



CARACAL

ENGINEERING

SPECIFICATION SHEET

Solar Carports

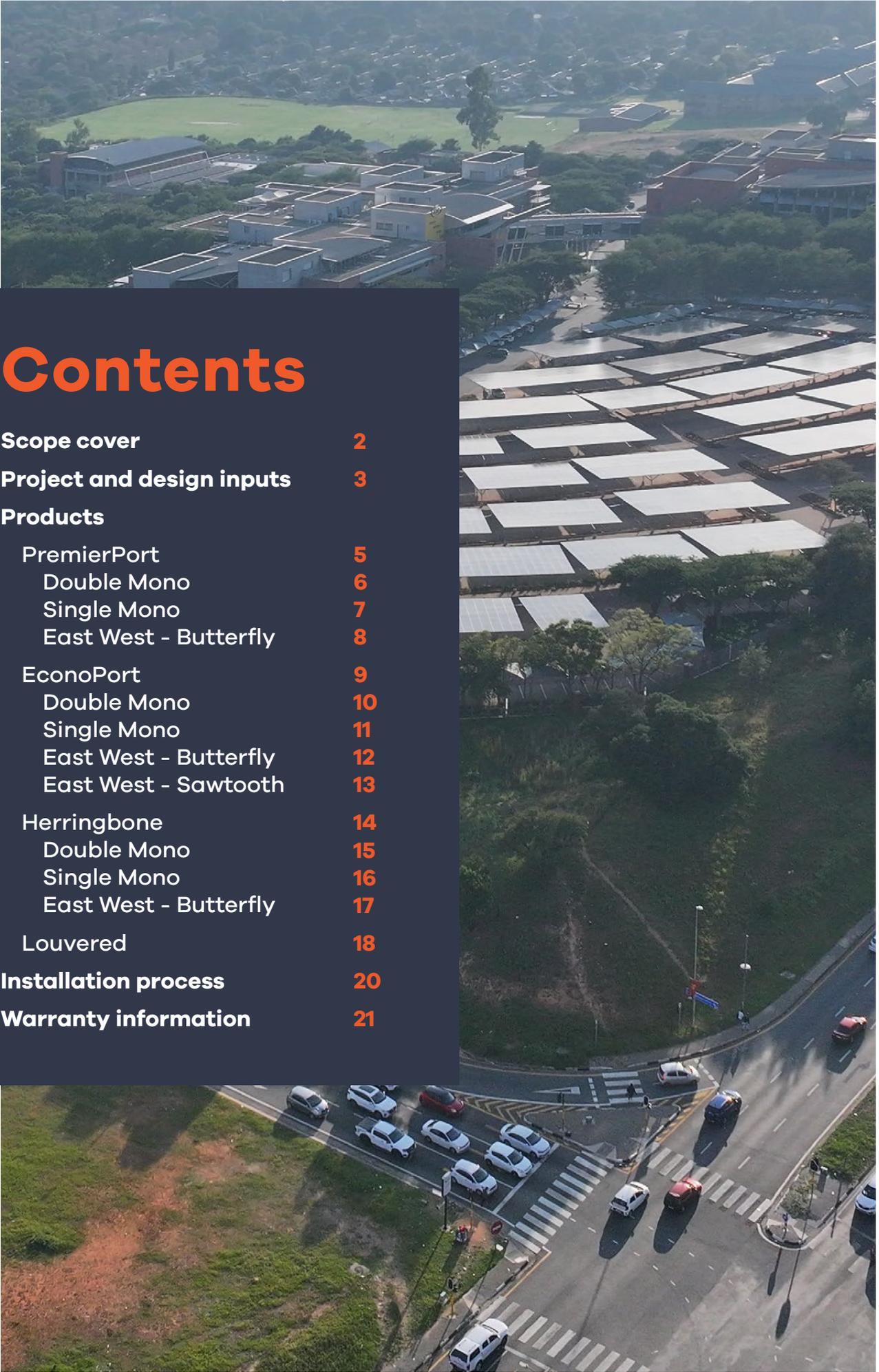
Dynamic. Inventive. Multi-use.

**PV Solutions, Done Right.
DESIGNED. MANUFACTURED. BUILT.**

Caracal Engineering is known to solve and deliver complex structural and mechanical engineering, construction and product design services for commercial, industrial and utility scale photovoltaic (PV) projects across African, Asia-Pacific and Middle Eastern markets. We expertly design, manufacture and build structures and systems for 200 kWp - 50 MWp solar projects.

Given the increasingly important cost item of mounting structures and the associated construction as well as the perpetual importance of getting the foundations right, it seems only right that most appropriate systems are advocated. Such a system must be able to handle the rigors of the environment in which it is placed. This is exactly what we strive to do, on repeat—now and into the future.

We've earned a reputation for working out complex PV engineering challenges. Maybe that's because we enjoy the process. For us, ingenuity happens when we collaborate.

An aerial photograph of a campus. In the foreground, there's a road intersection with several cars. Behind it, a large area is covered with solar panels. Further back, there are several buildings and a green field. The background shows a residential area with houses and trees.

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SCOPE COVER

While we design, engineer and manufacture all of the components necessary for the delivery of the carport, we also spend a great deal of time on the construction once the material gets to site.

Our scope cover includes:

- Ground condition testing
 - DCP- Deep Conal Penetration testing
 - Plate Bearing tests
 - The type of testing selected is contingent on the project, the available information and the available equipment.
- Drone mapping
- Renders - on special request
- Surveying
- Foundation preparation and implementation - including civil works such as concrete and rebar design and implementation
- Table construction
- Module mounting
- Transport of material to site - the location has a bearing on the transportation costs and timing

We generally offer these services across our key markets, however, we are happy to supply only the mounting structure and remotely assist with the implementation.

We strive to be the turnkey structural contractor with carports to make the life of the EPC easier.

Caracal Engineering and its affiliates take no responsibility for the shading calculations or inter-row spacing between modules. This calculation needs to be undertaken by the client or EPC and the measurements given to us.

Please also note we do pressure calculations on the modules and will recommend alternative angles of inclination if the module pressure is exceeded. It is the client or end-user's responsibility to double-check these calculations, in conjunction with the supplier of the modules, to ensure that the modules can withstand the environment in which they are placed.



With our carports, we design, engineer, and manufacture the system to the specifications of the site and client's requirements.

The following are fundamental considerations for Caracal Engineering when developing commercial proposals and the eventual end product:



MODULE SPECIFICATION SHEET

Critical to ensuring the system can accommodate the module selected, so accurate dimensions of the module are of importance.



LOCATION

Vital for determining the load on the system.



TYPE OF FIXATION

Ground mount or slab mounted has tangible implications on commercial proposition.

Service layouts: The services below the site have significant bearing on where foundations need to go and how careful we need to be to avoid them when drilling or excavating.

A layout is useful, however, we work with clients to develop the optimal.



SOIL CONDITIONS

Soil conditions have implications on the founding method selected for the project.

Any information that the client has available is useful. Without information from the client or the end user, and depending on specific site conditions, we employ a series of tests either DCP or plate bearing tests. These tests either confirm the initial estimations or necessitate a change to the preferred method.



DESIGN CONSIDERATION

Although not a technical concern from our side, where it occurs, it is best to include the input from the architects. We understand that there are considerations made by this specialist with the initial conception of the parcel, so to improve the harmony of old and new, it makes sense to include their input.

Additionally, the incorporation of an architect earlier in the process assists in achieving the relevant permitting and permission from councils for construction, as well as the occupation certificate once the system is implemented.

Key design considerations

No two project scenarios are quite the same, and there's no such thing as one-size-fits-all solar – and definitely not when it comes to mounting structures. This means that each system is site-specific. We carefully evaluate the context, conditions and purpose before starting a project or implementing any solution.

Under normal conditions, wind loads are designed for 1 in 25 year, 3 second gusts. However, wind speeds and geotechnical conditions are unique to each location. So, before we take on a project, we carefully consider the founding methodology, uplift forces, deadloads, moment capacity of the members, corrosivity, deflection and others to develop a solution best suited to the environment.

All designs are subjected to local standards and norms depending on the country. In the case of South Africa, the following codes are used during the design process:

- SANS Code 10160 Part 3
- SANS Code 10162 Part 1
- SANS Code 10162 Part 2
- To calculate to other codes is not a problem, should it be required

We use structural analysis software, our own as well as Prokon Sumo to significantly reduce the time spent on design. This saves clients unnecessary costs.

As transparency and accuracy is of utmost importance to us, we utilise external structural engineers for an objective, final verification of our designs and we provide a detailed design report to substantiate all systems.

Additionally, we welcome input and dialogue with Owners Engineers (OE) or Lenders Technical Advisers (LTA). Depending on the size of the project, we would insist on the incorporation of these professionals to ensure we provide the best solution and the EPC/End User gets a product that meets expectations.



OUR FLAGSHIP CARPORT

PremierPort

**Modern look.
Leading quality.**

The world class PremierPort is designed with aesthetics, strength and quality in mind.

From the founding method and constructability to the final look and feel, the form and function of the product is expertly considered, making it a leading class choice for any setting.

We use a number of different founding techniques to ensure our structures fulfil the code requirements but as importantly, are robust, clean, aesthetically resolved and mitigated disruption to site and operations. This may include cast in situ bases, micro-piling, a hybrid of both or other techniques depending on the sub-surface we need to fix to.

In the case of multi-storey parkades or rooftops we have solutions for the following:

- Coffers slabs
- Post tension
- Steel reinforced concrete
- Other

Each of these founding techniques are ratified by our external engineers and are in line with the geotechnical testing undertaken prior to implementation. In the case of carports, it could be vertical uplift tests on the micro-piles and chemical anchors or plate bearing tests or DCP tests on the in-situ material of the excavated earth.

We recommend installation of the PremierPort for transient populations such as malls, hospitals and commercial parks. The reason for this is the interaction with the struts is more limited in relation to the EconoPort, so the possibility of damaging the structure is mitigated.



Material consideration

Being our flagship and most frequently deployed, the PremierPort system uses both steel and aluminium depending on a client's requirements. Because of our adaptability we can produce the system entirely out of steel or entirely out of aluminum, however, the most often used is an amalgam where we use structural grade steel for the struts and girders and an aluminum purlin.

Double Mono

The Double Mono PremierPort system is designed to have a single pitch facing in one direction. The standard angle of inclination is five (5) degrees and a number of configurations are possible in landscape and portrait module layouts.



CONFIGURATIONS	Up to 6 in portrait using large format modules
	Up to 7 in portrait using smaller format modules
	Up to 12 in landscape for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	<p>Depending on the loading the system can accommodate:</p> <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
ANGLE	It is preferable to work on 5 degree angles of inclination however depending on the loading, architectural requirements and yield, this can be increased to 10 degrees as a maximum.
MATERIALS AVAILABLE	<ul style="list-style-type: none"> • All aluminum 6063 T6- milled, anodised or powder coated • All steel S355 structural grade steel-HDG or pre-coated • A hybrid using both materials • 3CR12 is in rare applications
FOUNDING METHOD	<ul style="list-style-type: none"> • Cast in situ- with a stub and IPE rising from the base • Micro-piling - using a prefabricated concrete block over the micro-pile • Percussion drilling and anchoring • Chemical anchoring
APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

Single Mono

The Single Mono PremierPort system is designed to have a single pitch facing in one direction but only covering a single bay. The standard angle of inclination is five (5) degrees and a number of configurations are possible in landscape and portrait module layouts.



CONFIGURATIONS	Up to 3 in portrait using large format modules
	Up to 4 in portrait using smaller format modules
	Up to 6 in landscape for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

East West - Butterfly

The East-West PremierPort system is designed to manage configurations or parking layouts that can only accommodate East-West PV layouts. The standard angle of inclination is five (5) degrees and a number of configurations are possible in landscape and portrait module layouts.



CONFIGURATIONS	Up to 3 in portrait per wing using large format modules
	Up to 4 in portrait per wing using smaller format modules
	Up to 6 in landscape per wing for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

OUR ECONOMICAL CARPORT

EconoPort

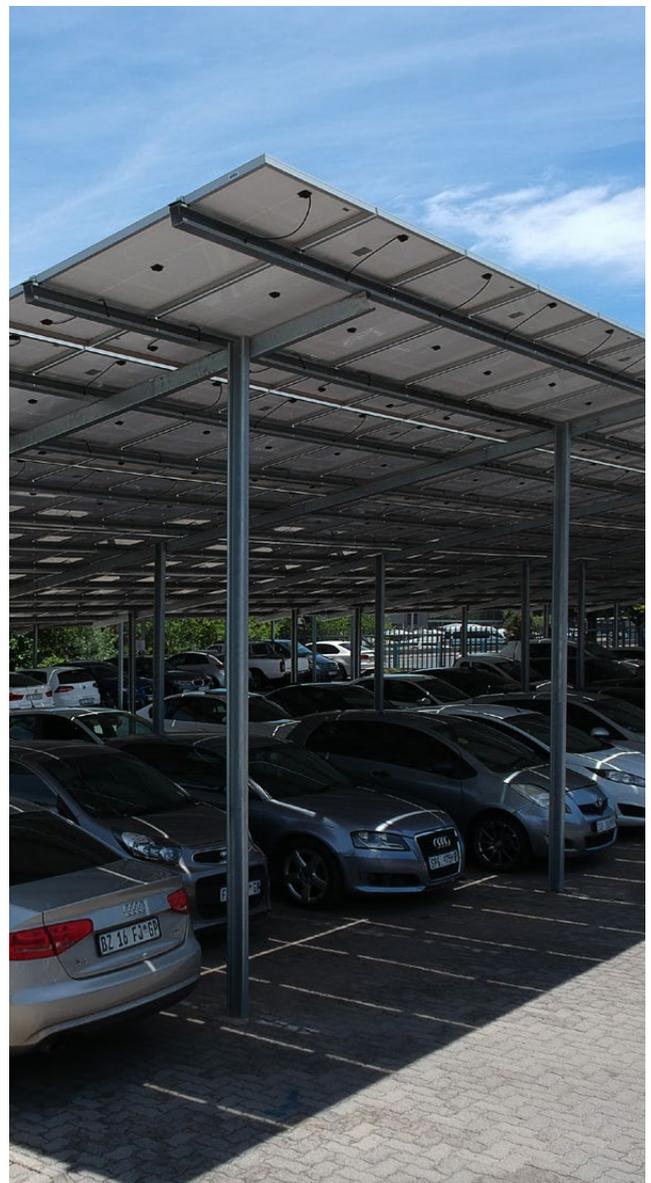
**Price savvy.
Industrial angle.**

The EconoPort is designed for situations where price is of greater importance than aesthetics. The general application of this system is industrial facilities with more frequent interaction from users.

The steel foundations of the structure are fixed into pre-drilled holes using concrete or connected to a base plate and chemically anchored to a concrete slab, as with the PremierPort. Our steel members are either hot-dip galvanised to the specified and adopted code or alternatively we use pre-coated material. Where we can, we prefer to use aluminium purlins because they are easier to work with to expedite implementation. However, if price is limiting we can deploy our steel purlin range.

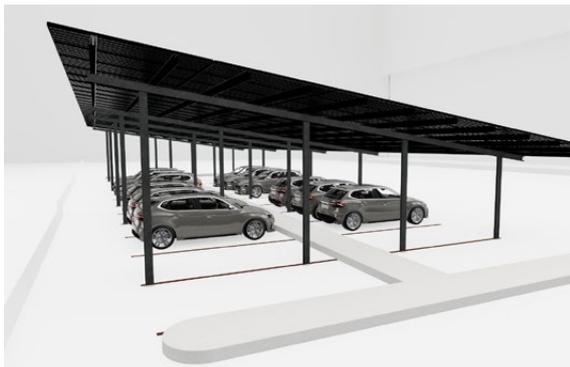
Generally, for our struts and girder we use cold rolled lip channels, however in some cases, if the client is looking for something a bit different, we use steel tubes for the struts with a back to back girder. The high-level aesthetic does not change, but rather the design looks more resolved.

Importantly we only use structural grade steel and an aluminium temper and grade that is well understood within the Solar PV market.



Double Mono

The Double Mono EconoPort system has a single pitch facing in one direction. The standard angle of inclination is five (5) degrees and a number of configurations are possible in landscape and portrait module layouts.



CONFIGURATIONS	Up to 6 in portrait using large format modules
	Up to 7 in portrait using smaller format modules
	Up to 12 in landscape for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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FOUNDING METHOD	<ul style="list-style-type: none"> • Percussion drilling and anchoring • Chemical anchoring
APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

Single Mono

The Single Mono EconoPort system is designed to have a single pitch facing in one direction. The standard angle of inclination is five (5) degrees.

There are two options related to the Single Mono, namely positive and negative inclinations which ensures that the orientation of the tables is optimal.

The system has two foundations. However, Caracal Engineering is aware of the ergonomics and has placed the foundations in such a way as to mitigate potential conflict on turning radiuses and opening car doors.

A number of configurations are possible with this Carport in either landscape and portrait module layouts.



CONFIGURATIONS	Up to 3 in portrait using large format modules
	Up to 4 in portrait using smaller format modules
	Up to 6 in landscape for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

**East West
- Butterfly**

The East West – Butterfly system is designed to manage configurations or parking layouts that can only accommodate East West PV Layouts. The standard angle of inclination is five (5) degrees but up to 10 degrees is possible.

The system has three-four foundations connected by a girder. However, Caracal Engineering is aware of the ergonomics and has therefore placed the foundations in such a way as to mitigate potential conflict on turning radiuses and opening car doors.

A number of configurations is possible with this carport considering both landscape and portrait module layouts.



CONFIGURATIONS	Up to 3 in portrait per wing using large format modules
	Up to 4 in portrait per wing using smaller format modules
	Up to 6 in landscape per wing for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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FOUNDING METHOD	<ul style="list-style-type: none"> • Percussion drilling and anchoring • Chemical anchoring
APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

East West - Sawtooth

The East West - Sawtooth system is designed to manage configurations or parking layouts that can only accommodate East West PV Layouts. The system is beneficial where a large area is to be covered and the requirement is to reduce the height of the structure imposing on surrounding structures.

The standard angle of inclination is five (5) degrees and a number of configurations is possible in landscape and portrait module layout. The central foundation adds to the ergonomics of the system, as it does not impede opening of car doors.



CONFIGURATIONS	1 in portrait
	2 in landscape
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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FOUNDING METHOD	<ul style="list-style-type: none"> • Percussion drilling and anchoring • Chemical anchoring
APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

OUR HEAVY-DUTY CARPORT

Herringbone

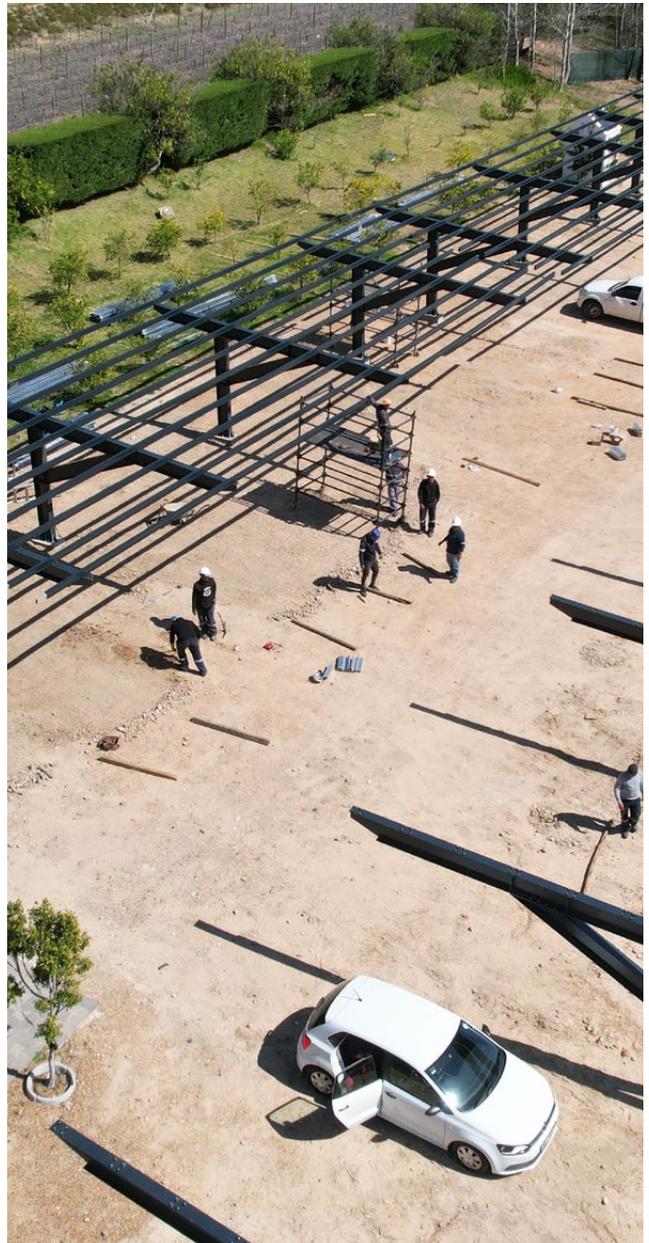
**Ergonomic strength.
Ideal for irregular parking configurations.**

The Herringbone from Caracal Engineering is designed to be heavy duty, with higher clearances and a single foundation to cater to a range of applications.

Two of interest are automotive manufacturers, where parking space is at a premium and secondly, commercial activities that have a herringbone parking configuration. In these cases, only a single foundation can be used. Large H sections are used as girders to reduce the deflection at the end of each cantilever. The H section struts are fixed to cast in situ bases to adequately cater for overturning moments.

The material selection for this application is somewhat different to previous iterations. Both the girder and the strut are hot rolled steel, whereas the EconoPort uses cold rolled steel and the PremierPort, aluminium or steel. This does mean that the system is heavier, making construction a little more complicated, but Caracal has worked to reduce the complication by increasing the preassembly of the substructure.

Somewhat more brutalist in its conception, the system is unapologetically robust and clean. Although fairly limited in terms of application in South Africa, we have found greater appetite for this product in the Middle East.



Double Mono

The Double Mono Herringbone system, much like the PremierPort, is designed to have a single pitch facing in one direction. The standard angle of inclination is five (5) degrees.

It has a single central foundation with numerous benefits, however from a consumer perspective it means limited possibility of collision. It also gives greater flexibility on parking configurations.

A number of configurations are possible with this carport considering both landscape and portrait module layouts.



CONFIGURATIONS	Up to 6 in portrait using large format modules
	Up to 7 in portrait using smaller format modules
	Up to 12 in landscape for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

Single Mono

The Single Mono Herringbone system is designed to have a single pitch facing in one direction. The standard angle of inclination is five (5) degrees.

As with the Single Mono Econoport and PremierPort system, there are two options, namely positive and negative inclinations which ensures that the orientation of the tables is optimal.

It has a single central foundation with numerous benefits, however from a consumer perspective it means limited possibility of collision. It also gives greater flexibility on parking configurations.



A number of configurations are possible with this carport considering both landscape and portrait module layouts.

CONFIGURATIONS	Up to 3 in portrait using large format modules
	Up to 4 in portrait using smaller format modules
	Up to 6 in landscape for either large or small format modules
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SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

Herringbone

East West - Butterfly

The East-West–Butterfly system is designed to manage configurations or parking layouts that can only accommodate East-West PV Layouts. The standard angle of inclination is five (5) degrees.

It offers many benefits due to its single central foundation. For consumers, this means the limited possibility of collision and for site owners. It offers greater flexibility on parking configurations.



Several configurations are possible in landscape and portrait module layouts.

We are proud of our ability to amend designs to suit every client, budget and context. We offer and install 2 in portrait, 3 in portrait, 4 in portrait and 4- 8 in landscape systems.

We also stay current with technology changes such as bifacial PV panels and incorporate these into our designs.

CONFIGURATIONS	Up to 3 in portrait per wing using large format modules
	Up to 4 in portrait per wing using smaller format modules
	Up to 6 in landscape per wing for either large or small format modules
	Maximum length of the tables is 35m
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>
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APPLICATION	Ground mounted
	Coffer slabs
	Other
	Post tension slab mounted
	Steel reinforced concrete slab

OUR NEXTGEN CARPORT

Louvered

**Optimal energy.
Maintenance light.**

Our Louvered Carport line is one of the more interesting designs in our Caracal Engineering Solar Carports range. It is compelling if you want to exploit the full potential for Solar PV on any given site and can face either North-South or East-West.

Much like our other carport lines, we use only graded steel and aluminium, and craft the shape of the sections while gauging to accommodate change in loading as we move across jurisdictions.

The Louvered system is interesting because it is designed with human scale in mind. Most often we design to a 3m consistent clearance of the girder to ground. As a result, the canopy has a consistent height across the entire array. The benefit of this, in relation to the large mono pitch, is that the clearance of the Louvered on the back side remains 3m, whereas with the Double Mono pitch exceeds 4.5m.

We generally deploy our tube sections for the struts with back-to-back girders for this application with an aluminium purlin, which aids in three ways:

- Firstly, providing for enlarged span distance;
- Secondly, the elegant implementation and integration of the brace supports accommodates larger spans; and
- Thirdly, the product is more robust to handle slight knocks from the site's users.

The layout for this product is somewhat different in that we work to 7.5m by 7.5m or 10m by 10m grids. This ensures the circulation of the traffic below the structure is not disrupted and the site remains functional after we complete installation. It is important to stress however that, like with all structures, there will be a need for education of the users as there will still be struts that need to be avoided.





CONFIGURATIONS	1 in portrait	
	2 in landscape	
	Maximum length of the tables is 35m	
SPANS DISTANCES	Depending on the loading the system can accommodate: <ul style="list-style-type: none"> • 7.5m by 7.5m grid • 10m by 10m grid • other if required but would necessitate specialised engineering and component development. <p>These grids still accommodate the parking configurations below:</p> <ul style="list-style-type: none"> • 2.5m (1 parking bay) • 5m (2 parking bays) • 7.5m spans (3 parking bays) <p><i>The parking bays are in line with the generally accepted 2.5m by 5m dimension. If changes are required, we are happy to accommodate such requests.</i></p> <p><i>Other configurations are possible.</i></p>	
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APPLICATION	Ground mounted	
	Coffer slabs	
	Other	
	Post tension slab mounted	
	Steel reinforced concrete slab	

Founding tests

Generally before the project commences and whether there is information available from the client, depending on the solutions proposed, various geotechnical tests are conducted to assess the suitability of the soil, namely:

- Vertical uplift tests either on the tube, cold rolled section, micro-pile or chemical anchor
- Horizontal pressure tests
- Plate bearing tests
- DCP tests

The type of testing is elected by Caracal Engineering based on the available information and project context.

Drone mapping and surveying

Much of the design undertaken by EPCs in the initial conception of the project is based on Google Earth images, which although helpful is unreliable when scale is considered. We, therefore undertake a drone mapping campaign. This entails flying the drone over the site across a predetermined map and taking several hundred high resolution pictures.

We then take these images and use the relevant software to stitch them together to form a scaled map of the site. Aside from being useful to the EPC and other contractors on site that have to work from the same coordinates, it helps us to:

- Plan out the positions of the piles
- Accommodate the shading distance provided by the client
- Identify topographical challenges which would inform the civil contractor's scope of work

The drone mapping dovetails with our internal surveying services. To make the process from conception to implementation move efficiently, Caracal Engineering has internalised the survey function. While we are happy to work with external surveyors, this service more directly meets our requirements.

It should be noted that we insist on sanity checks of the survey positions from the client to the extent that we have a hold point in place until we get sign-off from the client. We do not proceed with work until the client has signed off that they are satisfied that the design is in line with their requirements, particularly the azimuth of the site and the shading distance between tables.

Ballast + drilled + micro-piled + chemically anchored

Depending on the founding conditions and client requirements, we use a range of methods depending on what the context demands. These include:

- DTH boring
- Micro-piling
- Cast in situ
- Chemically anchoring
- A hybrid based on the conditions

Top structure

While the application of the foundation may differ where we use IPE risers or precast concrete ballast block for the PremierPort, or percussion drilled holes and concrete for the EconoPort, the principle of the balance of construction remains the same. The struts are connected to the girder and purlin clamps are placed along the girder ready to receive the purlins. The full assembly is then lifted into place on the foundation or the rammed strut, depending on foundation methodology.

Girder preparation

If required, EPDM gaskets are placed where the purlins will be to ensure mitigation of bimetallic corrosion between the different metals of the girder and purlin. Where we use steel purlins there is no need for EPDM gaskets.

Purlin placement

Purlins are placed, spanning between girders and fastened with the preplaced clamps.

Module installation

Finally, the modules are added and securely clamped to the purlins to ensure there is no movement.

Our warranty spans 10 years commencing on the date of completion of the structure or once it is delivered to site or alternatively, when the structure is handed over to a client for commissioning, whichever is sooner.

In highly corrosive environments and or conditions where there is a changing context such as industrial development or site subsidence, Caracal Engineering reserves the right to reduce or eliminate the warranty period. The warranty period cannot be extended beyond the initial period even if components are replaced during this period.

Please note:

- Caracal Engineering's warranty is conditional upon damage being caused to a component. Despite proper installation and handling under normal use, and provided the client has adhered to the maintenance requirements, the supplier would, at their cost, repair or replace the respective component within the warranty period.
- Our warranty is limited to the repair, supply and delivery of replacement parts for the defective components upon notification of damage within the warranty period, i.e. 10 years.
- Caracal Engineering would not be obligated to honour this warranty if the damage arises from causes beyond our control, i.e. exceptional circumstances such as fire, abnormal weather conditions, mechanical damage, physical damage, malicious damage, pollution, instability of the sub-surface, exposure to acidic, chemical, biological or other hazardous sources which are believed to be damaging to the components.
- With respect to installation and handling, the technical product descriptions and installation instructions provided by us would govern. If a shorter lifespan is explicitly indicated for specific construction components, either generally or within our custom designs for particular types of use, the warranty period would be limited to that lifespan or period.

No claims may be made for damages covered or capable of being covered by insurance.

NB: Our Limited Warranty applies exclusively to claims made by our direct clients and is non-transferrable in whole or in part. Any statutory warranty or liability claims remain unaffected.

Any changes made to the structure without the expressed permission and relevant calculation supporting the change with the addition of the sign-off from a Caracal Engineering representative will void the warranty entirely.

Failure to inspect and maintain the components at the specified intervals will invalidate the warranty.

In the event of a claim being made, the following records need to be made available to Caracal Engineering or our nominees:

- Inspection and details of cleaning/washing records.
- Maintenance records.
- Any other data relevant to the service history of the mounting structure.

For more information on our warranty as well as care and maintenance and the format of the required Inspection and Maintenance Logbook, please reach out to a Caracal Engineering representative.

This datasheet only provides information for Caracal Engineering Solar Carports. The contents of this document will vary depending on where the project is situated and the client requirements.

Let's do Solar better. Get in touch!

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