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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Delivering, unloading and storing of HVAC Duct materials using pickup and unloading by manual handling | **Plant and Traffic movement**   * Run over by vehicles/plants * Hit by reversing equipment * Overhead obstructions * Vehicle break down * Property damage * Collision with other vehicles * Personal injury * Fatality   Accident due to poor lighting and visibility (operation at night | Operatives  Staff/visitors | 3 | 4 | 12 | Medium | 1) Delivery/ collection drivers shall be subject to McLaren induction/Training with regards to traffic management.  2)Ensure exclusion zone is set up around the preparation work area and all plant movement and checked by supervisor  3) Always use the pedestrian access provided  4) Traffic light batons shall be provided for banks man at night  5) All plant to have a fully trained banks man present all times.  6) No plant to reverse without banks man.  7) Ensure access route are sufficient and safe to use.  8) Do not take rest in or under vehicles  9) Proper barricade and safety signboard provided on open excavation  10) All vehicles must be fitted with reverse alarm / Flashing light.  11) The work place and all access to be well illuminated.  12) Ensure close supervision, Effective Communication & Coordination with McLaren  13) Enforce Speed limit  14) Ensure all vehicles entering the site is properly maintained and reported if found any defect  15) Ensure materials are secured/tied in pallet trolley to avoid fall from trolley. | 1 | 4 | 4 | Low | Site Eng.  Supervisor, Foreman, |
| 2 | Manual Handling | musculoskeletal disorders, Hand injuries, cut , bruises  Sharp edges  Slip/Trip hazards | Operatives involved in work | 3 | 4 | 12 | Medium | 1) Eliminate the need for manual handling by using mechanical aid.  2)Reduce the weight of a load to limit force exertion  3) If unsure of the load weight, check with supervisor.  5)Ensure proper manual handling procedure  6) Identify and eliminate sharp edges before any manual lift  7) Ensure adherence with sufficient and appropriate PPE.  8) Limit load carrying to 20kg per person  9) Supervisor must make sure while manual handling load individual task and environment to be considered to reduce the risk of manual handling. | 1 | 4 | 4 | Low | Supervisor, Foreman, Site Eng. |
| 3 | Material storing | Slips, Trips and fall  Poor house keeping | Operatives  Staff/storekeeper | 3 | 4 | 12 | Medium | 1. Ensure accesses are kept clear at all times.   2)Housekeeping to be carried out regularly throughout the day when required  3)Supervisor to ensure operatives are stacking material neatly and stacks are stable and in a safe condition  4)Provide adequate lighting especially during night hours  5) Appropriate space is allowed around storage areas for employees to move around safely without the risk being trapped between stacked materials.  6) Maintain good housekeeping. | 1 | 4 | 4 | Low | Supervisor, Foreman, Site Eng. |
| 4 | Fabrication work for HVAC Duct and accessories | **Grinder/Cutter**  **Eye injury**  **Fragile Duct materials**  **Noise**  **Metal waste**  **Electric shock**  **Fire** | Involved all work force and supervisor/foreman | 3 | 4 | 12 | Medium | 1. Ensure grinding /cutting disks are appropriate for the application and do not use if date is expired. 2. Ensure that wheel speed marked on disk should greater than grinder machine 3. Ensure that grinder have safety guard 4. Operatives must use face shield and eye protection 5. Ensure that grinding/cutting area free from combustible materials 6. Hot work permit must be obtained for any type of hot work. 7. Fire blanket must use for any grinding /cutting work. 8. Ensure Fire Extinguisher and sand bucket in place. 9. Ensure all electrical cables are in good condition and away from hot work area. 10. Use ear protection for noise control 11. Ensure there is no loose connection and no damage electrical cable or socket for preventing electric shock. 12. Ensure Proper earthling and use of industrial socket only. 13. Operatives must aware of voltage and use accordingly the socket considering colour. 14. Fire watcher must ensure hot work area have no fume or spark or any smoke before leave the work area 15. Ensure that operative’s cloths not to entanglement with rotating tools and injury. 16. Work area must clean and tidy to avoid slip trip or fire. 17. Ensure adequate earth leakage protections are provided. 18. Proper illumination in work place. | 1 | 4 | 4 | Low | Site Eng.  Supervisor  Foreman |
| 5 | HVAC Duct fixing by using manual handling | musculoskeletal disorders, Hand injuries, cut , bruises  Sharp edges  Tripping hazard | Involved all operatives | 3 | 4 | 12 | Medium | 1 Eliminate the need for manual handling by using mechanical aid.  2)Reduce the weight of a load to limit force exertion  3) If unsure of the load weight, check with supervisor.  5)Ensure proper manual handling procedure  6) Identify and eliminate sharp edges before any manual lift  7) Ensure adherence with sufficient and appropriate PPE.  8) Limit load carrying to 20kg per person  9) Supervisor must make sure while manual handling load individual task and environment to be considered to reduce the risk of manual handling.  10) Ensure accesses are kept clear at all times.  11 Prior to start the activity ensure that lifting devices are inspected by competent person  12)Always comply with the WLL & man loading capacity | 1 | 4 | 4 | Low | Site Eng.  Supervisor  Foreman |
|  | Installation of HVAC Duct using Mobile tower | **Work at height**  Fall form height  Falling objects  Over loading  Fragile surface  Access & egress | Operatives/Staff/  Visitors  Others | 4 | 4 | 16 | High | 1) Only trained and authorised personnel to carry out the task.  2) Ensure the PTW in place.  3) Ensure proper working platform with complete fall protection  4) Ensure Full body harness and 100% Tie off  5) Ensure the scaffold platform is properly erected with "Safe to use" tag.  6) Ensure castor wheels are locked and out rigger in place.  7) Hand tools must be secured/tethered  8)Work materials strictly not allowed to be stored on platform except for working tools  9) Always comply with the WLL & man loading capacity  10) Ensure unauthorised person not allowed to modify the scaffolding and if needed to any changes then must be modified by trained and certified scaffolder.  11) Must clean the work area after completion the job.  12)Ensure safe access to the working platform  13)Scaffold access must be free from obstruction  14) During installation and connection activity ensure that no body will enter in side Duct for resting or keeping any food item and no debris will remain inside.  15) Work area must barricade with signage and watchman must monitor no unauthorised person will enter inside exclusion zone  16) Ensure sufficient illumination in work area.  17) Work area should clean and remove all the debris end of shift.  18) Ensure that working near fragile surface special care of body and eye protection with necessary PPE. | 1 | 4 | 4 | Low | Supervisors Foreman, Site Eng. |
| 6 | Use of Ladder During installation of duct accessories | Falling from height  Working on Uneven ground  Falling objects | Operatives/  Staff/ | 3 | 4 | 12 | Medium | 1) Only light work, off short duration and work in which the operative can maintain secure hand and foot hold can be undertaken form a ladder  2) Never try to overreach with any ladders  3) Check the ladder is of suitable quality for industrial use and is in good condition  4) Maintain a minimum of 3 points of contact with stepladders at all times (feet/thighs/hands)  If possible avoid the use of stepladders at a working height of 2 meters and more.  5) Check the ladder legs (and stays) are fully deployed or locked (depending on type) to maintain maximum base dimensions and the step ladder is orientated to provide maximum stability.  6) Stepladders/ladders has to be used on leveled ground/firm base  7) Ensure that during using ladder from the top 2 step is blocked to avoid climb on that.  8) The ladder securely fixed to prevent slipping outwards or sideways or securely footed at all times.  9) Person must hold the ladder while another operative working on it  8) Materials should not be placed above the thread of ladders/step ladders  9) Do not carry any materials in one hand while climbing or getting down from ladder  10) Ensure the area under the ladder is barricaded especially if it is being used in a public area.  11) Ensure the ladder is electrical insulated podium type if working in live services | 1 | 4 | 4 | Low | Supervisor Site Eng.  Foreman, |
| 7 | Use of power tools such as angel grinder, Drill machine, | Damaged cable insulation,  Sockets.  Electrocution  Electric shock  Short circuit  Electric burn  Trip/Fall  **Noise**  Hearing loss  **Vibration**  **Dust** | Operatives and staff | 3 | 4 | 12 | Medium | 1) All portable electrical equipment must be PAT tested and color coded. Make sure the test dates are visible on the equipment.  2) Ensure all power tools are 110 volt and periodic inspection by qualified electrician.  3) PTW to be obtained, prior to commencing the task  4) Damaged industrial sockets and power cables must be removed.  5) Ensure the electrical cable is not damaged and has not been repaired with insulating tape or unsuitable connectors.  6) Ensure cables from power tools shall be organized so as not to present a tripping hazard  7) Only trained competent operatives to operate the power tools.  8) Ensure proper and regular maintenance of equipment that takes account of noise  9) Ensure proper hearing protection always.  10) Make sure people use the right tool for the job and are trained to use it correctly  11) Ensure defective tools that require maintenance is reported for repair or replacement.  12) Instruct workers to keep their hands warm and dry, and to not grip a vibrating tool too tightly. Workers should allow the tool or machine to do the work.  13) Ensuring proper job rotation and limiting time operatives working with power tools and hand tools.  14) Ensure adequate earth leakage protections are provided.  15) Never hang/lift the machine by using its power cable cord  16) Operator shall ensure the drilling/grinding machine is fitted low/high speed. | 1 | 4 | 4 | Low | Supervisor  Foreman  Site Eng. |
| 8 | Working under  High temperature  Direct sun light  Dusty  High wind | Heat exhaustion, Heat stroke, Dehydration, Personal injuries due to high temperature, Burn, Tiredness | Workers | 4 | 4 | 16 | High | 1.Arrange adequate drinking water and rest shelter  2.Drink plenty of water with electrolyte  3.If feel something unusual immediately inform supervisor and report to site clinic.  4.Make shift to operate the routine work  5.Do not allowed alone work  6.Frequent breaks  7.Proper supervision available  8.Correct PPE must use  9.Provide heat stress training  10.Conduct tool box talk  11.Proper signage for drinking water | 1 | 4 | 4 | Low | Site Eng. Supervisors, Foreman |
| 9 | Working at night time | Poor visibility due to darkness / poor illumination  Lone worker | Operatives/staff | 3 | 4 | 12 | Medium | 1) Ensure proper night work permit is obtained  2) Proper lighting system should be in place  3) Ensure proper Communication / Coordination and close supervision  4) Industrial safe torches to be available for emergency situations  5) High visibility Traffic Vest for personnel’s in night shift  6) Avoid lone working and always ensure buddy system while working at night  7) Employees to be trained and understand McLaren Crises plan. | 1 | 4 | 4 | Low | Site Engr  Supervisor  Foreman |
| 10 | Use of Hand tools and Rivet Gun/ Pop Rivet | Improper selection of hand tools.  Damaged and Defective Hand tools  Hand injuries  Pinch point  Ergonomics  Repetitive strain injury | Operatives/Staff | 3 | 3 | 9 | Medium | 1. Hand tools should be visually inspectedfor defects, prior to use. 2. Never use damaged, blunt or broken tools to avoid injury. 3. Select right tools for right Job 4. Ensure no Homemade or makeshift tools to be used at site 5. Remove from service any tool that shows signs of damage or defect 6. Ensure Hand tools are Stored in accordance with the manufacturer’s instructions. 7. Ensure hands are not in direct line of fire while working with hand tools 8. Ensure appropriate PPE at all times**.** 9. **Ensure work with a pop rivet gun, must protect your body from possible injuries** 10. **It is very risky to use a pop rivet gun in the presence of flammable materials or liquids. Always operate the tool a safe distance away from combustible liquid.** 11. **Always be careful about the placement of the pop rivet gun. Keep your fingers and body away from the line of fire** | 1 | 3 | 3 | Low | Site engg  Supervisor  Foreman |

Approved By: Name Position \_\_\_\_\_\_\_\_\_\_ Signature \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

**RISK ASSESSMENT & CONTROL GUIDELINES**

1. **Executing Steps:**
   1. **Planning**
2. Construction and HSE team must ensure that hazard identification is complete.
3. Construction and HSE team must prioritize the hazard issues, which are of significant in nature. (It means that risks have well established legal requirements, potentially high risks).
4. Construction and HSE team to prepare the risk assessment plan for the priorities identified hazards for these potential high risks.
   1. **Risk Assessment**

Risk is the probability of an event occurring in a given set of circumstances. The ‘event’ is an exposure to hazard. The hazard is the potential to cause harm. The risk assessment is the technique of evaluating not just the likelihood of an event occurring, but also the outcome will be in terms of injury, loss, damage or harm.

* 1. **Risk Assessment Process**

The process of carrying out a risk assessment should be as follows.

1. Identify the hazards.
2. Identify who might be harmed and how.
3. Evaluate the risk and implement the control measures.
4. Record the significant findings.
5. Review the assessment and update if necessary.
   1. **Examination of the Hazards and Risk Associated**

* Competent staff must be used in examining the risk associated with the identified hazard.
* Competent staff should examine following aspect to determine the risk involved:
* Examine the existing control measures in place.
* Identify employees at risk.
* Likelihood of risk.
* Severity
* Risk level and their tolerability.
  1. **Evaluating the risk:**

Once the necessary information has been obtained on the hazards encountered by work activities, next stage is to access the risks.

* + 1. **Risk Rating Score**

Risk rating score is a combination of two factors.

* The severity of the risk that could injure persons or cause damage to plant.
* The likelihood of the risk that it could happen (Probability).

**RISK RATING = LIKELIHOOD X SEVERITY**

**NOTE: Each activity has to be assessed for the risk value for determining the level of Severity and likelihood are mentioned in the table below.**

**SEVERITY**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **No Injury (1)** | **Minor Injury (2)** | **Moderate Injury (3)** | **Major Injury (4)** | **Catastrophic (5)** |
| **Rarely (1)** | **1** | **2** | **3** | **4** | **5** |
| **Unlikely (2)** | **2** | **4** | **6** | **8** | **10** |
| **Possible (3)** | **3** | **6** | **9** | **12** | **15** |
| **Likely (4)** | **4** | **8** | **12** | **16** | **20** |
| **Almost Certain (5)** | **5** | **10** | **15** | **20** | **25** |

**LIKELIHOOD**

**RISK LEVEL:**

|  |  |  |
| --- | --- | --- |
| **Low** | **Medium** | **High** |