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AFFFA
Project Transportation Management
PART II
Objective:
Once the freight forwarder has size up the cargo, the next process would be to ensure that the loading port has the facility to handle the cargo or goods. In this sections we will also discuss on the hazards working around cranes, shipment via rail transportation and also RoRo vessel.
Preparation of the Site at the Loading Port

1. Is there sufficient space at the wharf apron to keep the cargo?

2. Many smaller ports may not have the required strength to keep stationary heavy load at the wharf side;

3. Many wharfs are designed with an average load factor of some 3 tons per sq. m. for moving loads; [in Malaysia, container wharf is generally designed with a pile-head strength of 150 ton]
4. Storing away from the wharf apron will mean double shifting or handling of cargo; incurring additional costs.

5. Is the loading-ship equipped to lift the heavy-lift with her on board crane/s?

6. If not, is shore crane available at the port?

7. Shore cranes that are normally mobilized from outside the port premises involve additional cost of mobilization;

8. Though many larger ports may have modern quay container cranes that can offer an alternative to mobile cranes.
The Changing Size of Quay Cranes since containerization in the late 60s to date

Source: cranetodaymagaine.com
Latest Quay Crane in comparison with the common mobile shore crane
Cargo Transportation

Working on the wharf Apron: with space limitation

Courtesy: en‘wikipeidia.org
Cargo Transportation

Using Ship Cranes
Can be cheaper when
Compared to mobile
Shore cranes

Courtesy: worldmaritimeneews.com
Cargo Transportation

Working at Wharf Apron with Twin Shore Mobile Cranes

Courtesy: whytecranes.com
Cargo Transportation

Floating Crane Working Along-side Wharf

Courtesy: Media Gallery USA
Small narrow wharf apron; many Ports still operate with such Facilities: Designed with rather limited tolerance for heavy loads

Courtesy: guttedarcades.blogspot.com
Is the wharf sufficiently built to handle such crane?

Out-riggers may be required

Are steel plates required to rest to support those out-riggers?

What is the cost of such arrangement?

Is there a better alternative?
Cargo Transportation

Crane equipped with out-riggers. With the mobile crane resting on the out-riggers thus releasing pressure on the tires.

Courtesy: ditzj.de
Cargo Transportation

Crane with extended Out-riggers of Different Length

Courtesy: ditzj.de
Cargo Transportation

Out-riggers with Expanded Support base

Courtesy: p3planningengineer.com
Cargo Transportation

An Improvised Out-rigger Support

Courtesy: elcosh.org
Using purpose designed Pads to Re-enforce Out-riggers

Courtesy: willmarsh3.net
Cargo Transportation

Pads Designed for Out-riggers

Specifications:

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Max Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALMP900-30</td>
<td>300x300x30mm</td>
<td>3 kg</td>
<td>6000 kg</td>
</tr>
<tr>
<td>ALMP500-80</td>
<td>500x500x60mm</td>
<td>15 kg</td>
<td>20000 kg</td>
</tr>
</tbody>
</table>

Courtesy: taslifting.com.au
Cargo Transportation

Avoiding Pressure On the tires Of the Crane; resting On elevated Out-riggers

Courtesy: forums.dhsdiecast.com
Improvised pads used for out-riggers such practice may prove dangerous and unsafe.

Courtesy: cranelicense.blogspot.com
Safe Working angle:
Note the term: SWL or Safe Working Load
Indicated at 25 degree
## Safe Working Load

<table>
<thead>
<tr>
<th>SWL</th>
<th>Test Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 20 tonnes</td>
<td>25 percent in excess.</td>
</tr>
<tr>
<td>20 to 50 tonnes</td>
<td>5 tonnes in excess.</td>
</tr>
<tr>
<td>Over 50 tonnes</td>
<td>10 percent in excess.</td>
</tr>
</tbody>
</table>

Courtesy: osha.gov.com
Cargo Transportation

What Happened?

Courtesy: craneblogger.com
This can be the consequence when the basic rules are not observed

Courtesy: liftequipmentsafety.blogspot.com
Working around cranes can cause the above mentioned accidents; signage may be required

Courtesy: Elcosh=CPWR
Another signage when working near a crane

Courtesy: Elcosh
Cargo Transportation

Hazards of Working Around Cranes

Key Concepts:

- Electrocution Hazards
- Caught-In, Compressed or Crushing Hazards
- Struck-By Hazards
- Other Hazards

Courtesy: ELCOSH-CPWR
Cargo Transportation

Hazards of Working Around Cranes

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Courtesy: ELCOSH-CPWR
Cargo Transportation

Controlling the Problem:

• OSHA (Occupational Safety and Health Academy) power line clearance distances.
• ANSI (American National Standards Institute) requirements for working around power lines.
• Safe working clearance distance for cranes.
• Preventive measures for avoiding power line contacts.
• Planning for power line hazards.
• Dealing with power line emergencies.
Dealing with power line emergency

Current can flow outwards through the ground

Courtesy: Elcosh
Cargo Transportation

1. **Know Your Crane**
2. **Crane Signals**
Cargo Transportation

From left to right
1. Recommended
2. Not Recommended
3. Recommended

Shackles should be checked
Improvisation should be avoided

Courtesy: Elcosh
Proper Use of Shackles

Avoid eccentric loads.

1. On the Left : Bad
2. On the right: Correct

Courtesy: Elcosh
Proper Use of Shackles

Never replace a shackle pin with a bolt.
The load will bend the bolt.

Courtesy: Elcosh
Correct way of Installing wire rope pin

Courtesy: Elcosh
Violation of Basic Practice

Courtesy: Elcosh
Cargo Transportation

Handling Heavy lifts Through lesser Developed Location

Courtesy: heavyliftspecialist.com
Cargo Transportation

Or on very tough terrain

Source: demoffhighway.com
Cargo Transportation

Lesser developed Location

What are The Possible Problems?

Courtesy: heavyliftnews.com
Cargo Transportation

- Over long distances, the combine transport of rail-road may prove more competitive;
- This is true of large landmass countries: Russia; China; USA; Canada and India
- Rail rate has been proven much cheaper than road over long distances
- It is a combination of speed and availability
According to the Ministry of Transport of China; the following rates were recorded from Chongqing to Shanghai:

- Road: RMB20,000 per teu 3 / 4 days
- Rail: RMB6,000 per teu 4/5 days
- Barge: RMB2,000 per teu 8/11 days
Cargo Transportation

Loading by rail

Source: iran-trading.de
Cargo Transportation

• Though many European and US ports are directly rail-linked but many Asian ports; in spite of the large volume of cargo movement seldom use this mode of rail-road combination;

• For example in China only the port of Qingdao is originally rail-linked; most of the container ports are served by road mode

• At Port Klang, only the older wharves are rail linked; indicating the lesser use of rail for goods transportation
Shipment Of The Cargo:
Is the ship a specialist vessel built for such purpose?
Are all the cargoes readily available to be loaded?
Delay may incur demurrage charges, understand the terms and conditions of the charter party;
Are all basic gears on hand with spares in case of unexpected breakdowns?
Chartering specialist ship may require chartering consultants to finalize the arrangement.
Such ships used to ply short-sea route with on-board cranes

Courtesy: maritimejournal.com
Samples of large quay cranes being delivered fully built. Notice the **Tug-boats** Pushing the ship.

courtesy: heavyliftspecialist.com
Cargo Transportation

Examples of large heavy units being loaded by double cranes working simultaneously

Video Crane Handling

Courtesy: arabianindustry.com
Issues with Storage at Port of Loading

- Suitable space requirement; ground condition
- Total space requirements; can it be hired incrementally if so required
- Distance to the point of loading i.e. to the wharf
- Equipment requirement for this operation
- Supervision on receiving and delivering of cargo
- With busy terminals, penalties may be imposed for waiting or delays etc
Storage space within most terminals is very limited with premium rates; Many wharves even with container operations average only 45m-50m in width.

Courtesy: smc-pro.com
Many types of ship may be used; this is a specialist Heavy-lift ship

Courtesy: DFDS Group
Cargo Transportation

Another picture showing the width of Multi-purpose wharf’
Average load allowed is some \(3 \text{ ton p/sq. m}\)

Courtesy: en.Wikipedia.org
Cargo Transportation

Such loads being **railed** for direct loading or Unloading are often permitted as the **railway** track on wharf is **normally strengthened**

Courtesy: Trans-trading.uk
Cargo Transportation

Shipment by rail will depend on the fact if the delivery site is rail connected;

• otherwise additional handling is required;
• whether rail service can handle the unusual heavy unit will depend on a number of factors:
  • dimensions; weights as the route may pass through
  • tunnel/s, bridges and maybe connecting stations.
Cargo Transportation

Heavy Units of limited dimensions hauled by rail

Courtesy: midwestheavyhaul.com
Cargo Transportation

Loads by rail are normally within the normal gauge of the railway system

Courtesy: railynews.com
Cargo Transportation

Where the rail line has no height restrictions

Courtesy: American-rails.com
Cargo Transportation

Such structures can impede the use of the rail services for Over-sized cargo

Courtesy: en.wikepedia.org
Such tunnels will limit the use of the rail line

Courtesy: geography.org.uk
Though stationary load like this one may not be permitted in some ports for even over-night stay. Why?

Courtesy: Hansa Meyer.bloodspot.com
Cargo Transportation

By Ro-Ro Barge
Example:
Exports of mills to certain locations in Indonesia from Port Klang
Courtesy: DFDS Group

By Ro-Ro Vessel
Courtesy of Wilhensem Shipping
Meet the new Mark V - WWL's new generation roro vessels
CONCLUSION

When arranging for export, consider the following points:

• Suitability of the ship
• Loading into the ship; gears availability
• Do remember that many such cargo may be destined to developing countries with limited facilities at their ports
• Searching for or getting the required gears or equipment may pose a challenge!!