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| **Serial**  **No.** | **Sub-Activities** | **Hazards Identified**  **(Generic & Task)** | **Risks Involved**  **(People & Property)** | **Risk Rating** | | | **Control Measures** | **Residual Risk** |
| **Severity** | **Probability** | **Initial Risk** |
| 1. | Prepare work area | · Unauthorized, untrained workers | · Cuts  · Abrasions | 2 | A | L | · TBT/DSTI to be conducted by the foreman/  safety officer prior to work commencement  · Task specific safety training to be provided  · Authorized personnel to undertake the job  · Daily safety inspection should be carried and  eliminate the hazard. | Low  (ALARP) |
| 2. | Manual Handling | · Incorrect lifting of loads  · Sharp edges.  · Placing the object while  fingers underneath.  • Slip/trip/fall ( same level )  • Unsafe posture | · Back Injuries  · Cut to finger  · Strain  • Musculoskeletal  Injuries | 3 | C | M | · Any lifting tasks shall be carried out by  persons physically capable to do so  •No employee should be asked to carry loads  above his capacity and in any case no load  shall exceed 30kg per man.  • Mass of the load is more then to be equally  shared  · Deploy enough number of personnel for lifting  shall be appointed to the task depending upon  the type of load to be lifted.  ·Use easy mode of transport like trolley etc.  • Load not to be lifted above your shoulder  Height  • Keep your fingers away from pinch point  While placing the load  • Area to be illuminated with adequate lighting.  · Proper personal protective equipments to be  used while manual handling of materials and  loads. | Low  (ALARP) |

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| 3. | Transportation of materials to site using with trailer, pickup, fork lift and crane | • Unauthorized, Untrained  Workers  • Failure of lifting  equipment  • Failure of lifting tools &  tackles.  • Unsafe lifting.  • Swinging of material  • Damaged sling/wire rope or  a chain  • Poor maintenance of vehicle  • Speedy operation  • Over turn  • Over load | • Fatality  • Fractures  • Property damage  • Injury to personal  • Sprain and strain | 4 | C | H | • Ensure the crane and forklift engaged is tested  and having valid license and the operator has  valid license and approved 3rd party  certificate.  • Engage trained and certified banks man.  • Barrication and warning signs in to the area  where lifting operation is carried out and  restrict the entry.  • Check list should be carried out to their  vehicles by the operator prior to start any work  • Use tagline for control of swing and alignment.  • The crane must be stopped when the wind  speed exceeds 38km/hr.  • SWL should be clearly marked on the crane  and should be check that is functioning.  • The crane and trucks shall be periodically  maintained and a periodical check has been  done by the maintenance team.  ·Vehicle not to be left unattended at site (ie,to be  switch off mode if required and keys removed)  • Safe working load should be carry by crane and trucks and Secure the load before it is travelling.  • Operators and rigger must worn high level of  reflecting vest and adequate PPE ( Shoe, helmet, leather gloves, goggles, over all )  ·Vehicle routes kept free of obstructions (with spillages being cleaned up promptly) | M  (ALARP) |

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|  |  |  |  |  |  |  | ·Any lifting/ reversing that is necessary should be overseen by a trained flagman / Banksman.  · Operator should follow the site speed limit  and obey the traffic rules.  • Colour coded system to be implemented to all  lifting equipments as per the month. |  |
| 4. | Stacking and Storing | ∙ Unauthorized, untrained  workers  · Material fall from height  • Improper stacking  • Collapse of materials | **•** Crush  · Cut and abrasion  · Damage to  property | 3 | B | M | · All materials shall be stored below 2 meter  height.  · If the material is too heavy, use hydraulic  trolley to shift the material.  • No storage of materials to be done in the work  place, only required quantity to be taken for the  job.  • Personnel protective equipment must wear at all time during the activity. (Helmet, shoe, vest, overall, gloves, goggles, mask.) | Low  (ALARP) |
| 5. | Working with Hand tools. (Hacksaw blade) | Slip, trip and fall  • Damaged warn out hand  tools  • Flying objects | • Fatigue  • Trigger finger  • Cuts and abrasions | 3 | C | M | • Defective tools should not be issued or used  to perform the task,to be checked by store  keeper  • Don’t extend the spanner by using a pipe as  an extension bar  • Never use a file as a lever  • Never use a screw driver as a chisel  • Don’t work with oily or greased hands  • Use eye/ face protection when there is flying  materials hazard, wear gloves while required to  protect the hands  • Use right tools for the job | Low  (ALARP) |

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| **Severity** | **Probability** | **Initial Risk** |
| 6. | Working with power tools ( Drill machine ) | * Defective equipment * Electricity * Improper use of equipment * Poor maintenance * Untrained workers * Flying object * Noise and vibration * Fire * Dust | * Hearing losses * Eye injury * Crushing * Back injury * Burns * Electrocution * Ringing in the ear / Deafness | 3 | C | M | • PTW to be applied and obtained prior to start,  If spark producing activity is performed  · Defective tools should not be issued or used to  perform a task.  • Monthly inspection should be carried out by the electrician and record to be kept at the store  · All portable power tools should be fitted with adequate fuse protection either in the tool body or in its electrical plug.  · The weight, size and type of tool should be selected to suit the job being carried out.  • Don’t lay the cables around the access way, it should be proper routing  • Industrial distribution board and socket only to be used at site  • No joints shall be made in electrical cable.  • Cable hangers shall be used to avoid the  direct contact of power tools cable with the  scaffolding members.  • Electrical connection shall be routed through  ELCB only.  • Correct rate of ELCB should be used ( Ex:-30ma only acceptable)  · Only those persons who have been adequately trained and experienced in the use of the tool should be allowed to use the same.  Power tools shall have inspection sticker.  · Tools should be stored and maintained in good working condition.  · Appropriate PPE Should use ( Goggles, Mask, Ear plug, Gloves, Shoe, Helmet, Overall, Vest ) | M  (ALARP) |

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| **Severity** | **Probability** | **Initial Risk** |
| 7. | Welding work (arc) | • Fire  • Untrained, Unauthorized  Worker  • Poor signage and barricade  • Lighting and ventilation | •Electric Shock  •Burns  •Skin Effect  •Eye Injury  •Property damage | 4 | C | H | • PTW to be applied and obtained prior to start,  If spark producing activity is performed  • Certified person only undertake the welding job  • All Flammable /combustible materials should  be removed from the area where welding & gas  cutting operations are carried out.  • Fire blankets should be used to contain sparks  and molten metal’s within the floor and should  not be allowed to fall from height.  • Warning signs and boards should be provided  And area to be well barricaded  • Appropriate fire extinguisher should be placed  in to the work area ( Dry powder, CO2, Fire  blanket )  • Adequate lighting and ventilation to be  Provided.  • Close supervision to be done at all times.  • Hoses should be of approved type and should  be free.  ·Appropriate PPE Should use ( Face shield, Dust  mask, Goggles, Gloves, Shoe, Helmet, Overall,  Vest ) | Low  (ALARP) |
| 8. | Handling chemicals  (Solvent cement) | • Unauthorized, untrained  workers  • Spillage  • Poor ventilation  • Fire  • Health hazards ( External /  Internal ) | · Skin injury  · Ingestion  • Eye injury  • Environment affect  • Property damage  • Occupational health | 3 | C | M | · Ensure the chemicals are stored as per the  manufacturer recommendation and  identification.  •Adequate lighting and ventilation to be provided  • MSDS to be referred prior and to follow the  manufacturer instruction  • Trained and authorized person to do the job  • Only required quantity to take for the work  • Do not store chemicals at non designated areas. | Low  (ALARP) |

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|  |  |  |  |  |  |  | • Old/ empty container return to store for proper  Dispose  • Container should check for leakage before  Handling  • Personnel hygiene to be maintained while  after use of chemicals  • All spillage shall be clean by sand or other  absorbent materials  • Rubber gloves, overall, helmet, vest, shoe,  Goggles, mask to be worn while during the  activity |  |
| 9. | Working with ladder | • Fall from height  • Over reaching  • Over loading  • Obstructing the access way  • Slippery or uneven surface | • Sprain and strain  • Fracture  • Injury to the  person | 3 | C | M | • The ladder should extend minimum one meter  from the top for safe movement  • Heavy materials should not be carried  • Do not erect in slippery, uneven surface  • Should be set up with a 4 vertical to 1  horizontal slope ( 4:1 )  • Inspection and maintenance to be registered  and recorded by the store keeper  • Step ladder must fully open and lock and the  devices to be as per manufacturer  • Defective ladder should not be used and report  it immediately  • Do not work from the top of two rungs  • Remember the 3 point contact  • Do not work in front of the door. If work is  carried then locked the door or blocked off  • Ladder to be used for short duration works only  limited to 15 min.  • Colour coded system to be implemented | Low  (ALARP) |

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| **Severity** | **Probability** | **Initial Risk** |
| 10. | Working on mobile scaffold | • Uneven surface  • Overhead structure and cable  • Materials and worker fall  from height  • Untrained, unauthorized  Workers  • Collapse of scaffold | • Sprain and strain  • Fracture  • Spinal cord damage  • Musculoskeletal  Injury  • Fatality | 3 | C | M | • Do not stack materials on to the scaffold  • Visual inspection should carry before use  • Out rigger fitted and breaks are locked on  • Only trained scaffolders shall be involved in  erection & dismantling activities.  • No person to be on the scaffold while it is  being moved  • Scaffold only use in on level and surface area  • Safety harness to be used above 2mtr height and anchored in above shoulder height at all time  • Tagging system to be implemented ( i.e., all safe scaffolds shall be provided with green tags and unsafe scaffolds with red tag )  • Keep walkways free of obstacles, tools and  Equipment  • Never stand and sit on the hand rails  • Mobile scaffold height should be restricted to  3.5 to 4 times the shortest base width, If height  of scaffold exceeds raker support or it should be  tied to the structure properly. | Low  (ALARP) |
| 11. | Working in excavated area | · Material/equipment fall  from height  · Slip/trip/fall  · Workers/ Pedestrians/ fall  into excavation | · Serious injury  · Fatality  · Property  Damage | 3 | D | M | • Safe access and egress shall be provided  · Barricade sensitive areas,  · Ensure falling protection.  · Use warning signboards in those areas.  · Use Head protection strictly.  · PTW to be applied and obtained prior to  start work | Low  (ALARP) |

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| **Severity** | **Probability** | **Initial Risk** |
| 12. | Working on roofs | • Unauthorized/  Untrained workers  • Slip, trip and fall  • Material Fall from  Height  • Abnormal weather | • Fatality  • Fracture  • Sprain and strain | 4 | B | M | • Authorized person only to assign the job  • Safety net to be provided from falling materials  • Openings in the roof must be securely covered  or guarded.  • Keep walkways free of obstacles, tools and  Equipment  • Covering or guarding may be removed to allow  the passage of men or material, itmust be  replaced immediately after that operation.  • Barricade the ground level area of work and  post warning signs.  • Wet, windy or hot weather can seriously affect  your safety during roofing works, ask if in  doubt and do not work in that abnormal  weather condition  • High visibility vest to be worn at all times  while work on roof. | Low  (ALARP) |
| 13. | Working near floor openings | · Material/equipment fall  from height  · Slip/trip/fall | ·Fatality  ·Property Damage  • Fracture | 4 | B | M | • PTW to be applied and obtained prior to  start work  · Rigid barrication and toe board to be  provided to all external edges and where a fall  can occur.  •Warning signboards to be provided in those areas.  · PPE to be used at all times ( Helmet, Shoes, Vest, Overall, Harness ) | Low  (ALARP) |

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| **Severity** | **Probability** | **Initial Risk** |
| 14. | Installation of drains and accessories | • Untrained, unauthorized  Workers  • Material Fall  • Sharp edges  • Unsafe posture  • Slip, trip and fall | • Cut and abrasion  • Back Injuries  • Fatigue  • Musculoskeletal  Injuries | 3 | C | M | · Authorized personnel to undertake the job  ∙Work location shall be inspected by  concerned supervisor / foreman.  • Close supervision to be done at all times  • Materials should not kept in walkways, edge  of the opening.  · Deploy enough number of personnel for  material lifting shall be appointed to the task  depending upon the distance  • Proper communication to be maintained  between the workers while doing the  installation  • Avoid over reaching the drain pipes to reduce  from strain and pain.  • Maintain a good housekeeping policy to  prevent from slip, trip, and fall hazards.  •Two level works to the openings and edges not  to be performed.  • PPE to be worn at all times( Gloves, goggles,  mask, helmet, shoe, vest, overall) | Low  (ALARP) |
| 15. | While working at night shift | ∙ Poor illumination  · Slip/trip/fall | ∙ Fatality  • Cuts | 3 | B | M | · Proper illumination to be provided  · light post to be secured from fall  · Proper cable management system to be  Followed  · All materials to be staged in proper manner  without obstacles | Low  (ALARP) |

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| **Severity** | **Probability** | **Initial Risk** |
| 16. | Working in hot weather | · Heat | ∙ Dehydration  · Sunburn  · Skin Cancer | 2 | B | M | · Drink plenty of water  · Proper awareness of heat stress symptoms  · Avoid highly physical tasks during the hottest  part of the day  · Isotonic drinks to be provided | Low  (ALARP) |
| 17. | Work Completion | · Poor housekeeping  · Slip/trip/fall | · Fire | 2 | A | L | · General housekeeping, Remove all surface,  unwanted waste materials from the building  · All necessary precautions will be adopted to  prevent fire | Low  (ALARP) |

**RISK MATRIX**

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|  |  |  |  |  | Probability | | | | | |
|  |  |  |  |  | A | B | C | | D | E |
| Severity | People | Assets | Environment | Reputation | Improbable  1 in 100,000  Years | Remote  1 in 10,000  Years | Occasional  1 in 1000  years | | Probable  1 in 100 years | Frequent  1 in 10 years |
| 5-Catatrophic | Multiple fatalities or permanent total disabilities | Extensive damage | Massive effect | International impact |  |  | | | | |
| 4-Severe | Single  fatalities or permanent total disabilities | Major damage | Major effect | National impact |  | | | **High Risk** | | |
| 3-critical | Major injury or health effects | Local damage | Localised effect | Considerable impact |  | **Medium Risk**  **(ALARP)** | |  | |  |
| 2-Marginal | Minor  injury or health effects | Minor damage | Minor effect | Minor impact |  |  | | |
| 1-Negligble | Slight injury or health effects | Slight Damage | Slight effect | Slight impact | **Low Risk** | | |  | |

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| HIGH | **3-E**  **4-C,D,E**  **5-B,C,D,E** |
| MEDIUM | **1-D,E**  **2-B,C,D,E**  **3-A,B,C,D**  **4-A,B**  **5-A** |
| LOW | **1-A,B,C**  **2A** |