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HYUNDAI ENGINEERING & CONSTRUCTION

AMIRAL PROJECT

Contract No : 6601000283(IK)

FALLING OBJECT PREVENTION PLAN

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1 PURPOSE

The purpose of this Falling object Prevention Plan is to establish clear guidelines and procedures for eliminating the occurrence of dropped objects when working at height in AMIRAL PKG-04. This prevention plan is intended to significantly reduce the risk of serious to employees caused by dropped objects. By implementing this plan, we aim to ensure that workers are properly trained to secure tools at height and adhere to correct procedures.

2 OVERVIEW

This plan applies to CONTRACTOR personnel and subcontractors working at heights with all types of tools, where they may be exposed to a dropped objects while working below other personnel, tools, equipment and platforms. The requirements of this plan must be observed by all personnel involved in working at height or below at height activities, including planning for activities that require working at height with tools, and those activities that require working below such conditions. This plan establishes minimum expectations in order to mitigate the risk of damage to property or personnel caused by dropped or falling objects. It is expected that any tools and materials that could be considered drop hazards are secured with secondary drop systems.

3 DEFINITIONS

3.1 Drop Hazard

Any tool, material, or object that poses a risk of falling from an elevated surface to a lower level, potentially causing damage to property, injury, or loss of life.

3.2 Mitigation

The elimination or reduction of the frequency, magnitude, or severity of exposure to risks by the minimization of the potential impact of a threat or warning.

3.3 Anchorage

A secure point of attachment specifically designed to support the tethering of tools, equipment, or transport buckets with closure systems. It is distinct and separate from the anchorage points utilized for fall protection systems for personnel.

3.4 Guardrail System

A guardrail system is a protective barrier installed along exposed edges, open-sided

floors, platforms, walkways, or any elevated surface to prevent accidental falls and provide a safe working environment for personnel.

3.5 Leading Edge
The unprotected edge of a walking/working surface, such as a roof, floor, or platform, where construction or other work is being performed, presenting a fall hazard to workers.

3.6 Protective Screen
A protective screen, when used between a toe board and guardrail, serves as an additional safety measure to prevent objects from falling through the gap between the toe board and the guardrail in elevated work areas

3.7 Attachment Point
A device designed and utilized to create a connection point on a tool to which the user can connect at ether or lanyard.

3.8 Tool Lanyard/Tether
A flexible and durable cord or strap designed to secure tools or equipment to worker's person or to an anchorage point, and is designed to prevent an object from being dropped.

3.9 Tool Bucket
A bucket designed for transporting tools and materials to and from elevated levels, typically utilizing with a rope and pulley system.

3.10 Tool Pouch
A bag or pouch that is designed to secure its contents (nuts, bolts, nails, screws, small hand tools etc.) from being spilled or dropped. Many tool pouches allow the user to remove a tool for use while preventing it from becoming a drop hazard through use of tethers, retractors, etc.

3.11 Tool Belt
A device that is designed to ergonomically support and manage other dropped prevention items such as, lanyards/tethers, pouches, and holsters on the person of the worker.

3.12 Dropped Object Zone (DOZ)
An area with potential to be impacted by drop hazards currently present in a work-in-

progress above. These Dropped Object Zones are to be secured with barricades to prevent unauthorized entry. Signage stating the hazard and who to contact for information will be posted at the DOZ as well.

3.13 Unprotected Sides and Edges

Any side or edge (excluding entrances to points of access) of a walking or working surface, such as a floor, roof, ramp, or runway, where there is no wall or guardrail system in place that meets the minimum height requirement of 42 inches (105 cm) as per Aramco standard

4 RESPONSIBILITIES

4.1 HSE Manager / Supervisors

- Establish clear policies and procedures for dropped object prevention in alignment with Aramco and applicable regulatory requirements including industry best practices.
- Provide comprehensive training to tall personnel on the importance of dropped object prevention and the proper use of equipment and tools.
- Ensure regular risk assessments are conducted to identify potential dropped object hazards in the workplace.
- Establish clear channels of communication for reporting dropped object incidents, near misses, and hazards
- Regularly review and evaluate the effectiveness of the dropped object prevention plan

4.2 Management/Supervision

- Communicating the expectation that dropped objects will be eliminated within the designated work area and ensuring that this plan and associated procedures are implemented.
- Ensure that all personnel are aware of their responsibilities and obligations regarding dropped object prevention
- Ensuring employees have appropriate equipment and materials to implement the procedure effectively.
- Ensuring workers have necessary opportunity for required training.
- Evaluate fall hazards in work areas under their control.

4.3 Site Safety Officers

- Implement all aspects of the plan for work areas under their control.
- Ensure that personnel are informed, trained, and provided with the appropriate fall protection systems and equipment to be protected from potential fall hazards associated with job tasks.
- Conduct regular inspections of work areas to identify any deficiencies or hazards and take corrective action as necessary.
- Ensure that all personnel are aware of their responsibilities and obligations regarding dropped object prevention.
- Ensure suitable tools, materials, and equipment are provided for the effective implementation of this procedure and are free from damages and defects that could compromise safety or lead to dropped objects.
- Promptly report any incidents or near misses involving dropped objects and ensure that appropriate corrective actions are taken

4.4 Emergency Response Team

- Conducting regular inspections to ensure that safety measures are being followed, such as the use of toe boards, guardrails, and debris nets.
- Being prepared to respond promptly to falling object incidents or emergencies.
- Providing first aid and medical assistance to injured workers.
- Coordinating with external emergency services if necessary.
- Investigating incidents involving falling objects to determine root causes and prevent recurrence.
- Documenting and reporting incidents as required by Amiral policy and regulations.
- Ensuring that all personnel are aware of emergency procedures related to falling objects, including evacuation routes and assembly points.

4.5 Scaffold Supervisors

- Be aware of the requirements outlined in this plan.
- Provide a means of fall protection (guardrails, personal fall arrest/restraint systems, or Safety monitor) for all work from elevated heights greater than 6 feet for

construction work.

- Conduct regular inspections of the work site to identify potential hazards related to dropped objects.
- Conduct regular inspections of tools and equipment to ensure they are in good condition and free from defects that could lead to dropped objects.
- Maintain a clean and organized work site to reduce the risk of objects becoming dislodged or misplaced.
- Provide oversight and supervision to ensure that work activities are conducted in accordance with dropped object prevention procedures.
- Monitor workers to ensure they are using appropriate methods for securing tools and equipment and are following safe work practices.
- Ensure that workers are aware of the specific hazards and control measures relevant to their work tasks.
- Promptly report any incidents or near misses involving dropped objects and ensure that appropriate corrective actions are taken

4.6 Employees

- Handle tools and equipment with care, ensuring they are properly secured and not left unattended on elevated surfaces
- Inspect tools and equipment before use to ensure they are in good condition and free from defects that could lead to dropped objects
- Report any damaged or faulty tools to a supervisor immediately and refrain from using them until they are repaired or replaced.
- Maintain a clean and organized work area by keeping tools, materials, and equipment properly stored when not in use.
- Promptly report any incidents, near misses, or hazards involving dropped objects and cooperate with investigations as needed.
- Take personal responsibility for preventing dropped object incidents and ensuring one's own safety and the safety of others.

4.7 Subcontractors

- Be aware of the requirements outlined in this plan.
- Provide a means of fall protection (guardrails, personal fall arrest/restraint systems, or safety monitor) for all work from elevated heights greater than 6 feet for construction work.
- Conduct a thorough assessment of the work area to identify potential hazards

related to dropped objects and implement appropriate control measures.

- Ensure their employees are adequately trained on dropped object prevention, including the proper use of tools and equipment.
- Actively participate in efforts to improve dropped object prevention measures and provide feedback on ways to enhance safety on the worksite.
- Coordinate the correction of fall hazards brought to their attention.
- Report incidents relating to fall hazards to CONTRACTOR.
- Implement lessons learned from past incidents and near misses to prevent recurrence and minimize risks in the future

5 RISK ASSESSMENT

All work tasks performed at elevated heights (1.8 meters) shall be assessed initially and upon any changes. The risk assessment shall be completed to identify if there is a risk of a fall and the control measures to be implemented. This risk assessment shall be done for all work at height activities and activities which have the potential for falling object hazards, ensuring that appropriate control measures are in place to mitigate these risks. Risk assessment shall be maintained in the name Project HSE Risk Register

5.1 Identify Potential Hazards

- Identify areas where overhead work is being conducted.
- Recognize objects that could potentially fall, such as tools, equipment, or materials.
- Consider environmental factors such as wind, weather conditions, and visibility.

5.2 Assess Probability:

- Evaluate the likelihood of objects being dropped based on the nature of the work being performed.
- Consider factors such as the frequency of overhead activities, the stability of work platforms, and the effectiveness of containment measures.

5.3 Evaluate Severity:

- Assess the potential consequences of a dropped object, including injuries to personnel, damage to property, and operational disruptions.
- Consider the height from which objects could fall and the force with which they could impact.

5.4 Identify Control Measures:

- Implement engineering controls such as barriers, toe boards, or nets to contain

falling objects.

- Utilize administrative controls such as exclusion zones, warning signs, and safe work practices to minimize the risk of dropped objects.
- Ensure that proper personal protective equipment (PPE) is worn by workers in the vicinity of overhead work areas.

5.5 Implement Control Measures:

- Ensure that control measures are effectively implemented before work begins, including the installation of barriers, the establishment of exclusion zones, and the provision of necessary PPE.
- Communicate control measures to all personnel involved in the work, including workers, supervisors, and contractors

5.6 Monitor and Review:

- Regularly monitor the effectiveness of control measures throughout the duration of work activities.
- Conduct periodic inspections to identify any new hazards or deficiencies in control measures.
- Review incident reports, near-misses, and feedback from workers to continuously improve dropped object prevention measures.

5.7 Adjust and Improve:

- Adjust control measures as necessary based on changing work conditions, feedback from workers, and lessons learned from incidents or near-misses.
- Continuously seek opportunities to improve dropped object prevention through the use of new technologies, training programs, and best practices in the industry.

A pre-task inspection shall be conducted for all identified activities with the potential for dropped objects, utilizing Attachment 1 – Pre-task Job Checklist for Dropped Object Prevention

6 RESCUE CAPABILITIES OF EMERGENCY RESPONSE TEAM

- The team assesses the situation to determine the severity of the fall, the condition of the victim, and any potential hazards in the surroundings.
- Clear communication shall be established among team members to coordinate the rescue operation effectively. This may involve radio communication or other

methods depending on the environment.

- Before attempting any rescue, the team must ensure the safety of both the victim and themselves. This might involve securing the area to prevent further falls or injuries.
- If the victim is conscious and responsive, the team provides immediate first aid to address any injuries. This may include stabilizing spinal injuries, controlling bleeding, or providing basic medical care.
- Depending on the situation, the team may need to extricate the victim from the location of the fall. This could involve techniques such as using a stretcher, ropes, or other specialized equipment to safely move the victim to a secure location.

7 SAFE WORK REQUIREMENTS

Where there is a risk to personnel injury and damage to plant and equipment due to falling objects, adequate measures shall be implemented in alignment with this procedure. To ensure a safe and productive working place, the following safe work practices must be adhered to at a minimum, in compliance with the Saudi Aramco Construction Safety Manual (CSM) and other relevant regulations, including industry best practices.

7.1 Scaffold Platform

- Toeboards must be installed along all edges of scaffold platforms and stair/ladder landings exceeding 1.8 meters (6 feet) above a lower level, unless access to the lower level is physically restricted.
- Wood toeboards must be a minimum of 25 mm (1 inch) in thickness. Toe boards must be firmly fastened along the outermost edge(s) of the platform and should not exceed 6 mm (1/4 inch) clearance above the walking/working surface.
- Toeboards must be solid and able to withstand a force of at least 23 kilograms (50 pounds) without failure, in either a downward or horizontal direction at any point along the toe boards.
- Where tools, materials or equipment are piled to a point higher than the top edge of a toeboard, and where there is the danger of objects falling through guardrails and striking personnel or equipment below, a protective screen consisting of a minimum No. 18 gauge wire with a maximum 13 mm (1/2 in) mesh shall be securely fixed to the toeboard, midrail and toprail.
- Barricade the area below where objects can fall and not permitting personnel to

enter the hazard area, and where required, erect debris nets, catch platform or canopy structures.

- Materials shall not be piled, stacked or grouped unless they are stable and self-supporting.
- Scaffold platforms shall be closed planked or decked as fully as possible to avoid falling of any loose materials.
- The maximum height of the uppermost work platform should not surpass 4 times the minimum base dimension of any mobile or tower scaffold. If the basic scaffold fails to meet this criterion, outriggers must be fitted to achieve the minimum base dimension, or additional stabilization measures (such as ties or rakers) should be implemented to prevent tipping.
- Scaffolders shall fasten the spanner lanyard securely using the provided attachment mechanism, such as hook-and-loop closure or a buckle, such as;
  - Secure one end of the tool lanyard to a suitable attachment point on the scaffolders wrist, belt or harness;
  - Attach the other end of the tool lanyard to the hole or loop provided on the spanner's handle;
  - Ensure that the connection between the tool lanyard and the spanner is securely fastened, using a reliable method;
  - Adjust the length of the tool lanyard as needed to allow the spanner to be used comfortably without restricting movement;
- Where required, install protective screen between a toe board and guardrail to prevent objects from falling through the gap between the toe board and the guardrail.
- Platforms must remain clear of obstacles, unnecessary debris, protruding nails, or any elements that could cause tripping hazards (including uneven surfaces). There should always be sufficient space for workers to move safely, even when materials are placed on the platforms or if additional levels are added.
- Platform units that have become slick due to substances like oil or sand must be promptly cleaned or replaced before further use to ensure safety.
- The incline of scaffold platform units (planks) should not exceed a ratio of 1 vertical to 4 horizontals to maintain stability and prevent accidents.
- Scaffold platforms, landings, and walkways must be a minimum width of 675 mm (27 inches) (equivalent to 3 planks) to ensure safe passage for workers, both during the erection process and throughout use.

- Measures should be taken to prevent wooden planks from being exposed to welding slag or open flame. When erecting a scaffold near a heat source or equipment containing flammable materials above its auto-ignition temperature, it's advisable to use a system scaffold with compatible fabricated metal planks instead of wooden ones, for added safety.

7.2 Working at Height

- Where planks or metal decking around columns do not fit tightly, wire mesh exterior plywood or equivalent material shall be installed and shall be sufficient strength to prevent objects from falling through.
- All tools and hand-held machinery used at height must be secured against being dropped, both when in use and while being moved.
- Lifting bags/buckets should be utilized for lifting or lowering loose materials to and from elevated work areas. Additionally, these lifting areas must be securely barricaded with hard barriers and accompanied by warning signs
- Erect barricades and install toe boards around the work area to contain falling objects and prevent them from reaching lower levels
- Install guardrails and safety nets around the perimeter of elevated work areas to provide additional protection for workers below where there is a risk of falling objects.
- Regularly inspect tools, equipment, and structural components for wear, damage, or defects that could lead to dropped objects. Replace or repair any compromised items promptly.
- Store materials and equipment securely in designated areas on scaffolding or platforms to prevent them from being dislodged or knocked over.
- Maintain good housekeeping to keep the work area tidy and ensuring materials, debris, tools and equipment that are not being used are out of the way.
- Keep tools or other materials away from edges and off the railing or sills.
- If placing an item on a scaffold or platform, provide a secure physical barrier at the edge of the elevated area, such as toe boards that form part of guardrail system.
- Ensure to use lanyards and tethers when working at heights with hand tools to prevent dropping of tools from the hand while working at height.

7.3 Floor Opening

- Securely cover the hole or opening with suitable material such as grating, plywood, or protective screen.
- Erect guardrails around the perimeter of the opening to create a barrier and prevent accidental entry or falls.
- Clearly mark the area with warning signs or barricades to alert workers and others about the hazard.
- Install toe boards around the edge of the opening to prevent objects from falling through.
- Conduct regular inspections to ensure that covers and guardrails are secure and in good condition, and promptly repair any damage or defects.

7.4 Lifting Operation

- All crane operators shall be properly licensed and certified per GI 7.025 for the crane type/model they are using.
- Prior to lifting and hoisting operations, conduct a risk assessment to identify any potential hazards or risks of falling objects
- Ensure that all objects being lifted are properly secured using appropriate rigging equipment, such as slings, chains, or straps, to prevent them from becoming dislodged during the lift.
- Thoroughly inspect all rigging equipment, including slings, hooks, and attachments, before each lift to check for signs of wear, damage, or defects that could compromise their integrity.
- Establish exclusion zones around the lifting area to prevent unauthorized personnel from entering and minimize the risk of injury from falling objects.
- Use barricades and prominently display warning signs to alert workers.
- Maintain clear communication between all personnel involved in the lifting operation, including signalers, operators, and ground personnel, to coordinate movements.
- Tag lines shall be used to control suspended loads.
- No lifting shall be performed beyond the rated capacity of the lifting equipment and gears.

7.5 Material Transportation

- Prior to transporting materials to or from worksites, it shall be inspected for dropped object risk potential.
- Transporting of loose materials using trailers, forklifts, boom trucks or any other mechanical means, such materials should be properly secured by suitable means of restraint, such as straps, chains, or cargo ropes/nets.
- Equipment such as forklift, boom truck etc. shall be suitable for the job is properly inspected, maintained and operated by Aramco certified operator.
- Ensure safe working load limits and all relevant factors of moving equipment are taken into account such as;
  - Stability of the ground condition;
  - Use of outriggers stabilizers;
  - Wind condition etc.
- Make sure the load is balanced and secure when the load is lifted.
- Enclose the areas over which loads are being lifted, and cordon off the area with warning signs posted.

8 INSPECTION AND MAINTENANCE

Visual inspections of fall arrest systems associated with dropped object prevention devices/equipment shall be conducted prior to each use, following the manufacturer's instructions. Inspections should check for excessive wear, damage, and other signs of deterioration. This includes:

- Inspection and color-coding as in accordance with Subsection 12.2.6 Quarterly Color Code SA-AMI-000-HDAI-710004 Contractor Site Safety Program (CSE).
- Check for signs of wear, damage, corrosion, loose components, or any abnormalities.
- Check attachment points, fasteners, cables, and connections for integrity and secure fitting.
- Test mechanisms such as locking pins, lanyards, and tensioning systems to ensure they engage and release smoothly
- Replace any worn, damaged, or defective components identified
- Use only genuine parts provided by the manufacturer to maintain device integrity and performance.
- Maintain detailed records of inspection findings, maintenance activities, repairs, and replacements.

Note: Dropped object protection equipment must be used in accordance with the manufacturer's instructions. This includes weight and size limitations, and must not be altered in any way without the manufacturer's written authorization.

9 REPORTING AND INVESTIGATION

All incidents, including near-misses, unsafe acts, and conditions related to dropped objects, must be reported and investigated according to the procedures outlined SA-AMI-000-HDAI-710014 Incident Reporting Procedure.

10 TRAINING

Personnel engaged in tasks involving potential falling objects and those exposed to dropped object risks must undergo training as outlined in SA-AMI-000-HDAI-710004 Contractor Site Safety Program (CSE), specifically in section 8 on HSE Orientation and Training. This training shall encompass the following:

- Identification of common dropped object hazards and associated risks.
- Proper selection, inspection, and use of equipment such as tool lanyards, tethering systems, and barricades.
- Safe work practices for working at heights, handling tools and equipment and securing objects.
- Importance of maintaining a clean and organized work area to minimize dropped object hazards.
- Emergency response procedure in the event of a dropped object incident.
- Instruction on lifting techniques, handling procedures, covering, securing, protection, and other safe working methods pertinent to preventing falling objects.
- Incident reporting protocols and procedures.

11 REFERENCES

- Amiral Construction Safety Manual (CSM) II-5
- SA-AMI-000-HDAI-710004 Contractor Site Safety Program (CSE)
- SA-AMI-000-HDAI-710014 Incident Reporting Procedure

12 ATTACHMENT

Attachment 1 – Pre-task Job Checklist for Dropped Object Prevention

PART 1: General Information

Site & Location of Assessment:		Date:
Person Performing Assessment:		
Activity (That has potential for dropped objects)		
Persons Who May Be Affected:		
Workers Consulted:		

Part 2: Hazard Evaluation

Identify Hazards	YES	NO	N/A	Comments
Have potential hazards related to falling objects been assessed in the work area?				
Have areas where overhead work is conducted and potential drop zones been identified?				
Have barricades and warning signs been set up to restrict access to dropped object zones?				
Are tools and equipment required for the task readily available and in good condition?				
Have tool lanyards, tethers, and other dropped object prevention devices been provided and checked for accessibility and functionality?				
Do all workers have the necessary PPE, such as hard hats and safety glasses, for protection against falling objects?				

Are there toe-boards, guardrails, and protective screens in place to prevent objects from falling to lower levels?				
Have all tools and materials been securely stored when not in use to prevent accidental displacement?				
Have lifting bags or buckets been properly secured and accompanied by warning signs when used for material transportation?				
Has a pre-task meeting been conducted to ensure all workers understand their roles and responsibilities in preventing dropped objects?				
Are materials properly packaged, stored and secured to prevent shifting during transit using trailers, forklifts, boom trucks, or other mechanical means?				
Are suitable means of restraint, such as straps, chains, or cargo ropes/nets, available for securing the load?				
Are exclusion zones established around the lifting area to prevent unauthorized personnel from entering?				