

COURSE: RIGGER INITIAL TRAINING - STAGE 1.

SCOPE AND APPLICABILITY:

The aim and objectives of the Rigger Initial Training Programmer are to provide the learner with knowledge of the rigging principles, general hazards and risks of rigging and lifting operations, an awareness of relevant legislation and regulation, and an opportunity to practice basic rigging operations following a lifting plan.

TARGET GROUP:

The target group for Rigger Initial Training Standard is personnel who have had little or no training and/or experience in rigging and lifting operations and wish to gain an Industry-recognized introductory certificate in rigging and lifting operations prior to undertaking further supervised workplace training.

REGULATIONS & STANDARDS

- OPITO 9088 – Rigger Initial Training Standard;
- OGP - Lifting and Hoisting Safety Recommended Practice;
- BS 7121-1:2016;
- ISO 12480-1:1997;
- HSE – UK;
- LOLER – ACOP;
- CCOHS – Canadian Centre for Occupational Health and Safety;
- ILO - Occupational Hazards Datasheets for Crane Operator;
- IHSA - Hoisting and Rigging;
- Health and Safety at Work etc. Act 1974 (HASAWA).

COURSE CONTENT:

1. The Role of the Rigger
 - 1.1. The Role and Responsibilities of a Rigger
 - 1.1.1. Rigger responsibilities
 - 1.1.2. Typical functions responsible for installation
 - 1.1.3. OIM
 - 1.1.4. Site manager
 - 1.1.5. Rigging supervisor
 - 1.1.6. Banksman responsibilities
 - 1.1.7. Slinger responsibilities
 - 1.1.8. Difference between banksman, slinger and rigger
 - 1.1.9. Crane operator responsibilities
 - 1.1.10. Competent person responsibilities
 - 1.1.11. Hierarchy in lifting operations
 - 1.1.12. Reporting structure for a rigger
 - 1.2. Typical Installation/Site Responsible Roles
 - 1.3. Typical Roles Involved in Lifting Operations and Their Main Duties
 - 1.4. Typical Reporting Structures for the Rigger
2. Introduction to Lifting Operations
 - 2.1. Relevant Regional Legislation and Regulations Related to Lifting and Rigging Operations
 - 2.1.1. Employer and employee duties under health and safety regulations
 - 2.1.2. Regulations for the planning of lifting operations
 - 2.1.3. Regulations for the maintenance of lifting equipment
 - 2.1.4. Regulations which require a risk assessment to be undertaken for the lifting operation
 - 2.2. Control of Work Systems
 - 2.2.1. Permits
 - 2.2.2. Procedures
 - 2.2.3. Toolbox talks
 - 2.3. Typical Hazards Associated with Lifting and Rigging Operations
 - 2.3.1. Dropped loads or striking adjacent equipment, structures or machinery
 - 2.3.2. Working at heights
 - 2.3.3. Restricted access working
 - 2.3.4. Working near live electrical equipment and machinery
 - 2.3.5. Working near live process equipment and machinery
 - 2.3.6. Working near or within multiple worksite areas
 - 2.3.7. Chemical hazards
 - 2.3.8. Environmental hazards
 - 2.3.8.1. Wind
 - 2.3.8.2. Rain, snow or ice
 - 2.3.8.3. Visibility
 - 2.3.9. Dynamic forces affecting lifting and rigging operations
 - 2.3.10. Hand and finger injuries
 - 2.3.11. Misuse of equipment used in lifting operations
 - 2.3.12. Lifting from structural steel not designed for lifting purposes

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- 2.4. Correct Manual Handling Techniques
- 2.5. Adequate access, Working Space and Lighting
- 2.6. Personal Protective Equipment (PPE) Relevant to the Rigger
 - 2.6.1. Hard hat
 - 2.6.2. Safety glasses or goggles
 - 2.6.3. Gloves
 - 2.6.4. Safety shoes or boots
 - 2.6.5. Harnesses and lanyards
 - 2.6.6. Respirators
 - 2.6.7. Hearing protection
3. The Principles of Rigging and Lifting
 - 3.1. Common Rigging and Lifting Terminology
 - 3.1.1. SWL (Safe Working Load)
 - 3.1.2. WLL (Working Load Limit)
 - 3.1.3. Difference between SWL and WLL
 - 3.1.4. Lifting equipment
 - 3.1.5. Lifting appliances
 - 3.1.6. Lifting accessories
 - 3.1.7. Factors of safety
 - 3.1.8. Center of gravity
 - 3.1.9. Load Safety
 - 3.2. The Purpose of Inspections and Thorough Examinations
 - 3.2.1. Thorough examinations
 - 3.2.2. Inspection before starting operation
 - 3.3. Temporary Structural Supports for Lifting Equipment
 - 3.3.1. Scaffolding frames
 - 3.4. Load Characteristics Which Effect Complexity
 - 3.4.1. Size
 - 3.4.2. Uneven weight distribution
 - 3.4.3. Fragile load
 - 3.4.4. Difficult to access lifting points
 - 3.4.5. Dynamic loading
 - 3.5. The Effects of Resultant Tension on Lifting Equipment
 - 3.5.1. Tension in the sling legs during lifting operations
 - 3.6. Types of Equipment Used in Lifting Operations
 - 3.6.1. Chain blocks
 - 3.6.2. Lever hoist
 - 3.6.3. Snatch blocks
 - 3.6.4. Wire rope hoist
 - 3.6.5. Beam clamps
 - 3.6.6. Beam trolley
 - 3.6.7. Master links
 - 3.6.8. Shackles
 - 3.6.9. Chain slings
 - 3.6.10. Wire rope slings
 - 3.6.11. Fibre slings
 - 3.6.12. Eye bolts and eye nuts
 - 3.6.13. Swivel hoist rings
 - 3.6.14. Turnbuckles
 - 3.6.15. Jacks
 - 3.6.16. Machine skates
- 3.7. Anchor Points
 - 3.7.1. Structural steel
 - 3.7.2. Scaffold lifting frames
 - 3.7.3. Runway beams
 - 3.7.4. Pad eyes
4. How to Prepare for the Lifting Operation
 - 4.1. Risk Assessment
 - 4.1.1. The information contained in a risk assessment for lifting operations
 - 4.1.2. How to use a risk assessment
 - 4.1.3. Qualitative risk assessments
 - 4.1.4. Quantitative risk assessments
 - 4.1.5. Generic risk assessments
 - 4.1.6. Site-specific risk assessments
 - 4.1.7. Dynamic risk assessments
 - 4.2. Lifting Plan
 - 4.2.1. The elements of a lifting plan
 - 4.2.2. Routine lifts and non-routine lifts
 - 4.2.3. Key information included in a lifting plan
 - 4.2.3.1. Lifting equipment
 - 4.2.3.2. Load weight and center of gravity
 - 4.2.3.3. Personnel
 - 4.2.3.4. Site conditions
 - 4.2.3.5. Rigging and securing
 - 4.2.3.6. Communication
 - 4.2.3.7. Emergency procedures
 - 4.2.4. Examples of lifting plans
 - 4.2.4.1. Overhead crane lifting plan
 - 4.2.4.2. Forklift lifting plan
 - 4.2.4.3. Scaffolding lifting plan
- 4.3. Lifting and Rigging Communication Methods and Protocols
 - 4.3.1. Hand signals
 - 4.3.2. Two-way radios
 - 4.3.3. Examples of signaling
 - 4.3.3.1. Hoist
 - 4.3.3.2. Lower
 - 4.3.3.3. Use main hoist
 - 4.3.3.4. Use whip line
 - 4.3.3.5. Raised boom
 - 4.3.3.6. Lower boom
 - 4.3.3.7. Move slowly
 - 4.3.3.8. Raise the boom, lower the load
 - 4.3.3.9. Lower the boom, raise the load
 - 4.3.3.10. Swing
 - 4.3.3.11. Stop
 - 4.3.3.12. Emergency stop
 - 4.3.3.13. Travel
 - 4.3.3.14. Dog everything
 - 4.3.3.15. Travel (one track)
 - 4.3.3.16. Travel (both tracks)
 - 4.3.3.17. Extend boom
 - 4.3.3.18. Retract boom
 - 4.3.4. Examples of efficient communication

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- 4.4. Procedures to Establish the Load Bearing Capabilities of Structures
 - 4.4.1. Site survey
 - 4.4.2. Structural drawings
 - 4.4.3. Suspended loads weight calculation
 - 4.4.4. Calculation of load capacity of structures
 - 4.4.5. Establish safe working loads
 - 4.4.6. Mark safe working loads
 - 4.4.7. Carrying out load tests
 - 4.4.8. Record and review results
- 4.5. Escape Routes
- 4.6. Identification Tags
 - 4.6.1. How to use identification tags
 - 4.6.1.1. Identification tag location
 - 4.6.1.2. Tag reading
 - 4.6.1.3. Check the equipment against the tag
 - 4.6.1.4. Follow any instructions or restrictions
- 4.7. Colors of Fiber Slings
- 4.8. Color Coding
 - 4.8.1. Application of color codes
 - 4.8.2. Avoiding conflicting colors in color coding
- 4.9. Determining the Weight of a Load
 - 4.9.1. Methods and sources that can be used to determine the weight of a load
 - 4.9.1.1. Manufacturer's manual
 - 4.9.1.2. Weighing scales
 - 4.9.1.3. Load cells
 - 4.9.1.4. Engineering calculations
- 4.10. Pre-use Inspection of Lifting Equipment
 - 4.10.1. Pre-use checks
 - 4.10.1.1. Review the equipment manual
 - 4.10.1.2. Visual inspection
 - 4.10.1.3. Check the load capacity
 - 4.10.1.4. Check the control system
 - 4.10.1.5. Test the emergency stop
 - 4.10.1.6. Check the safety features
 - 4.10.1.7. Check the power source
 - 4.10.1.8. Record the inspection
- 4.11. Position and Install the Lifting Equipment for the Lifting Operation
 - 4.11.1. Conduct a risk assessment
 - 4.11.2. Select the appropriate lifting equipment
 - 4.11.3. Determine the lifting points
 - 4.11.4. Determine the rigging configuration
 - 4.11.5. Position the lifting equipment
 - 4.11.6. Attach the lifting equipment to the load
 - 4.11.7. Test the lifting equipment
 - 4.11.8. Lift the load
 - 4.11.9. Monitor the lift
 - 4.11.10. Lower the load
- 4.12. Parts Affected by the Lifting Operation
 - 4.12.1. Importance of parts affected by the lifting impending and ongoing operation being aware
- 4.13. Accounting for Adverse Environmental Factors
 - 4.13.1. Safety
 - 4.13.2. Equipment reliability
 - 4.13.3. Environmental protection
 - 4.13.4. Legal compliance

COURSE DESIGN:

Theoretical – 8 hours.

Practical – 16 hours.

TOTAL: 24 hours.

PREREQUISITE(S):

There are no prerequisites for Rigger Initial Training.

MINIMUM/MAXIMUM NUMBER OF DELEGATES

The maximum number of learners for the Rigger Initial training program is **eight**.

There is a minimum of two participants to constitute team, when undertaking practical exercises

The following ratios indicate the maximum number of learners to be supervised by one instructor at any one time during each activity.

Theory 1:8 [Instructors: Learners]

Practical 1:4 [Instructors: Learners]

MAIN SAFETY ISSUES:

- Hazards associated with lifting and rigging operations, such as dropped loads, working at heights, restricted access working, working near live electrical or process equipment, chemical hazards, and environmental hazards like wind, rain, snow, or ice;
- Proper manual handling techniques to avoid injuries, such as hand and finger injuries, caused by misuse of equipment used in lifting operations or lifting from structural steel not designed for lifting purposes;
- Adequate access, working space, and lighting to ensure safe lifting operations;
- Personal protective equipment (PPE) relevant to the rigger, such as hard hats, safety glasses or goggles, gloves, safety shoes or boots, harnesses and lanyards, respirators, and hearing protection;
- Regulations and guidelines related to lifting and rigging operations, including those for the planning and maintenance of lifting equipment, and the need for a risk assessment to be undertaken for each lifting operation;
- The importance of inspections and thorough examinations of lifting equipment before starting operations, and the use of temporary structural supports for lifting equipment;
- Load characteristics that affect complexity, such as size, uneven weight distribution, fragile loads, difficult to access lifting points, and dynamic loading;
- The effects of resultant tension on lifting equipment, including tension in the sling legs during lifting operations;
- Types of equipment used in lifting operations, such as chain blocks, lever hoists, snatch blocks, wire rope hoists, beam clamps, beam trolleys, master links, shackles, chain slings, wire rope slings, fiber slings, eye bolts and eye nuts, swivel hoist rings, turnbuckles, jacks, and machine skates;
- Proper rigging terminology, safe working load (SWL), working load limit (WLL), lifting equipment, lifting appliances, lifting accessories, factors of safety, center of gravity, and load safety;
- The hierarchy of personnel involved in lifting operations, their roles and responsibilities, and the reporting structure for a rigger;
- The need for control of work systems, such as permits, procedures, and toolbox talks, to ensure safe lifting operations.
- All equipment must be maintained, inspected and tested in accordance with applicable legislation and standards. Certificates and maintenance schedules should be always available.

REQUIRED EQUIPMENT:

- As a minimum, the following equipment is required to meet the stated content of the Rigger Initial Training:
 1. Appropriate PPE e.g., safety boots, safety helmet, eye protection, hearing protection and gloves;
 2. A variety of loads to be lifted e.g., structural steelwork, steelwork assemblies, pipework assemblies, plant and equipment, loads with an offset center of gravity etc.;
 3. Examples damaged lifting equipment and lifting accessories;
 4. Appropriate lifting equipment typically found in a workplace rigging loft, to include:
 - Chain blocks;
 - Lever hoists;
 - Snatch blocks;
 - Wire rope hoist (Tirfor);
 - Beam clamps (universal and standard);
 - Beam trolley;
 - Master links;
 - Shackles;
 - Chain Slings;
 - Wire rope slings;
 - Fiber slings;
 - Eye bolts and Eye nuts;
 - Swivel hoist rings;
 - Turnbuckles;
 - Jacks*;
 - Machine skates*.

* Where specific equipment is unavailable due to regional differences in operations or practice, appropriate substitutes may be implemented. Where alternative equipment is used it must allow for the same lifting operation outcome to be completed.

- Note: Damaged lifting equipment - purposely used for specific assessment criteria by the approved center - must be securely controlled and clearly identifiable to the assessor and center support staff.

PROCEDURE FOR PRACTICAL EXERCISES:

- Training area(s) must be suitable to enable each learner to participate fully;
- Practical training areas so designed to accommodate the full working area of the rigging activities and to enable each learner to participate fully.
- All facilities must be maintained and where appropriate, inspected and tested in accordance with current standards/legislation;
- Working to a detailed lifting plan and a risk assessment;
- Perform lifting equipment pre-use inspections and how to establish SWL, WLL and current certification;
- Correctly and safely positioning and installing lifting equipment prior to starting the lifting operation;
- Moving loads using specific lifting techniques such as: lifting, moving, lowering and landing unbalanced loads;
- Ensuring that the load is moved at the minimum height necessary to avoid exceeding the safe range of the equipment and avoiding obstacles and locate the load in its final position and lowering the load at the final location i.e. positioning the load in the exact location and in the correct orientation;
- De-rigging and removing all lifting equipment from the lifting operation restoring the site work area;
- Safe methods of disconnecting the load from lifting equipment and lifting accessories;
- Best practice communication methods and protocols prior to and during lifting activities.

CERTIFICATION:

Learners successfully completing the Initial Training Programmer will be awarded an Rigger Initial Training certificate; this entitles the learner to progress onto supervised workplace experience.

CERTIFICATE VALIDITY PERIOD:

2 years.

Note: The Rigger Workplace Experience Logbook must be completed and Rigger Competence Assessment must be undertaken during this two-year period if the learner wishes to achieve an approved Rigger certificate of competence.