
Road Transport Regulation and Pallet Loading Configuration

Preamble

95% of citrus fruits are transported by road transportation; the diversity of citrus packaging can create a complex range of loading parameters to ensure that trucks loaded with citrus are within regulatory requirements. Development of High Cube Integral Reefer Containers has advanced the citrus industries packaging and palletization practices. Whereas prior to the use of this mode of sea transportation to bring citrus fruits to global markets, citrus was transported by way of bulk refrigerated ships with a pallet height restriction of ~2.1m within the cargo holds. High Cube Integral Reefer Containers permit a pallet height of ~2.4m. Common practice was to transport citrus of pallet height ~2.1m to port facilities to be built-up to height ~2.4m in port prior to stuffing. The 40ft container permits 20, 1.0m (Length) x 1.2m (width) x ~2.4m (height) single pallet lots to be loaded. The conventional pallet height of ~2.1m that was transported to port would then permit 23 pallet lots to be stuffed of which 3 pallet lots would be disassembled and an extra layer or two would be built-up above 20 pallets to assemble 20 pallets of height ~2.4m. The industry logistics agents realized there was a significant cost saving by promoting citrus production points to palletize pallets to a height of ~2.4m and transport to port. The savings were made by omitting the 3 pallets of height ~2.1m from being charged for handling and pallet assembly fees by the port packing facilities. The development of the commonly known 'high cube' pallet has gained momentum and now represents ~80% of total citrus pallets exported of which is transported predominantly by road to port facilities to be stuffed in containers. Where pallets of height ~2.1m; (known as 'standard height' pallets) depending on the commodity type, weighed ~1,000kg to 1,300kg, the 'high cube' pallet weighs ~1,200kg to ~1,500kg and beyond. An additional 160kg to 190kg of cargo is placed above the standard pallet height of ~2.1m to create a height of ~2.4m. This alters the Centre of Mass (COM)¹ of the pallet which responds more negatively to acceleration, deceleration or sideways sway of a road vehicle. Noticeably in some cases the increased pallet weight has had an influence on the pallet loading configuration on road trucks to ensure the weight distribution remained within regulation. To achieve this, cargo is loaded 1,000mm to 1,500mm from the headboard on single trailer chassis and the rear trailer on an interlinking chassis. This creates an environment where the pallets are more susceptible to collapse where the load is unable to be secured against the headboard or where a load is not secured sufficiently enough to prevent negative inertia – more so in the case of sudden deceleration. As the case stands there has been a significant increase in the amount of citrus product damaged during road transport due to this trend. There are a few impeding results due to the high number of occurrences of damaged product:

1. Impacting on the producer's ability to export.
2. High costs to repair damaged product received at stuffing facilities.
3. High costs to place damaged product on the local market.
4. Transporters negating to transport citrus – creating vulnerability to obtain supply of transport.
5. High insurance premiums or insurers negating to insure citrus – high transport costs.

¹ COM: The **centre of mass** or **mass centre** is the [mean](#) location of all the [mass](#) in a system. In the case of a [rigid body](#), the position of the centre of mass is fixed in relation to the body.

Pallet securing on Flat Deck trailers compared to Tautliner trailers.



Tautliner trailers are becoming common place when transporting citrus, the reduced time for securing a load and drawing the curtains to protect the cargo from the elements compared to the conventional flat deck requiring tarpaulins (sails) to be placed over the cargo followed by netting and securing straps, means less down time for the trucks. The natural securing process when cargo is loaded on flat deck trailers is a means to protect the cargo from damage in itself. The combination of the tarpaulin and netting creates

a barrier against negative inertia experienced during the transport journey. The Tautliner trailer relies only on the corner plates and straps that are placed over each pallet and secured by fastening to the trailer bed. There is limited or no barrier against the negative inertia experienced during the transport journey. In the case of cargo that is not placed against the headboard of the rear trailer, there is no direct barrier to the negative inertia from sudden deceleration. This circumstance and event is the main cause of citrus being damaged during road transportation as most citrus is transported by Tautliner truck trailer combinations and most citrus is palletized as high cube pallets; which is not loaded against the headboard on the rear trailer.

There has been a lot of discussion and correspondence regarding the vast amount of damages incurred during road transportation. The cause of the problem can mostly be equated to the change in COM of the pallet and the limited ability for trucks to secure the load from forward thrust during hard deceleration. The palletization practice used to secure the citrus carton onto the pallet to create a secure unit must also be considered. Since the COM of the pallet cannot be changed the focus to secure the load can be directed mainly to load securing and palletization practices.

On inspection of the damaged loads, in most cases the carton itself does not appear to present a direct influence on the cause of the damage but rather the damaged carton is a result of the product collapsing due to negative inertia applying forces which the load securing or palletization methods as a combination cannot seem to be able to withstand in unison.



Palletization Practices

There is a trend that has done away with the use of spot gluing on full telescopic cartons which has now been substituted with the application of corner pieces applied to each corner of the pallet, secured by horizontal strapping placed vertical up the pallet. The corner piece alone is not an effective barrier against the COM of a high cube pallet unless strapping is applied to each carton layer. Without spot glue the fail safe is reliant on the strength of the corner piece at the point between each layer and if there are layers where strapping has not been applied the fail safe is radically reduced. In terms of whether a corner piece is a failsafe solution on its own should be tested under replicating conditions. Each layer of a typical pallet consists of 10 cartons which could weigh 18.5kg each thus each layer of the pallet could weigh in excess of 185kg. A typical high cube pallet would consist of 8 layers with the top 4 layers existing above the COM weighing 740kg. This would by default mean that the corner piece would have to withstand forward pressure of 740kg of mass plus forward inertia during hard deceleration. Without being too scientific it is hard to imagine a strip of compressed cardboard withstanding the forces of hard deceleration during transportation.

There are a number of various types of corner pieces in circulation which are being applied by the citrus industry. Some are compressed paper type and others are recycled plastic and there are also hard plastic types. Each of these types offer a varying degree of resistance to breaking and there is a need to test for the most suitable type that offers resistance across the full supply chain especially during transport and cold treatment.

There does not seem to be any uniform method of securing pallets to create a formidable structure that can withstand the forces working against the structure of the pallet as a unit. Some production points are aware of the need to properly secure the pallets and apply spot gluing, corner pieces and strap each carton layer. There is a distinct difference in the quality of properly secured pallets against palletization practices where only corner pieces and 4 – 6 straps are applied instead of strapping each layer (no spot glue).

The 'open top' display carton by design does offer a degree of failsafe against horizontal inertia due to the interlocking nature of the design. However the top carton only rests on the outer corners of each carton below it which does not offer much frictional support. During transportation it is common place that nesting occurs frequently where the top carton falls into the bottom carton. On this type of carton the only failsafe to prevent collapse during transportation is to apply strapping on each layer. Spot gluing cannot be applied to these types of cartons. Without the use of



spot glue the single failsafe measure applied in palletization rests with the ability for the corner piece in preventing collapse brought on by the various levels of negative inertia during transportation – more so in the case of Tautliner trucks.

Load Securing

When it comes to 'high cube' pallets, in most cases the load cannot be placed against the headboard on single trailer chassis and the rear trailer on an interlinking chassis. Therefore there is no preventative measure against negative inertia during hard deceleration. Flat Deck trailers are forced to use tarpaulins and in most cases netting is also applied as a preventative measure against collapse, but damages have been recorded on flat deck trailers even with the use of netting. The only true failsafe measure to prevent forward thrust during hard deceleration is to create a solid barrier against this negative inertia.



Proposals have been made to create an extendable headboard that can be adjusted outwards to 1,500mm along the trailer. This proposal and others similar have been tested with transporter operators whom have suggested the practicality of such is not deemed sufficiently feasible for many reasons. This suggestion should not be totally muted and should be considered an option to securing the citrus pallets from forward collapse.

Site visits to port stuffing facilities has shown that various loading configurations are being used to create a barrier against forward inertia during hard deceleration. As pictured below the placement of single row of pallets against the headboard on single trailer chassis and the rear trailer on an interlinking chassis provides some degree of support against possible forward thrust. This loading technique has been tested with the Transolve 2010 Loading Module which indicates that it complies with weight regulations on interlink truck trailer combinations under certain loading conditions and provided pallet masses do not exceed 1,460kg. The number of pallets loading on the front trailer and rear trailer will depend on the mass of each pallet and the total weight of the load to be transported. The Transolve compliant loading configuration for this method of loading can be found on the pages below.

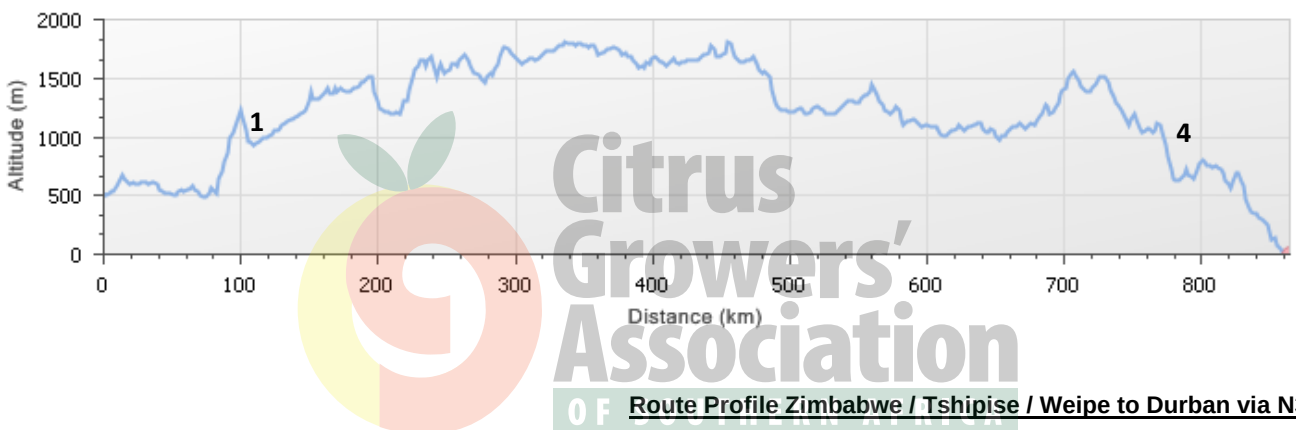


Northern Region Road Conditions and Route Profile

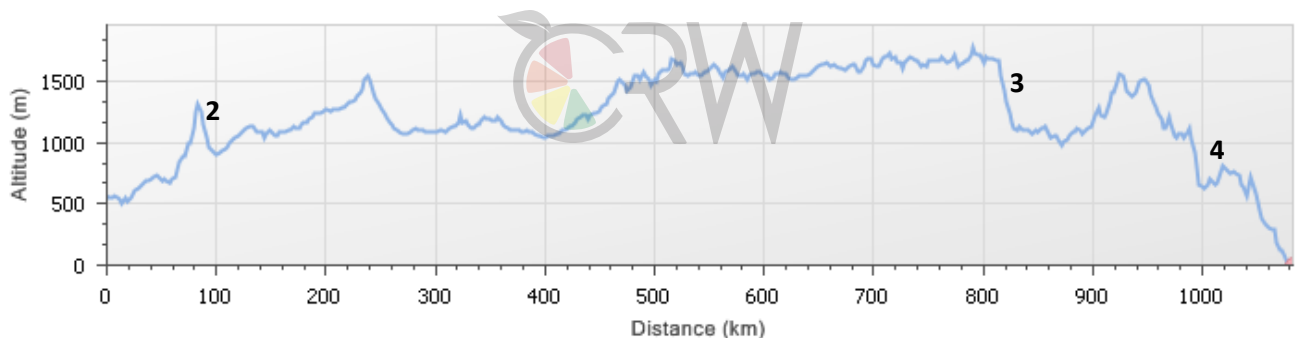
The Northern Regions of Mpumalanga, Limpopo and Zimbabwe are located distances of 600km to 1,250km from the Durban port. The terrain that trucks are travelling can be quite severe which can impact the condition of loads being transported over this distance. In most cases there are treacherous mountain passes that need to be traversed on route to port.

1. Abel Erasmus Pass outside Ohrigstad on the R36.
2. Wylliespoort pass on N1 outside Louis Trichardt.
3. Van Reenen Pass between Harrismith and Estcourt on the N3.
4. Town Hill outside Pietermaritzburg on the N3. Most trucks carrying citrus to Durban would travel the N3 between Estcourt and Durban (final 200km) and be subjected to the severe declines where hard deceleration is required.

Route Profile Letsitele / Hoedspruit to Durban via R36 / N11 / N3



Route Profile Zimbabwe / Tshipise / Weipe to Durban via N3



The National roads are also fraught with congestion and ongoing road works while traffic accidents are all too common – in particular along the dreaded Town Hill outside Pietermaritzburg on the N3 Eastbound to Durban. Road conditions also have an impact on the condition of cargo transported as well as presenting obstacles for drivers to avoid thus impacting on load stability. A shift in driving patterns could be a frequent occurrence to avoid the variation of road hazards that drivers are faced with; this could have a severe consequence on load conditions. There is currently a vast amount of road works being undertaken on the Northern corridors, the below sections are some of the key citrus routes for consideration:

1. N2 between Empangeni and Pongola – general repairs.
2. R40 between Hazyview and Hoedspruit – complete road upgrade with stop/start.

3. R36 between Tzaneen and Polokwane (Modjadjiskloof pass) – complete road upgrade with stop/start.
4. N2 between Ermelo and Pongola – complete road upgrade with stop/start. In some sections there are no tar roads and single lanes of severely damaged sections.
5. N11 between Ermelo and Newcastle – complete road upgrade with stop/start. In some sections there are no tar roads and single lanes of severely damaged sections. Road conditions and number of heavy vehicles on this section of road is concerning. Trucks transporting citrus should avoid the N11 between Middleburg and Ladysmith and rather travel N12 between Middleburg to Johannesburg to travel on the N3.
6. N3 between Johannesburg and Durban – general road maintenance in places with some sections reduced to single lanes.



Summary of Traffic Act

The Traffic Act stipulates the carrying mass of each type of vehicle in accordance to trailer and axle configuration.

Interlink 7-axle Truck Trailer Combination is referred to as Tridem Axle Unit – Dual Tyre

Maximum Permissible Length Overall = 22,0m

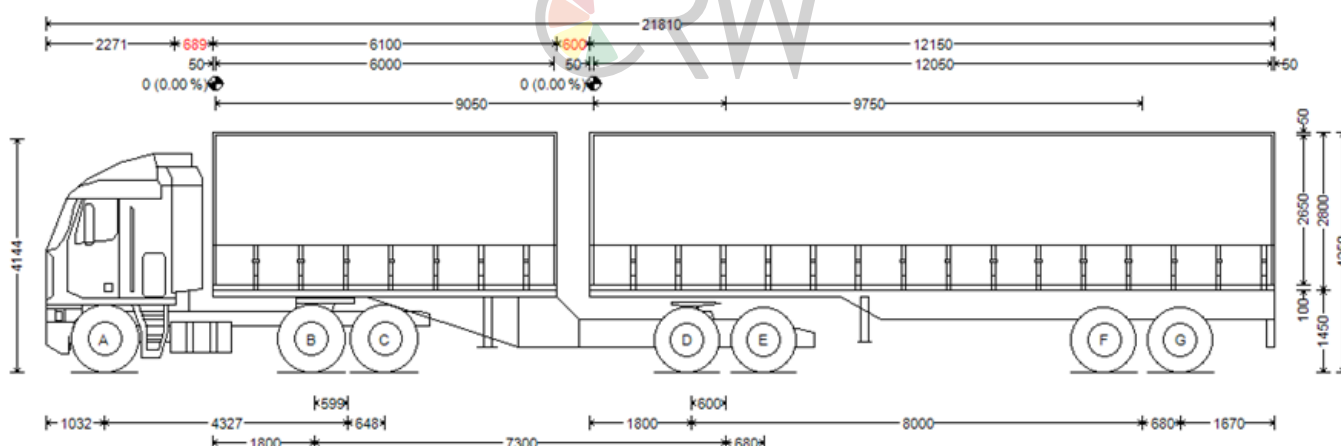
Maximum Permissible Combination Mass = 56,000kg

Steering Axle Maximum Mass = 7,700kg

Tandem Axle Unit Maximum Mass – Dual Tyres = 18,000kg

The average unladen mass of an interlink truck trailer combination is generally 22,000kg all up and fully fuelled, this means the cargo mass should not exceed 34,000kg to be within the maximum mass of 56,000kg. Each carrying axle is regulated to 18,000kg; this is where the loading configuration is an important factor in determining if a vehicle is overloaded. In most cases the load bearing axle group is that of the front trailer (trailer 1) where the mass of the front trailer and rear trailer creates a Centre of Gravity (COG). In order to prevent overloading on trailer 1 axle group, the load must be shifted forward on the front trailer and shifted back on the rear trailer where the pallet mass exceeds ~1,150kg. In most cases a citrus pallet exceeds this mass and therefore necessitates the load on the rear trailer (trailer 2) to be shifted between 1,000mm – 1,500mm from the headboard to reduce weight off trailer 1 axle group towards trailer 2 axle group.

The most effective way to reduce weight onto trailer 1 axle group is to load the heavy pallets (generally bigger counts / smaller fruit with high pack mass) onto the front of trailer 1 (over vehicle rear axles) and the rear of trailer 2. The lighter pallets (generally smaller counts / bigger fruit with low pack mass) should be placed over trailer 1 axle group which is the front of the rear trailer.



Warnings

- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance for trailers is 180 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

Generally the full load consignment should not exceed a mass of 34,000kg and the number of pallets to be loaded will be determined by the mass of each pallet. All too frequently there are trucks that are caught at weigh bridges due to overloading and by following the Traffic Act and the loading guidelines set out below, overloading should not be experienced.

When loading 'High Cube' pallets, it is suggested to follow the 2 single row pallet loading configuration on the rear trailer to secure the load against the headboard. This should negate the negative inertia from sudden deceleration forcing pallets to collapse forwards. Palletization practices should be overcompensated to ensure pallet integrity is maintained throughout the supply chain process.

Citrus Pallet Weights						
A15C - 15KG Carton						
Cartons per pallet	Gross weight per carton	~Weight per pallet base	Gross weight per Pallet	Description	Gross Payload per Truck - Interlink	Maximum Pallets per Truck
70	16.5	20	1175	Standard Pallet	34,000	28
70	17	20	1210	Standard Pallet	34,000	28
70	17.5	20	1245	Standard Pallet	34,000	26
70	18	20	1280	Standard Pallet	34,000	26
80	16	20	1300	High Cube Pallet	34,000	26
70	18.5	20	1315	Standard Pallet	34,000	24
80	16.5	20	1340	High Cube Pallet	34,000	24
70	19	20	1350	Standard Pallet	34,000	24
80	17	20	1380	High Cube Pallet	34,000	24
80	17.5	20	1420	High Cube Pallet	34,000	22
80	18	20	1460	High Cube Pallet	34,000	22
80	18.5	20	1500	High Cube Pallet	34,000	22
80	19	20	1540	High Cube Pallet	34,000	22
E15D / E15C - 17KG Carton						
Cartons per pallet	Gross weight per carton	~Weight per pallet base	Gross weight per Pallet	Description	Gross Payload per Truck - Interlink	Maximum Pallets per Truck
55	17	20	955	Standard Pallet	34,000	34
55	17.5	20	983	Standard Pallet	34,000	34
55	18	20	1010	Standard Pallet	34,000	32
55	18.5	20	1038	Standard Pallet	34,000	32
55	19	20	1065	Standard Pallet	34,000	30
65	17	20	1125	High Cube Pallet	34,000	30
65	17.5	20	1158	High Cube Pallet	34,000	28
65	18	20	1190	High Cube Pallet	34,000	28
65	18.5	20	1223	High Cube Pallet	34,000	26
65	19	20	1255	High Cube Pallet	34,000	26

Summary of Traffic Act

Permissible maximum axle unit massloads

Single Axle (steering) - Singles	7 700 kg
Single Axle - Singles	8 000 kg
Single Axle - Dual tyres (4 Tyres)	9 000 kg
Tandem Axle unit - Single Tyres	16 000 kg
Tandem Axle unit - Dual Tyres	18 000 kg
Tridem Axle unit - Singles or Duals	24 000 kg

Other Restrictions

- (a) Maximum Permissible Combination Mass 56 000 kg
- (b) Bridge formula:
- (2100 X [measured in metres and tenths of a metre from the centre of the first axle of any group of axles to the centre of the last axle of such group]) + 18000 kg
- (c) All vehicles to be plated showing maximum design and maximum legal (permitted) loads.
- (d) Vehicle or combination mass in kg not to exceed nett engine power in kilowatts x 240.
- (e) Minimum 20 % of GCM on driving axle/s (laden or unladen condition).
- The load on the steering axles may not be less than :
- (i) 11 % of the gross mass in the case of articulated vehicle.
- (ii) 20 % of the gross mass if the vehicle is not an articulated vehicle.
- (f) (iii) 30 % of the gross mass if the vehicle is fitted with a steering axle unit.
- (g) A combination is limited to a drawing vehicle and one or two trailers (a converter dolly shall, when used in combination with a semi-trailer, be deemed not to be a trailer).

	Maximum	Regulation		Maximum	Regulation
Overall Length Trailer with one axle or one axle unit. Trailer with two axles or one or more axle units. Any other vehicle. An articable motor vehicle Combination of vehicles.	11,3 m 12,5 m 12,5 m 18,5 m 22,0 m	221 (b) (i) 221 (c) 221 (d) 221 (d) 221 (g)	Load Projection Load projection must not be confused with overhang. Basically, overhang is part of the vehicle, whereas projection is that part of the load which extends beyond the front end and/or rear end of the vehicle. Maximum load projections are -		
Overall Width Goods vehicle, the gross vehicle mass of which does not exceed 12 000 kg Goods vehicle, the gross vehicle mass of which exceeds 12 000 kg	2,5 m 2,6 m	223 (b) & (c) 223 (a)	Side Load Projection In the case of a goods vehicle which has a GVW exceeding 12 000 kg, max each side of longitudinal centre line. Front Load Projection All goods vehicles, the projection of the load beyond the front end of the vehicle.	1,30 m 1,25 m	227 (a) 227 (b)
Overall Height All goods vehicles.	4,3 m	224 (b)	Rear Load Projection All goods vehicles, the projection of the load beyond the rear end of the vehicle.	300 mm	227 (a) (i)
Wheelbase Semi-trailer. Trailer. All other goods vehicle.	10,0 m 8,5 m 8,5 m		Note: The combined length of a vehicle or combination of vehicles plus and front or rear load projection must not exceed the prescribed overall length of the vehicle or combination.		227
Front Overhang Semi-trailer. Goods vehicle, 60% of wheelbase, or a) if the driver's seat is no more than 1,7m from the front end - 5,2m minus half the wheelbase. b) any other goods vehicle (incl a trailer) - 5,8m minus half the wheelbase. In the case of a trailer unit, the front overhang is measured from the foremost axle and not the centre of the axle unit.	1,8 m	225 (a) (i) or (i) 225 (a) (i)	Drawbar Length Maximum length of conventional drawbar - The length of an underslung drawbar - the maximum drawbar length is not prescribed, but the maximum distance between the rear end of the towing vehicle and the front end of the trailer must not exceed	1,80 m	227 (i) (a) (ii)
Rear Overhang Refuse collectors, road making road construction vehicles, and towing vehicles - 70% of wheelbase. A trailer with one axle or one axle unit (excluding a semi-trailer) - 5% of body length. Any goods vehicle - 5% of wheelbase. The rear overhang is measured from the rear most axle.	10,0 m 8,5 m 8,5 m	226 (2) (a) 226 (2) (b) 226 (2) (c)		2,0 m 2,5 m	222 (2) (b) 222 (2) (b)

Regulation 352

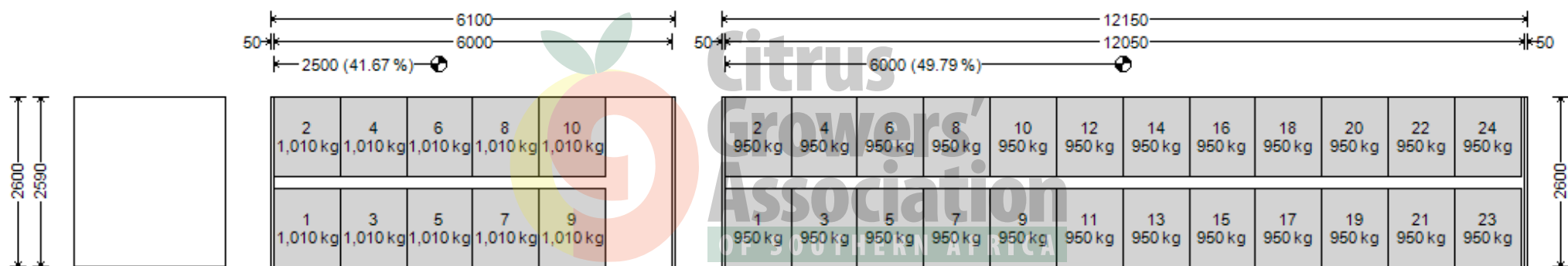
Restriction on Combination of Motor Vehicles

- (a) Regulation 222 (1) A combination of motor vehicles may consist of :
- (i) A truck drawing two drawbar trailers;
- (ii) A truck-tractor drawing a semi-trailer and a drawbar trailer;
- (iii) A truck-tractor and two semi-trailers (an Interlink).

34 Pallet Loading Configuration for ALL Interlink Trailer Combination with Average Gross Pallet Mass ≤ 983kg.

Max loading = 34 pallets per truck x ≤983kg per pallet = 33,422kg per truck load.

Notes: For the correct weight distribution suggest loading 10 pallets on front trailer and 24 pallets on rear trailer. For Flat Deck trailers, cargo should be suitably covered with a tarpaulin and netting. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,721 kg	Unladen Tr. 1	3,561 kg	5,558 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,936 kg	Unladen Tot.	5,173 kg	21,248 kg	4,612 kg
1,256 kg	7,820 kg	Payload Tr. 1	1,024 kg	10,100 kg	
120 kg	747 kg	Payload Tr. 2	9,821 kg	22,800 kg	12,112 kg
1,376 kg	8,567 kg	Payload Tot.	10,845 kg	32,900 kg	12,112 kg
6,903 kg	14,503 kg	Gross	16,018 kg	54,148 kg	16,724 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-4.79 %	-19.43 %	Overload	-11.01 %	-3.31 %	-7.09 %

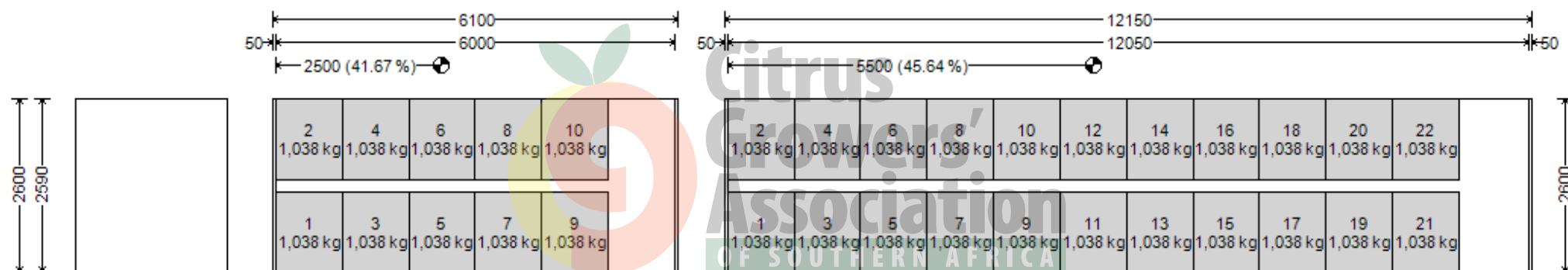
Warnings

- The default payload centre of gravity has been adjusted
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs
- Left versus right mass distribution is not calculated
- Swing clearance for trailers is 280 mm, recommended is 300 mm

32 Pallet Loading Configuration for ALL Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,010\text{kg}$ to $\leq 1038\text{kg}$.

Max loading = 32 pallets per truck x $\leq 1,038\text{kg}$ per pallet = 33,216kg per truck load.

Notes: For the correct weight distribution suggest loading 10 pallets on front trailer and 22 pallets on rear trailer. For Flat Deck trailers, cargo should be suitably covered with a tarpaulin and netting. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,721 kg	Unladen Tr. 1	3,561 kg	5,558 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,936 kg	Unladen Tot.	5,173 kg	21,248 kg	4,612 kg
1,291 kg	8,037 kg	Payload Tr. 1	1,052 kg	10,380 kg	
136 kg	848 kg	Payload Tr. 2	11,148 kg	22,836 kg	10,704 kg
1,427 kg	8,885 kg	Payload Tot.	12,200 kg	33,216 kg	10,704 kg
6,954 kg	14,821 kg	Gross	17,373 kg	54,464 kg	15,316 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-4.08 %	-17.66 %	Overload	-3.48 %	-2.74 %	-14.91 %

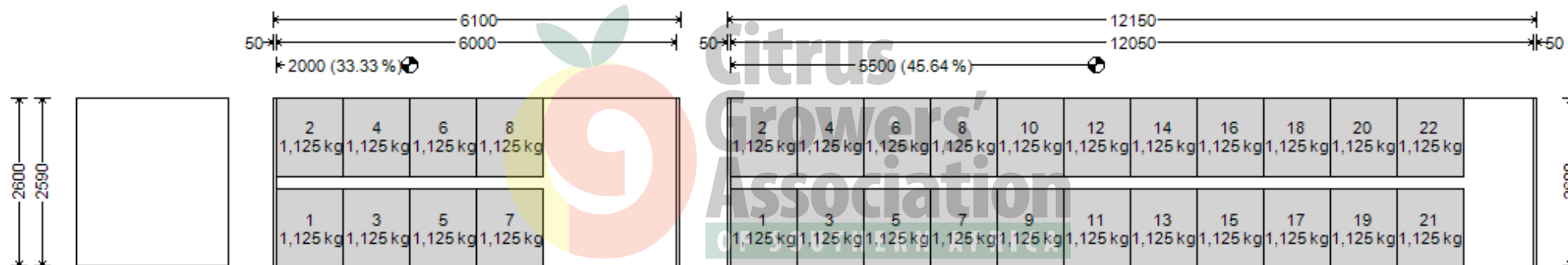
Warnings

- The default payload centre of gravity has been adjusted
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs
- Left versus right mass distribution is not calculated
- Swing clearance for trailers is 280 mm, recommended is 300 mm

30 Pallet Loading Configuration for ALL Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,065\text{kg}$ to $\leq 1,125\text{kg}$.

Max loading = 30 pallets per truck x $\leq 1,125\text{kg}$ per pallet = 33,750kg per truck load.

Notes: For the correct weight distribution suggest loading 8 pallets on front trailer and 22 pallets on rear trailer. For Flat Deck trailers, cargo should be suitably covered with a tarpaulin and netting. . Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,721 kg	Unladen Tr. 1	3,561 kg	5,558 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,936 kg	Unladen Tot	5,173 kg	21,248 kg	4,612 kg
1,204 kg	7,492 kg	Payload Tr. 1	304 kg	9,000 kg	
148 kg	918 kg	Payload Tr. 2	12,082 kg	24,750 kg	11,602 kg
1,352 kg	8,410 kg	Payload Tot	12,386 kg	33,750 kg	11,602 kg
6,879 kg	14,346 kg	Gross	17,559 kg	54,998 kg	16,214 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-5.12 %	-20.30 %	Overload	-2.45 %	-1.79 %	-9.92 %

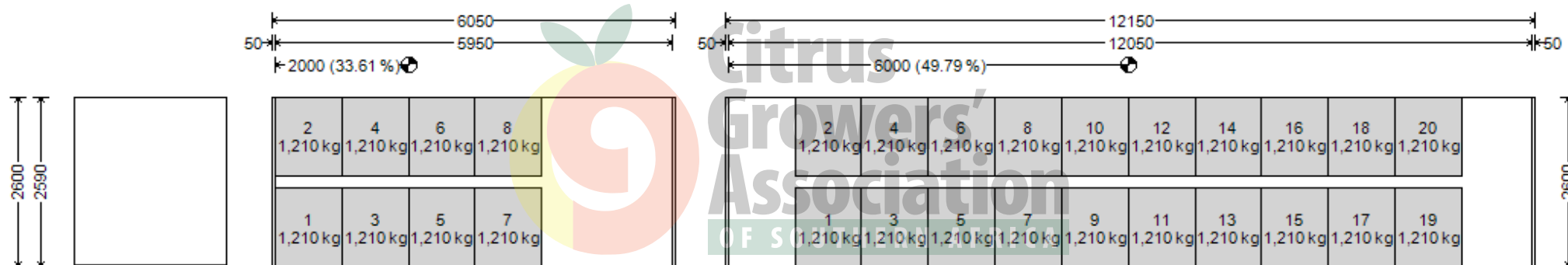
Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance for trailers is 280 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

28 Pallet Loading Configuration for Flat Deck Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,158\text{kg}$ to $\leq 1,210\text{kg}$.

Max loading = 28 pallets per truck x $\leq 1,210\text{kg}$ per pallet = 33,880kg per truck load.

Notes: For the correct weight distribution suggest loading 8 pallets on front trailer and 20 pallets on rear trailer. For Flat Deck Interlink trailer combination it is necessary to load pallets 1,000mm from trailer 2 front headboard to achieve correct weight distribution. For Flat Deck trailers, cargo should be suitably covered with a tarpaulin and netting. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,716 kg	Unladen Tr. 1	3,554 kg	5,546 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,931 kg	Unladen Tot.	5,166 kg	21,236 kg	4,612 kg
1,295 kg	8,058 kg	Payload Tr. 1	327 kg	9,680 kg	
127 kg	793 kg	Payload Tr. 2	10,424 kg	24,200 kg	12,856 kg
1,422 kg	8,851 kg	Payload Tot.	10,751 kg	33,880 kg	12,856 kg
6,949 kg	14,782 kg	Gross	15,917 kg	55,116 kg	17,468 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-4.15 %	-17.88 %	Overload	-11.57 %	-1.58 %	-2.96 %

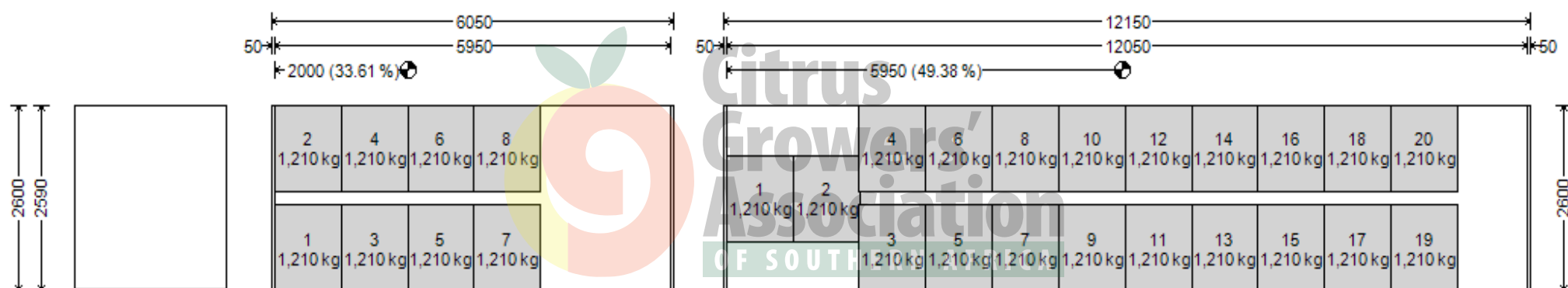
Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

28 Pallet Loading Configuration for Tautliner Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,158\text{kg}$ to $\leq 1,210\text{kg}$.

Max loading = 28 pallets per truck x $\leq 1,210\text{kg}$ per pallet = 33,880kg per truck load.

Notes: For the correct weight distribution suggest loading 8 pallets on trailer 1 and 20 pallets on trailer 2. For Tautliner Interlink trailer combination it is advisable to load pallet 1 and pallet 2 on the centre of trailer 2 from the front headboard followed by the balance of pallets loaded double breasted from front to rear. Pallet 1 and pallet 2 on trailer 2 should have strapping placed on each carton layer with the inclusion of admissible corner pieces to each corner. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,716 kg	Unladen Tr. 1	3,554 kg	5,546 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,931 kg	Unladen Tot.	5,166 kg	21,236 kg	4,612 kg
1,295 kg	8,058 kg	Payload Tr. 1	327 kg	9,680 kg	
129 kg	803 kg	Payload Tr. 2	10,563 kg	24,200 kg	12,705 kg
1,424 kg	8,861 kg	Payload Tot.	10,890 kg	33,880 kg	12,705 kg
6,951 kg	14,792 kg	Gross	16,056 kg	55,116 kg	17,317 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-4.12 %	-17.82 %	Overload	-10.80 %	-1.58 %	-3.79 %

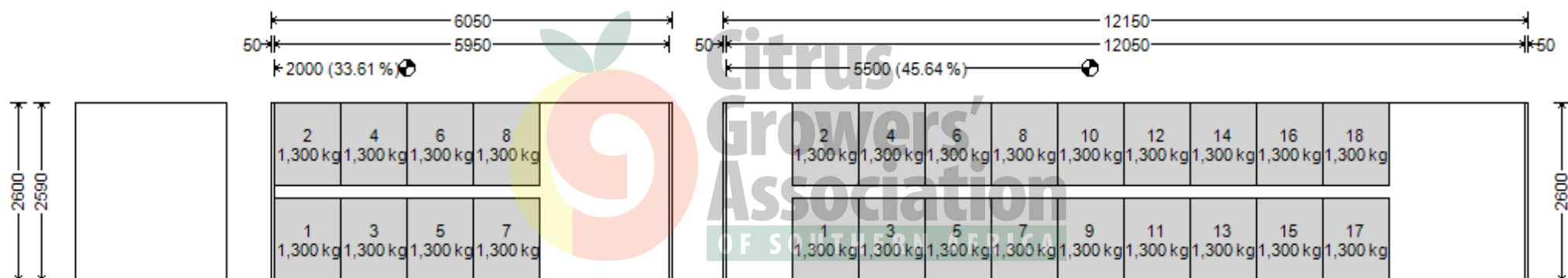
Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

26 Pallet Loading Configuration for Flat Deck Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,223\text{kg}$ to $\leq 1,300\text{kg}$.

Max loading = 26 pallets per truck x $\leq 1,300\text{kg}$ per pallet = 33,800kg per truck load.

Notes: For the correct weight distribution suggest loading 8 pallets on front trailer and 18 pallets on rear trailer. For Flat Deck Interlink trailer combination it is necessary to load pallets 1,000mm from trailer 2 front headboard to achieve correct weight distribution. For Flat Deck trailers, cargo should be suitably covered with a tarpaulin and netting. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,716 kg	Unladen Tr. 1	3,554 kg	5,546 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,931 kg	Unladen Tot.	5,166 kg	21,236 kg	4,612 kg
1,391 kg	8,658 kg	Payload Tr. 1	351 kg	10,400 kg	
140 kg	868 kg	Payload Tr. 2	11,423 kg	23,400 kg	10,969 kg
1,531 kg	9,526 kg	Payload Tot.	11,774 kg	33,800 kg	10,969 kg
7,058 kg	15,457 kg	Gross	16,940 kg	55,036 kg	15,581 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-2.65 %	-14.13 %	Overload	-5.89 %	-1.72 %	-13.44 %

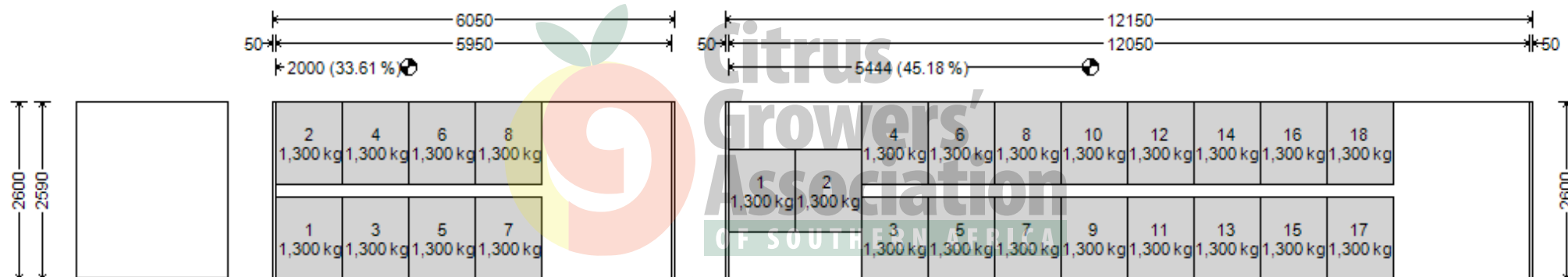
Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

26 Pallet Loading Configuration for Tautliner Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,223\text{kg}$ - $\leq 1,300\text{kg}$.

Max loading = 26 pallets per truck x $\leq 1,300\text{kg}$ per pallet = 33,800kg per truck load.

Notes: For the correct weight distribution suggest loading 8 pallets on trailer 1 and 18 pallets on trailer 2. For Tautliner Interlink trailer combination it is advisable to load pallet 1 and pallet 2 on the centre of trailer 2 from the front headboard followed by the balance of pallets loaded double breasted from front to rear. Pallet 1 and pallet 2 on trailer 2 should have strapping placed on each carton layer with the inclusion of admissible corner pieces to each corner. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,716 kg	Unladen Tr. 1	3,554 kg	5,546 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,931 kg	Unladen Tot	5,166 kg	21,236 kg	4,612 kg
1,391 kg	8,658 kg	Payload Tr. 1	351 kg	10,400 kg	
141 kg	880 kg	Payload Tr. 2	11,573 kg	23,400 kg	10,806 kg
1,532 kg	9,538 kg	Payload Tot	11,924 kg	33,800 kg	10,806 kg
7,059 kg	15,469 kg	Gross	17,090 kg	55,036 kg	15,418 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-2.63 %	-14.06 %	Overload	-5.06 %	-1.72 %	-14.34 %

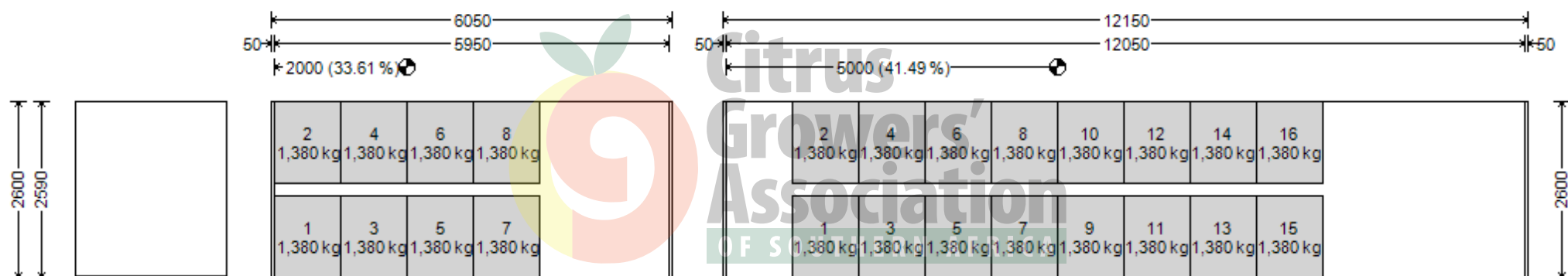
Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

24 Pallet Configuration for Flat Deck Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,223\text{Kg}$ to $\leq 1,300\text{Kg}$ per Pallet

Max loading = 24 pallets per truck x $\leq 1,380\text{kg}$ per pallet = 33,120kg per truck load.

Notes: For the correct weight distribution suggest loading 8 pallets on front trailer and 16 pallets on rear trailer. For Flat Deck Interlink trailer combination it is necessary to load pallets 1,000mm from trailer 2 front headboard to achieve correct weight distribution. For Flat Deck trailers, cargo should be suitably covered with a tarpaulin and netting. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,716 kg	Unladen Tr. 1	3,554 kg	5,546 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,931 kg	Unladen Tot	5,166 kg	21,236 kg	4,612 kg
1,477 kg	9,190 kg	Payload Tr. 1	373 kg	11,040 kg	
147 kg	916 kg	Payload Tr. 2	12,047 kg	22,080 kg	8,970 kg
1,624 kg	10,106 kg	Payload Tot	12,420 kg	33,120 kg	8,970 kg
7,151 kg	16,037 kg	Gross	17,586 kg	54,356 kg	13,582 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-1.37 %	-10.91 %	Overload	-2.30 %	-2.94 %	-24.54 %

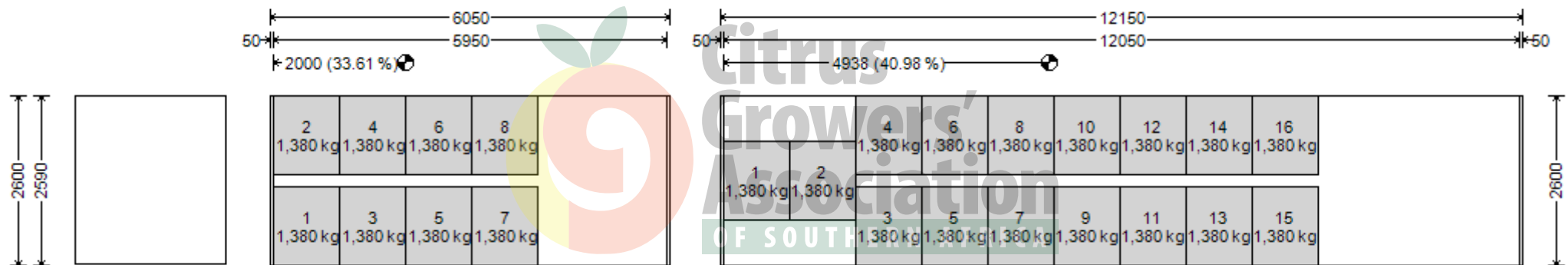
Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

24 Pallet Configuration for Tautliner Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,340\text{kg}$ - $\leq 1,380\text{kg}$ per Pallet.

Max loading = 24 pallets per truck x $\leq 1,380\text{kg}$ per pallet = 33,120kg per truck load.

Notes: For the correct weight distribution suggest loading 8 pallets on trailer 1 and 16 pallets on trailer 2. For Tautliner Interlink trailer combination it is advisable to load pallet 1 and pallet 2 on the centre of trailer 2 from the front headboard followed by the balance of pallets loaded double breasted from front to rear. Pallet 1 and pallet 2 on trailer 2 should have strapping placed on each carton layer with the inclusion of admissible corner pieces to each corner. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,716 kg	Unladen Tr. 1	3,554 kg	5,546 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,931 kg	Unladen Tot.	5,166 kg	21,236 kg	4,612 kg
1,477 kg	9,190 kg	Payload Tr. 1	373 kg	11,040 kg	
149 kg	928 kg	Payload Tr. 2	12,205 kg	22,080 kg	8,798 kg
1,626 kg	10,118 kg	Payload Tot.	12,578 kg	33,120 kg	8,798 kg
7,153 kg	16,049 kg	Gross	17,744 kg	54,356 kg	13,410 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-1.34 %	-10.84 %	Overload	-1.42 %	-2.94 %	-25.50 %

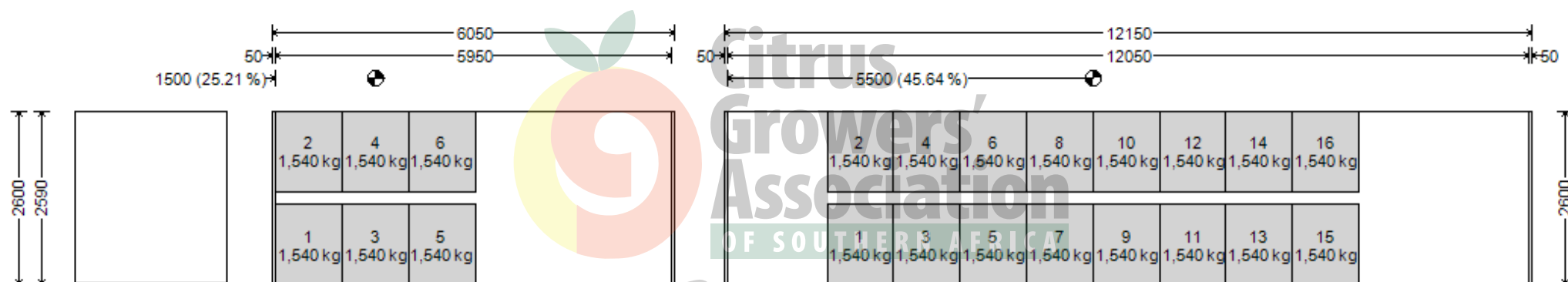
Warnings

- The default payload centre of gravity has been adjusted
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Left versus right mass distribution is not calculated
- Swing clearance not calculated for landing legs

22 Pallet Configuration for Flat Deck Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,460\text{kg}$ to $\leq 1,540\text{kg}$ per Pallet

Max loading = 22 pallets per truck x ~1,540kg per pallet = 33,880kg per truck load.

Notes: For the correct weight distribution suggest loading 6 pallets on trailer 1 positioned against front headboard and 16 pallets on trailer 2 positioned 1,500mm from trailer 2 front headboard to achieve correct weight distribution. For Flat Deck trailers, cargo should be suitably covered with a tarpaulin and netting. Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,716 kg	Unladen Tr. 1	3,554 kg	5,546 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,931 kg	Unladen Tot	5,166 kg	21,236 kg	4,612 kg
1,322 kg	8,230 kg	Payload Tr. 1	-312 kg	9,240 kg	
147 kg	914 kg	Payload Tr. 2	12,029 kg	24,640 kg	11,550 kg
1,469 kg	9,144 kg	Payload Tot	11,717 kg	33,880 kg	11,550 kg
6,996 kg	15,075 kg	Gross	16,883 kg	55,116 kg	16,162 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-3.50 %	-16.25 %	Overload	-6.21 %	-1.58 %	-10.21 %

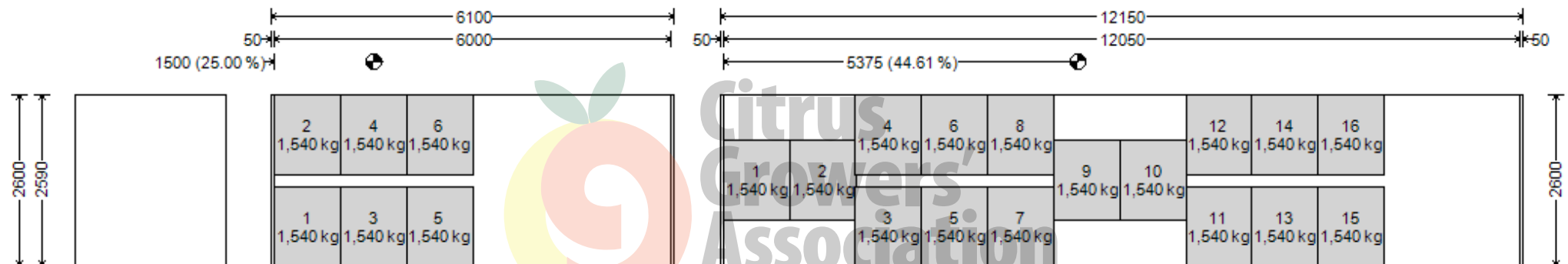
Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs

22 Pallet Configuration for Tautliner Interlink Trailer Combination with Average Gross Pallet Mass $\geq 1,460\text{kg}$ - $\leq 1,540\text{kg}$ per Pallet.

Max loading = 22 pallets per truck x $\leq 1,540\text{kg}$ per pallet = 33,880kg per truck load.

Notes: For the correct weight distribution suggest loading 6 pallets on trailer 1 and 16 pallets on trailer 2. For Tautliner Interlink trailer combination it is advisable to load extra heavy High Cube citrus pallets as shown below. Pallets 1, 2, 9 and 10 on trailer 2 should have strapping placed on each carton layer with the inclusion of admissible corner pieces to each corner. . Pallets must be properly secured on each row with corner boards and cross over straps rung tight and checked at regular intervals during the journey.



Veh. Front	Veh. Rear		Trailer 1	Total	Trailer 2
5,231 kg	4,093 kg	Unladen Veh.		9,324 kg	
276 kg	1,721 kg	Unladen Tr. 1	3,561 kg	5,558 kg	
20 kg	122 kg	Unladen Tr. 2	1,612 kg	6,366 kg	4,612 kg
5,527 kg	5,936 kg	Unladen Tot.	5,173 kg	21,248 kg	4,612 kg
1,322 kg	8,230 kg	Payload Tr. 1	-312 kg	9,240 kg	
151 kg	942 kg	Payload Tr. 2	12,382 kg	24,640 kg	11,165 kg
1,473 kg	9,172 kg	Payload Tot.	12,070 kg	33,880 kg	11,165 kg
7,000 kg	15,108 kg	Gross	17,243 kg	55,128 kg	15,777 kg
7,250 kg	18,000 kg	Permissible	18,000 kg	56,000 kg	18,000 kg
-3.45 %	-16.07 %	Overload	-4.21 %	-1.56 %	-12.35 %

Warnings

- The default payload centre of gravity has been adjusted
- Left versus right mass distribution is not calculated
- Cab swing clearance is only 269 mm, recommended is 300 mm
- Swing clearance for trailers is 280 mm, recommended is 300 mm
- Swing clearance not calculated for landing legs