activity allowed in the clets are secur fastener, washer and nut. Make sure angles are secur fastener, washer and nut. Make sure three trained persons will be on the lob make sure door to be fixe 	m should be provided on the scaffolding. harness to be anchored at the scaffolding at two be hold by two workers until to support hnected with block work for casting as per wed on the site(if applicable) for each lift shaft. shaft opening before leaving the place. ely installed on wall and tied with anchor	1	sor / Route ineer
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16	CAR Top Wiring and Door Operation	 Fall of Men Material from height 	 Ensure proper access and working platform provided on the top of CAR. Ensure proper handrail fixed on the CAR TOP all the tools must be secured with guide rope. Ensure underneath area barricaded with warning signage. Ensure trained person with competent supervisor engaged for the task. 	Sit supervisor / Route engineer
17	Weight filling in Counter sling	 The weights slip, sharp edges of the weights. Improper manual handling 	 Supervision must present at all times to ensure employees/workers are adhering to manual handling safe working instructions Ensure that clear access & egress is available at the weights filling area. Must wear suitable PPE i.e Hand gloves. Employees are provided with the correct lifting / handling techniques. Frequent breaks should be given to employees during the off loading works. Minimize the repetitive works. 	Sit supervisor / Route engineer
18	Testing and commissioning	• Electric shock	 Make sure all electrical connection to be checked by multi meter prior to give power supply on it. Make sure all standard Jonson box/ contactor and DB with proper locking system to be fixed as per manufacture instruction prior to give power supply on it. Make sure all lift gates to be proper installed Make sure electrical resistance hand gloves to be provided to concerned engineer/electrician. Make sure live testing power supply area to be completely barricaded with warning signage. 	Sit supervisor / Route engineer

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19	Night Shift Activity	 injury, property damage Fire Glare Flickering lighting Electrocution Slips, Trips and Falls Insufficient lighting levels Fatigue 	 Proper and sufficient lightning's to be provided in all areas of work and access and egress areas at the work location. Stroboscopic effects to be avoided while providing lightning's. Must ensure that the emergency procedures and the contact numbers of the team known by work team. All work area must be well lit, without shadow Reflecting, hi visibility vest must be worn. Suitable and sufficient access way for emergency procedures must be maintained. Regular inspections must be conducted on the power tools and lifting tools and tackles for ensuring good condition. Only Qualified authorized persons can install / fit / remove lighting. Electric cables to be routed safely and not lying on the ground where possible. Damaged lighting or cables not to be used or where identified must be removed immediately and returned to the store. When it is not possible to raise electrical cables those are laid safely and not along designated walk ways. Lone work is not permitted in the site during night works. 	Sit supervisor / Route engineer	
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