QUICK CONSTRUCTION TECHNIQUES FOR DOCKS WITH PITS FOR DOCK LEVELLERS

30 CAMPISA
1972-2002

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n. 1516 / 4 / 00
cat. OS 04 cl. IV°

SUMMARY

LOADING BAYS: A SYSTEM OF WORK, NOT

The loading bay

It is the complete installation which allows quick and safe loading and unloading of goods from vehicles. A well coordinated set-up allows quick and safe loading, minimizing of energy used, and saving on heating and chilling costs, therefore maintaining the quality of the transported goods and reducing their cost.

Pits for dock levellers:

a building strategy for making them quickly, economically, and with precision

Pits for dock levellers are a building theme. The builder needs to build them quickly, with low cost and without risk of fracturing the pavement caused by re-makes and joints in places of wear and tear.
All pits construction systems are illustrated here, and within them those that avoid these risks, allowing the one off casting of the pavement and allowing the installation of dock levellers only when all “wet trades” are finished. This means absence of claims, certainty of costs, cleanness and saving.
The mechanical-hydraulic part of the dock levellers is always identical, what changes is only the type of outside frame of the dock leveller that has to suit the building system of the pit.

For the builder the use of the *CAMPISA* construction systems means:

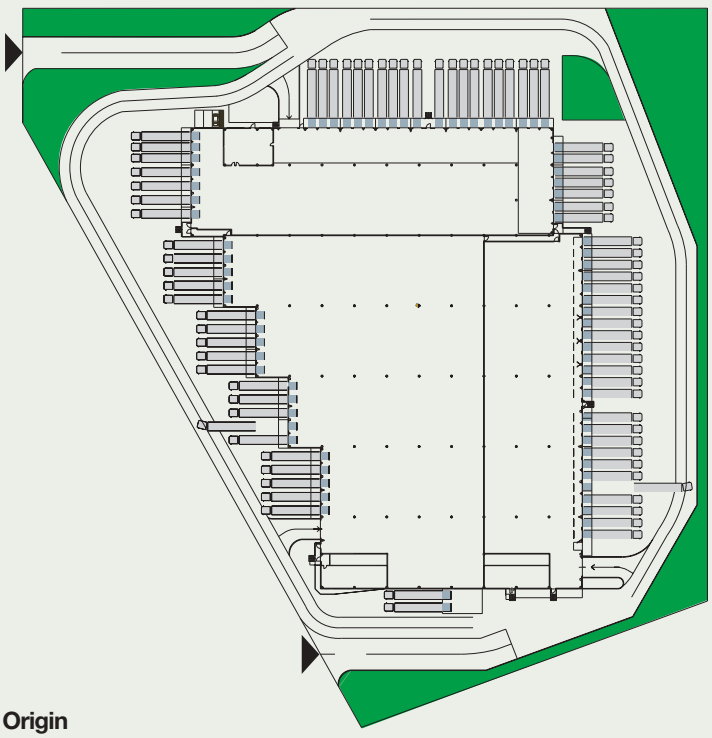
- INSTALLING CERTIFIED AND LATEST INDUSTRY STANDARD EQUIPMENT
- COMPLIANCE GIVING THE DEMANDS OF CUSTOMER TECHNICAL DESCRIPTIONS
- FINDING THE MOST ECONOMIC AND EASY TO INSTALL EQUIPMENT
- CONSIDERATION PAYING FOR THE BUILDING USING INNOVATIVE PROPOSALS
- CHOOSING PIT AND DOCK CONSTRUCTION SYSTEMS ALLOWING QUICK AND SURE EXECUTION, MAINLY WITHOUT RE-MAKES AND DAMAGE TO THE PAVEMENT
- ADOPTING DOCK LEVELLERS THAT CAN BE INSTALLED ONLY AT THE END OF ALL THE “WET TRADES”
- CHOOSING SYSTEMS THAT ALLOW TO REDUCE TO THE MINIMUM THE ELECTRIC WIRINGS AND PLUG- POINTS
- SECURING DELIVERY WITHIN TIME, USING PROVEN MATERIALS

The best start is a good design: general principles of the lay-out

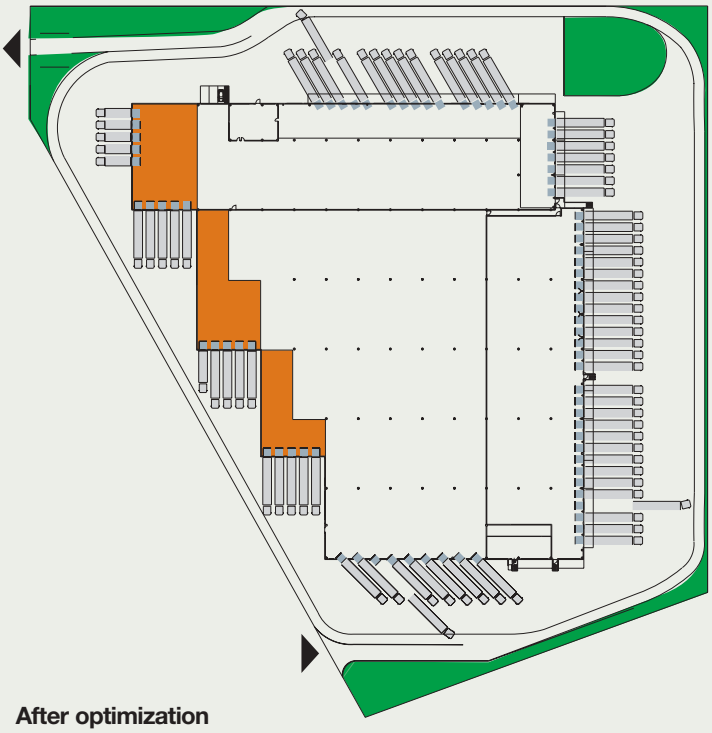
The lay-out of the loading bays has to take into consideration the dimensions of the vehicles, manoeuvring spaces, the sense of circulation, slopes of the yard, thickness of bumpers (essential to building preservation) and many other things. A lay-out cannot be generic because It may penalise the user and is often more expensive for the builder. **All solutions have wide descriptions in the manual "G.Paolo Nelzi - The loading bays - The design in function of Materials Handling", synthesis on the site** *http://www.campisa.it*

Sending your lay-outs in DWG format to *project.assistant@campisa.it* **they will then be returned with relevant notes, workshop and architectural drawings.**

An example of a development of a project sent to *project.assistant@campisa.it*: **in this optimization** **1.570** **square metres of warehouse have been created, with a perfectly rational lay-out of traffic and docking.**
An improvement of the "performance index of the loading bays" of 53% has been obtained.



Origin



After optimization

TRADITIONAL CONSTRUCTION OF PITS FOR

The traditional building system with rims reinforced by angle profiles and strong head and pit base profiles, on which the dock leveller is to be welded, is still used. The pit may be simple, elongated at ground level or have lower clearance for tail lifts: the dock leveller has no influence on the depth of the pit. Poor dimensions and squaring often cause expensive redundant re-makes before being able to install the dock leveller. The bumpers are directly installed on the concrete, at the side of the pit.

Traditional shuttering for building the pit

A finished traditional pit

Dimensions in mm of the top part of traditional pits for "castle" RCA dock levellers
The dimensions for swivelling and telescopic lip dock levellers are the same

dock leveller width	2000	2000	2000	2200	2200	2200
dock leveller length (lip excluded)	2000	2500	3000	2000	2500	3000
pit length "A"	2000	2500	3000	2000	2500	3000
pit width "B"	2040	2040	2040	2240	2240	2240
pit height "C" (part interesting the dock leveller)	550	550	550	550	550	550
swivelling lip d.l. lifting cylinder centre "D"	600	880	1170	600	880	1170
telescopic swivelling lip d.l. lifting cylinder centre "D"	530	660	970	530	660	970
Tail lift room width	3000	3000	3000	3000	3000	3000

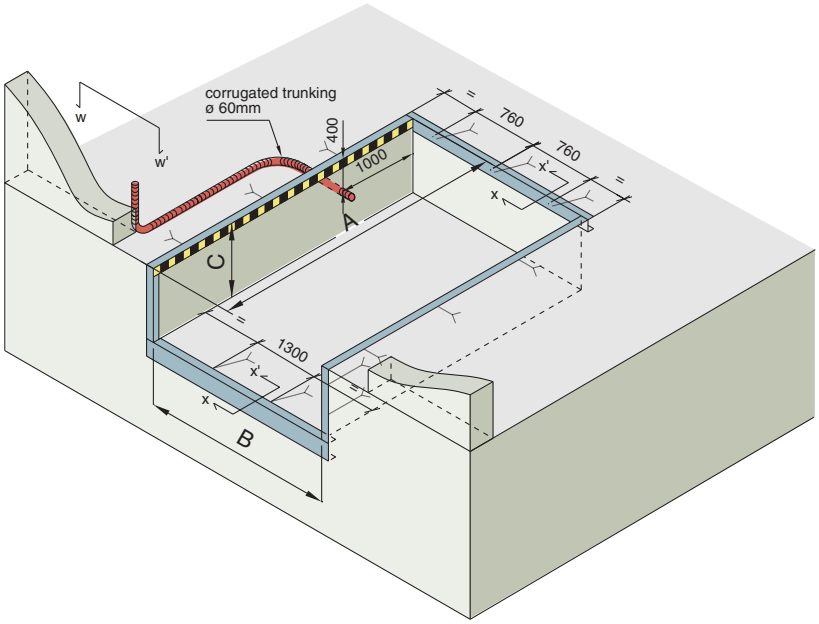
Note: with 2000 mm long d.l. the tail lift room is only 1700 mm deep and may be insufficient

“LAID” DOCK LEVELLERS

Simple traditional pit

The three perimetrical armoured walls of the pit are built, with bracketed angle profiles cast into the rims and strengthened head and base of pit profiles.

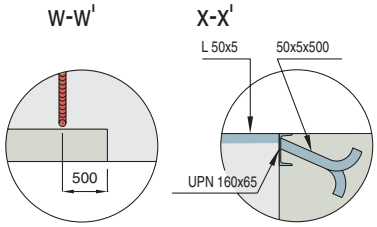
Into these pits RCA “castle” dock levellers are installed at the end of the “wet trades”.



Simple total height traditional pit

Similar to the above construction, with a pit of the same height as the dock, that allows for a step on the internal side of the pit and a profile on the external one, on which the dock leveller is put.
The three perimetrical armoured walls of the pit are built, on the rims of which are cast bracketed angle profiles, and stronger head and base of pit profiles. The dock leveller lays on a reinforced step on the inside wall and a front profile.

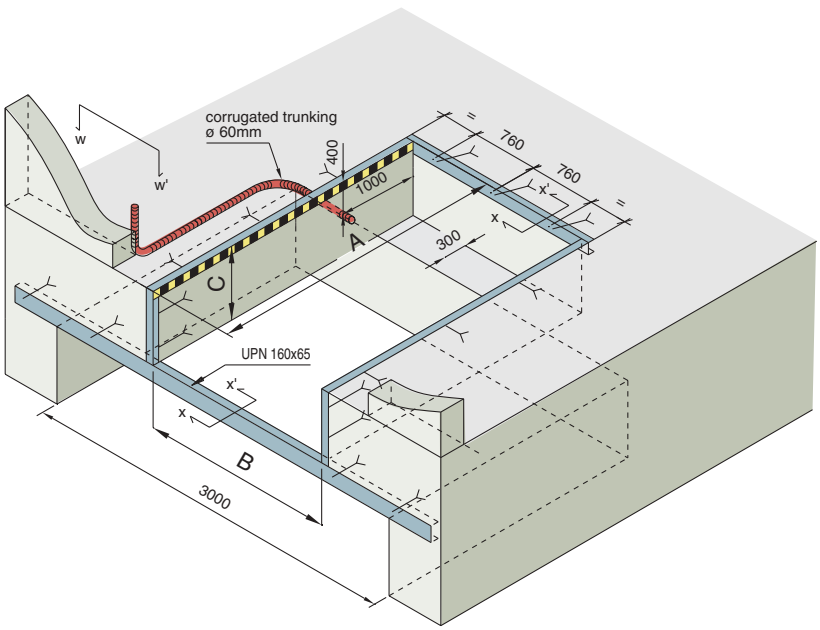
Into these pits RCA “castle” dock levellers are installed at the end of the “wet trades”.



Traditional pit with tail lift clearance

It is identical to the previous one, with the clearance 3 m wide, to receive the tail lift. It makes allowance for a step on the inside part of the pit and a profile on the outside one, on which the dock leveller lays.
It is necessary to have quite heavy reinforcements for the two overhangs

Into these pits RCA “castle” dock levellers are installed at the end of the “wet trades”.



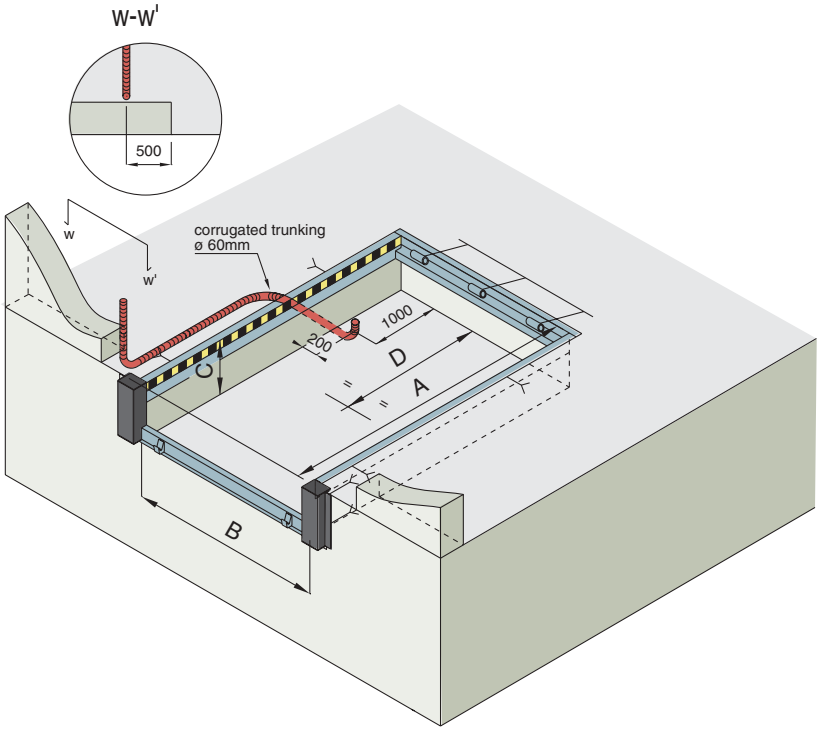
THE RECOVERABLE POURING TRAYS, FOR

It is an alternative to the traditional pits building system, in an industrialized way. The pit rim frames and the monolithic bumper bearer are fixed with bolts to the recoverable pouring tray, that is positioned into the dock under construction. The three perimetrical walls are cast approx. 10 cm short. It is disarmed in five minutes, by simply lifting the pouring tray that retracts - thanks to a patented system. Back filling of the dock, compression, under-pavement mesh and walking level may be completed another time, depending upon necessity.

Simple pit formed with recoverable pouring tray CR

The frame brackets become one single body with the three classic reinforced perimetrical walls that are cast directly on three sides around the pouring tray.

Into these pits RCT traditional CAMPISA dock levellers are installed at the end of the "wet trades".



Dimensions in mm of the pits for swivelling and telescopic lip dock levellers, built with CR recoverable pouring trays

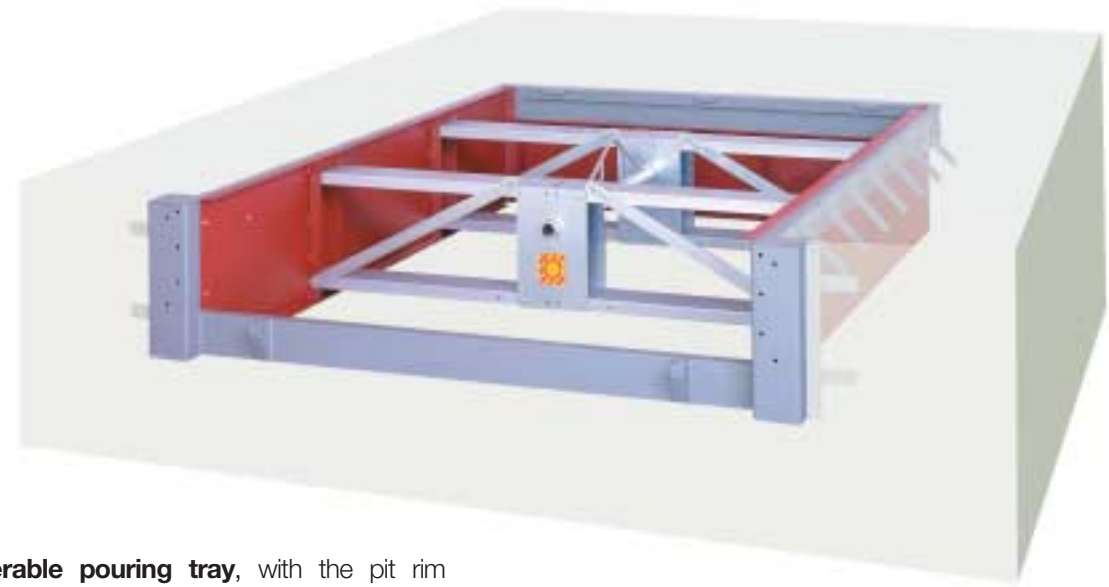
recoverable swivelling and telescopic d.l. pouring tray code	CVRR 2020P0	CVRR 2025P0	CVRR 2030P0	CVRR 2220P0	CVRR 2225P0	CVRR 2230P0
dock leveller width	2000	2000	2000	2200	2200	2200
dock leveller length (lip excluded)	2000	2500	3000	2000	2500	3000
pit length "A"	2000	2500	3000	2000	2500	3000
pit width "B"	2040	2040	2040	2240	2240	2240
pit height "C"	550	550	550	550	550	550
swivelling lip dock levellers lifting cylinder centre "D"	600	880	1170	600	880	1170
telescopic lip dock levellers lifting cylinder centre "D"	530	660	970	530	660	970
tail lift room width	3000	3000	3000	3000	3000	3000

Note: with 2000 mm long dock levellers the tail lift room is only 1700 mm deep, and is sometimes insufficient.

Complete perimetrical profiles order codes: front connection, head hinging, side rim protection, for pits built with recoverable CR pouring trays

swivelling lip perimeter profile code for recoverable CR pouring tray	TVRR 2020P0	TVRR 2025P0	TVRR 2030P0	TVRR 2220P0	TVRR 2225P0	TVRR 2230P0
telescopic lip perimeter profile code for recoverable CR pouring tray	TVTR 2020P0	TVTR 2025P0	TVTR 2030P0	TVTR 2220P0	TVTR 2225P0	TVTR 2230P0

SIMPLIFYING THE TRADITIONAL SYSTEM



The recoverable pouring tray, with the pit rim profiles positioned before the casting.
Two CR pouring trays may be over stacked to build the total pit height

Disarming a recoverable pouring tray takes a matter of minutes

“Almost” pouring trays: dock levellers contour sheets, for cement casting

“Dock levellers with pouring trays” are available on the market, made up of simple metal sheets contoured to match the dock leveller frame, that supports and receives the casting. They are low price, the dock leveller is always contaminated with cement and installed during the full “wet trades”. They require the classic three armoured perimetrical walls; the dock leveller will never be recoverable.
They are not to be confused with the “real” pouring trays, allowing the installation of the dock levellers once the wet trades are completed.

A dock leveller with the contour casting sheets, an “almost” pouring tray

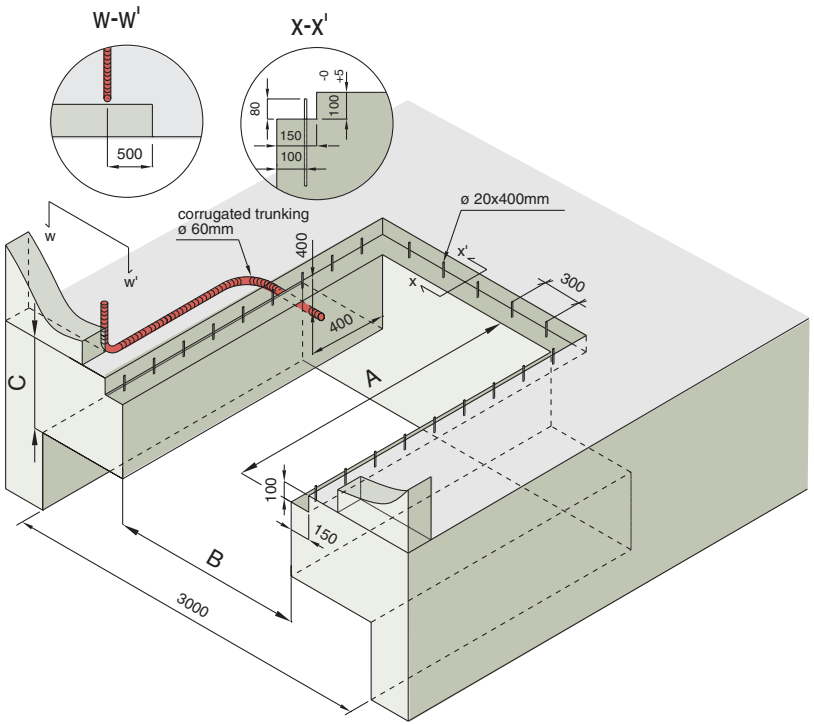
THE TRADITIONAL CONSTRUCTION OF THE

This system is popular mainly in cold countries, where the dilatation problems given by the temperatures are lower. The tensions of the different materials: cement, frame of the dock leveller, finish of the pavement around the dock leveller, often results in fractures of the pavement. To combat this, the type with “L” frame has been created to solve some of the problems, but with much higher costs.

Pit for “C” type, “suspended” dock levellers

Three reinforced perimetrical walls are built, on the rim of which a rebate 150 mm wide and 100 mm high is formed. Into the rebate 20 mm diam. rods are fitted - to which the frame of the dock leveller shall be welded.
Once the dock leveller is installed, the pavement is completed around the whole perimeter, however the dock leveller will be dirtied by cement and there is the risk of fractures to the pavement.

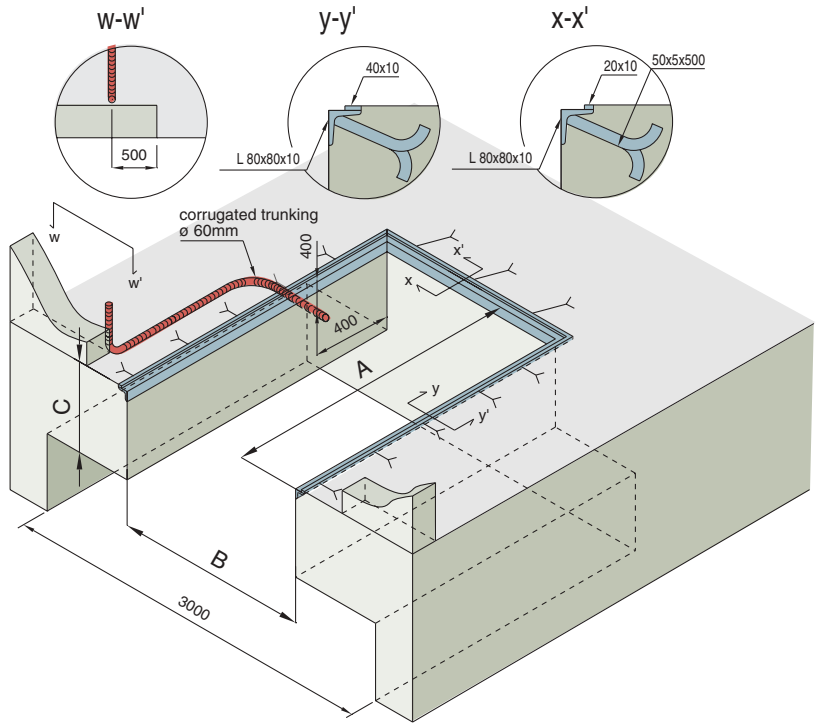
In these pits “C” type “suspended” dock levellers are installed, before the “wet trades” are finished. The dock levellers are dirtied with cement. Risk of fractures of the pavement.



Pit for “L” type, “suspended” dock levellers

The pit for "L" type dock levellers was conceived to avoid frequent fractures of the pavement that very often occur with the “C” system. It is made by a heavy reversed 80x80x8 mm “L” on the whole perimeter, strongly bracketed, with a plate 40 x 10 welded on the sides and a 20 x 10 on the head, on which the reversed “L” frame of the dock leveller is welded. The system is expensive but allows for pouring the pavement in once and for installing the dock levellers at the end of the “wet trades”.

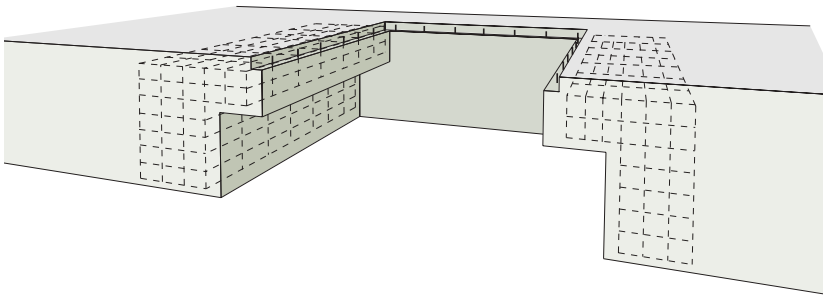
In these pits “L” type “suspended” dock levellers are installed, after the “wet trades” are finished. The risk of fractures in the pavement are moderate but remain; the steel structure that remains cast is complicated to do and difficult to be made with precision.



“SUSPENDED” DOCK LEVELLERS

The pits for “suspended” dock levellers may also be built at full height, or with clearance for the tail lifts. Dock levellers remain always the same, because they are “suspended” from the pit rim. There is a cost increase, coming from the heavily reinforced rebated plinths for sustaining the two side overhangs, where clearance is necessary.

The heavy reinforcement plinths to sustain the side overhangs.



Suspended “C” type dock levellers. The dock rim remains “clean”, but fracture risks are frequent.

Suspended “L” dock levellers. The “L” frame of the pit rim is complicated to install / fabricate. The visible welds of the “L” frame to the dock leveller cannot be finished aesthetically. The risk of fracture is limited, but remains.

Dimensions in mm of the pits for “C” and “L” type “suspended” dock levellers, with swivelling or telescopic lip

Dock leveller width	2000	2000	2200	2200
Dock leveller length (lip excluded)	2500	3000	2500	3000
Pit length “A” - 0 + 10 mm	2500	2000	2500	3000
Pit width “B” -5 +5 mm	2070	2070	2270	2270
Minimum pit height “C” (part interesting the dock leveller)	550	550	550	550

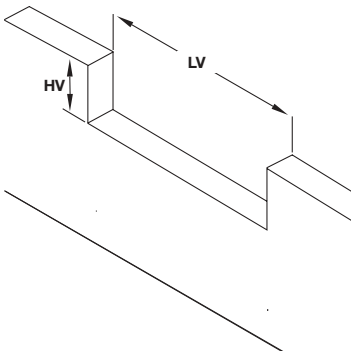
PREFABRICATED PITS: QUICK BUILDIN

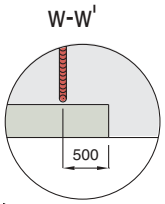
The *CAMPISA* prefabricated pits reverse the construction sequence: instead of building “rooms” with reinforced walls, into which the dock levellers are put, only the front wall is built, the dock is filled with compacted inert soil, the prefabricated pits are positioned and levelled, the weak mix sub pavement concrete, mesh and the pavement are cast: in one rather than previously six weeks. The sequence represented here, is already widely self-explanatory, further confirmation can be found in the animated demonstration available on the site *www.campisa.it*

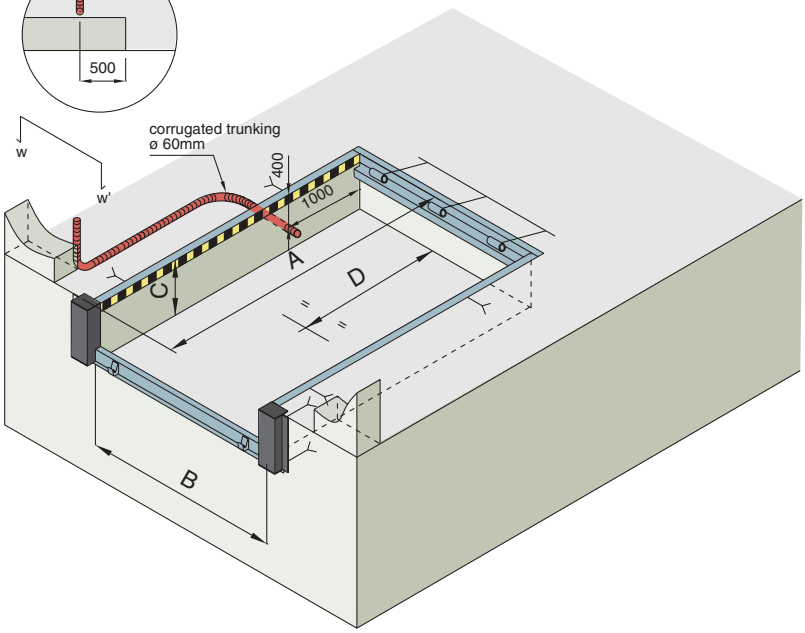
Prefabricated CP pits

The CP prefabricated pit represents the complete solution to all problems of building a pit. Shipped disassembled for minimizing freight costs, it is assembled in less than a quarter an hour without any possibility of mistakes. Squaring is maintained by a jig. It is completed with distance-keepers.
The front connection includes strong shock-absorbers of steel and solid rubber, durable even under heavy impacts of reversing vehicles.
The strong steel sheets duly bracketed, are structurally calculated to substitute the three side reinforced walls. It is only necessary to build the front wall, with the opening for the prefabricated pit.

Into these pits the traditional CAMPISA RTC dock levellers are installed at the end of all “wet trades”.







Dimensions in mm of the pits for dock levellers with swivelling or telescopic lip, built with CP prefabricated pits

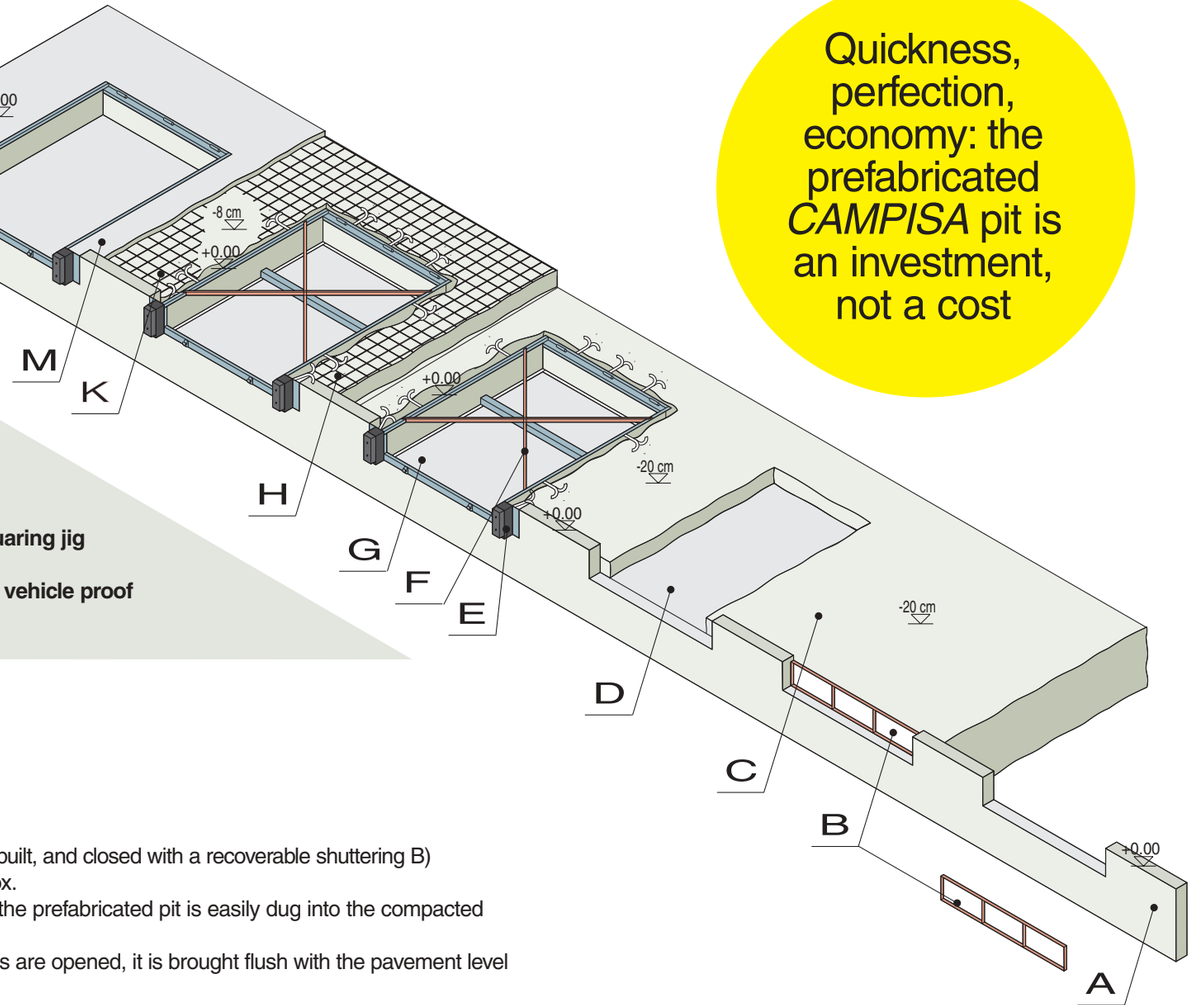
Prefabricated pit code	CVRN 2020P0	CVRN 2025P0	CVRN 2030P0	CVRN 2220P0	CVRN 2225P0	CVRN 2230P0
Dock leveller width	2000	2000	2000	2200	2200	2200
Dock leveller length (lip excluded)	2000	2500	3000	2000	2500	3000
Pit length “A”	2000	2500	3000	2000	2500	3000
Pit width “B”	2040	2040	2040	2240	2240	2240
Pit height “C”	550	550	550	550	550	550
Opening width in the front wall (LV)	2380	2380	2380	2580	2580	2580
Opening height in the front wall (HV)	570	570	570	570	570	570
Lifting cylinder centre “D” swivelling lip dock leveller	600	880	1170	600	880	1170
Lifting cylinder centre “D” telescopic lip dock leveller	530	660	970	530	660	970

OF Ddocks WITH SIMPLE PITS, WITHOUT CLEARANCE FOR TAIL-LIFTS

The prefabricated pit is positioned into the foreseen opening in the wall. The whole dock inside has been filled with compacted inert soil. The monolithic front connection with bumpers hanger steel supports is a guarantee of resistance against the shocks of the docking vehicles.

Once the prefabricated pit is registered at finished pavement level, the corrugated trunking is positioned, all around is cast to back fill and secure, then the inside is cast, pulling with a wooden float onto the inferior lips.

The CP prefabricated pits, used with the indicated system, are an incredibly time saving tool, reliable and economical for quick construction of the whole dock without tail-lift clearance. They only require the front wall with openings for their insertion.



- **It is NOT necessary to build the perimetrical reinforced walls, which reduce adherence**
- **NO reinforcement is necessary**
- **The risk of out-of-squaring pits IS ELIMINATED thanks to the squaring jig**
- **THE MONOLITHIC front connection with steel bumper bearing is vehicle proof**

THE RAPID AND SIMPLE CONSTRUCTION STEPS OF THE DOCK

- The front wall A) with the necessary for the prefabricated pit opening is built, and closed with a recoverable shuttering B)
- The dock is filled with compacted inert soil C) until level - 20 cm approx.
- The shuttering B) is recovered and the room D) necessary to receive the prefabricated pit is easily dug into the compacted inert soil. Before laying it a thin reinforced slab is cast.
- The prefabricated E) pit with the F) squaring jig is mounted, all brackets are opened, it is brought flush with the pavement level and blocked in position.
- The cement bottom of the prefabricated pit G) is pulled with a wooden float against the predisposed inferior lips.
- The weak mix concrete is cast once, up to level H), finishing approx. 8 cm below walking level
- The K) sub pavement mesh is laid. The squaring jig F) is recovered
- The final M) pavement is cast.

Quickness, perfection, economy: the prefabricated *CAMPISA* pit is an investment, not a cost

After the mesh wire is laid, the pavement is cast once to avoid fractures.

The dock levellers remain perfect because they are installed only at the end of the “wet trades”.

Prefabricated *CAMPISA* pits, a since 1983 consolidated experience

A simpler, quicker, surer state of the art system does not exist that also avoids expensive masonry re-makes from mistakes that often come with traditional systems.

THE *CAMPISA* PREFABRICATED PIT WITHOUT CLEARANCE FOR TAIL-LIFT

A QUICK AND SIMPLE SYSTEM FOR A QUICK AND SURE RESULT

The *CAMPISA* prefabricated pit: a technologic object structurally designed for eliminating any reinforcement, not only a couple of simple casting sheets.

The monolithic front connection with steel bumper bearers is vehicle proof, thanks to its rear brackets that make it a unique and indestructible piece within the front wall.

CAMPISA INNOVATION: PREFABRICATED

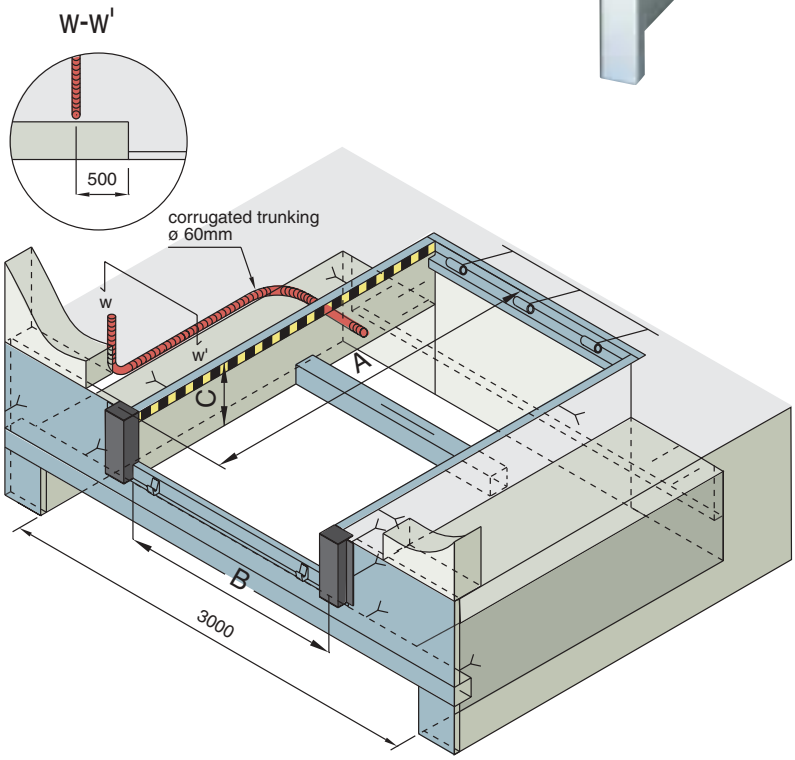
This innovative system further reduces installation stages: by eliminating reinforced walls, eliminating the heavy rod castle reinforcements of the two side overhangs, eliminating the front wall by substituting it using its front hot dip galvanized wall. The dock appears from nothing, complete with pit and clearance for the tail-lifts, on a simple reinforced base slab. Years of development and tests, have culminated in an international patent of wide validity that constitutes an excellence of innovation.

Prefabricated CI docks with inclusive pits for dock levellers and tail-lift clearance

This simple, rapid, sure system for building docks starting from a simple reinforced slab at ground level. It is the complete solution: the front wall is directly constituted by the hot dip galvanized front face of the prefabricated dock. It is the ultimate solution for stand alone dock levellers, for multiple bays and renovations.

Into these pits the traditional CAMPISA dock levellers are installed at the end of all "wet trades".

The prefabricated pit is 1 m high and the slabs height corresponds to reach the desired dock level. For a dock 115 cm high, the reinforced slab shall be 15 cm.
The bottom room for the tail-lift is 3 m wide (minimum requirement).
The prefabricated slab is supplied with two full super bumpers, dimensions 150 x 400 h, 130 mm deep for preserving the wall above the dock leveller from collisions caused by the roofs of docking vehicle boxes.
The monolithic front connection is manufactured to match vehicle chocks.



Prefabricated CI docks: dimensions in mm of the pits with clearance for the tail-lifts, for dock levellers with swivelling or telescopic lip

Prefabricated dock code	CVRG 2020P0	CVRG 2025P0	CVRG 2030P0	CVRG 2220P0	CVRG 2225P0	CVRG 2230P0
Dock leveller width	2000	2000	2000	2200	2200	2200
Dock leveller length (lip excluded)	2000	2500	3000	2000	2500	3000
Pit length "A"	2000	2500	3000	2000	2500	3000
Pit width "B"	2040	2040	2040	2240	2240	2240
Pit height "C"	550	550	550	550	550	550
Tail-lift room width	3000	3000	3000	3000	3000	3000

Note: with 2000 mm long dock leveller the tail-lift room is only 1900 mm deep and is sometimes insufficient

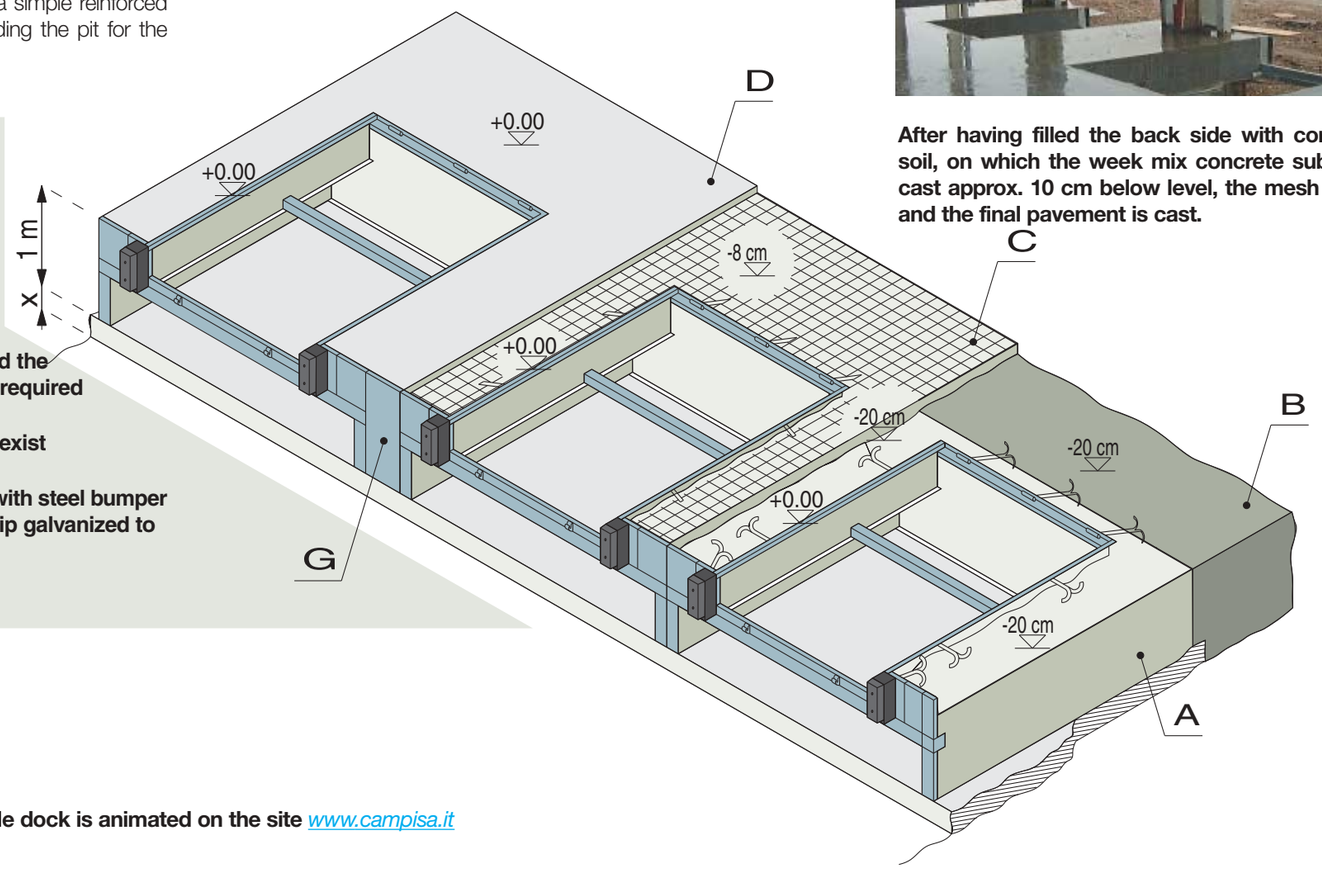
DOCKS FOR DOCK LEVELLERS, WITH CLEARANCE FOR TAIL-LIFTS

Without reinforcement, in particular the overhangs and front wall. The prefabricated docks are shipped disassembled for transport minimization and are assembled in less than half an hour on the base slab. The outer face of the prefabricated dock is hot dip galvanized.

Prefabricated docks that are built from nothing, thus *CAMPISA* **technology**

The prefabricated CI docks are based on a simple reinforced slab that creates the complete dock including the pit for the dock levellers and clearance for tail-lifts.

- **The front wall is NOT necessary**
- **The reinforced perimetrical walls are NOT to be built.**
- **The side overhangs do NOT need reinforcing**
- **Besides the sub pavement mesh and the head of line, NO reinforcements are required**
- **The risk of misalignment does NOT exist**
- **The MONOLITHIC front connection with steel bumper bearers is vehicle proof and is hot dip galvanized to avoid future rusting**



The construction sequence of the whole dock is animated on the site *www.campisa.it* **starting from the reinforced slab:**

- The prefabricated docks are mounted and blocked on the slab with expansion bolts
- The “G” add-on panels which allow for increasing the standard step are mounted
- The “A” block is cast to approx. 85 cm of height
- The rear “B” block is filled with compacted inert soil until approx. 20 cm below finished level
- The sub pavement is cast approx. 8-10 cm below finished level and the sub pavement “C” mesh wires are laid
- The “D” pavement is cast starting from the pit rim, thereby avoiding fractures

The remaining openings between bay and bay are shuttered and casting is made to approx. 10 cm below level. The back counter-wall is structurally calculated and remains in the casting as reinforcement.

After having filled the back side with compacted inert soil, on which the week mix concrete sub pavement is cast approx. 10 cm below level, the mesh wires are laid and the final pavement is cast.

The cleanness of installation underlines the high quality of the work and longevity granted by the hot dip galvanizing of the façade of the prefabricated dock.

In line with the compulsory Norms: pits have to be built with clearance for the tail-lift of the vehicles, to respect the prohibition of connection with the platform, stated by the Norm EN 1756-1

There is no simpler, quicker, surer state of the art system, to build a whole dock, already complete with pit for a dock leveller and clearance for tail-lift, starting from a simple reinforced slab.

THE *CAMPISA* PREFABRICATED DOCK WITH CLEARANCE FOR THE TAIL-LIFT

A QUICK AND SIMPLE SYSTEM FOR BUILDING THE ENTIRE DOCK

The prefabricated *CAMPISA* dock: using high technology for calculating the structural metal sheets eliminates the use of any reinforcement during casting.

The monolithic front connection with steel bumper bearers is vehicle proof, and is hot dip galvanized to avoid any possible trace of rust in the future.

The prefabricated *CAMPISA* dock completely substitutes the front wall.

THE IMPORTANCE OF THE RIGHT BUMPER

The bumper is used to indicate to the driver he has arrived in position. It must be particularly strong and it must stop the vehicle at least 13 cm from the wall, not to damage it.

Full and hard rubber bumpers, not hollow: the STANDARD bumpers

It is important that they have a steel base, strongly anchored into the concrete wall, because the bumpers fixed with expansion bolts have a limited resistance and cannot be installed near to the rim of the dock; when installed too low, they don't meet the vehicle.
The standard bumpers are antifriction full rubber, 60 mm wide, 350 mm tall and 120 mm deep with steel support.

The monolithic front connection, guarantees conformity of shape in the future

The best solution is a monolithic structure with two steel blocks bearing two SUPER bumpers

Made of antifriction full and hard rubber, 130 mm thick to protect the building façade, avoid damage from the truck and provide a safe but not excessive support of the dock leveller lip on the truck bed.
CAMPISA SUPER bumpers fully respond to the necessity of safeguarding the front façade of the building.

The SUPER bumpers have dimensions 150 mm width, 400 mm height

A particular solution, for particular cases: the MEGA bumpers

If the yard is sloping down to the dock, the whole vehicle continues to press with its whole mass against the bumpers, during loading, therefore fluctuating in the vertical.
In these cases, special steel bumpers are needed, fluctuating in the vertical for 80 mm also under the vehicle pressure. The MEGA bumpers fully respond to this necessity and have a framed wooden front that minimizes damage to the vehicles.

The fluctuating MEGA bumpers have dimensions 200 mm width, 700 mm height, 150 mm depth.

THE COMPULSORY NORMS

Docks and pits undergo the building Norms and the Construction Products Directive CPD 89/106/CE. But by choosing the construction system the effects of some compulsory Norms for the dock levellers, more extensively detailed in the “Dock leveller” catalogue, cannot be disregarded.

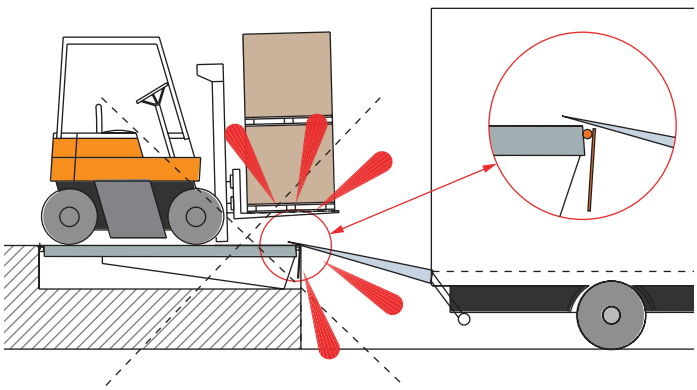
EN 1398, dock levellers: the dimensions and the carrying capacity of the dock levellers, coming from the Norm prescriptions, must be considered.

Dock leveller width should be as much as possible near to the truck bed width, and at least 700 mm wider than the fork lift truck. The present standard is of 2200 mm for big vehicles, 2000 for smaller ones. The side flaps automatically reduce the width of the lip, if the truck bed is narrower.

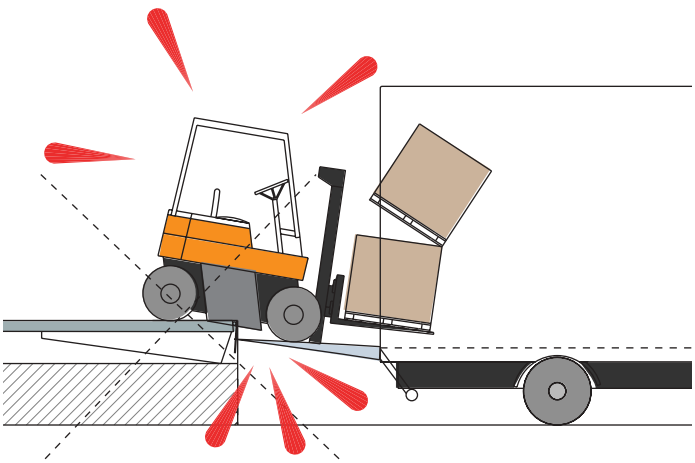
Dock leveller length adapts to the fork lift trucks (they climb a maximum of an 8% gradient) or to the transpallets (they climb a maximum of a 4% gradient). The 12,5% gradient that appears in the EN 1398 Norm is only the “antislippery limit” and has nothing to do with the working gradient: many that have misunderstood now have unusable dock levellers because they are too short and consequently too steep in the connection. The standards are 2000 – 2500 – 3000 mm of length, but specials arrive to 6 metres.

Maximum carrying capacity of the dock leveller: it is loaded on only one axle of the fork lift truck, on two bearings 15 x 15 cm 1 m apart. The standards are 6 and 9 t, but specials arrive to 15 t. The “uniformly distributed” rates are not considered by the Norm, because this is not the use of the dock leveller.

EN 1756 - 1, tail-lifts for industrial vehicles: it is in this Norm, point 5.1.3.2, not in the EN 1398, that the prohibition of the use of the platform of the tail-lift as connection to the dock, for loading-unloading (but the case of special design for this function), is stated. The Norm is little known but is compulsory since 2002. An accident on work due to the non respect of it cannot bring anything else other than a penal conviction, but connecting to the dock with the tail-lift also leads to severe damage to same, the impossibility of sealing the vehicle to the building and the consequential energy waste of heating and conditioning. If there is no tail-lift clearance below the dock leveller, docking with the tail-lift platform means to wear away by cutting the dock shelter with it, and therefore remains one and a half metre out from the dock, under the rain.



In line with the compulsory Norms: build the pits with tail-lift clearance below, to respect the prohibition of connecting with the tail-lift platform, stated by the Norm EN 1756-1



Without clearance for the tail-lift, connecting the dock with the platform of the tail-lift harms the dock levellers and keeps the vehicle at a distance from the dock

COORDINATED EQUIPMENT = RELIABILITY,

The equipment for the loading bays is strongly interdependent: pit, dock leveller, sectional door, dock shelter and traffic control systems. The choice of a complete range avoids later incompatibilities. CAMPISA manufactures a full range of highly reliable products in its factories such as the Fidelity sectional doors, supplied with a 5 years guarantee. Proven by over 21.500 installations, (up to the end of 2003) which are still working without any maintenance after almost 11 years.

Dock levellers

Sectional overhead doors

Dock House

Retractable dock shelters

Cushion dock shelters

Rapid doors

Combining the buying of loading bay equipment further reduces costs where it is possible to obtain multiple use of the electro hydraulic units, that are able to power more elements. Thus significantly reducing to a minimum descents and electric sockets, even more saving!

ECONOMY, AESTHETIC

Coordinated equipment also gives an aesthetic quality: a dock shelter with aluminium perimetrical rim, a more appropriate RAL coloured sectional door, a well designed dock leveller and hot dip galvanized ground wheel guides which precisely drive the docking vehicles. The CAMPISA range of products is all this and more.

Outside steel docks

Full vision sectional doors

Dock tunnel

Wheel guides

Sectional doors with pedestrian door

E-trade levellers

Further to a complete and coordinated range of equipment, *CAMPISA* also offers unequalled support to designers and builders, aimed at providing rapid and economic solutions to their needs. The sending of DWG drawings, the insertion into structural or architectonic views, all this is part of *CAMPISA* support and is the essence of the service proposed by *project.assistant@campisa.it*

A RAPID GUIDE TO THE CHOICE OF PIT AND DOCK

Here below a practical scheme to quickly choose the most appropriate system of construction:
it appears evident the lesser cost of construction with the prefabricated pits or with the prefabricated docks that also grant the absence of possible mistakes. The convenience of the prefabricated dock is macroscopic. The evaluations have been made with good constructive technique, calculations within the norms, and refer to pits for dock levellers 2,2 x 3 m. The elimination of the three perimetrical walls of contour of the pit is the first element of saving, that finds its top with the use of the prefabricated docks with dock leveller pit and clearance for the tail-lift, where also the heavy plinth rod reinforcements for sustaining the two overhangs have been eliminated.

STANDARD DOCK LEVELLERS

The first choice to do: dock levellers WITH or WITHOUT clearance for tail-lifts

WITHOUT CLEARANCE

WITH CLEARANCE

type of construction

type of dock leveller

type of construction

Simple traditional pit

10 m² shuttering	= €.....
35 kg rod	= €.....
86 kg bracketed angles	= €.....
2 m³ concrete	= €.....
12 hours armour and build	= €.....

Re-make risks: HIGH

RCA castle dock leveller:
high volume
=
high transport costs

Traditional pit with tail-lift clearance

28 m² shuttering	= €.....
415 kg rod	= €.....
112 kg bracketed angles	= €.....
5,5 m³ concrete	= €.....
32 hours armour and build	= €.....

Re-make risks: HIGH

Simple pit with recoverable CR pouring tray

10 m² shuttering	= €.....
35 kg rod	= €.....
2 m³ concrete	= €.....
8 hours armour and build	= €.....
Rim frame: *CAMPISA*	= €.....
Hiring *CAMPISA* pour.tray	= €.....

Re-make risks: NONE

CAMPISA
traditional RTC d.l.:
reduced volume
=
reduced transport cost

Pit with tail-lift clearance, with CR recoverable pouring tray

10 m² shuttering	= €.....
35 kg rod	= €.....
2 m³ concrete	= €.....
8 hours armour and build	= €.....
Rim frame: *CAMPISA*	= €.....
Hiring *CAMPISA* pour.tray	= €.....

Re-make risks: NONE

Simple CP prefabricated pit

Shuttering, armouring, angles: NO	
0,5 m³ concrete	= €.....
3 hours mount and build	= €.....
CAMPISA prefabricated pit	= €.....

Re-make risks: NONE

The simplest, quickest, surer, more economic solution is always the *CAMPISA* prefabricated pit or dock

Prefabricated CI dock with dock leveller pit and bottom clearance for tail-lift

Shuttering, armouring, angles: NO	
2 m³ concrete	= €.....
5 hours mount and build	= €.....
CAMPISA prefabricated dock	= €.....

Re-make risks: NONE

LEVELLERS, AND COSTS COMPARISONS

Suspended dock levellers constitute a world on its own.
Valid in the cold countries where minimal dilatations of the elements are evidenced, they have shown limits inhot countries.

"SUSPENDED" DOCK LEVELLERS

WITHOUT CLEARANCE

Indented simple pit, for "C" "suspended" dock levellers

22 m² shuttering	= €.....
105 kg rod	= €.....
4,5 m³ concrete	= €.....
20 hours armour and build	= €.....

(8 hours if with specific pouring tray)

Pavement completion after dock leveller installation: pavement fractures risks: HIGH

"C" suspended d.l. high volume = high transport costs

"L" suspended d.l. add 140 kg of pit rim angles

Re-make risks: MODERATE

WITH CLEARANCE

Indented with clearance pit, for "C" "suspended" dock levellers

30 m² shuttering	= €.....
415 kg rod	= €.....
4,5 m³ concrete	= €.....
30 hours armour and build	= €.....

(12 hours if with specific pouring tray)

Pavement completion after dock leveller installation: pavement fractures risks: HIGH

PIT- DOCK LEVELLER - COMBINATION TABLE

Summary table of the pit-dock leveller combinations

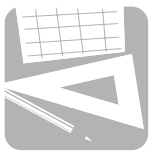
Pit or dock characteristics	d.l. type	Dock leveller characteristics
TRADITIONAL TYPE PITS		
Simple traditional pit	RCA	Castle dock leveller
Height extended or with tail-lift clearance traditional pit	RCA	Castle dock leveller
TRADITIONAL PITS BUILT WITH RECOVERABLE POURING TRAYS		
Recoverable CR pouring tray pit	RTC	traditional CAMPISA dock leveller
PITS FOR "SUSPENDED" DOCK LEVELLERS		
"C" "suspended" pit - simple or with tail-lift clearance	RSC	"C" suspended dock leveller
"L" "suspended" dock leveller - simple or with tail-lift clearance	RSL	"L" suspended dock leveller
PREFABRICATED PITS		
Prefabricated CP pit, simple	RTC	traditional *CAMPISA* dock leveller
PREFABRICATED DOCK, WITH DOCK LEVELLER PIT AND BOTTOM TAIL-LIFT CLEARANCE		
Prefabricated CI dock, with tail-lift clearance	RTC	traditional *CAMPISA* dock leveller

CAMPISA - SERVICE

Leaders like *CAMPISA,* must also grant their customers the best quality service levels. *CAMPISA* is always behind you, for any need, with its servicing:

CAMPISA - INFORMATION

The answers to any enquiries you have
e-mail address: info@campisa.it



CAMPISA - PROJECT - ASSISTANT

A reference point, complete support for your designs
e-mail address: project.assistant@campisa.it

CAMPISA - SALES

For any commercial need, always at your disposal
e-mail address: campisa@campisa.it

CAMPISA - INSTALLATIONS

The service that with careful coordination looks after your installation.
e-mail address: montaggi@campisa.it

CAMPISA - AFTER SALES SERVICE

For service problems, that occasionally happen
e-mail address: assistenza@campisa.it

CAMPISA - INSPECTIONS

For granting and certifying compulsory inspections of supplied equipment
e-mail address: assistenza@campisa.it

CAMPISA - SPARE PARTS

For quick shipment, including same day, any required spare parts
e-mail address: assistenza@campisa.it

CAMPISA, the certainty of a sure choice

CAMPISA - **IN THE WORLD**

From Headquarter or distributors, ***CAMPISA*** supplies highest quality materials and equipments all over the world.

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CAMPISA

la certezza di una scelta sicura
the certainty of a sure choice
la certitude d'un choix sûre
die Sicherheit der richtigen Entscheidung
la certeza de una elección segura
η σιγουριά της σωστής επιλογής

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