

PALLET DESIGN SYSTEM Version 6.1

Pallet Specification Sheet

All dimensions in millimeters

Customer:

Loop

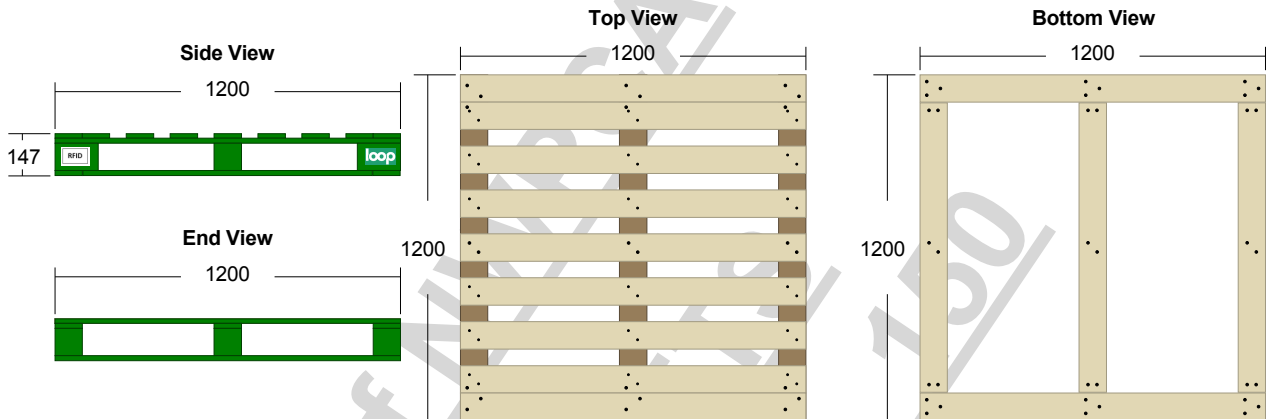
Prepared by:

Scott Pallets
Halbeath Interchange Business Park
Kingseat Rd
Halbeath, Dunfermline
KY11 8RY
PDS License: 150 Printed: July 02, 2020

Pallet ID: 1200 x 1200

Drawing Number: JDPL020720.2 Specification Date: July 02, 2020

Classification: 1200 x 1200, Block-Class, Double-Face Non-Reversible, Full 4-Way, Reusable, New Manufacture



Components

Top Deck:

Style: Deckboard/Stringerboard Type: New Lumber

Number	Thickness	Width	Length
9	16	95	1200

Volume: 0.0164 cubic meters

Mat Assembly Method, Mat Fasteners Clinched

Bottom Deck:

Style: Perimeter Base Type: New Lumber

Number	Thickness	Width	Length
2	18	95	1200
3	18	95	1005

Volume: 0.0093 cubic meters

Top Stringerboards:

Type: New Lumber

Number	Thickness	Width	Length
3	18	95	1200

Volume: 0.0062 cubic meters

Blocks:

Type: Lumber Grain Orientation: Sidegrain Nailing

Number	Width	Length	Height
3	95	95	95
6	95	150	95

Volume: 0.0107 cubic meters

Materials

Fasteners:

	Mat	TD Block	BD Block
Fastener ID:	40 X 2.1	75 X 3.35	60 X 3.35
Fastener Type:	Plain	Annular	Annular
Fastener Length:	39	75	60
Thread Length:		53	42
Thread Diameter:		3.6	3.3
Wire Diameter:	2.1	3.4	3.1
Head Diameter:	5.0	7.5	7.0
Rings:		42	34
Pitch:		1.3	1.2
MIBANT Angle:	108	21	21
FWC:	1.00	3.45	3.69
Total Number:	36	24	36

New Lumber:

Lumber ID:

Species Class	Grade	Lumber Mix
Common European Softwoods	Standard &BTR	70 %
Dense European Softwoods	Standard &BTR	30 %

Moisture Content (at manufacture and assembly): Air Dry - 25%

Total New Lumber Volume: 0.0425 cubic meters

Spec Sheet Notes:

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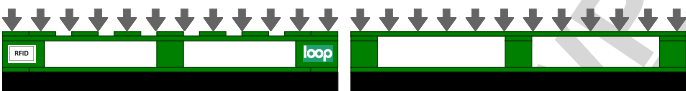
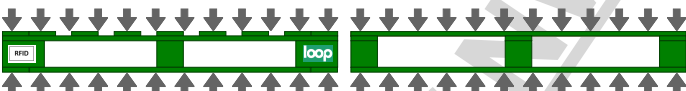
Pallet Structural Analysis

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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 or Connection
Side View	End View					
<p>Warehouse Storage Stacked 1 Unit Load High</p> 		1769 kg	9 mm	----	----	Center Top Stringerboard
<p>Stacked 2 Unit Loads High</p> 		1106 kg per pallet	9 mm	----	----	Center Top Stringerboard

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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 results from PDS are based on the NWPCA's continuing program of laboratory and field research. While the engineering outcomes reflected in the results are based on sound science, 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, and specifically disclaims any responsibility for such. Notwithstanding the history of the PDS system, users of the PDS system are strongly encouraged to undertake individual, unique analysis of the results as they then pertain to specific applications and the production process. 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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PALLET DESIGN SYSTEM Version 6.1

Pallet Durability Analysis

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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:

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

Predicted Service Life: 16 Cycles

Predicted Cycles until First Repair: 4

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)	7	12	1		
Top Butted Boards (2)					
Top Interior Boards (4)					
Top Center Board (1)					
Perimeter-base Outer Boards (2)	11	4	3		
Perimeter-base Butted Boards (3)		4	3	Yes	
Exterior Top Stringer Boards (2)	13				
Interior Top Stringer Board (1)					
Corner Blocks (4)		8	1		
Edge Blocks (2)		8	1		
End Blocks (2)					
Center Block (1)		16			

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Pallet Physical Property Analysis

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	At Manufacture	At 19% MC	At 15% MC	At 12% MC
Average Pallet Weight	20.9 kg	19.9 kg	19.2 kg	18.7 kg

Width Shrinkage
Thickness Shrinkage



Dimensional Change due to Wood Drying

Component	Original Dimension	Shrinkage from Manufacture to 19% MC	Shrinkage from Manufacture to 15% MC
Top Deckboards	16 mm Thickness 95 mm Width	0.2 mm (+/- 0.1 mm) 1.2 mm (+/- 0.4 mm)	0.3 mm (+/- 0.1 mm) 2.1 mm (+/- 0.6 mm)
Top Stringerboards	18 mm Thickness 95 mm Width	0.2 mm (+/- 0.1 mm) 1.2 mm (+/- 0.4 mm)	0.4 mm (+/- 0.1 mm) 2.1 mm (+/- 0.6 mm)
Blocks	95 mm Height 95 mm Width	1.2 mm (+/- 0.4 mm) 1.2 mm (+/- 0.4 mm)	2.1 mm (+/- 0.6 mm) 2.1 mm (+/- 0.6 mm)
Bottom Deckboards	18 mm Thickness 95 mm Outer Board Width 95 mm Butted Board Width	0.2 mm (+/- 0.1 mm) 1.2 mm (+/- 0.4 mm) 1.2 mm (+/- 0.4 mm)	0.4 mm (+/- 0.1 mm) 2.1 mm (+/- 0.6 mm) 2.1 mm (+/- 0.6 mm)

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2-D Pallet Drawings

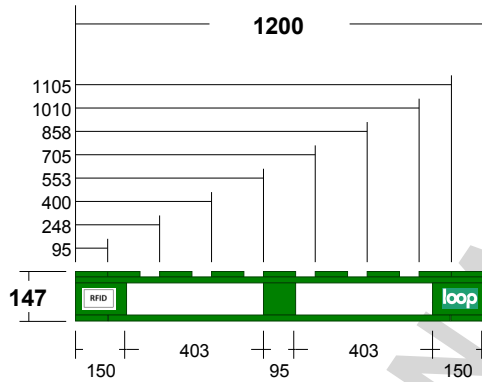
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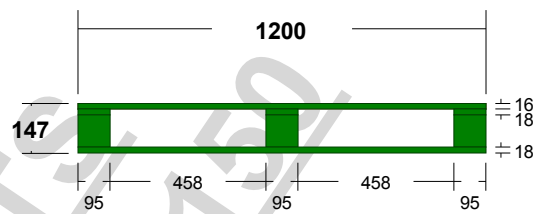
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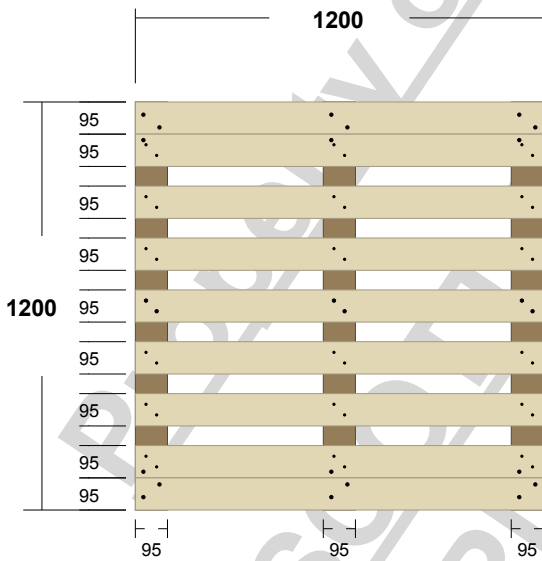
Side View



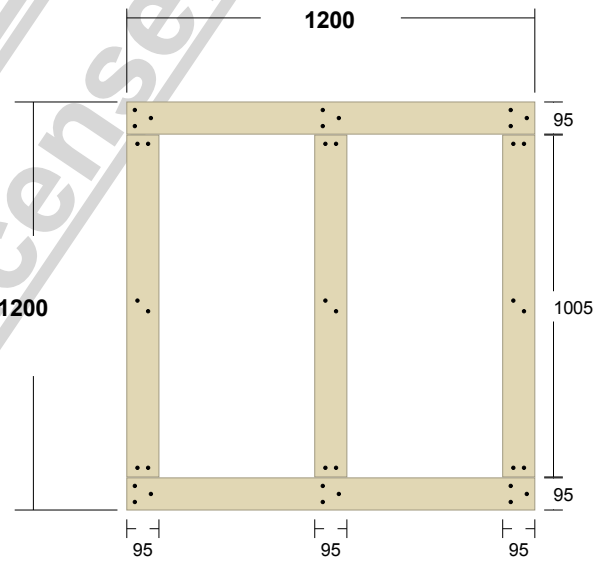
End View



Top View



Bottom View



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Pallet Drawing - Side and End View

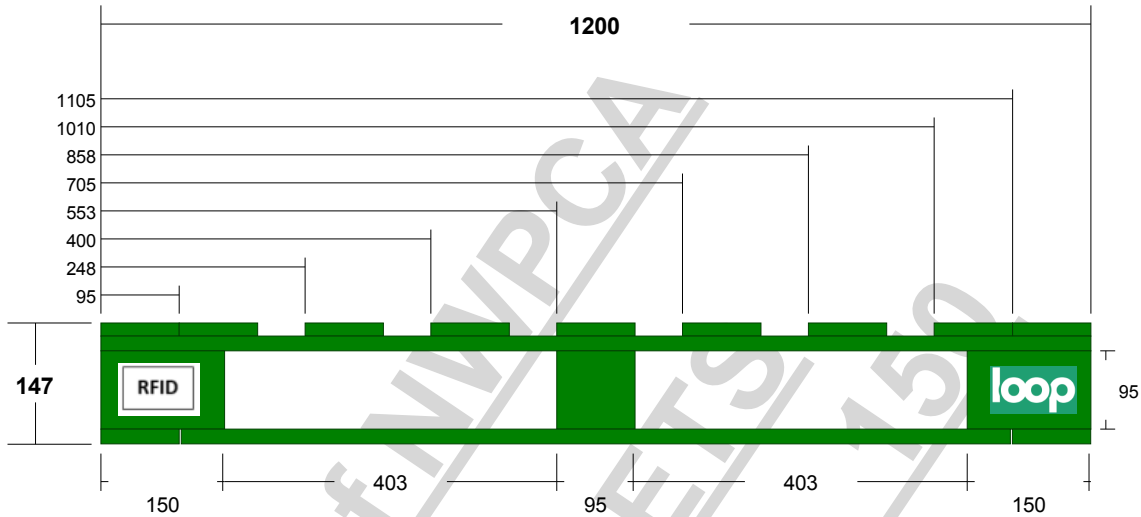
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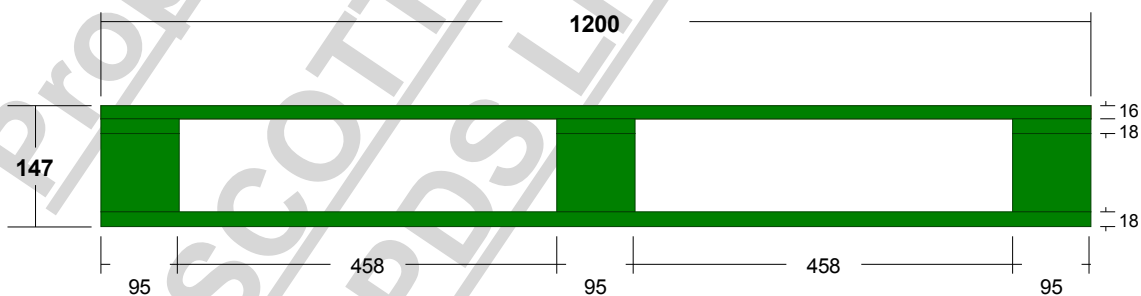
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Side View



End View



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Pallet Drawing - Top View

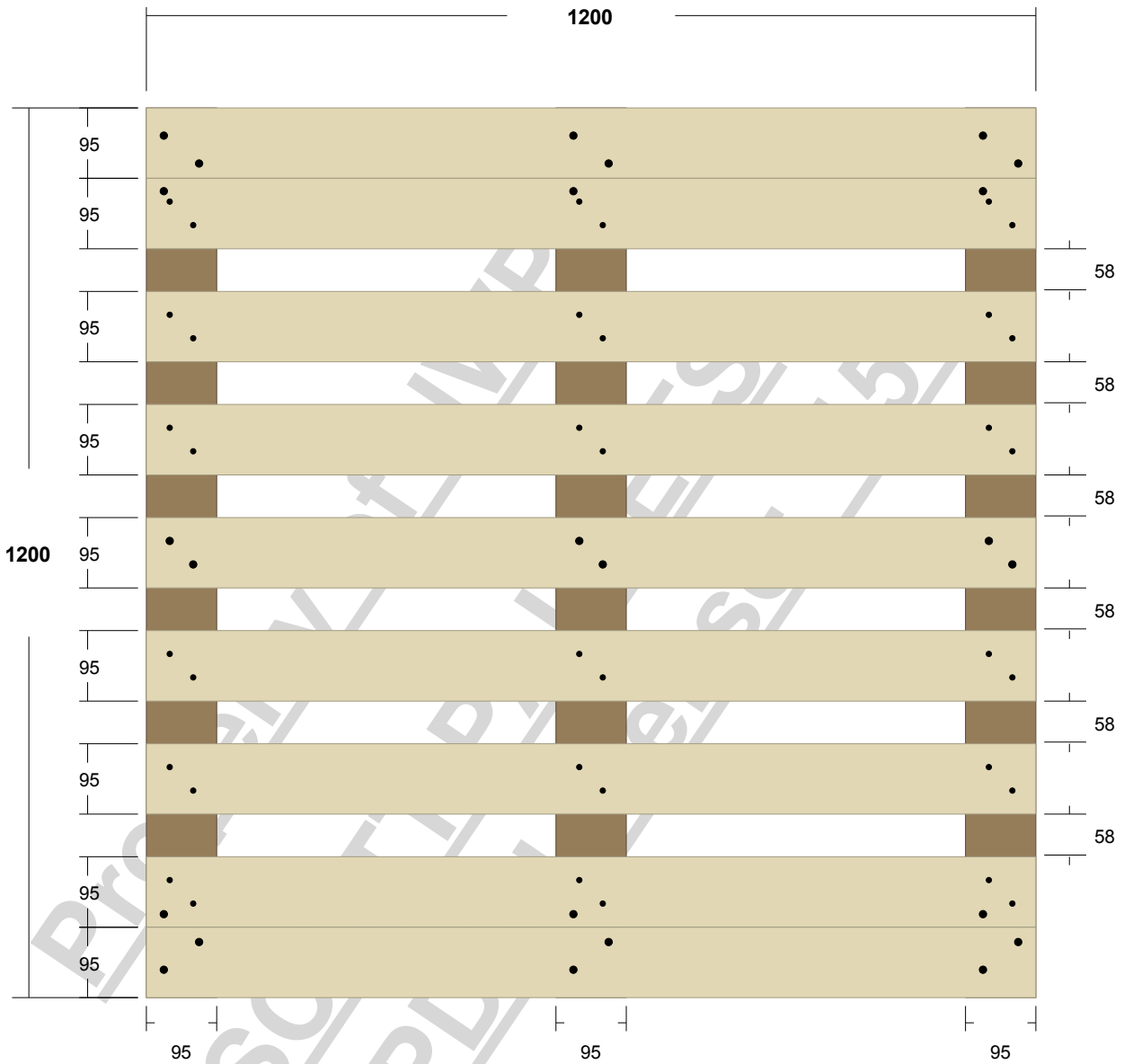
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Pallet Drawing - Bottom View

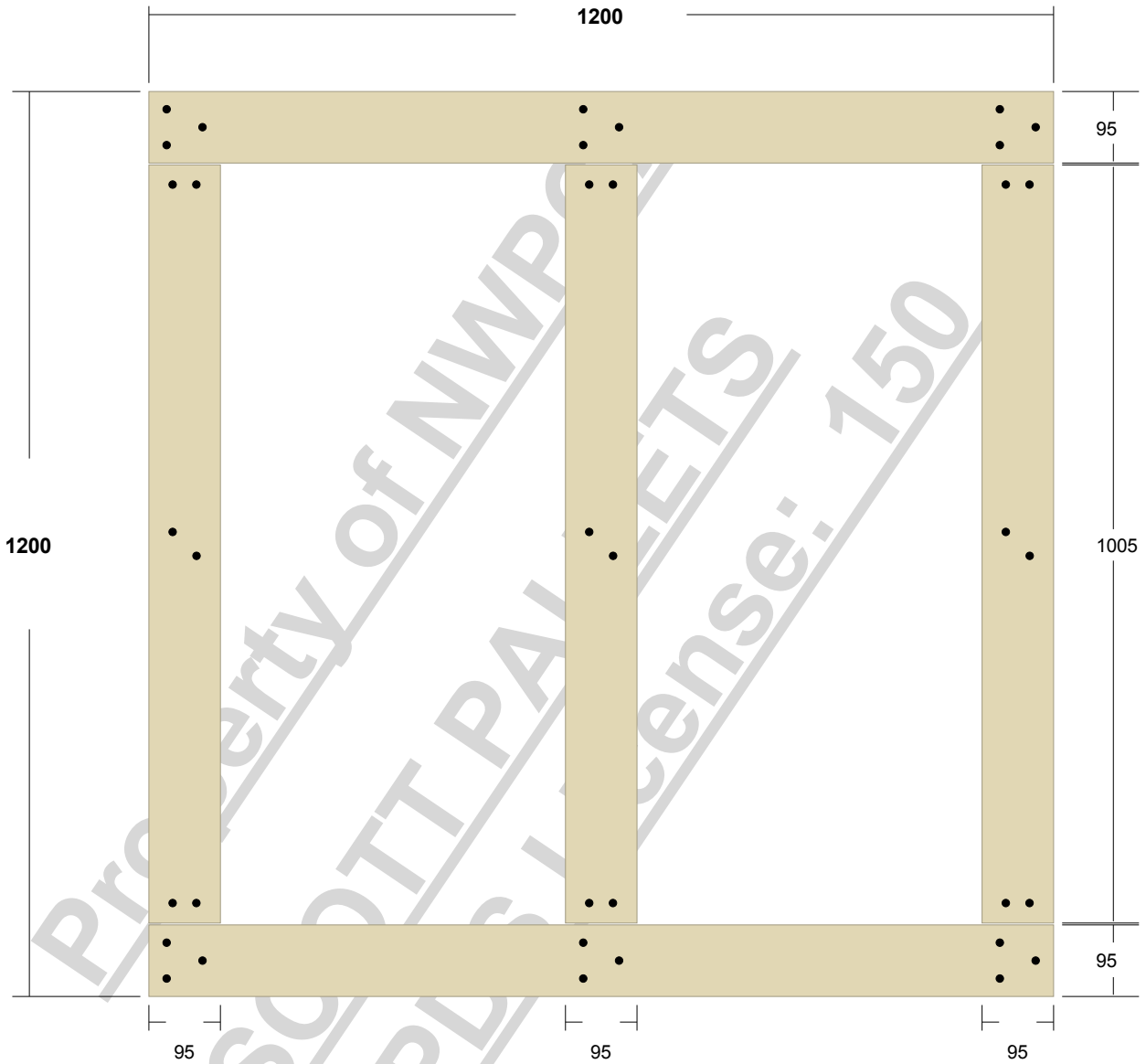
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Bottom View



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3-D Pallet Drawings

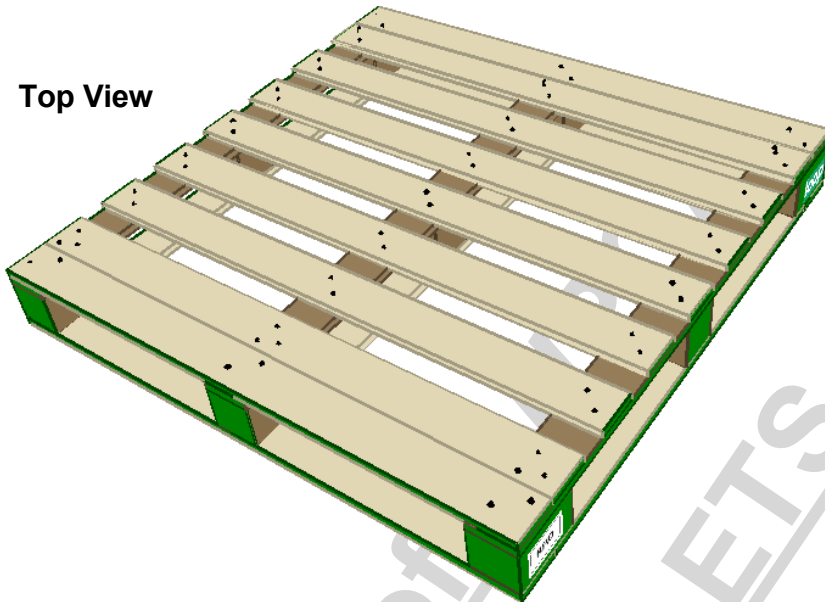
All dimensions in millimeters

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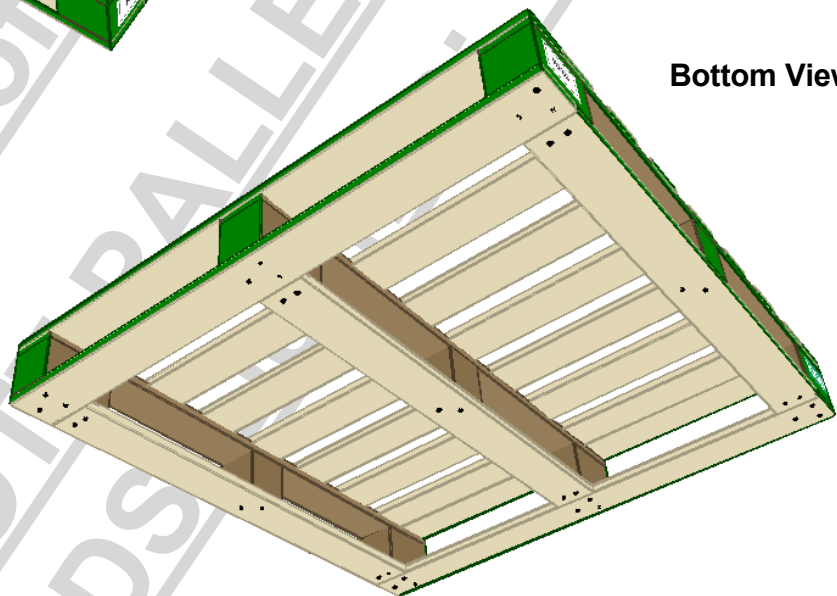
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Top View



Bottom View



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Unit Load Specification and Drawings

All dimensions in millimeters

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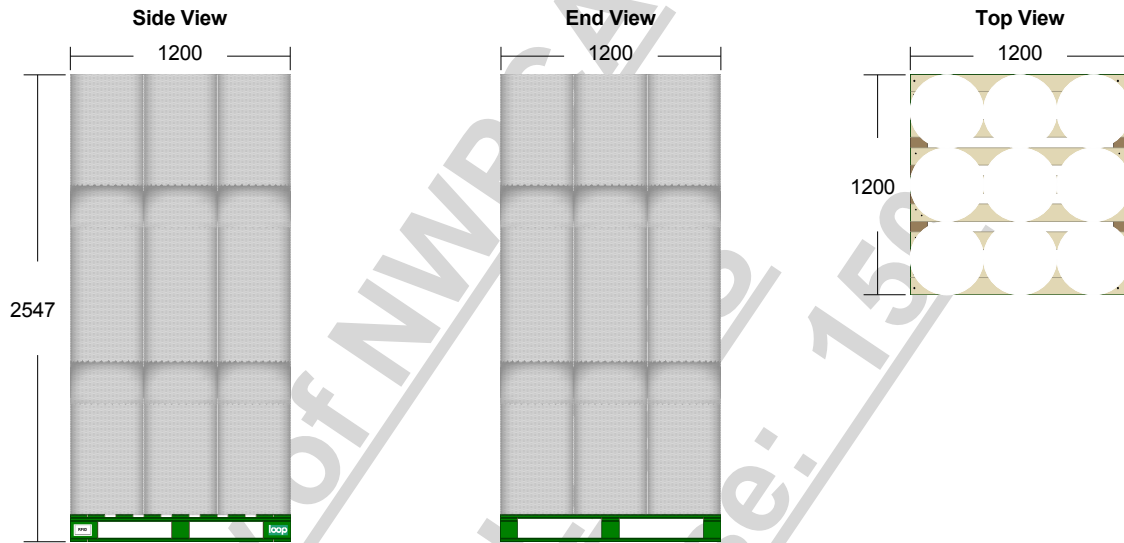
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Container Type: Drum

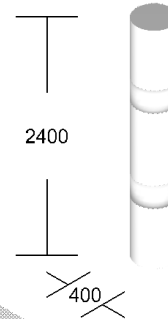
Drum Style: Open-head
Material: Plastic

Weight per Drum: 55.0 kg

Number of Drums per Layer: 9
Number of Layers per Unit Load: 1
Number of Drums per Unit Load: 9
Total Weight of Load: 495.0 kg
Total Height of Load: 2400 mm

Outside Dimensions:
Height: 2400
Diameter: 400

Single Stacked



Load Stabilizers

Wrap

Type: Shrink Wrap

