Rolled Paper Pattern Creation 101

Creating load plans using 3-D drawing platforms
Google SketchUp Pro Example
AAR DPFC Conference July 2019

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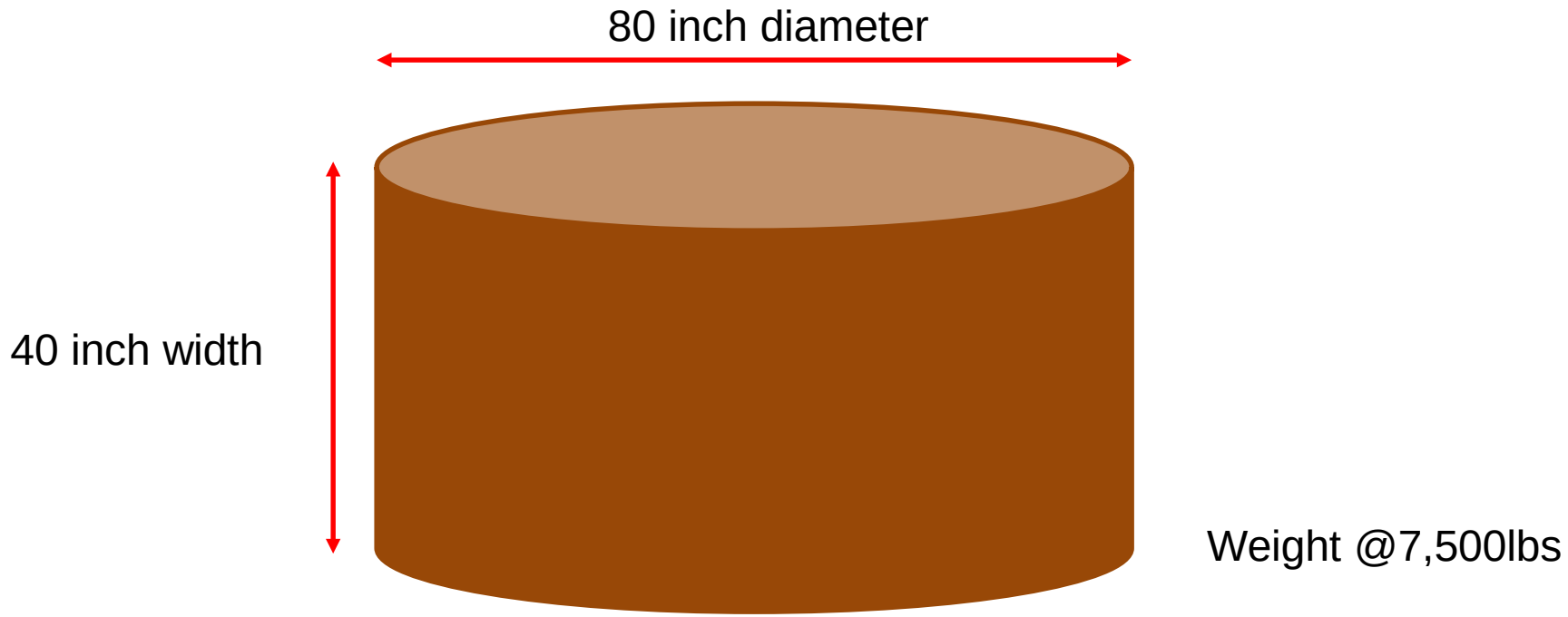
Closed Car-Intermodal Commodity Manager
Loading & Securement Solutions

Rolled Paper Pattern Creation 101

- Overview
  - Shipper requests load pattern
  - Roll diameter (weight, width, and quantity)
  - Conveyance
    - Boxcar
    - Intermodal
  - Routing (will these be interchanged to another carrier)
  - Current dunnage on hand or dunnage preferences
  - AAR Approval
    - Approved pattern
    - Impact testing
    - Field testing

Rolled Paper Pattern Creation 101
81 inch diameter x 40 inch width @ 7,500lbs

- Shipper provides roll details



Rolled Paper Pattern Creation 101
81 inch diameter in 60ft Double Plug Door

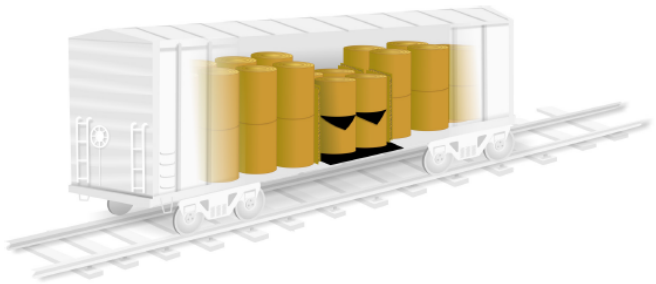
- Load Planning for 81inch diameter rolls
  - Conveyance
    - Boxcar
      - Length - 60ft
      - Width – 9ft 6in
      - Door type – 16ft double plug doors

Rolled Paper Pattern Creation 101
81 inch diameter in 60ft Double Plug Door

ASSOCIATION OF AMERICAN RAILROADS

Closed Car Loading Guide

Part 2
Best Practices for
Loading
Roll Paper in Railcars



Approved August 2016 by the
Damage Prevention and
Freight Claim Committee

8-60 Load Plans—60 ft Cars

8-60-37	60 ft Car—37 in. Diameter Rolls
8-60-40	60 ft Car—40 in. Diameter Rolls
8-60-42	60 ft Car—42 in. Diameter Rolls
8-60-45	60 ft Car—45 in. Diameter Rolls
8-60-48	60 ft Car—48 in. Diameter Rolls
8-60-50	60 ft Car—50 in. Diameter Rolls
8-60-58	60 ft Car—58 in. Diameter Rolls
8-60-60	60 ft Car—60 in. Diameter Rolls
8-60-68	60 ft Car—68 in. Diameter Rolls
8-60-69	60 ft Car—69 in. Diameter Rolls
8-60-70	60 ft Car—70 in. Diameter Rolls
8-60-72	60 ft Car—72 in. Diameter Rolls
8-60-84	60 ft Car—84 in. Diameter Rolls

https://aar.com/standards/damage-publications.php

Rolled Paper Pattern Creation 101
81 inch diameter in 60ft Double Plug Door

Closed Car Loading Standards

Part	Subject / Title	Publication Date	Formerly	Incorporates
1	Minimum Loading Standards for **Freight** in General Purpose Boxcars	01/2014	Pamphlet No. 14, Minimum Loading Standards for Freight in General Purpose and Specially Equipped Boxcars (12/84)	G.I.S. Nos. 583, 701, 709, and 715
	Pneumatic Dunnage Product Verification List			
	Nonmetallic Strap Substitution for Doorway Protection			
2	Best Practices for Loading of **Roll Paper** in Railcars French Version	08/2016	Best Practices for Loading of Roll Paper in Railcars / Pamphlet No. 39, Supplemental Loading Standards for Roll Paper/Pulpboard in Closed Cars (5/11)	G.I.S. Nos. 672, 679, 681, 689, 722, 727, 728, 730, 732, 733, 735, 738, 739, 741,742, 746, 747, 748, 749 and Pamphlet No. 39

GIS Updates:

749 50 in. Diameter Roll Paperboard in 50 ft. Cushioned Boxcars with Horizontal Airbags (8/16)
752 Large Diameter Paper Rolls in 60 ft. Cushioned Boxcars with Single Plug Doors and Anchored Straps (10/16)
753 60 in. Diameter Roll Paperboard in 60 ft. Cushioned Boxcars with Doorway Stacks on Risers (10/16)
758 58 in. Diameter Roll Pulpboard in Boxcars with an Incomplete Second Layer Loaded on End (2/17)
761 37 in. Diameter Plastic Stretch Wrapped Kraft Rolls Loaded in a Single Layer in 60 ft. Cushioned Boxcars Using Rubber Mats and Lengthwise Filler Panels (3/17)
763 Roll Paperboard in Boxcars with Doorway Stacks on Risers and Rubber Mats (6/17)
766 45 in. Diameter Roll Paper in 60 ft. Cushioned Boxcars with Double Plug Doors (8/17)
769 42 in. Diameter Roll Paper Loaded in 60 ft. Cushioned Boxcars Using Rubber Mats and and Airbags (9/17)
770 48 in. Diameter Roll Paper Loaded in 50 ft. Cushioned Boxcars Using Horizontal Airbags (9/17)
771 50 in. Diameter Roll Paper Loaded in 50 ft. Cushioned Boxcars Using Sidewall Fillers and Horizontal Airbags (10/17)
772 81 in. Diameter Roll Paper in 50 ft. Standard Draft Gear Boxcars with Sliding Doors (10/17)
773 42 in. Diameter Roll Paper in 50 ft. Cushioned Boxcars with 10 ft. Doors (revised 6/18 - 10/17)
774 48 in. Diameter Roll Paper in 60 ft. Cushioned Boxcars with 16 ft. Double Doors (12/17)
776 45 in. Diameter Roll Paper in 50 ft. Cushioned Boxcars with up to 12 ft. Doors (2/18)
788 60 in. Diameter Roll Paperboard in 60 ft. Cushioned Boxcars with 12 ft. Wide Plug Doors (6/18)
790 58 in. Diameter Roll Paperboard in 50 ft. Cushioned Boxcars with 12 ft. Wide Plug Doors (6/18)
796 58 in. Diameter Roll Pulpboard with an Incomplete Second Layer (10/18)
801 49 in. Diameter Roll Paper in 52 ft. Cushioned Boxcars with 12 ft. Wide Plug Doors (12/18)
802 58 in. Diameter Paper Rolls T-Loaded in 60 ft. Boxcars with 16 ft. Wide Double Plug Doors Using Lengthwise Filler Panels (12/18)
804 Lengthwise Void Filler Panels in Rigidly Braced Roll Paper Load Securement (2/19)
807 54 in. Diameter Roll Paper in 60 ft. Cushioned Boxcars with 16 ft. Wide Plug Doors (4/19)
808 45 in. Diameter Roll Paper Loaded in 50 ft. Cushioned Boxcars Using Horizontal Airbags (4/19)

Closed Car Loading Guide Part 2 link

General Information Series Updates

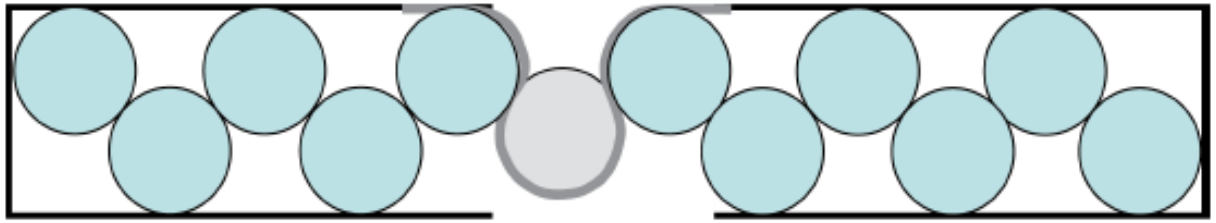
https://aar.com/standards/damage-publications.php

Rolled Paper Pattern Creation 101
81 inch diameter in 60ft Double Plug Door

- Load Planning
  - Circular 42 Rules
  - Large jumbo rolls are typically loaded in a 1-1 offset
  - Doorway protection

BEST PRACTICES LOAD PLANS — 60 FT CAR—72 IN. DIAMETER ROLLS

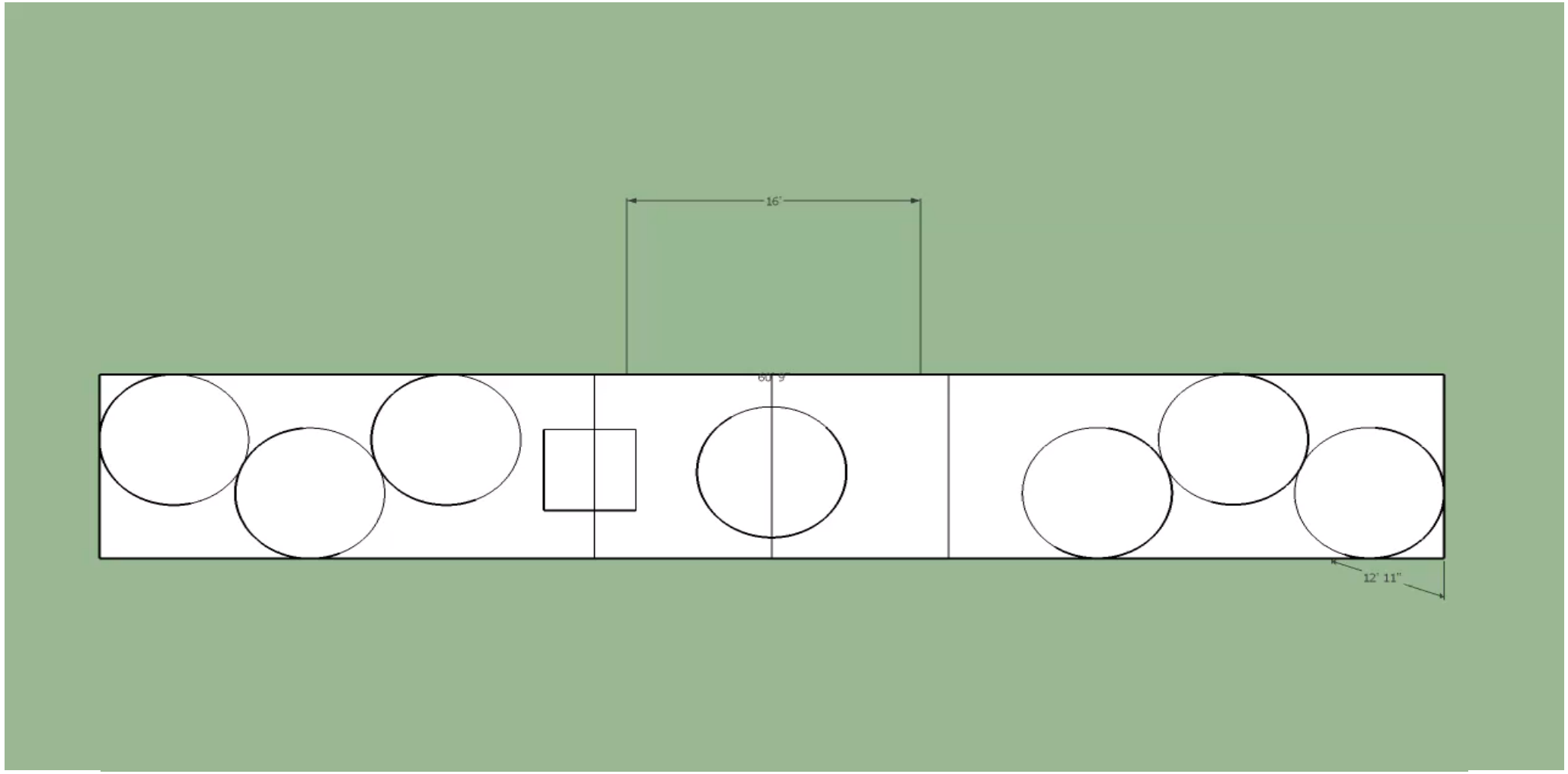
8.3.8.1 72 in. Diameter 60-9 × 9-6 Railcar Key/Anchor Application 12 Floor Spots



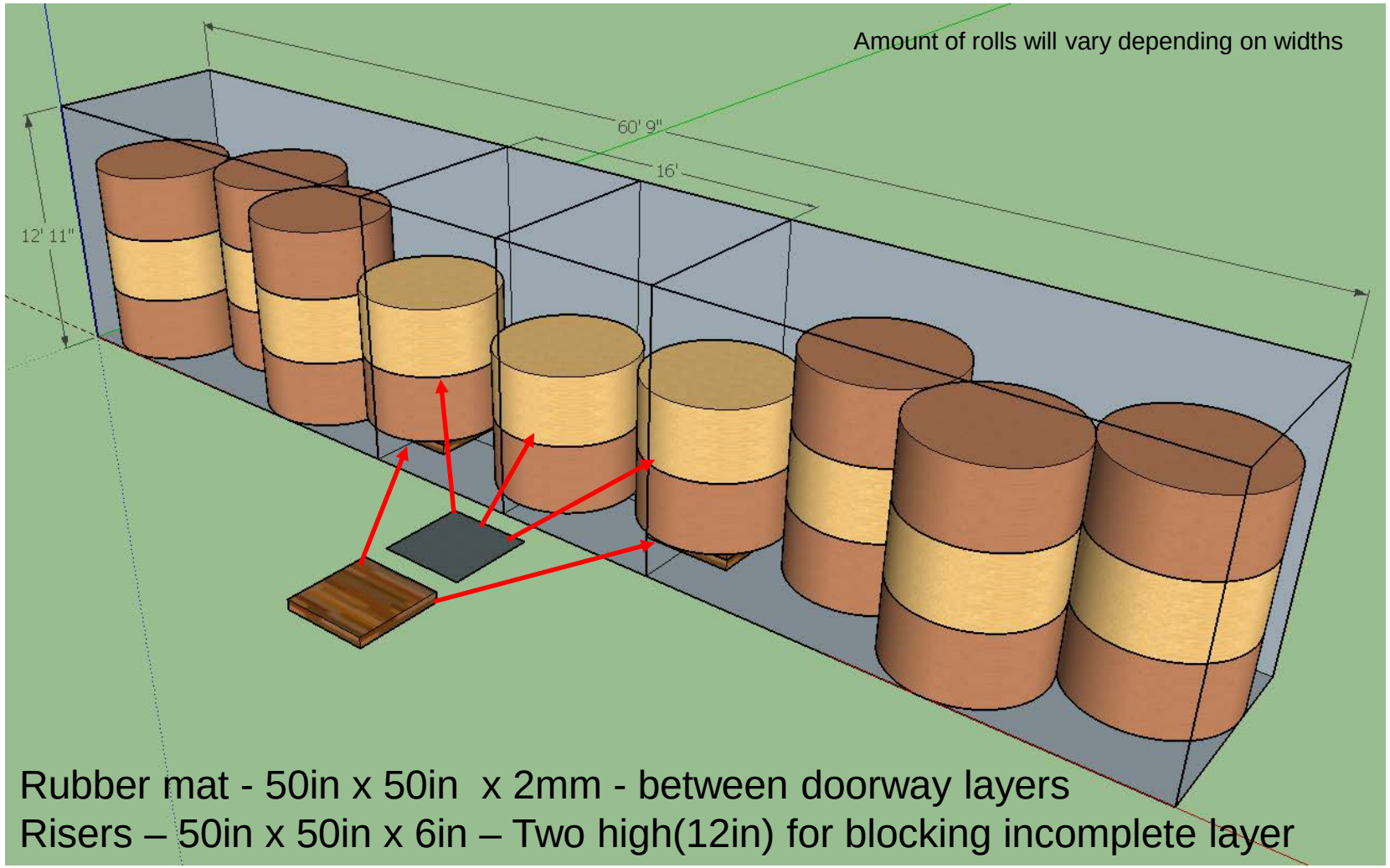
Suitable Door Types	Doorway Protection	Maximum Door Width (ft)	Suitable Draft Gear Type
✓ Single sliding	7.8	12	✓ Standard draft gear
✓ Single plug	7.8	12	✓ Cushion underframe

Reference paragraph 7.8

Rolled Paper Pattern Creation 101
81 inch diameter in 60ft Double Plug Door

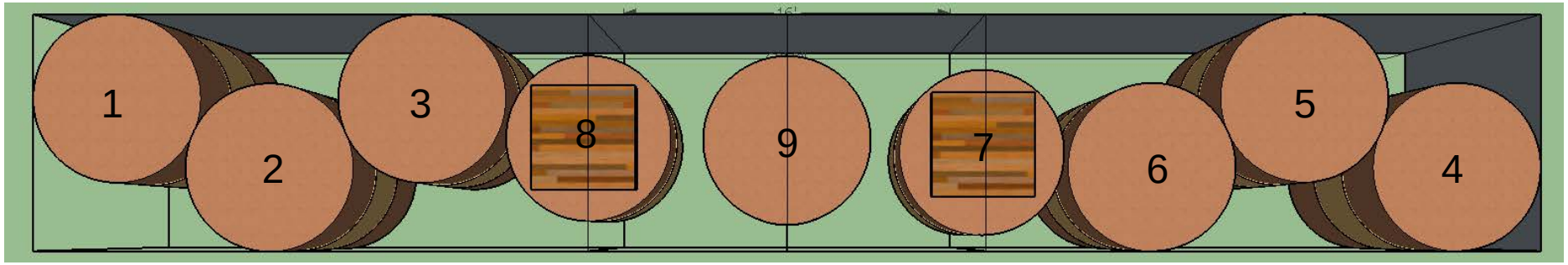


Westrock 81in Diameter x 9 Floor Spots
60ft 16ft Double Plug Door Car 20190130

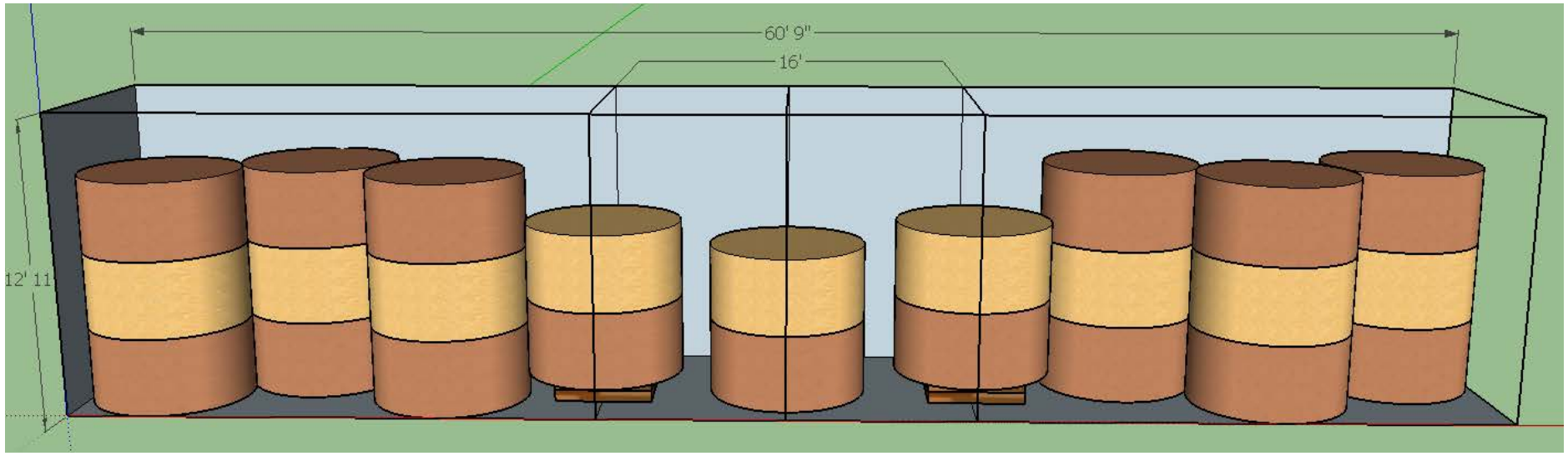


Rubber mat - 50in x 50in x 2mm - between doorway layers
Risers – 50in x 50in x 6in – Two high(12in) for blocking incomplete layer

Westrock 81in Diameter x 9 Floor Spots 60ft 16ft Double Plug Door Car 20190130

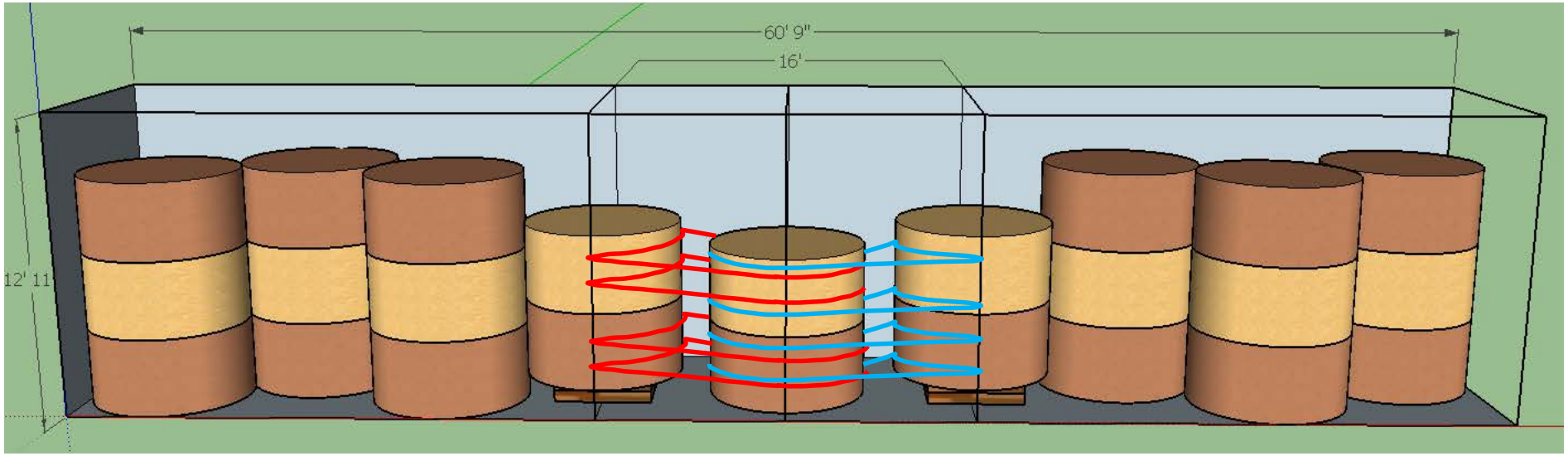


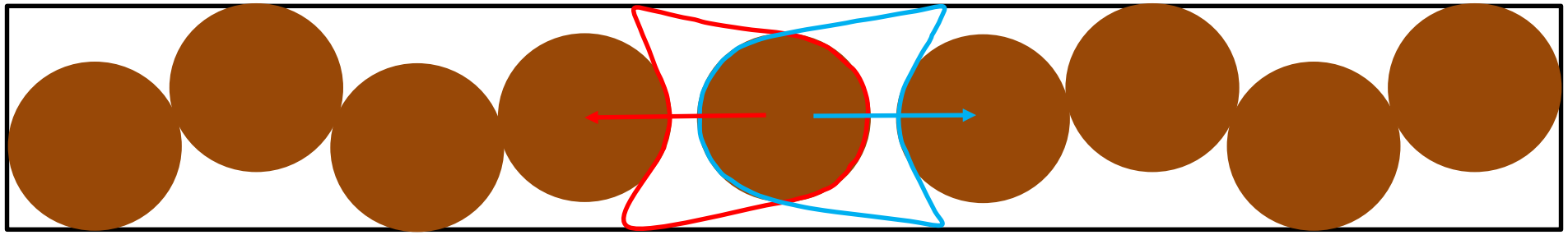
Bottom View



Side View

Westrock 81in Diameter x 9 Floor Spots 60ft 16ft Double Plug Door Car 20190130





AAR Type 1A Grade 5 Non-Metallic Strap with ladder buckles –
Four per end, two per layer – encircling center roll (similar to H-Band Method)

Westrock 81in Diameter x 9 Floor Spots TBOX 664163 Loaded 02-04-19

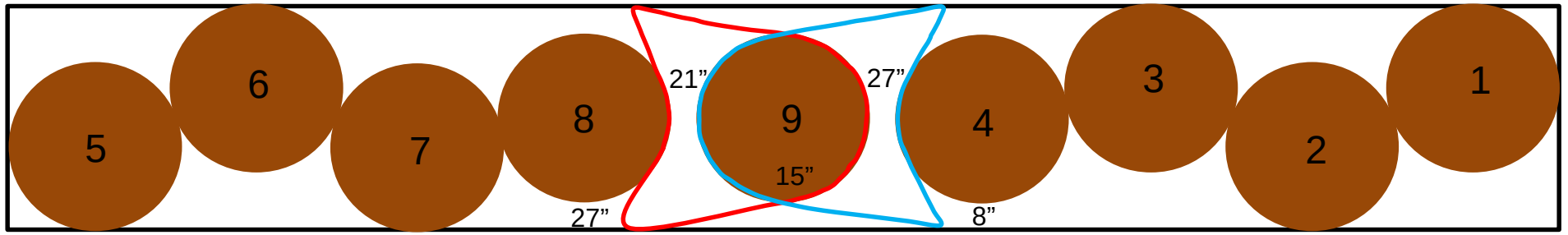
- What we learned:
  - Strap lengths are approximately 42ft.
  - Straps can be pre-positioned
  - Doorpost rolls can be loaded tight to sidewalls
  - Voids on either side of centered doorway roll are approximately 24inches
  - Work straps from top to bottom and side to side, this will avoid becoming entrapped(i.e. left-hand side use odd numbered anchor points, right-hand side use even numbered anchor points)
  - Tension both sides of buckles

Westrock 81in Diameter x 9 Floor Spots
TBOX 664163 Loaded 02-04-19

TBOX 664163 A-End

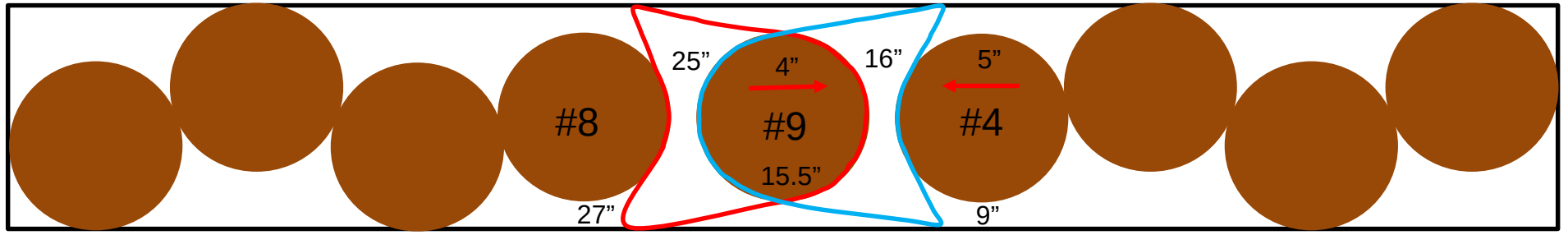
Loaded 02-04-19

TBOX 664163 B-End

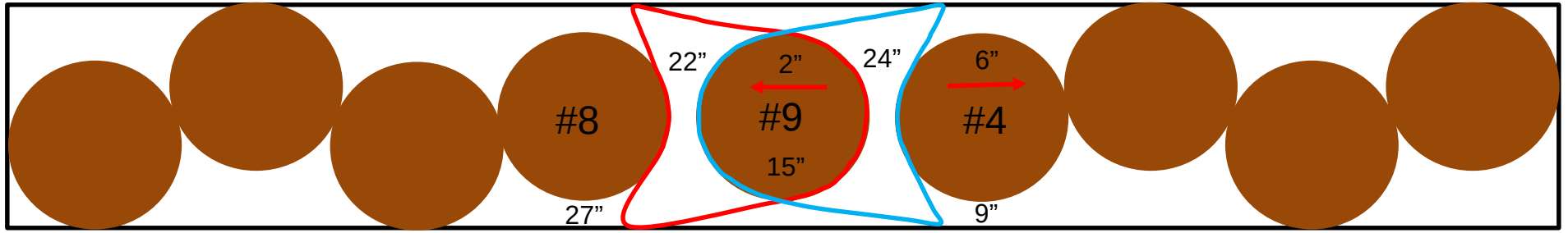


Macon, GA 02-11-19

Approximate weight 134,415lbs



Orangeburg, SC 02-19-19



Westrock 81in Diameter x 9 Floor Spots
TBOX 664163 Loaded 02-04-19

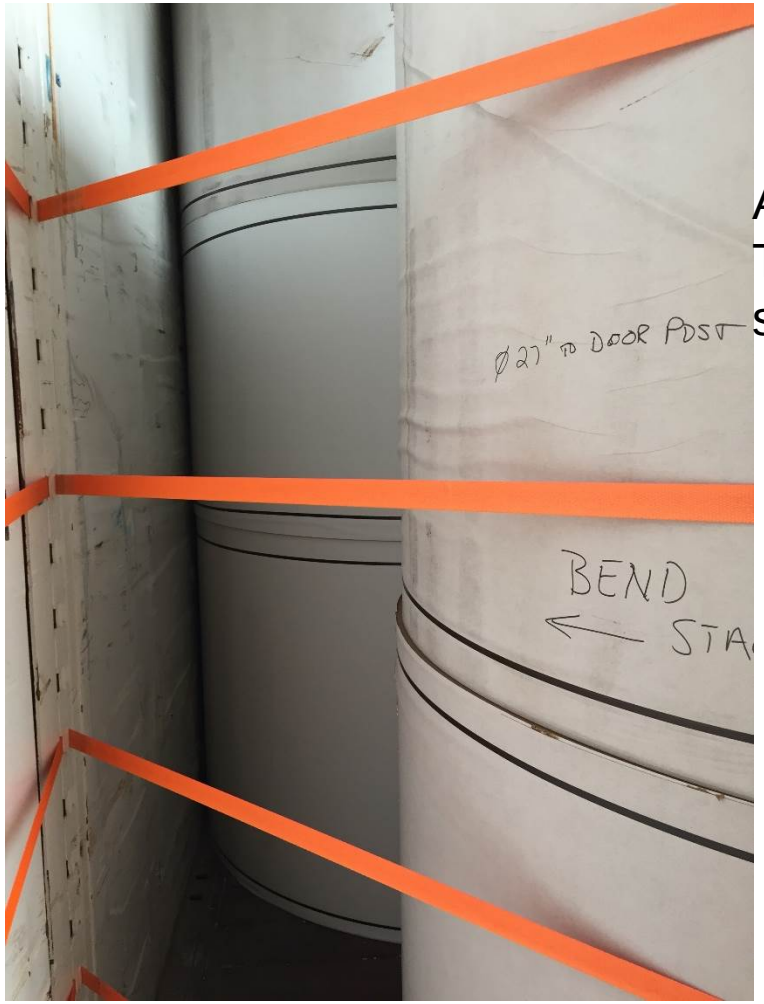
Westrock 81in Diameter x 9 Floor Spots TBOX 664163 Inspection 02-11-19

- Inspection 02-11-19 at NS Brosnan Yard, Macon GA
  - Overall, minimal movement, car went over the hump on 02-07 and 02-10 prior to inspections and 02-12-19 to destination
  - Top layer straps securing Rolls #8 and #9 from A-END were loose (Roll#9 Layer 2 is about 79.5in diameter)
  - Rolls #4 and #9 moved laterally 1.0in and 0.5in respectively towards the right side
  - B-END rolls appear to have moved as a unit approximately 5 inches off the end wall
- Data recorder applied and car was released to destination
  - Routing Mahrt AL to Macon GA is 129 miles
  - Macon GA to Orangeburg SC is approximately 297 miles

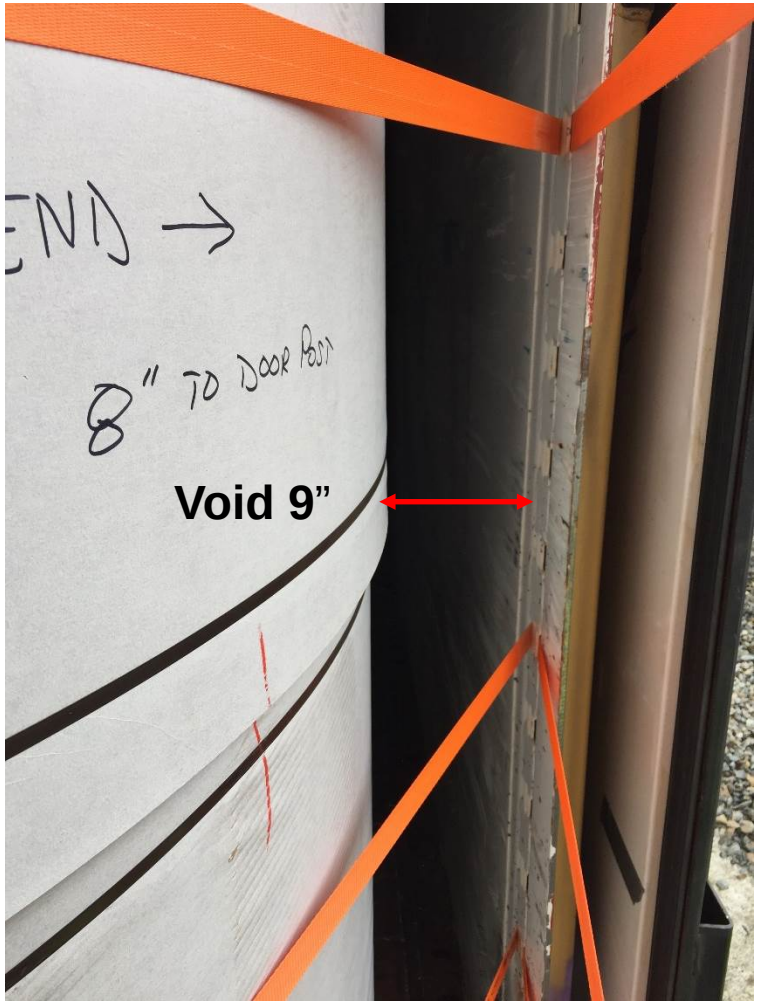
Westrock 81in Diameter x 9 Floor Spots
TBOX 664163 Inspection 02-11-19

A-END Roll #8
Top straps loose
Lower straps tight

Westrock 81in Diameter x 9 Floor Spots
TBOX 664163 Inspection 02-11-19



A-END Roll #4
Top and lower straps tight

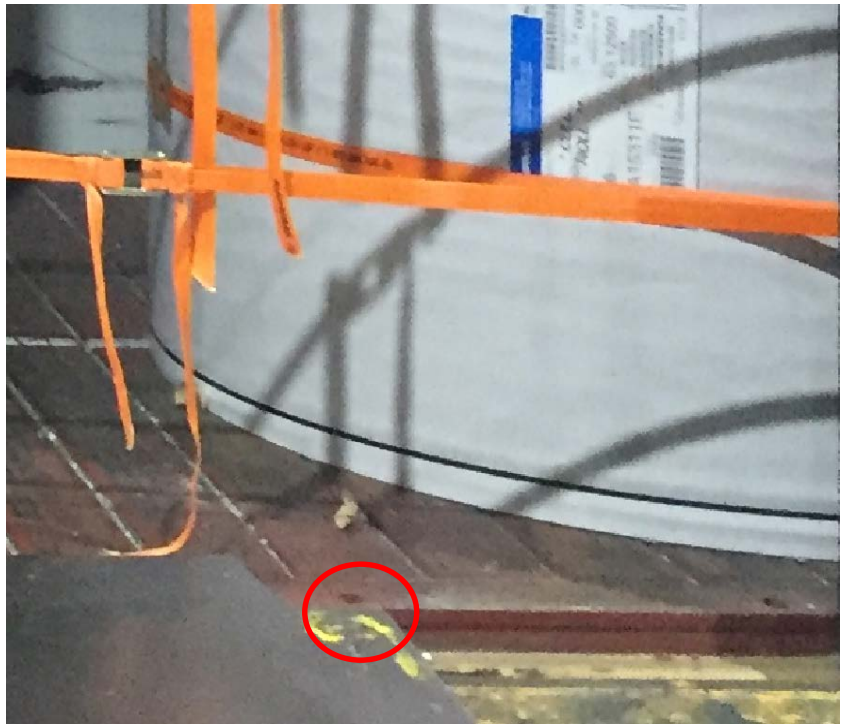


Westrock 81in Diameter x 9 Floor Spots
TBOX 664163 Inspection 02-11-19

[Car IDs:TBOX664163] [Between: 02/04/2019 00:00 - 02/13/2019 07:39] [Order By: Log Date↓] [Total: 3]

Log Date▼	CTk	FTk	MRC	MSw	List	Seq	Car ID	AAR	TMR	Typ	CWB	Wt
2019-02-12 19:38:37	-1	34	0	0	HE79	22	TBOX664163	A606	4	1	53.9	118.95
2019-02-10 22:48:25	-1	1	0	0	HE47	30	TBOX664163	A606	3	1	53.8	118.75
2019-02-07 15:58:07	-1	11	0	0	HE80	11	TBOX664163	A606	4	1	53.8	119

Westrock 81in Diameter x 9 Floor Spots
TBOX 664163 Inspection 02-11-19

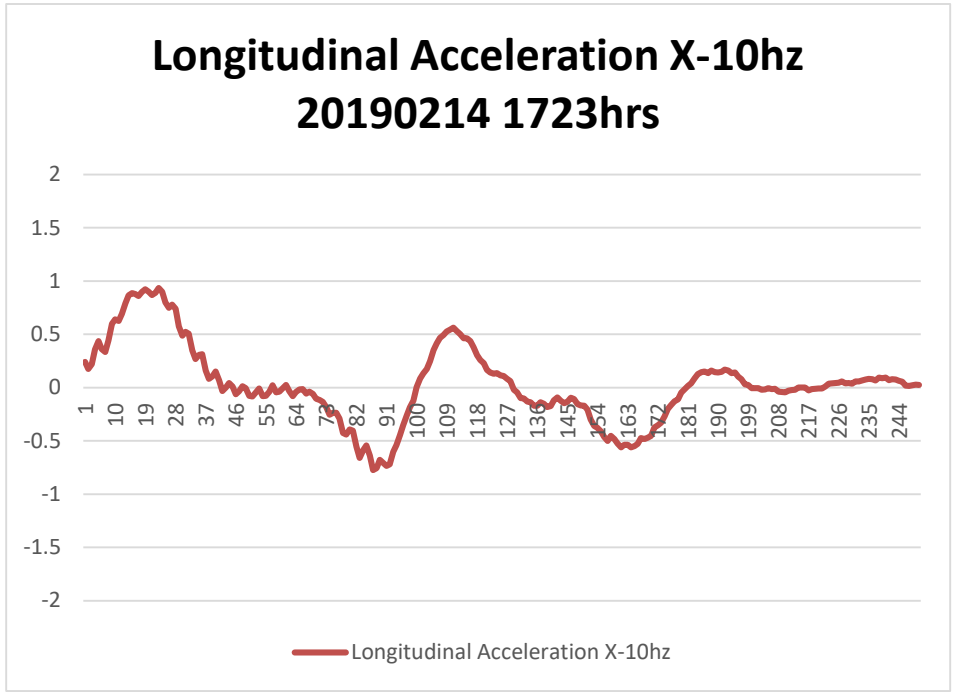


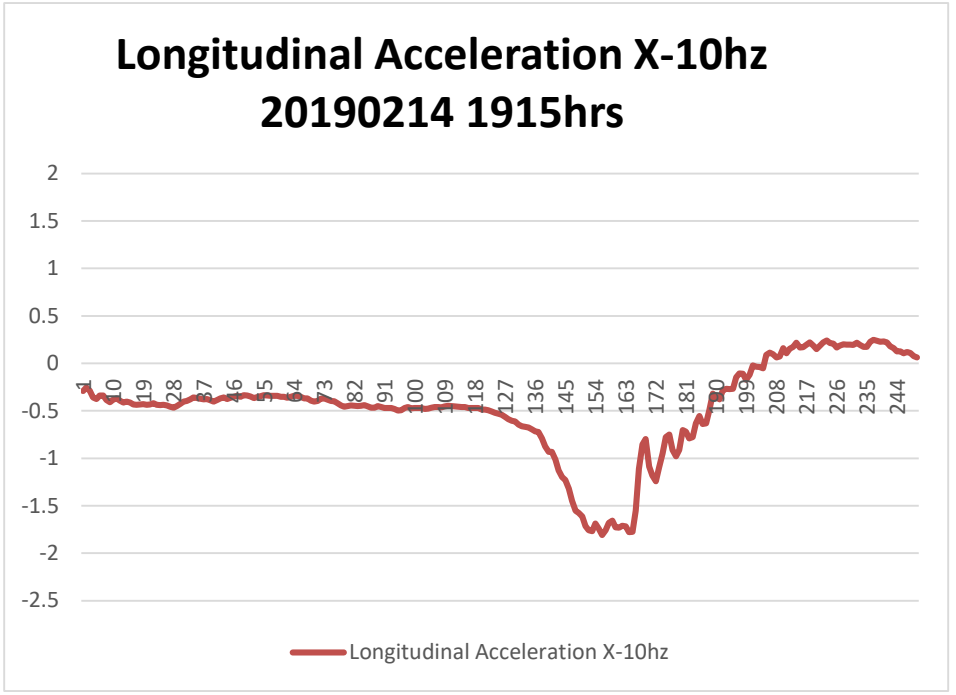
Mahrt AL
Roll #4

Macon GA
Roll #4

Each floor board is 8 inches wide, movement noted from floor anchor position

Westrock 81in Diameter x 9 Floor Spots
TBOX 664163 Data Recorder





Westrock 81in Diameter x 9 Floor Spots TBOX 664163 Inspection 02-19-19

- Inspection 02-19-19 at Sun Trading Warehouse, Orangeburg, SC
  - Overall, minimal movement, car went over the hump on 02-07 and 02-10 prior to inspections and 02-12-19 to destination
  - Top layer straps securing Rolls #8 and #9 from A-END were loose (Roll#9 Layer 2 is about 79.5in diameter)
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  - B-END rolls appear to have moved as a unit approximately 5 inches off the end wall

Westrock 81in Diameter x 9 Floor Spots Conclusion

- The securement method appears to have potential for large voids that would typically have void fillers
- The 3-D concept allows the user to view the plans from different perspectives

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- Questions?

- Thank you!