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Floor and Wall Openings Procedure

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Floor and Wall Openings Procedure

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1.0 PURPOSE

During the performance of some Maintenance activities, floors and walls may be opened or created (e.g., cutting, access panel), for access to equipment or material/equipment maneuverability.

Activities performed around these openings can be highly dangerous due to the introduction of a fall hazard to the work environment. Therefore, it is good practice for Entities, and/or their facility management contractors, to implement HSE procedures to identify and rigorously control hazards associated with openings in floors and walls to minimize risk of injury or greater, to staff, workers, visitors and passers-by.

2.0 SCOPE

The scope of this procedure is to provide means to the user to create a custom procedure outlining and detailing the requirements and responsibilities for identifying and controlling openings in floors and walls. This procedure applies throughout the Kingdom of Saudi Arabia to Operations and Maintenance functions and activities on government owned facilities and projects where floors and wall openings exist or are created and create a fall hazard.

3.0 DEFINITIONS

Definitions	Description
Fall Protection Cover	A structure that is placed over an opening in a surface of a building or other structure to prevent a person falling through the opening. Consists of solid sheets of sturdy material
Floor Hole or Opening	Hole means a gap or void 2 inches (5 cm) or more in its least dimension, in a floor, roof, or other walking/working surface Opening means a gap or open space in the floor surface, or similar surface that is at least 30 inches (76 cm) high and at least 18 inches (45 cm) wide, through which an employee can fall to a lower level.
Hard Barricade	A wooden or metal guarding device, capable of withstanding a 90 kg force from any direction, that is placed around a floor hole or floor opening to keep persons from walking into the hole or opening
HSE	Health, Safety and Environment
JHA	Job Hazard Analysis
Wall Opening	A gap or void at least 76 cm high and 45 cm or wider in any wall or partition through which persons may fall to a lower level, such as hatches, chute openings, or rigging opening.

4.0 REFERENCES

- Standards 29 CFR OSHA 1910 Subpart D Walking- Working Surfaces.
- Standards 29 CFR OSHA 1926 Subpart G Signs, Signals, and Barriers.
- EOM-KSS-PR-000001 A&FM General Safe Work Requirements Procedure.
- EOM-KSS-PR-000005 Fall Protection Procedure.
- EOM-KSS-PR-000006 Barricades and Signs Procedure.
- EOM-KSS-PR-000016 Hazardous Work Permit Procedure
- EOM-KSS-PR-000026 Roofing Work Procedure.
- EOM-KSS-PR-000033 Job Hazards Analysis & Pre-Start Briefing Procedure

5.0 RESPONSIBILITIES

5.1 Facility Manager or Contractor Responsible

The Facility Manager or Contractor Responsible is to ensure that adequate resources, people, equipment, and training are made available to facilitate the requirements of this procedure, and for ensuring that the requirements of this procedure are properly implemented.



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5.2 HSE Representative

- Monitoring ongoing compliance with this Procedure.
- Providing support and advice to management in relation to fulfilling HSE requirements with local rules and legislation.
- Ensuring regular audits against this Procedure

5.3 Supervisors

- Ensuring that the requirements of this Procedure are monitored for compliance and effectiveness.
- Ensuring that protective measures for covering floor openings are fit for purpose.
- Ensuring that no floor opening or penetration is left open while unattended or open overnight.
- Ensuring that no person is instructed to remove a floor covering or penetration without an approved JHA in place and the applicable risk controls implemented.

5.4 Facility or Contractor Personnel/Operators

All personnel are responsible and accountable for complying with the requirements set out in this procedure.

6.0 GENERAL REQUIREMENTS

It is imperative that prior to beginning any work activity, a JHA which includes mitigations for any other hazards noted by personnel at the Facility. The discussion shall also include job steps, expected hazards associated with the activity, and the mitigation and protection methods that shall be implemented to prevent incidents. Refer to EOM-KSS-PR-000033 Job Hazards Analysis & Pre-Start Briefing Procedure for further details.

This section outlines the minimum requirements for covering floor openings, floor holes, and wall openings. These requirements are mandatory. Refer to Section 3 of this procedure for the size of any opening that must be secured.

Un-secured guardrails or barricades used around permanent floor holes and/or floor openings instead of proper covers are prohibited. See below for additional information:

- Anyone working inside of a barricaded area around a floor opening or wall opening shall be required to wear and use a safety harness.
- Contractors or O&M employee creating a floor hole, floor opening, or wall opening shall have authorization from an authorized engineer and their supervisor.
- The supervisor will coordinate with the contractor or O&M employees on appropriate physical barricades prior to creating a floor or wall opening or floor and shall be responsible for ensuring this is properly covered after works have ceased.
- The only alternative to the above-stated requirements is for the supervisor to assign one or more persons to constantly guard any hole or opening until the hole or opening is covered, where it is judged to still constitute a serious safety hazard despite barricades and guard rails being set up.
- Barricades:
 - Hard barricades (e.g. – steel handrail) shall be the preferred method to guard openings.
 - Barricade tape (i.e., soft barricade)
 - Barricade tape around a hole or opening will not prevent personnel from falling through the area in which the hole or opening is found.
 - Barricade tape used to protect non-authorized personnel shall be red “danger” tape.
 - The use of barricade tape should be avoided when possible.
 - Barricade tape around a hole or opening shall be placed a minimum of 1.83m (6 feet) away from the leading edge (opening).
- No material will be stored on any floor covers to minimize the potential for overloading



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- The use of floor covers to support work platforms (i.e. scaffolds) is prohibited unless a JHA has been completed, and that the floor cover is engineered/designed and able to support the work platform. The assessment is then to be approved by the Facility manager or Contractor Responsible.

6.1 Floor and Wall Penetrations

6.1.1 Floor Holes

All floor holes will be covered with 1.9 cm exterior-grade plywood or the equivalent. In addition, these covers will be secured to prevent them from slipping or being displaced by personnel traffic. Floor hole covers will extend a minimum of 10 cm from the edge of the entire hole being covered. All such closures shall have adequate warning signs and surrounding barriers to prevent trip hazards.

6.1.2 Floor Openings

All floor openings 1 meter or less at their narrowest dimensions are to be covered and secured using 1.9 cm exterior-grade plywood or equivalent, with bracing nails underneath for all square or rectangular floor openings (Figure 1). Floor opening covers can run continuously, as long as the width of the opening is not greater than 1 meter, over such items as trenches, pipe chases, etc.

Whenever the narrowest dimension is greater than 1 meter, the floor opening will be treated as a temporary floor. In cases where the floor opening is greater than 30 cm, but equal to or less than 60 cm at its narrowest dimension, only one support brace will be required to extend the entire length of the floor opening cover. All types of floor opening covers will extend a minimum of 10 cm over the edge of the floor opening being covered. If pedestrians are able to walk over cover, it shall be capable of withstanding twice the weight.

Signage is required and fluorescent paint around the edges to highlight the potential trip hazard (Figure 2).



Figure 1: Typical Hole Cover Example



Figure 2: Typical Signage on Cover

6.1.3 Wall Openings

Wall openings will be barricaded with guardrails of metal or wood, and a toe plate will be required if the wall opening is less than 10 cm above the floor or platform level. Wooden guardrails must be 5 cm x 10 cm boards or the equivalent. Metal guardrails must be 4 cm nominal size handrail material or larger. The mid-rail can be made of a 2.5 cm x 15 cm board, or a 5 cm x 10 cm board, or a 4 cm nominal size metal handrail material. The toe board can be made from a 2.5 cm x 10 cm board or a 1 cm flat metal plate. These guardrails must be able to withstand a 90 kg force from any direction without failing. If a wall opening is to be covered, 2 cm exterior grade plywood will be used and will be substantially braced to withstand a 90 kg force without failure from any direction. Metal plate can be used to cover a wall opening as long as it can withstand a 90 kg horizontal force without failure.



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6.1.4 Temporary Flooring

When a floor opening exceeds 1 meter at its narrowest dimension, it will require temporary flooring with enough strength for the anticipated loads. Temporary flooring can be solid 5 cm lumber positively secured to prevent displacement from personnel traffic or equipment or 1.9 cm exterior-grade plywood, if it is properly supported.

6.2 Cover Removal

If the cover for a floor hole, a floor opening, or a wall opening, needs to be removed for a short period, 2 employees can be assigned to guard the area involved to keep people away from it. Employees assigned the duty of guarding such areas will not leave the area at any time and shall wear fall protection. Prior to removing any cover for a length of time, a JHA will be conducted.

If the cover must be removed for an extended period, a substantial guardrail or barrier must be erected around the opening. The guardrail must be anchored so that it cannot be accidentally displaced. The guardrail systems must be able to withstand a 90 kg horizontal force from any direction without failure (Figure 3).

Whenever any type of cover listed in this procedure must be removed, the employees removing it must have authorization from their supervisor and if required a JHA conducted. The supervisor will inspect the area where the cover or covers are to be removed to determine what precautions are warranted (employees to guard opening or the erection of barricades consisting of properly constructed guardrails).



Figure 3: Guardrails around Floor Penetration

6.3 Cover Alterations

If floor covers must be altered or cut so they can accept piping, conduit, etc., the supervisor responsible for the work will be required to contact the cover installer to make changes or alterations to floor covers.

6.4 Cover Installation

The personnel responsible for installing all wooden covers over holes or openings shall be trained in this Procedure. In addition, they will be required to mark all such covers in the following manner: "FLOOR OPENING - DANGER, DO NOT REMOVE." This is to be in both Arabic and English.



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7.0 TRAINING

Training shall be completed to ensure that personnel working under this procedure understand the requirements. Training records are to be kept accessible on file for review and audit.

8.0 ATTACHMENTS

N/A