

# The Time, Space & Cost Guide to Better Warehouse Design, Second Edition

By Maida Napolitano



The Time, Space & Cost Guide to Better Warehouse Design, Second Edition By Maida Napolitano

Save time, improve space utilization and reduce costs with the newly revised and expanded second edition of The Time, Space & Cost Guide to Better Warehouse Design.

The Guide provides a wealth of information that will help you benchmark your operations and test new ideas and concepts before you implement them.

The section on warehouse time standards discusses the use of time to measure work, estimate labor requirements, evaluate alternative designs, and benchmark and improve operations. By measuring time in the warehouse, you can identify opportunities to save time, reduce labor costs and increase throughput.

Includes 35 figures with labor estimates for everything from pallet putaway and document processing to travel time, package handling and more.

The section on warehouse space calculations evaluates the impact of various storage and material handling equipment methods on space utilization and provides strategies to help you determine the best possible combination of products, equipment, and operating systems for your facility.

Includes 58 figures illustrating the advantages and disadvantages of various storage, receiving and shipping layouts, and detailed specifications for a wide range of material handling equipment.

The section on warehouse cost calculations focuses on the conversion of time and space requirements into bottom-line costs. You'll find a thorough analysis of the different warehouse cost centers, the latest cost figures and techniques for analyzing these costs.

Includes 17 figures showing typical building costs, material handling equipment costs, storage equipment costs, dock equipment costs, average hourly wages by region and more.

Informative charts and figures

The newly revised edition offers more than 100 charts and figures to illustrate concepts, provide detailed data, and offer further insight. Here are some

examples of the figures you will find in this book:

Figure 2.4: Industry Throughput Standards

Figure 2.5: Summary of Time Standard Techniques Figure 2.6: Sample Output of a Time Study on a Manual Batch Pick Operation Figure 2.8: Steps for Establishing Warehouse Time Standards Figure 2.9: Element-by-Element Breakdown of Pallet Putaway Figure 3.29: Sample Excess Inventory Analysis Figure 3.31: Calculating Effects of Honeycombing And Storage Utilization Figure 3.53: Sample Full Case Movement Profile Figure 3.54: Sample Full Case Popularity Profile Figure 3.55: Various Picking Configurations Figure 4.3: Material Handling Equipment Costs Figure 4.4: Conveyor Systems Project Cost Breakdown Figure 4.5: Storage Equipment Costs Figure 4.6: Sample Planning and Design Costs Figure 4.10: Average Hourly Wages of Warehousing Jobs by Geographic Region and by Business

#### A hands-on working manual

This second edition of The Time, Space & Cost Guide to Better Warehouse Design has been completely updated and expanded from the original. Throughout the book, the authors have combined a theoretical yet practical approach that is applicable to both conventional and state-of-the-art warehouses.



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#### **Editorial Review**

About the Author

You can rely on The Time, Space & Cost Guide to Better Warehouse Design.

The Guide was carefully prepared by a team of experts from Gross & Associates, one of the country's leading warehouse consulting firms. Their authoritative work in analyzing, evaluating and designing warehouse operations and in implementing warehouse programs led to the development of this unique guide.

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**CHAPTER 1: INTRODUCTION** 

The consequences of poor planning and design is often costly. Even small oversights, such as inadequately sized dock doors or improperly positioned rack beams, can snowball into large, head-pounding problems. The only way to avoid or counteract this downward spiral is by getting back to the basics: Reassess the current operation, then properly plan and design — or re-design — the facility to create a world-class warehouse.

How does one go about designing a world-class warehouse? Begin by understanding the qualities that make a warehouse world class. It must offer consistent high-quality service in a facility that is economical to build, efficient to operate, and flexible enough to adapt to changing business conditions. Its operational components must consist of a complex but balanced array of facility, people, equipment, information systems, and product, which work as a cohesive unit to maximize the utilization of space while optimizing throughput. It must also perform all of these tasks under an inflexible trio of constraints: limited time, finite available space, and bottom-line costs.

These dimensions of time, space, and costs are the three cornerstones by which an efficient and effective warehouse is measured. A warehouse that is able to accomplish its mission while saving time, space, and costs in the process is on its way to world-class status. Knowing how to use these measures in warehouse design becomes a definite advantage to a warehouse manager. It is also the primary subject of this book.

The chapter on warehouse time standards discusses the use of time to measure work, estimate labor requirements, evaluate alternative designs, improve operations and benchmark operations, as well as its use as input in simulation analysis. By measuring time in the warehouse, one can identify opportunities in the design where time can be saved, subsequently reducing labor costs and increasing throughput. This chapter also includes a collection of common warehouse time standards that can be used in planning and design.

The chapter on warehouse space calculations goes beyond just calculating space requirements for the different operational areas of a warehouse. It also includes an introduction to the basic components of warehouse space from the receiving to the shipping docks. It discusses how to design these functions in the least amount of space.

The chapter on warehouse cost calculations focuses on the conversion of time and space requirements into their bottom-line costs. It summarizes the different warehouse cost centers with the latest cost figures, spreadsheets, and techniques to analyze these costs. It also discusses how cost calculations are used to justify and evaluate alternative designs.

Throughout this book, the authors have made an effort to combine a theoretical yet practical approach that is applicable to both conventional and "state of the art" warehouses. The broad scope of information is useful to both experienced and inexperienced managers. For the experienced warehouse manager, this book will serve as a tool for improving productivity. It can also be used as a guide for preliminary design and operations analysis. This book will also acquaint the less experienced manager with the basics of warehousing.

#### **Users Review**

#### From reader reviews:

#### **Emilie Lechner:**

This book untitled The Time, Space & Cost Guide to Better Warehouse Design, Second Edition to be one of several books that will best seller in this year, that's because when you read this publication you can get a lot of benefit into it. You will easily to buy this specific book in the book shop or you can order it by using online. The publisher of this book sells the e-book too. It makes you quicker to read this book, because you can read this book in your Cell phone. So there is no reason to you to past this reserve from your list.

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