

Company profile

Edwards Heavy Lift is a specialist Engineering Consultancy that can provide you with all the assistance you might need relating to temporary & permanent works design, construction methodology, heavy lift and transport engineering.

Our experience

Edwards Heavy Lift has the experience to efficiently and effectively assist you. We have extensive capability and experience in marine structure and infrastructure construction including ports, barges, jetties, piers and berths. Our innovative engineering services cover all aspects of port handling and waterfront infrastructure.

Our engineering capability combined with our construction experience allows us to provide innovative designs combined with cutting edge constructability and methodology.

Our team of industry specialists with expertise and experience in construction methodology, temporary works – concept and functional design, advanced sea-state analysis (wind, waves and tides which impacts productivity and plant selection), logistics systems, plant selection, marine transport logistic (people and materials) and fabrication facilities to reduce project risks and deliver cost effective solutions.

Our specialist team can engineer, plan and execute large scale lifting and transport projects.

The engineering team uses industry-leading software, hardware and procedures to produce detailed feasibility studies, execution plans and calculations and ensure every consideration has been addressed, from conception to completion.



“Our aim is to be recognised as the leading **specialist engineering consultancy** in the business.”



Construction methodology
Construction systems
Structural design
Temporary and permanent works
Steel, concrete & composites



Lift plans & lifting design
Heavy transport plans
Stability & structural analysis
Technical drawings, rendering & 3D animation



Tender documentation
3rd Party review - lift plans, rigging & structural
Road & civil design
Marine design
Motion analysis & Barge stability
Lashing, support frames / cradles & cyclone tie-down



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Services

We can assist with the following services and more:

- Lift plans / lift studies
- Rigging design, selection and inspection
- Modularisation and Module Design
- Heavy transport plans
 - Lashing, stability & structural analysis
 - Route selection
 - Road design
- Feasibility Studies
- Jacking
- Loadout, Materials Offloading Facilities, Trans-shipment
- Tender documentation
 - Cost estimates
 - High quality methodology submissions
- Technical drawings plus presentation quality rendering & 3D animation
- Construction methodology
 - We have extensive experience covering all aspects of civil, heavy industrial, mining and marine infrastructure
- Marine design
 - Motion analysis, Barge stability and fit-out
 - Lashing / cyclone tie-down / sea-fastening
 - Shipping cradles / lashing
 - Traveller, temporary jetties & other construction systems
- Civil design
 - Ground Bearing Capacity analysis
- Structural design
 - Wharf Capacity
 - Specialised lifting equipment, spreaders, triangles, bog mats
 - Temporary works
- Project Management and Site Management
- Independent 3rd party review
 - Lift plans, rigging & structural design
 - Certified by CPEng / NPER / RPEQ
 - Expert Witness Reports
 - Client Representation and Surveillance



Scope

The lift training requested includes the following:

- A pre-test
 - A reference training document will be supplied for self-paced learning if participants need refreshing / some guidance for pre-requisite maths skills.
- Two-day face-to-face course

Each course includes:

- Hard copy reference and assessment handbook and other supporting materials
- Assessment (and answers provided as reference after the course).
- Supply of a certificate (A4) with name and completion details

The following clarifications apply:

- The price is based on Edwards Heavy Lift providing the Client hard copies of the course content under the following conditions:
 - Edwards Heavy Lift retains all intellectual property rights and is free to use the training materials in any manner.
 - McConnell Dowell does not provide the training materials to any third party or allow their employees or former employees to distribute the training material.
- The course content is training material only. McConnell Dowell accepts the training does not guarantee or assess competency. McConnell Dowell accepts there may be errors or omissions in the training material and competent persons are required to design and review any lifting operations. Mentoring can be provided if requested.

The following items are excluded from the scope of works:

1. Review / development by training experts / educators. Price is based on development by Edwards Heavy Lift (technical specialists) only.
2. Development and/or provision or integration with a learning management system. i.e. training materials provided as is.
3. Site visits / meetings
4. Mentoring of participants

Client to provide:

- Training room with whiteboard and screen
- Laptops for participants with Liccon installed
- Food for participants
- Booking in / liaison with participants about date / time / location of course
- Email address of participants to allow them to log in to access pre-test / reference materials
- Purchase Order for each participant / invoicing details prior to commencement. (i.e. which business unit / details invoice will go to and any split invoicing requirements).



Course content

The course content is regularly developed and is subject to change. However, an overview of the proposed content is as follows:

1. Pre-test

The pre-test is proposed to cover the following basics:

- Trigonometry
- Vectors
- Moment equation
- Algebra

Essentially the pre-test and associated self-paced reference document is to ensure participants understand and can perform the essential mathematical building blocks that is necessary to be able to successfully participate in the training.



2. Course contents

The below table outlines the course content for the course sessions:

Introduction
<ul style="list-style-type: none">• Welcome• Trainer introduction & personal introductions. Name, role, interest / background in cranes• What is the training and how it fits in with McConnell Dowell Procedures• What we don't cover:<ul style="list-style-type: none">○ Documentation & certification for lifting equipment and lifting accessories – refer procedure○ Crane operating, rigging or dogging○ Maintenance and inspection for lifting equipment and lifting accessories
Equipment overview & terminology
<ul style="list-style-type: none">• Cranes• Transport
Basic safety information
<ul style="list-style-type: none">• Safety basics• Applicable Standards & Codes of Practice• Load stability demonstration
Forces
<ul style="list-style-type: none">• Units• Vector & moment basic equations• Worked example: Match with rigging arrangement on model.• Worked example: Calculate centre of gravity of item
Ground conditions
<ul style="list-style-type: none">• Calculating outrigger and track loads<ul style="list-style-type: none">○ First principles overview○ Worked Example: First principles – All Terrain○ Worked Example: Software – Liccon with LTRI00• Dynamic loads: Wind, slew, hoist• Track contact area• Worked example: Steel plate / timber strength
Wind loads



- Allowable wind speeds
- Reducing wind speed for load surface area

Rigging overview

- Types: Chain, wire rope, synthetic rope, synthetic rope, sheave, shackle, sync hoist, chain block
- Pros / cons of various rigging types
- Calculating sling tensions
- Worked example: TBA

Skew load factor & static indeterminacy

- Overview
- Example: Four lift points in line on spreader
- Model example: Skew load factor
- Model example: Triangle versus sheave to a common point

Chains

- Overview: Grade, shortener types
- How to read capacities
 - Reeved, basketed, sling angle etc
- D/d requirements
- Specific applications
 - Two leg chain into single shackle
 - Two leg chain into equaliser triangle
 - Two leg chain back hooked into ring

Wire rope

- Overview: Grade, terminations, types
- How to read capacity tables
- D/d requirements load & end fitting
- Specific applications

Synthetic round slings

- Overview: Grade, terminations, types
- How to read capacity tables
- D/d requirements load & end fitting
- Specific applications

Shackles



- Overview: Grade, types
- Side loading
- Specific applications
 - Remote release, Piling

How to read a load chart

- Overview
- Worked example: All Terrain
 - Deductions (fly)
 - Minimum hook block size
 - Boom sequence
 - Counterweights, outriggers, quadrant

Lift planning basics

- Worked example: Boom & load clearance
 - Provide building dimensions & crane position. Class work out minimum boom length. All terrain. If everyone gets the wrong answer – repeat with crawler.
- Worked example: Head height
 - 3 charts one too small, one has capacity but wrong boom length; one can do with correct boom.
- Site access / egress
- Space to build boom, cwt trucks, assist cranes
- Tail swing
- Dual crane lifts
- Public areas / exclusion zones

Lift planning datasheets / documentation

- General overview
- Required content and attachments
- Complete a lift plan

Theory test

- Theory test covering course content

