

# DESIGN PRINCIPLES FOR LIFTING & LOWERING TASKS

(Adapted from NIOSH Elements of Ergonomics Programs – Toolbox Tray 9-D)

Modified by EWI Works – January, 2002

## 1. Optimize material flow through the workplace by:

	<ul style="list-style-type: none"> <li>Reducing manual lifting of materials to a minimum.</li> </ul>		<ul style="list-style-type: none"> <li>Establishing adequate receiving, storage and shipping facilities.</li> </ul>
		<ul style="list-style-type: none"> <li>Maintaining adequate clearances in aisle and access areas.</li> </ul>	

## 2. Eliminate the need to lift or lower manually by:

		<ul style="list-style-type: none"> <li>Increasing the weight to a point where it must be mechanically handled.</li> <li>Palletizing handling of raw materials and products.</li> </ul>		<ul style="list-style-type: none"> <li>Using unit load concept (bulk handling in large bins or containers).</li> </ul>
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## 3. Reduce the weight of the object by:

		<ul style="list-style-type: none"> <li>Reducing the weight and capacity of the container.</li> <li>Reducing the load in the container.</li> <li>Limiting the quantity per container to suppliers.</li> </ul>	
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## 4. Reduce the hand distance from the body by:

	<ul style="list-style-type: none"> <li>Changing the shape of the object or container so that it can be held closer to the body.</li> </ul>		<ul style="list-style-type: none"> <li>Providing grips or handles for enabling the load to be held closer to the body.</li> </ul>
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## 5. Convert load listing, carrying and lowering movements to a push or pull by providing:

		<ul style="list-style-type: none"> <li>Conveyers</li> <li>Ball caster tables</li> </ul>		<ul style="list-style-type: none"> <li>Hand trucks</li> <li>Four-wheel carts</li> </ul>
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