SITE SAFETY INDUCTION PROCEDURE

AGREEMENT NO.	**:**	**09-5578-E-4**
PROJECT NAME	**:**	**Ruwais Refinery Expansion Project EPC-4: Tankage & Associated Interconnecting Piping**
COMPANY	**:**	**Abu Dhabi Oil Refining Company (TAKREER)**
PMC	**:**	**Mott MacDonald Ltd.**
CONTRACTOR	**:**	**Daewoo Engineering & Construction Co., Ltd.**

This page is a record of all revisions of this document. All previous issues are hereby superseded and are to be destroyed.

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REV	DATE	REASON FOR ISSUE	PREP	CHKD	REVD	APP'D	COMPANY
O	16 July10	Issued for Construction	C Wardman	DY Kim	J Brand	M Heo	
A	12 July10	Issued for Review and Approval	C Wardman	DY Kim	J Brand	M Heo	
SIGNED (Initials)							

NOTES:

(a) Revisions are denoted by a vertical line placed in the right-hand margin against the revised text.

(b) PREP = Prepared by, CHKD = Checked by, REVD = Reviewed by, APP'D = Approved by.

(c) In case of conflict between any requirements stipulated in this document with the contractual requirements, the contractual requirements shall prevail.

REVISION INDEX DETAILS

Rev	Location of Change	Brief Description of Change

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Project Overview

The Ruwais Refinery Expansion Project (Project) will be executed from December 2009 up to February 2014 (50 months to Provisional Acceptance). The Project is located in the Ruwais Complex in the UAE. The client is Takreer and the scope of Daewoo E&C is the engineering, procurement, construction and commissioning of 76 tanks and associated piping.

1.2 Objectives

CONTRACTOR'S main objective is to provide a Safety Induction program that will be presented in an interactive manner with practical applications and exercises, to ensure that all persons attending shall stay focused on the course and that they will enter the site area with sufficient knowledge on how to carry out general activities in a safe manner.

1.3 Scope

This procedure shall be applicable to all personnel joining the Ruwais Refinery expansion Project and shall not only cover general Site Safety, but will also incorporate Confined Space Entry and Working at Height. The trainer that will be employed by CONTRACTOR shall utilize this as a guiding document for the RRE Project Site Induction Program.

The Site Safety Induction Program shall be practiced throughout the duration of the RRE Project and may be tailored according to changes in site conditions. A brief Site Induction shall also be compiled only highlighting key information, this will be given to persons only visiting the site for a short duration. As with the main Induction Program, competency shall also be measured.

1.4 Targets

As per the RRE Project manpower plan, at peak there will be approximately 6500 workforce on site. The target for CONTRACTOR is to ensure 100% compliance by all personnel – COMPANY, CONTRACTOR and Subcontractor. When new personnel arrive on site, they shall immediately attend the Site Safety Induction Program, ensuring that only competent persons may enter the site area.

2. DEFINITIONS

ALARP	As Low As Reasonably Practicable (ALARP). Refer to section 3.4 for explanation of ALARP.
Aspect	Element of an organisations activities products or services that can interact with the environment
Audit	An independent, systematic and documented process of objectively obtaining and evaluating verifiable evidence to determine that business controls: • Are complete and consistent. • Are (cost) effective and efficient. • Safeguard DEC's resources and promote their effective use. • Provide, and protect the integrity of, required records and information. Allow for compliance with policies, chosen standards, laws and regulations.
Barriers	Elimination and prevention measures that remove or reduce the likelihood of realising a hazards potential for harm. Barriers may be physical (materials, protective devices, segregation, etc.) or non-physical (procedures, inspection, training, drills, etc.)
Company	Mott Macdonald
Continuous improvement	Process of enhancing the (HSE) management system to achieve improvements in overall (HSE) performance in line with the organisations (HSE) policy.
CONTRACTOR	Daewoo Engineering & Construction Co., Ltd. or DAEWOO
DEC	Daewoo Engineering and Construction Company Limited
Effect	An adverse impact on people, the environment, DEC's assets or reputation.
Hazard	The *potential* to cause harm , including ill health and injury, damage to property, products or the environment; production losses or increased liabilities
HSE Management System (HSE MS).	The company structure, responsibilities, practices, procedures, processes and resources for implementing health, safety and environmental management.
HSE Policy	A public statement of the intentions and principles of action of the company regarding its health, safety and environmental effects, giving rise to its strategic and detailed objectives.
Incident	An event or chain of events which has caused or could have caused fatality, injury, illness and/or damage (loss) to assets, the environment, company reputation or third parties.
Inspection	A scheduled, structured examination of a work site with a specific focus on physical conditions and working practices in addition to normal supervisory duties.
Near Miss	An event or chain of events which could have caused injury, illness and/or damage (loss) to assets, the environment, company reputation or third parties.
PPE	Personal Protective Equipment

PPS	Microsoft PowerPoint Show/Slide
Risk	The product of the measure of the likelihood of an occurrence of an undesired event and the potential adverse effects that this event may have on people, the environment, TAKREER's assets or reputation.
RRE	Ruwais Refinery Expansion

3. METHODOLOGY

The Site Safety Induction Procedure and Program was strategically developed considering what is the most essential information a person requires before he/she enters the site area. The HSE Management for the Project highlighted a total of 28 points to be focused on. After ascertaining the main points, the focus is placed on expanding on these points bearing in mind what is needed to know i.e. Barricade – Types?, Purpose?, do's and don'ts? Finally, after deciding on the focus questions, forms of mediums were devised on presenting the information in the most successful manner.

In most cases, a person will arrive on site then attend a general Site Safety Induction. Usually this will only be compiled of general site Safety which is generally only applied through the usage on PowerPoint Presentations. After the general induction, the person will proceed to site to start with activities. In most cases, these activities may include Working at Height and Confined Space which is considered to be a separate training module, as more in depth knowledge is required. As well as this issue, presenting training only in PowerPoint format is usually not very successful, as most persons tend to forget what is presented in slide and text format. Another consideration is the target audience.

CONTRACTOR has considered all these main points to develop the Site Safety Induction Program in a format that will prove to be most successful and enjoyable by all. The scoped of the project allows for a more practical interactive approach taking into consideration he target audience.

4. PROCEDURE

4.1 Site Safety Induction Focus Points and Requirements

Focus Points	Required Information	Form of Medium
1. Site Introduction	1.1 Scope 1.2 Manpower	1.1.1 PPS 1.2.1 PPS
2. Organization	2.1 Client 2.2 Company 2.3 Contractor	2.1.1 Display 2.2.1 Display 2.3.1 Display
3. Personal Protective Equipment	3.1 Purpose 3.2 Types 3.3 Do's & Don'ts 3.4 Inspection	3.1.1 PPS 3.2.1 Hands On 3.3.1 Lecture 3.4.1 Exercise
4. Prohibited Items	4.1 Purpose 4.2 Items	4.1.1 PPS 4.2.1 PPS & Display
5. Signage	5.1 Purpose 5.2 Types	5.1.1 PPS 5.2.1 Display
6. Heat Stress	6.1 Purpose 6.2 Charts 6.3 Flags	6.1.1 PPS 6.2.1 Display 6.3.1 Hands On
7. Disciplinary Procedure	7.1 Purpose 7.2 Dismissal	7.1.1 PPS 7.2.1 Lecture
8. Traffic Management	8.1 Purpose 8.2 Plan 8.3 Vehicle Safety 8.4 Accidents	8.1.1 PPS 8.2.1 Lecture 8.3.1 Exercise 8.4.1 Display
9. Fire Awareness	9.1 Purpose 9.2 Equipment 9.3 Requirements	9.1.1 PPS & Lecture 9.2.1 Hands On 9.3.1 Lecture
10. Excavation Safety	10.1 Purpose 10.2 Protection Methods 10.3 Do's & Don'ts	10.1.1 PPS 10.2.1 Display 10.3.1 Lecture & Display
11. Confined Space Entry	11.1 Purpose 11.2 Requirements 11.3 Hazards 11.4 PTW 11.5 Gas Testing 11.6 Signage 11.7 Barricading 11.8 Competency	11.1.1 PPS 11.2.1 PPS & Lecture 11.3.1 Display 11.4.1 Display 11.5.1 Hands On 11.6.1 Display 11.7.1 Hands On 11.8.1 Exercise

12. Working at Height	12.1 Purpose 12.2 Requirements 12.3 Hazards 12.4 Equipment 12.5 Fall Protection 12.6 Scaffolding Safety 12.7 Competency	12.1.1 PPS 12.2.1 PPS & Lecture 12.3.1 Display 12.4.1 Hands On 12.5.1 Hands On 12.6.1 Display & Lecture 12.7.1 Exercise
13. Waste Management	13.1 Purpose	13.1.1 PPS & Lecture
14. Permit to Work	14.1 Purpose 14.2 Types	14.1.1 PPS & Lecture 14.2.1 Display
15. Emergency Response	15.1 Purpose 15.2 What to do? 15.3 Contact Details	15.1.1 PPS 15.2.1 Lecture 15.3.1 Display (hand out)
16. Incident/Accident Reporting	16.1 Purpose & Procedure	16.1.1 PPS
17. Near Miss Reporting	17.1 Purpose 17.2 Forms	17.1.1 PPS 17.2.1 Display (hand out)
18. Smoking	18.1 Do's & Don'ts	18.1.1 Lecture & Display
19. Eating on Site	19.1 Do's & Don'ts	19.1.1 Lecture & Display
20. Hazardous Material	20.1 Purpose 20.2 Hazardous Material on Site	20.1.1 PPS 20.2.1 Display
21. Illness	21.1 Common Types 21.2 Preventative Measures	21.1.1 PPS 21.2.1 Lecture
22. Noise	22.1 Purpose 22.2 Types 22.3 Tools Noise Levels	22.1.1 PPS 22.2.1 Hands On 22.3.1 Lecture & Display
23. Grinders	23.1 Purpose 23.2 Statistics 23.3 Hazards 23.4 Guards 23.5 PPE	23.1.1 PPS 23.2.1 Display 23.3.1 Lecture 23.4.1 Hands On 23.5.1 Hands On
24. Barricading	24.1 Purpose 24.2 Types 24.3 Do's & Don'ts	24.1.1 PPS 24.2.1 Hands On 24.3.1 Lecture
25. HSE Incentive Program	25.1 Purpose	25.1.1 PPS
26. Right to Refuse	26.1 Purpose	26.1.1 PPS
27. Passes/Training Passport	27.1 Purpose	26.1.1 PPS & Display (hand out)
28. Housekeeping	28.1 Purpose	28.1.1 PPS & Hands On

4.2 <u>Site Induction Training Mediums</u>

The following mediums will be utilized for the presentation of the training;

- **Microsoft PowerPoint** – This will include slides with only essential information, incorporating more site illustrations. Text will only be used to highlight important point i.e. Confined Space Entry requirements.

- **Hands On** – The trainer will interact with the persons attending the training, using props and material i.e. Scaffolding.

- **Display/Signs** – This may include blown up pictures, signage or may be copies of actual site documentation.

- **Lecture** – The trainer will not utilize the presentation slide during this exercise. He will focus on the point at hand and give a discussion on the topic. The trainer will usually ask questions at this point to test grasping of the knowledge.

- **Exercise** – This point will prove to be the most interactive and practical hands on medium. The trainer will instruct the group attending the training to perform an exercise relating to the current point being discussed. It is regarded a very good form of medium in training programs i.e. requesting the person attending the training to inspect their lifting gear.

5. TRAINING MATERIAL

5.1 Microsoft PowerPoint

The following equipment is required for this medium;

- Training Room
- Laptop/Notebook
- Overhead Projector
- White Projector Screen
- Microsoft Office 2007

5.2 Hands On

The equipment and material requirement for this medium is as follows, but is not limited to;

- Small & large angle grinder
- General Personal Protective Equipment
- Tools
- Scaffolding
- Shade Netting
- Barricade – hard and tape

5.3 Display/Signage

The following materials and equipment will be required;

- Computer
- Printer – colour A4 & A3 with sufficient sock of ink cartridges
- A4 Paper
- A3 Paper

- Wood
- Board
- General Stationary
- Laminating Machine
- Lamination sleeves

5.4 Exercise

This medium will require the most focus, as material and equipment requirements will be utilised to construct a make shift site condition. Materials, equipment and others as follows;

- Manpower
- Scaffolding and supporting equipment
- PPE
- Fall Protection i.e. Safety Harness and lanyards
- Barricade – hard and tape (all types)
- Checklists
- Fire Fighting Equipment

6. TIME ALLOCATION

CONTRACTOR will allocate a time to the Site Safety Induction Program once an initial trial run had taken place. The idea is to grasp the exact duration requirement, without wasting any valuable resources. Viewing the current program for the training, it is estimated that the minimum requirement would be half a day.

The overall quality of the program and intended outcome shall not be affected by time constraints, therefore, the duration will be set accordingly.

7. SCHEDULE

The main Training Plan and schedule is yet to be developed, which will ultimately affect the schedule of the Induction Program. In the Interim, the Site Safety Induction Program will be prearranged by all relevant parties. Once all the CONTRACTOR training modules have been implemented for the project, the Induction Program shall be scheduled accordingly and followed stringently by all.

8. COMPETENCY ASSURANCE

8.1 Examination

On completion of the Site Safety Induction Program, persons attending shall be issued with a multiple choice questionnaire. They are required to complete this questionnaire successfully with a minimum pass rate of 80%. The trainer may use his digression in the event a person attending shows understanding of the Induction Program, but fails by a small margin. The trainer may pose a question to this effect whereby the person is expected to give the correct answer verbally.

8.2 Practical Application

There shall be numerous practical exercises throughout the Site Safety Induction Program i.e. scaffolding inspection, PPE inspection, fall protection inspection, Confined Space Entry requirements etc. The trainer will gauge the competence of all persons during their practical applications. If a person is found to be failing the practical exercises, the trainer will request that the exercise is redone until satisfied with the result.

Only once persons attending the training program have shown full competence during the practical applications, as well as the examination, will the trainer issue them with their site training passport with the Site Safety Induction stamped

9. TRAINING MATRIX

CONTRACTOR will develop a training matrix to track all personnel trained in not only the Site Safety Induction Program, but also all training modules developed for the RRE Project. The Matrix will work off a formula basis and calculate the amount of personnel trained and those that are outstanding in certain modules. This compliance percentage will be included in the HSE statistics as leading or lagging indicators.

10. CLOSING

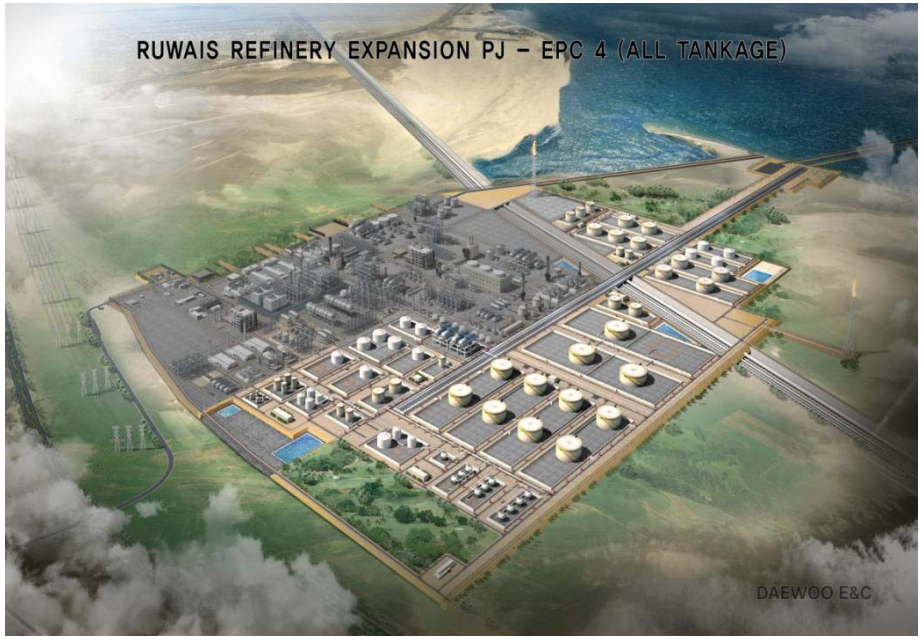
It is of the utmost importance that the Ruwais Refinery Expansion Project Site Safety Induction Program is developed and implemented efficiently in the early phase. This program will act as the first point of training for personnel throughout the duration of the project and if it is not delivered correctly in the early stages, it will prove to be very difficult to catch up as manpower increases at a rapid pace.

CONTRACTOR will ensure that the Site Safety Induction Program is delivered in the most practical and professional manner with the main goal and purpose in mind of competence assurance and mitigation of the potential of an incident or accident occurring involving new personnel.

11. ATTACHMENT

10.1 Site Safety Induction PowerPoint Presentation

SITE HSE
INDUCTION PROGRAM



RRE Site Induction Program

Agenda

1. Site Introduction
2. Organization
3. Personal Protective Equipment
4. Prohibited Items
5. Signage
6. Heat Stress
7. Disciplinary Procedure
8. Traffic Management
9. Fire Awareness
10. Excavation Safety
11. Confined Space Entry
12. Working at Height
13. Waste Management
14. Permit to Work
15. Emergency Response
16. Incident/Accident Reporting
17. Near Miss Reporting
18. Smoking
19. Eating on Site
20. Hazardous Material
21. Illness
22. Noise
23. Grinders
24. Barricading
25. HSE Incentive Program
26. Right to Refuse
27. Passes/Training Passport
28. Housekeeping

WELCOME

- Trainer introduction...

- The site Manager is Mr. Myung Heo

- Other Key personnel include
  - HSES Manager: Mr. Johnny Brand
  - Construction Manager: Mr. John Lee
  - Administration Manager: Mr. JK Jin
  - Project Control Manager: Mr. KY Park

INTRODUCTION

Why do we need a site induction?

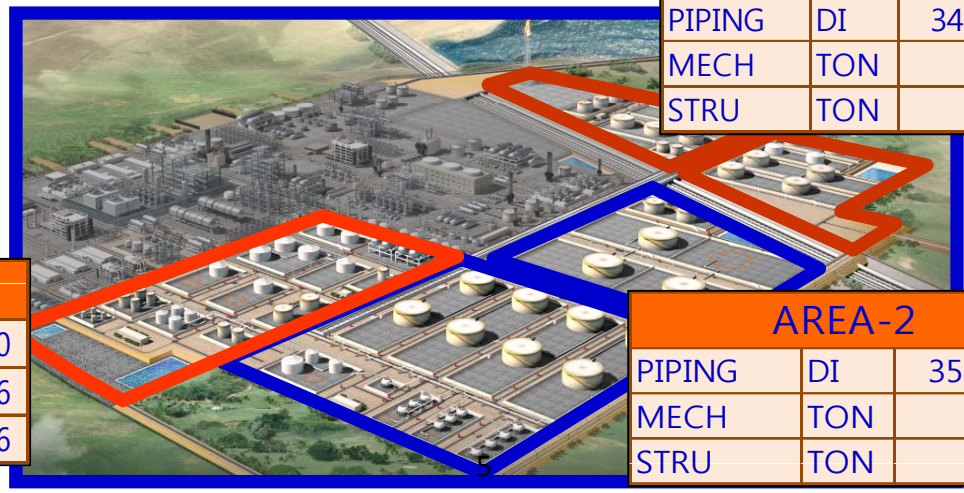
To ENSURE that everyone in this room will go home safely to their families on completion of their work on this project!

How will we achieve this?

1. Make everyone aware of the risks on this project
2. By giving information regarding site safety rules
3. Encourage everybody to contribute in making a healthy and safe working environment

PROJECT OVERVIEW

- The Project will be executed from December 2009 up to February 2014 (50 months).
- The Project is located in the Ruwais Complex in the UAE (± 250km from Abu Dhabi).
- The client is Takreer, PMC is Mott Macdonald and Contractor Daewoo E&C (DEC).
- DEC's package is EPC-4 and includes 76 tanks and associated works.

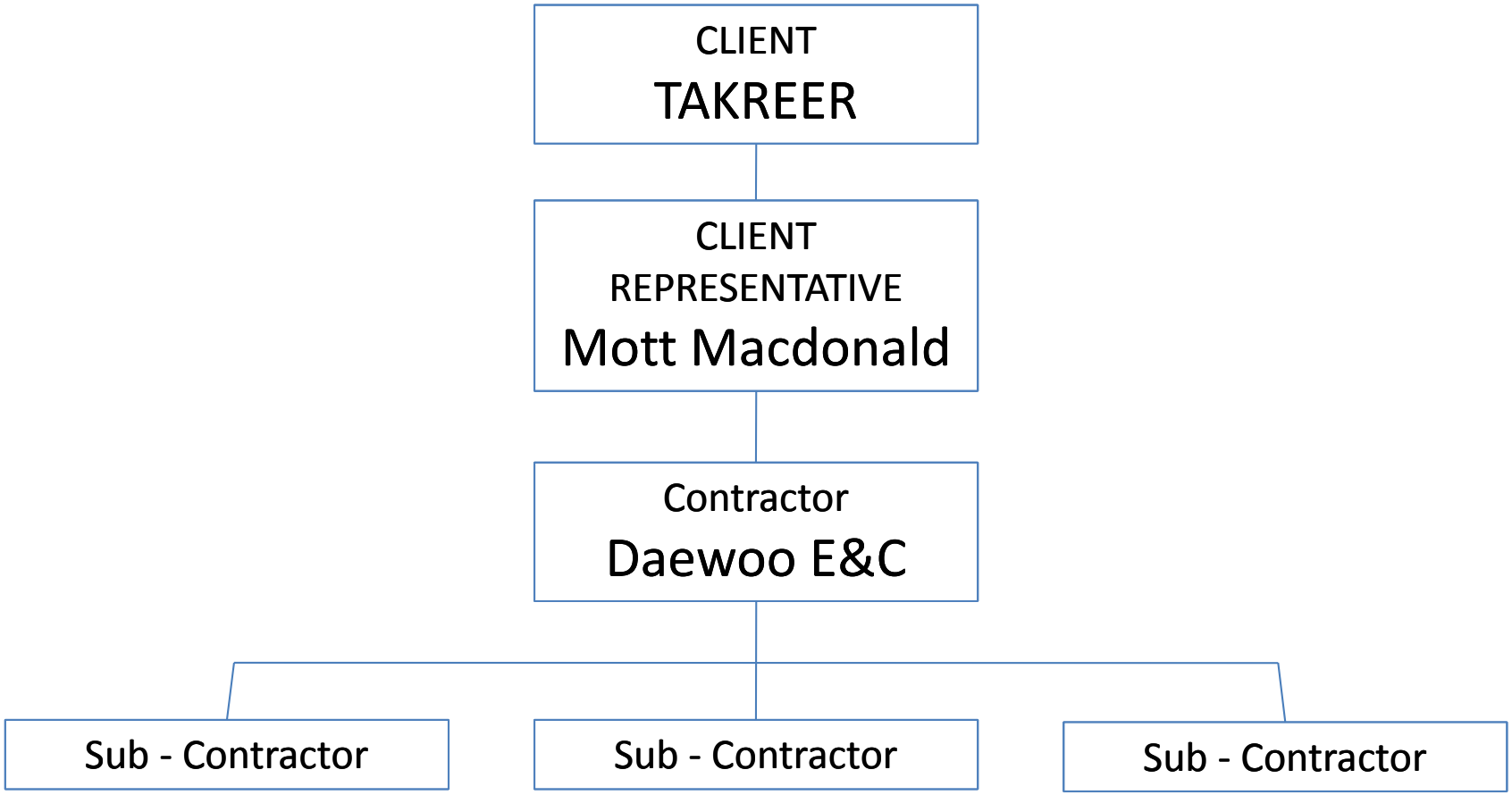


AREA-1		
PIPING	DI	345,016
MECH	TON	964
STRU	TON	2,335

AREA-2		
PIPING	DI	356,469
MECH	TON	347
STRU	TON	1,398

AREA-3		
PIPING	DI	338,690
MECH	TON	226
STRU	TON	886

RRE PROJECT ORGANIZATION OVERVIEW



HSE POLICY

Daewoo Commitment to HSE:

- Incident Free Environment
- Zero Accident

Your Commitment towards your Family:

- Provide Food & Security
- Return home in same condition as you left

➢ **GOOD REASONS FOR FOLLOWING THE PROJECT SAFETY RULES**

GENERAL SITE SAFETY

WHO ARE REQUIRED TO ATTEND SAFETY INDUCTION?

ALL EMPLOYEES & SUBCONTRACTORS

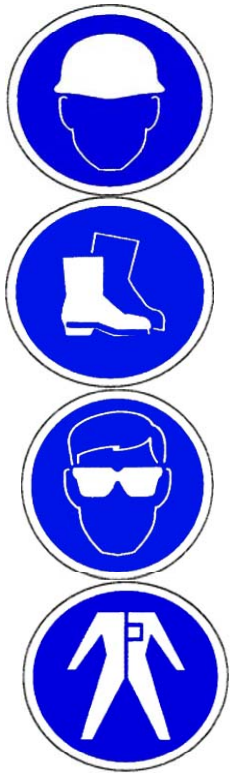
shall attend Safety Induction Training Program before performing of any work on project.

GENERAL SITE SAFETY

WORKING CLOTHES & SAFETY GEARS (PPE)

Four Basic PPE Required on Site:

1. Head Protection - Helmet/Hard Hat
2. Foot Protection - Safety Shoes
3. Eye Protection – Safety Glass
4. Coverall



*PPE to be worn according to work and environment requirement.

GENERAL SITE SAFETY

PROHIBITED ITEMS

1. NO Weapons
2. NO Alcohol
3. NO Illegal Narcotics (drugs)
4. You are not allowed to enter the site if you are breaching the UAE Law , as well as the Projects

GENERAL SITE SAFETY

BARRICADES & SIGNS

- Adequate protective barricades shall be provided as physical protection from falling as well as indicating a dangerous condition.

GENERAL SITE SAFETY

BARRICADES & SIGNS

Cautionary Signs

Danger Signs

Notice Signs

Safety Signs

Warning Signs

General Signs

GENERAL SITE SAFETY

HEAT STRESS

To ensure that you are not affected by Heat Stress, follow these guidelines;

- Drink Lots of Water
- Eat balance meals
- Enough Rest
- Don’t over dress
- Follow the heat index flags & charts

GENERAL SITE SAFETY

DISCIPLINARY PROCEDURE

Any person violating HSE requirements shall be issued a safety default notice and disciplinary action.

First offence - Verbal warning with documentation

Second offence - Written reprimand with punishment

Third offence - Written termination

Depending on severity of offence, a straight forward termination may be issued.

***For every violation a hole will be punched in your ID card.**

GENERAL SITE SAFETY

TRAFFIC MANAGEMENT

Road Signage and Traffic Controls

Speed Limit

- Speed limit will be strictly implemented.
- The speed limits at each site are dependent on the final site layout of each work site location.

Two way street

Construction site

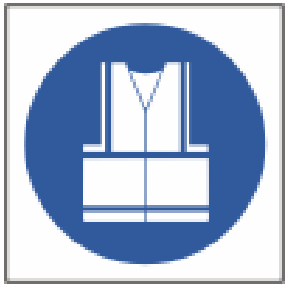
GENERAL SITE SAFETY

TRAFFIC MANAGEMENT

Road Signage and Traffic Controls

Flagman / Traffic Controller

- Flagmen shall control the flow of traffic in cases as needed.
- A flagman should be equipped with a basic PPE, high visibility vest, green and red flag or signage that indicates “STOP & GO”.



Traffic Signs & Notices

- Traffic signs & notices are placed on areas to give information to the pedestrian & drivers on the road condition.

Two way street

Construction site

GENERAL SITE SAFETY

FIRE AWARENESS

Ensure that you know what to do in the even of a fire.

- Follow the emergency escape route
- Follow fire wardens instructions
- Know you fire extinguisher – use the P.A.S.S system if it is safe to do so. Pull Aim Squeeze then Sweep
- Report fires immediately to the HSE department
- Notify emergency services

GENERAL SITE SAFETY

EXCAVATION

Hazards

- Excavation collapse
- Engulfment / asphyxiation
- People, equipment or vehicles fall into excavation
- Underground hazards

GENERAL SITE SAFETY

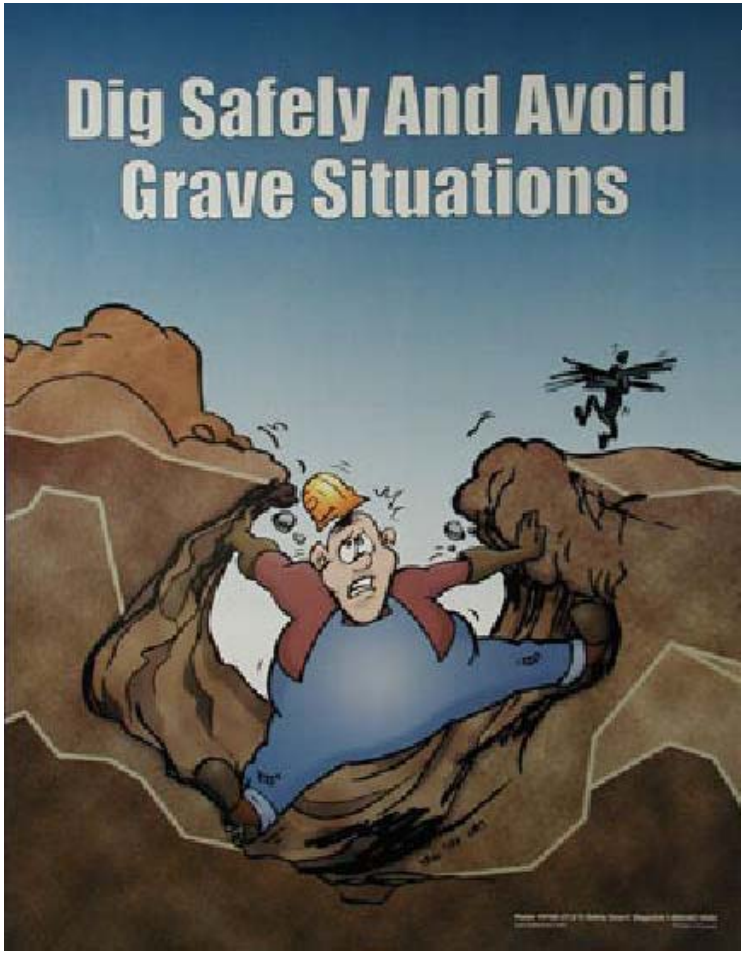
EXCAVATION

Controls:

- Excavations must be shored, sloped or benched
- All excavations must be barricaded
- Must have safe access (Ladders or steps)
- Do not jump in an excavation – use the safe access

0.9 m

GENERAL SITE SAFETY



CONFINED SPACE ENTRY

Why do we need to control confined space entry?

A graduate engineer on work-experience entered an inspection chamber to test for seepage and collapsed. Three work colleagues attempted a rescue and as each entered the chamber, collapsed.

All four young men died.

CONFINED SPACE ENTRY

Why do we need to control confined space entry?

An employee was working in a trench 4 feet wide and 7 feet deep. The trench wall collapsed on him and covered his body up to his neck. He suffocated. There were no exit ladders. No sloping or shoring had been used in the trench.

CONFINED SPACE ENTRY

Objective:

- **Identify all permit required CS on the project**
- **Define responsibilities**
- **Define CS hazards & risks**
- **To ensure safe access & egress**
- **Set standards for rescue plans**
- **Set standards for rescue equipment**
- **Ensure no deaths during entry**

CONFINED SPACE

DEFINITION:

A space that-

- Is large enough for a person to enter bodily and perform work
- Has limited or restricted means of entry or exit
- Is not designed for continuous human occupancy
- May contain hazardous or potentially hazardous atmosphere.

CONFINED SPACE

Samples of Confined Space:

- **Tanks & Vessels**
- **Manholes**
- **Sewers & Pits**
- **Pipes**
- **Trenches**
- **Ducts**

CONFINED SPACE

HAZARDS

Possible presence of:

- Oxygen deficient atmosphere (<19.5%)
- Oxygen enriched atmosphere (>23%)
- Flammable substances (Methane, Hydrogen, Acetylene, Propane, Gasoline fumes)
- Toxic substances Carbon Monoxide, Hydrogen Sulfide, Welding Fumes)
- Ingress of solids or liquids (engulfment)
- Excessive heat

CONFINED SPACE (CS)

CONFINED SPACE ENTRY SUPERVISOR

Responsibility:

- Overall responsible for work to be carried out inside a Confined Space
- Perform all planning needed for the Confined Space Entry
  - Assess the hazards in the CS
  - Establish and implement control measures
  - Establish the required rescue plan
  - Ensure that required rescue equipment and services are available

CONFINED SPACE (CS)

CONFINED SPACE ENTRY SUPERVISOR

Duties:

- Oversee all Confined Space Entry operations
- Ensure Competent attendant (Standby / Holewatch) is available
- Ensure entrants are trained and competent to enter
- Ensure gas tests are performed prior to entry by a competent AGT
- Ensure that calibrated atmosphere monitoring equipment are available
- Applies for a PTW inside a CS
- Perform toolbox talks to Entrants and Attendants
- Ensure that all unauthorized persons are removed from the CS
- Terminating entry if specified requirements are not met
- Must always be present at CS

CONFINED SPACE (CS)

AUTHORIZED ENTRANT

Definition:

- **The person authorized by the employer to perform the work inside the confined space.**

CONFINED SPACE (CS)

AUTHORIZED ENTRANT

Duties:

- Follow the project CSE procedure
- Attend toolbox talks
- Ensure he understands hazards, risks inside the CS & symptoms of exposure
- When entering hang his blue CSE identification card on the CSE board
- Wear a safety harness and a lifeline at vertical entrance & where ever practical
- Constantly monitor atmospheric conditions

CONFINED SPACE (CS)

AUTHORIZED ENTRANT

Duties:

- Maintain communication with CS Attendant
- Inspect, test and make proper use of equipment and protective devices
- Alert the Attendant should an unsafe condition occur or symptoms of exposure appear
- Remove his CSE ID card from the CSE board when he leaves the CS.
- Come out of CS when -
  - Ordered by attendant
  - Recognize warning symptoms of exposure
  - An unsafe condition exist
  - Monitor alarm goes off

CONFINED SPACE (CS)

STANDBY / HOLE WATCH

Definition:

A competent person who is outside the CS at the entrance and who is responsible to:

- Control access & egress to & from the confined space
- Monitor the authorized entrants and
- Summons the rescue team in a case of an emergency

CONFINED SPACE (CS)

STANDBY / HOLE WATCH

Duties:

- Attend toolbox talk before start of work
- Always remain outside the CS at the entrance

NEVER ALLOWED TO LEAVE CS UNLESS RELIEVED BY ANOTHER ATTENDANT

CONFINED SPACE (CS)

STANDBY / HOLE WATCH

Duties:

- Maintains accurate account of entrants by using a Log Board
- Must understand the hazards and symptoms of exposure to the hazards
- Monitor conditions inside and outside CS

NOT ALLOWED TO ENTER A CONFINED SPACE

CONFINED SPACE (CS)

STANDBY / HOLE WATCH

Duties:

Keep entrants under surveillance and maintain communication

- Line-of-sight (not always possible)
- Voice contact
- Radio
- Signals on air-klaxons, whistles etc
- Pre-arranged lifeline signals

CONFINED SPACE (CS)

STANDBY / HOLE WATCH

Duties:

Order authorised entrants to evacuate the confined space immediately if:

- a life threatening condition exists
- behavioural effects of hazard exposure are detected
- a situation occurs outside the confined space that could endanger the entrants inside the CS
- an uncontrolled hazard is detected inside the confined space
- the attendant must leave the work station

CONFINED SPACE (CS)

STANDBY / HOLE WATCH

Duties:

- Ensure that only those who have CSE training will enter the CS

- Summons assistance should an entrant get in trouble
  (Telephone or Radio)

CONFINED SPACE (CS)

AUTHORIZED GAS TESTER

Definition:

A person who has passed the CSE and AGT training modules and who is certified by Project Management.

CONFINED SPACE (CS)

AUTHORIZED GAS TESTER

Duties:

- Performs tests before start of work (30 minutes) and after breaks
- Proves oxygen is within the required levels
- Prove and certify the atmosphere in the CS safe for entrance

CONFINED SPACE (CS)

AUTHORIZED GAS TESTER

Duties:

- Enter readings on the CSE Permit and if atmosphere is safe-sign the permit
- If atmosphere is not safe – do not sign as safe tc enter - discuss with the CSE
- Monitor for Thermal Stress (WBGT)
- Audit the CSE System

CONFINED SPACE (CS)

PERMIT REQUIRED CSE CONTROL

Permit to Work (PTW)

- All work in a CS is controlled by means of a PTW
- PTW defines the scope of the work, Identify Hazards & Risks (JSA), Prescribe Mitigating measures & Certify that the area is prepared for safe access
- A CSE Certificate attached to the PTW is used to certify that the atmosphere in the CS is safe for entry

CONFINED SPACE (CS)

PERMIT REQUIRED CSE CONTROL

Rescue Plan

ELEMENTS OF A RESCUE PLAN

- Emergency communication method
- Emergency communication for assistance
- Required gas testing / monitoring equipment
- Required retrieval equipment
- Rescue team
- Required PPE
- Required first aid and resuscitation equipment

CONFINED SPACE (CS)

PERMIT REQUIRED CSE CONTROL

Retrieval Equipment

Non Entry Retrieval:

- Retrieval line
- Chest or full body harness
- Wristlets
- Lifting device (Tripod)

Entry Retrieval

- BA Set

CONFINED SPACE (CS)

REMEMBER

AN UNPLANNED RESCUE WILL PROBABLY BE YOUR

LAST

CONFINED SPACE (CS)

ISOLATION

Electrical isolation

- Locked & Tagged
- Disconnected
- Discharge of energy

Process isolation (Mechanically)

- Positive isolation

CONFINED SPACE (CS)

VENTILATION

- Before entry the CS must be ventilated and the atmosphere tested
- If atmosphere quality not within required limits ventilate again
- While work are performed inside continuous ventilation should be maintained (positive pressure – provide fresh air & remove contaminants)

VENTILATION SOURCE

- Electrical blower or
- Air blower

CONFINED SPACE (CS)

GAS TESTING

- Only to be performed by an Approved Gas Tester with a calibrated instrument
- Shall only be performed when the CS is isolated
- Shall only be performed if the Attendant is in attendance
- Where practically the test shall be performed from the outside with extension probes

CONFINED SPACE (CS)

THERMAL STRESS

Ensure adequate rest periods when experiencing high temperatures.

RESULTS OF HEAT STRESS

- Heat rash (clogged pores)
- Radiation burns (sunburn)
- Heat fatigue (tiredness)
- Heat syncope (fainting)
- Heat cramps (loss of electrolytes)
- Heat exhaustion (reduced blood flow – clinical condition of shock)
- Heat stroke (body temperature regulatory mechanism fails - not treated - death)

CONFINED SPACE (CS)

THERMAL STRESS

CONTROL METHODS

PPE

- Drinking approximately 10 cups of water
- Drink the provided Glutamine
- Wear light coloured clothing
- Train workers to identify symptoms
- First aiders trained to identify and treat symptoms

CONFINED SPACE (CS)

LIGHTING

Considering the condition of the Confined Space, ensure that adequate lighting is provided. The job Supervisor shall provide adequate lighting.

CONFINED SPACE (CS)

LIGHTING

- The supply cables to the transformers, for extra low voltage portable lights, must always be supported above ground
- Transformers must never be taken inside the Confined Space
- Particular attention must be paid to the protection of cables passing through doors and entry points

CONFINED SPACE (CS)

CONFINED SPACE ENTRY PROCESS FLOW

1. Do JSA & establish PTW or non-PTW entrance
2. If PTW entrance required complete PTW
3. Decide on Rescue plan and ensure equipment is available
4. Isolate CS
5. Test atmosphere (AGT)
6. If atmosphere not safe – Ventilate
7. Test atmosphere (AGT) again
8. Certify area safe on CSE Certificate
9. Toolbox talk
10. Entrant don lifeline

CONFINED SPACE (CS)

CONFINED SPACE ENTRY PROCESS FLOW

11. Attendant maintain control at entrance
12. Entrant hang ID card on Log Board
13. Entrant enter with gas monitor
14. Regular monitoring of WBGT
15. Should atmosphere change Attendant summons entrant out
16. Entrant exit and take ID card
17. At brake Attendant close the CS physically and display “No Entry” Sign
18. After break AGT perform gas test and certify area safe
19. End of shift - close the CS physically and display “No Entry” Sign

CONFINED SPACE ENTRY

REMEMBER

IF YOU TAKE SHORT CUTS

TO GET INTO A CONFINED SPACE...

YOU MIGHT NOT GET OUT ALIVE AGAIN!

WORKING AT HEIGHTS

Works over 2 meters high is considered Working at Heights

WORKING AT HEIGHTS

➢ HAZARDS

- **Fall from elevation**
- **Fall through unguarded holes**
- **Falling tools / debris**
- **Platform collapse**
- **Electrocution (Overhead electrical hazards)**

WORKING AT HEIGHTS

➢ FALL PROTECTION

- **Guardrails & toe boards**
- **Personal fall arrest systems**
- **Safety nets**
- **Airbags**

WORKING AT HEIGHTS

- **If the preferred method cannot be used**

  - Fall arrest equipment shall be used

WORKING AT HEIGHTS

EDGES AND HOLES

- **All to be barricaded with physical hard barricading with railings, mid railings & toe-boards**

WORKING AT HEIGHTS

SCAFFOLDING

2 TYPES-

- **Fixed**

- **Mobile**

WORKING AT HEIGHTS

MOBILE SCAFFOLD

- **Same rules as for fixed platform (Guard rails, safe access & toe-boards)**
- **Brakes has to be applied before ascending**
- **Must be inspected and certified by Scaffolding Supervisor (Scafftag)**
- **All persons must leave the platform / equipment removed before it is moved to a new position**
- **Designed for light work only**

WORKING AT HEIGHTS

FIXED SCAFFOLD

- **Same rules as for fixed platforms (Guard rails, safe access & toe-boards)**
- **Can only be erected, changed or dismantled by certified scaffolding personnel**
- **Must be inspected and certified weekly by the Scaffolding Supervisor - Scafftag**

WORKING AT HEIGHTS

FIXED SCAFFOLD

- **Must be inspected and certified after bad weather by Scaffolding Supervisor**
- **Height should not be more than 4 times the width unless guys, ties or braces are used**
- **Shall be constructed on a firm base**
- **Scaffold planks (at least 2 in width) must be tied to the frame at the ends & there must be no gaps**

WORKING AT HEIGHTS

USE OF SCAFFOLDING

- Check the scafftag

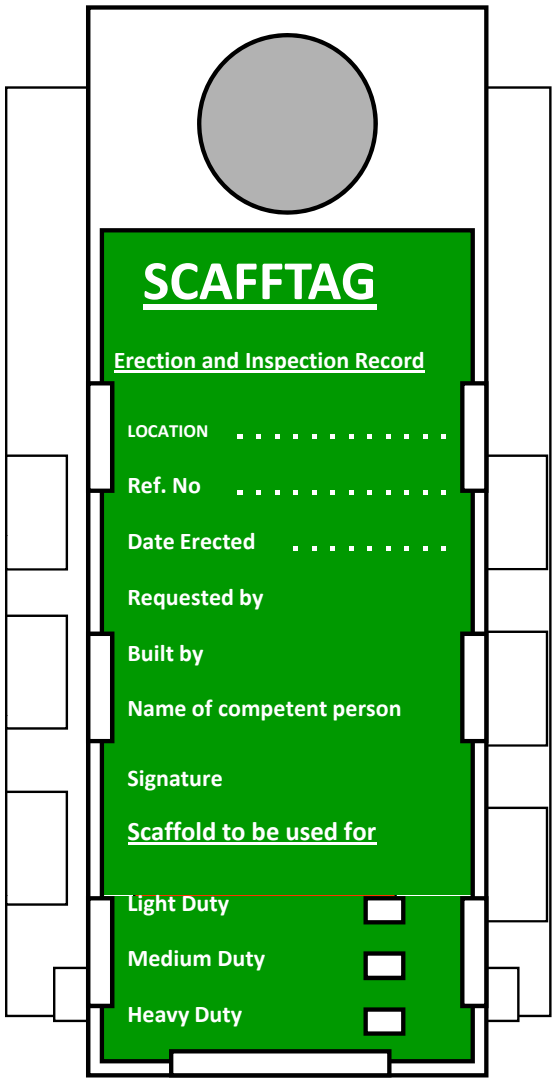
- if red do not use

- If green - use

- if not inspected within a week do not use

- Us the ladder / steps to gain access – not the frame

- Do not alter a scaffold (only Scaffolding personnel are authorized to modify)



WORKING AT HEIGHTS

FALL ARREST EQUIPMENT

Comprises of:

- **Safety harness (not safety belt)**
- **Anchorage**
- **Lifeline**
- **Double lanyard**
- **Shock absorber**
- **Retractable lifeline / fall arrestor (sala block / yo yo)**

WORKING AT HEIGHTS

MAINTENANCE OF SAFETY HARNESS

- Must be certified harnesses
- Must be inspected quarterly by a competent person
- Must be inspected before use by the user

USE & DON OF SAFETY HARNESS

- User must be trained how to use and maintain the harness
- Attach harness above head height – not at floor level

WORKING AT HEIGHTS

WORKING ON ROOFS

- If roof is higher than 2 meter and no guard rails are provided:

➢ Safety harness with 2 lanyards

➢ Lifeline (withstand forces of 2.2 Ton)

➢ Take care of skylights / weak spots

WORKING AT HEIGHTS

LADDERS

2 Types:

- **Straight / extension ladder**

- **Step ladder**

WORKING AT HEIGHTS

RESPONSIBILITY

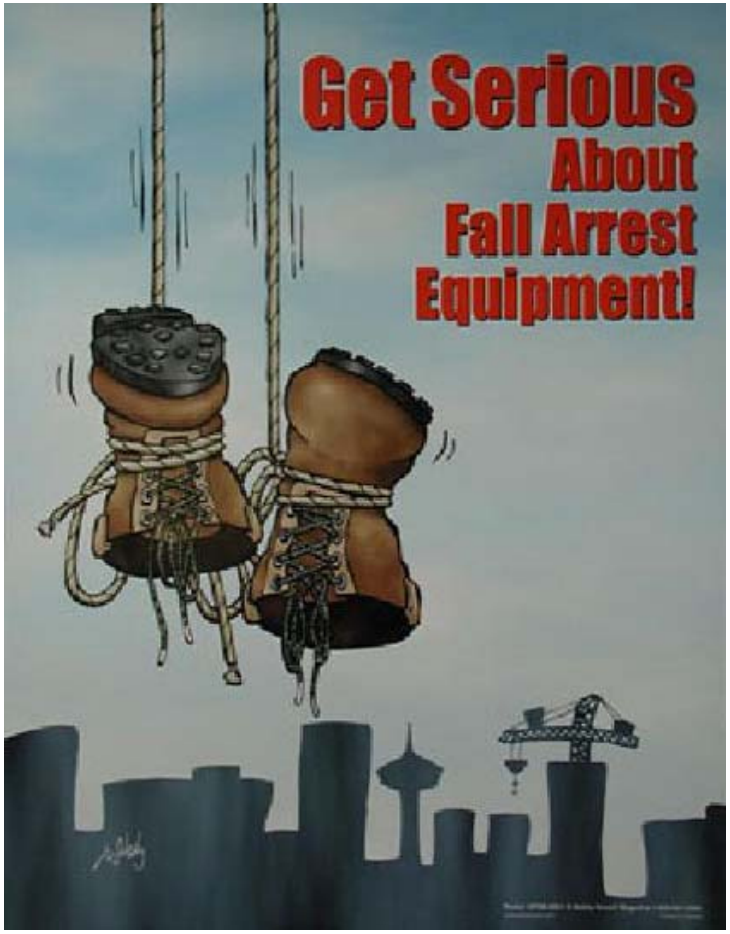
SUPERVISOR

- Ensure certified fall protection equipment is available
- Ensure users of fall protection are trained
- Stop any working at heights which is unsafe

WORKER

- Follow the working at heights rules
- Inspect equipment before use
- Do not use equipment if you are not trained
- Stop any working at heights which you think is unsafe & report to your Supervisor

WORKING AT HEIGHTS



GENERAL SITE SAFETY

WASTE MANAGEMENT

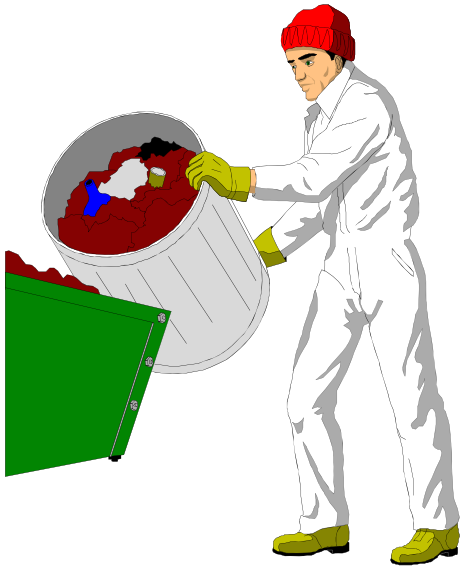
Waste **is unwanted or undesired material. It may also be called rubbish, trash, garbage or junk.**

Hazards:

- **Fire**
- **Pollution**
- **Ill health**

Controls:

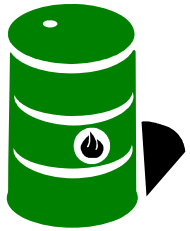
- **Waste bins & skips provided**
- **It is expected from everybody to keep their workplace clean and use the bins / skips provided**



GENERAL SITE SAFETY

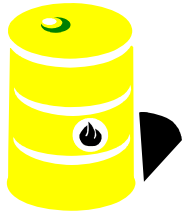
WASTE MANAGEMENT

Recycle / Reuse:



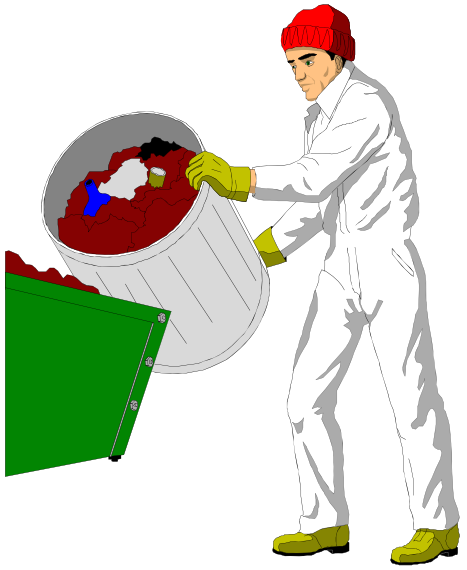
Waste segregation to aid recycling

Domestic waste (paper, wood etc.)



Construction waste (bricks, concrete etc.)

Hazardous waste (chemicals, chemical containers, medical waste etc.)



GENERAL SITE SAFETY

WORK PERMIT

- **Contractor's Internal Permit to Work system shall be implemented once the site is handed-over to Daewoo E&C.**

GENERAL SITE SAFETY

WORK PERMIT

The purpose of work permit is to ensure that;

- The work is authorized by an adequate level of responsibility.
- The work has been completely studied and planned.
- Suitable Safety Measures are listed and people who must use them are named.
- Personnel involved have been completely informed about the work to be carried out, the related risks and safety measures to be used.
- Working conditions and times when work maybe done have been specified and declared.
- To authorize the work to start was signed by the qualified personnel.

EMERGENCY RESPONSE PROCEDURE

MEDICAL EMERGENCY

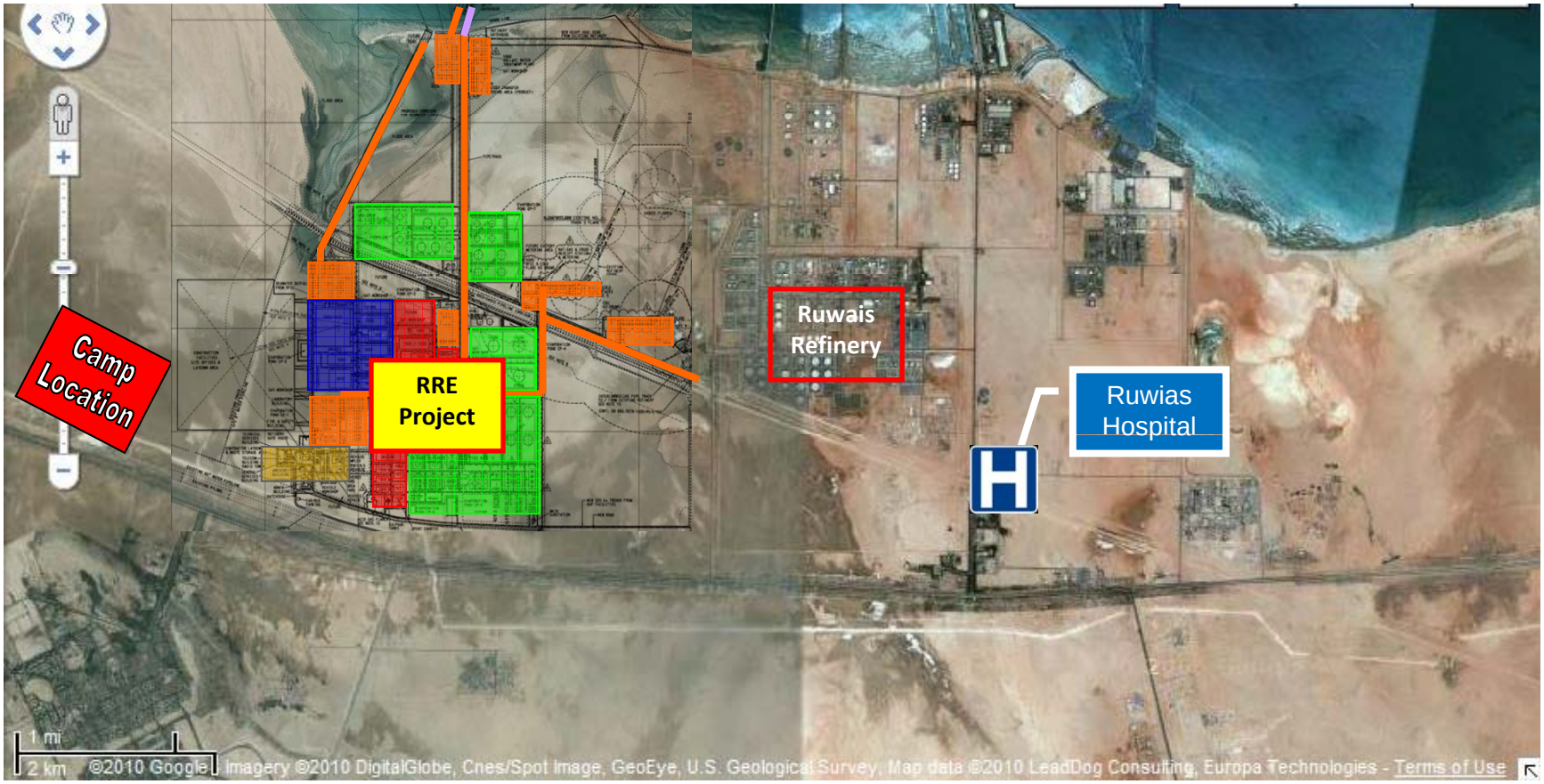
- Any injured or sick personnel requiring medical attention shall be referred to **ADNOC Hospital**.
- It is the Site foreman/supervisor's responsibility to bring the patient to the Hospital.

Contact Numbers:

ADNOC Hospital (24 Hrs.) ***(02 602 23 40)***
Ambulance service ***(02 602 23 40)***

EMERGENCY RESPONSE PROCEDURE

ADNOC/Ruwais Hospital Location Map



EMERGENCY RESPONSE PROCEDURE

FIRST – AID CASES

- First-Aid boxes shall be placed in the Daewoo Site Office and where necessary.

INCIDENT /ACCIDENT REPORTING

- Each event, which results in an occupational injury or illness, shall be reported by Supervisor in-charge and be investigated.

- A Preliminary Accident/Incident Notification form shall be accomplished by the Supervisor and submitted immediately.

- An Incident Notification Report which shall be completed within 24 hours

NEAR MISS

- Near Miss Notification Cards shall be posted at various locations on site.

- If you witness a Near Miss, or are involved in one, please complete the card or notify the HSE Department immediately.

SMOKING

- Only smoke in designated smoking areas!

EATING ON SITE

- Eating is not allowed on the site area. Please do not eat on site! This can cause vermin infestation

HAZARDOUS MATERIAL

- Persons entering the site area may be exposed to certain chemicals.
- Do not use chemicals if you are not sure of the Hazards involved.
- Always reference the MSDS – Material Safety Data Sheet

ILLNESS

- Influenza
- Colds
- Coughs
- Sore throats
- Infections

Practice good hygiene and visit the doctor on first signs and symptoms.

NOISE

- Ensure that earplugs are worn in high noise zones
- When using a grinder..wear ear plugs!
- If no earplugs are available, report to the HSE Department
- Wear ear plugs where personnel are venting steam or air blowing, look for signage

GRINDERS

Don't let this be you!

- Leading cause of injuries in the work field
- Causes many fatalities every year!
- High Noise levels
- Do not remove guards on grinder
- Do not use sub standard conditioned equipment
- If you feel its not safe, report to the HSE Department
- Only competent persons to use grinders

HSE INCENTIVE PROGRAM

- Contractor will develop and implement an incentive program for all workforce
- This will revolve around SAFETY on site
- The Safer you act the more chance you have of receiving rewards in the form of money, phone vouchers and many more. So, practice safety from day one

YOU HAVE THE RIGHT TO REFUSE!

- If you are put in a situation by your manager or supervisor that is unsafe, YOU HAVE A RIGHT TO REFUSE!

Report directly to the HSE Department in this situation

No Safety – No Work

TRAINING PASSPORT

- All personnel on the RRE Project shall receive Training Passports
- All training modules will be listed within
- On completion of a training module, the passport will receive a stamp in the relevant black
- Don't lose your training passport! There will be a fee...

GENERAL SITE SAFETY

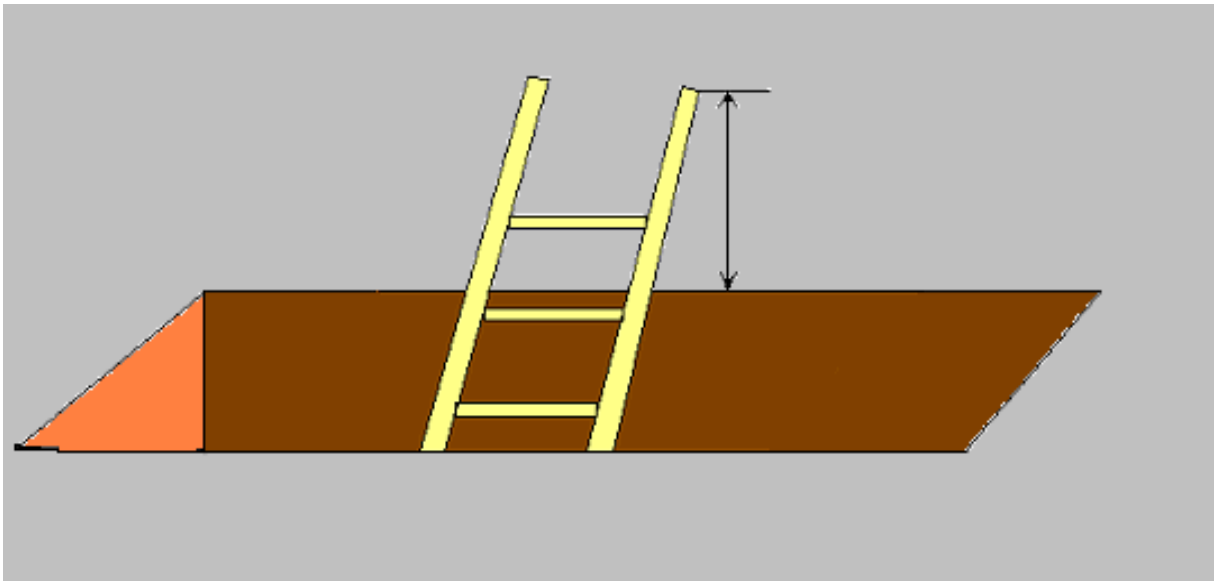
HOUSE KEEPING

Good housekeeping should be followed:

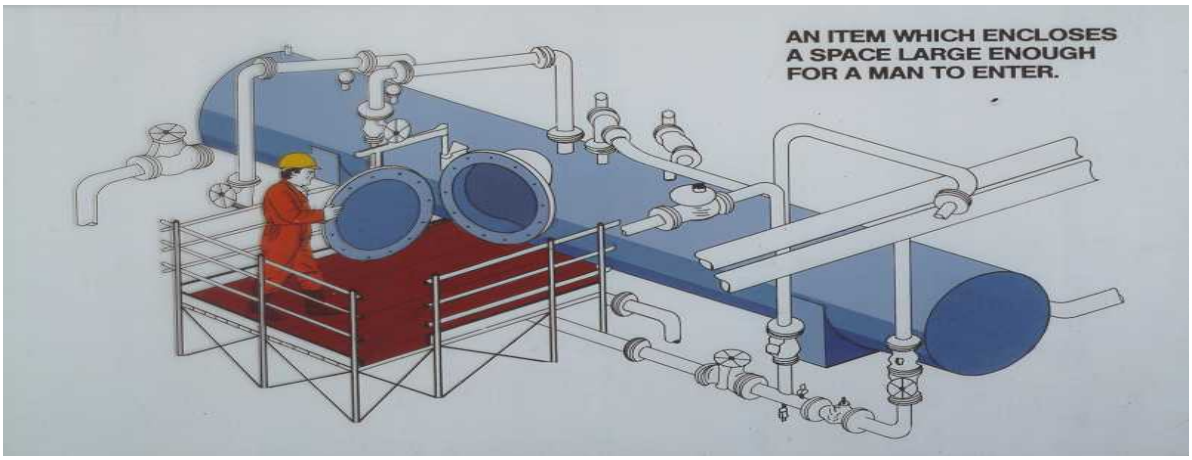
- Work areas, passageways and all other areas kept free of obstruction debris and materials.
- Construction materials, tools, equipment shall be stored or placed in an orderly manner.
- Construction waste removed and works areas cleaned by the end of the shift.
- Temporary extension leads, wires, electrical cables and hoses etc. kept off the walking surfaces and routed in orderly manner.
- Assign regular housekeeping helpers to keep all areas clean of construction debris and rubbish during and after work hours.

THANK YOU VERY MUCH

Site Safety Induction Supportive Photos



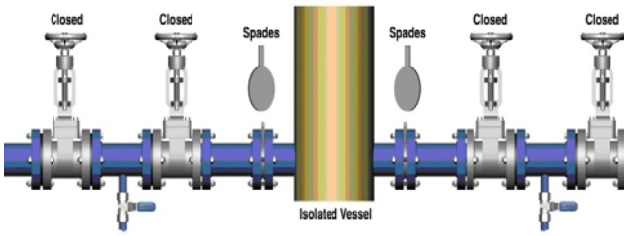

SAFETY FIRST

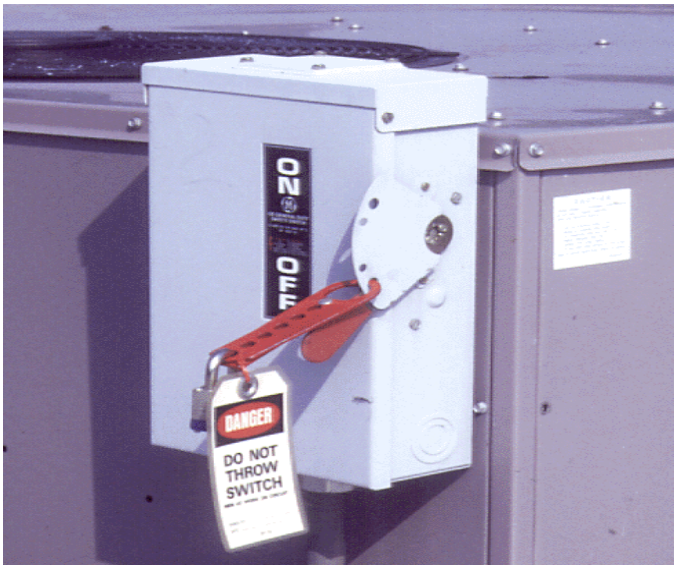

AN ITEM WHICH ENCLOSES
A SPACE LARGE ENOUGH
FOR A MAN TO ENTER.


12. 8. 2003


QUESTemp° 30

SPADE / BLANK / FLANGE




ON
DANGER
DO NOT
THROW
SWITCH


T12