EXPRO National Manual for Projects Management

Volume 11, Chapter 2

Project Manual Material Handling Procedure

Document No. EPM-KSS-PR-000027 Rev 003

Document Submittal History:

Revision:	Date:	Reason For Issue
000	21/09/2017	For Use
001	03/12/2017	For Use
002	04/12/2018	For Use
003	09/08/2021	For Use

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1.0 PURPOSE

To outline the responsibilities associated with the management and control over manual handling hazards. The purpose of this procedure is to define the requirements for the identification, assessment and control of risks arising from manual handling tasks in the workplace on a Project site. In doing so the procedure has the following aims:

- Protection of the Health and Safety of personnel.
- Compliance with relevant statutory requirements.
- Reduction and control of risks associated with manual handling.

2.0 SCOPE

The scope of this procedure applies to all personnel who may perform any manual handling task. It will outline the requirements and guidance on how to reduce the risk of injury resulting from manual handling tasks that applies to all works performed under all Government Construction Contracts executed throughout the Kingdom of Saudi Arabia.

3.0 DEFINITIONS

Definitions	Description
Manual Handling	tasks that require the use of force exerted by a person to lift, push, pull, carry or otherwise move, hold or restrain a person, animal or object
Hazardous Manual Handling	Manual handling which reflects the following characteristics: • Repetitive or sustained application of force. • Repetitive or sustained awkward posture. • Repetitive or sustained movement. • Application of high force. • Exposure to sustained vibration • Manual handling of live persons or animals • Manual handling of unstable or unbalanced loads or loads which are difficult to grasp or • Manual Handling of containers of hazardous substances e.g. sulphuric acid.
Musculoskeletal Disorder (MSD)	An injury or condition that arises in whole or part from undertaking hazardous manual handling tasks in the workplace, whether occurring acutely (suddenly) or chronically (over a long period of time). Such conditions may include: • Muscle sprains and strains • Injuries to muscles, ligaments, intervertebral discs and other structures in the back • Injuries to soft tissues such as nerves, ligaments and tendons in the wrists, arms, shoulders, neck or legs abdominal hernias • Chronic pain • Weight and dimensions of loads. • Age, fitness level and physical characteristics of personnel undertaking manual handling tasks. Working environment and conditions (heat, noise, cold, vibration, air quality, weather conditions
HSSE	Health, Safety, Security and Environment
JHA	Job Hazard Analysis
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment

4.0 REFERENCES

- EPM-KSS-PR-000001 Project General Safe Working Requirements Procedure.
- EPM-KSS-PR-000002 Project Housekeeping Procedure.
- OSHA 1910.176 Subpart N Materials Handling and Storage
- OSHA 1926.25 Subpart C General Safety and Health Provisions.
- OSHA 1926.250 Subpart H Material Handling, Storage. Use, and Disposal.

5.0 RESPONSIBILITIES

5.1 Project Manager

Project Manager's responsibilities include the following:

- Overall responsibility for this procedure and for supporting this process and verifying all Project entities actively participate.
- Providing the personnel, facilities, and other resources necessary to effectively accomplish this procedure.

5.2 Site Construction Manager

The Site Construction Manager is responsible for monitoring that the site is in compliance with applicable Health, Safety, Security and Environment HSSE requirements by:

- Providing the resources to implement the requirements of this procedure.
- Communicating with management concerning Project HSSE expectations concerning general safe work practices.
- Providing leadership regarding HSSE requirements and expectations for Managers, Project Supervisors, Superintendents and other leadership.

5.3 HSSE Manager

Site HSSE Manager's responsibilities include the following:

- Auditing this procedure.
- Confirming that this procedure meets the government requirements and regulations in the location of the Project facility.

5.4 Project Personnel

Project personnel's responsibilities include the following:

- Knowing and understanding the Environmental Safety and Health requirements of this Procedure that apply to the work they perform.
- Requesting additional information and further clarification before starting work if personnel receive assignments they do not understand.

Complying and abiding by this Material Handling Procedure for any work they perform

6.0 RISK ASSESSMENTS

Before any Project/Work Activity/ commences it is important that Risk Assessments are completed prior to beginning any work.

Risk assessments must be conducted at the Planning Stage:

- Project Risk Assessment.
- Work Method Statements (WMS)

- Job Hazard Analysis (JHA).

It is imperative that prior to beginning of any work activity, a pre-start briefing occurs to discuss the contents of the WMS/JHA which includes mitigations of for 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.

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 through 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 PROGRAM

7.1 Implementation - General

Engineers and supervisors must design work methods to eliminate, as far as is reasonably practicable, the need for employees to manually handle any heavy load.

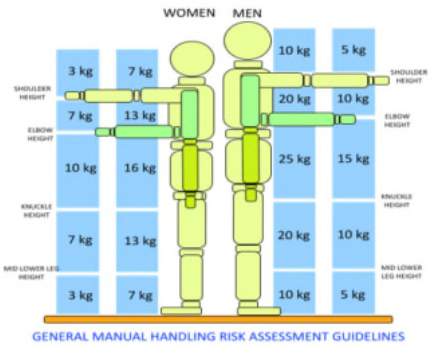
Mechanical aids will be designed into work methods with adequate access and scaffold design to eliminate the need for employees to over exert or over stretch.

Supervisors will be trained in the Manual Handling Risk Assessment techniques and conduct risk assessments. Attachment 1 provides step-by-step instructions for conducting such assessments.

Where manual handling is unavoidable, the supervisor will conduct a risk assessment and follow up with a group discussion session with employees before work starts.

Storage areas must be designed to reduce risk to personnel from moving heavy loads and over-reaching.

All back injuries will be promptly reported to the supervisor and thoroughly investigated. Appropriate action(s) will be instituted accordingly to prevent similar injuries in the future.



GENERAL MANUAL HANDLING RISK ASSESSMENT GUIDELINES

8.0 MANUAL HANDLING BASICS

When manual lifting is anticipated, the following guidelines are provided to minimize the potential for back injuries.

8.1 Identification, Assessment and Control of Manual Handling

Hazardous manual handling risks shall be identified and assessed:

- During Safety in Design reviews.
- As part of the JHA development process.
- When an incident investigation, audit, inspection, observation etc. identifies a hazardous manual handling risk which has not been adequately identified or assessed through other existing processes such as JHA using the Manual Handling Risk Assessment form.

Identification of manual handling risks should include:

- Assessment of manual handling tasks during the design phase.
- Assessment of plant modification.
- Workplace layout.
- Working position and posture.
- Actions and movements necessary for tasks including their frequency and duration.
- Location and position of loads to be lifted, carried, pushed, pulled or restrained.
- Weight and dimensions of loads.
- Age, fitness level and physical characteristics of personnel undertaking manual handling tasks.
- Working environment and conditions (heat, noise, cold, vibration, air quality, weather conditions).

As part of the Manual Handling Risk Assessment key risk factors should be identified.

8.1.1 Posture and Layout

- What is the weight of the object?
- Is stooping involved where the hands pass below mid-thigh height?
- Is reaching above shoulder height involved?
- Is forward reaching (more than 30 cm away from the body) involved?
- Is significant sideways twisting of the body involved?
- Is unbalanced or uneven lifting or carrying involved?
- Is an awkward grip involved?

8.1.2 Task and Object

- Is handling performed for more than one hour at a time?
- Is handling performed more than once every five minutes?
- Are there any forces applied to move the object, apart from lifting e.g. pushing, pulling, restraining/holding.
- Is there a long vertical distance of travel (more than 25 cm).
- Is the weight of the object?
- Does the object have sharp edges or contain hot/cold materials.
- Does it have unstable/unbalanced contents?

- Are live persons or animals being moved?
- Are slippery materials/objects handled?
- Is the object bulky or awkward (more than 75 cm in two directions).
- Is the object an unusual shape e.g. does it have handles.

8.1.3 Workplace Conditions

- Is the task performed in a confined space?
- Is the workplace hot, cold, or poorly lit?
- Are the floor surfaces slippery or uneven?

8.2 Assess the Load

To assist all employees, it is essential to assess the load prior to attempting any manual handling task. The following questions should be considered:

- Are slings attached to make it easier for loading?
- Are handhold points strategically placed to assist the best body position for the load, preventing excessive bending, stretching.
- Is the load weight evenly distributed?
- Is the load free of debris, dust, oil, etc...?
- Is the work surface sound and free of obstructions (e.g., trip, fall hazards).
- Are storage areas and vehicle access routes identified and clearly marked.
- Is access and manual handling to different levels restricted (can mechanical lifting be utilized instead).
- Does work area have sufficient lighting.

Once these basic questions have been considered, take appropriate steps to minimize the weight of the load by

- Minimize the packaging of the load – make it smaller.
- Specify lower package weights to suppliers.
- Sort loads by category.
- Make it easier to grasp – assess handle, grip, indents on cartons, etc., to make lifting the load easier.

8.3 Importance of Posture

Poor posture during manual handling introduces the additional risk of loss of control and sudden, spontaneous increase in physical stresses on the body, let alone the back. (Guidelines for correct manual handling technique can be found in Attachment 2)

Stress on the back increases with:

- Twisting
- Stooping
- Reaching upwards
- Excessive lifting and over-reaching
- Pushing and pulling
- Sudden movement or jerking of load
- Prolonged or frequent physical effort
- Insufficient rest periods/breaks
- Work rate governed by process system
- Handling while seated.

Note: A combination of the above seriously increases the risk of back injury. Assessment of the load is always critical and using the correct posture is essential.

9.0 TRAINING REQUIREMENTS

Initial training to be presented to each employee will include an overview on back injury prevention, stretching, and correct lifting methods.

All employees will be properly trained. An example of a training course can be seen in Attachment 2. These requirements this includes non-manual employees.

Back injury prevention will be continually emphasized to supplement initial training (e.g., Safety meetings, toolbox meetings, coaching or other methods, etc.). Topics that can be linked to manual material handling and back injury prevention include, but are not limited to, the following:

- Potential hazards (job or task specific).
- Unfamiliar handling operations.
- Proper use of handling aids (tools, equipment).
- Proper use of personal protective equipment.
- The working environment and personnel safety.
- Housekeeping.
- Factors affecting individual capabilities.
- Good handling techniques.

10.0 ATTACHMENTS

1. Risk Assessment for Back Injury Protection
2. Manual Handling Guideline Techniques

Attachment 1 - Risk Assessment for Back Injury Prevention

Factors to be considered when making an assessment of Manual Handling Operations

1.0 The Tasks

Do they involve:

Holding or manipulating the loads at a distance from the body? Unsatisfactory bodily movements or postures, especially:

- Twisting the trunk?
- Stooping?
- Reaching upward or overstretching?

Excessive movement of loads, especially:

- Excessive lifting or lowering of loads?
- Excessive carrying distances?
- Excessive pushing or pulling of loads?
- Risk of sudden movement of loads?
- Frequent or prolonged physical effort?
- Insufficient rest or recovery periods?
- A rate of work imposed by the process?

2.0 The Loads

Are they:

- Heavy?
- Bulky or unwieldy?
- Difficult to grasp?
- Unstable, or with contents likely to shift?
- Sharp, hot, or otherwise potentially damaging?

3.0 The Working Environment

Are there:

- Space constraints preventing good posture?
- Uneven, slippery or unstable floors/surfaces?
- Variations in level of floors or work surfaces?
- Extremes of temperature or humidity?
- Conditions causing ventilation problems or gusts of wind?
- Poor lighting conditions?

Attachment 2 - Manual Handling Guideline Techniques

Step 1 – ASSESS THE LOAD
Plan the lift, where is it going to be placed, handling aids available, Assistance available, Obstruction removed, access egress routes assessed for obstructions.

STEP 2 – FEET POSITION
Feet apart – balance, stable base for lifting, leading leg forward (ensure proper clothing is also worn).

STEP 3 – ADOPT GOOD POSTURE
Bend the knees ensuring hands are close to waist when lifting. Do not kneel or over flex the knees. Keep the back straight (tuck in chin – this helps align body) lean forward a little to allow a better grip, keep shoulders level and facing the same direction as the hips.

STEP 4 – GET A FIRM GRIP
Try to keep the arms within the boundary formed by the legs. The optimum position and nature of the grip depends on the circumstances and individual preferences, but it must be secure. A hook grip is less fatiguing than keeping the fingers straight. If it is necessary to vary the grip as the lift progresses, do so as smoothly as possible, preventing jerking or sharp movements.

STEP 5 - DON'T JERK
Carry out the lifting movement smoothly, keeping control of the load.

STEP 6 - MOVE THE FEET
Don't twist the trunk when turning to the side.

STEP 7 – KEEP CLOSE TO THE LOAD
Keep the load as close to the trunk for as long as possible. Keep the heaviest side of the load next to the trunk. If a close approach to the load is not possible, try sliding it towards you before attempting to lift it.

STEP 8 – PUT DOWN – THEN ADJUST
If precise positioning if load is necessary, put it down first, then where possible slide the load into position.