

**JD GRAY ASSOCIATES  
DISTRIBUTION CENTER PRODUCTIVITY CONSULTANTS**

## **DC LABOR STANDARDS KIT**

# **PREDETERMINED TIME ON INBOUND AND OUTBOUND LABOR OPERATIONS OF A DISTRIBUTION CENTER**

## **PICK CASE SAMPLE**

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As an adjunct to our manufacturing productivity systems, we have a special service for distribution centers that wish to undertake the improvement program themselves. Entitled DC LABOR STANDARDS KIT the service can be used for your existing inbound and outbound operation in the setting of industrial engineered standards.

If you're current method of operation is characterized by:

**HISTORICAL STANDARDS**  
POOR OPERATOR PERFORMANCE LEVELS  
UNMEASURABLE DOWNTIME  
INACCURATE PRODUCT COSTING  
OVERDUE SCHEDULES  
EXCESSIVE LABOR BURDEN

Our DC LABOR STANDARDS KIT can save you money! JD Gray Associates has developed inbound and outbound time values for conventional distribution centers and plotted them on a work sheet format allowing standards to be set accurately. The DC LABOR STANDARDS KIT addresses *six inbound job codes* of truck pallet unloading, pallet put-a-way, case sku breakdown, case put-a-way, replenish case, replenish pallet as well as *three outbound job codes* of pick case, pick pallet, truck pallet loading.

The DC Labor Standards Kit includes:

- Job code fixed work elements with leveled times & a work station sketch
- A variable travel time work sheet:
  - 1) Hand truck loaded and unloaded time values
  - 2) Fork truck loaded and unloaded time values
- A variable pallet rack slot level time option work sheet for:
  - 1) Floor level
  - 2) 2<sup>nd</sup> level
  - 3) 3<sup>rd</sup> level
- IE standard formula for single case and pallet put-a-way – examples
- IE standard formula for multi case and pallet put-a-way – examples
- IE standard formula for several case and pallet put-a-way locations – examples
- Pick and replenish case IE labor formulas

Variable travel time, work elements require client to plot facility layout footage to our work sheets resulting in a customized IE standard. We would be pleased to assist you in this effort and will send a proposal under separate cover upon request.



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**DISTRIBUTION CENTER PRODUCTIVITY CONSULTANTS**  
**TABLE OF CONTENTS**  
**INBOUND COST OPTIONS**

<b>JOB CODE</b>	<b>ITEM</b>	<b>PGS</b>	<b>\$</b>	<b>ORDER</b>
TRUCK PALLET UNLOADING	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> </ul>	3	\$75	
PALLET PUT-A-WAY	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> <li>▪ VARIABLE PALLET RACK SLOT LEVEL TIME OPTION WORK SHEET</li> <li>▪ IE STANDARD FORMULA FOR SINGLE PALLET PUT-A-WAY - EXAMPLE</li> <li>▪ IE STANDARD FORMULA FOR MULTI PALLET PUT-A-WAY - EXAMPLE</li> </ul>	4	\$150	
CASE SKU BREAKDOWN	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> </ul>	2	\$50	
CASE PUT-A-WAY	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> <li>▪ IE STANDARD FORMULA FOR SINGLE CASE PUT-A-WAY - EXAMPLE</li> <li>▪ IE STANDARD FORMULA FOR SEVERAL CASE PUT-A-WAY LOCATIONS - EXAMPLE</li> </ul>	4	\$125	
REPLENISH CASE	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> <li>▪ VARIABLE PALLET RACK SLOT LEVEL TIME OPTION WORK SHEET</li> <li>▪ REPLENISH CASE IE LABOR FORMULA</li> <li>▪ IE STANDARD FORMULA FOR SEVERAL CASE PUT-A-WAY LOCATIONS - EXAMPLE</li> </ul>	4	\$150	
REPLENISH PALLET	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> <li>▪ VARIABLE PALLET RACK SLOT LEVEL TIME OPTION WORK SHEET</li> <li>▪ IE STANDARD FORMULA FOR SEVERAL PALLET PUT-A-WAY LOCATIONS - EXAMPLE</li> </ul>	4	\$125	

**OUTBOUND COST OPTIONS**

<b>JOB CODE</b>	<b>ITEM</b>	<b>PGS</b>	<b>\$</b>	<b>ORDER</b>
PICK CASE	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> <li>▪ VARIABLE PALLET RACK SLOT LEVEL TIME OPTION WORK SHEET</li> <li>▪ PICK CASE IE LABOR FORMULA</li> <li>▪ IE STANDARD FORMULA FOR SINGLE CASE PICK - EXAMPLE</li> </ul>	5	\$150	SAMPLE
PICK PALLET	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> <li>▪ VARIABLE PALLET RACK SLOT LEVEL TIME OPTION WORK SHEET</li> <li>▪ IE STANDARD FORMULA FOR SINGLE PALLET PICK - EXAMPLE</li> </ul>	4	\$125	
TRUCK PALLET LOADING	<ul style="list-style-type: none"> <li>▪ FIXED WORK ELEMENTS, LEVELED TIME &amp; SKETCH</li> <li>▪ VARIABLE TRAVEL TIME WORK SHEET</li> <li>▪ VARIABLE PALLET RACK SLOT LEVEL TIME OPTION WORK SHEET</li> </ul>	4	\$100	

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**Article - Industrial Time Study Institute**

**Similar to manufacturing objectives, warehousing and distribution objectives are to minimize cost and maximize customer service.**



Productivity improvement and cost reduction are the bottom line for warehousing and distribution operations. Generally, expenditures for labor are the largest single cost component of warehousing and distribution.

A critical first step for improving productivity and reducing costs is developing engineered labor standards. Engineered labor standards establish a baseline productivity measurement. They are also used to measure productivity levels in key cost areas such as: order picking, packing, shipping, receiving and put away.

Work measurement, time studies, methods engineering, and standardized work are all tools that can be used to develop work content and labor cost comparisons that help choose the best handling and storage methods.

Productivity analysis/evaluations can determine how employees spend their time and what they spend it on, as well as determine the amount of productive vs. non-productive time.

#### Engineered Labor Standards Development

Labor Standards are at the heart of any successful labor management environment. Calculation of Work Content and comparisons of labor costs are required when choosing the best methods for work practices. Standards become key components for all warehousing and distribution areas:

**Labor Scheduling & Budgeting** - Accurate labor standards ensure the right labor hours are generated for the operations weekly schedules and labor budgets.

**Performance Reporting** - Evaluating warehouse/distribution performance against standards becomes a critical component for identifying opportunities for labor savings.

**Best Practice & ROI Analysis** - The standards developed will allow you to estimate improvement potential for process changes and equipment investments.

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**OUTBOUND OPERATIONS**

**PICK CASE**

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**PICK CASE**

<b>NO</b>	<b>OPERATION DESCRIPTION</b>	<b>OPERATIONS FIXED TIME</b>	<b>VARIABLE TIME MINUTES/FOOT TRAVELED ▪ FORK TRUCK OPTIONS</b>	<b>OPERATIONS VARIABLE TIME</b>
1	READ HAND COMPUTER FOR NEW PALLET LOCATION	<b>.075</b>		
2	PALLET JACK FROM STAGING ___ TO ROOM ___ - AISLE ___ - PALLET RACK ___. PICKUP EMPTY PALLET FOR ORDER ENROUTE (INTERNAL TO TRAVEL TIME).		<b>CALCULATE FROM NEXT PAGE AND ENTER</b>	
3	SCAN LABEL OF PALLET RACK			<b>.231</b>
4	FIND CASE ON STORAGE PALLET. VERIFY ITEM DESCRIPTION (CASE ID ON PALLET VS HAND COMPUTER). VERIFY CASE QUANTITY. REMOVE CASE FROM STORAGE PALLET AND PLACE/ORIENT ON ORDER PALLET. READ HAND COMPUTER FOR NEXT CASE LOCATION.	<b>.293</b>		
5	TRANSPORT PALLET TRUCK TO NEW CASE LOCATION - ROOM ___ - AISLE ___ - PALLET RACK ___.		<b>CALCULATE FROM NEXT PAGE AND ENTER</b>	
6	WRAP PLASTIC AROUND FULL PALLET LOAD			<b>.475</b>
7	PRINT LABEL AND APPLY TO PALLET LOAD			<b>.280</b>
8	TRANSPORT PALLET LOAD FROM ROOM ___ - AISLE ___ - PALLET RACK WITH PALLET JACK* INCLUDES SCANNING ID OF STAGING LANE.		<b>CALCULATE FROM NEXT PAGE AND ENTER</b>	
<b>SUB TOTAL</b>		<b>0.368</b>		<b>0.986</b>
<b>SEE FORMULA</b>				

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**NUMBER 2 & 5**

**VARIABLE TIME WORK SHEET  
TRUCK OPTIONS  
-TRAVEL - MINUTES PER FOOT-**

<b>DISTANCE TRAVELED</b>	<b>FORK TRUCK WITH PALLET</b>	<b>FORK TRUCK WITHOUT PALLET</b>	<b>HAND TRUCK WITH PALLET</b>	<b>HAND TRUCK WITHOUT PALLET</b>	<b>SELECTED OPTION</b>
<b>TO:</b>	<b>.0024 MIN/FT</b>	<b>.0022 MIN/FT</b>	<b>.0021 MIN/FT</b>	<b>.0018 MIN/FT</b>	<b>- POST ON ABOVE SUMMARY SHEET -</b>
<b>TOTAL</b>					

**NUMBER 8**

**VARIABLE TIME WORK SHEET  
TRUCK OPTIONS  
-TRAVEL - MINUTES PER FOOT-**

<b>DISTANCE TRAVELED</b>	<b>FORK TRUCK WITH PALLET</b>	<b>FORK TRUCK WITHOUT PALLET</b>	<b>HAND TRUCK WITH PALLET</b>	<b>HAND TRUCK WITHOUT PALLET</b>	<b>SELECTED OPTION</b>
<b>FROM:</b>	<b>.0024 MIN/FT</b>	<b>.0022 MIN/FT</b>	<b>.0021 MIN/FT</b>	<b>.0018 MIN/FT</b>	<b>- POST ON ABOVE SUMMARY SHEET -</b>
<b>TOTAL</b>					

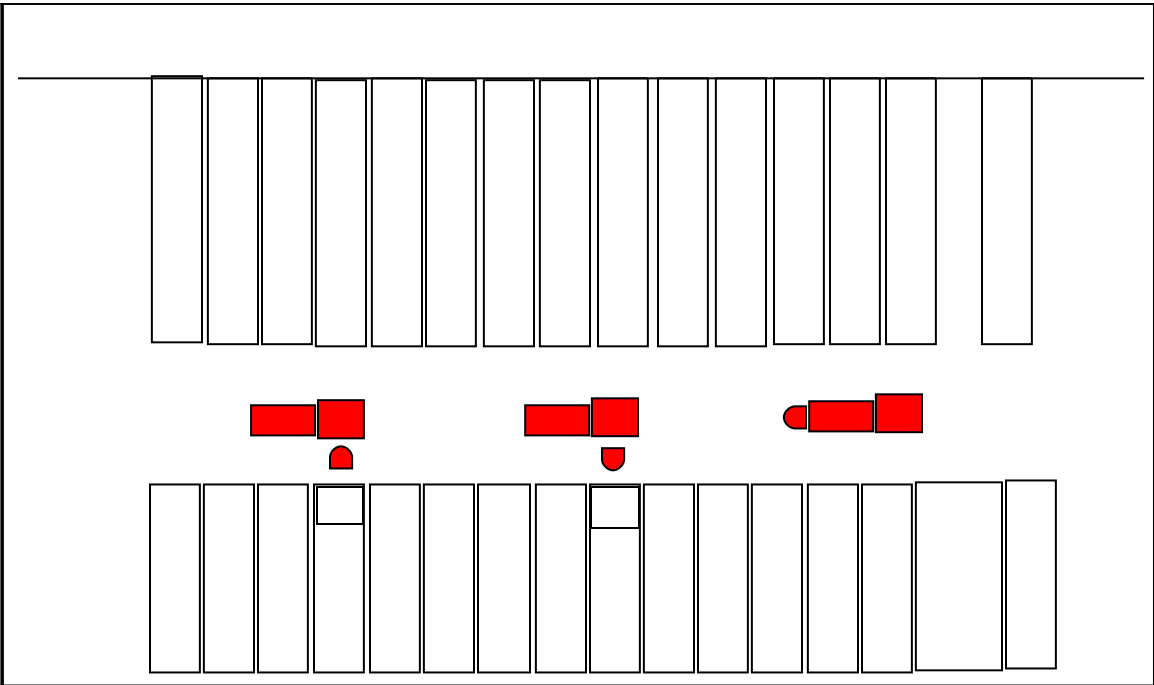
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**NUMBER 2, 5 & 8**

**VARIABLE TIME WORK SHEET  
TRUCK OPTIONS  
-SLOT LEVEL-**

<b>FLOOR LEVEL SLOT .224 MIN CYCLE</b>	<b>2<sup>ND</sup> LEVEL SLOT .464 MIN CYCLE</b>	<b>3<sup>RD</sup> LEVEL SLOT .715 MIN CYCLE</b>	<b>SELECTED OPTION - POST ON ABOVE SUMMARY SHEET -</b>
<b>TOTAL</b>			

**- CONCEPTUAL SKETCH -**





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**PICK FULL CASE IE STANDARDS FORMULA EXAMPLE  
(SEE FULL CASE WORK ELEMENTS FOR COLOR CODE DETAIL)**

**VARIABLE TRAVEL TIME PER CASE CALCULATION**

<b>EXISTING PALLET RACK LOCATION (room-aisle-pallet rack loc)</b>	<b>NEW PALLET RACK LOCATION (room-aisle-pallet rack loc)</b>	<b>STANDARD TRAVEL TIME FROM ABOVE (includes PF&amp;D)</b>	<b>NET TRAVEL TIME (less previous standard travel time)</b>
From staging area to room's 1 <sup>st</sup> pallet rack			XXXXXXXX
		vs.	
		vs.	
		vs.	
		vs.	
TOTAL TRAVEL TIME PER # OF CASES ON PALLET = AVE TIME PER CASE			XXXXXXXX

+

450 SHIFT MIN

**VARIABLE OPERATIONS TIME OF .986**

NUMBER OF CASES ON PALLET

= NET VARIABLE CASE TIME

+ **FIXED TIME OPERATIONS PER CASE OF .368**

X 115% PFD

= CASE MIN PER PALLET

= IE CASE STD FOR ORDER (8 HOUR SHIFT)

NOTE: FOR THE ABOVE FULL CASE EXAMPLE – IF SAME ROOM AND PALLET RACK LOCATION IS DIFFERENT AISLE AND RACK NUMBERS RESET - CALCULATION SHOULD BE TO LAST RACK IN EXISTING AISLE THEN PLOT TIME OF 1<sup>ST</sup> PALLET RACK IN NEW AISLE TO DESTINATION RACK FOR ADDED CALCULATION TIME. IF NEW PICK IS IN DIFFERENT ROOM, BEGIN WITH 'From staging area to rooms' 1<sup>st</sup> pallet rack'.