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Project Floor and Wall Openings Procedure



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Project Floor and Wall Openings Procedure

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1.0 PURPOSE

This procedure describes the minimum requirements for personnel to implement when covering floor openings, floor holes, and wall openings to ensure that employees are not exposed to the potential of falling.

2.0 SCOPE

The scope of this procedure applies to all works performed under all Government Construction Contracts executed throughout the Kingdom of Saudi Arabia.

3.0 DEFINITIONS

Definitions	Description
Floor Hole	Any gap or void measuring 30.5 cm or less at its largest dimension, but more than 2.5 cm at its smallest dimension, in any floor, roof, or platform through which materials, but not persons, may fall, such as a belt hole, pipe opening, or slot type opening
Floor Opening	an opening measuring 30.5 cm or more in its least dimension, in any floor, platform, pavement, or yard through which persons may fall; such as a hatchway, stair or ladder opening, pit or large manhole. Floor openings occupied by elevators, dumb waiters, conveyors, machinery, or containers are excluded.
Wall Opening	A gap or void at least 76.2 cm high and 45.7 cm or wider in any wall or partition through which persons may fall to a lower level, such as doorways, chute openings, or rigging opening.
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
Hard Barricade	A wooden or metal guarding device, capable of withstanding a 90.7kg force from any direction, that is placed around a floor hole or floor opening to keep persons from walking into the hole or opening
HSSE	Health, Safety, Security and Environment
JHA	Job Hazard Analysis
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
STARRT	Safe Talk Analysis and Risk Reduction

4.0 REFERENCES

- Standards 29 CFR OSHA 1910 Subpart D Walking- Working Surfaces.
- Standards 29 CFR OSHA 1926 Subpart G Signs, Signals, and Barriers.
- EPM-KSS-PR-000001 Project General Safe Work Requirements Procedure.
- EPM-KSS-PR-000005 Project Fall Protection Procedure.
- EPM-KSS-PR-000006 Project Barricades and Signs Procedure.
- EPM-KSS-PR-000016 Project Hazardous Work Permit Procedure
- EPM-KSS-PR-000029 Project Roofing Work Procedure.

5.0 RESPONSIBILITIES

5.1 Site Construction Manager

- Holding Project Personnel accountable for compliance with this Procedure.

5.2 Construction Contractor HSSE Manager

- Monitoring ongoing compliance with this Procedure.



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5.3 Construction Contractor Supervisor

- Ensuring that the requirements of this Procedure are monitored for compliance and effectiveness.
- Ensuring that protective measures for covering floor openings are:
 - o Able to withstand the impact of a falling person, and to ensure that the person does not fall.
 - o Be securely fixed in place to prevent being moved or removed accidentally.
 - o Clearly marked in high visibility signage with the wording "FLOOR OPENING – DANGER, DO NOT REMOVE" installed. Signage must be written in multi language that worker can understand.
- Ensuring that no floor opening or penetration is left open while unattended or overnight.
- Ensuring that no person is instructed to remove a floor covering or penetration without an approved JHA in place and the applicable fall prevention/protection controls implemented.

6.0 RISK ASSESSMENT

Before any penetrations are developed, it is important that a Risk Assessment or JHA is completed.

It is imperative that prior to beginning any work activity, a pre-start briefing Safe Talk Analysis and Risk Reduction (STARRT) occurs to discuss the contents of the JHA which includes mitigations for any other hazards noted by the crew at the jobsite. 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. STARRT must be conducted by supervisor and cross check by safety representative.

The Hierarchy of control shall be used to reduce the likelihood of an incident occurring.

- **Elimination** (Remove the Hazard)
- **Substitution/Isolation** (Replacing material, process or hazard with a lower risk one/ separate people from the hazard (such as suitable guarding, distance, etc.)
- **Engineering Controls** (Redesign or replacement of plant and equipment)
- **Administration Controls** (Procedures, training, signage)
- **PPE** - Personal Protective Equipment

No work is to commence until the above has been implemented and signed by the relevant Supervisor in charge.

7.0 GENERAL REQUIREMENTS

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 not acceptable. See below for additional information:

- Employees creating a floor hole, floor opening, or wall opening must have authorization from an authorized engineer and their supervisor.
- The supervisor of any employee creating a floor hole, floor opening, or wall opening is responsible for working with the carpenter supervisor to have the floor hole, floor opening, or wall opening properly covered. The supervisor will coordinate with the carpenters on appropriate physical barricades prior to creating a floor or wall opening or floor hole.
- 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 properly covered.
- Barricade tape around a hole or opening will not prevent personnel from traveling through the area in which the hole or opening is found – Hard Barricades must be in place
- No material will be stored on any floor covers to minimize the potential for overloading
- Anyone working inside of a barricaded area around a floor opening or wall opening will be required to wear and use a safety harness.



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- The use of floor covers to support work platforms (i.e. scaffolds) is prohibited unless a risk assessment 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 HSSE Department.

7.1 Floor and Wall Penetrations

7.1.1 Floor Holes

All floor holes, as defined, 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 for a circular floor hole can be made in a circular, square, or rectangular shape. Floor hole covers will extend a minimum of 10.2 cm from the edge of the entire hole being covered.

7.1.2 Floor Openings

All floor openings 101.6 cm or less at their narrowest dimensions are to be covered and secured using 1.9 cm exterior-grade plywood or the equivalent, with bracing nails underneath for all square or rectangular floor openings. Floor opening covers can run continuously, as long as the width of the hole is not greater than 101.6 cm, over such items as trenches, pipe chases, etc.

Whenever the narrowest dimension is greater than 101.6 cm, the floor opening will be treated as a temporary floor. In cases where the floor opening is greater than 30.5 cm, but equal to or less than 60.1 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 10.2 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.



Typical Signage on Cover



Typical Hole Cover Example

7.1.3 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 10.2 cm above the floor or platform level. Wooden guardrails must be 5 cm x 10.5 cm boards or the equivalent. Metal guardrails must be 3.8 cm nominal size handrail material or larger. The mid-rail can be made of a 2.5 cm x 15.2 cm board, or a 5.1 cm x 10.6 cm board, or a 3.8 cm nominal size metal handrail material. The toe board can be made from a 2.5 cm x 10.6 cm board or a 0.64 cm flat metal plate. These guardrails must be able to withstand a 90.7 kg force from any direction without failing.

If a wall opening is to be covered, 1.9 cm exterior grade plywood will be used and will be substantially braced to withstand a 90.7 kg force without failure from any direction.

Metal plate can be used to cover a wall opening as long as it can withstand a 90.7 kg force without failure from any direction.



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7.1.4 Temporary Flooring

When a floor opening exceeds 101.6 cm at its narrowest dimension, it will require temporary flooring of sufficient strength for the anticipated loads. Engineers shall design and decide on the type and thickness of material to use.

Temporary flooring can be solid 5.1 cm lumber positively secured to prevent displacement from personnel traffic.

Temporary flooring can be 1.9 cm exterior-grade plywood as long as it is properly supported.

7.2 Cover Removal

If a floor hole, a floor opening, or a wall cover needs to be removed for a short period, an employee can be assigned to guard the area involved to keep people away from it. An employee assigned the duty of guarding such areas will not leave the area at any time and will be afforded fall protection.

If a floor hole, etc., cover must be removed for an extended period, a substantial guardrail must be erected around the opening. The guardrail must be anchored so that it cannot be accidentally displaced.

Guardrail systems must be able to withstand a 90.7 kg force from any direction without failure.

Whenever any type of cover listed in this procedure must be removed, the employees removing it must have authorization from their supervisor. 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).



Guardrails around Floor Penetration

7.3 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 supervising carpenter to make changes or alterations to floor covers.

7.4 Cover Installation

The carpenters are responsible for installing all wooden covers over holes or openings. 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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8.0 TRAINING

Training shall be completed to ensure that all personnel working under this procedure understand the requirements. Training records are to be kept so that they can be called upon if required.

9.0 ATTACHMENTS

N/A