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Design Principles

While there are few operational improvement projects that incorporate all of the Design Principles noted below, Distribution Design will evaluate the potential for applying the principles. If the principle will fit the operation AND can be cost justified, it should be suggested for consideration.

**Velocity Profiling:** the Line Item profile measures the frequency of pick for each stockkeeping unit (SKU), and the Unit Profile measures the quantity of units needed to fulfill a line item on an order. Each of these profiles focuses on the consumption of labor of high and low velocity items. If you are following Pareto’s Law in setting up your picking zones (20% of the SKUs are 80% of the volume), you are probably over spending.

**Strategic Vs. Tactical Improvement:** Most improvement projects take a tactical approach that can be described as "Given where we are today, what is the next logical step?" However, every operation needs to take a more strategic view at least every few years. This can be described by "Never mind where we are today. Given our size, competitive environment, customer requirements, and costs, where SHOULD we be?"

**Design For Payback:** This principle evaluates each component of capital in an improvement design for its return on investment. Typically, the major savings category is from improved productivity so little time should be spent on justifying "soft" benefits. Most clients need an attractive ROI in order to have a project's funding approved. DDI takes a disciplined approach by evaluating the ROI for each element of a design, rather than just looking at the ROI for the entire project. The Design For Payback principle prevents payback from one element of a design to justify other elements that should not be included.

**Fewest Touches:** This one is pretty simple. The more often you touch something, the more you add costs to the operation. Be sure all of the "touches" are adding value and not just cost.

**Batch Picking:** In most distribution operations, at least 50% of an associate's day is spent traveling and searching. The picking function itself typically consumes more than half of the labor in a facility. By grouping orders together into batches, and choosing from several techniques to pick them as a group, a distribution center can make a substantial reduction in travel time.

**Work-To-Person, Not Person-To-Work:** In many operations, there are opportunities for cost-justifiable technologies and procedures that bring the work to the person. This reduces travel and/or search time, thereby improving productivity. Applying this principle is commonly done with carousels, zone pass (an order picking technique), or consolidating problem resolution into a small group of specially trained personnel.

**Bypass:** This principle looks for opportunities to skip certain steps in the material flow, and it is usually a feature of a good warehouse management system. Some examples of bypass are: Pre-Receiving items based on an Advance Shipment Notification (ASN), directing product from receiving to a picking location without going through Reserve Storage and Replenishment, cross docking, and full case picking directly from Reserve Storage.

**Distribution with Postponement:** This principle tries to delay doing anything to a product that customizes it for a particular customer or use until the last possible opportunity. A common application of postponement is in building kits from various components after an order has been received rather than building them to stock in...
advance of an order. The principle is best applied when postponement is integrated into an operation so the required work can be done "on the fly" smoothly and quickly when the order is received.

**Common Sense Material Handling:** In these days of mergers and acquisitions, downsizing, and focusing on short term financial results most companies do not want to tie up capital for long payback periods. Yet some material handling equipment can have very long payback requiring 7, 10, or even more years of operation to payback the invested capital. Distribution Design’s approach is to avoid long paybacks as much as possible, and this means avoiding the material handling equipment with long payback periods.

However, higher cost does not necessarily mean long payback as there are technologies that cost more but can achieve payback in fairly short periods of time. The trick is to stay within the bounds of what we call "commercially proven, cost-justifiable technology".

**It’s worth repeating...,**

Very few operations will justify all of these Design Principles (and there are others). However, it is important to know what principles can be applied and when to apply them.