

# PALLET DESIGN SYSTEM Version 5.1

## Pallet Specification Sheet

All dimensions in inches

**Customer:**

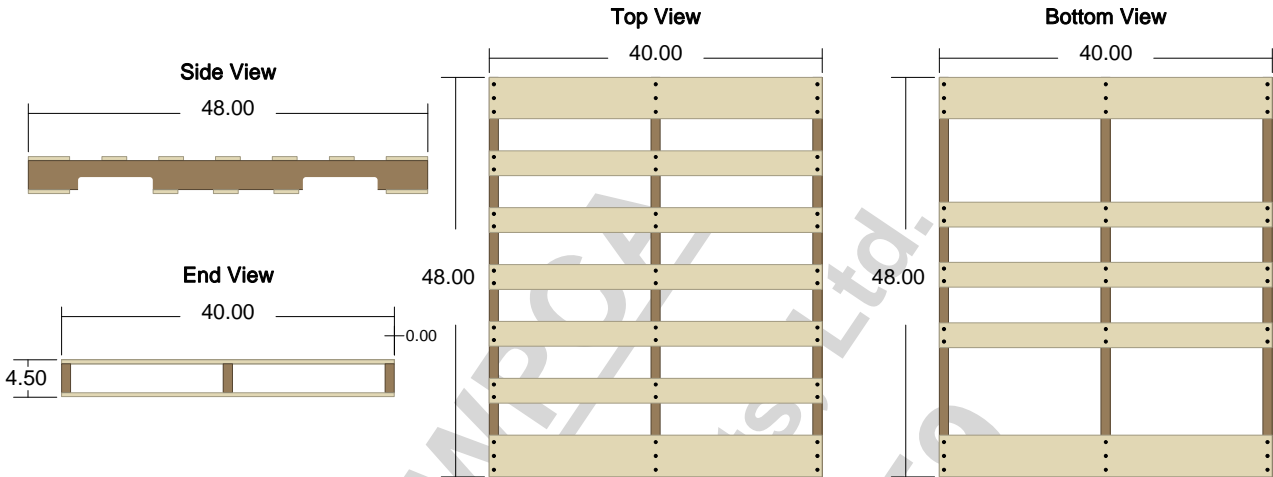
**Prepared by:**

Custom Crates & Pallets, Ltd  
 1501 Westway Blvd.  
 Canutillo Tx, 79835  
 PH 915-886-4985  
 PDS License: 459

Printed: February 04, 2015

**Pallet ID:** NEWS48x40DI

**Classification:** 48.00 x 40.00, Stringer-Class, Double-Face Non-Reversible, Partial 4-Way, Single-Use, New Manufacture



### Components

### Materials

**Top Deck:**

Style: Deckboard Type: New Lumber

Number	Thickness	Width	Length
5	0.500	3.000	40.00
2	0.500	5.000	40.00

Volume: 3.5 bd ft

**Bottom Deck:**

Style: Deckboard Type: New Lumber

Number	Thickness	Width	Length
3	0.500	3.000	40.00
2	0.500	5.000	40.00

Volume: 2.6 bd ft

**Stringers:**

Type: New Lumber

Number	Width	Height	Length
3	1.130	3.500	48.00

Volume: 4.0 bd ft

Partial 4-way Entry Notch:

Depth: 1.500 Length: 9.00 Location: 6.00 Radius: 0.75

**Fasteners:**

Fastener ID:	2x.092
Fastener Type:	Helically Threaded Nail
Fastener Length:	2.00
Thread Length:	1.25
Thread Diameter:	0.097
Wire Diameter:	0.092
Head Diameter:	0.280
Flutes:	4
Helixes:	5.4
Pitch:	0.231
Thread Angle:	72
MIBANT Angle:	36
FWC:	1.48

Total Number: 84

**New Lumber:**

Lumber ID: Custom Crates & Pallets Saw Mill

Species Class	Grade	Lumber Mix
Douglas-Fir	Standard &BTR	80 %
Hem-Fir	Standard &BTR	10 %
Pinus caribaea	Standard &BTR	10 %

Moisture Content (at manufacture and assembly): Air Dry - 19%

Total New Lumber Volume: 10.1 bd ft

**Spec Sheet Notes:**

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## Pallet Structural Analysis

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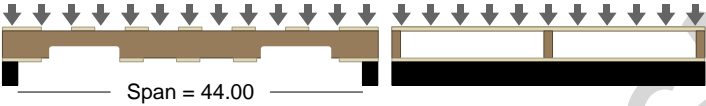
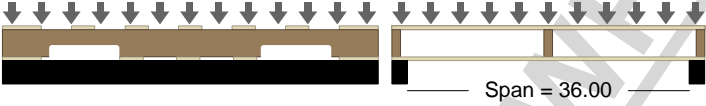
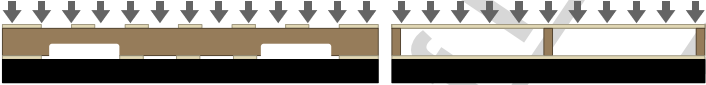
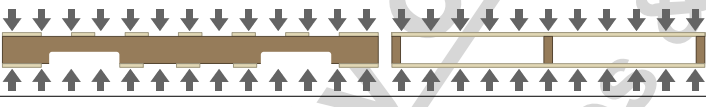

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General Load Type: Uniformly Distributed - Full Pallet Coverage

Load Weight Variability: Medium

Service Environment: Dry Environment (EMC <= 19%)

Support Condition		Safe Maximum Load	Deflection at Maximum Load	User Specified Deflection Limit	Maximum Load for Deflection Limit	Critical Member
Side View	End View					
<p><b>Racked Across Length</b> <b>2 Beam Support</b></p>  <p>Span = 44.00</p>		773 lbs.	0.26 in.	----	----	Center Stringer
<p><b>Racked Across Width</b> <b>2 Beam Support</b></p>  <p>Span = 36.00</p>		806 lbs.	0.64 in.	----	----	Interior Bottom Deckbd
<p><b>Warehouse Storage</b> <b>Stacked 1 Unit Load High</b></p> 		3180 lbs.	0.17 in.	0.25 in.	NA	Interior Top Deckboard
<p><b>Stacked 5 Unit Loads High</b></p> 		873 lbs. per pallet	0.17 in.	0.25 in.	NA	Interior Bottom Deckbd
<p><b>Lateral Collapse Resistance</b></p> 		<p>Low                      Medium                      Good                      Excellent</p> <p style="text-align: center;">↑ H/V = 0.78</p>				

### Pallet Design System (PDS)

Developed and owned by:

#### National Wooden Pallet and Container Association (NWPCA)

Research and development for early versions of PDS were conducted in cooperation with:  
 Center for Unit Load Design, Virginia Tech Department of Wood Science and Forest Products;  
 U.S.D.A. Forest Service and Forest Products Laboratory; APA - The Engineered Wood Association;  
 Software Technologies Laboratory, Virginia Tech Department of Industrial and Systems Engineering

The recommendations from PDS are based on the NWPCA's continuing program of laboratory and field research. They represent the best available engineering information compiled to date. However, the quality of workmanship, the input data, and the conditions in which pallets are used may vary widely. Therefore, the Association cannot accept responsibility for pallet performance or design as actually constructed. Wood pallets manufactured to this PDS design are for the sole purpose of storing and/or transporting material. Under no circumstance should any person stand, step, or lean upon them or otherwise use them for support.

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National Wooden Pallet and Container Association, 1421 Prince Street, Suite 340, Alexandria, Virginia 22314-2805

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# PALLET DESIGN SYSTEM Version 5.1

## Pallet Durability Analysis

**Customer:**

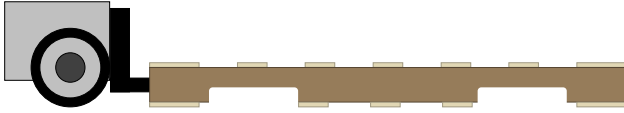
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### Pallet Service Life Analysis

The **Pallet Service Life Analysis** simulates a series of forces and impacts applied to the pallet during each handling cycle. The frequency and severity of these impacts are estimates based on laboratory measurements, warehouse observations, and the Virginia Tech FasTrack Handling Cycle. The resistance to damage and the damage level requiring component repair or replacement are based on laboratory testing and the NWPCA Uniform Standard for Wood Pallets.

**Service Environment Conditions:**

Good Handling and Treatment, Light-Duty Loads, Dry Environment (EMC <= 19%)

**Predicted Service Life:** 2 Cycles

**Results from Handling Cycle Simulation (Single-Use)**

Pallet Components	Cycles To First Repair	Cycles To First Replacement	Limits Pallet Service Life	Relative Component Damage during Simulation
Top Leadboards (2)	2		Yes	
Top InteriorBoards (5)				
Bottom Leadboards (2)				
Bottom InteriorBoards (3)				
Exterior Stringers (2)				
Interior Stringers (1)				

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# PALLET DESIGN SYSTEM Version 5.1

## Pallet Physical Property Analysis

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Average Pallet Weight	At Manufacture		At 15% MC	At 12% MC
	27 lbs.		26 lbs.	25 lbs.



Component	Original Dimension	Shrinkage from Manufacture to 19% MC	Shrinkage from Manufacture to 15% MC
Top Deckboards	0.500 in. Thickness 3.000 in. Width 5.000 in. Width		0.004 in. (+/- 0.001 in.) 0.025 in. (+/- 0.006 in.) 0.041 in. (+/- 0.011 in.)
Stringers	3.500 in. Height 1.130 in. Width		0.029 in. (+/- 0.007 in.) 0.009 in. (+/- 0.002 in.)
Bottom Deckboards	0.500 in. Thickness 3.000 in. Width 5.000 in. Width		0.004 in. (+/- 0.001 in.) 0.025 in. (+/- 0.006 in.) 0.041 in. (+/- 0.011 in.)

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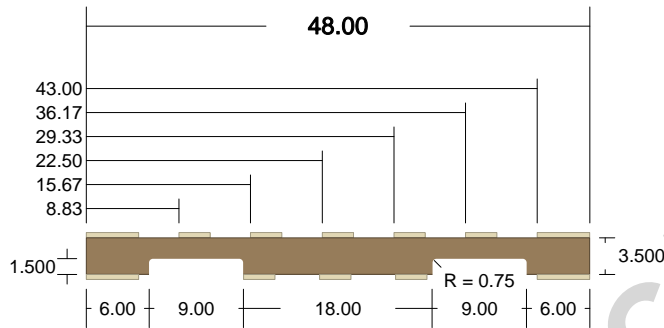
## 2-D Pallet Drawings

All dimensions in inches

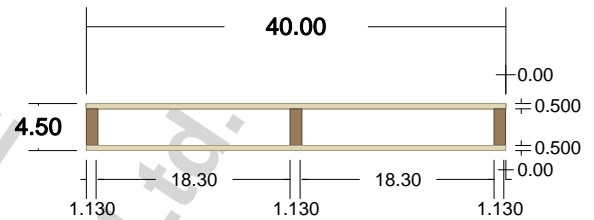
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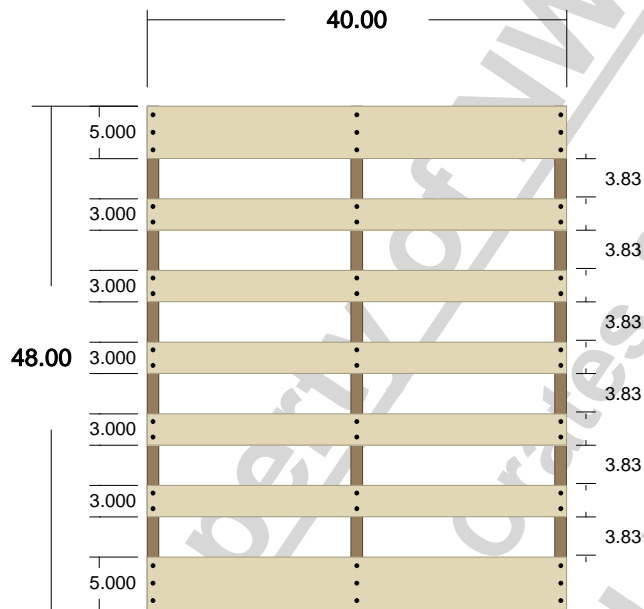
### Side View



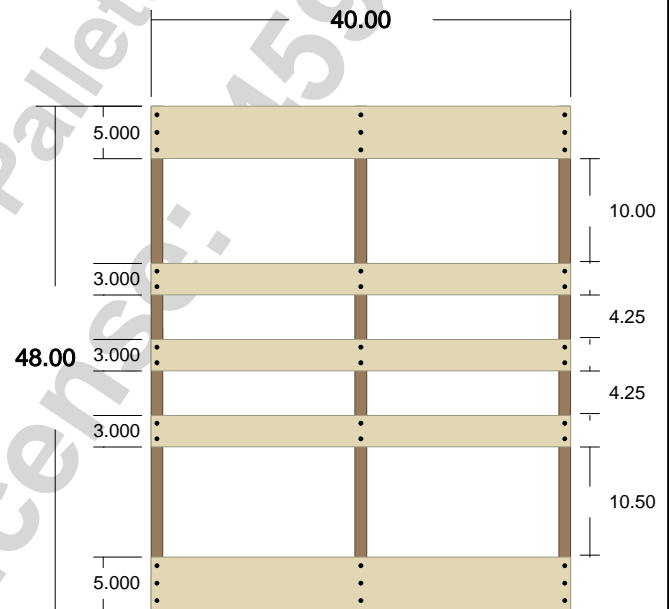
### End View



### Top View



### Bottom View



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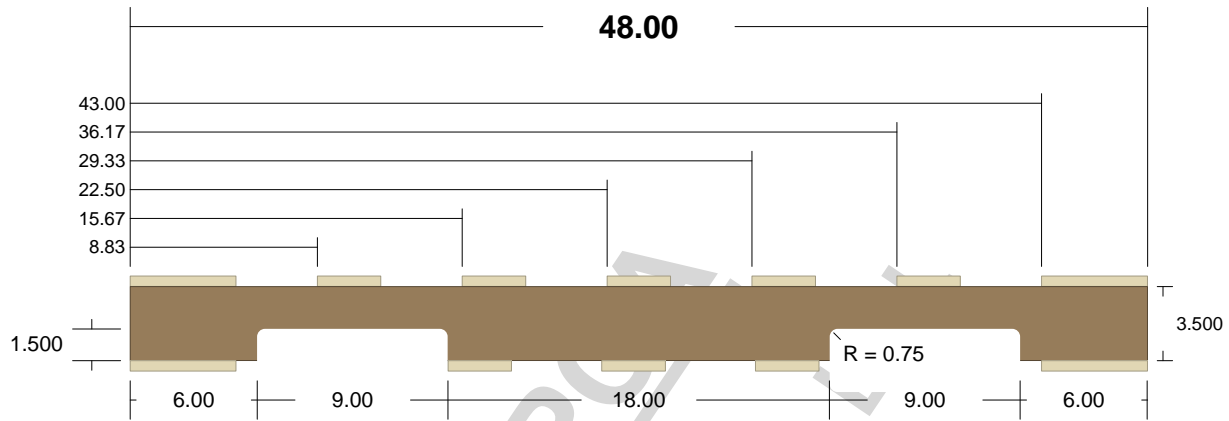
## Pallet Drawing - Side and End View

All dimensions in inches

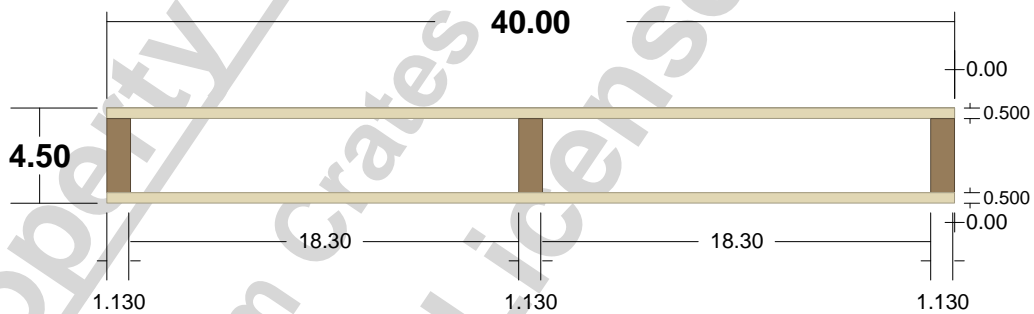
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### Side View



### End View



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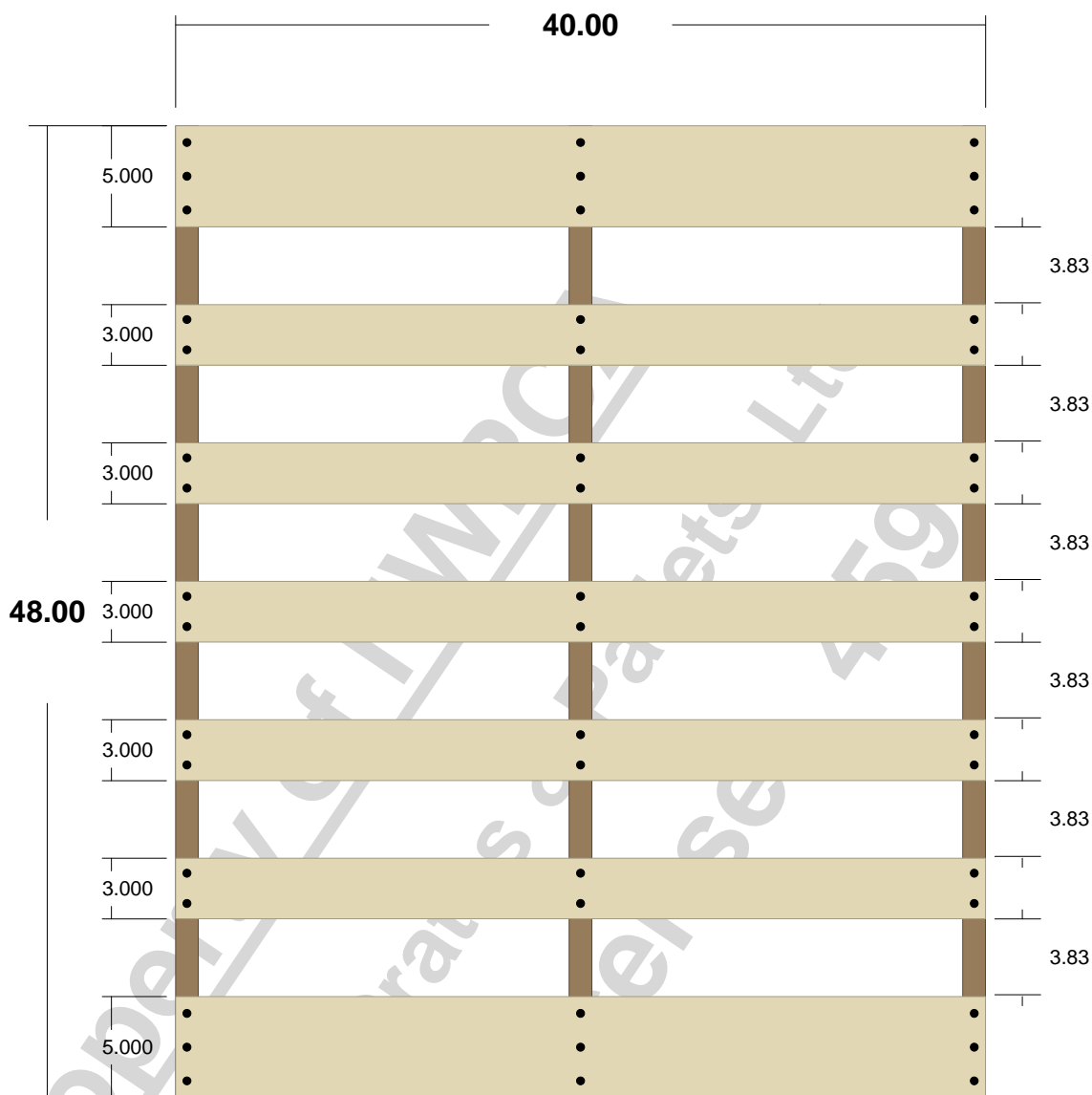
## Pallet Drawing - Top View

All dimensions in inches

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### Top View



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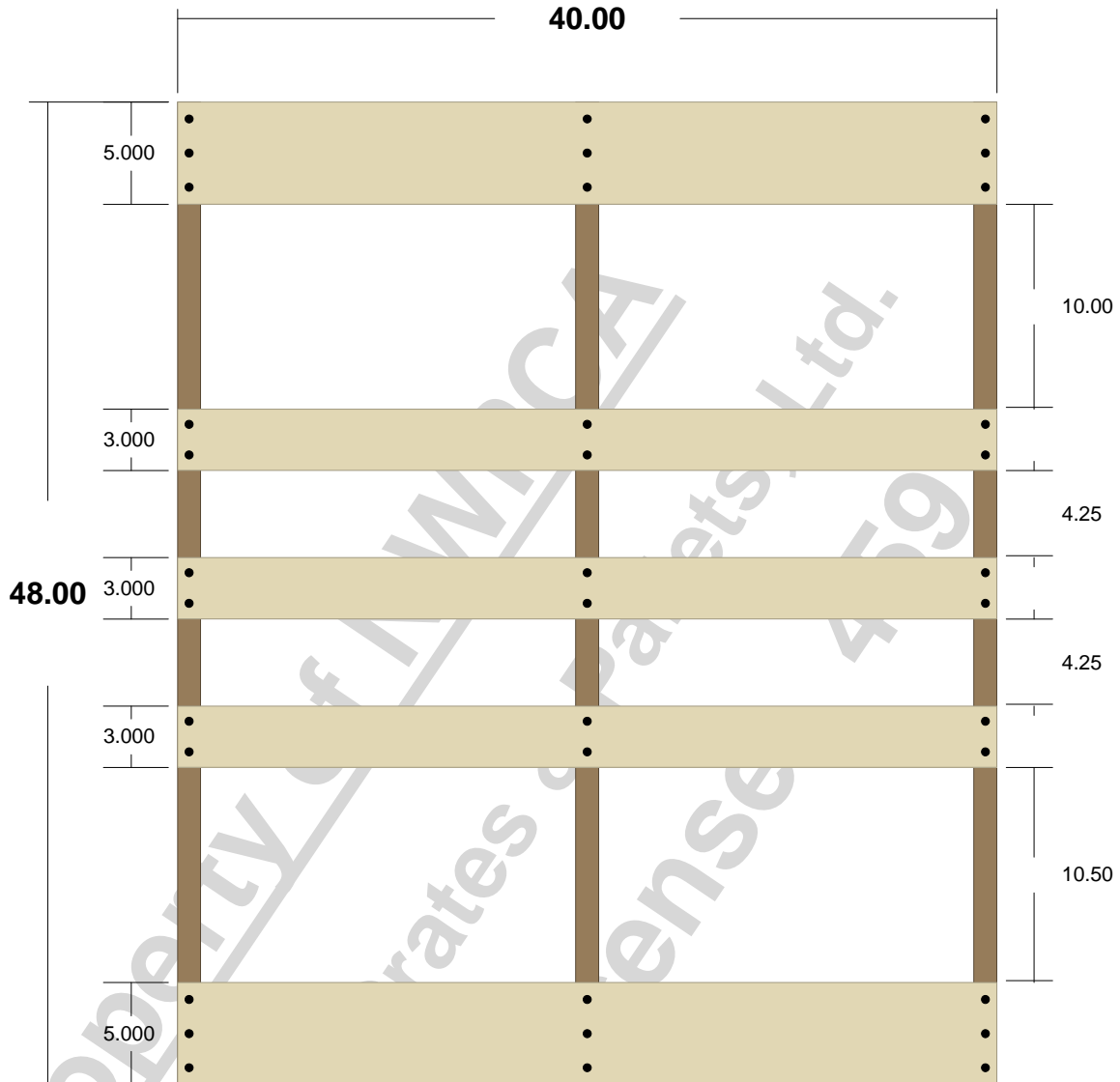
## Pallet Drawing - Bottom View

All dimensions in inches

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### Bottom View



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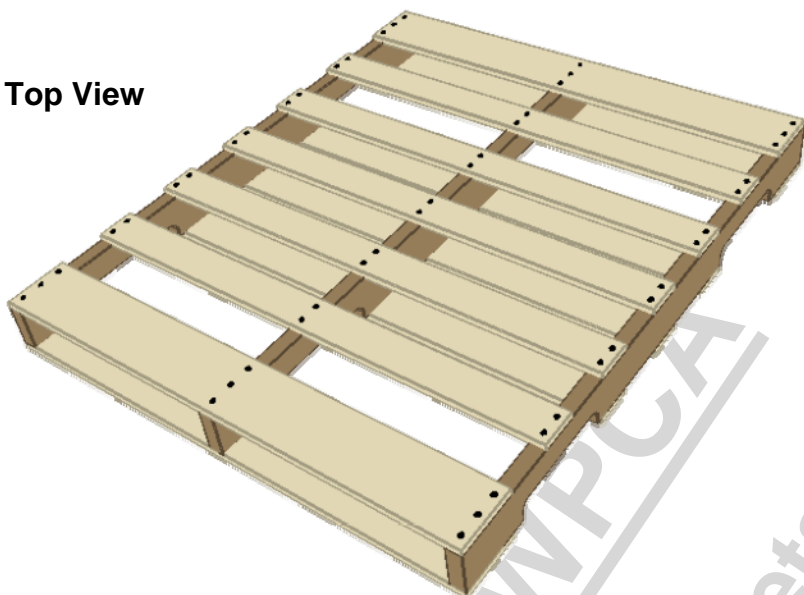
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## 3-D Pallet Drawings

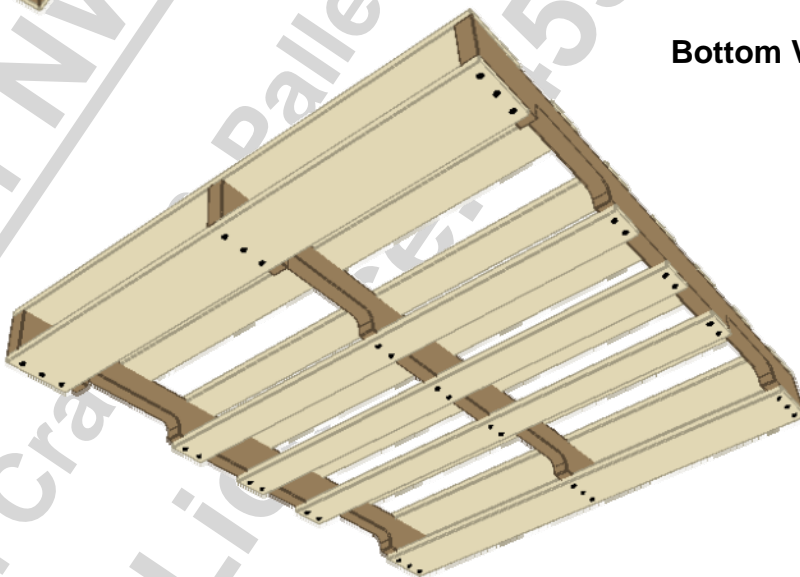
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Top View



Bottom View



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