The Training Material on “Project Transportation” has been produced under Project Sustainable Human Resource Development in Logistic Services for ASEAN Member States with the support from Japan-ASEAN Integration Fund (JAIF). Copyright Association of Southeast Asian Nations (ASEAN) 2014. All rights reserved.
AFFA

Project Transportation Management

Part IV
Objectives:
The objective of this section is to provide the student with an understanding of stowage planning, functions of packaging (IMO/ILO packaging standards), container or CTU securing and transport costing.
Stowage Planning

There are three main reasons why it is important to formulate a stowage plan before packing. Precise details of the packaging, weights and dimensions of the cargo, as well as the container’s internal dimensions and weight restrictions, are required before a stowage plan can be formulated -

a) To achieve **optimal capacity utilization** of containers
b) To **simplify and speed up loading/unloading**
c) To **calculate the necessary lashing materials** promptly in advance
Length wise:
Wooden beams are required for bedding heavy cargo.

Courtesy: Hapag-Lloyd AG
Before drawing up a stowage plan, a suitable container has to be selected, taking into consideration the following factors:

a) Load limit and permitted weight distribution of container

b) Weight restrictions for inland transport in country of sender and recipient

c) Recipient’s abilities to unload cargo from container
Cargo Transportation

**Functions of Packaging**
Packaging has to:

1. **Protect cargo**
2. Enable cargo to be stacked
3. Enable cargo to be *lifted, moved and secured*
4. **Provide information on cargo characteristics and proper and effective handling**
The Container itself is the means of transport. **Cargo** must, therefore, generally be **packed for transport in containers**.

The **type and quantity of packaging** required depends on the type of transport and container used.

If items of **cargo of various sizes and weights** are stowed together, more stable packaging is required.

If cartons or crates are **stacked in several layers** on top of one another, the **lowest layer must be able to withstand the weight of the items stacked above**.
The requisite stack strength depends on the packaging material, transport time and moisture condition.

Standard containers can be given linings for bulk freight cargo, rods for clothing or moisture-absorbing materials.

If the cargo is loaded in open containers or on flat-racks, the packaging must withstand influences from the climate, weather and transshipment during the entire transport process.
Cargo Transportation

General Guidelines for Packing a Container

• Cargo of the following types **must not be packed together**

• **Dusty goods** with **dust-sensitive cargo**

• **Odour-emitting with odour-sensitive cargo**

• **Moisture-emitting goods** or packaging with **moisture-sensitive cargo** or packaging

• **Items with protruding parts** (e.g. sharp corners, edges) with goods in comparatively soft and sensitive packaging (e.g. sacks or bales)
Cargo Transportation

- Moist goods with dry goods
- Heavy packages should not be stacked on top of light package
- **Lashing eyes on corner posts**, For fastening ropes, plastic straps, metal brackets, roof and floor longitudinal quick-acting locks, etc. (for load restrictions, see beams or rings in floor.
- **Corrugation in side walls** For securing cargo lengthwise. Timber lying crosswise can be wedged in the corrugation.
- Corner posts for chocking heavy items of cargo to prevent horizontal slipping.
Know the Parts of container

Courtesy: UK P&I Club
Poorly Stuffed Coil

Photo 3. Note the damage caused to the container by the poorly secured coils

Courtesy: UK P&I Club
Another Poorly Stuffed Container

Courtesy: UK P&I Club

Photo 1: Poorly stuffed container – note the damaged packages, the pallet on top of cartons and the apparent lack of securing arrangements.
Well secured Cargo

Fig. F

Courtesy: UK P&I Club
Cargo Transportation

Example of secured shipment

Courtesy: UK P&I Club
Coils loaded into A flat rack with Proper lashing

Courtesy: UK P&I Club
Cargo Transportation

The Final Failure!
The last straw on lashing

Courtesy: UK P&I Club
General Rules for Securing Cargo

When packing a container or securing cargo, the Guidelines for Packing and Securing Cargoes in Containers for Transport by Land or by Sea (Container Packing Guidelines) issued by the International Maritime Organization (IMO) and International Labour Organization (ILO), must be observed.
Unlike cargo securing as is usual for land transport, cargo carried by sea must also be secured within a container against all ship movements, such as rolling, pitching and yawing.

The best way of securing cargo is to distribute it without any gaps over the entire floor.
If gaps cannot be avoided, the space between the packaging and container walls must be filled using air bags, dunnage or other stowage material. Individual cargo parts that can not be filled up, it must be secured by being chocked and lashed to the floor. Lashing eyes are provided on the longitudinal beams on the floor, roof and corner posts.
• Containers are controlled at every interchange. In addition, it is recommended that a careful check of the following items after receiving a container:

• **External checklist:**
• There are no holes or cracks in walls, floor or roof.
• Doors are easy to operate.
• Locking devices and handles function properly.
Cargo Transportation

- **Customs seal** device must be in orderly condition.
- **No self-adhesive labels from previous cargo** (e.g. IMDG placards);
- **DG stickers** are permitted only if there are dangerous goods in the container
- **Current issues facing lines**: over-weight and poorly stuffed containers
• As noted many project shipments are sent to the developing countries with limited special equipment readily available;

• Delays can be prevented if preparation is made in anticipation of any unexpected eventuality;

• Where procedures are spelled out; it should be adhered to; especially where local authorities are not prepared to be flexible in interpretation of rules and regulations;
In summary, the following considerations should be adhered to as most project or shipment differs. Many different factors are involved in such operations; different environment may require different approach or solution to the problems especially through third country operations.
The Principle of Unit Loads

- **Goods should be kept together** in form of a transport unit adapted to all present vehicles and handling equipment.
- The unit **should be formed as early as possible** and be broken as late as possible in the material flow.
- Preferably should be **formed at the consignor’s, and broken at the consignee’s.**
Unit Loads

• Unit loads are parts of a shipment that can be treated as a single unit during cargo handling and transportation.

• The size or dimensions of the unit load can vary according to requirements and to the means of transport and packaging container available.

• To optimize the cargo handling, transport and storage processes, standardization of unit loads is desirable.
The most common unit loads are pallets and components with bases that resemble pallets. The most important properties of a unit load are:

1) that it can be loaded to ensure a tight fit,
2) its modularity and its stability,
3) it can be stowed safely and will not be damaged by load securing measures.
Costs Of Using Unit Loads

- Need for technical adaptation
- Need for larger and more costly transshipment equipment
- Economies of scale cause less flexibility
- Extra costs for unit loads and empty positioning
Costs Analysis of Each Phase of The Operations

- transport costs: road; rail; barge or ship
- hire of special equipment; duration required
- issue on availability of such equipment at certain locations
- Costs of storage at each phase of the project as indicated
- Costs of local procedures e.g. removal of obstacles
Cargo Transportation

Detail Analysis on Transportation Costs:

- Shipping costs based on special ship will be negotiated
- Shipping costs on containers require an understanding of the shipping routes involved;
- Issue on transshipment
- Issue on container detention and demurrage charges;
- Where applicable; if 2nd hand units can be used
Conclusion

Cargo packing and handling is a very important part in the chain of transportation. The freight forwarder must be able to address the issue stowage planning, understand the cargo securing methods and also basic compliance to the IMO/ILO standards.