



## SCAFFOLDS & LADDERS SAFE WORK PRACTICES

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## 1.0 PURPOSE AND SCOPE

Scaffolds are used in refineries and storage facilities as temporary work platforms to provide support for workmen, plant and materials used in maintenance, construction, and demolition work.

The accidents to workers that are caused due to falls from height or collapse of scaffold show clearly the importance of properly constructed and maintained scaffolds. Accidents also occur due to;

- Slipping of unsecured ladders
- Use of unsuitable scaffold or faulty materials
- Inadequately supported scaffold boards
- Inadequate or irregular platform widths
- Omission of guardrails or toeboards
- Failure to properly secure the scaffold to the building or to brace it adequately
- Overloading the scaffold platforms, etc.

This document is intended to provide a generic and non-exhaustive safety guideline on the use of various types of steel scaffolds. It also covers ladders used alone or in conjunction with scaffolds, step platform, and aerial work platforms.

This document is not a design manual/reference. Users should refer to **relevant British/European/OSHA Standards for detailed scaffold components'** specifications and other scaffold design criteria.

Mandatory **rules (or 'MUST')** are characterized by the word **'SHALL'** throughout the text. Advisory rules or recommendations are indicated by the word **'SHOULD'**.

## 2.0 REFERENCES

SN	Standard Organization	Standard Number	Title
1	OSHA	1910.28	Safety Requirements for Scaffolding
2	OSHA	1926.451	Scaffold General Requirements
3	OSHA	1926.452	Additional Requirements Applicable to Specific Type of Scaffolds
4	OSHA	1926.453	Aerial Lifts
5	OSHA	1910.67	Vehicle Mounted Elevating and Rotating Work Platform



SN	Standard Organization	Standard Number	Title
6	BS EN	12811-1: 2003	Temporary Works Equipment Part-1: Scaffolds Performance Requirements and General Design
7	BS EN	39: 2001	Loose Steel Tube for Tube and Coupler Scaffolds
8	BS	2482: 1981	Timber Scaffold Boards
9	BS	2037: 1998	Aluminum Ladders and Steps
10	NSC	A10.8: 2001	Scaffold Safety Requirements
11	ANSI	A92.2: 2001	Vehicle Mounted Elevating and Rotating Work Platforms
12	ANSI	A14.7: 2000	Mobile Ladder Stands and Mobile Ladder Stand Platform
13	KPC	Document 50	Safety Belt and Fall Protection

### 3.0 DEFINITIONS

Bearer (putlog) - means a horizontal transverse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests and which joins scaffold uprights, posts, poles, and similar members.

**Boatswains' chair** - means a single-point adjustable suspension scaffold consisting of a seat or sling designed to support one employee in a sitting position.

Safety harness - means a design of straps which may be secured on the body of the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders, with means for attaching it to other components of a personal fall arrest system.

Brace - means a rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure.

Cleat - means a structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.

Coupler - means a device for locking together the tubes of a tube and coupler scaffold.

Guardrail system - means a vertical barrier, consisting of, but not limited to, toprails, midrails, and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels.



Hoist - means a manual or power-operated mechanical device to raise or lower a suspended scaffold.

KNPC Supervisor that will be authorized to inspect and sign in the scaffold inspection checklist and **scaffold Green Tag shall include contractor's** supervisor that works as KNPC representative (or secondment personnel in general).

Landing - means a platform at the end of a flight of stairs / ladders.

Lifeline - means a component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Lower levels - means areas below the level where the employee is located and to which an employee can fall. Such areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, and equipment.

Maximum intended load - means the total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Personal fall arrest system - means a system used to arrest an **employee's** fall. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or combinations of these.

Platform - means a work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.

Stair tower (Scaffold stairway/tower) - means a tower comprised of scaffold components and which contains internal stairway units and rest platforms. These towers are used to provide access to scaffold platforms and other elevated points such as floors and roofs.

Walkway - means a portion of a scaffold platform used only for access and not as a work level.

## 4.0 SCAFFOLD MATERIALS REQUIREMENTS

All scaffold components shall conform to the relevant British/European/OSHA Standard or equivalent.



**Contractor's scaffold material samples shall be approved by Company Engg. & Services division (or equivalent Div. for Projects and LM Departments) based on Third Party certificates prior to procurement.**

To ensure sufficient stock of scaffold components are maintained and in good condition, a quarterly audit at **Contractor's** scaffold storage yard shall be carried out by KNPC Safety Section and Sponsoring Division. Following items have to be checked during the audit:

- **Documentation on KNPC approval for contractor's scaffold materials**
- Unique markings of scaffold components to identify the owner
- General condition on storage of scaffold materials
- Sign of any visual damage (e.g. bent, cracks, corrosion, etc.) on tubes, couplers, fittings, joint pins, metal planks, toeboards, etc.
- Condition of scaffold ladders
- Availability of Green Tag and Red Tag (holder-type)
- Others

Damaged or deteriorated scaffold components shall be immediately discarded or tagged not to be used. Sponsoring Division shall ensure the prompt disposal of damaged and deteriorated scaffold materials.

Scaffold components shall be uniquely marked / labeled to appropriately identify the owner. Markings or label should **contain the Contractor's name / emblem** that shall be either painted into the material, use of a self- adhesive material, or stenciled into a metal plate.

#### 4.1 TUBES & FITTINGS

Type 3 and 4 steel tubes to BS EN 39:2001 is 48.3 mm outside diameter / 3.2 mm thick 48.3 mm outside diameter / 4.0 mm thick. Tubes and fittings shall be free of cracks, surface flaws and other defects. Tubes shall be straight. All tubes should be maintained in a good condition, not corroded and regularly inspected.

Fittings should be regularly examined. Moving parts should be regularly lubricated for easy movement.

#### 4.2 BOARDS (PLANKS)

**Metal Boards.** Metallic boards shall be used in running units or where the boards are in contact with hot lines or surfaces. Metallic boards shall have a non-slip working surface and shall be capable of supporting, without failure, its own weight and 4 times the intended working (live) load. **Metallic boards shall be used in accordance with the manufacturer's specifications.**

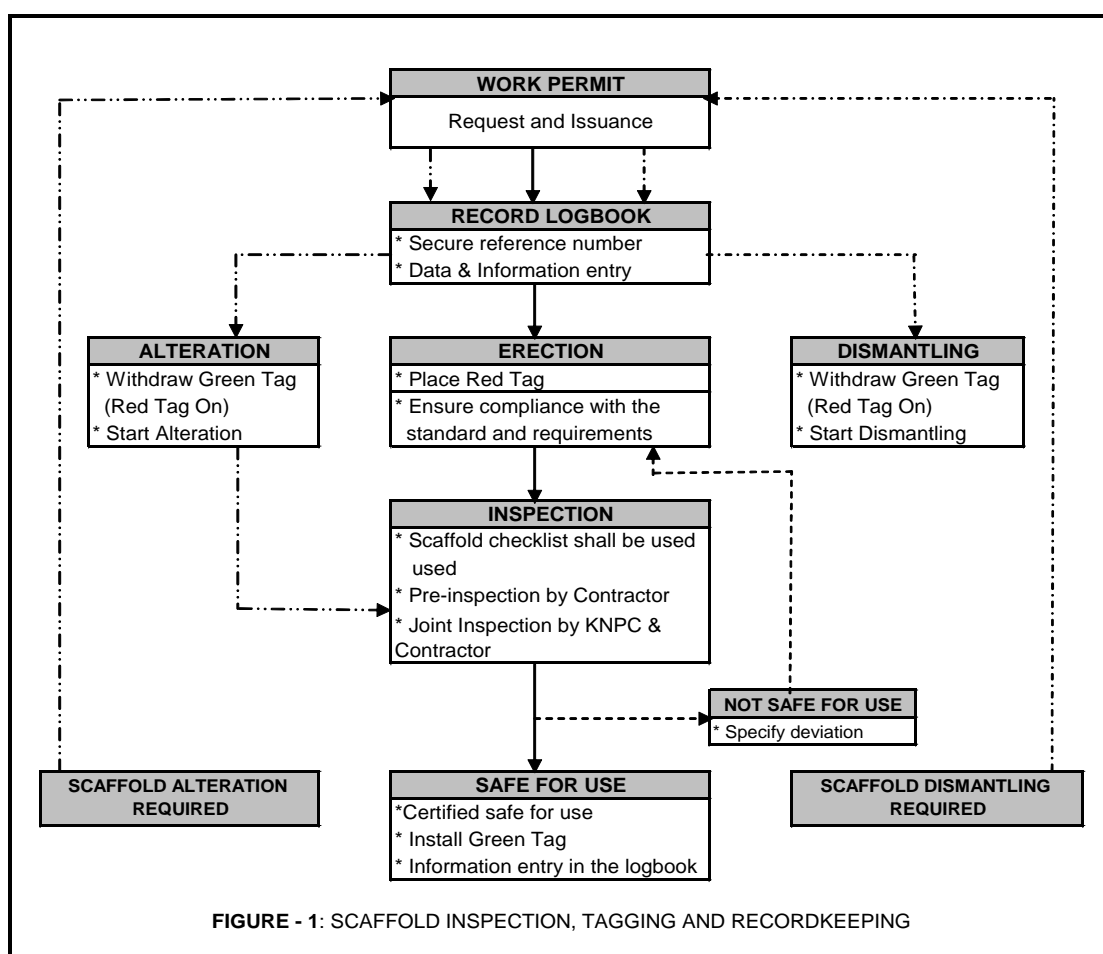


Since timber boards can be cut for the required length they may be used in small confined spaces, etc. subject to above conditions.

Boards used for scaffolding decking shall be 50.8 mm (2 inches) thick and not less than 229 mm (9 inches) wide. Boards which are split, decayed or warped shall not be used. Boards shall not be painted or treated in any way that may conceal defects.

## 5.0 SCAFFOLD INSPECTION, TAGGING AND RECORDKEEPING

Figure-1 below provides an overview on the workflow for scaffold inspection, tagging and recordkeeping activities and responsibilities.



5.1 The green and red scaffold tags (see Appendix-A) shall be used to inform / warn users about the condition or readiness of a scaffold. The tags shall be



weatherproof and should have the Contractor's name. The 'green tag' shall be an insert while the 'red tag' shall be a holder having an attachment port which can accommodate at least two inserts. The red tag (or holder) should be fixed into the scaffold component as 'scaffold erection' progresses.

5.2 The 'green tag' shall be inserted into the holder only when scaffold is certified safe for use through the completion of the scaffold checklist.

5.3 Tags shall be displayed at eye level on all access points of the scaffold. Scaffold tag no. should be indicated in the work permit (*section 1B*) whenever an activity requires the use of scaffold.

5.4 Tags shall also be applied for temporary accessways/cross-over bridges, if it is constructed of scaffold materials.

5.4 Executor shall prominently display the 'Red Tag' (DO NOT USE SCAFFOLD) when scaffolding is incomplete, whether it be during erection, dismantling or alteration. Access to those parts, which are incomplete, shall be barred. Barricade should be such that users would not accidentally step into the unfinished portion.

5.5 No portion of the scaffold should be utilized unless that portion is fully decked, braced, tied, demarcated and certified. Sufficient number of red tags (i.e. every after 2 bays and on all access points) shall be installed during construction of lengthy scaffolds.

5.6 Scaffold supervisor and KNPC Supervisor (or his superior) shall inspect the scaffold after completion of erection and certify them using the checklist in Appendix-C. KNPC signatory shall keep the original checklist and copy shall be filed with the permit issuer for checking the validity while issuing permits for users. A copy of the completed checklist shall be kept along with the scaffold record logbook that is being maintained at Maintenance Site shelter.

5.6.1 If **there's no KNPC Supervisor on-duty** when a newly built or modified **scaffold needs to be inspected and certified 'safe for use'** outside normal working hours or during weekends / holidays, an authorized Mechanical Maintenance Contractor supervisor or engineer can sign in the Scaffold Inspection Checklist and Green Tag under the column of KNPC Supervisor with the following mandatory requirements that shall be strictly enforced:

- (a) This provision shall only be applied on scaffold that is being erected /modified/dismantled by KNPC Scaffold Contractor. The application of this provision is likewise limited to light duty or minor scaffolds only.



- (b) The Mechanical Maintenance Contractor employee that will be authorized to sign in place of KNPC Supervisor should not be directly involved or responsible on the scaffold erection / modification / dismantling and neither be a Safety Personnel.
- (c) Team Leader Mechanical Maint. (MAA/SHU/MAB) or equivalent in PD & LM shall prepare and publish the list of authorized Contractor employees (supervisor and engineer) that can sign in place of KNPC Supervisor. Also, he should arrange the **employees'** mandatory training on Scaffold Safety, Inspection and Tagging Course at HSE Training Center.
- (d) All scaffold that had been **approved/tagged 'Safe For Use'** by the Contractor supervisor/engineer shall be re-inspected and re-certified the following day or in the next normal working hours by the concerned KNPC Supervisor.

5.7 Duly signed '**Green Tag**' (Use Scaffold) shall be displayed by inserting into the holder. It shall be re-inspected at least every seven days or after modification/alteration and after weather is likely to have affected stability, whichever occurs earlier.

5.8 Maintenance should maintain a dedicated Scaffold Record Logbook in each unit area kept at the Maintenance site shelter. A scaffold unique reference number (e.g. a sequential number depicting the unit area number) shall be assigned, recorded and closed out by Maintenance group. Information that shall be maintained in the logbook should include (but not limited to) the following:

- Date erected and date dismantled
- Responsible Scaffold Engineer / Supervisor
- Exact location where the scaffold will be erected (e.g. equipment no., floor level, etc.)
- Brief description of Scaffold (e.g. no. of span, no. of working platform, etc.)
- Name of Contractor who erected the scaffold

5.9 Only authorized scaffold personnel can alter or modify a certified safe scaffold which must be carried out under a work permit requirement and condition. At this stage, a red scaffold tag shall be displayed and then re-certified after modification / alteration. Any alteration or modification done should be registered in the scaffold record logbook.





## 5.10 TRAINING AND AWARENESS

KNPC Safety shall provide / arrange training of concerned KNPC Supervisors and Engineers on scaffold safety, inspection of scaffold, and how to fill the checklist/tags.

## 5.11 COMPETENT AND AUTHORIZED SCAFFOLD PERSONNEL

Only competent and authorized personnel shall be delegated the task to design, erect, alter, modify, dismantle, inspect and maintain scaffolding in KNPC premises. Competent and authorized scaffold personnel are hereunder defined as Scaffold Engineer, Scaffold Supervisor, and Scaffold Erectors.

The competency of scaffold personnel shall mean (a) declared competent by KNPC concerned Team Leader, or (b) the employee is in position of a recognized degree, certificate or professional standing and possesses an extensive knowledge, training and experience.

The following competency guideline should be utilized as a general reference:

### 5.11.1 Scaffold Engineer

Shall be a graduate Civil Engineer having a minimum of five (5) years experience on structural design and construction. Additional certifications and experience specific to scaffold design, erection and dismantling should be given preference.

### 5.11.2 Scaffold Supervisor

Shall be a diploma holder in Engineering or a Science graduate (i.e. 3 years college course graduate) and having five (5) years experience on scaffold erection, modification and disassembly.

Scaffold supervisor should be trained and certified from a recognized and licensed Institution (or from KNPC approved Third Party Agency) declaring that he is capable to inspect scaffolds and scaffold components for visible defects or condition which could affect the structural integrity.

### 5.11.3 Scaffold Erectors and Dismantlers

Shall have a certified training (from a recognized & licensed Institution or from KNPC approved Third Party Agency) on Scaffold Erection and Dismantling and have three years experience in related field.



## 6.0 CONSTRUCTION REQUIREMENTS COMMON TO ALL SCAFFOLDS

### 6.1 GENERAL

Figure-2 and 3 below show various scaffold components. The recommended maximum distributed loading of scaffold platform shall conform to the table in Appendix-B.

Members shall support own weight and at least 4 times maximum intended load. Contractor or supplier shall show documentary proof on this aspect. Maintenance / Construction Planning shall indicate maximum intended load (light/medium/heavy duty as shown in Appendix-B) when requesting a scaffold.

Scaffolds (a) exceeding 38 m (125 ft) height, (b) requiring special application and (c) those required for unusual heights or for use in abnormal circumstances shall be designed by a qualified engineer and approved by KNPC Civil Engineer (who is in-charge on structural design).

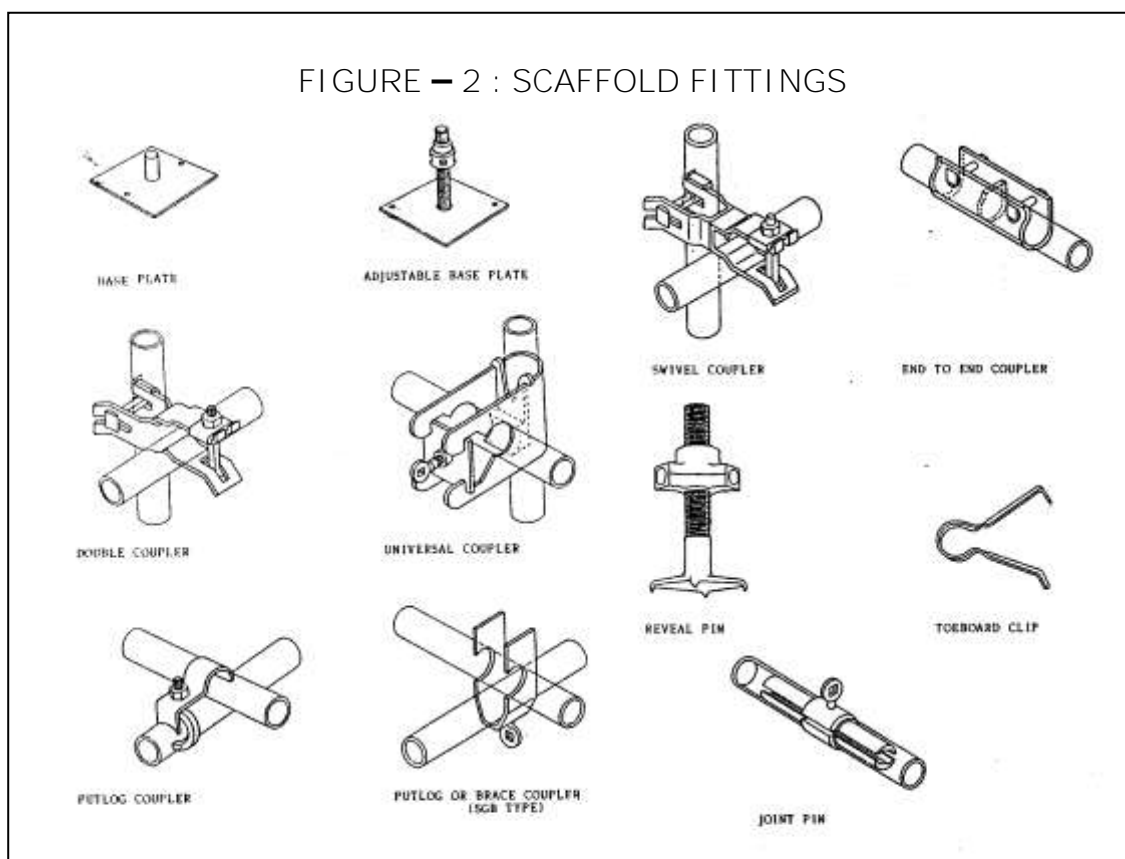
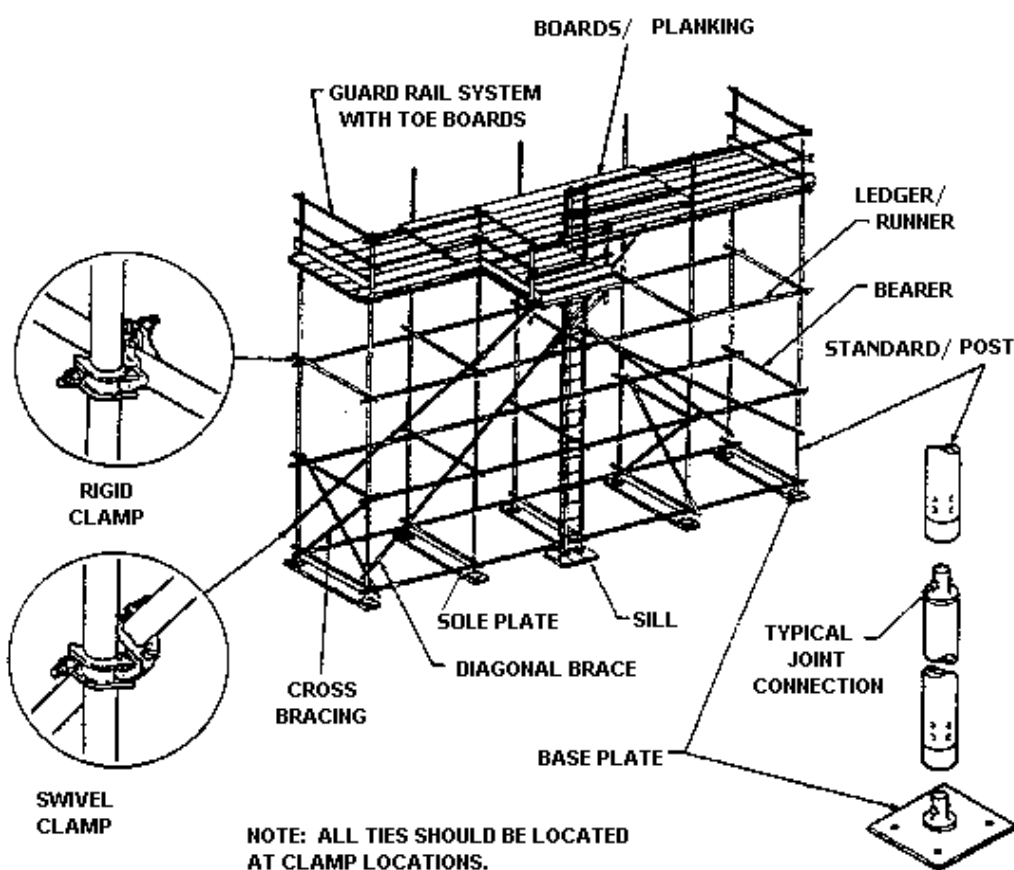




FIGURE – 3: TUBE AND COUPLER SCAFFOLD

- This is a typical "Independent Tied Scaffold" which may be tied to a permanent structure such as a process vessel or a building, etc.
- Access ladder has a separate extended platform, which can have a hinged top handrail.



## 6.2 FOUNDATIONS, BASE PLATES & SOLE PLATES

The footing or anchorage for scaffolds should be sound, rigid, and capable of carrying intended load without settling or displacement.

A good base is essential, so the ground or floor on which the scaffolding is going to stand should be carefully examined. Soil or made up ground will need consolidating.

The use of at least 229 mm x 38 mm (9 inches x 1½ inches) cross section of wooden sole plates (or equivalent metal sole plates) are required to spread the load on earth, made up ground or asphalted surface for most scaffold with



four levels or less in height, and not heavily loaded. If multiple levels will have live load simultaneously, and on taller scaffolds, the scaffold engineer should ensure sole plates are capable of carrying intended load without settling or displacement. Sole plates shall extend under at least two standards.

For Scaffolds resting on concrete surface or steel structure where there is no risk of displacing or sinking, base plate may rest directly on the surface without a sole plate.

Base plates with screw jacks should be used to ensure proper scaffold leveling adjustments.

### 6.3 STANDARDS (Vertical Tubes/Uprights/Columns/Posts)

Standards shall be pitched on base plates and sole plates or timber pads. Joints in standards should not occur in the same lift. Joints should be arranged so that they occur as near as possible to a ledger. All standards shall be vertical.

### 6.4 LEDGERS (Horizontal Tubes/Runners)

Ledgers shall be securely fixed to standards with double or universal load-bearing couplers and shall be horizontal. Joints in ledgers should be staggered, i.e. joints in adjacent ledgers should not occur in the same bay. It is desirable that these joints be made with sleeve couplers. If joint pins are used they should be placed at about one-quarter to one-third the span between the standards, not at mid-span.

### 6.5 TIEING THE SCAFFOLD TO A STRUCTURE

The scaffold must be secured to prevent it from tipping by means of tying (as shown in figure-4 above) the scaffolding to an adjacent structure, using guy wires, or increasing the base width. The first tie shall be secured at an elevation of four times the minimum base with the following two separate requirements for the next upward interval:

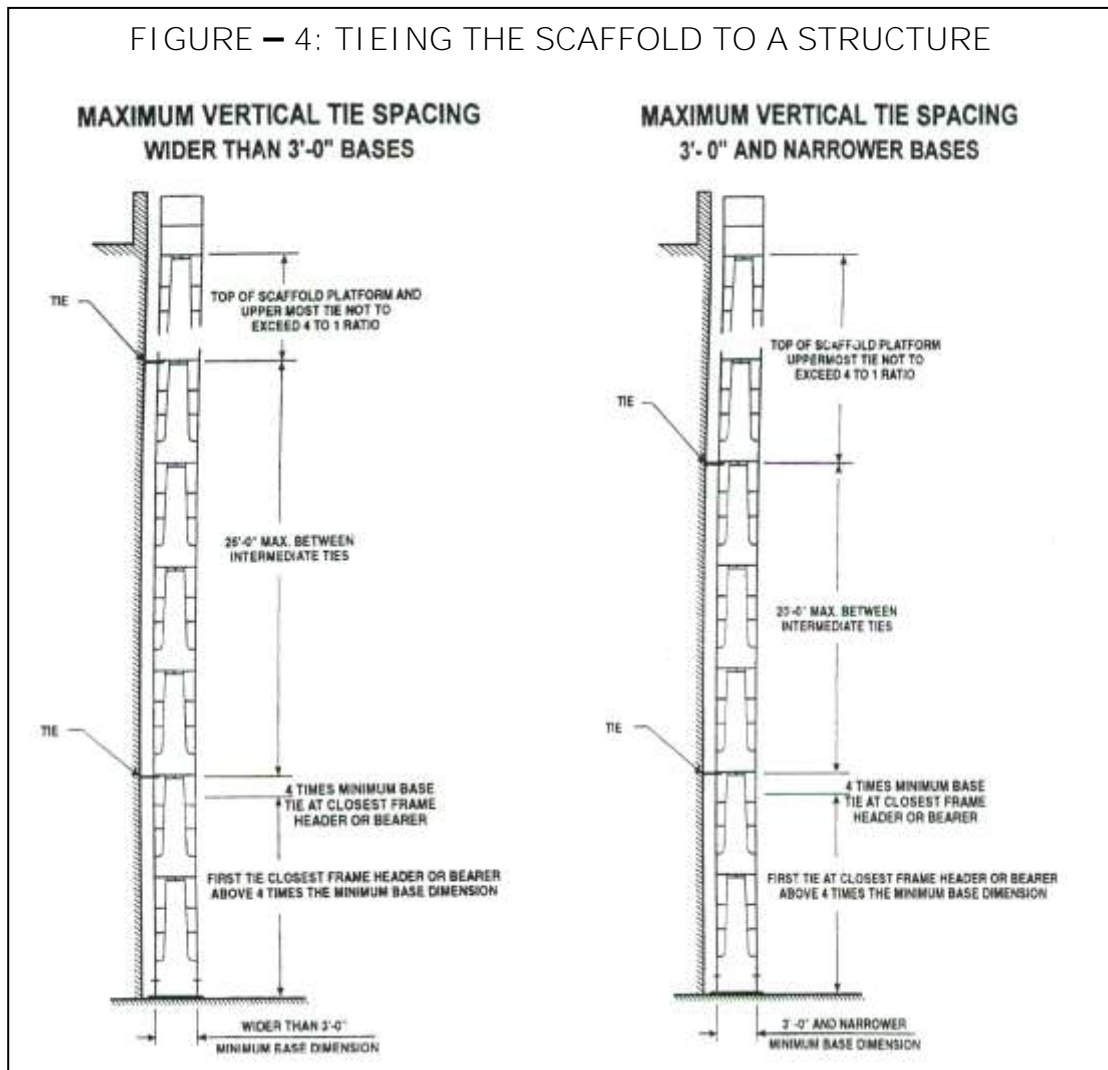
- If the scaffold is wider than 91.5 cm. (3 feet), subsequent tie-ins must be secured to the building or structure at intervals not greater than 793 cm. (26 feet) vertically.
- If the scaffold is less than 91.5 cm. (3 feet) wide, the subsequent tie-ins must be at no greater than 610 cm. (20 feet) maximum vertical intervals.

Ties must be placed at both ends and every 915 cm (30 feet) horizontally and should be installed during the erection process. Ties shall not be removed until the scaffold is dismantled to that height.



Anchoring, guying, tying off or bracing of scaffolds must be affixed to structurally sound components to ensure it can carry the tension and compression loads. If guying is necessary, the guying system and requirements shall be designed by the scaffold engineer.

FIGURE – 4: TIEING THE SCAFFOLD TO A STRUCTURE



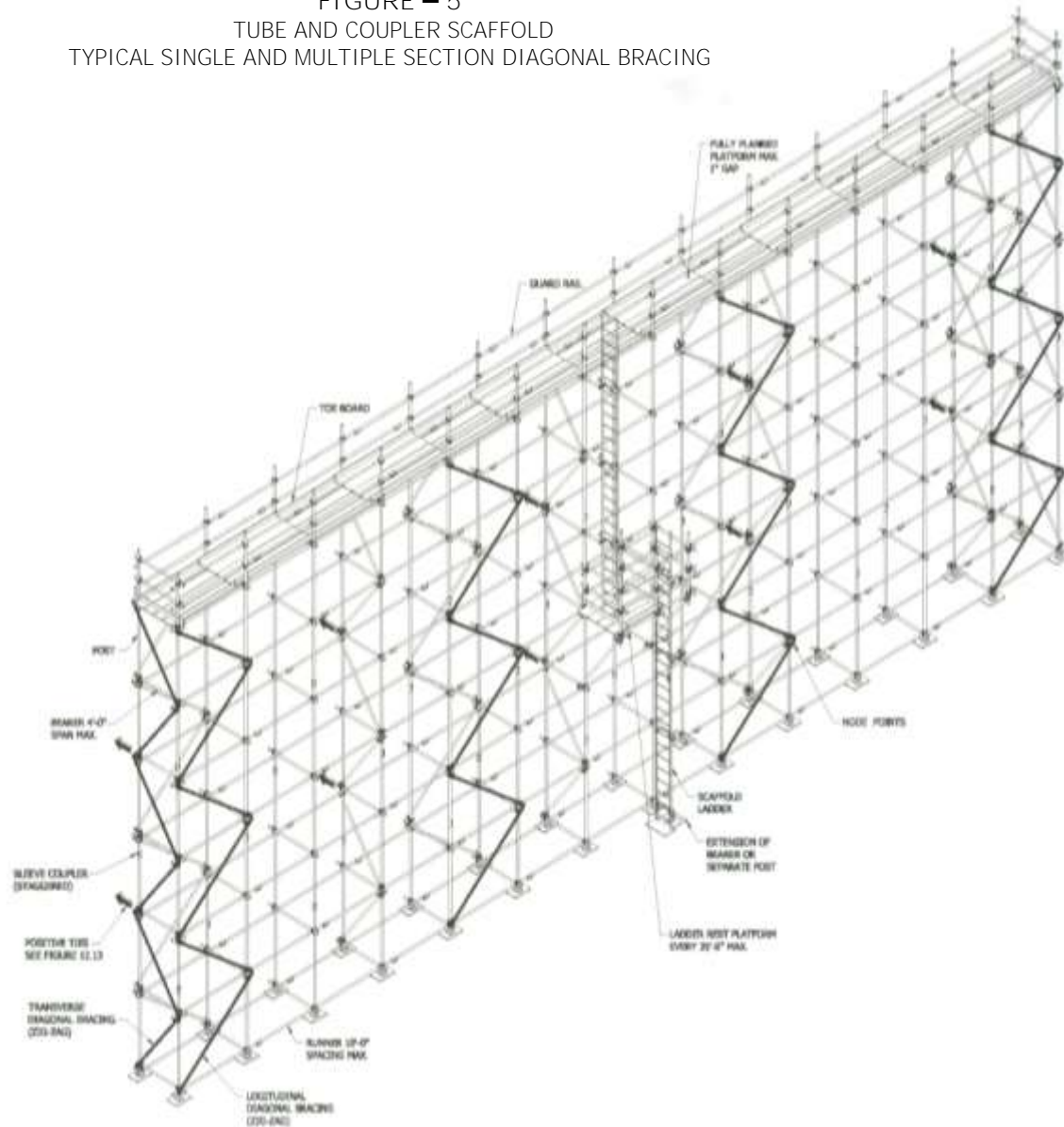
## 6.6 BRACING

Scaffolds shall be properly braced by cross bracing or diagonal braces (see figure-5 below), or both, for securing vertical members together laterally, and the cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections shall be made secure.

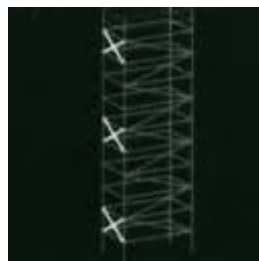


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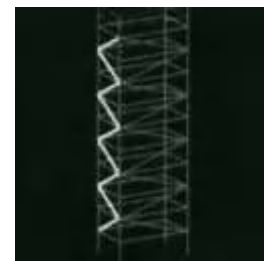
FIGURE — 5  
TUBE AND COUPLER SCAFFOLD  
TYPICAL SINGLE AND MULTIPLE SECTION DIAGONAL BRACING



Longitudinal Diagonal Bracing



Transverse (Cross) Bracing



Alternate Method  
Transverse Diagonal Bracing





Longitudinal diagonal bracing shall be installed at an approximately 45 degree angle from near the base of the first outer post upward to the extreme top of the scaffold. If the scaffold is more than five bays in length, start a new diagonal brace every fifth post. Diagonals should be attached within 48 mm. (12 inches) of the node point (intersection of horizontal and vertical).

Transverse (cross) bracing must be installed across the width of the scaffold. It shall be placed every fourth level up, and every third set of posts horizontally. Such bracing shall extend diagonally from the inner and outer runners upward to the next outer and inner runners. The alternate method **which is the 'zig-zag', must be installed all the way up on every level and should be provided every third set of posts horizontally.**

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## 6.7 DECKING

All decking shall be close-boarded and shall be at least 60 cm. wide (3 boards), each board resting evenly on at least three supports. Boards shall oversail end supports by at least 50.8 mm (2 inches) but shall not oversail by more than four times their thickness.

Supports for scaffold boards (transoms, putlogs, etc.) shall be spaced with due regard to the nature of the platform and the load it will bear

Except on decking contiguous to the curved surface of a cylindrical or spherical structure, boards shall be laid flush wherever possible. Where the scaffold changes points of direction such as at a corner, the boards (or planks) which would lay across the bearer at other than a right angle shall be laid first, see figure-6 below. The planks, which lay at a right angle, are then laid on top. The result is end of the top planks form a straight line rather than saw-toothed, and reduces the tripping hazard. It also ensure that the bottom planks overlap the bearer.

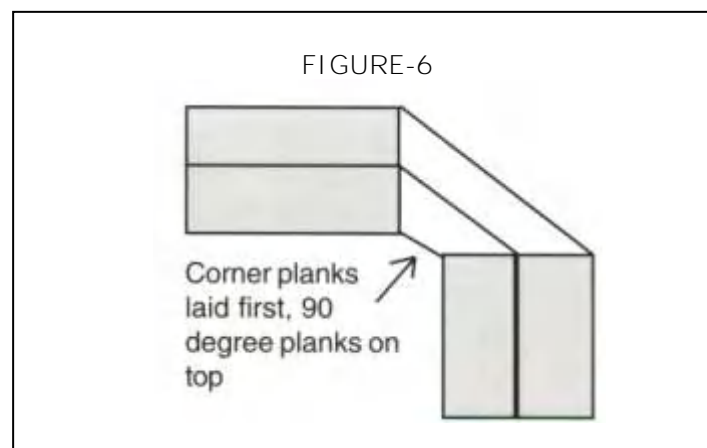


Boards shall be laid with no openings more than 25.4 mm. (1 inch) between adjacent boards or scaffold member.

Decking shall be kept free from unnecessary obstructions and from materials, rubbish and projecting nails.

Decking which has become slippery with oil, or other substance shall be immediately replaced.

Boards shall be secured from movement by clamps or a combination of clamps and gauge #9 BWG wire. Nylon or other combustible material shall not be used.



## 6.8 GUARDRAILS & TOEBOARDS

Guardrails and toe boards shall be fitted at edges of decking from which persons or material could fall a distance exceeding 183 cm. (6 feet). Top guardrail shall be not less than 92 cm. (3 feet) and not more than 114 cm (45 inches) high. Midrail shall be provided. Toe boards should be 15.2 cm. (6 inches) high and secured in position by toe board clips/clamps or a combination of clips and gauge # 9 wire.

Guardrails and toeboards shall be fitted to the inside of standards to prevent outward movement, unless they are so designed and used as to prevent such movement.

If guardrails and toe boards are to be removed for the movement of materials, Work Permit Executor shall coordinate with the authorized scaffolding personnel who shall restore the scaffold as soon as practicable (ex. heat exchanger jobs). Also, refer section 5.0 for scaffold inspection, tagging and recordkeeping.





The use of wire ropes or chains as top rails and intermediate rails of guardrails shall not be allowed in any type of scaffolds.

## 6.9 MATERIAL GUARDS

Where materials are to be stacked on a working platform or working place above the height of the toeboards, suitable barriers such as nets or metal sheets shall be positioned so as to prevent the fall of such material from the platform or place.

## 6.10 ACCESS

A platform should not be installed on a scaffold without a safe and easy means of access. An access ladder or equivalent safe access must be provided for any platform more than 61 cm (2 feet) above lower level.

Access may be provided by ladders specially made for scaffold access by scaffold manufacturers, portable ladders, stair towers, stairway-type ladders, ramps, walkways, integral prefabricated rungs in the frame, or direct access from another structure.

Access ladders shall be clamped into the scaffold structure. The use of tie wire shall be prohibited.

Access to a working platform is best achieved by providing a separate ladder tower or cantilevered access platform so as not to obstruct the platform and to minimize the possibility of persons falling through the gap in the guardrail or decking (See Figure 3). If this is not practical, the top handrail should be hinged or a hinged short bar provided at access point.

Tools and materials should not be carried by persons ascending or descending ladders except that tools may be carried in pockets or special belts, provided they do not impair movement. A 3-point contact (i.e. 2 feet + 1 hand or 2 hands + 1-foot) shall be maintained while ascending / descending from a ladder. This safe work practice on the use of ladder shall be observed irrespective of whether it is a portable or fixed ladder.

## 6.11 GIN WHEELS

Gin wheels (pulley & rope) can be used for lifting light loads (up to 50 kg) on to scaffolding if use of standard lifting appliances is not practical or safe. Work Permit Executor shall ensure that pulley and rope are in good condition and of adequate capacity. The Scaffold Engineer shall be consulted where to install the gin wheels in the scaffold section. Also, the Executor shall ensure proper attachment of the pulley to the scaffold member and consistently maintains the hoisting rope and pulley in good condition.



## 6.12 INCLEMENT WEATHER

Risk assessment shall be carried out if the wind speed exceeds 50 kmph. Personnel shall not be on any scaffold or other temporary elevated work area during heavy rains, storms or high winds, sustained winds more than 65 kph (40 mph) - unless the scaffold or working level is indoors or otherwise unaffected by the weather conditions. Outdoor scaffolds or elevated work platforms shall not be used during thunderstorms or when there is likelihood of lightning. Anemometers should be available with ECCC (Emergency Communication Control Center), shift safety and executor / contractor. ECCC Public Address system can be used for announcing general alerts.

## 6.13 OTHER PRECAUTIONS AND SAFE WORK PRACTICES

- a) Scaffolding shall be erected, altered and dismantled only by competent and authorized scaffold personnel (see section 5.11 above).
- b) Scaffolding couplers should be tightened with proper non-sparking tools.
- c) Scaffolding materials and other objects shall not be dropped, thrown, tipped or shot from heights. Drop area shall be barricaded.
- d) Scaffold shall not obstruct access to/from any fire fighting equipment / emergency equipment, operating area equipment, instruments and control panels, ladders, monkey ladder cages, stairways, doors, stairways, etc.
- e) Extension or alteration of scaffold is not permitted on the approved part of scaffold being used at that time. Erection/dismantling directly above an approved scaffold platform shall not be allowed.
- f) During dismantling, no component, which endangers the stability of the remaining structure, shall be removed. The procedure of dismantling shall be orderly and planned and should proceed generally from the top in horizontal sections.
- g) Components shall be raised or lowered hand to hand in an orderly fashion or handled by crane, gin wheel or other suitable means. Dismantled scaffold materials shall be lowered to the ground and not stored on the scaffold.
- h) Personal fall arrest systems on scaffold erection and dismantling **should have the scaffolder's lanyards attached to either a vertical lifeline, horizontal lifeline, or stable scaffold structure member.** Scaffolders shall wear safety harness with two lanyards at all times. When changing positions they shall position one lanyard securely before unhooking and re-hooking the other lanyard. Lanyard shall be hooked/secured above the employee to ensure that he will not hit the ground or platform whenever a fall occurs. Where the use of fall arrest system is not practical due to various reasons, the elevated working platform shall be assembled/constructed at a correct working height with complete handrails.



When vertical lifelines are used, they must be fastened to a fixed safe point of anchorage, independent of the scaffold, and be protected from sharp edges and abrasion. Vertical lifelines shall not be attached to each other, or to the same point of anchorage. Safe points of anchorage include structural members of buildings, but not standpipes, vents, electrical conduit, etc., which may give way under the force of a fall.

When horizontal lifelines are used, they should be secured to two or more structural members of the scaffold and shall be fitted with turnbuckles that shall be used to secure the lifeline with minimal deflection (i.e. not to exceed 3 inches deflection when a load of 200 pounds is applied).

Job engineer shall evaluate and ensure compatible personal fall arrest components are on-use. These components include harnesses, lanyards, dee-rings, snap hooks, lifelines and anchorage points. Job engineer should review carefully the **manufacturer's instructions and warnings, and should** be particularly vigilant when components are manufactured by different entities and not sold as a complete system since such components are more likely to be incompatible for use together. It shall be ensured that the snap hooks on the fall arrest systems are not engaged to any object which is incompatibly shaped or dimensioned in relation to the snap hooks.

- i) The installation and use of a stair access ladder for scaffolding above 8 meters should be considered in order to reduce fatigue and increase safety at heights amongst workers particularly in summer time.

## 7.0 TYPES OF SCAFFOLD AND REQUIREMENTS

### 7.1 INDEPENDENT TIED SCAFFOLD

An independent tied scaffold is the most common form of access scaffolding and is divided into three groups (see table in Appendix-B).

- a. Light duty independent tied scaffold
- b. Medium duty independent tied scaffold
- c. Heavy duty independent tied scaffold

Independent tied scaffold consists of a double row of standards connected together longitudinally with ledgers and with transoms at right angles to the ledgers. Braces and ties are essential for its stability (see Figure 4 and 5 above).

### 7.2 TOWER SCAFFOLD (STATIONARY & MOBILE)

A tower scaffold is an independent scaffold, which is not tied to a permanent structure.



7.2.1 Stationary tower scaffold height shall not exceed 18.3 meters (60 feet) and shall not exceed 4 times the minimum base dimension. If 1:4 ratio cannot be maintained, tower shall be stabilized by guying or other means.

7.2.2 Mobile tower scaffold consists of four or more standards connected together longitudinally with ledgers and with transoms at right angle to the ledger, forming a square or rectangular tower, mounted on wheels. It has single working platform and is a common form of access scaffolding for painters and others who do work of a light nature and of short duration (see Figure-7 below).

7.2.3 Mobile tower scaffold height shall not exceed 12.2 meters (40 feet) and shall not exceed 3 times the minimum base dimension.

7.2.4 Castors shall be minimum 12.7 cm (5 inches) diameter with rubber or similar resilient tyres. They shall have positive wheel and swivel lock. Wheels shall be locked while in use.

7.2.5 Mobile tower scaffolds shall only be moved by pushing or pulling at the base. Force shall not be applied at a height greater than 1.37 meters (54 inches) above the floor level or base. No persons, equipment or materials shall be on the working platform or elsewhere on the structure whilst it is in motion.

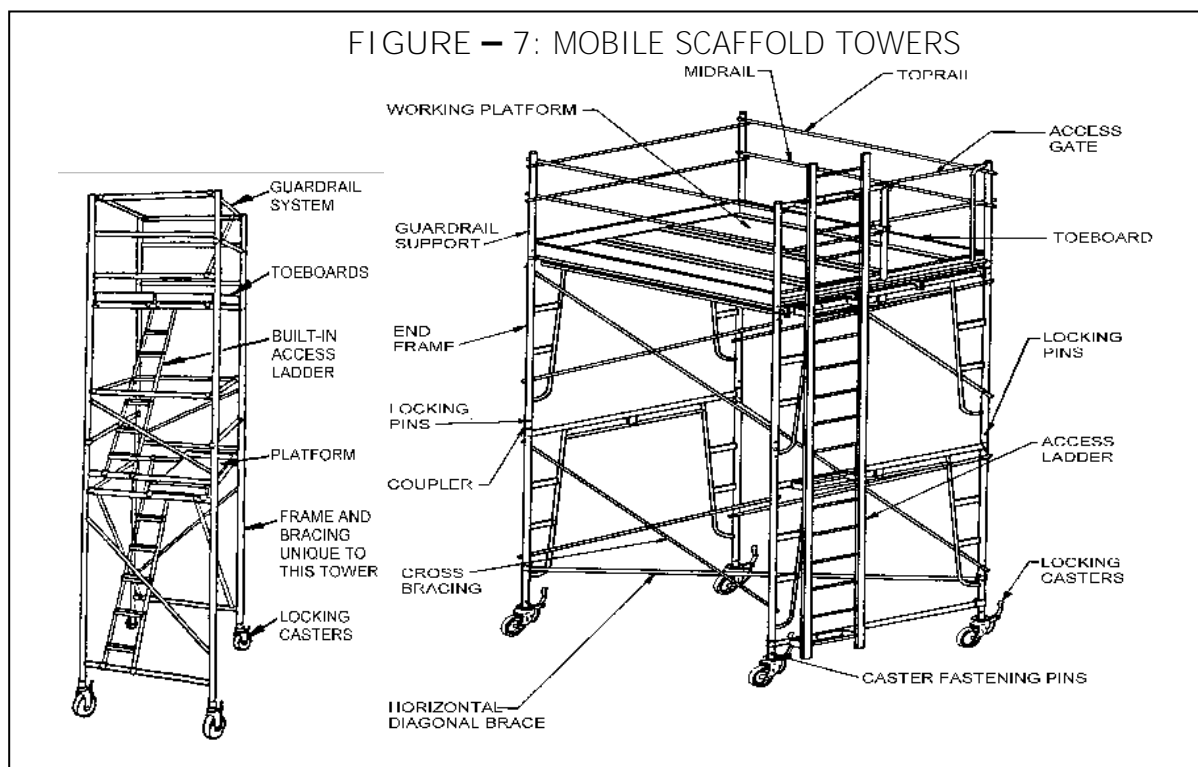
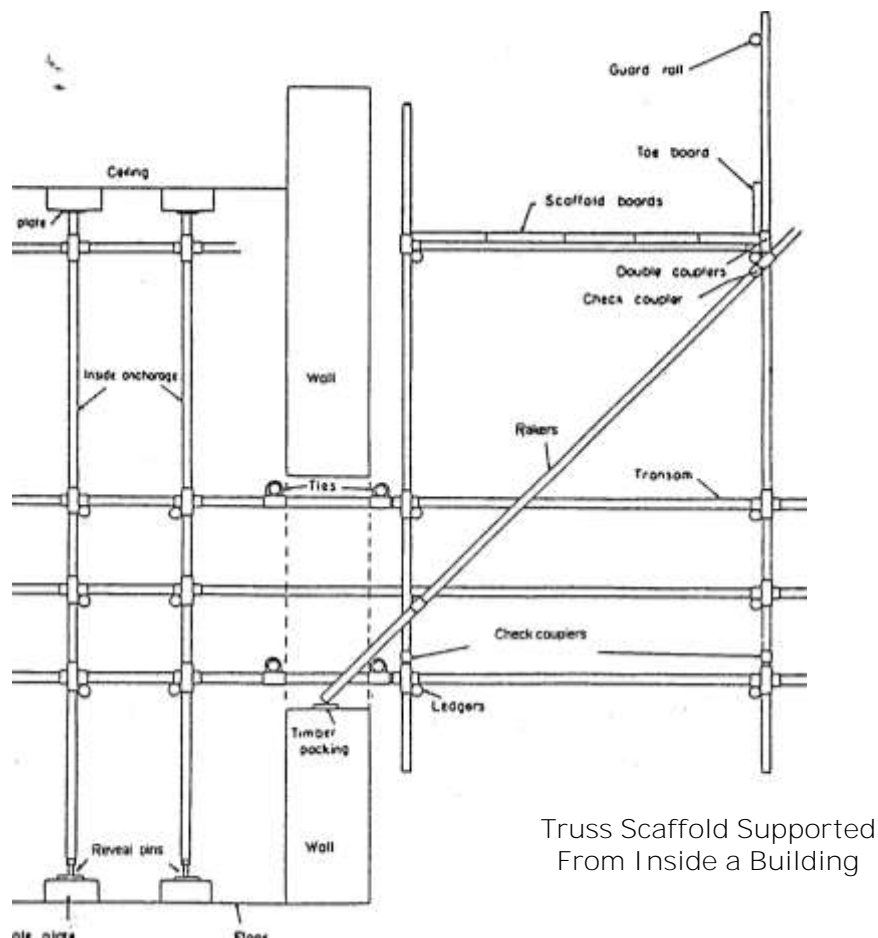
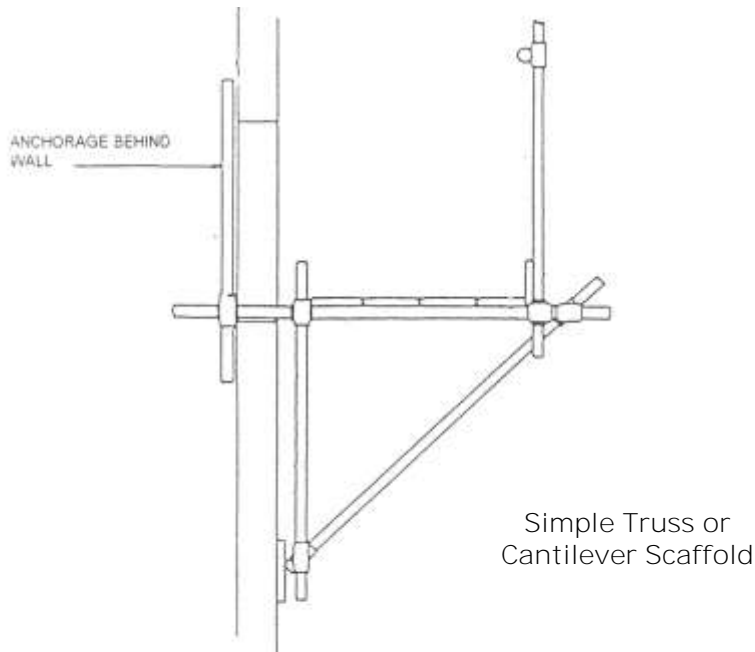




FIGURE – 8: CANTILEVER SCAFFOLD





### 7.3 CANTILEVER SCAFFOLD (TRUSS OR JIB SCAFFOLD)

A truss (also known as cantilever or jib) scaffold is cantilevered out from a building or structure and used where it is impracticable to erect standards bearing on the ground or other surface. It is a form of light independent tied scaffold, which is entirely dependent upon the building or structure for support and stability (See Figure-8 above).

Rakers (bottom diagonals, one for every standard) shall be secured to an outside ledger above the opening and to an inside ledger at a lower level. Rakers more than 3 meters (10 feet) in length shall be braced. The angle of rakers shall be no greater than 35 degrees from the vertical (i.e. horizontal span for a single raker is 1.83 meters (6 feet)).

Cantilever scaffold shall have only one working platform, with maximum height of 12.2 meters (40 feet) from truss to working platform.

### 7.4 SYSTEM SCAFFOLD

System scaffolding is also known as unit or frame scaffolding and is composed wholly or partly of prefabricated section. There are many types of system scaffolding available which vary greatly in design and method of erection (see Figure-9 below).

Construction common to all scaffolds (section 6.0 above) is applicable to system scaffolds. Care should be taken that it is erected on a sound base with standards (or equivalent units) vertical and ledgers (or equivalent units) horizontal.

Adjustable bases should be used with at least 1/3 threaded in. It should be adequately braced and securely tied. Diagonal bracing shall be used to provide rigidity. Standard scaffold tubes and couplers may be used for bracing. All connections on a scaffold level shall be secured before assembling next level.

System scaffold components of different manufacturers shall not be intermixed unless they are compatible.

### 7.5 FABRICATED TUBULAR FRAME SCAFFOLD

Members shall support own weight and at least 4 times maximum intended load. Diagonal bracing shall be used to secure vertical members. When brackets are used they shall not be bent or twisted from normal position.

Frame scaffold components of different manufacturers shall not be intermixed unless they are compatible. Typical frame scaffold is shown in Fig-10 below.



FIGURE – 9

## SYSTEM SCAFFOLD

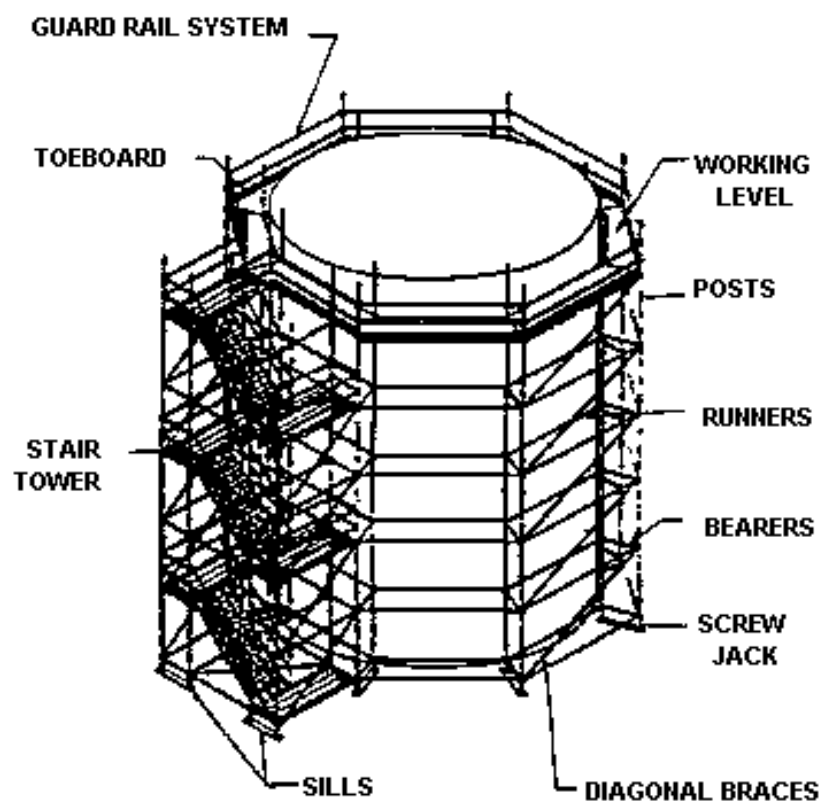
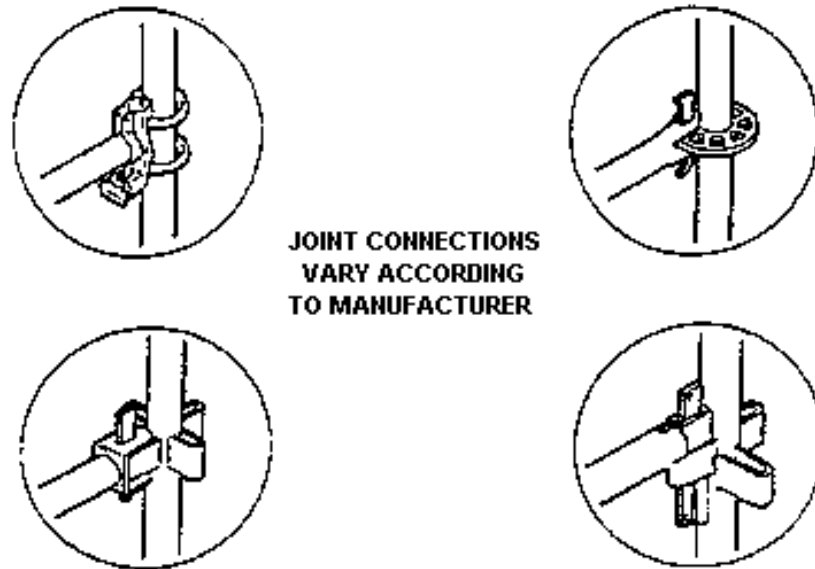






FIGURE – 10  
FABRICATED FRAME SCAFFOLD



## 7.6 BRACKET SCAFFOLD

This type of scaffold is used in Tank construction, etc. Metal brackets and straps shall be able to withstand own weight and 4 times the maximum weight. Bracket strap welding shall be as per IC-25 Welding Manual and certified by KNPC Inspection and Corrosion Division (or equivalent in PD and LM). Horizontal spacing of straps shall not exceed 8 feet. Brackets shall be vertical. Maximum 2 persons are allowed at a time between 2 brackets. Sample bracket scaffold is shown in Figure-11 below.

## 7.7 SLUNG SCAFFOLD (SUSPENDED SCAFFOLD)

A slung scaffold is suspended at a fixed height either below load bearing projecting brackets or beams or from the structural members of a roof or other overhead structure. The suspension is usually by scaffold tubes. Suspension may also be by lifting gear and wire ropes, which are not provided with the means of rising or lowering when in use but this type is not common in KNPC. Generally it is used for painting and other work of a light nature see Figure-12 below.





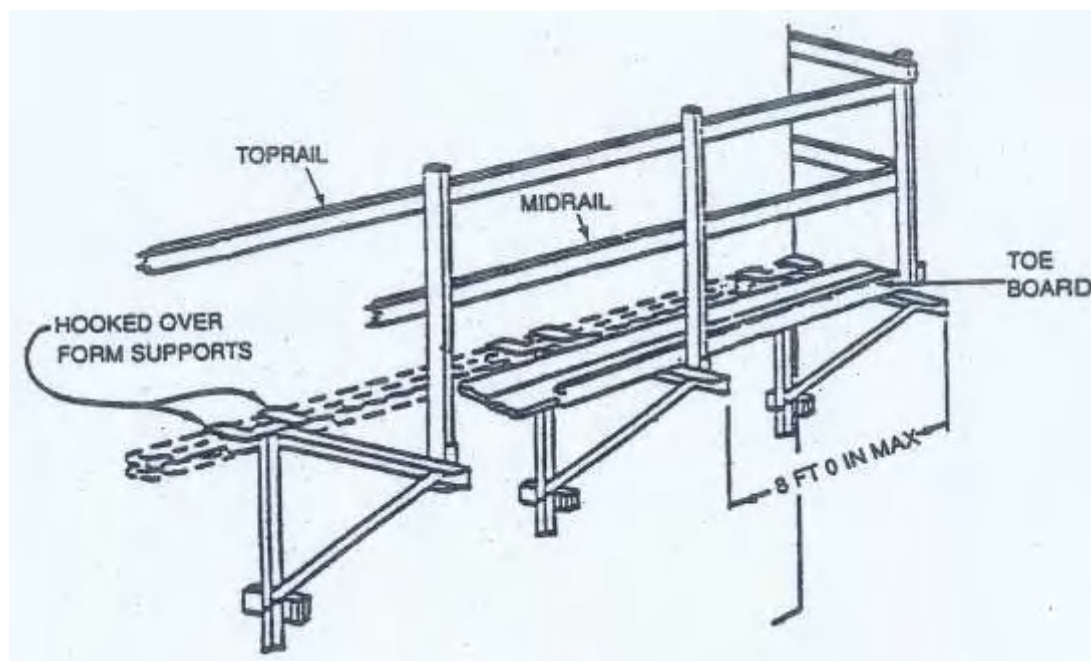
7.7.1 A slung scaffold shall only have a single working platform. Scaffold lashing must never be used as a means of suspension.

7.7.2 When slung scaffold is suspended by scaffold tubes from a roof, roof members or other structural members where scaffolding from below is impracticable, loading shall be as for light independent tied scaffold (see Appendix-B). Support tubes must be anchored to a fixed stable structure.

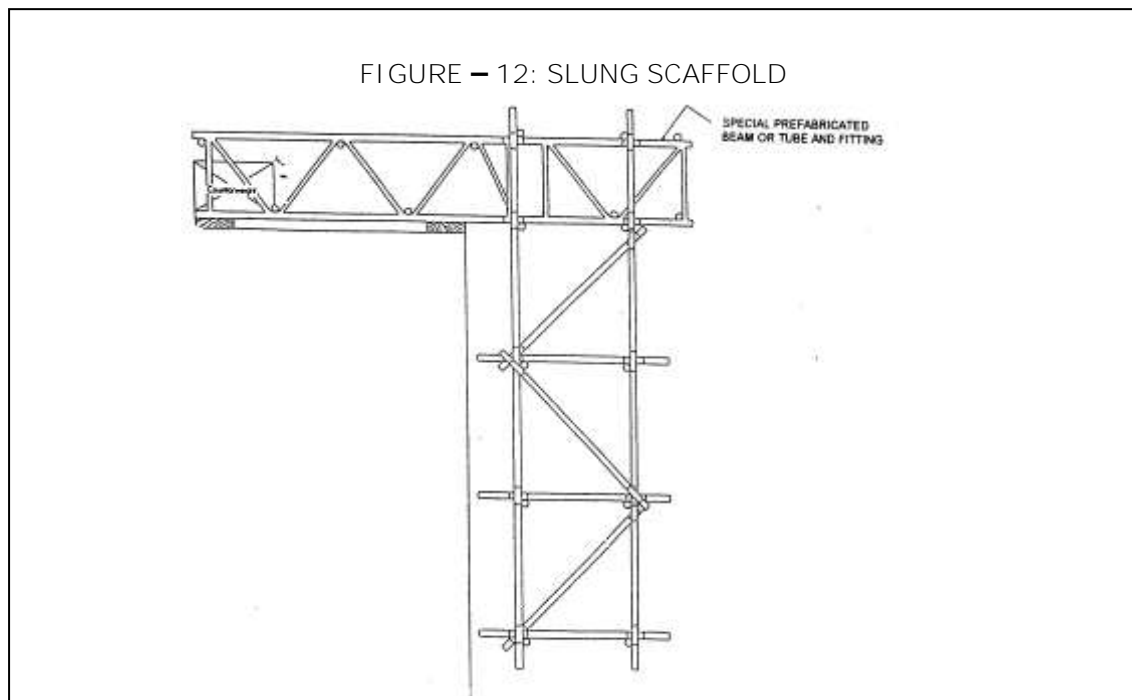
7.7.3 Check couplers (additional coupler) shall be employed at the top and bottom of suspension tubes.

7.7.4 Wherever possible vertical suspension tubes should be in one length. Where joints are necessary the tubes should be single lapped using at least two couplers or may be butted and lapped with a short length of tube.

FIGURE – 11  
BRACKET SCAFFOLD



- (1) The acceptable toprail and midrail material shall be 1-1/4" x 1-1/4" x 1/8" structural steel angle or 1" x 0.070" wall steel tubing or the equivalent.
- (2) Other types, sizes and arrangements of guardrail system construction shall be acceptable provided they are of sufficient strength to withstand a 200 pound force applied in any outward or downward direction, except upwards, without failure.



## 7.8 ADJUSTABLE SUSPENSION SCAFFOLDS

The scaffolding including hoists and wire ropes shall be tested and certified by KNPC approved third party, with the validity date clearly mentioned in the certificate. Executor shall ensure that certificate is available before use. The wire rope used shall meet a safety factor of 6. Supporting cable shall be protected from damage (ex. use of padding). Executor shall ensure that, the safe working load and date of checking are marked on the platform.

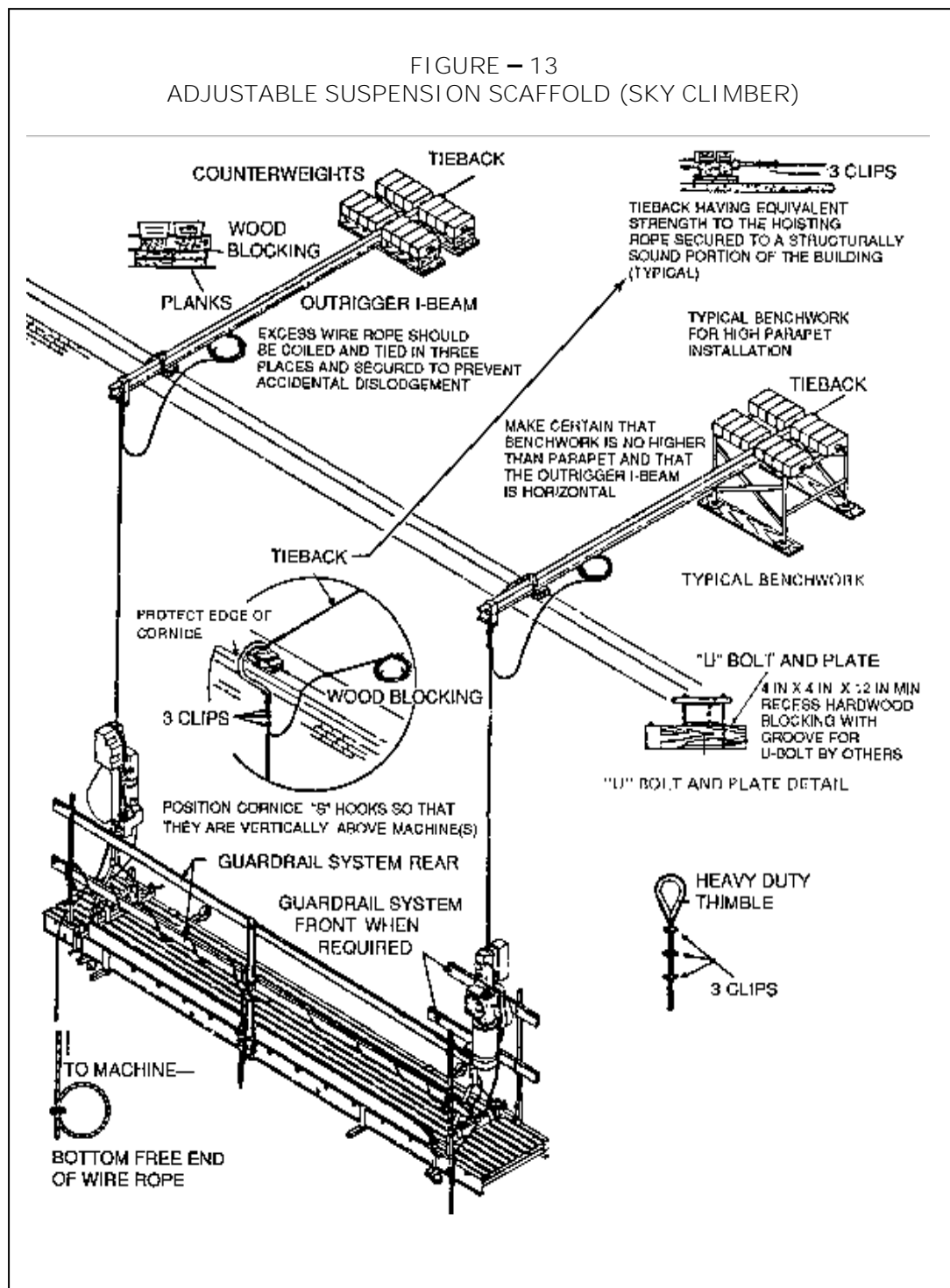
All hoists shall be provided with a primary brake and a secondary brake. The user shall wear safety harness, which is independently attached to a fixed anchor.

Adjustable Suspension Scaffolds can be suspended from a Single-Point or Two-Points. **Boatswain's Chair is a type of single point suspension scaffold** which can be manually propelled or powered and can be used only by a single person.

In Two-Point Adjustable Suspension Scaffold (Sky Climber/Swing Stage, see Figure-13 below), platform width shall be between 61 cm. and 92 cm. (2 ft. and 3 ft.). Guardrail and toe board shall be provided.



FIGURE – 13  
ADJUSTABLE SUSPENSION SCAFFOLD (SKY CLIMBER)



## 7.9 CRAWLING BOARD OR CHICKEN LADDERS

Crawling boards are used by roof workers (figure-14 below). Crawling boards shall be not less than 25.4 cm. (10 inches) wide and 2.54 cm. (1 inch) thick, having cleats 2.54 x 3.81 cm. (1 x 1 1/2 inches). The cleats shall be equal in length to the width of the board and spaced at equal intervals not to exceed



61 cm. (24 inches). Nails shall be driven through and clinched on the underside. The crawling board shall extend from the ridge pole to the eaves when used in connection with roof construction, repair, or maintenance.

A firmly fastened lifeline of at least three-quarter-inch rope shall be strung beside each crawling board for a handhold.

Crawling boards shall be secured to the roof by means of adequate ridge hooks or equivalent effective means.

FIGURE – 14  
CRAWLING BOARD (CHICKEN LADDER)



## 8.0 PORTABLE LADDERS

This section deals with portable ladders used independently or as a means of access to a scaffold platform. Fixed ladders as part of some building, plant structure or equipment are covered separately under KNPC Engineering Standard.

### 8.1 Portable Ladder Selection

8.1.1 Ladder should be industrial type and should be marked and identified by duty rating based on work load.

- The label markings shall have the name or other identification of the manufacturer, the rated load, ladder size, and month and year of manufacture.
- All markings shall be permanent and legible.



8.1.2 A ladder shall be of the proper length for the job to be done. If it is used as a means of access or as a working place it shall rise to a height of at least 1.07 meters (42 inches) above the landing place or above the highest rung to be reached by the feet of the person using the ladder.

8.1.3 Self-supporting (foldout or stepladder, figure 15-a below) and non-self-supporting (leaning into a wall/structure or vertically clamped into an scaffold, figure 15-b below) portable ladders must be able to support at least four times the maximum intended load, except extra-heavy-duty metal or plastic ladders, which must be able to sustain 3.3 times the maximum intended load.

8.1.4 Foldout or stepladders must have a metal spreader or locking device to hold the front and back sections in an open position when in use.

8.1.5 Ladder rungs, cleats, or steps must be parallel, level, and uniformly spaced when the ladder is in position for use. Rungs must be spaced between 25.4 and 35.6 cm. (10 and 14 inches) apart. Rungs must be so shaped that an employee's foot cannot slide off, and must be skid-resistant. For extension trestle ladders, the spacing must be 20.3 – 45.7 cm (8 - 18 inches) for the base, and 15.3 – 30.5 cm (6 - 12 inches) on the extension section.

8.1.6 Wooden ladders shall not be used in running process unit areas or where they are in contact with hot lines or surfaces.

8.1.7 Metal ladders, wooden ladders with metal reinforced stiles, and ladders which are wet shall not be used near electrical equipment with exposed live conductors.

## 8.2 Portable Ladders Inspection and Tagging

Independently used portable ladders shall be periodically inspected and tagged (i.e. **'safe for use' or 'not to be used'**). **This tagging requirement** excludes portable ladders that are intended or used as means of access to scaffold platform.

8.2.1 **The duly signed 'Ladder Inspection Tag' in Appendix-D** shall be permanently attached (by wire or lock) on each ladder to inform / warn users on its condition. Defective ladder should be immediately discarded or tagged not to be used.

8.2.2 KNPC supervisor / engineer (or his superior) shall inspect the ladder monthly and certify them by using the checklist in Appendix-E. If the ladder belongs to contractors, the required inspection and certification shall be **carried out by the concerned contractor's engineer / supervisor.**

8.2.3 Ladders shall be examined (by all users) before use for cracked or split stiles, missing, broken, loose, decayed or damaged rungs and splinters.



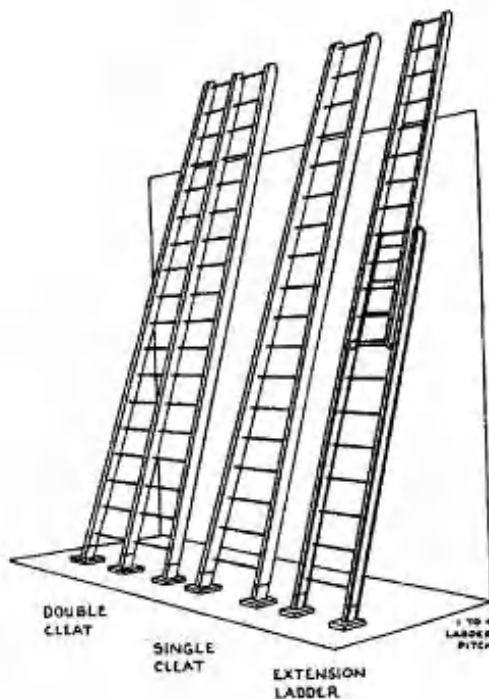
FIGURE – 15  
PORTABLE LADDERS



15-a  
Self-Supporting Ladder  
(Fold-Out or Stepladder)



15-b  
Non-Self Supporting Ladder  
(Straight/Leaning/Vertical Ladder)



15-c  
Typical Straight Ladders





### 8.3 Use of Portable Ladders

8.3.1 Where a ladder is carried single-handed, the front end should be kept high enough to clear person's heads and special care taken at corners and blind spots.

8.3.2 The stiles of a ladder shall be equally supported on a firm level surface. Boxes, bricks, barrels, etc., shall not be used as a means of support and under no circumstances shall wedges or other loose material be used as packing.

8.3.3 Ladders shall not be supported on their rungs and rungs shall not be used to support scaffold boards. Bottom of ladder shall rest on floor or platform.

8.3.4 Independently used ladders shall be set 30.5 cm. (1 foot) out of each 122 cm. (4 feet) of height, i.e. at an angle of 75 degrees to the horizontal. Both stiles of the ladder shall be evenly supported and securely lashed to prevent movement.

8.3.5 Attachable (straight) ladder to scaffold shall be vertically installed and clamped into a U-shaped ladder bracket. It should extend far enough above the deck to allow proper access. If no swing gate is provided, the ladder should be extended above the top guard rail.

8.3.6 Where extension ladders are used fully extended, the minimum overlap of sections shall be four rungs. Splicing or lashing ladders together to obtain an extension shall not be permitted.

8.3.7 Where securing at the upper resting place is impossible, a person shall be stationed at the foot to control a ladder not more than 6 meters (20 feet) in height.

8.3.8 Where there is a possibility of a ladder being struck by moving vehicles, a man should be placed on guard or space at the base of the ladder fenced off. Similarly if a ladder is erected close to a door, the door should be locked shut or secured in the open position with a man on guard.

8.3.9 Ladder landing places or platforms are required at every 6 meters (20 feet) of height and shall be provided with guardrails and toeboards. Holes in platforms through which ladders pass shall be as small as practicable.

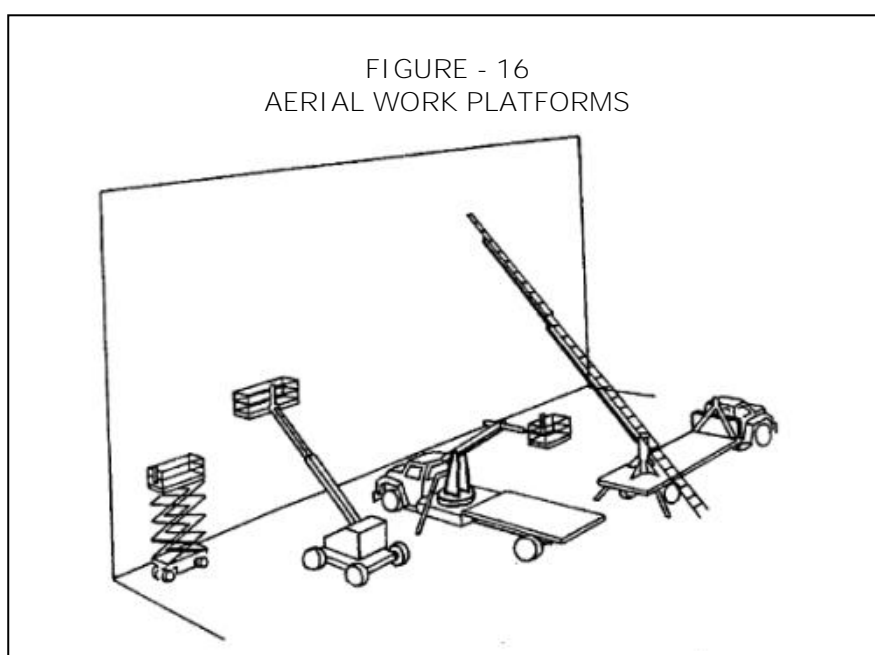
8.3.10 Tools and materials should not be carried by persons ascending or descending ladders except that tools may be carried in pockets or special belts, provided they do not impair movement. A 3-point contact (i.e. 2 feet + 1 hand or 2 hands + 1-foot) shall be maintained while ascending/ descending from a ladder. This safe work practice on the use of ladder shall be observed irrespective of whether it is a portable or fixed ladder.



8.3.11 A person working on or from a ladder must always have both feet on the rungs and a secure handhold. If the work to be done necessitates the use of both hands, a safety harness with lanyards appropriately secured should be used. Only one person should be on a ladder at a time.

## 9.0 AERIAL WORK PLATFORM

Aerial Work Platform (AWP) as shown in figure-16 below maybe self propelled, supported on a boom that is mounted on a truck or mobile unit, or it may consist of a ladder that is mounted that onto a base that rotates or swivels on a truck.



This aerial work platform (AWP) includes certain vehicle-mounted elevating and rotating platforms, namely, extensible boom platforms, aerial ladders, articulating boom platforms, vertical towers, and a combination of any of the above.

The following requirements and safe practices shall be met and enforced:

9.1 Powered aerial work platform shall have third party inspection certificate.

9.2 Only authorized, properly trained, qualified persons with Kuwait construction license shall operate a powered aerial work platforms.

9.3 Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.





9.4 A safety harness shall be worn with the lanyard attached to the boom or basket when working from an aerial work platform.

9.5 Boom and basket load limits specified by the manufacturer shall not be exceeded.

9.6 The brakes shall be set and when outriggers are used, they shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline provided they could be safely installed.

9.7 The insulated portion of an aerial work platform shall not be altered in any manner that might reduce its insulating value.

9.8 Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

9.9 An aerial lift truck shall not be moved when the boom is elevated in a working position with men in the basket, except for equipment, which is specifically designed for this type of operation in accordance with the operation manual.

9.10 Ladder trucks and tower trucks: Aerial ladders shall be secured in the lower traveling position by the locking device on top of the truck cab and the manually operated device at the base of the ladder before the truck is moved.

9.11 Articulating boom and extensible boom platforms are primarily designed as personnel carriers.

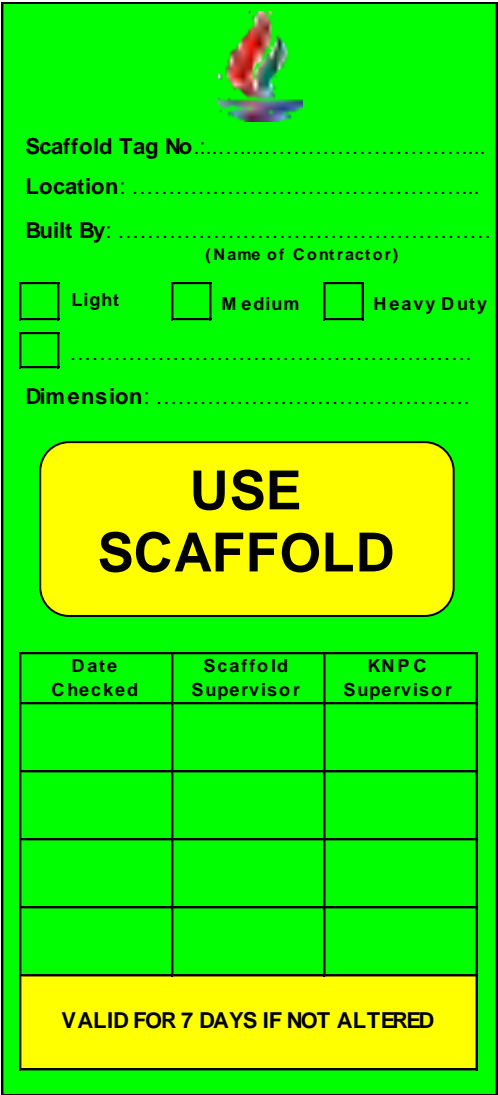
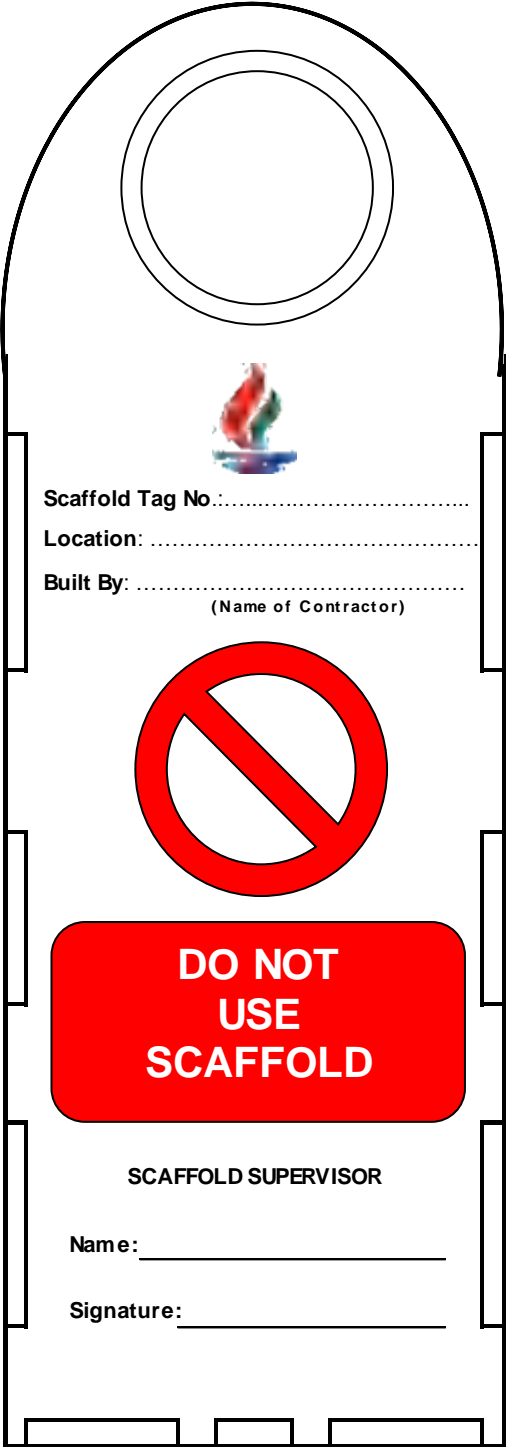
- They shall have both platform (upper) and lower controls.
- Upper controls shall be in or beside the platform within easy reach of the operator.
- Lower controls shall provide for overriding the upper controls.
- Controls shall be plainly marked as to their function.
- Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
- Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

## 10.0 AUDIT REQUIREMENTS

Compliance on the complete implementation of this guideline shall be regularly audited through the existing audit and inspection programs such as in the **'Safety Performance Audit'** that is being carried out by various disciplines and **Safety Engineer's routine site safety inspections.**



## APPENDIX - A SCAFFOLD TAGS (RED &amp; GREEN)

GREEN TAG			RED TAG (HOLDER)		
 <p>Green Tag Template: A vertical rectangular tag with a green background. It features a yellow header with a logo, followed by fields for Scaffold Tag No., Location, and Built By (Name of Contractor). Below these are checkboxes for Light, Medium, and Heavy Duty, and a Dimension field. A large yellow box in the center contains the text "USE SCAFFOLD". At the bottom is a table with 3 columns (Date Checked, Scaffold Supervisor, KNPC Supervisor) and 5 rows. A yellow footer box contains the text "VALID FOR 7 DAYS IF NOT ALTERED".</p>			 <p>Red Tag Holder Template: A vertical rectangular holder with a white background and a red border. It features a yellow header with a logo, followed by fields for Scaffold Tag No., Location, and Built By (Name of Contractor). Below these is a large red circle with a diagonal line through it. A large red box in the center contains the text "DO NOT USE SCAFFOLD". Below this is a section for the Scaffold Supervisor, including Name and Signature fields. At the bottom are three small rectangular slots.</p>		
20 cm			20 cm		
8 cm.			9 cm.		
GREEN TAG			RED TAG (HOLDER)		

Note: If your copy is black & white please visit KNPC HSE intranet to see original colors.



## Appendix - B

### MAXIMUM DISTRIBUTED LOADING ON SCAFFOLD PLATFORMS

Type Of Scaffold	No. Of Working Platforms In Use	Spacing Of Standards	Width Of Platform*	Area Per Bay	Permissible Loading	Max. Load Per Bay	Example Of Max. Load Per Bay **
Light duty independent tied	1	9 ft. (2.7m)	3 Boards	18 ft <sup>2</sup> (1.67 m <sup>2</sup> )	15 lb/ft <sup>2</sup> (73 kg/ m <sup>2</sup> )	270 lb (122.4 kg)	1 man, hand tools, paint or plaster
Light duty independent tied	1	9 ft. (2.7m)	4 Boards	27 ft <sup>2</sup> (2.5 m <sup>2</sup> )	15 lb/ft <sup>2</sup> (73 kg/m <sup>2</sup> )	405 lb (183.7 kg)	2 men, hand tools, paint or plaster
Medium duty independent tied	4	7 ft. (2.1m)	5 Boards	28 ft <sup>2</sup> (2.6 m <sup>2</sup> )	37 lb/ft <sup>2</sup> (180 kg/m <sup>2</sup> )	1036 lb (469.8 kg)	1 man, mortar on spot board and 130 bricks
Medium duty independent tied	4	8 ft. (2.4m)	5 Boards	32 ft <sup>2</sup> (2.97 m <sup>2</sup> )	30 lb/ft <sup>2</sup> (145 kg/m <sup>2</sup> )	960 lb (653 kg) 435.410	2 men, and 620 lb (280 kg) materials
Heavy duty independent tied	2 heavy duty 2 light duty	6 ft. (1.8 m)	5 Boards	24 ft <sup>2</sup> (2.22 m <sup>2</sup> )	60 lb/ft <sup>2</sup> (290 kg/m <sup>2</sup> )	1440 lb (653.0 kg)	1 man, mortar on spot board and 200 bricks
Heavy duty independent tied	2 hvy duty 2 light duty	6 ft. (1.8 m)	5 Boards	27 ft <sup>2</sup> (2.5 m <sup>2</sup> )	60 lb/ft <sup>2</sup> (290 kg/m <sup>2</sup> )	1620 lb (734.7 kg)	2 men, and 1280 lb (580 kg) materials
Heavy duty independent tied	2 heavy duty 2 light duty	6 ft. (1.8 m)	5 Boards	24 ft <sup>2</sup> (2.22 m <sup>2</sup> )	37 lb/ft <sup>2</sup> (180 kg/m <sup>2</sup> )	888 lb (402.7 kg)	2 men and 550 lb (250 kg) of materials
Put log	1	6 ft. (1.8 m)	5 Boards	24 ft <sup>2</sup> (2.22 m <sup>2</sup> )	56 lb/ft <sup>2</sup> (275 kg/m <sup>2</sup> )	1344 lb (609.5 kg)	1 man, mortar on spot board and 180 bricks
Put log	1	8 ft. (2.4 m)	5 Boards	32 ft <sup>2</sup> (2.97 m <sup>2</sup> )	37 lb/ft <sup>2</sup> (275 kg/m <sup>2</sup> )	1184 lb (536.9 kg)	1 man, mortar on spot board and 160 bricks

Notes: \* Assumption made: Width of board = 9 inches, Weight of a man = 168 lbs. (76.2 kg)  
 \*\* Assumption made: Weight of spot board and mortar = 70 lbs. (31.7 kg)  
 Weight of a brick = 6 lbs. (2.72 kg)



## KUWAIT NATIONAL PETROLEUM COMPANY

## APPENDIX-C



Kuwait National Petroleum Company

## SCAFFOLD INSPECTION CHECKLIST

SCAFFOLD REFERENCE NO.:	ERECTED BY (NAME OF CONTRACTOR):
SCAFFOLD LOCATION (UNIT / EQUIPMENT NO.):	TYPE OF SCAFFOLD (DUTY/ALLOWABLE LOAD, KG/BAY) ( ) LIGHT ( ) MEDIUM ( ) HEAVY ( ) .....

SN	INSPECTION ITEMS	* FINDINGS			RE - INSPECTION		
		1	2	3	1	2	3
<b>1.0</b>	<b>GENERAL REQUIREMENTS</b>						
1.1	Scaffold designed by a qualified person?						
1.2	Conform to the 4 to 1 base to height ratio requirement? If not conforming, secured to a fixed structure by use of ties?						
1.3	Scaffold components of the same make / fit together without force?						
1.4	Scaffold components marked with the Contractor's emblem and name?						
1.5	Scaffold materials in good condition, no visible defects?						
<b>2.0</b>	<b>FOUNDATIONS, BASE PLATES, SOLE PLATES AND CASTERS</b>						
2.1	Adequate and firm footing / anchorage?						
2.2	Stable base plate and with screw jack						
2.3	Proper sole plates on loose ground. Extended under two uprights?						
2.4	For mobile scaffold - are casters with lock and pinned into the frames or adjustment screws?						
<b>3.0</b>	<b>STANDARDS (VERTICAL TUBES/UPRIGHTS/COLUMNS/POSTS)</b>						
3.1	Plumb and braced?						
3.2	Joints not in the same lift. Arranged near ledgers as possible?						
3.3	Sound materials. No visible bents or defects?						
<b>4.0</b>	<b>LEDGERS (RUNNERS) AND BEARERS</b>						
4.1	Securely fixed to standards with proper couplers?						
4.2	Horizontally levelled?						
4.3	Staggered joints and not occurring in the same bay?						
4.4	Sound materials. No visible bents or defects?						
4.5	Are runners interlocked and coupled to each post (standards)?						
4.6	Are the bearers attached to both posts and does the inboard coupler rest on the runner coupler?						
4.7	Do the ends of the bearer tube have full contact with the clamp?						
<b>5.0</b>	<b>BRACINGS</b>						
5.1	Is transverse (or cross) bracing installed on the ends of the scaffold and every third set of posts (verticals) horizontally and every fourth runner vertical?						
5.2	Is longitudinal bracing installed at a 45 degree angle on both faces of the scaffold?						
5.3	Does the longitudinal bracing extend from the first (left hand) post to the extreme top of the scaffold?						
5.4	If the scaffold is longer than five posts (verticals), is a new line of bracing begun at every fifth post?						
5.5	Is bracing installed as close as possible to the node point?						
5.6	Are all brace connections secured?						
<b>6.0</b>	<b>TIES</b>						
6.1	Has the tie been installed at a horizontal member that supports the inner and outer legs?						
6.2	Has the vertical tie been installed at a height less than 4 times the minimum base dimension?						
6.3	Have vertical ties been repeated every 610 cm. (20 feet) or less for scaffolds that are 91.5 cm. (3 feet) or less in width?						
6.4	Have vertical ties been repeated every 793 cm. (26 feet) or less for scaffolds wider than 91.5 cm. (3 feet)?						
6.5	Are ties installed at each end of the scaffold and at horizontal distances not to exceed 910 cm. (30 feet)?						
<b>7.0</b>	<b>COUPLERS AND FITTINGS</b>						
7.1	Proper and right couplers/fittings used?						
7.2	Couplers / fittings in good condition?						



## KUWAIT NATIONAL PETROLEUM COMPANY

<b>SCAFFOLD REFERENCE NO.:</b>		<b>ERECTED BY (NAME OF CONTRACTOR):</b>					
<b>SCAFFOLD LOCATION (UNIT / EQUIPMENT NO.):</b>		<b>TYPE OF SCAFFOLD (DUTY/ALLOWABLE LOAD, KG/BAY)</b> ( ) LIGHT ( ) MEDIUM ( ) HEAVY ( ) .....					
SN	INSPECTION ITEMS	* FINDINGS			RE - INSPECTION		
		1	2	3	1	2	3
<b>8.0</b>	<b>DECKINGS (BOARDS / PLANKS)</b>						
8.1	Platforms fully planked with less than 2.54 cm. (1") between planks?						
8.2	All platforms at least 60 cm. (3 planks) wide?						
8.3	Platform's open sides less than 35.6 cm (14") from the face of the work?						
8.4	Platforms extending their end supports (overhang) no more than 30.5 cm (12")?						
8.5	Where planks are overlapped are they lapped over the supports?						
8.6	Are planks that rest on the bearer at other than a 90 degrees angle laid first?						
8.7	Are tools, materials, and debris removed from scaffold to prevent an accumulation?						
<b>9.0</b>	<b>ACCESS</b>						
9.1	Safe access been provided for all scaffold platforms?						
9.2	Rest platform provided every 6 meters (20 feet) of scaffold height?						
9.3	Ladders are clamped and positioned so as not to tip the scaffold?						
9.4	Ladders are of industrial type, in good condition, no bents / defects?						
9.5	Do rungs and steps of ladders line up vertically between the rest decks?						
9.6	Is the rung spacing uniform and no more than 43 cm (16 3/4")?						
<b>10.0</b>	<b>GUARDRAILS</b>						
10.1	Are guardrails (top and mid rails) installed on all open sides?						
10.2	Are top guardrails installed between 92 cm. to 114 cm.?						
10.3	Guardrails are fitted to the inside of standards (uprights)?						
10.4	Guardrails firmly clamped and secured?						
<b>11.0</b>	<b>TOEBOARDS</b>						
11.1	Have toeboards been installed to prevent falling objects?						
11.2	Are toeboards at least 15.2 cm. (6 inches)?						
11.3	Toe boards are secured properly by a clamp / clip?						
11.4	Toeboards are fitted to the inside of standards?						
<b>12.0</b>	<b>OTHERS</b>						

\* Findings: 1 - Either 'Meeting Requirement', 'Satisfactory' or 'Yes'  
2 - Either 'Not Meeting Requirement', 'Unsatisfactory' or 'No'  
3 - Not Applicable

**GENERAL COMMENTS:**

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\_\_\_\_\_

\_\_\_\_\_

DATE & TIME	NAME, EMPLOYEE NO. AND SIGNATURE BY SUPERVISOR (OR ABOVE)	
	CERTIFIED SAFE FOR USE BY SCAFFOLD CONTRACTOR	CHECKED BY KNPC MAINTENANCE / PROJECT CONSTRUCTION

**IMPORTANT:** CONTRACTOR AND KNPC SHALL CARRY-OUT NEW SCAFFOLD INSPECTIONS EVERY AFTER SEVEN DAYS AND SHALL COMPLETE ANOTHER INSPECTION CHECKLIST FOR THE APPROVAL ON THE CONTINUOUS USE OF THE SCAFFOLD.




## APPENDIX - D

FRONT SIDE

BACK SIDE



## APPENDIX - E

 Kuwait National Petroleum Company		
<b>PORTABLE LADDER INSPECTION CHECKLIST</b>		
Ladder Owner:		Ladder Storage Location:
Type of Ladder:    ( ) Self Supporting                      ( ) Non-Self Supporting		
SN	INSPECTION ITEMS	FINDINGS
1	Industrial Type Ladder?	
2	Markings are permanent and legible with the name of the manufacturer, rated load, ladder size, and month & year of manufacture.	
3	Base section (feet) slip resistant tread / pads secured to the foot	
4	Side rails, rungs or steps and platforms are free from cracks, bends and splits.	
5	Rungs, steps and platforms are corrugated, serrated, knurled, dimpled or coated with slip-resistant material.	
6	Weld-joints are free from undercuts and cracks	
7	Condition of rung / step connections to side rails	
8	Spreader braces and locks (for self supporting ladder) free from deformation and working properly.	
9	Condition of bucket shelves (for self supporting ladder)	
10	Rope and pulley (for multi-section non-self supporting ladder) free from defects and operating smoothly.	
11	Guide fittings and interlocks (for multi-section non-self supporting ladder) free from defects and operating smoothly.	
General Comments:		
Certified Safe for Use By: (Name & Signature by KNPC / Contactor Engr./ Supervisor)		Date & Time: