<u>REBAR</u>

SUMMARY		
Stowage	 All tiers to be stowed level, the face of the stow to be as straight as possible, with sufficient clearance from the adjacent stow to prevent virtual over stows. Safe passage shall be provided directly from the ladders to the top of the cargo stow. Safe access shall also be provided from the tank-top to the top of the cargo stow. 	
Lashing	 Lashing wire distance: Min. 2 wires per 6 meter length / Min.3 per 12 meter length of bundle A minimum of 3 clips on lashing wires with the grips saddle on the live (short side) wire. Separate lashing of the under-coaming cargo stow is recommended. 	Right way of applying buildog grips
Dunnage	 On the tank-top: 100mm x 100mm hardwood dunnage For the first six tiers:75mm x 75mm hardwood dunnage For subsequent tiers: 75mm x 75mm soft wood dunnage Maximum distance between rows of dunnage: 3 meters. Dunnage to be laid between each layer Dunnage is required for the under-coaming space areas 	Hardwood vs Softwood
Bundling	 Minimum bundling wire size: 6mm with double strapping at the ends and middle. Twisting of bundling wire: At least 3 times Each bundling wire space: approximately 1.7 to 2.2 meters, and 0.5 meters from the ends Approximate numbers of bundling wires: 4 for 6-metre length 5 for 9-metre length 7 for 12-metre length 9 for 18-metre length 	

WIRE ROD COIL

SUMMARY

Stowage	 All tiers to be stowed level, the face of the stow to be as straight as possible, with sufficient clearance from the adjacent stow to prevent virtual over stows. (Max 12 tiers high) Wire coils may be stowed on top of other steel cargoes (plate, pipe, section, H-beam, etc.) but not be over-stowed by other cargo Safe passage shall be provided directly from the ladders to the top of the cargo stow. Safe access shall also be provided from the tank-top to the top of the cargo stow.
Lashing	 Lashing of the top 3 tiers is not required for a full stow of WRICs. For under-coaming stows: The top 3 tiers shall be lashed in a group and separated from open hatch stow. For open hatch stows: It may not be lashed if the stow is across the full length of the tank-top. It is a good practice, however, for the top three tiers to be lashed in a group.
Dunnage	 On the tank-top: 10mm thickness plywood/timber dunnage On bulkheads: 15mm x 100mm cross- section dunnage Tank-top to be prepared with appropriate dunnage to prevent steel-to-steel contact.
Bundling	 Bundling wires: 5 nos. equally spread with double wires Twisting: at least 4 twists Bundling wire size: at least 6mm diameter.

STEEL PLATE

SUMMARY **Stowage** ✓ Clearance: Min. 100mm between edges of the steel plates and adjacent cargo or bulkheads. This clearance shall be properly dunnaged. ✓ All gaps in the top tier of plates shall be chocked with timber dunnage to provide a secure, tight and level stow across the full width of the cargo hold \checkmark The stow shall be kept level throughout, with timber dunnage used to fill any gaps in the stow. ✓ Lashing wires spacing on the tank-top: not more than 3 metres. Lashing ✓ The full stow may be lashed in one block. Alternatively, the last two tiers or the last tier of steel plates shall be lashed. ✓ Tank-top dunnage: 100 mm x 100 mm hardwood. Shorter pieces Dunnage may be used. ✓ Dunnage spacing: not exceeding 3 metres. ✓ Dunnage between tiers: Min. 50mm x 50mm hardwood ✓ Dunnage between tiers to be laid in a vertical line to prevent waviness occurring on steel plate.

STEEL PIPES

SUMMARY	
<u>Stowage</u>	 All tiers to be stowed in fore-and-aft direction and level. In the cargo compartments, where possible, safe passage shall be provided directly from the Australian ladders to the top of the cargo stow. Safe access shall also be provided from the tank-top to the top of the cargo stow. The lashing arrangement shall be uniform.
Lashing	 ✓ Lashing material: Wire rope or nylon web lashings ✓ Lashing requirement: Secure in a single block with provision for adjustment of the turnbuckle during the passage. ✓ Lashing for the under-coaming: lashed separately
Dunnage	 Dunnage distance: Max. 3 metres. 1 metre from both ends for the first and last row of dunnage Dunnage size: On the tank-top: 75mm x 75mm hardwood dunnage Subsequent 2 tiers: 75mm X 75mm hardwood dunnage Remaining tiers: 75mm x 75mm softwood dunnage Dunnage requirement: in way of bulkheads and other structures. For large diameter pipes: wedges nailed to the underlying dunnage on the tank-top, and fitted to both sides For small-diameter pipes in bundles: dunnage shall be used between every cargo tier. Alternative option: pipes to be pre-slung
Bundling	 For small diameter pipes: steel strapping tightly applied. No loose bundles with failed hexagonal shape. For bundling of square shape: dunnage used between the tiers within the bundle. For medium size pipes: may not in a bundled form and may be as single pipes. For large diameter pipes: usually in an unbundled form and as single units.

STRUCTURAL STEEL

<u>SUMMARY</u>		
<u>Stowage</u>	 All tiers to be stowed level. The face of the stow is to be as straight as possible, with sufficient clearance from the adjacent stow to prevent virtual over stows. Longer units are to be stowed under shorter units. For two horizontally separated stows, the clearance between the stows shall not be less than 1 meter. 	
Lashing	 For cargo not fully stowed: Wire lashings are used to secure the stow in a single block Number of wires: Min. 2 wires per 6 meter length / Min.3 per 12-meter length of bundle The upper tiers shall be properly secured by dunnage and wedges prior to the lashing. 	
Dunnage	 ✓ The distance between dunnage rows: not exceed 3 metres. The first and last rows of dunnage approximately 1 meter from the ends of the cargo units. ✓ For dunnage on the tank-top: At least 75mm x 75mm hardwood ✓ For dunnage in the first 6 tiers: 75mm x 75mm hardwood ✓ For dunnage in subsequent tiers: 75mm x 75mm softwood 	
Bundling	 ✓ Bundling wire size: 6mm wire with double strapping ✓ Bundling wire spacing: at intervals of approximately 2 to 3 metres, and at 0.5 metres from the ends. ✓ Bundling wire twisting: At least 3 times 	

HOT AND COLD STEEL COIL				
SUMMARY				
<u>Stowage</u>	 ✓ Coils cannot be stowed on the 'tween deck but only on the tanktop in the cargo holds. ✓ The stowage shall be uniform and compactly arranged ✓ In the cargo compartments, safe passage shall be provided directly from the ladders to the top of the cargo stow. Safe access shall also be provided from the tank-top to the top of the cargo stow. 			
Lashing	 ✓ Lashing material: 25-40mm steel strapping bands SWL 4T ✓ Lashing tools: pneumatic tools and never by hand. ✓ For heavy coils above 15 tonnes: Lashing material and size to be doubled 			
Dunnage	 ✓ Dunnage size: 2 - 4 wooden planks on the tank-top with size of 150mm x 25mm (6" x 1"). ✓ Wooden wedges: Nailed on wooden planks to lock the coils ✓ Requirement for coils on the first tier: each end coil resting on dunnage placed on the side bulkhead and the adjacent coil. 1st tier of coils shall be locked with one or two locking coils, depending on the space. If not, to use hardwood dunnage between two adjacent coils ✓ Requirement for other coils: shall rest on two adjacent coils. No dunnage required. 	1/3 Diameter 2/3 Diameter		

INGOTS, BILLETS, BLOOMS, SLABS

SUMMARY

Stowage	 ✓ In the cargo compartments, safe passage shall be provided directly from the ladders to the top of the cargo stow. Safe access shall also be provided from the tank-top to the top of the cargo stow. ✓ The stow shall be kept level throughout, with timber dunnage used to fill any gaps in the stow. ✓ All gaps in the top tier of pallets shall be chocked with timber dunnage to provide a secure, tight and level stow across the full width of the cargo hold.
Lashing	 Lashing wires spacing on tank top: not more than 3 metres For full stow box-type cargo compartment with proper chocking, lashing may not necessarily be used. Choking requirement for full stow: proper vertical dunnage to choke
<u>Dunnage</u>	 Dunnage size on tank top and between tiers: Plywood sheets or 200mm x 20mm wooden planks Dunnage material between bulkheads/frames and stow: Softwood dunnage or proper dunnage structure

COMBINED STOWAGE OF DIFFERENT STEEL PRODUCTS

The matrix below indicates which cargoes may be considered for loading on top of other cargoes, provided that the total upper stow weight is not dangerously higher to present a risk of shifting, collapse and damage to the lower stow. The table also provides guidance as to which cargoes must never be loaded on top of other cargoes.

	Upper Cargo						
		Steel Plates	Reinforced Bars	Wire Rods in Coils	Steel Coils	Steel Pipes	Structural Steel Products
	Steel Plates						
Lower Cargo	Reinforced Bars						
	Wire Rods in Coils						
	Steel Coils						
	Steel Pipes						
	Structural Steel Products						
The loading is possible.							
		Special considerations are required.					
		The loading is not allowed.					
		Homogeneous loading and stow.					