

PALLET DESIGN SYSTEM VERSION 4.1

Pallet Specification Sheet



PALLET ID: 48x40 4-way

PALLET CLASSIFICATION: Stringer-Class, Double-Face Non-Reversible, Partial 4-Way, Multiple-Use, New Manufacture

COMPONENTS

Top Deck:

Style: Deckboard

Type: New Lumber

Number 5,2

Thickness 0.688, 0.688

Width 3.500, 5.500

Length 40.00, 40.00

Volume: 5.4 bd ft

Bottom Deck:

Style: Deckboard

Type: New Lumber

Number 3,2

Thickness 0.688,0.688

Width 3.500, 5.500

Length 40.00, 40.00

Volume: 4.1 bd ft

Stringers:

Type: New Lumber

Number3

Width1.500

Height 3.500

Length 48.00

Volume: 5.3 bd ft

Partial 4-way Entry
Notch: Depth: 1.500

Length 6.00

Location 6.00

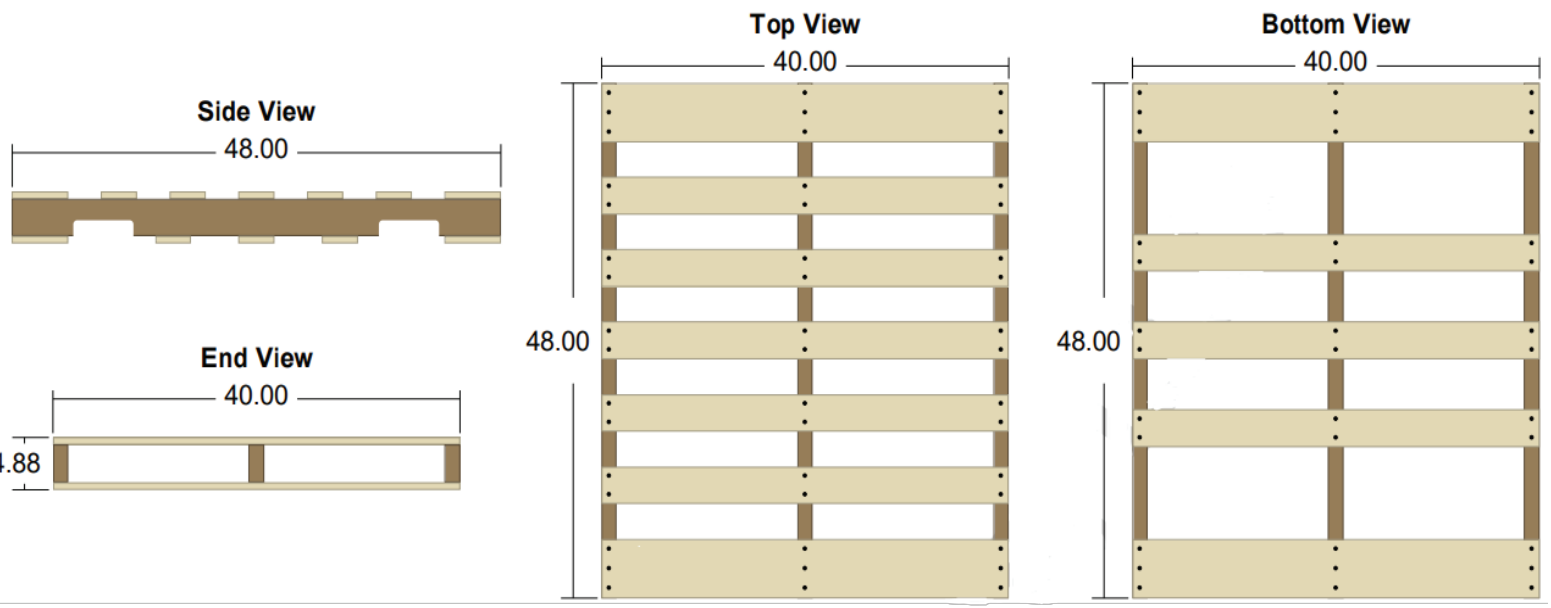
Radius 0.75

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MATERIALS

<p>Fasteners</p> <p>ID 2-1/4 x .112 SS Helixes 5.4</p> <p>Type Helically threaded nail Flutes 4</p> <p>Length 2.25 Thread angle 67</p> <p>Thread diameter 1.25 Mibant angle 36</p> <p>Wire diameter 0.128 FWI 71</p> <p>Head diameter 0.112 FSI 67</p> <p style="text-align: center;">TOTAL NUMBER: 84</p>	<p>New Lumber</p> <p>ID SPF</p> <p>Special class Hem-Fir</p> <p>Grade Standard and BTR</p> <p>Moisture content Kiln dry 15%</p> <p>Total new lumber volume: 14.8 bd ft</p>	<p>SPEC SHEET NOTES</p>
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Pallet Structural Analysis



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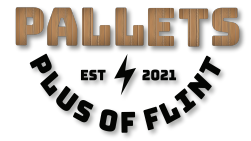
Unit Load Type: Uniformly Distributed - Full Pallet Coverage
Unit Load Weight Variability: Medium
Service Environment: Dry Environment (EMC <= 19%)

Support Condition	Safe Maximum Load	Deflection at Maximum Load	User Specified Deflection Limit	Maximum Load for Deflection Limit	Critical Member
Racked Across Length 	1300 lbs.	0.17 in.	1.00 in.	NA	Center Stringer
Racked Across Width 	1586 lbs.	0.40 in.	1.00 in.	NA	Bottom Deckboard
Stacked 1 Unit Load High 	5154 lbs.	0.10 in.	----	----	Top Deckboard
Stacked 2 Unit Loads High 	3221 lbs. (each pallet)	0.10 in.	----	----	Top Deckboard
Lateral Collapse Resistance 	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>Low</p> <p>Medium</p> <p>Good</p> <p>Excellent</p> </div> <div style="text-align: center;"> <p>H/V = 1.37</p> </div> </div>				

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Pallet Durability Analysis



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Pallet Service Life Analysis

PROCESS

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

CONDITIONS

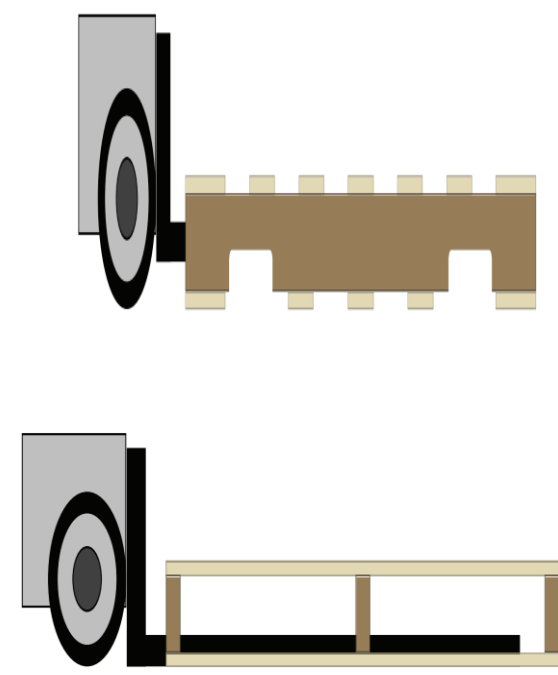
Service Environment Conditions:

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

PREDICTIONS

Predicted Service Life: 8 Cycles

Predicted Cycles until First Repair: 2



Results from Handling Cycle Simulation

Pallet Components	Cycles To First Repair	Cycles To First Replacement	Number of Times Replaced	Limits Pallet Service Life	Relative Component Damage during Simulation
Top Leadboards (2)	2	3	2		<div style="width: 90%; background-color: #cccccc;"></div>
Top InteriorBoards (5)					<div style="width: 30%; background-color: #cccccc;"></div>
Bottom Leadboards (2)	2	4	2		<div style="width: 85%; background-color: #cccccc;"></div>
Bottom InteriorBoards (3)					<div style="width: 15%; background-color: #cccccc;"></div>
Exterior Stringers (2)	2	4	1	Yes	<div style="width: 95%; background-color: #cccccc;"></div>
Interior Stringers (1)	6				<div style="width: 5%; background-color: #cccccc;"></div>

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Pallet Physical Property Analysis



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AVERAGE PALLET WEIGHT

AT MANUFACTURE	34lbs
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AT 12% MC	33lbs
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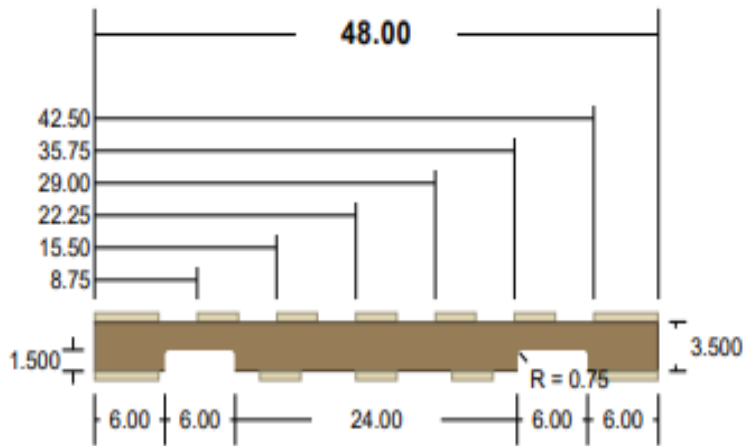
2-D Pallet Drawings



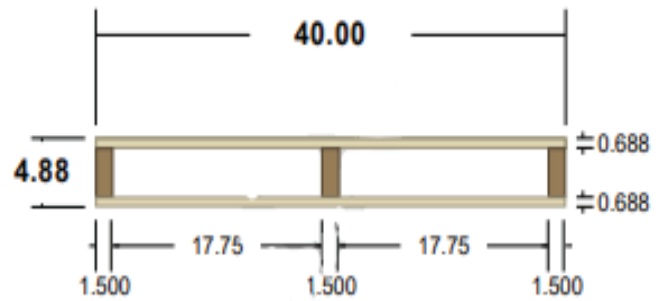
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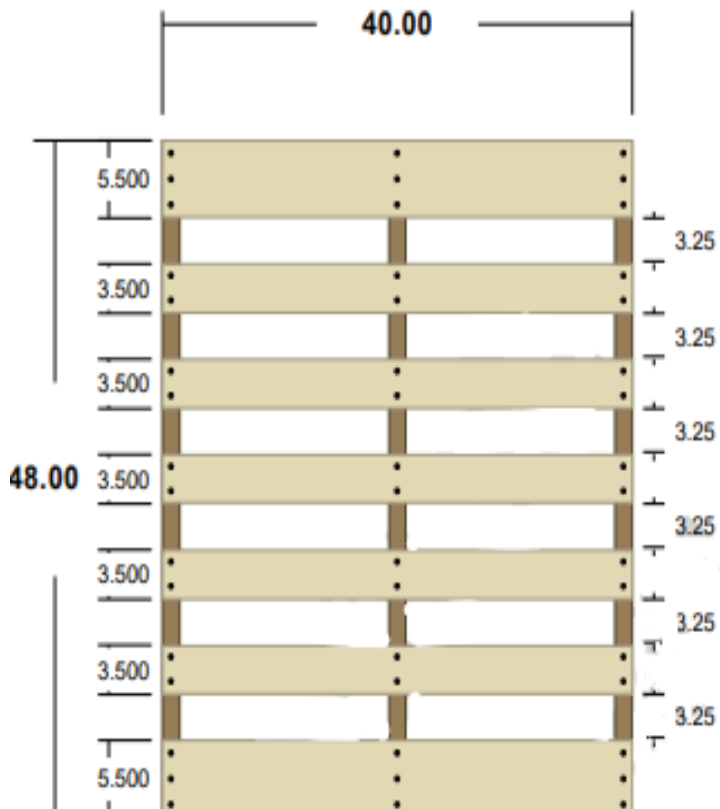
Side View



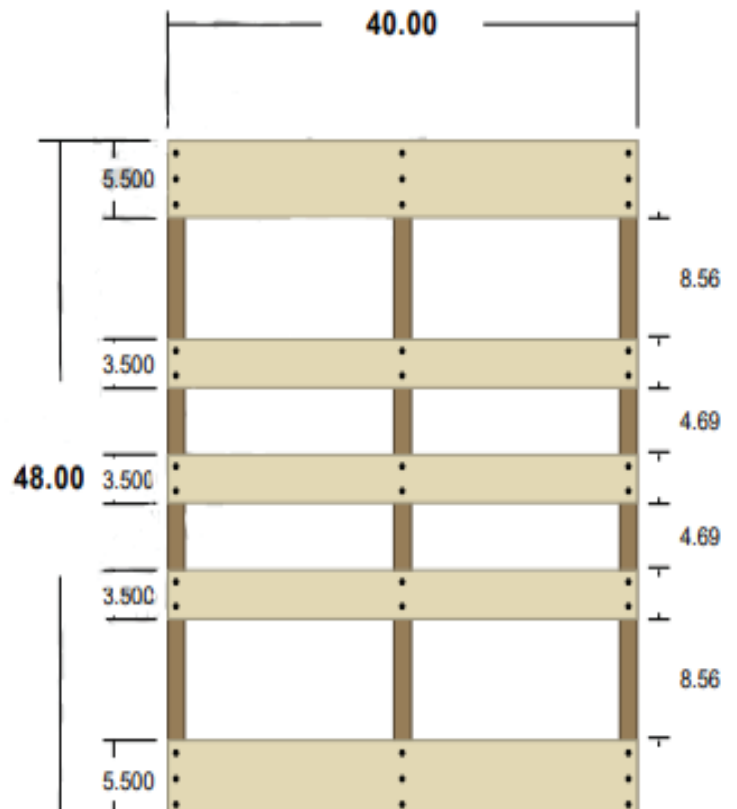
End View



Top View



Bottom View



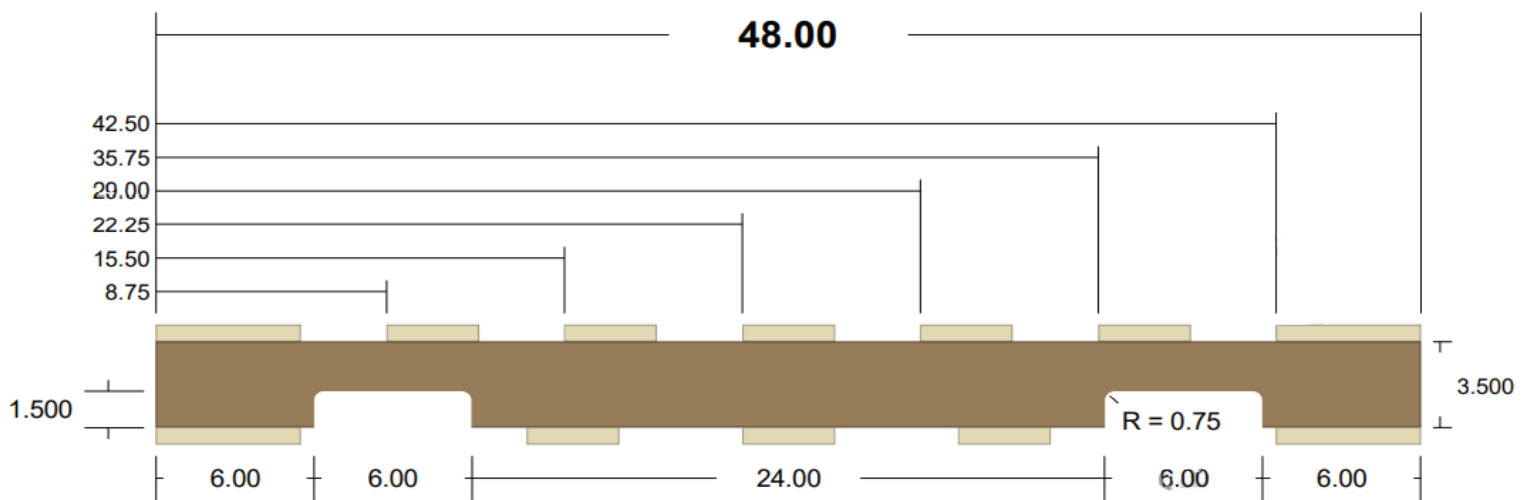
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Pallet Drawing - Side and End View

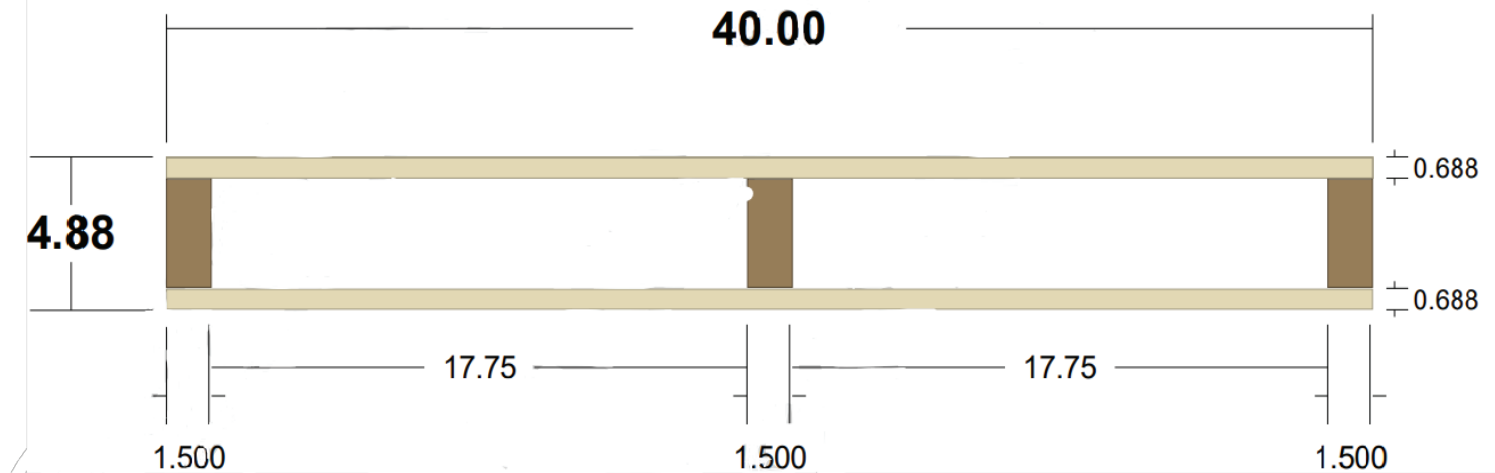


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Side View



End View



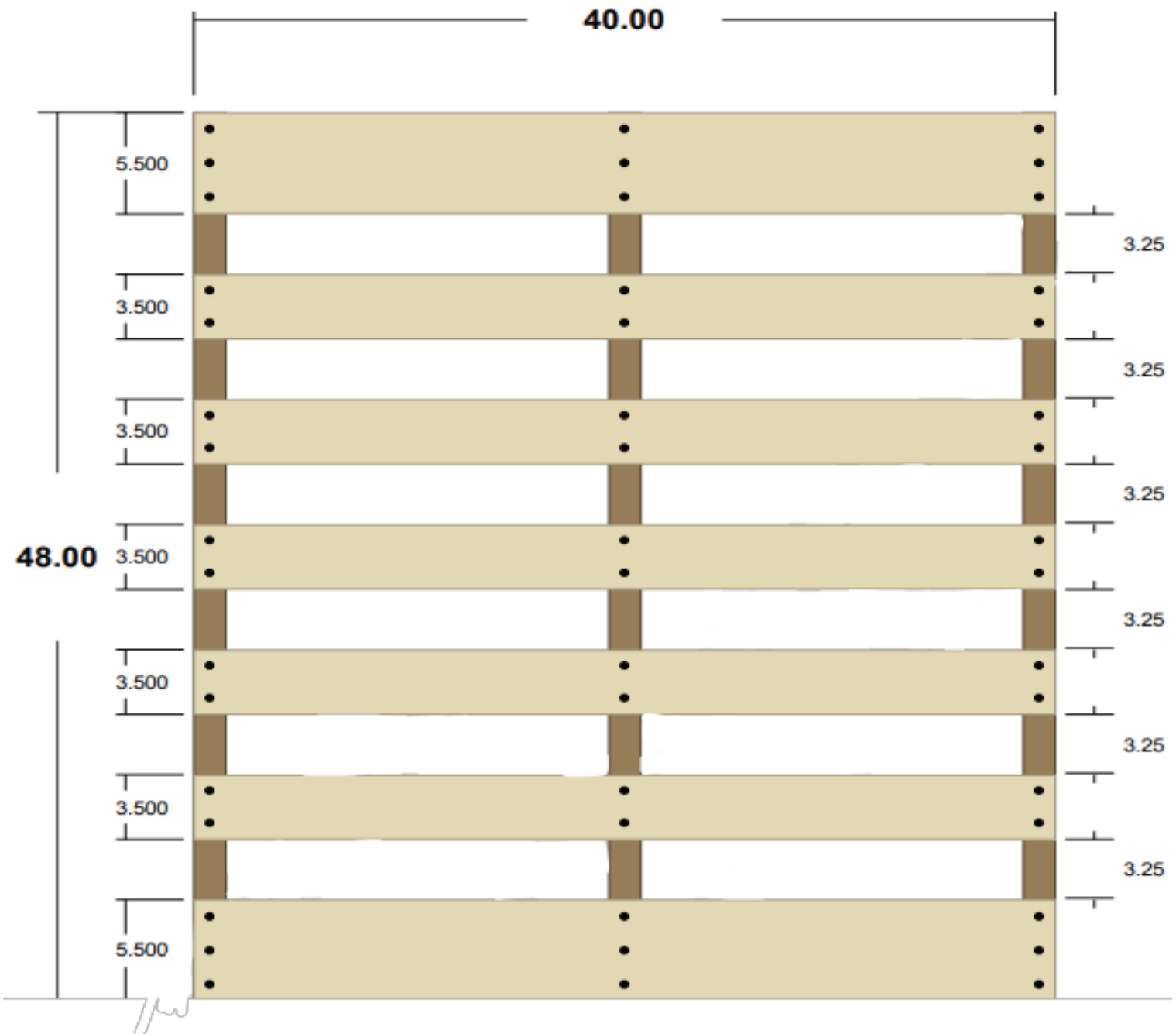
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Pallet Drawing - Top View



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Top View



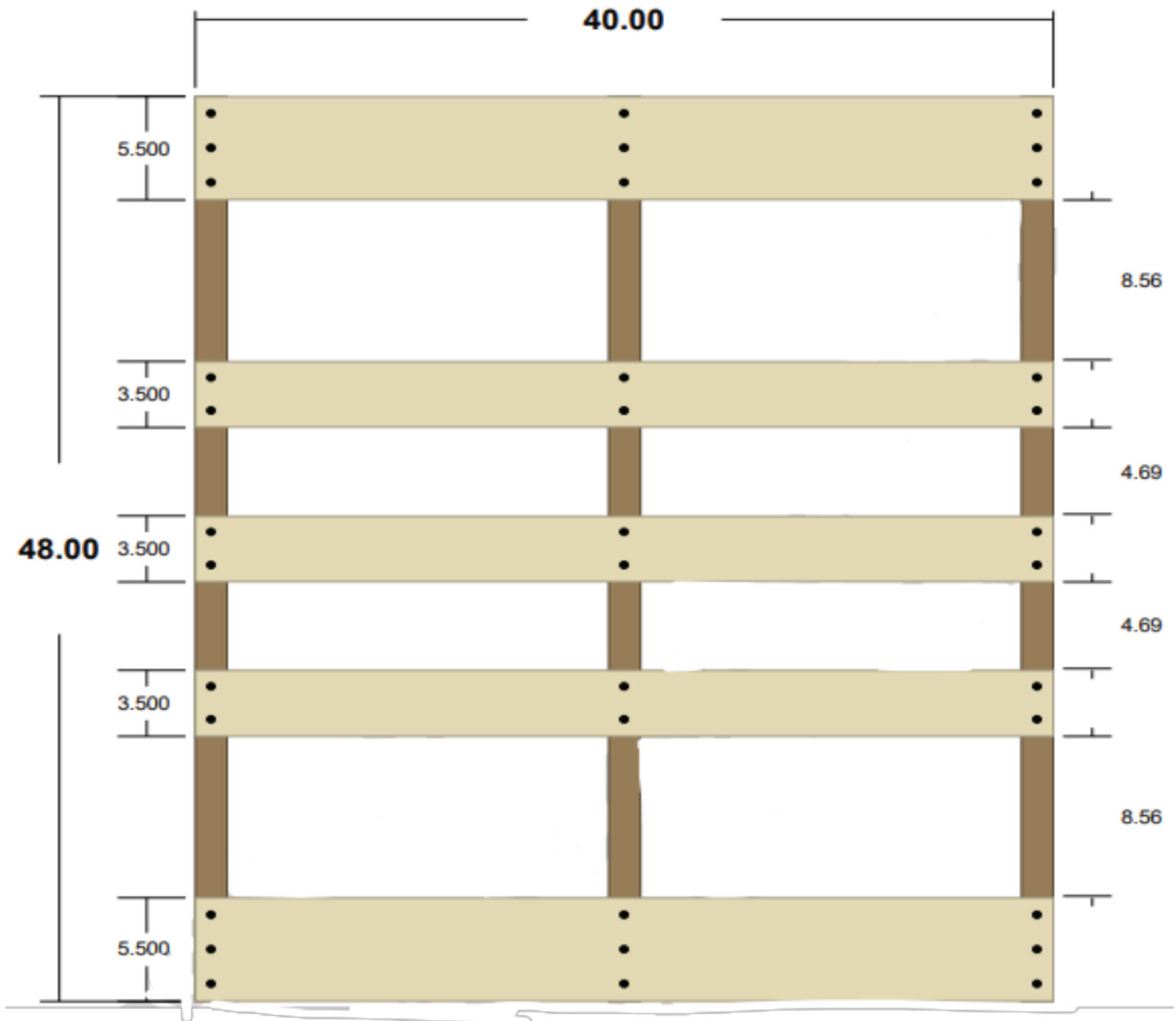
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Pallet Drawing - Bottom View



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Bottom View



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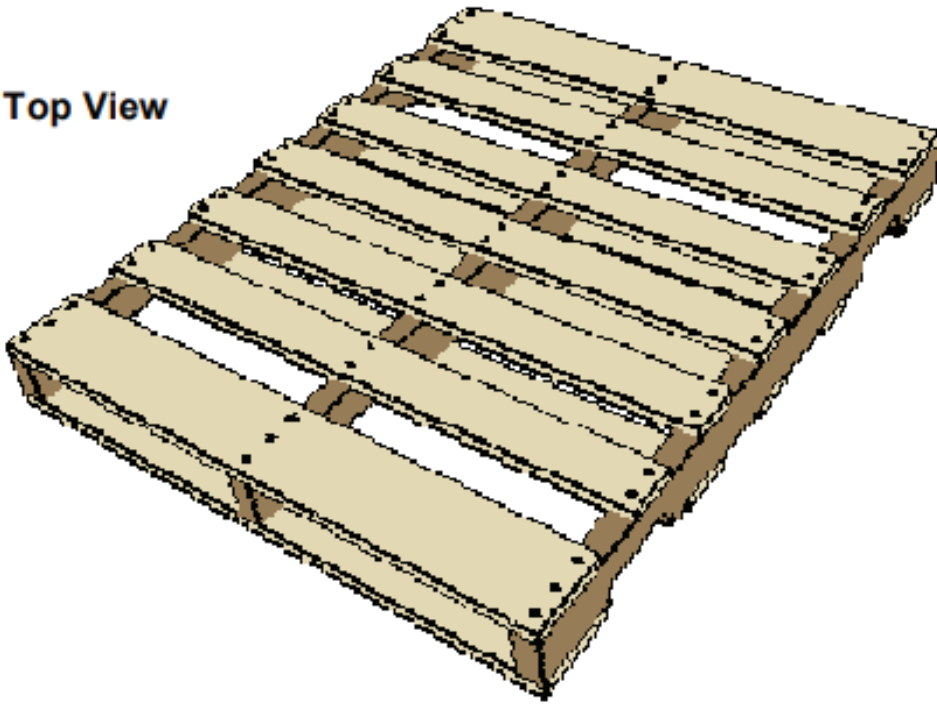
3-D Pallet Drawings



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Top View



Bottom View

