CUBA

Havana transport

Complex Projects | Havana Studio

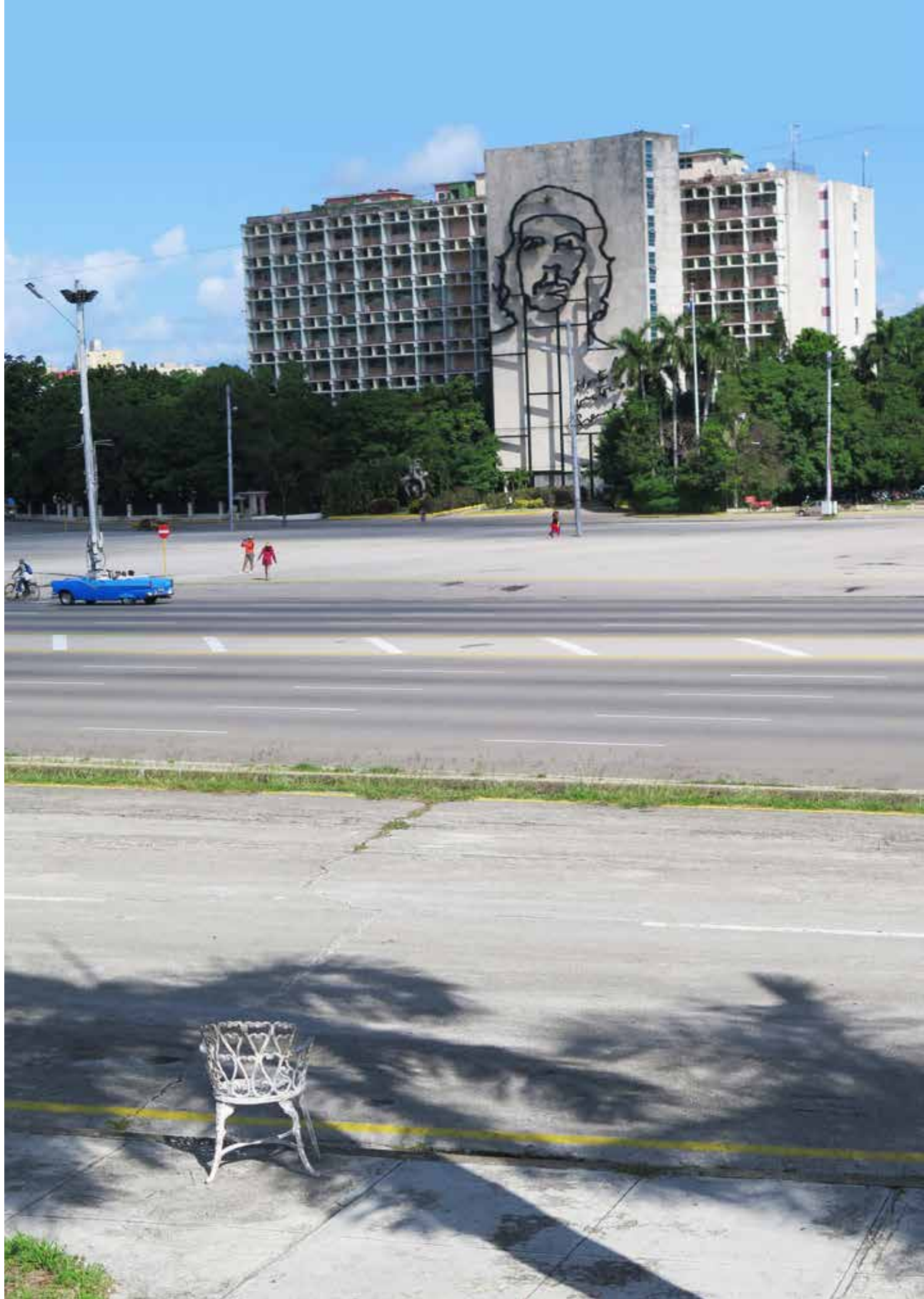
Sun Yuwei | 16 December 2016

TU Delft CP

While others countries were busy dealing with traffic booming these years, Cuba was going backwards on urban transport. Even around Revolution Square, few cars pass by in daytime. To compare, bus stops are filled with anxious people waiting for a bus. Even though they do not know when it will come. And this is their daliy life.

Next to this spaious but empty road, a chair was set confronting potrait of Che. I do not know who put this chair here. But I would like to know what he or she was thinking. Is this current condition of Cuba what Che was fighting for? Would he do same thing if he know the consequeces? Or today is a hard period towards right direction?

Is now the last page of revolution chapter in Cuban history? If so, what is going to happen?



Vedado is a well-organized area which is only 5 km far from central Havana. In history this area is developed by rich people in Havana and they build their villas here as this is a beautiful area with suitable distance to Havana. Now Havana is quite full. Vedado is very good choice for new projects serving Havana to build inside, as its distance, context and urban planning are all suitable.

Infrastructure in Havana is very inconvenient, people need hours per day to reach their workplaces.Now Cuba has decided to develop. In this condition, infrastructure is one of most basic preparation for development. As I regard Vedado as new central district of Havana, it need to develop firstly its infrastructure. So for now I would like to design a Transportation Hub for Vedado mixing maybe commercial and exhibition spaces, so that Vedado can connect itself to old Havana as well as other part of the city.

As for location, I want to involve water transportation in my design besides ground transportation, so joint of Malecon and the river is a suitable position.

Old Havana has a lot of historical buildings need to be protected and streets there are quite narrow. there is hardly adequate space left for new developments. It can be more developed into tourism area. And Vedado is now already commercial center of Havana and many hotels built in this area. And it can also develop more on cultural aspect.

25 years later, Vedado would be a fully developed district and would be city center for locals in commercial and leisure aspect. Cuba would have a loop in future, Vedado as the center of center will definetely develop fast. However this still need time. Cuba is still weak in many aspects.For instance it cannot build underground now. So for me, I would leave enough potential to fit the following rapid changing years.

City people merely reside in residential areas in contrast to living in rural or village neighborhoods as was true in the past. City people are mobile. They can and do pick and choose from the entire city (and beyond) for everything from a job, a dentist, recreation, or friends. to shops, entertainment, or even in some cases their children's schools. City people are not stuck with the provincialism of a neighborhood, and why should they be? Isn't wide choice and rich opportunity the point of Cities?

—— Isaacs

sent july 24 1927 for echo album

CUBA

THE LOVELIEST LAND THAT HUMAN EYES HAVE EVER SEEN

1927

2010

Public Transportation in Cuba: Moving Backwards

Cuba's public transportation system has never fully met people's needs in more than 50 years.

Long lines of people at bus stops aren't anything new. My friends tell me that, in the 70s and 80s, going to the beach on a bus was a veritable odyssey, and getting home meant a pitched battle involving yelling, insults and even shoving among those scrambling to board the scarce buses.

When I arrived in Cuba as a special press envoy in 1989 (before the economic crisis hit), I was very much amused by an enormous billboard which showed a Cuban bus with the chaos and agony of Picasso's *Guernica* painted inside it.

In the good old days, those with power got around in cars and those with money relied on *Lanchar*, a private taxi company that did pretty much the same thing privately-owned cabs do today. All the while, the vast majority of Cubans wrestled for a spot inside the country's buses (1).
Bringing a spare part for a Caterpillar engine entails buying it in the United States secretly, transporting it to Canada, shipping it to the Dominican Republic or Panama and then to the island – a rather long journey that makes Cuba lose a fair amount of time and a lot of money.

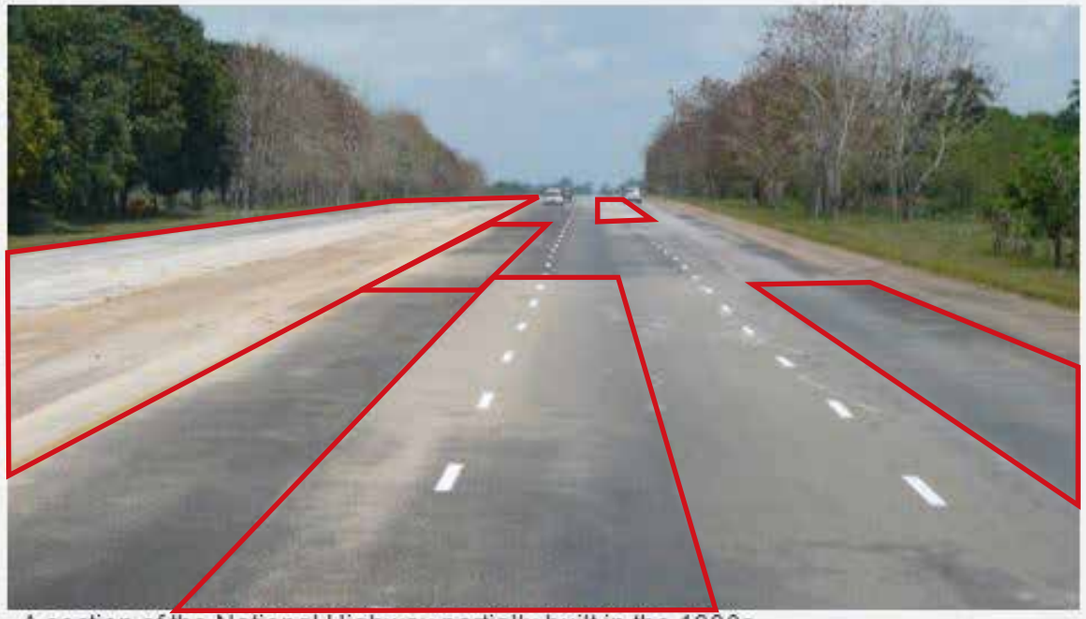
The problem, however, is even more complex. The Ministry of Transportation isn't only incapable of administering its own companies properly; it also proves unable to organize private transportation, which operates with less regulations than it would in a country with a market economy.
Though Cuba is avowedly a planned economy, I know of capitalist societies in which authorities exercise greater control and organize and monitor activities in the sector more rigorously in the sphere of public transportation.

The Cuban Ministry of Transportation takes no action, even though they know *boteros* buy diesel on the black market at one fourth its gas station price and continue to charge each passenger more or less what the majority of Cubans earn in an entire day of work.

What's more, there are more and more road accidents, but *boteros* are only required to take a one-week course and their vehicles are not subjected to regular inspections to verify their condition, as is common in many other parts of the world.

Cuba's public transportation system is chaotic because of a lack of norms and supervision.

Every day, bus drivers, Cuba's notorious *guagüeros*, harangue passengers with a phrase that could well become the slogan of the country's public transportation system: "come on people, keep moving, let's take a few more steps backward!"



A section of the National Highway partially built in the 1980s.

Transportation in Cuba, or the Hours of National Despair

Naty Gabriela Gonzalez

HAVANA TIMES — I get on a bus and see people run and cling to the open door, trying to keep their heels from being mangled. I see a mother hoist her kid onto her shoulder and grab hold of another passenger's waist, struggling to hold on to his neighbor with calloused hands. I get to the door and it closes behind me. We all look at each other, repeating the tired phrase of: "It ain't easy."

Photo: Caridad

I politely try to squeeze past the crowd and they yell at me, saying there's no room – that, if I want to get through, I have to jump over them. Someone asks me to let them through and I say nothing. We do this and shove each other around. The driver shuts the back doors and leaves a woman in the middle of the road, who yells, drops her purse and sees the discouraging spectacle of the other passengers, thronging together and going who knows where. Why do I keep quiet? Why don't I snap back? Why do we shove each other around?

This is not a diary entry, this is a passage of the story that repeats itself every day at the bus stop, when one returns home, when one goes to work, when one goes to university. Many are the debates that Cuba's public transportation has generated since the Special Period crisis, when it was at its worst (early/mid 1990's), and following the purchase of Yutong-brand buses from China some years back, which improved the situation considerably for a while.





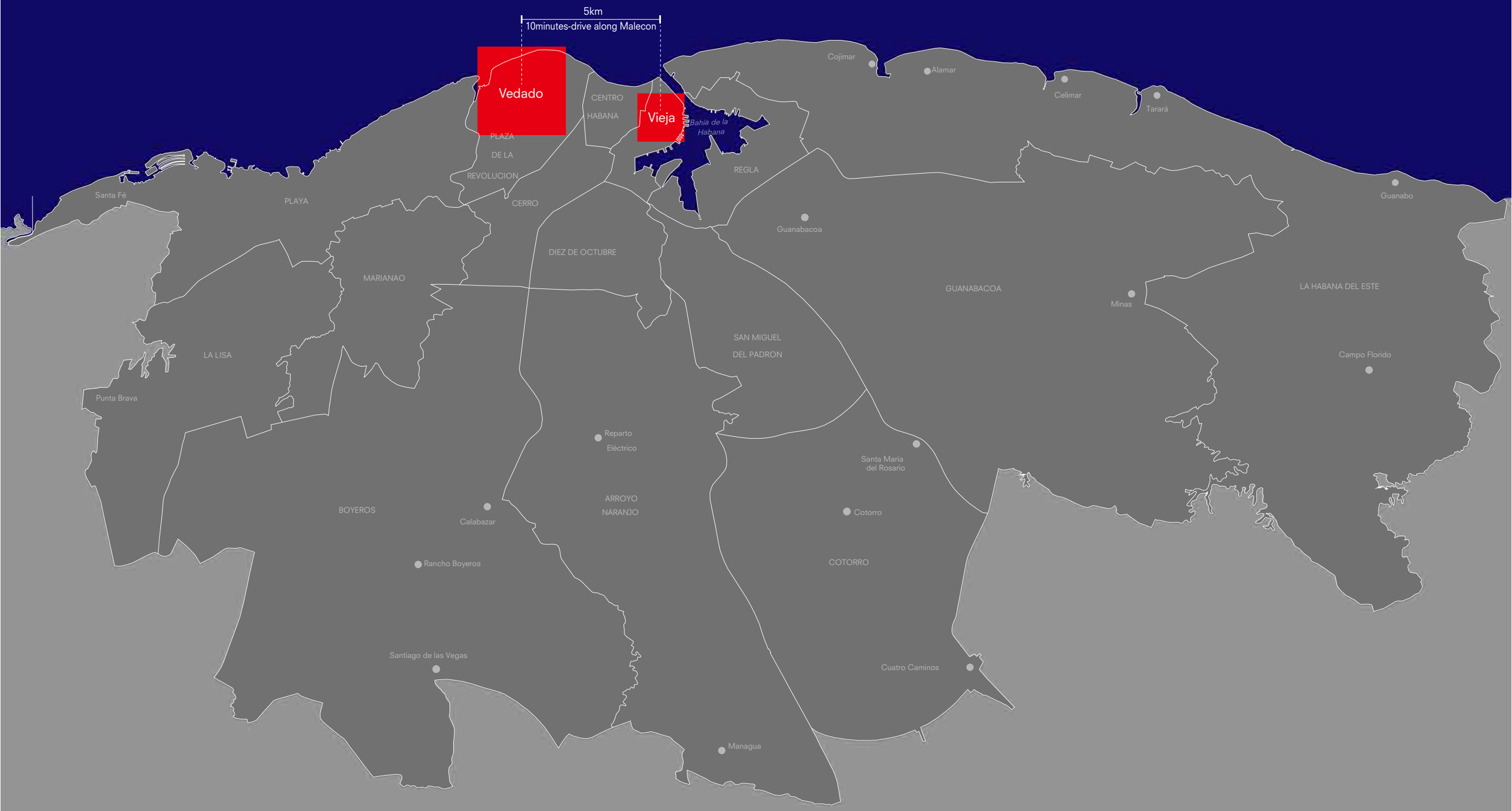









Vedado in Havana



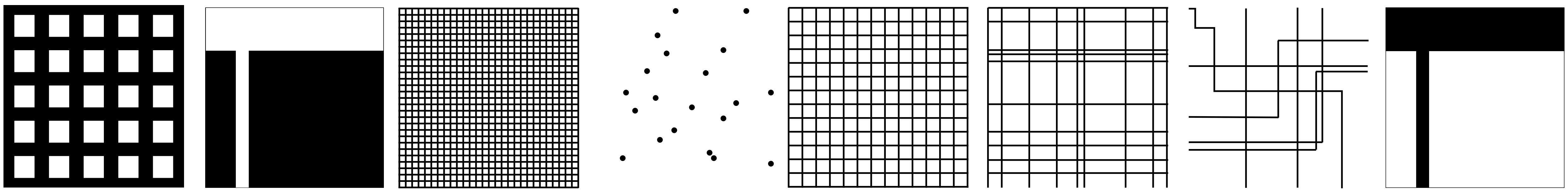
c o n t e n t

POST-EMBARGO

TRANSPORT

Transport methods in Havana

Transport	Details
Bike	Passengers 1 people Area all of Havana
Walk	Costs 10 cuban pesos Area all of Havana
Personal car	Passengers 4-6 people Area all of Havana
Geta	Costs free Passengers 4 - 6 people Area towards the outskirts of Havana
Taxi	Costs 4 CUC for 10 minute ride Passengers 4 - 6 people Area all of Havana
Almendrones	Costs 10 cuban pesos Passengers 6-10 people Area fixed routes through Havana
Omnibus / Guaguas	Costs 1 peso Passengers 50 - 70 people Area all of Havana
Ferry	Costs 1 peso Passengers 70-100 people Area cross Havana bay



Bike

Passengers 1 people
Area all of Havana

Cuba government imported a million Chinese bikes after Soviet Union collapse in order to solve transport problem. At that time, bike lanes, spare parts shops, guarded parking and neighborhood mechanics were ubiquitous. But barely a decade into the bicycle revolution, ships carrying Venezuelan petroleum sailed into Havana harbour, courtesy of late President Hugo Chávez. He offered interest-free loans to help the Cuban economy out of crisis and traded oil for Cuban doctors. Putting the bike at the center of transport policy eventually fell out of favour. The once ubiquitous Chinese bicycles have disappeared rapidly from the streets of Havana, mostly bought up by Cubans from the provinces, where public transportation still leaves a lot to be desired.

Everyone who went through the Special Period knows at least something about bikes.

To keep Cubans moving through years of extreme austerity, the government imported a million Chinese bikes and kicked off an unexpected cycling boom.

It was easy being a cyclist in Havana during the early 1990s: centralized planning meant bike lanes, spare parts shops, guarded parking and neighborhood mechanics were ubiquitous. Soon lawyers, doctors, and even central government workers were fixing flats, straightening wheels and replacing spokes with their neighborhood mechanic. .....

But barely a decade into the bicycle revolution, ships carrying Venezuelan petroleum sailed into Havana harbour, courtesy of late President Hugo Chávez. He offered interest-free loans to help the Cuban economy out of crisis and traded oil for Cuban doctors. Putting the bike at the center of transport policy eventually fell out of favour.

Old bike shop in Havana

Ernesto Peña is one of the few bike mechanics who still work in Central Havana, practicing his trade from whatever small space he can eek out. For the past few years, he's been working from his living room and the narrow walkway that leads to his front door – with no advertising and no sign out front. "People find me by word of mouth," Ernesto explains. "I've been working on these things for twenty years so the clients know me." He simply can't afford a bigger workspace, he says.

"When the workshops were state-owned, we didn't make enough money as workers," Ernesto explains. "Then the parts ran out, so eventually they were closed."

Subsidies for cycling dried up and what was once a total necessity became a niche pursuit once again.

A folding travel bike in this shop: 125 peso

New bike shop in Havana

In September 2014, Nayvis opened Taller Vélo (Vélo Workshop) behind the famous Coppelia ice cream parlor. Unlike Ernesto's crowded shop, Taller Vélo is more spacious, with bike racks and a well-stocked workspace.Nayvis has her eyes on the future and is closely watching the evolution of Cuban cycling culture. "Havana residents are still riding bikes, but not the old Chinese commuters," she explains. "They're riding new mountain bikes or road bikes so we're specializing in servicing newer models." Since 2011, the government has allowed citizens to open privately-owned small businesses such as Taller Vélo. Nayvis is taking full advantage: attracting new customers through advertising, giving out smart business cards (even ambushing cyclists as they ride past on the street to hand them over) and is building a web and social media presence.

repair prices (peso)

Pedales...20.00

Piñonera...50.00

Limpieza Bici...35.00-50.00

Armar/Desarmar...60.00-120.00

Ajuste de Holguras...5.00-30.00

REPARACIÓN:

Encentrado x Llanta... 10.00-30.00

Enrayado x Llanta y Encentrado... 50.00

Reparaciones a Partes o Piezas... 5.00-100.00

Ponche Frío...5.00- 10.00

Desarmar o Cambio de Gomas o Cámaras...10.00

PINTURA: new bike price

Bici Completa (Sin diseño exclusivo)...480.00

During the Round Table, Eng. José Conesa González, Director General of the Directorate General of Transport Havana, commented on the elements that directly affect the **public transport system** , which are grouped **four** major components such as transportation service (basic and supplementary), infrastructure, regulatory framework and urban context.

"Among the main causes that led to these problems and prevent the achievement of ... results in the ... of the population they highlight the ... of a ... comprehensive long-term strategy in the short, medium and; poor organization of ... of care and infrastructure development in general, "he added.

Cuba will encourage cycling and maintain buses

——directorate general of TransportHavana

After this analysis continues Conesa González, we can conclude that in the case of Havana, the public transport has been characterized over the years for its **instability, inadequate and poor quality, even in times of increased capacity transportation.**

"As a strategic line approved, there are fundamental elements to ensure an improvement of transport in general, highlighting the separation of state functions of business; give priority to public transport; encourage the use of non-motorized transport, such as cycling; maintain basic public services and rail transport buses (under a state scheme, applying new organizational forms); Cooperatives organize supplementary transport services, including the launches of Regla, the ruteros taxis, school bus service, transporting workers of state agencies and private carriers; among other policies that make a document of 16 important points, "he added.

The Director General of Transport Havana noted that this series of organizational actions will enable an increase in public transportation of passengers, with greater efficiency in the current conditions of the country and lay the foundation for sustainable long-term development, to ensure mobility of the population.

上线半年，共享自行车拿钱速度超过了打车大战，这会怎么改变你的出行？

two month since August, hundurds million dollors investment

China is promoting cycling

Cycling in the chain: the combination with public transport

Background

The bicycle is also eminently suitable as pre- or post-transportation in journeys over a longer distance - in combination with public transport. The combination offers great advantages: the bicycle carries the traveller without any waiting from the front door to the bus stop or station (which public transport generally cannot do) and public transport then takes the traveller quickly and comfortably over greater distances to the destination (which the bicycle does with difficulty). Thus the two transport methods resolve each others' weaknesses, together forming a strong chain.

TC News Startups Mobile Gadgets Enterprise Social Europe

Bikeshare conference brings pedal power to the peopl

Posted Nov 9, 2016 by Kristen Hall-Geisler (@kristenhg)

Cycling projects works well in US

As the North American Bikeshare Association begins its annual conference in Austin, Texas, participants will be focusing on social equity. If you're wondering what that means, wonder no more, thanks to a statement from the NABSA's project manager, Matt Martin: "Social equity in bikeshare means making a healthy and versatile form of transportation accessible to those who really need it, from students on a budget to mothers in low-income communities."

I also spoke with the organization's president at length about bikesharing and how it fits into a changing transportation landscape. "Many people that use bikeshare are people commuting in multiple ways," she said. "They take the train and bus and then hop on a bike in the end. It's so convenient and cost effective, and people are using it for practical reasons."

Bikesharing has been popular in European countries for decades, but now more North American cities are seeing racks of shared bikes at busy intersections. There are dozens of US cities with bikeshare programs, including Portland's new Nike-sponsored Biketown system, Ford's sponsorship of expanding bikeshare availability in San Francisco, and Washington DC's Capital Bikeshare.

"It's proven successful in almost 100 cities at this point," Freedman said. "We hear a lot about large cities' [programs], like New York and Chicago. But the reality is many midsized cities have run successful bikeshares."

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City Hall / Dossier: Cycling / Facts and figures

Cycling facts and figures

Below you will find an over...

48% of traffic movement is by bike in Amsterdam city center

Number of bikes in Amsterdam	An estimated 800,000 ... use their bike on ...
Number of cars in Amsterdam	263,000
Modal split	32% of traffic movement in the city is by bike compared to 22% by car and 16% by public transport. In the city centre, 48% of traffic movement is by bike.
Total length of bike paths	500 km
Total length of roads with 30 km/ph zones	900 km
Bike rental companies	35
Bike shops	157 (estimated)
Percentage of schools and individual children that participate in the theoretical traffic examination	90%
Percentage of schools and individual children that participate in the practical traffic examination	70%
Official bike 'parking' places near Amsterdam Central Station	Parking facilities in public space: 250.000 racks Supervised storage (paid): 13.000 racks Municipal supervised storage (free): 4.000 racks

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MOBILITY AND TRANSPORT

European Commission > Transport > Transport themes > Clean transport, Urban transport > Cycling

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Europe is promoting cycling

Cycling

Cycling is an efficient way of using expensive and scarce space in urban areas, and is healthy, clean and cheap. It has enormous potential when we acknowledge that almost half of all car trips in cities are of less than five kilometres.

The informal meeting of EU ministers for Transport adopted a Declaration on Cycling as a climate friendly transport mode, in Luxembourg, October 2015. Ministers called upon the Commission, Member States and local and regional authorities to consider a number of actions in that regard.

As a result, the Commission works on further integrating cycling into the multimodal transport policy, as follows:

- Reinforce **cycling aspects** within the current initiatives, such as CIVITAS and the European Mobility Week campaign,
- Give more attention to **increased road safety** in relation to cycling,
- Engage more with relevant inter-governmental **organisations** and **stakeholders**, via a cycling contact appointed in DG MOVE: MOVE-CYCLING@ec.europa.eu
- Reinforce **transport statistics** related to cycling.

Almendrones

Costs 10 cuban pesos
Passengers 6-10 people
Area fixed routes through Havana

The Almendrones is a kind of taxi with fixed routes, which mostly correspond to the routes of the public bus network. They cost around 10 cuban pesos, depending on the distances, and have a capacity of 6-10 people, depending on the vehicle size. The vehicles are all types of american pre-1960 classics, running with highly improvised engines and diesel, to beat the high gas prices. They are the only affordable taxi system for local people, although they are 10 times more expensive than a bus. The system is not driven by state, the fixed routes and the fixed prices are gradually decide by drivers.

Almendrones routes

Geta

Costs free
Passengers 4 - 6 people
Area towards the outskirts of Havana

On around 130 points spread out all over the city, a blue uniformed civil servant stops state owned passenger cars, to fill them up with people waiting for a lift at the marked point.
Every getting into and getting out of the vehicels is written down by the GETA servant. This is one of the compensatory mobility systems for the public transport, which exists since the Special Period, but is only since three years that well organized. This service is for free and only for locals.

Geta points

Taxi

Costs 4 CUC for 10 minute ride
Passengers 4 - 6 people
Area all of Havana

The predominant part of the Cubans can't afford travelling by taxi. It is the most expensive way getting around in Havana. Except in case of emergency or special occurences it actually never happens that the Habaneros drive by taxi. This method is mostly used by foreigners and tourists. The good thing about this service is, that they are able to reach every rural street grid within the city, on the contrary to other public vehicels driving within Havana. The authorized taxi service is offered almost always only for CUC, the peso convertible. A 10 min. ride costs about four CUC. Five firms are offering this service: Pana Taxi, Havana Taxi, Fenix, Okay and Panatrans. There are price differences between the companys.

Taxi routes

Omnibus / Guaguas

Costs 1 peso
Passengers 50 - 70 people
Area all of Havana

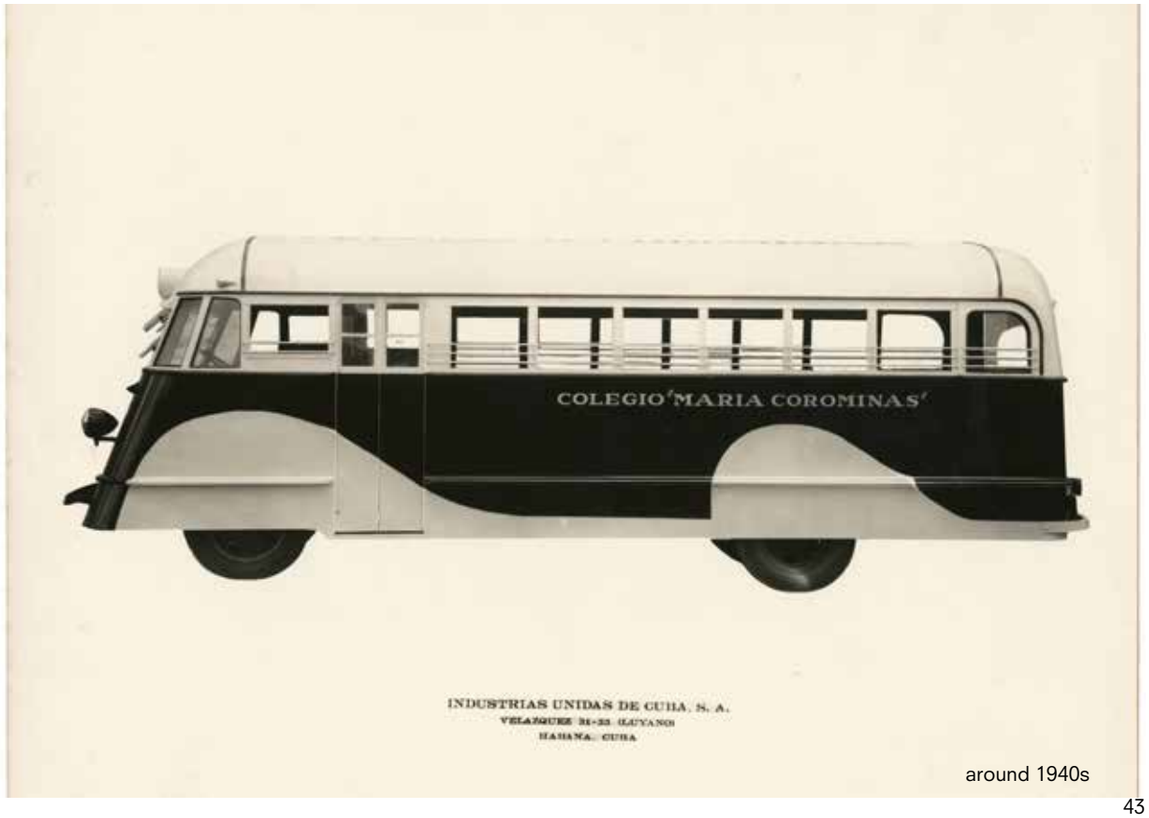
The Omnibus network consists of medium-sized vehicles with a capacity of about 50-70 people. The public bus system is the most cheap way to travel in Havana, which is less than one Cuban peso per trip. Although the spatial network is quite dense, the crucial problem is the lack of vehicles, which leads to unacceptable waiting times and highly overcrowded buses.

As for waiting time problem in Cuba, bus stops gradually become place to socialize. Sometimes residents live nearby may come to bus stop only for chatting. These “stations” has become important public spaces in comtemporary Havana.

Havana bus network worked well in history

Year: 1950

around 1940s



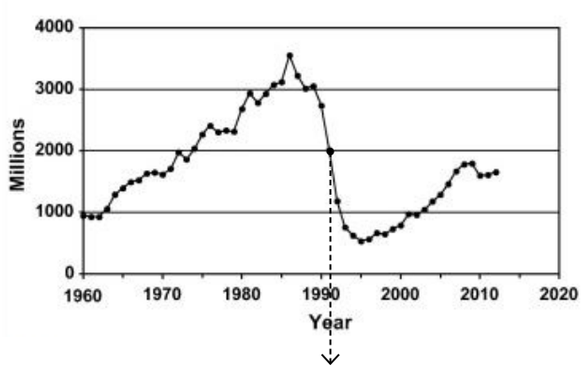
around 1940s

around 1940s

Havana bus stop

Cuban commuters line up to crowd onto a bus during the rush home at the end of the work day along San Lazaro Street in the Vedado district January 26, 2015 in Havana, Cuba. (Photo by Chip Somodevilla/Getty Images)

The Amount of transportation

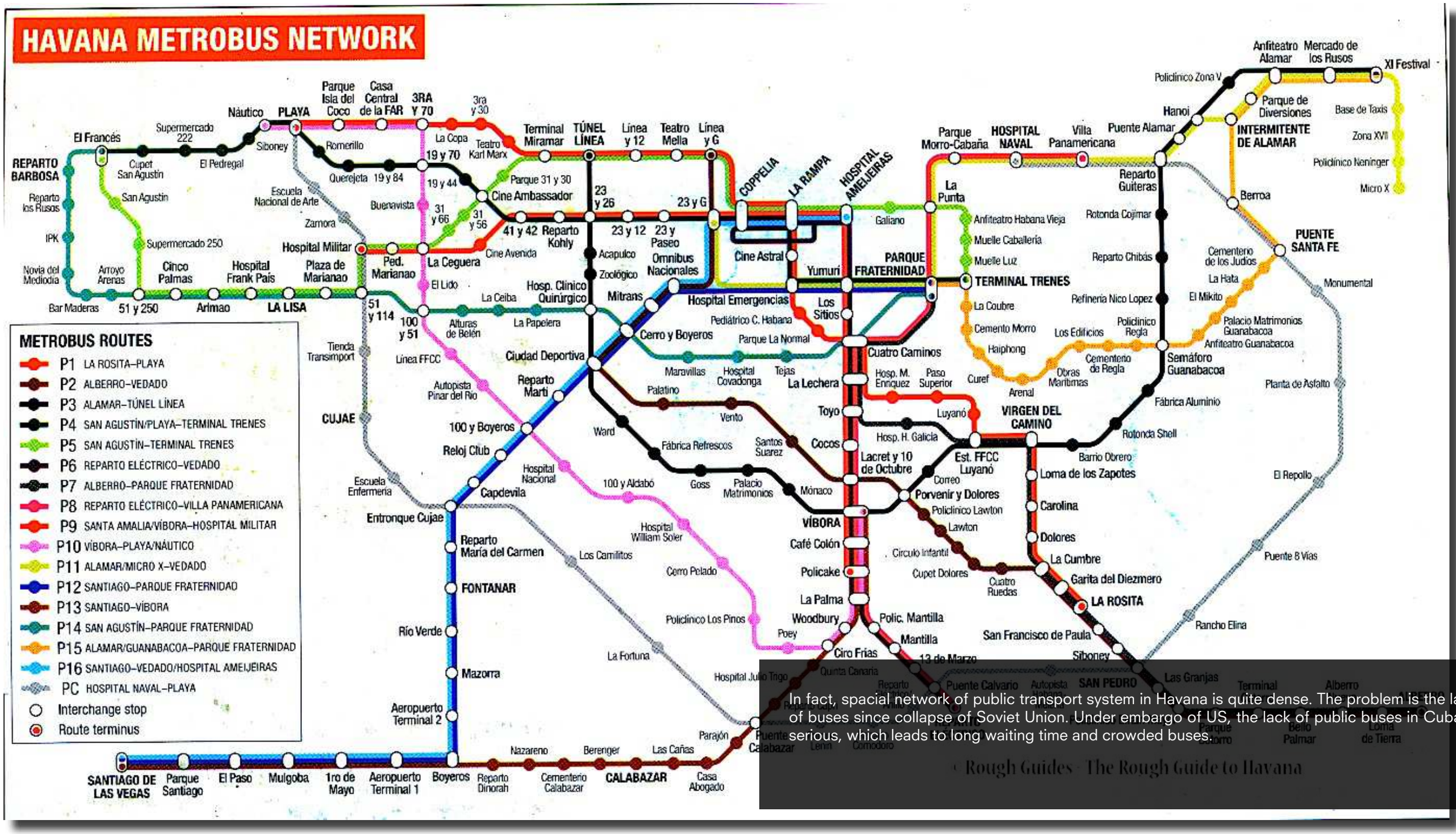


End of Soviet Union (1991)

1965

2007

Havana bus routes



In fact, spacial network of public transport system in Havana is quite dense. The problem is the lack of buses since collapse of Soviet Union. Under embargo of US, the lack of public buses in Cuba is serious, which leads to long waiting time and crowded buses.

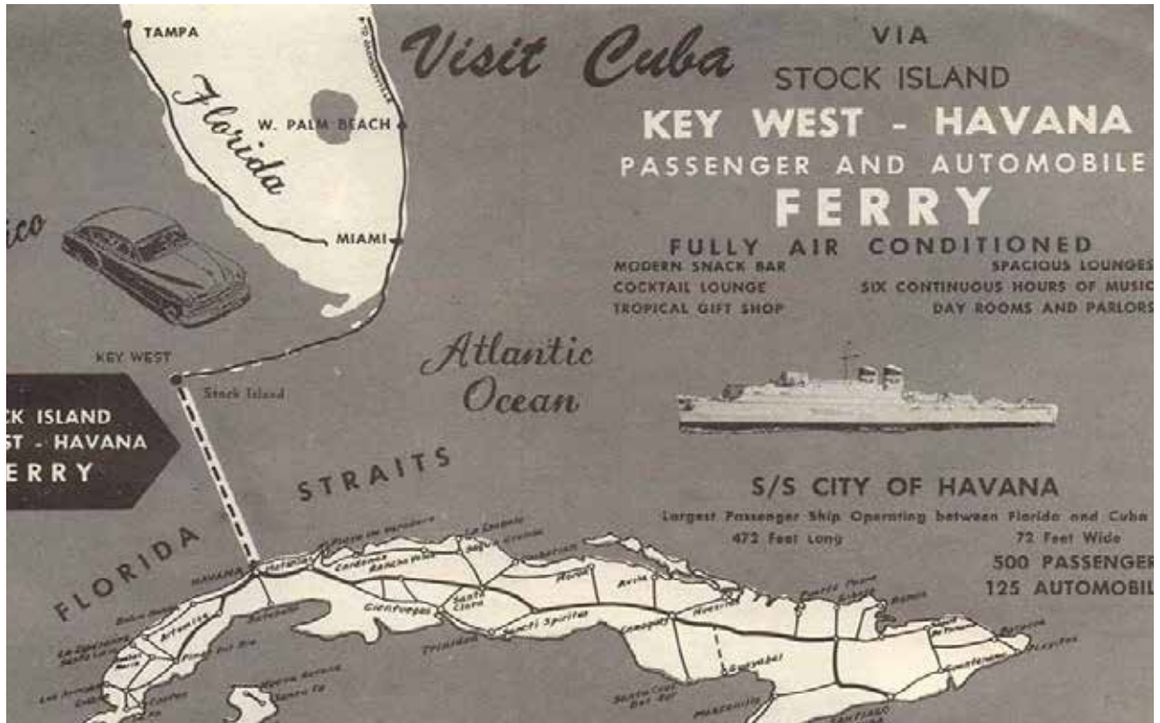
Rough Guides · The Rough Guide to Havana

Ferry

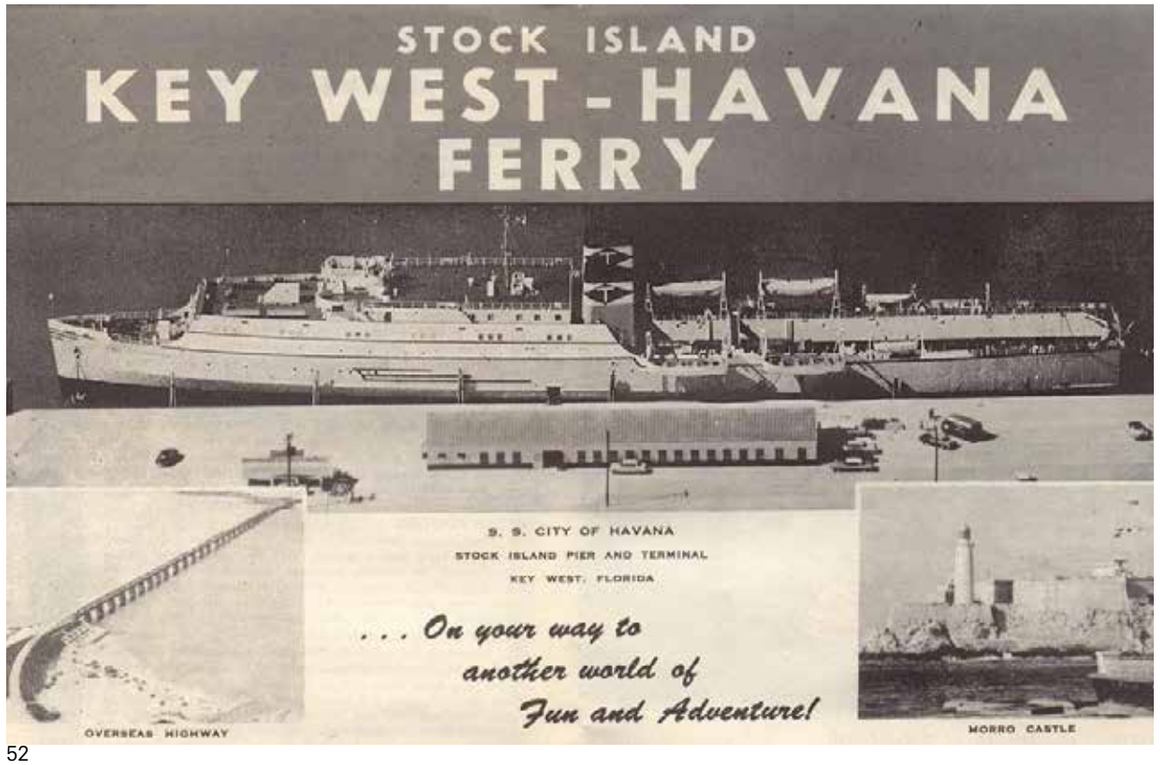
Costs 1 peso
Passengers 70-100 people
Area cross Havana bay

Cuba government in 1999 introduced tough new legislation to control the building, repair and movement of small boats around its shores to block illegal migration to the United States. As a result, Cuba as an island had very little water transport in past dacades. Sea was a barrier for Cuba since embargo, now it may be converted into a path, a road, a connection.

History ferry routes to Havana



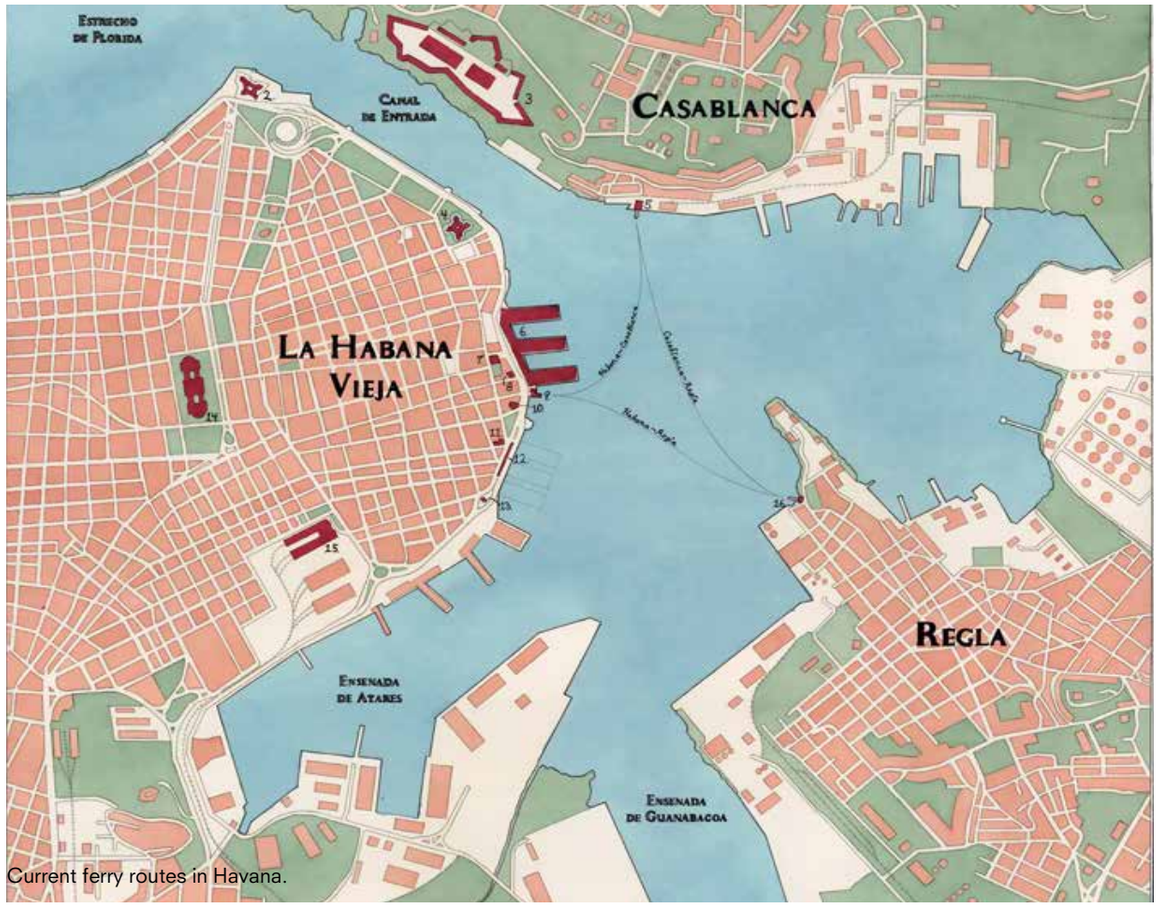
A 1950s advertising leaflet from West India Fruit & Steamship Co., promoting sea travel to Cuba. PHOTO: BJÖRN LARSSON



1920s

1920s

Current ferry routes in Havana



Current ferry routes in Havana.


Inside ferry.


port in Vieja


Ferry in Havana.

Cuba Executes Ferry Hijackers

A view of the hijacked ferry, foreground, after police forces left the scene of negotiations Thursday April 3, 2003 in Mariel, west of Havana, Cuba. There was no information about what was transpiring between government negotiators and the hijackers. After the vehicles left, the only movement seen from afar were a few people walking around the ferry. / **AP**

Comment / Share / Tweet / Stumble / Email

Three men charged with terrorism in last week's hijacking of a passenger ferry were executed Friday after a quick trial this week, the government reported.

The men were prosecuted for "very grave acts of terrorism" on Tuesday and given several days to appeal the sentences, said a statement read on state television.

The death penalty sentences were upheld both by Cuba's Supreme Tribunal and the governing Council of State and "at dawn today the sanctions were applied," said the statement.

The speed and severity of the punishment underscored Cuba's growing alarm and frustration over a string of successful and attempted hijackings that it blames on what it believes is a lax attitude by American authorities toward hijackers who reach American shores.

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More Cubans making risky trip to U.S., Coast Guard says

By Ralph Ellis, CNN

Updated 2315 GMT (0715 HKT) September 22, 2015

The Coast Guard found this group of Cuban migrants south of Key West, Florida, on September 13.

Story highlights

Coast Guard estimates 4,308 Cubans have attempted to illegally migrate to U.S. since October 1, 2014

Coast Guard says Cubans fear U.S. will change its "wet foot, dry foot" policy

(CNN) — The number of Cubans trying to reach the United States in rafts and small boats has grown, possibly because of the restoration of diplomatic relations between the two countries, the Coast Guard reports.

With 121 people in boats stopped at sea and repatriated to Cuba last week, the Coast Guard estimates 4,308 Cubans have attempted to illegally migrate to the United States since October 1, 2014, according to a Coast Guard press release. Most of these attempts occurred in the Florida Straits on unseaworthy vessels.

About 3,900 Cubans tried to reach the country by sea during the previous fiscal year -- October 1, 2013, to September 30, 2014, the Coast Guard said.

According to the Decree-Law passed on July 19, 1999, which will be in force ensuing its publication in the Official Gazette, the following acts shall be considered violations:

Building boats in the absence of due authorization from the corresponding Port Authority.
Repairing boats without due authorization from the corresponding Port Authority.
Using materials and means from illegal sources for the building, repair and operation of boats.
Owning or operating boats which are not duly registered with the corresponding Port Authority Registry.
Transporting boats on land without a permit issued by the appropriate Port Authority or violating the conditions set forth therein.
Being in the possession of boats for which the legitimacy of ownership cannot be ascertained.
Entering or leaving port or navigating in territorial waters without the corresponding dispatch or authorization from the Port Authority or violating the conditions set forth therein.
Loading or unloading persons or objects regardless of the established regulations or in unauthorized places.
Docking, anchoring and keeping boats outside of the established or authorized location.
Failing to comply with the physical safety and security of boats.
Violating the regulations for access to boats located in port.
Transferring control of a boat without prior authorization from the corresponding Port Authority.
Navigating in restricted areas without the proper authorization or failing to comply with the conditions set forth therein.
Violating any other regulation established by national institutions involved in the operation of boats.

CNN July 21, 1999
Cuba cracks down on illegal boat building and traffic

HAVANA (Reuters) -- Cuba, stepping up efforts to block illegal migration to the United States, on Wednesday introduced tough new legislation to control the building, repair and movement of small boats around its shores.

Details of the decree-law published in the official newspaper Granma required citizens to obtain permission from port captains for practically all operations or movements involving boats, including construction and transport on land.

Offenders faced heavy fines and possible confiscation of their vessels, according to passed by Cuba's ruling Council of State on Monday.

The tougher legislation was clearly a response to a reported increase in recent months of Cubans trying to migrate illegally from their communist-ruled island to the United States, either using their own boats or helped by migrant smugglers operating from the United States.

Cuba and the United States have made public commitments to prevent such attempts in line with accords they signed in 1994 and 1995 to promote safe, legal and orderly migration by Cubans to the United States.

"Cuba has a duty to block illegal departures with all the seriousness and responsibility with which we always assume our commitments," Granma said.

It said U.S. authorities had also taken measures to halt the growing clandestine transport of illegal migrants from Cuba by U.S.-based smugglers using fast motor launches.

The latest move by Cuba's communist authorities followed a number of recent dramatic incidents in which would-be Cuban migrants seeking to flee the island were involved in sometimes tense confrontations with Cuban and U.S. Coast Guards.

Earlier this month Cuban authorities blocked an attempt by a group of Cubans to leave illegally in a wooden boat from the port of Puerto Padre, 420 miles (700 km) east of Havana.

The would-be migrants, who were eventually detained, had reprovisioned and repaired their boat on Puerto Padre seafront watched by a large crowd of supporters. The Cuban government denied U.S. news reports that a riot broke out when the authorities initially tried to intervene.

The Cuban statement said these illegal migration attempts using small and medium-sized boats "not only create disorder, threats to fishing and to maritime traffic, but they also use materials and equipment obtained illicitly to build or adapt vessels and use them without authorisation."

The new rules also penalised Cubans who used materials obtained by unlawful means to build or repair boats.

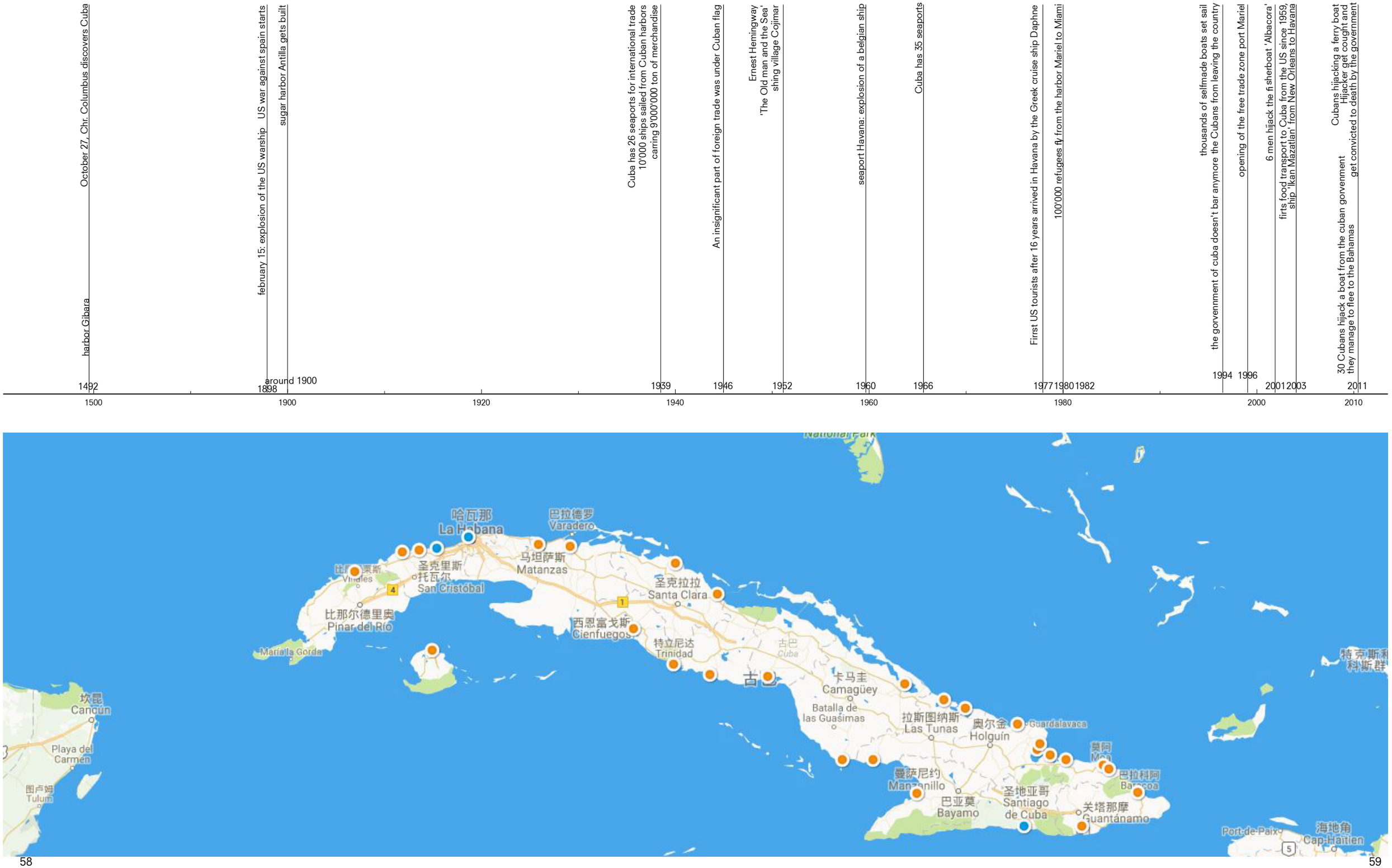
Cuban authorities also justified the new measures as a form of clamping down on illegal fishing, which they said was damaging fisheries stocks and costing the island more than $20 million in lost catches each year.

The fines decreed in the legislation ranged from 500 Cuban pesos to 10,000 Cuban pesos, a small fortune in a country where the average monthly wage is a little more than 200 pesos.

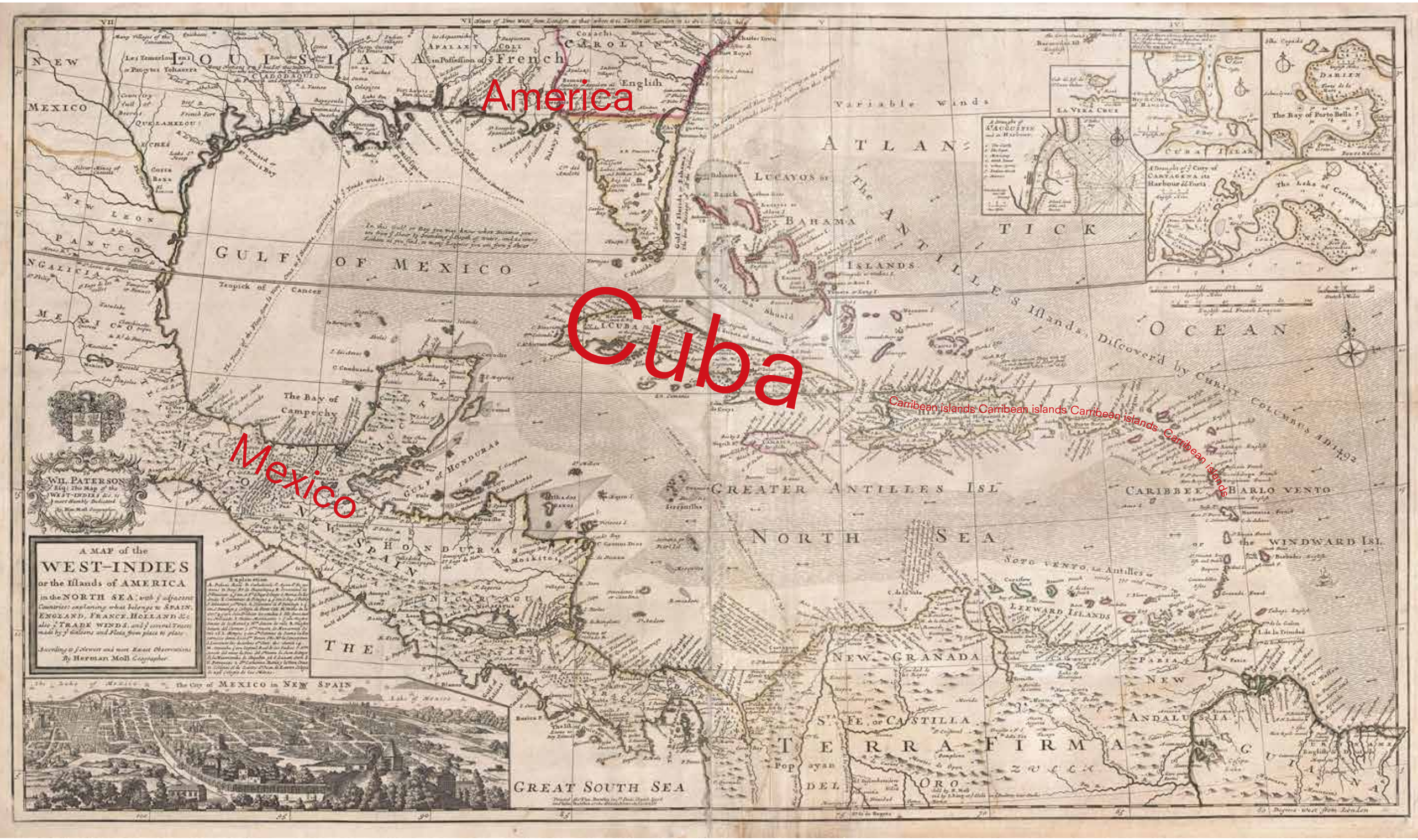
One U.S. dollar is worth 22 pesos in Cuba's authorised internal exchange market.

In cases where the offenders were foreigners or Cubans operating in hard currency, the fines would also be in hard currency, the law said.

Time line of cuban water transport



Cuba in 18 century map.



1732 Herman Moll Map of the West Indies, Florida, Mexico, and the Caribbean

Personal car

Passengers 4-6 people
Area all of Havana

Cuba is literally a rolling car museum. Everywhere you look is an old-school American brand vehicle, ranging from Oldsmobile to Chevrolet, Buick to Ford with a nice sampling of Chrysler's old Plymouth brand. There's even a few Russian Volgas thrown in the mix. These are all vehicles that the majority of American car lovers would spend hundreds of thousands of dollars on—and they are used as Cubans' everyday vehicles.

Though the island floats only 90 miles away from Key West, Florida, Castro had placed a ban on foreign vehicle imports, making it nearly impossible to buy a brand-new, foreign-made vehicle. It also made it difficult to buy new parts and fuel for the old-school American cars Cuba is known for. It is common to stop and fix car by its diver on street.

Old cars always break down in middle of streets.

Neptuno_Street_in_Havana_Cuba

Cuba has 60,000 50-year-old American cars.

Granma acknowledged the so-called 'letters of authorization' issued by the transport ministry had generated 'resentment, dissatisfaction and, in not a few cases ... (were) a source of speculation and enrichment.'

Holders of the letters, however, will still be first in line to buy cars while the new system is phased in, Granma said.

Opening Cuba's domestic car market to imports is likely to have fateful consequences for the lovingly maintained 1950s Chevys, Fords and Pontiacs that have survived a 50-year-old US embargo.

No official figures are available on Cuba's automobile fleet, but experts believe there are around 60,000 American cars still circulating on the island.

Mixed in with them are Soviet-made Ladas and Moskvich cars made in the 1970s and '80s and more modern, usually Asian-made, vehicles imported by the government.

Mint condition Cadillacs, Chryslers and Oldsmobile convertibles can still be seen carrying tourists around Havana, but most of the rolling relics from pre-revolutionary Cuba are now used for collective public transportation.

Cuba Automobile ownership rank 136 in world

Population	no.	2,117,343	11,210,064
Population density	person/km^2	2907	102
Urbanisation	%	100	77
Area	km^2	727	110,860
Paved roads	km	29,820	3330
Road density	km/km^2	0.55	4.58
Automobile ownership	no./1000 individuals	37 (est.)	28–38

Cuba don't have enough oil for cars

The Cuba-Venezuela Oil Relationship

In 2000, Cuba and Venezuela agreed to a services-for-oil trade deal, later implemented via Petrocaribe, Venezuela's oil alliance with 19 Caribbean and Latin American nations. We look at the numbers tying the two and the effects of Venezuela's worsening economy on Cuba's finances. Many of these figures come from research by energy expert and University of Texas at Austin Professor Jorge R. Piñón.

The Petrocaribe Deal

$5.4 billion

Annual value of labor of the 40,000 Cuban doctors, teachers, and military advisors who are supposed to be working in Venezuela in exchange for oil, per the 2000 contract. By early 2016, however, a majority of them had returned to the island as conditions in Venezuela deteriorate.

105,000

Average number of barrels of crude oil Cuba imported daily from Venezuela between 2007 and 2014, about triple the amount of any other Petrocaribe country.

1%

Interest charged to Cuba, to be paid over 25 years, on oil shipments Cuba finances rather than pays for upfront, when the price of oil is above $40. Below that, the interest goes up to 2% and must be paid within 17 years, and Cuba must pay for more oil upfront.

Price of new cars are very high in Cuba

The following is an initial list of prices:

Auto Transport Division of the CIMEX Corporation

PEUGEOT Agency

PRICES OF AVAILABLE NEW CARS FOR SALE IN CUC

(1.00 US Dollar = 0.87 CUC)

PEUGEOT EXPERT TEPEE 2013 ... 212,940.00
PEUGEOT 4008 2013 ... 239,250.00
PANEL PEUGEOT PARTNER TEPEE 2013 ... 145,612.50
PEUGEOT 206+ 2013 ... 91,113.00
PEUGEOT 301 2013 ... 108,084.00
PEUGEOT 301 2013 ... 109,684.00
PEUGEOT 301 2013 ... 109,699.00
PEUGEOT 5008 2013 ... 232,193.50
PEUGEOT 508 2013 ... 263,185.50

PEUGEOT Agency

PRICES OF NEW VEHCILES OF OTHER YEARS AVAILABLE FOR SALE (Prices in CUC)

GEELY CK T/A 2010 ... 26,550.00
GEELY CK T/M 2009 ... 25,950.00
GEELY FC 2009 ... 37,500.00
GEELY MK 2009 ... 30,000.00
HYUNDAI ACCENT T/A 2011 ... 45,000.00
HYUNDAI ACCENT T/A 2009-2010 ... 37,500.00
HYUNDAI ATOS 2009 ... 21,450.00
HYUNDAI 110 T/A 2009 ... 29,250.00
HYUNDAI 110 T/M 2009 ... 25,000.00
HYUNDAI 110 T/M 2009 ... 28,500.00
KIA RIO 2011 ... 42,000.00
SEAT ALTEA 2006 ... 45,000.00
VW JETTA 2010 ... 51,000.00

USED VEHICLES FOR SALE (CUC)

MICROBUS HYUNDAI TQ12 2009-2010 ... 110,000.00
JEEP HYUNDAI SANTA FE 2009-2010 ... 90,000.00
JEEP SUZUKI JIMNY 2008 ... 69,195.00
JEEP SUZUKI JIMNY 2008 ... 30,000.00
AUDI A4 2000 ... 45,000.00
BMW SMOD 1997 ... 14,457.60
CITROEN C3 2008 ... 46,025.10
CITROEN SAXO 2003 ... 26,431.65
CHANA-ALSV ALSVANA 2010 ... 31,950.00
DAIHATSU GRAND MOVE 2000 ... 22,000.00
FIAT PUNTO 2008 ... 26,950.00
FIAT UNO 2002 ... 18,000.00
GEELY CK 2010 ... 26,149.95
GEELY CK 2010 ... 26,150.10
HYUNDAI ACCENT T/M 2007 ... 35,000.00
HYUNDAI ACCENT T/A 2011 ... 45,000.00
HYUNDAI ACCENT T/A 2009-2010 ... 37,500.00
HYUNDAI ACCENT T/M 2011 ... 45,000.00
HYUNDAI ATOS 2007-2009 ... 21,450.00
HYUNDAI AZERA 2009 ... 75,000.00
HYUNDAI GETZ 2009 ... 32,250.00
HYUNDAI SONATA 2009-2010 ... 60,000.00
KIA PICANTO 2011 ... 38,285.40
KIA PICANTO 2011 ... 40,854.60
KIA PICANTO 2011 ... 41,486.40
KIA PICANTO 2011 ... 37,189.80
KIA PICANTO 2011 ... 37,782.45
KIA PICANTO 2011 ... 35,000.00
KIA PICANTO 2008 ... 28,000.00
KIA PICANTO 2011 ... 42,000.00
KIA PICANTO 2009 ... 35,000.00
MERCEDES BENZ 2006 ... 60,000.00
MITSUBISHI LANCER 1997 ... 20,000.00
PEUGEOT 406 1999 ... 28,000.00
PEUGEOT 106 2003 ... 16,222.95
PEUGEOT 206 2008 ... 85,227.60
PEUGEOT 206 2004 ... 30,000.00
PEUGEOT 407 2004 ... 30,000.00
PEUGEOT PARTNER 2008 ... 25,600.00
RENAULT CLIO 2005 ... 25,000.00

According to the resolution issued by the Ministry of Finances, retail car prices have been established on the basis of the following criteria:

For new vehicles, eight times market price (the cost of the vehicle plus expenses paid to transport it to the dealership), plus the tax amount.

As a side note: "The sums taken in will be used to create a fund destined primarily to the development of public transportation around the country."

This is why, in Cuba today, a 2013 508 Peugeot (one of the newest models being offered) is sold at 262,185.00 CUC (over 290,000 USD), a price you will not come across anywhere else in the world. I invite you to comment on this issue and, in the meantime, to continue catching the old 1950s cabs.

Cuba sells 50 new cars in first 6 months

$262,000?

HAVANA, 1 July Cuban dealers sold 50 cars and four motorcycles nationwide in the first six months of the year under a new law that removed limits on auto purchases for the first time in half a century but came with prices so high few people could afford them.

Long-frustrated Cubans welcomed the law that took effect in January until they saw sticker prices were marked up 400 percent or more, pricing family sedans like European sports cars. Cuba has said it would invest 75 percent of the proceeds from new car sales in its woeful public transportation system. But total sales at the country's 11 national dealerships reached just $1.28 million in the first six months of the year, the official website Cubadebate.com reported on Monday, citing Iset Vazquez, vice president of the state enterprise Corporacion CIMEX.
Most of the sales this year appeared to be of the second-hand variety considering the average sale price of $23,759 per vehicle, including the motorcycles. A Havana Peugeot dealership was pricing its 2013 model 206 at $91,000 when the new rules came into effect, and it wanted $262,000 for the sportier 508. Such prices drew howls of protest from the few Cubans who could even consider buying a car.

bad road condition

illigal boat

hijack

limited routes

old car

long waiting time

expensive new one

crowd bus

embargo

black market

low frequency

engine

oil shortage

Havana transport Problem

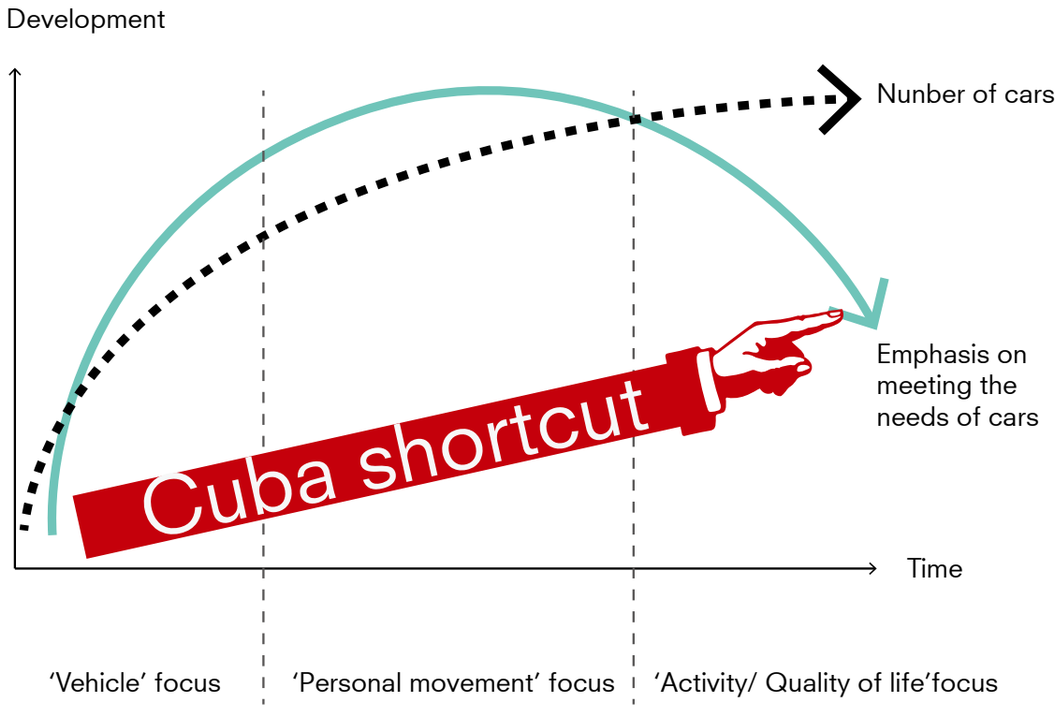
low ownership

decaying infrastructure

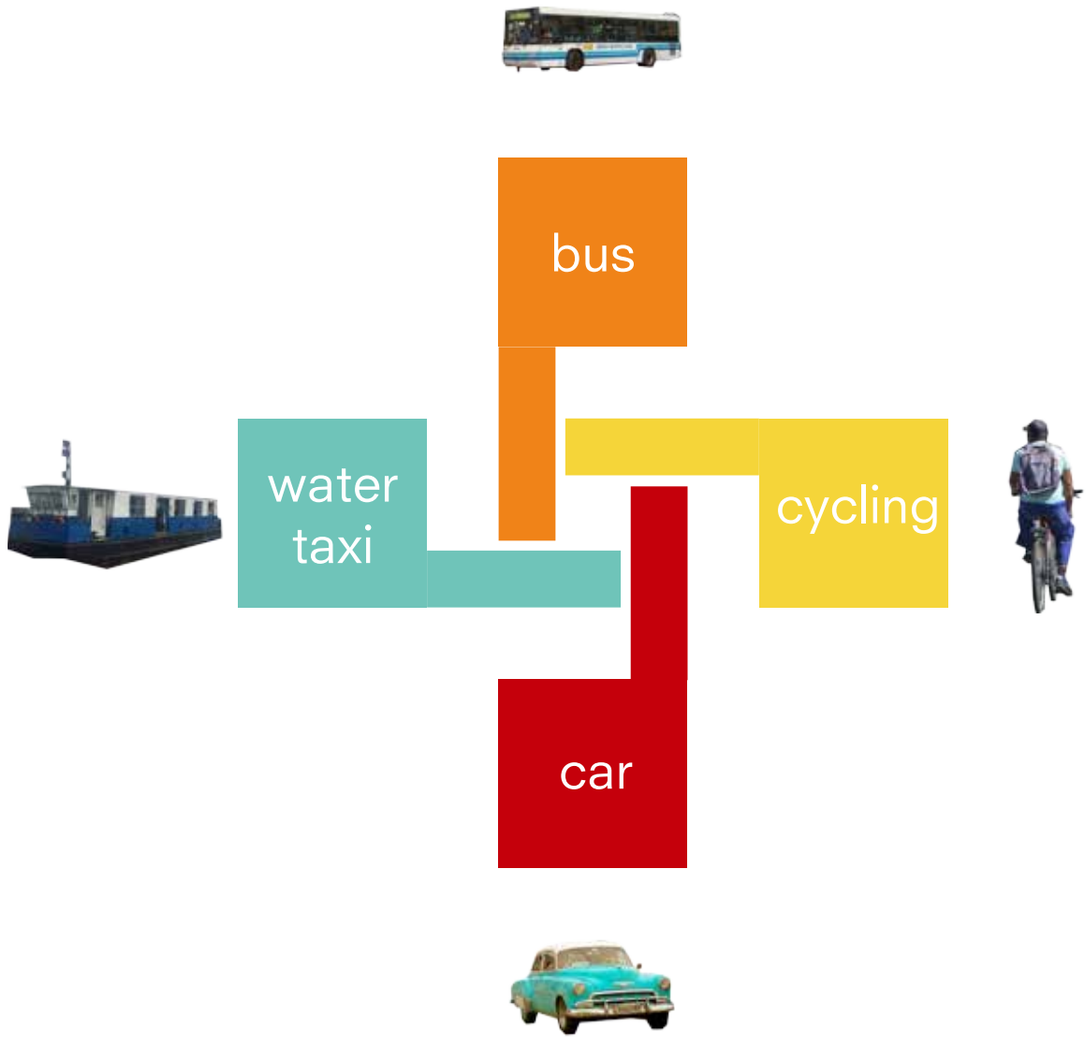
parts ran out

no workers

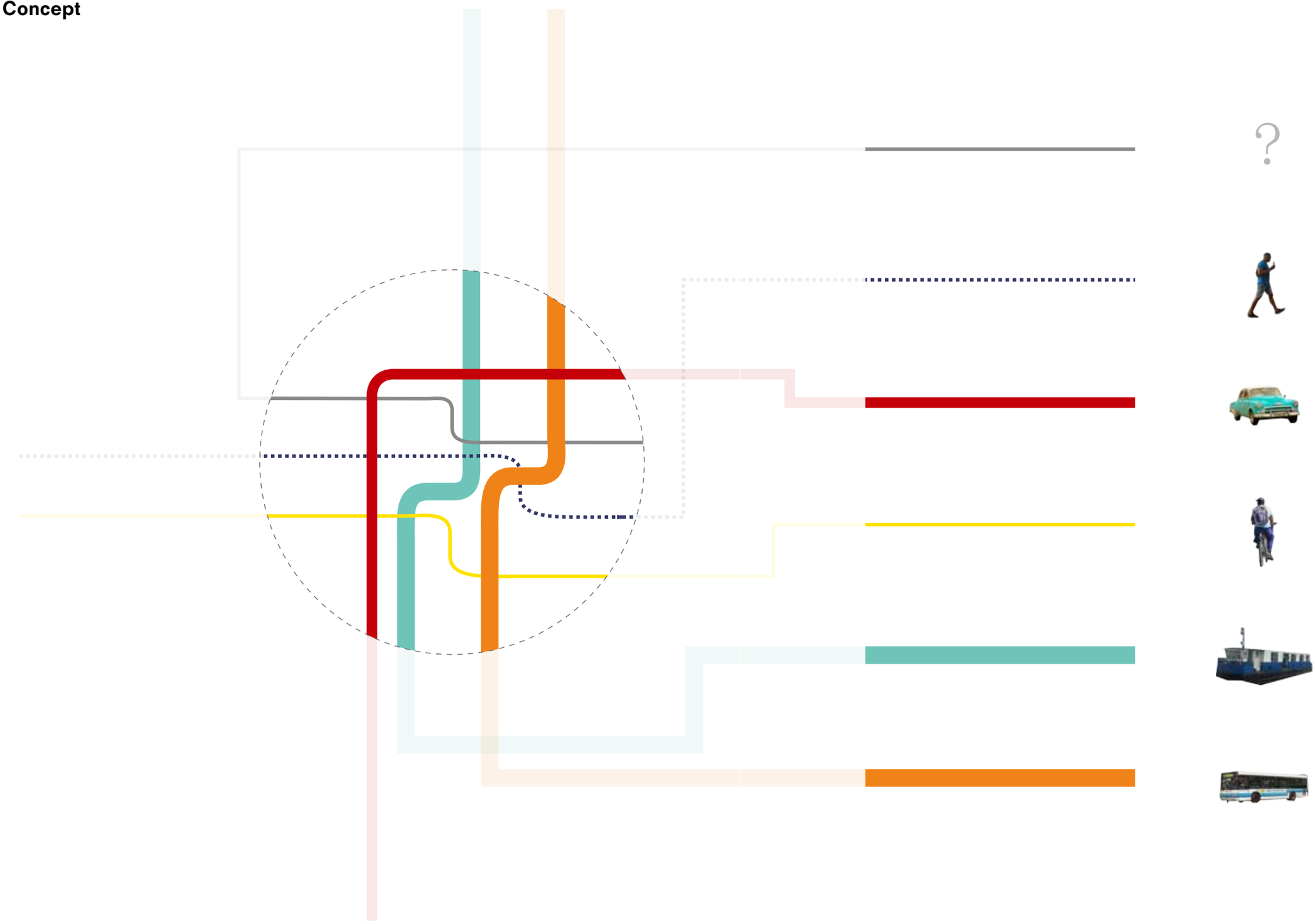
Typical Roads Policy Trajectory and Cuba shortcut



Integrate

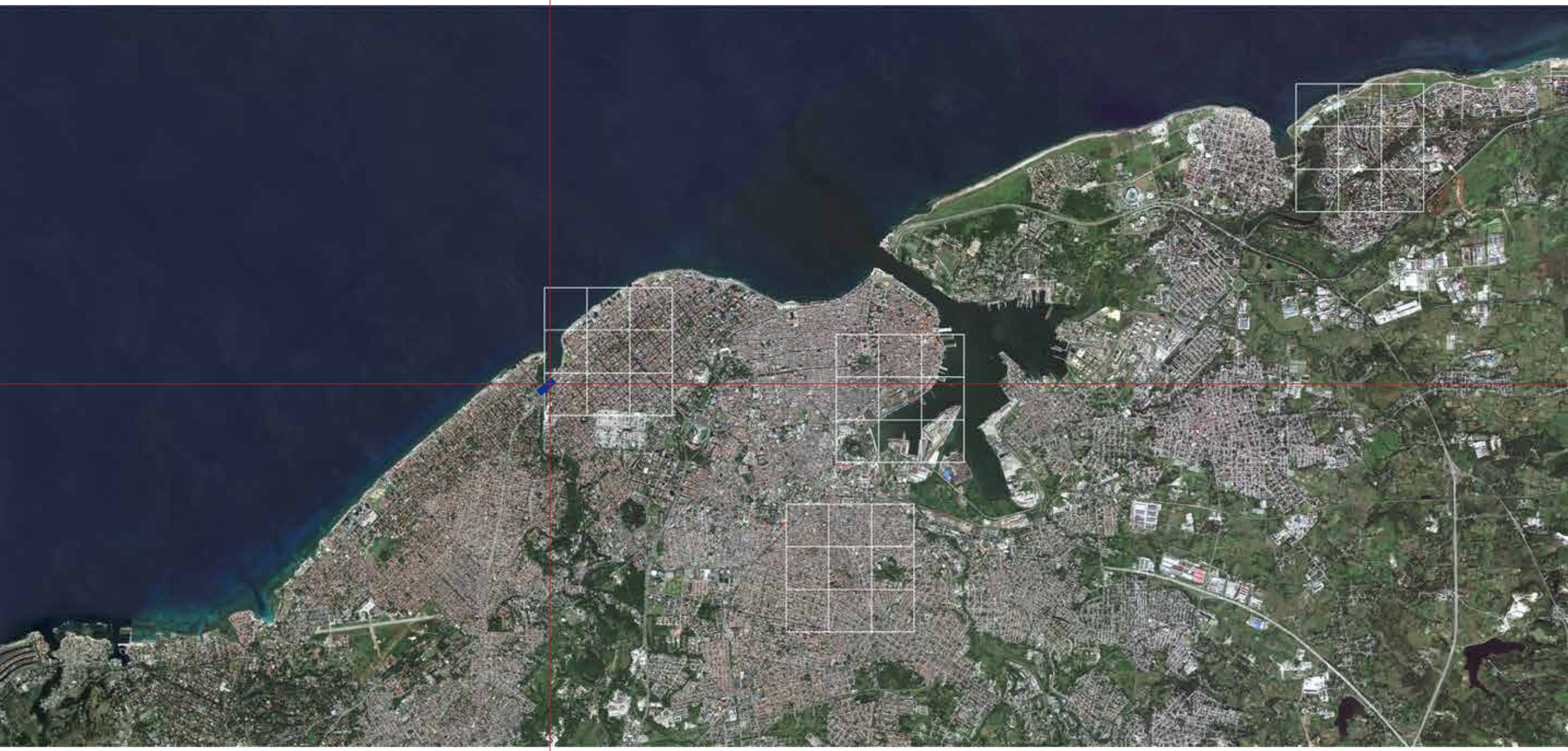


Concept



BLOCKED BLOCK

Site in Havana



Elements in Site

tunnel

public transport routes

Almendares River

park

Malecon Seawall

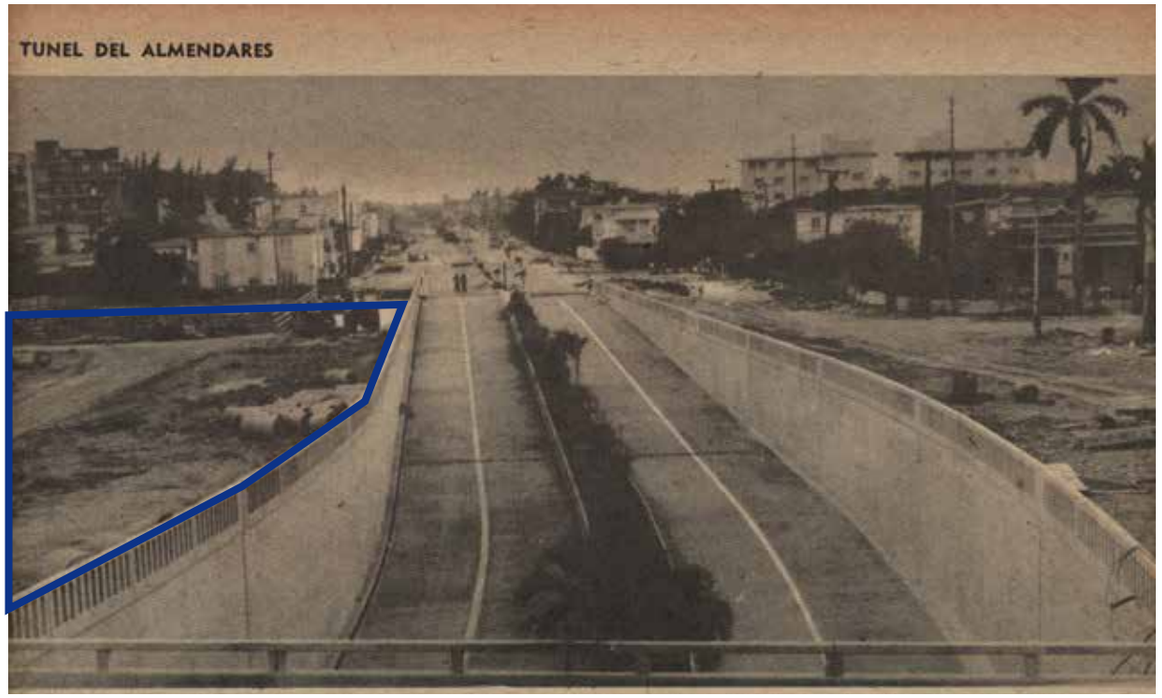
fort

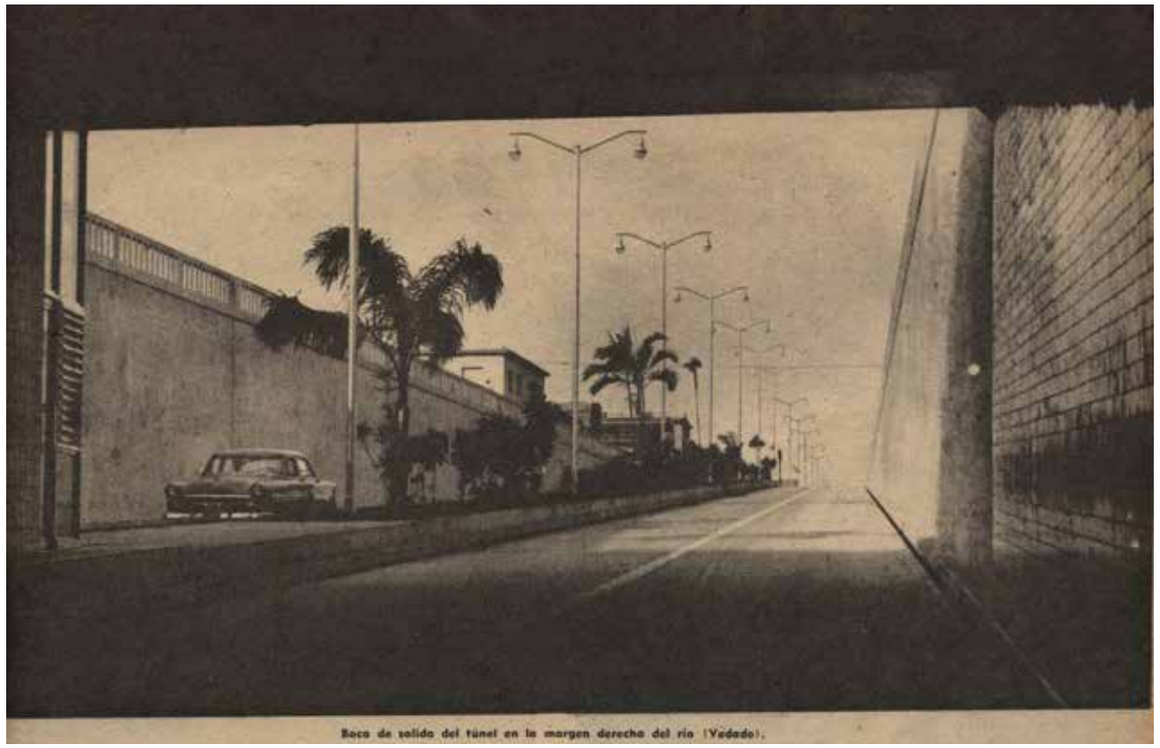
fisherman wareho

Tunnel

linea tunnel to Miramar
before tunnel, there was a bridge for train.
after train canceled, bridge also teared down.

TUNEL DEL ALMENDARES





Boca de salida del túnel en la margen derecha del río (Vedado).

Parte del río por donde atraviesa el túnel, a 1.50 metros bajo el lecho de la corriente.

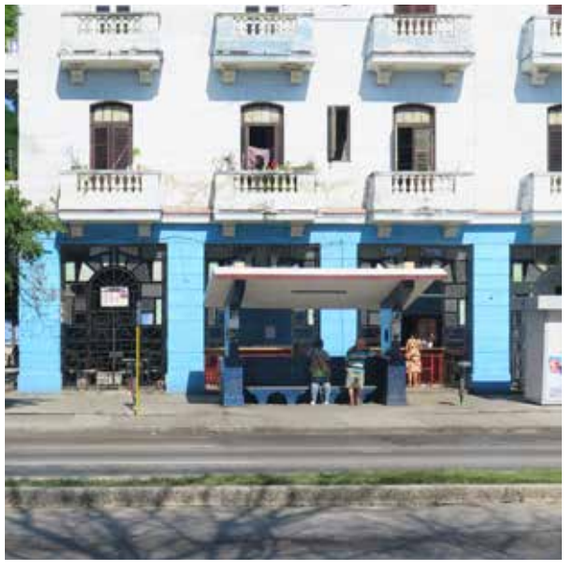
La longitud del túnel en su
rte cubierta es de 216 metros.
as dos rampas que dan acceso
túnel por ambos lados miden
.40, teniendo, pues, la obra un
al de 522.40, cuyo costo, ascen-
nte a cinco millones de pesos,
alterado muy poco la suma
presupuesto que se estimó
confeccionar el proyecto. El
antenimiento y demás servicios
starán mensualmente 4,000 pe-
s, de los cuales 1,500 corres-
ponderán a gastos de iluminación. Ocho policías tendrán a su cargo la vigilancia del túnel, y dos mecánicos y cuatro ayudantes atenderán los otros servicios.

En cuanto a las velocidades mínima y máxima que se establecerán para la circulación bajo el túnel, aunque la cuestión hállase todavía en estudio por la Dirección de Tránsito, estímase que la primera oscilará entre 35 y 40 kilómetros por hora, y

El ingeniero Manuel RAY (izquierda), que ha dirigido los trabajos del tunel, charlando con nuestro compañero RUIZ.

Barrera que cierra la entrada al túnel en caso de interrupción momentánea de la circulación en el interior.

Bus Stop
‘TUNEL DE LINEA’

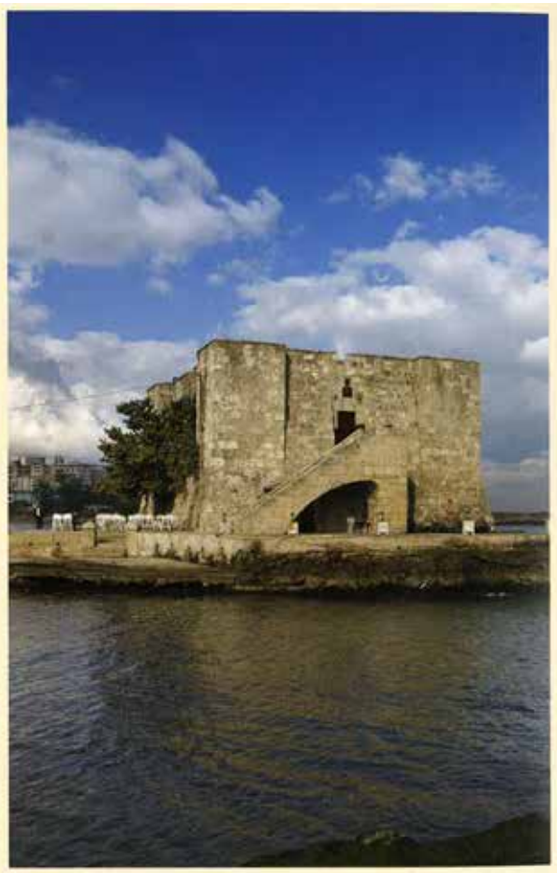


Public Transportation

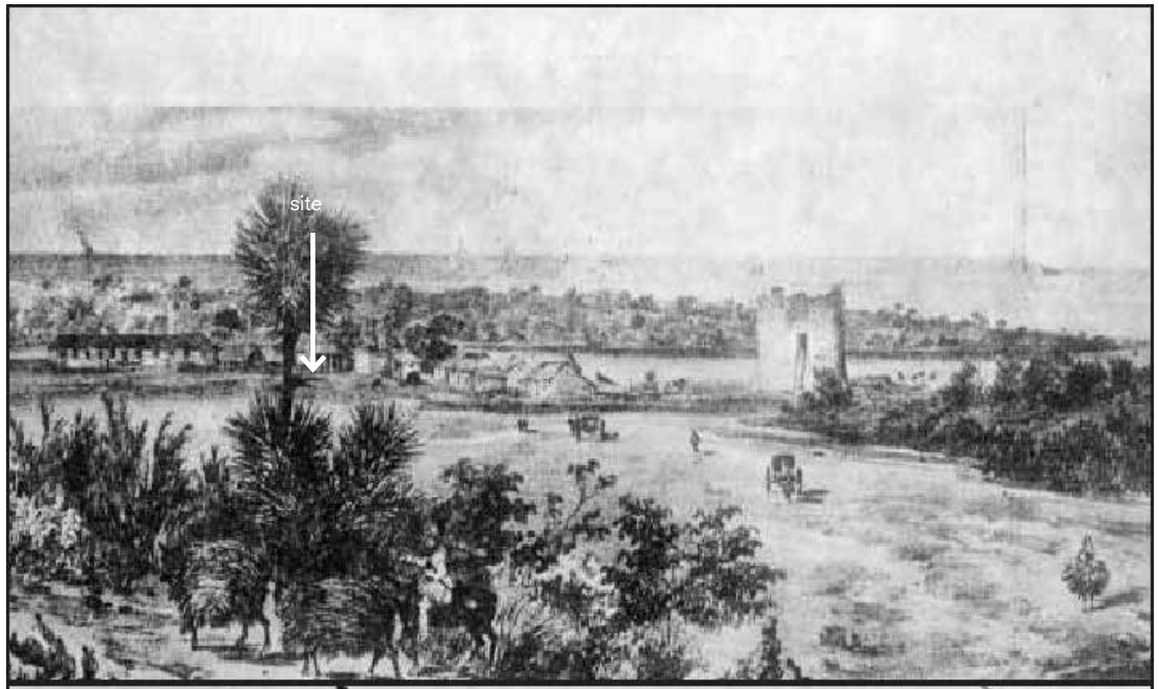
- Almendrones
- Bus
- Site

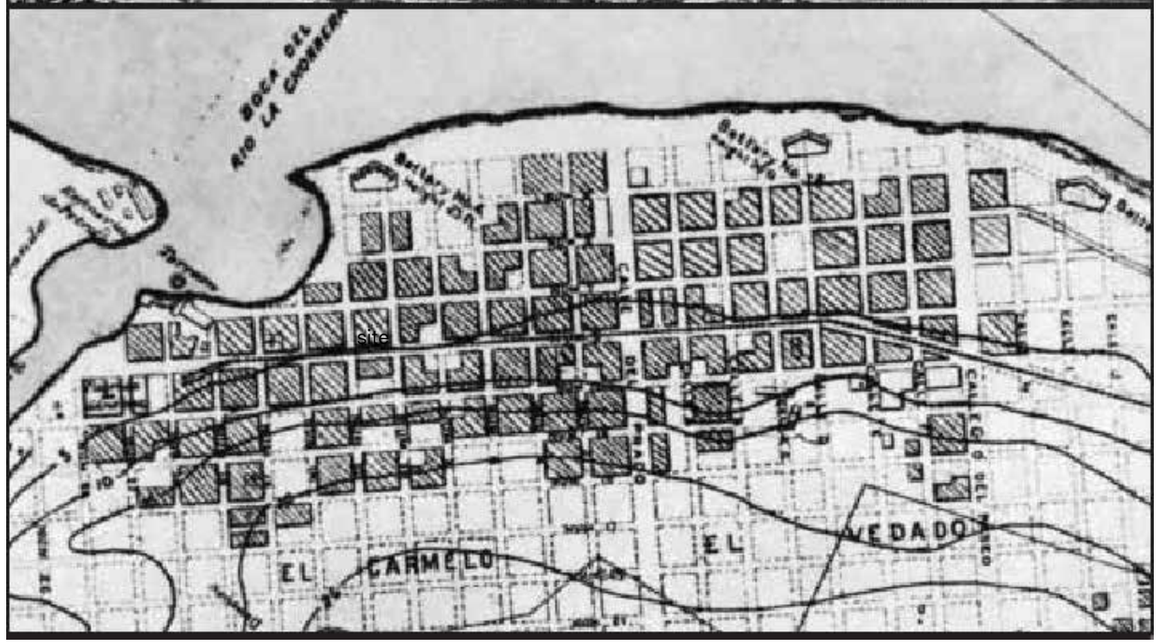
Malecon Seawall

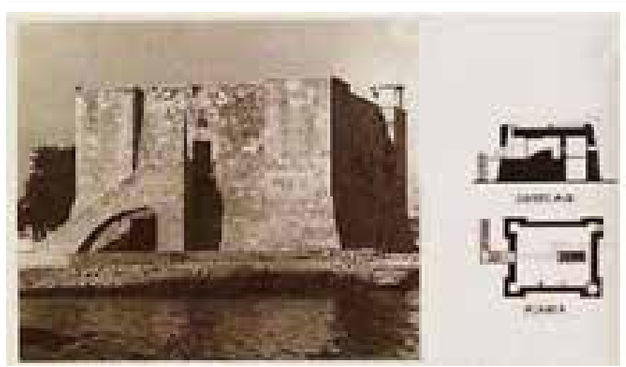
Torreón de la Chorrera

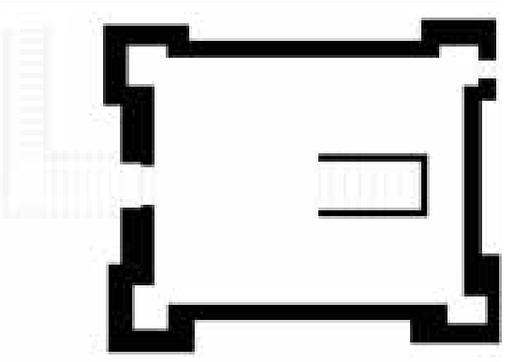


Santa Dorotea de Luna de la Chorrera Fortress was built to protect the mouth of the Almendares River, which was navigable at the time. Comprising storehouses, barracks for fifty men, and a drawbridge, it was severely damaged by the British in 1762.



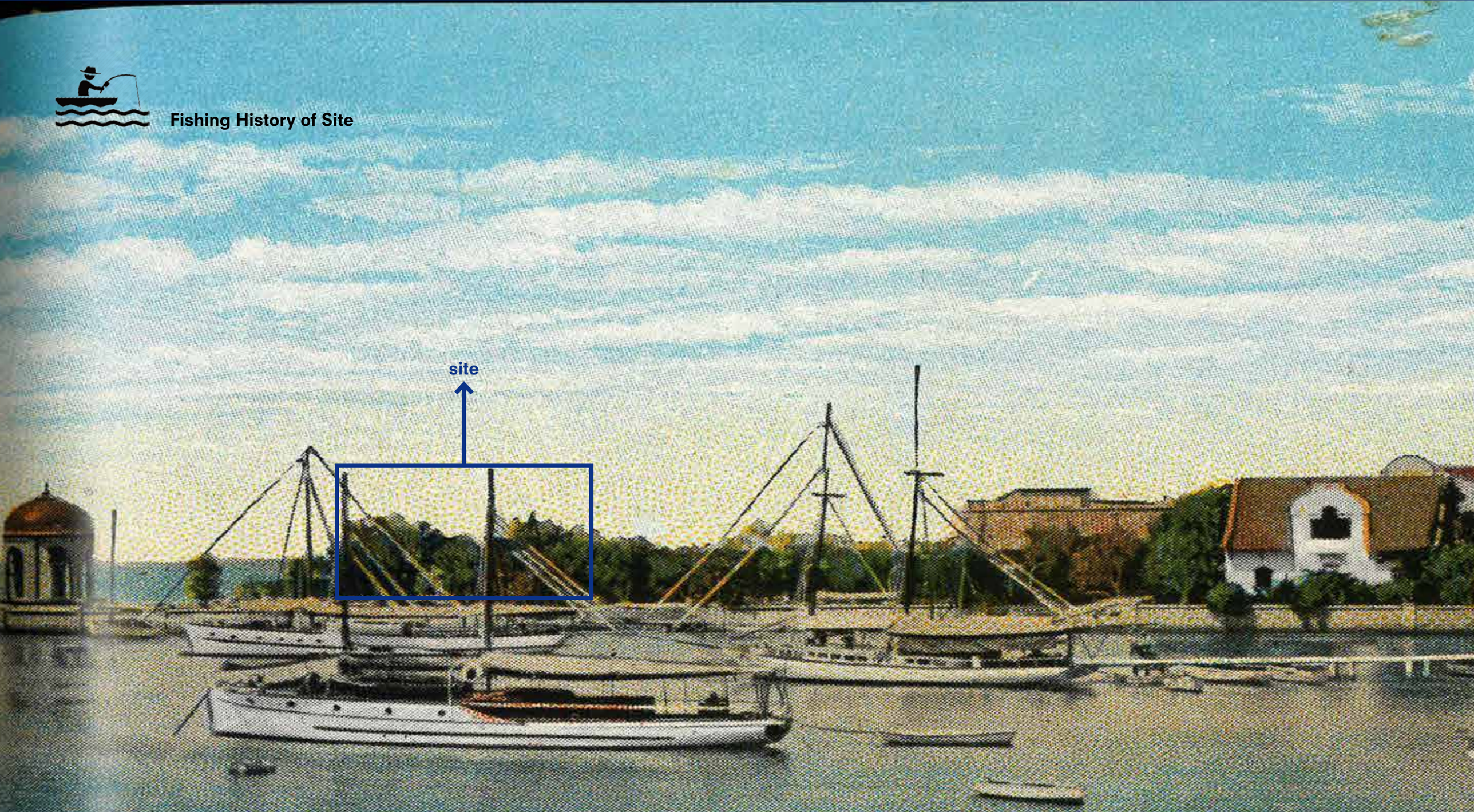






Almendares River

Fishing History of Site



Site Overview

tunnel

public transport routes

Almendares River

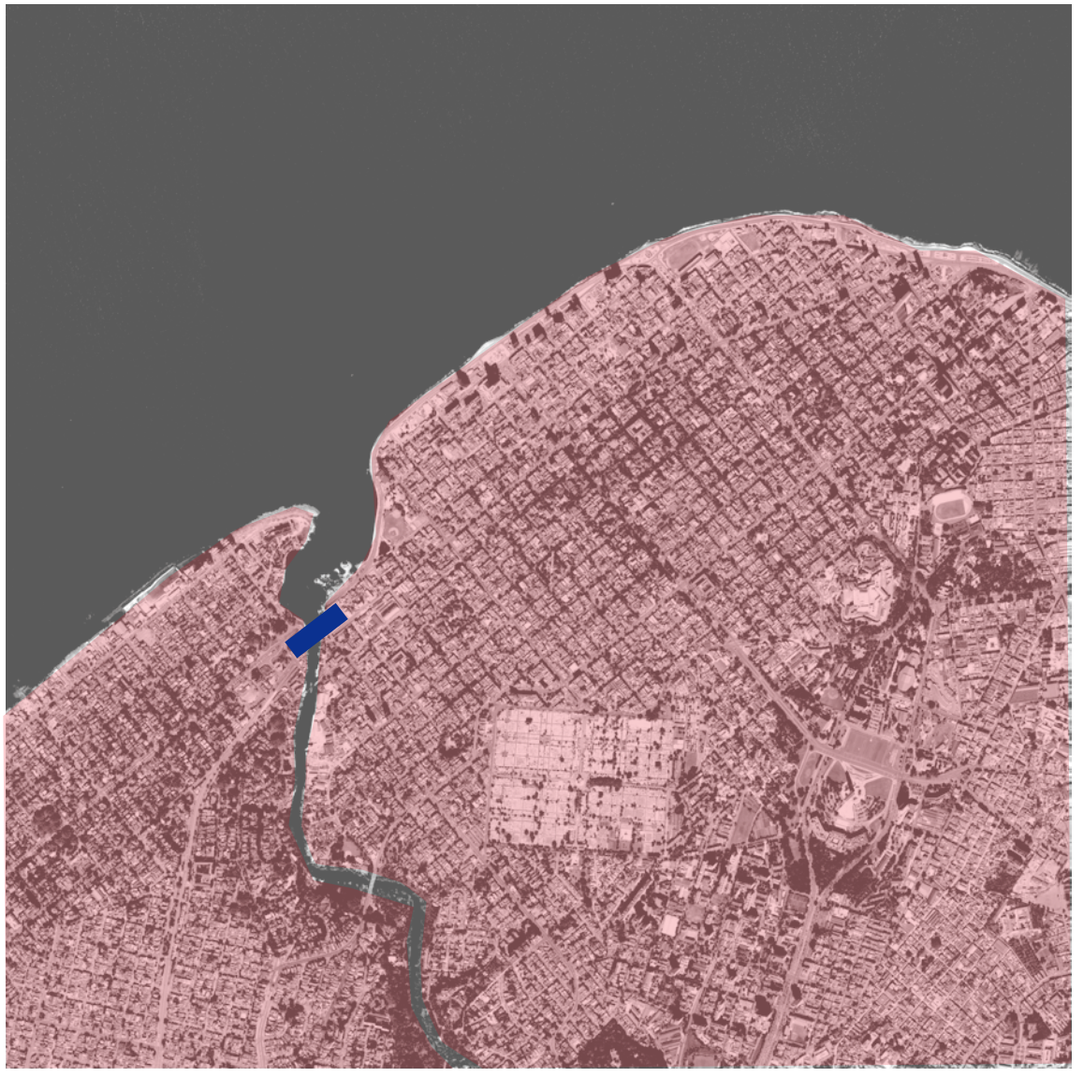
park

Malecon Seawall

fort

fisherman warehouses

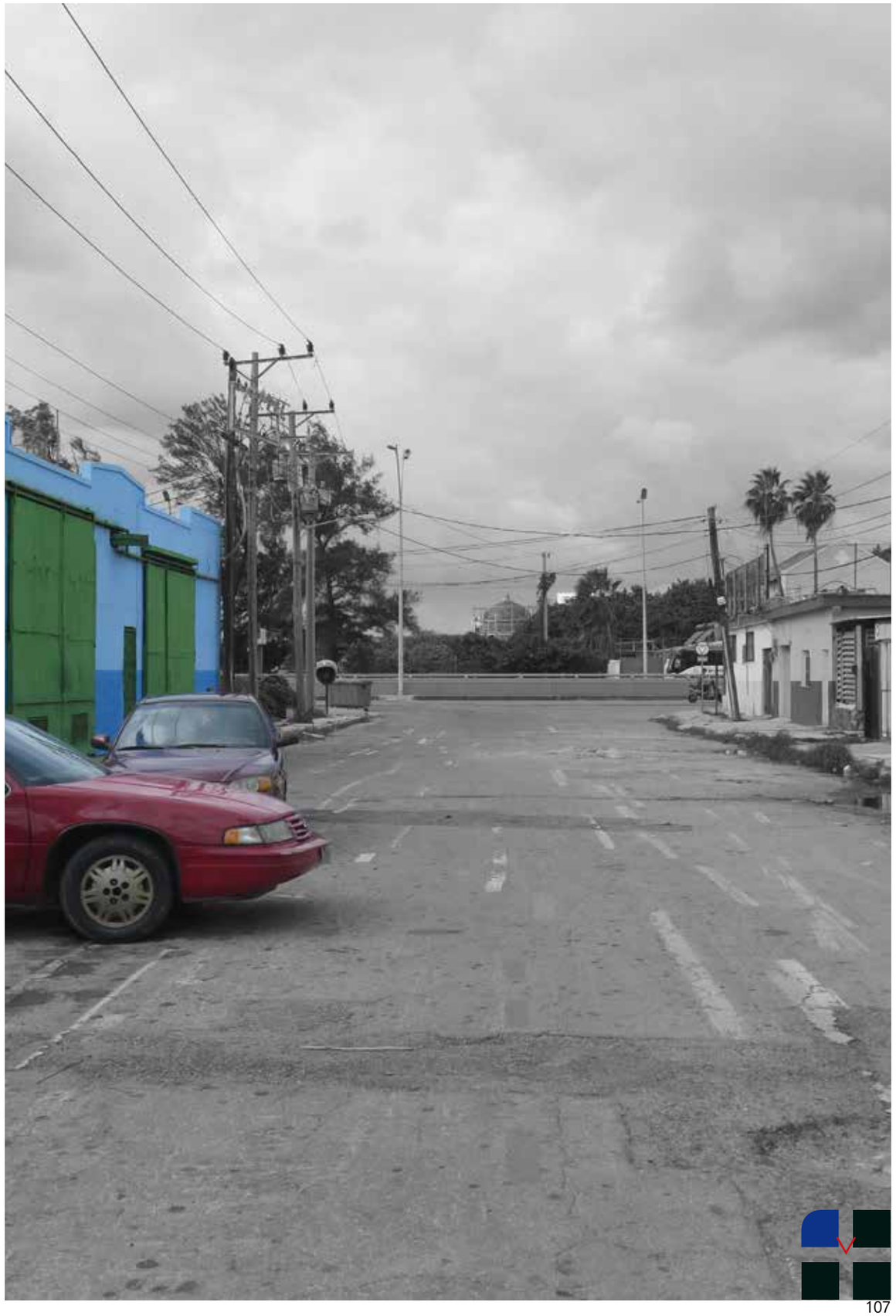
Site as Joint



Next to site, two tunnels connect Vedado and Miramar.

Along water front, public space is disconnected because of two tunnels.


Blocked block
site
tunnel 5ta. Avenida
tunnel linea

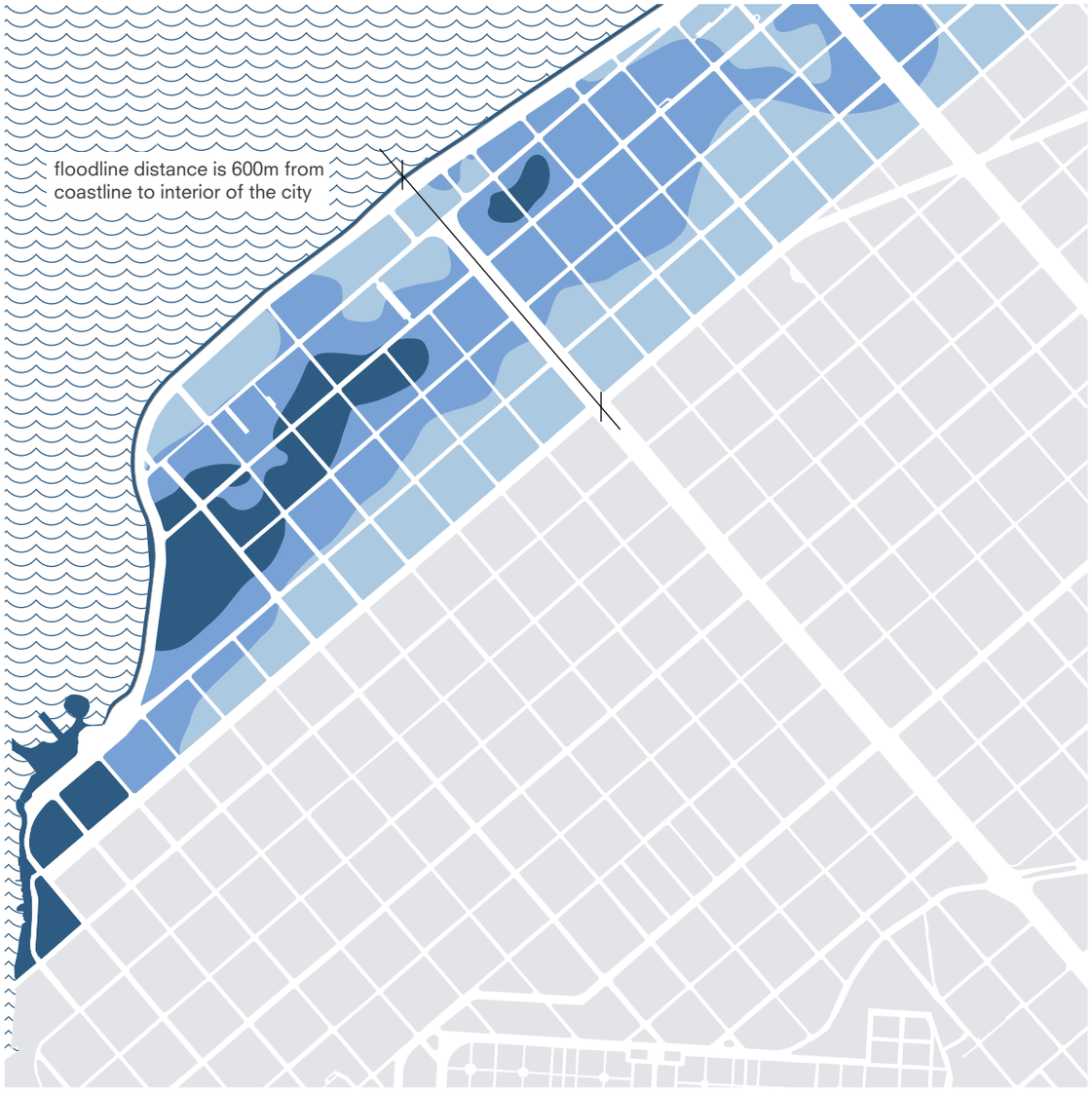


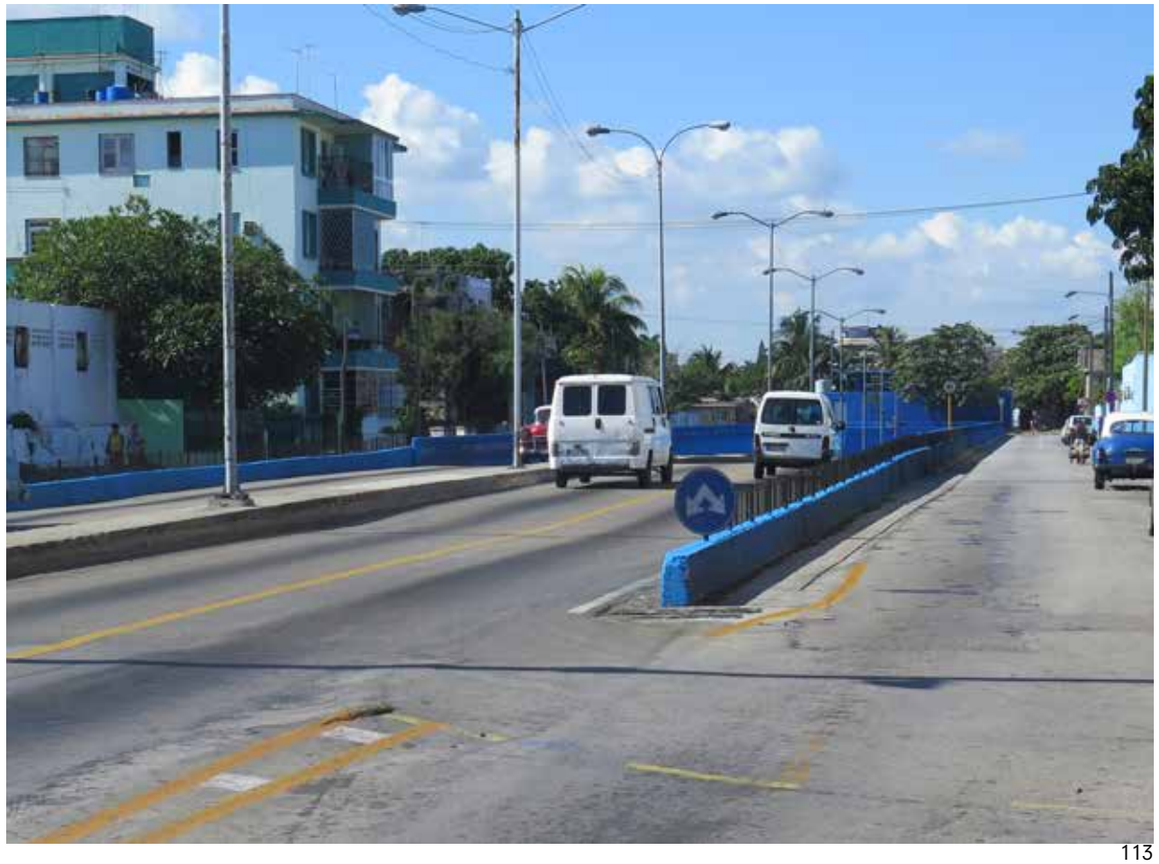
National Center of Traffic Engineering

Import Company

Floodline and Flood Intensity

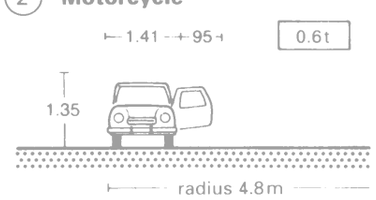
north atlantic ocean
light flooding area
moderate flooding area
severe flooding area
interior city blocks

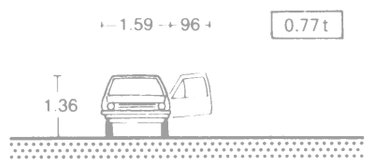


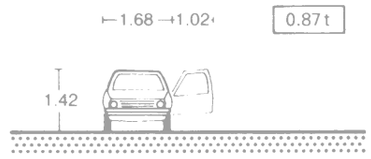


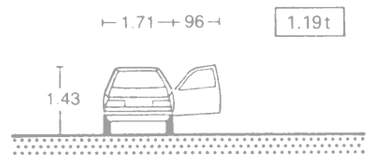
TYPOLOGY

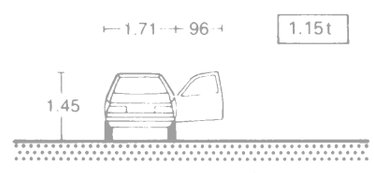
(2) **Motorcycle**

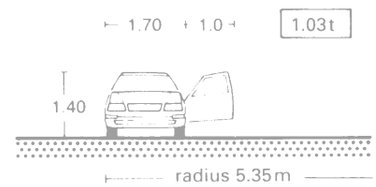


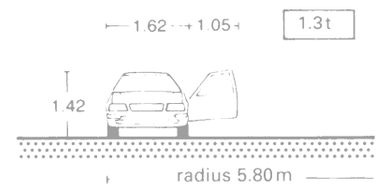


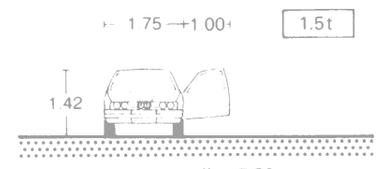




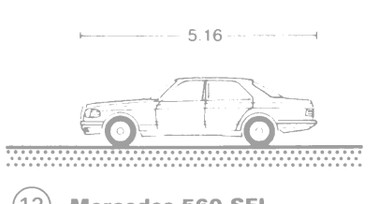




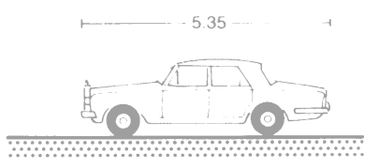




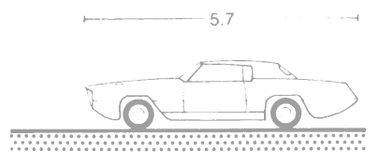
(12) **Mercedes 560 SEL**

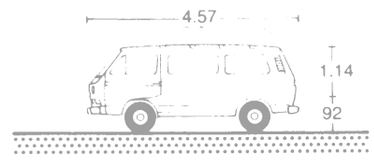


(13) **Rolls-Royce**

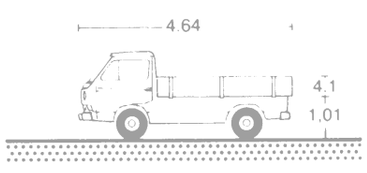


(14) **American limousine**

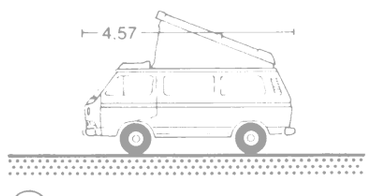




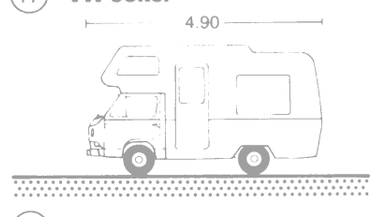
(15) **VW (high roof) mini**



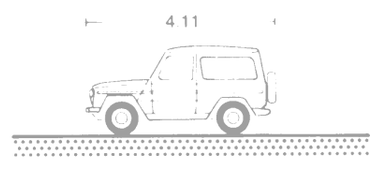
(16) **VW stretched truck with platform body**



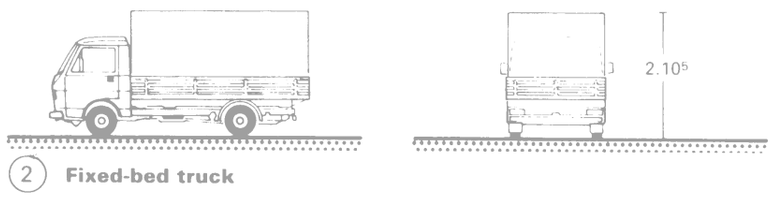
(17) **VW Joker**



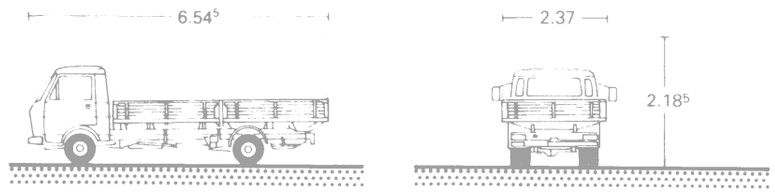
(18) **VW Karman-Cheetan, Gipsy**



(2) **Fixed-bed truck**

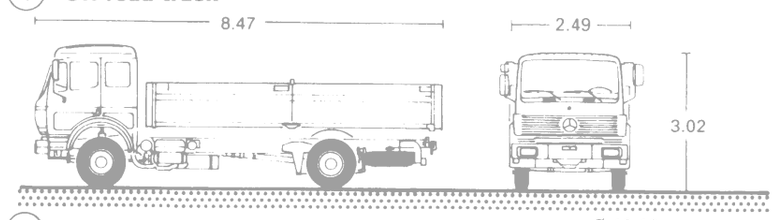


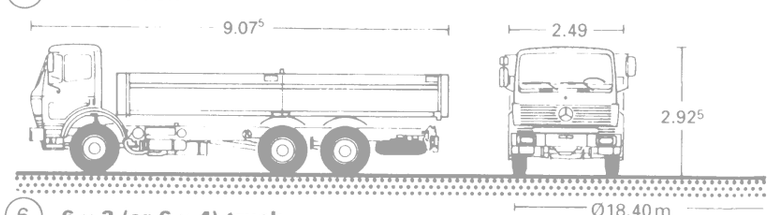
(3) **Fixed-bed truck**



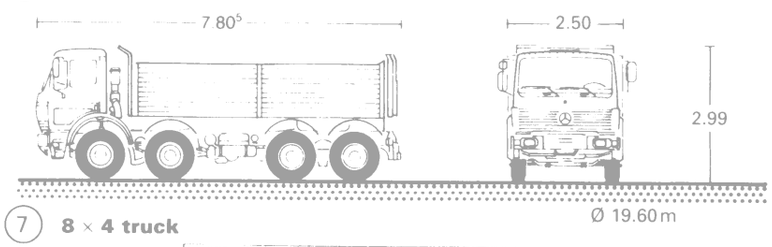
(4) **Off-road truck**

(5) **4 × 2 truck**

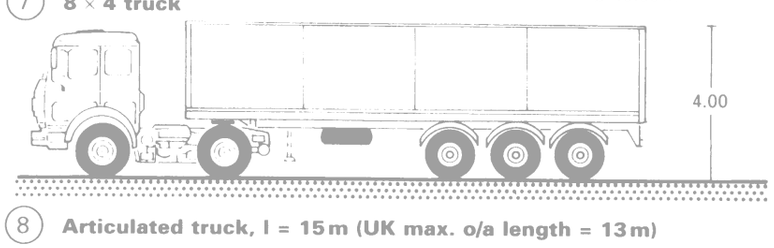




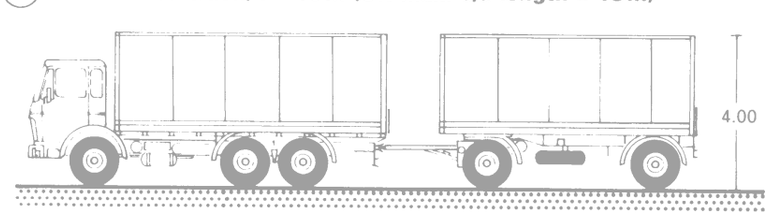
(6) **6 × 2 (or 6 × 4) truck**



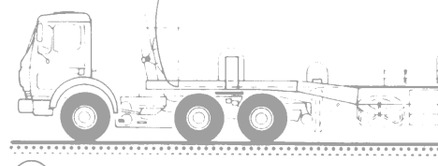
(7) **8 × 4 truck**



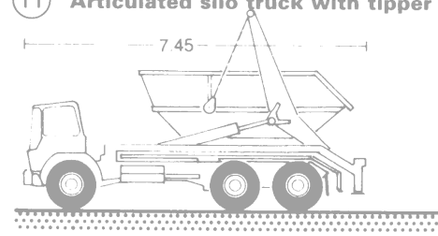
(8) **Articulated truck, l = 15m (UK max. o/a length = 13m)**



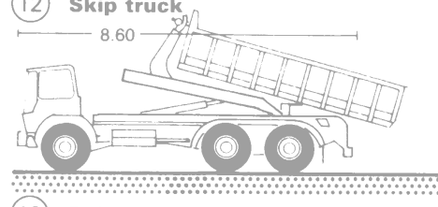
(11) **Articulated silo truck with tipper**



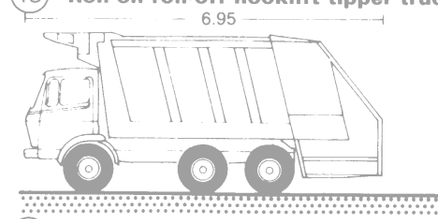
(12) **Skip truck**



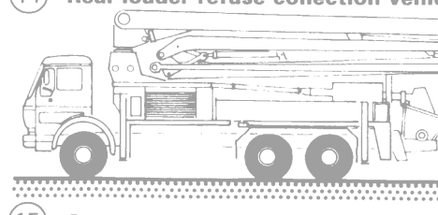
(13) **Roll-on roll-off hooklift tipper truc**



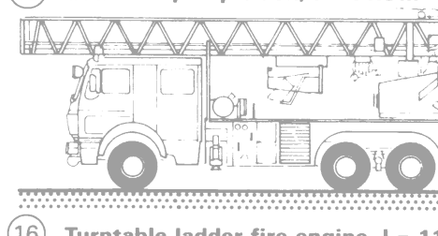
(14) **Rear-loader refuse collection vehic**



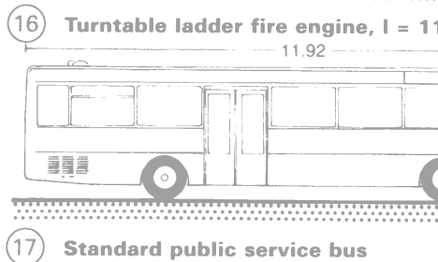
(15) **Concrete pump truck, l = 11.8m**



(16) **Turntable ladder fire engine, l = 11**



(17) **Standard public service bus**



Cuban 'STOP' typology

bus stop
Linear, Vedado, Havana

bus stop
Calle 26, Vedado, Havana

bus stop
Viaja, Havana

bus stop
Vedado, Havana

bus stop
Playa, Havana

bus stop
Linear, Vedado, Havana

bus stop
Alamar, Havana

bus stop
Linear, Vedado, Havana

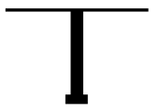
port
San Pedro, Vejia, Havana

port
San Pedro, Vejia, Havana

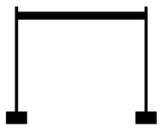
port
San Pedro, Vejia, Havana

Cuban 'STOP' typology

bus stop
Linear, Vedado, Havana

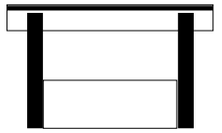


bus stop
Calle 26, Vedado, Havana

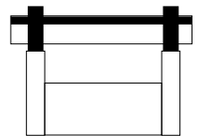


bus stop
Viaja, Havana

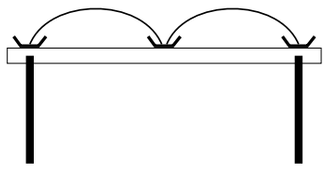
bus stop
Vedado, Havana



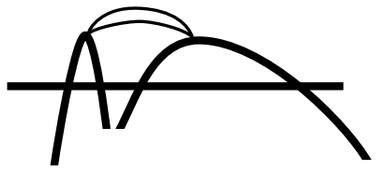
bus stop
Playa, Havana



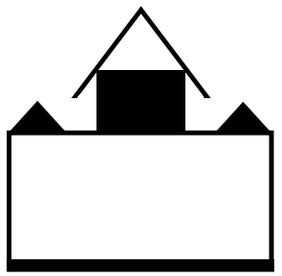
bus stop
Linear, Vedado, Havana



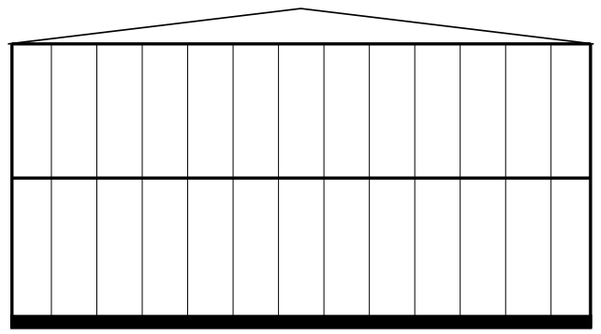
bus stop
Alamar, Havana



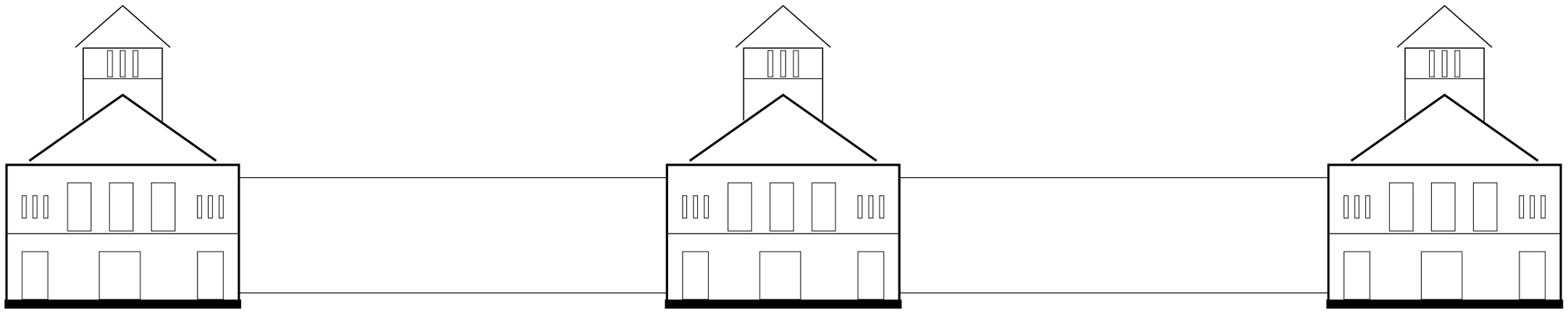
bus stop
Linear, Vedado, Havana



port
San Pedro, Vejia, Havana

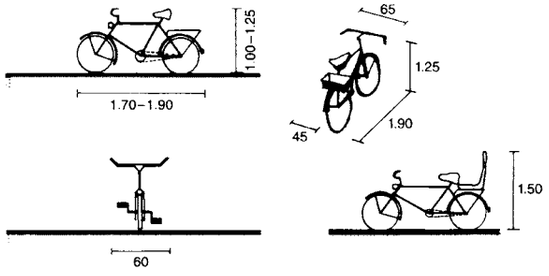


port
San Pedro, Vejia, Havana



port
San Pedro, Vejia, Havana

BICYCLE PARKING



① **Basic bicycle dimensions**

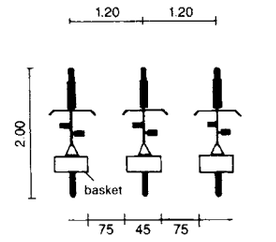
② **Bicycle with basket/child's seat**

Dimensions of bicycles → ①–②. Note allowances for baskets and children's seats. Include space for special types: recumbent bikes up to 2.35m long; tandems up to 2.60m; bicycle trailers (with shaft) approx. 1.60m long, 1.00m wide; bikes adapted for disabled people and for delivering goods.

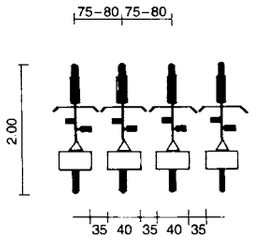
Offer comfortable parking → ③ wherever possible: narrow parking can cause injury, soiling and damage during locking/loading. Double rows with overlapping front wheels can save space.

Cycle stands must give steady support, even when loading the bike. Locking should be possible using only one 'U' lock, securing the front wheel and the frame to the stand at the same time. Tubular stands are therefore suitable → ⑨. Provide an intermediate bar for children's bikes. Stands should be 1.20m apart with access lanes 1.50–1.80m wide → ⑦–⑨. Cycle stands which do not provide sensible locking opportunities only suitable for internal use in areas of restricted access.

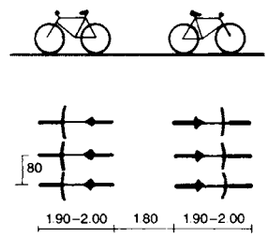
General installation design should be clear and user-friendly: close to the destination, easy to find and approach. For long-term parking, consider roofing and lighting → p. 219. Supervision is advisable at railway stations, sports grounds, shopping centres etc.



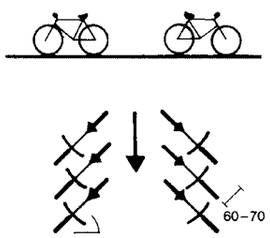
③ **Bicycle parking: ample space**



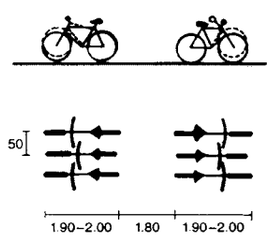
④ **Close packed**



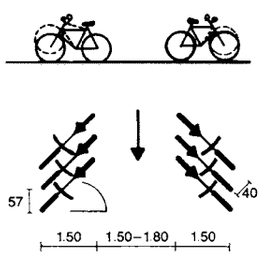
⑤ **Basic layout parallel in straight lines**



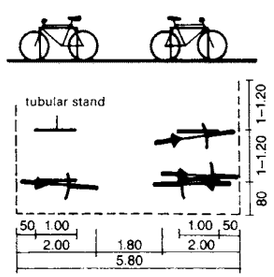
⑥ **Parallel, herringbone formation**



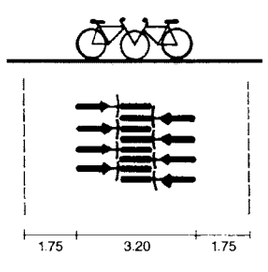
⑦ **Staggered, parallel straight formation**



⑧ **Staggered, herringbone formation**



⑨ **With tubular stands**

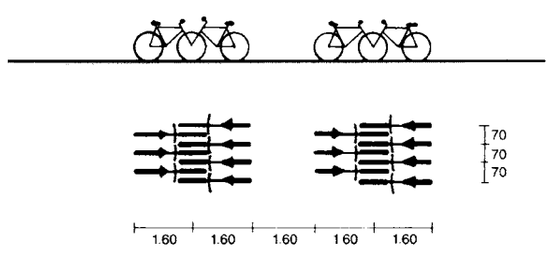


⑩ **Front wheel overlapping**

apartments	1 per 30m² total living area
visitors to apartments	1 per 200m² total living area
student residential halls	1 per bed
secondary schools	0.7 per pupil place
colleges of further educ.	0.5 per student place
lecture theatres	0.7 per seat
libraries	1 per 40m
college canteens	0.3 per seat
places of work	0.3 per employee
shops for daily supplies	1 per 25m² sales area
shopping centres	1 per 80m² sales area
retail units for	1 per 35m² sales area
professional offices, doctors' practices	0.2 per client on premises
sports arenas, halls, indoor swimming pools	0.5 per clothes locker
regional gathering places	1 per 20 visitor places
other gathering places	1 per 7 visitor places
local restaurants	1 per 7 seats
beer gardens	1 per 2 seats

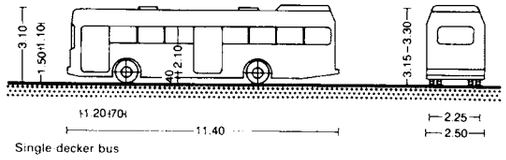
If several uses happen at the same time in a building, then the totals for the different uses should be added up.

⑪ **Guide values for capacity of cycle parking**

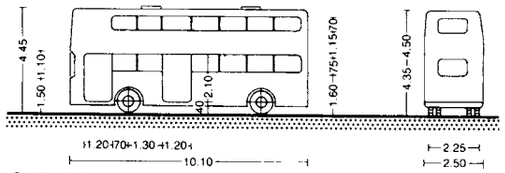


⑫ **Front wheel overlapping with central access**

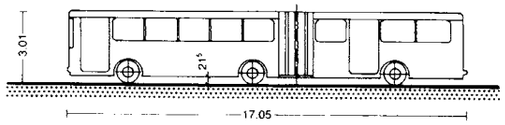
BUS STATIONS



Single decker bus



Double-decker bus



Articulated bus, common in Europe

① **Bus dimensions**

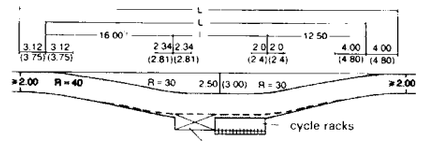
Special provision has to be made for the widening of curves to match the turning circles of buses → ②–⑮. Bus stops require shelters and special layouts (see also figures ①–⑧ on the next page).

Ramps should be provided at the front to allow easy access up to a 30–40cm high step → ⑪–⑫.

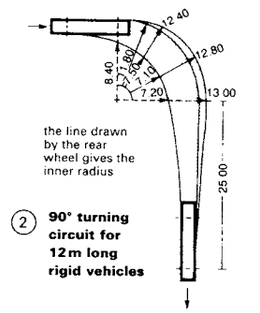
Short-stay car-parking space should be incorporated for passengers on the edge of towns (i.e. park and ride).

	l	L	L'
bus	12.00	40.50	47.62 (49.05)
two buses	25.00	53.50	60.62 (62.05)
articulated bus	18.00	46.50	53.62 (55.05)

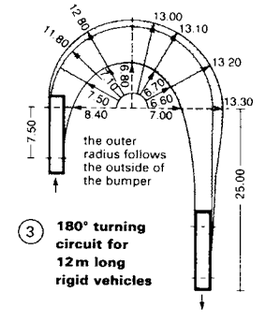
for 3m wide bus stop bays
*) 25m for bus stop bays for articulated buses



⑧ **Bus stop**



② **90° turning circuit for 12m long rigid vehicles**



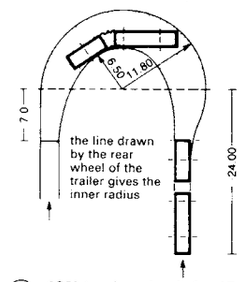
③ **180° turning circuit for 12m long rigid vehicles**

platform shape	without passing lane			with passing lane		
	Aa	Ab	Ac	Ba	Bb	Bc
layout of arrival line	parallel	at 45°	at 90°	parallel	at 45°	at 90°
platform length (m)	24	24	24	36–60	36–60	36–69
platform width (m)	3	3	3	3.5–4	3.5–4	3.5–4
number of loading points a) for buses	2	2	2	2–3	2–3	2–3
b) artic. buses	1	1	1	1–2	1–2	1–2
area of platform, roadway and arrival spur in m² a) for buses	138	176	189	293	296	313
b) artic. buses	276	340	378	439	444	470

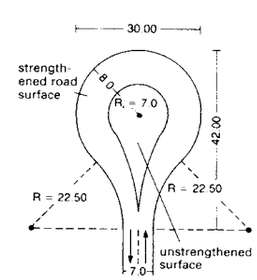
⑨ **Space requirement for platforms**

relation to line of arrival	parallel	at 45°		at 90°	
length of parking space (m)	32	12	24	12	24
parking options	1 artic. bus or 2 buses	1 bus	1 artic. bus or 2 buses	1 bus	1 artic. bus or 2 buses
width of parking space (m)	3.5	3.5	3.5	3.5	3.5
width of arrival lane (m)	4.0	8.0	8.0	14	14
parking area incl. roadway area in m² a) per bus	88	135	89	140	91
b) artic. bus	176		178		182

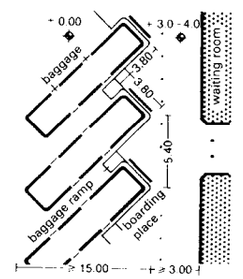
⑩ **Space for parking spaces**



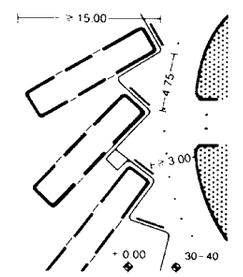
④ **180° turning circuit for 17m long articulated vehicles**



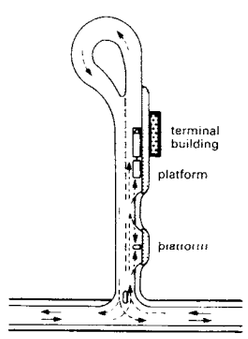
⑤ **Turning circuit**



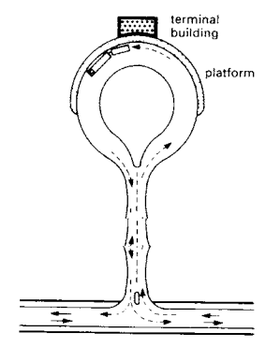
⑪ **Standard interlocking layout**



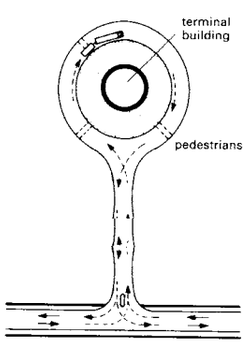
⑫ **Radial layout providing more room at the front**



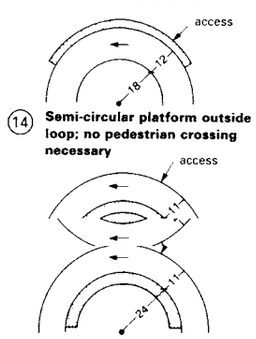
⑥ **Small turn-around station**



⑦ **Platform on the outside of the turning loop**



⑬ **Platform inside the turning loop**

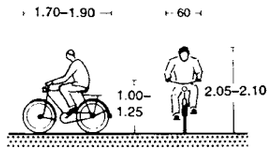


⑭ **Semi-circular platform outside loop; no pedestrian crossing necessary**

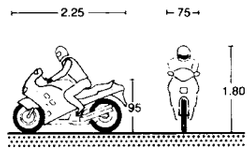
⑮ **Semi-circular platform**

VEHICLE DIMENSIONS

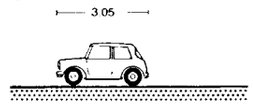
The illustrations show dimensions, turning radii and weights of typical vehicles with particular reference to space requirements and regulations for garages, parking places, entrances and passages.



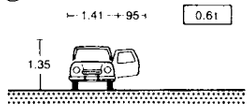
(1) **Bicycle**

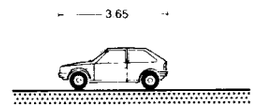


(2) **Motorcycle**

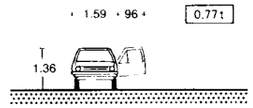


(3) **Mini**

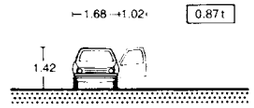


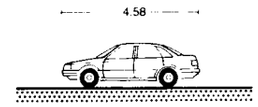


(4) **VW Polo Coupé**

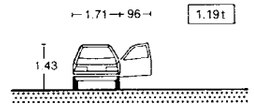


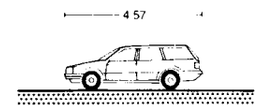
(5) **VW Golf**



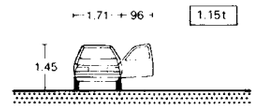


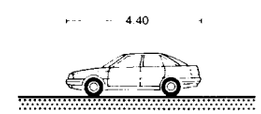
(6) **VW Passat**



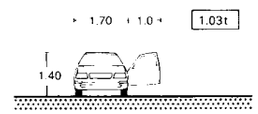


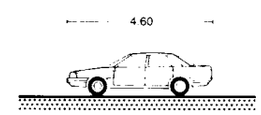
(7) **VW Passat Variant**



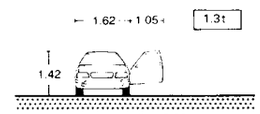


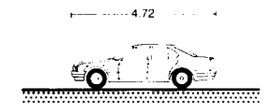
(8) **Audi 80**



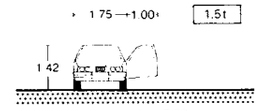


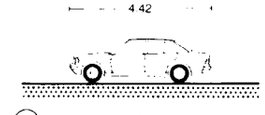
(9) **Audi 100**



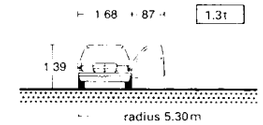


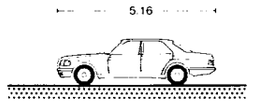
(10) **BMW '5' series**



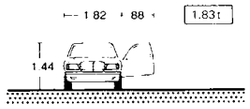


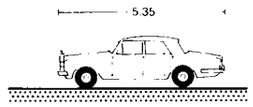
(11) **Mercedes 190**



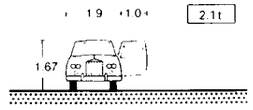


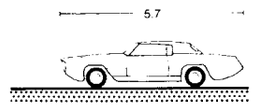
(12) **Mercedes 560 SEL**



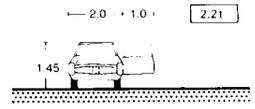


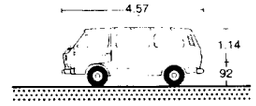
(13) **Rolls-Royce**



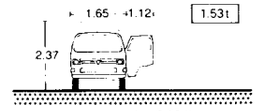


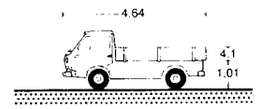
(14) **American limousine**



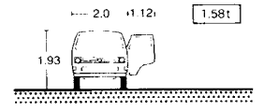


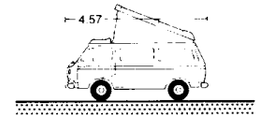
(15) **VW (high roof) Kombi**



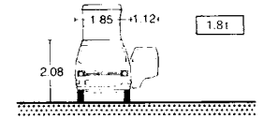


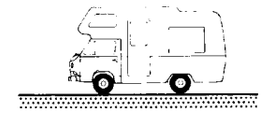
(16) **VW stretched truck with platform body**



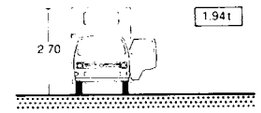


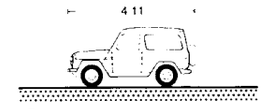
(17) **VW Joker**



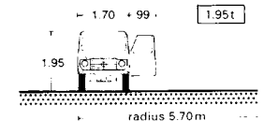


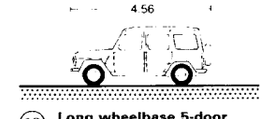
(18) **VW Karman-Cheetan, Gipsy**



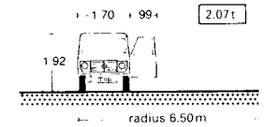


(18) **Short wheelbase, 3-door Mercedes station wagon**



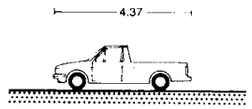


(18) **Long wheelbase 5-door Mercedes station wagon**

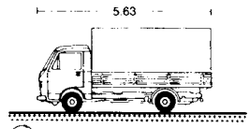


VEHICLE DIMENSIONS

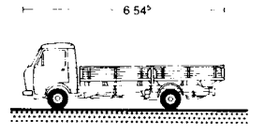
Dimensions and Turning Circles of Typical Trucks and Buses



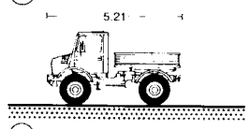
(1) **Pick-up van**



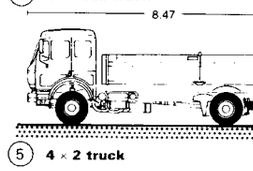
(2) **Fixed-bed truck**



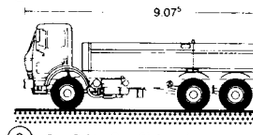
(3) **Fixed-bed truck**



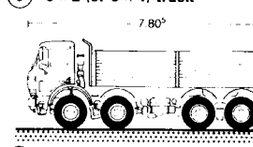
(4) **Off-road truck**



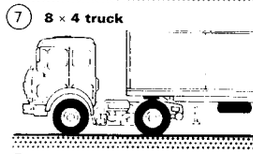
(5) **4 × 2 truck**



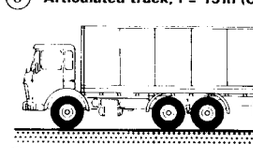
(6) **6 × 2 (or 6 × 4) truck**



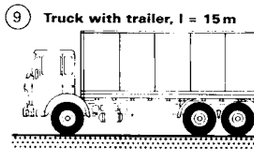
(7) **8 × 4 truck**



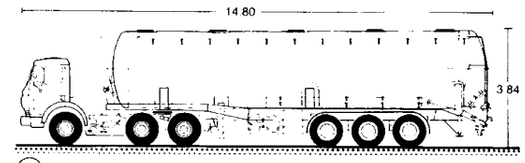
(8) **Articulated truck, l = 15m (UK max. o/a length = 13m)**



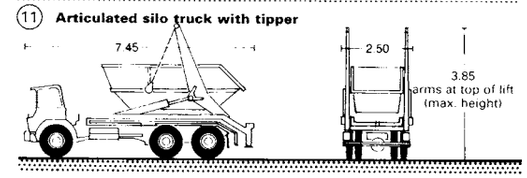
(9) **Truck with trailer, l = 15m**



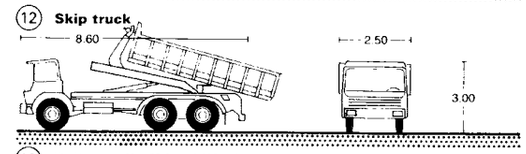
(10) **Truck with tandem trailer, l = 18m, w = 2.50m**



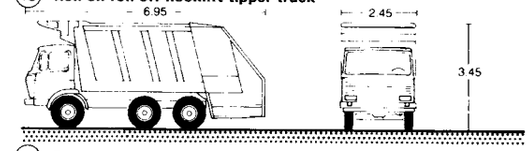
(11) **Articulated silo truck with tipper**



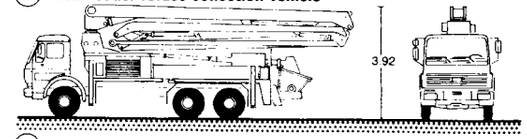
(12) **Skip truck**



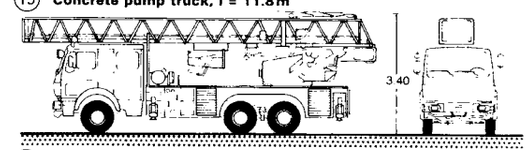
(13) **Roll-on roll-off hooklift tipper truck**



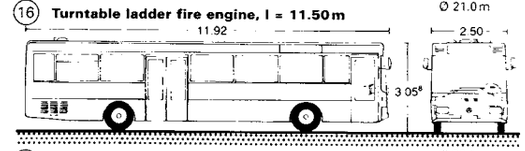
(14) **Rear-loader refuse collection vehicle**



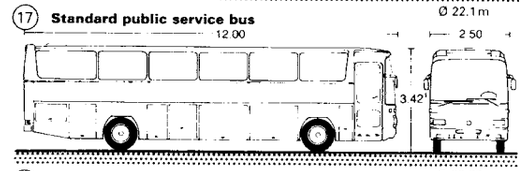
(15) **Concrete pump truck, l = 11.8m**



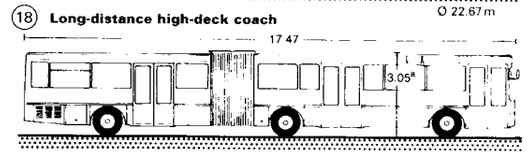
(16) **Turntable ladder fire engine, l = 11.50m**



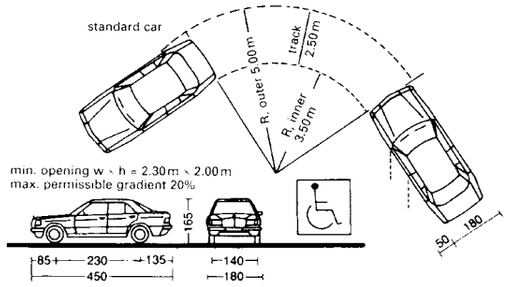
(17) **Standard public service bus**



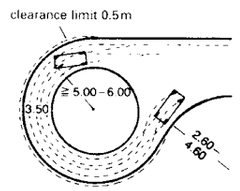
(18) **Long-distance high-deck coach**



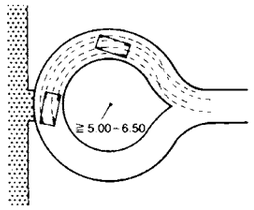
(19) **Standard articulated bus, w = 2.50m**



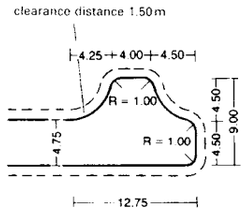
(1) **Standard car**



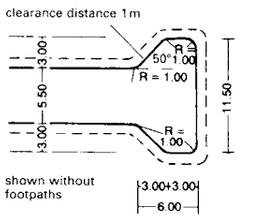
(2) **Car turning circle**



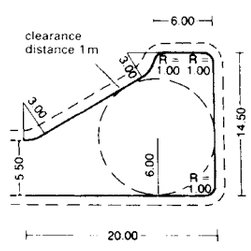
(3) **Car turning circle radius for an entrance drive ≥ 5–6.50 m**



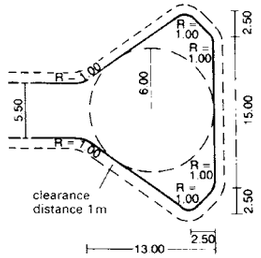
(4) **Hammerhead turning place for cars**



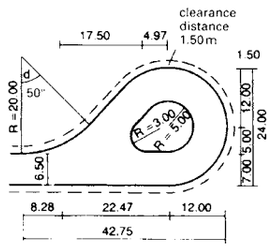
(5) **Hammerhead turning place for vehicles up to 8 m (refuse collection vehicles, fire tenders, trucks up to 6 t)**



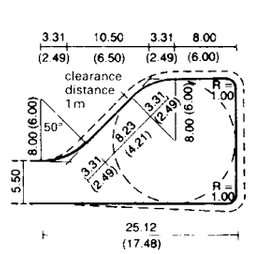
(6) **Turning area for trucks over 10 m long and 24 t 6 × 4 refuse collection vehicles**



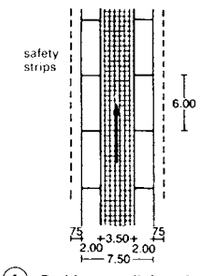
(7) **As (6)**



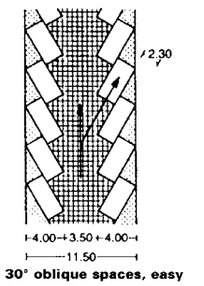
(8) **Turning loop for articulated trucks and buses**



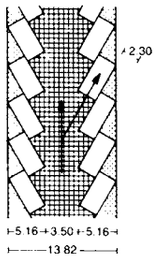
(9) **Turning circle for 4 × 2 refuse collection vehicles and 6 m long delivery vans**



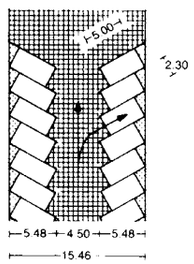
(1) **Parking parallel to the road**



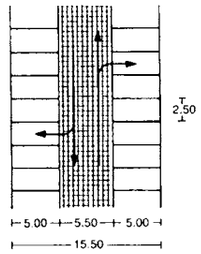
(2) **30° oblique spaces, easy entry and exit, but for use only with one-way traffic**



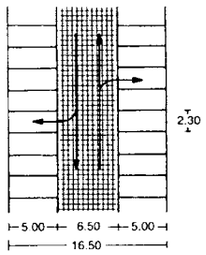
(3) **45° oblique parking, one-way traffic only**



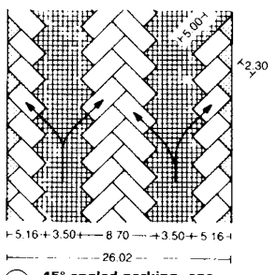
(4) **60° oblique parking, one-way traffic only**



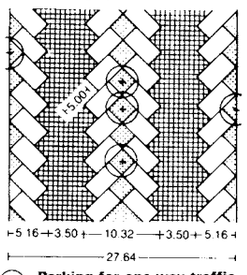
(5) **90° entry/exit to parking spaces for two-way traffic Parking space 2.50 m wide**



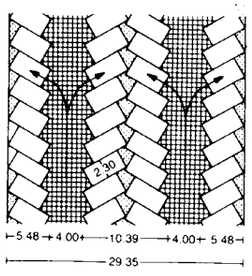
(6) **90° entry/exit to parking spaces, for two-way traffic Parking space 2.30 m wide**



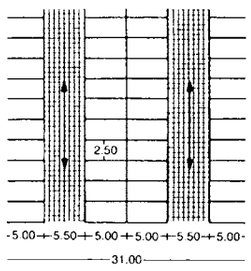
(7) **45°-angled parking, one-way traffic only**



(8) **Parking for one-way traffic (with spaces for plants)**



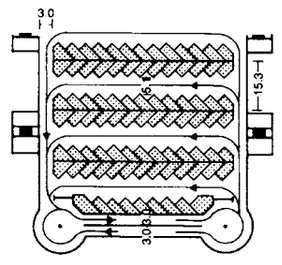
(9) **60° angled parking, one-way traffic**



(10) **90° parking, 5.5 m wide road Parking spaces 2.5 m wide**

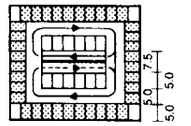
DESIGNING FOR VEHICLES

CAR-PARKS

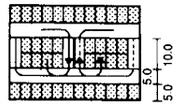


Architect: H Hertlein

(1) **Large garage at Siemens**

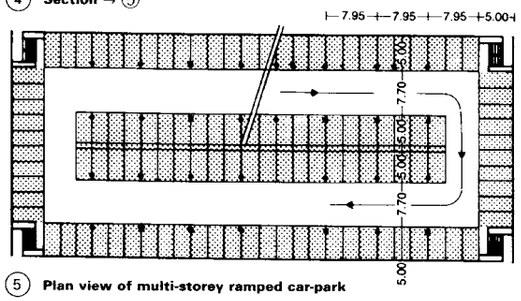


(2) **Longitudinal ramp**

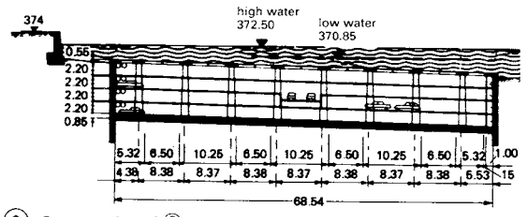


(3) **Transverse ramp**

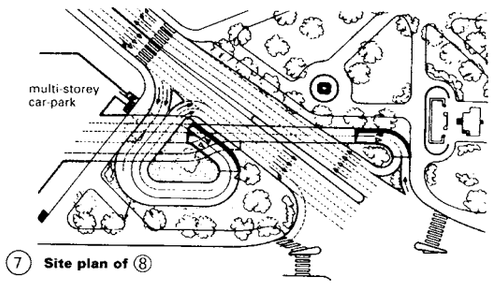
(4) **Section → (5)**



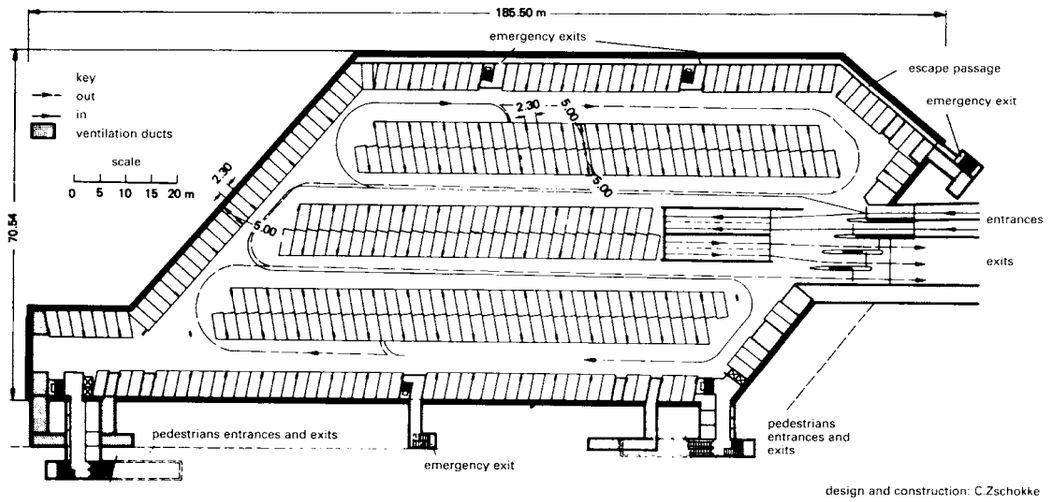
(5) **Plan view of multi-storey ramped car-park**



(6) **Cross-section of (8)**



(7) **Site plan of (8)**



design and construction: C.Zschokke

(8) **Under lake car-park in Geneva, Switzerland, Plan view of 1st floor. 372 parking spaces**

In accordance with the regulations applicable to garages:

- small garages are defined as those with ≤100 m² effective area;
- medium garages are those with 100–1000 m² effective area;
- large garages are those with ≥1000 m² effective area.

Underground garages are defined as those with the floor level on average ≥1.30 m below the surface of the ground.

Separate entrances and exits must be provided for large garages. These garages are normally located close to points of major traffic congestion such as railway stations, airports, shopping centres, theatres, cinemas, office and administration blocks and large residential buildings.

Medium and large garages must be located in easily accessible areas, have a clear headroom of 2.00 m, even below the main beams, ventilation ducts and other structural components. On the ground floor, this clear headroom is normally larger, as the space is often used for other purposes.

To accommodate small transport vehicles, this height should be 2.50 m. Floor loadings must be in accordance with local standards. Open garages have openings which cannot be closed (equal in size to one third of the total area of the outside walls) leading directly into the open air and divided in such a way that there is continuous through-ventilation, even in the presence of weather screening.

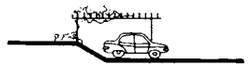
There is an ingenious example of a car-park in the centre of Geneva beneath the river Rhone. The entrance and exit points are on the approaches to the Rhone bridge → (7). Vehicles can easily filter in and out of the traffic flow by means of access ramps on both sides. All storeys are accessed by a right-hand drive up a central sloping ramp · (7) – (8). No staff are necessary as there are automatic parking ticket machines in use.

The criteria for the quality of multistorey car-parks are: safety in use, clear visibility, parking-space marking to enable drivers to remember the location of their vehicles, and integration into the context of town planning.

Other factors to be considered are: natural lighting and ventilation, clear views to the outside, plants and greenery and a simple system of collecting charges.

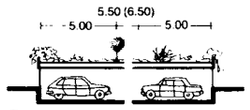
① Banking

② Earth wall

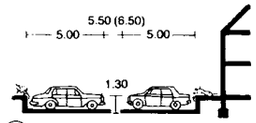


③ Plant cover

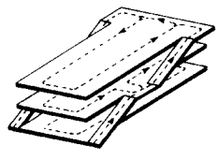
④ Canopy (for sound-proofing)



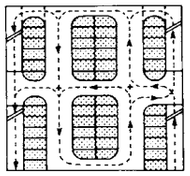
⑤ Roofed over



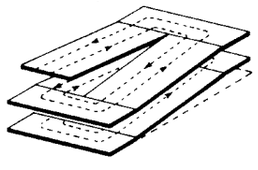
⑥ At a lower level



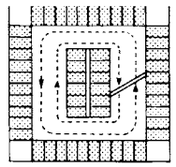
⑦ Multi-storey structure with full ramps



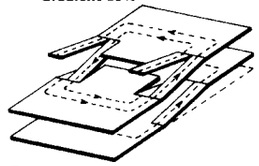
⑧ Plan view → ⑦



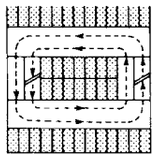
⑨ Full ramps, no loss of space Gradient ≤6%



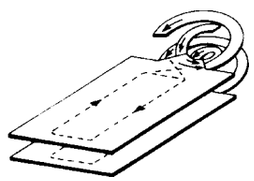
⑩ Plan view → ⑨



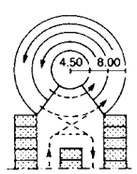
⑪ Half-storey ramp car-park (D'Humy system)



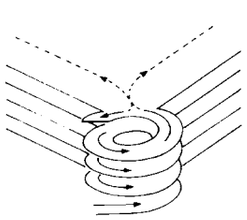
⑫ Plan view → ⑪



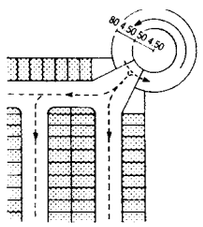
⑬ Spiral ramp car-park



⑭ Plan view → ⑬. The smaller the ramp radius, the wider the lane



⑮ Separate circular towers for ramps at the corners



⑯ Plan view → ⑮

Examples → ① – ⑥ show how parking spaces can be creatively integrated into their surroundings without restricting their use. Parking spaces can be completely or partially sunken or provided with roof planting to increase the area of open space → ③ – ⑤. Planting not only enhances the look of the area, but also provides shade and improves the environment by absorbing dust.

There are various ramp systems for gaining access to upper and lower floors of car-parks. The gradients of the ramps should not exceed 15%, or in the case of small garages 20%. A horizontal run of more than 5m must be included between an area carrying general traffic and ramps with more than 5% gradient. For car ramps the run must be more than 3m long, with ramps that can be up to 10% gradient. The options available for the arrangement and design of ramps can be summarised under four main headings → ⑦ – ⑭:

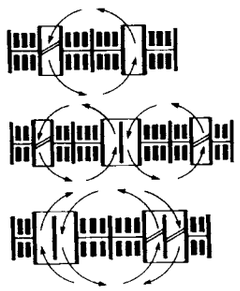
(1) straight, parallel and continuous multi-storey ramps with intermediate landings, with separate ramps for up and down traffic located at opposite ends → ⑦ – ⑧;

(2) sloping floors, with a full width ramp with no loss of space. The entire car-park structure consists of sloping levels. A space-saving system is shown → ⑨ – ⑩ with a gradient of more than 6%;

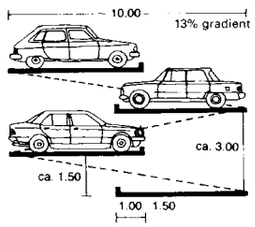
(3) offset half storeys (D'Humy ramps); parking areas are offset half storeys, height is gained by the use of short ramps ⑪ – ⑫ and → ⑰ – ⑱;

(4) spiral ramps – a relatively expensive design which lacks good visibility. The circular shape makes poor use of remaining areas → ⑬ – ⑯ and → ⑲ and ⑳. Spiral ramps must have a transverse gradient of more than 3%. The radius of the edge of the inner lane must be more than 5m. In large garages where special pedestrian routes are not provided, the ramps that are used by both vehicles and pedestrians must have a raised pavement at least 80cm wide. Medium-sized and large garages must have the following minimum width of lanes at entrances and exits:

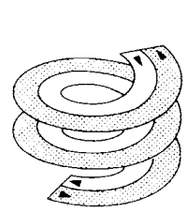
- 3m when used by vehicles up to 2m wide;
- 3.5m when used by wider vehicles.



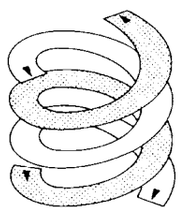
⑰ Basic forms of D'Humy ramp Ramps have 13–15% gradient



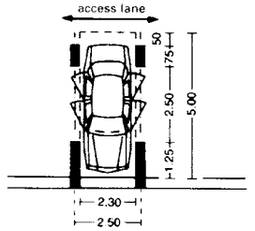
⑱ Dovetailing of storeys → ⑪ – ⑫



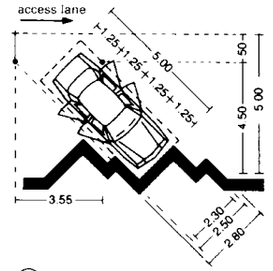
⑲ Spiral ramp, adjacent up and down lanes



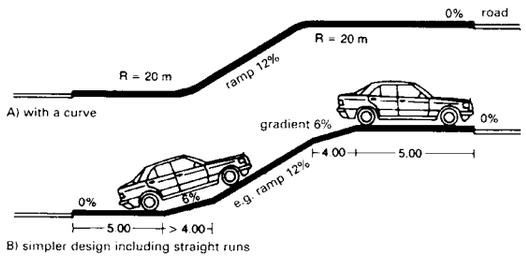
⑳ Double spiral ramps, superimposed up and down lanes



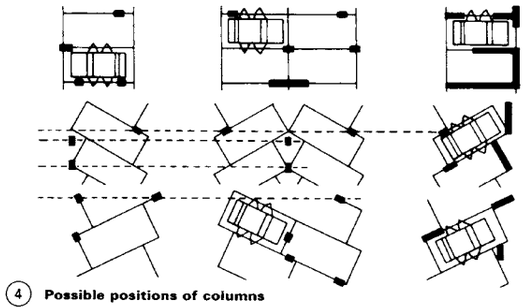
① Possible column positions, parking at 90° to access lane



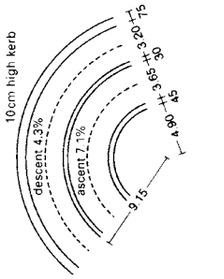
② Parking at 45° to access lane



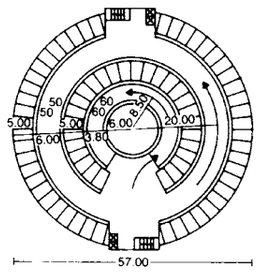
③ Change of gradient on ramps



④ Possible positions of columns



⑤ With smaller radius of ramps, larger lane widths

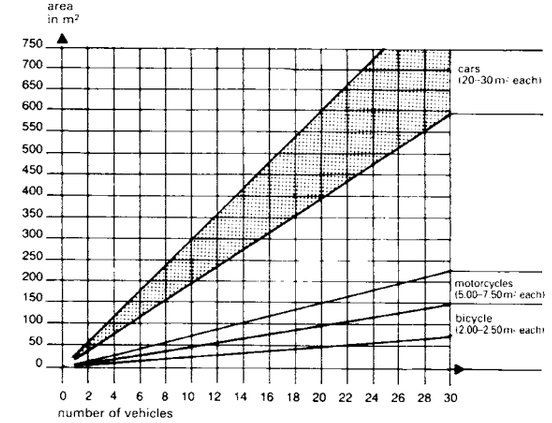


⑥ Spiral parking ramp

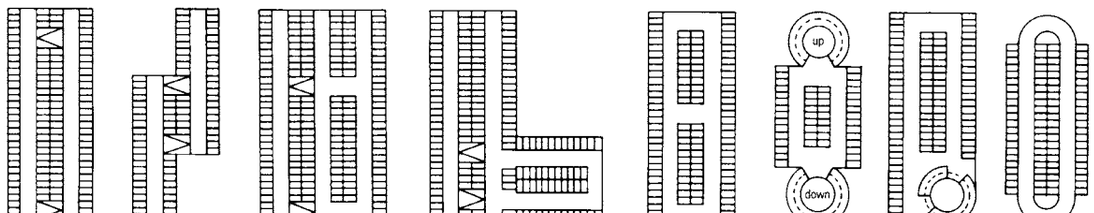
All the load bearing components of multistorey car-parks (floors, walls, support columns, bracing) must be fire-resistant. Garages open to the air must be of fire retardant design. The recommended clearance height in multistorey and basement garages is 2.20m. It is sensible to allow an extra 25cm for directional signs for drivers and pedestrians. A further 5cm is required for subsequent repair coats to the wearing surface, giving a total mean height of 2.50m, plus structures above the access lanes, which means a height per storey of 2.75–3.50m, depending upon the choice of design. A relatively narrow column grid pattern can, with careful planning and design, reduce building costs and height without any loss of function → ① + ②. Long span structures with no columns take up 7–12% less floor area than those with conventional support columns → ④.

Gradients and ramps must be appropriately shaped and designed → ③. Straight or spiral parking ramps are constructed by sloping the floor. With a spiral shape → ⑥, you can have vehicles on both sides of the ramp. In ⑧ it can be seen that the area required for a given number of cars to be parked, including the area required for manoeuvring, can be determined at the preliminary design stage. Layouts of multistoried garages and arrangements of ramps are shown → ⑦. These include two offset double rows of parked vehicles, four rows, six rows, parking in a corner, ramps in the direction of traffic, a multistorey car-park with ramps and finally one with parking on a continuous helical ramp.

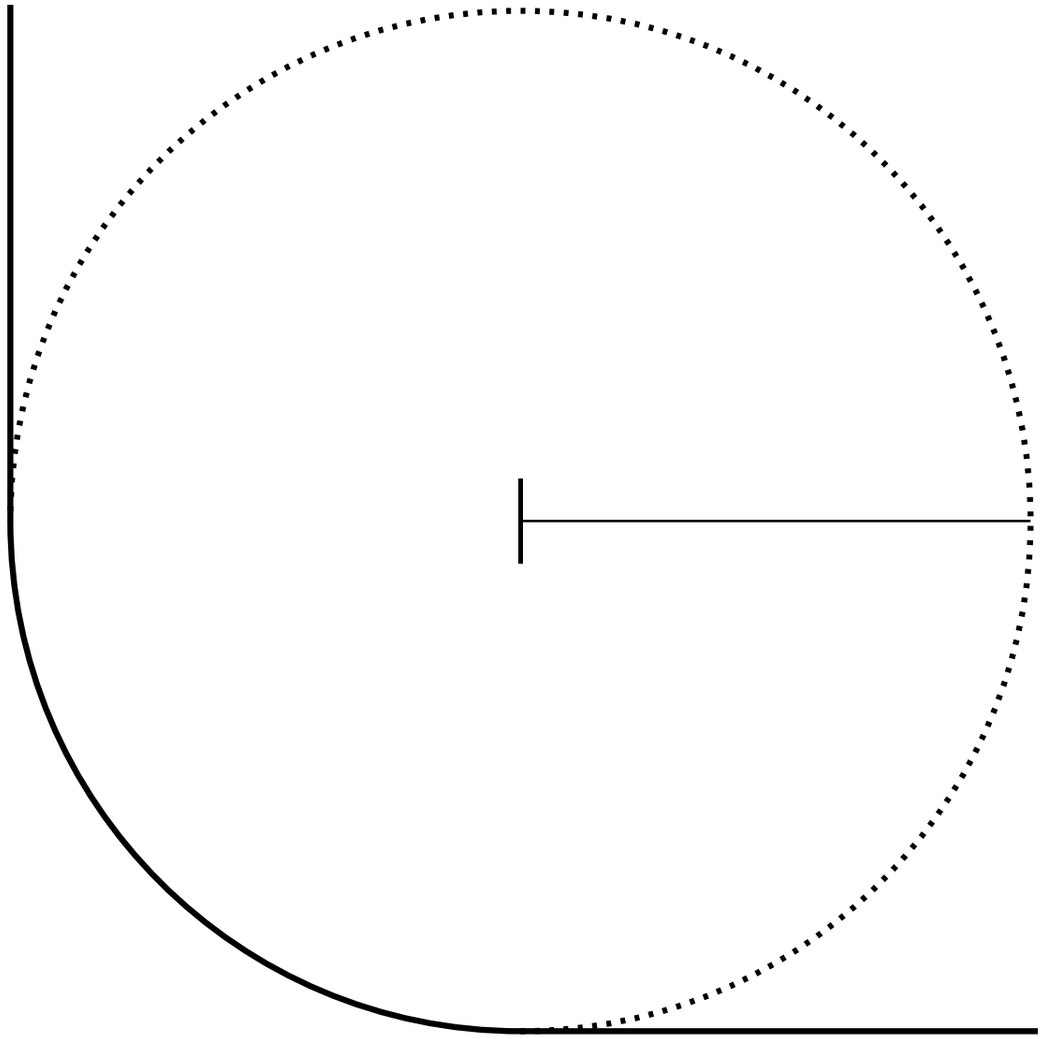
Reinforced concrete structures (with concrete mixed on site, pre-cast sections or hybrid construction) best meet the requirements for fire protection. As a rule, steel structures provide the main and subsidiary support systems and must be protected from fire with concrete, fire resistant cladding or other fire-proofing coatings. In garages, high loads should be allowed for, in addition to permitted superimposed loads of motor vehicles of 3.5kN/m², and of ramps 5kN/m². Roofs with gardens on top have to be designed for a loading of 10kN/m².



⑧ Area required for parking spaces, including room for manoeuvring

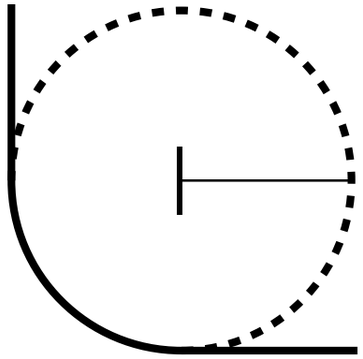


⑦ Plan views and arrangement of ramps



Underground

R=300m
50m*2.5m



Train

R=100m
40m*3.2m

bus

R=12m
10m*2.5m

car

R=6m
4.5m*2m

bike

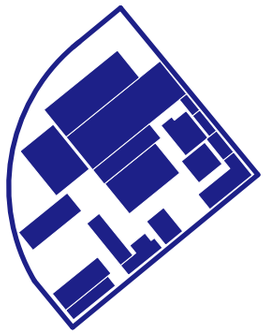
R=6m
1.8m*0.5m

people

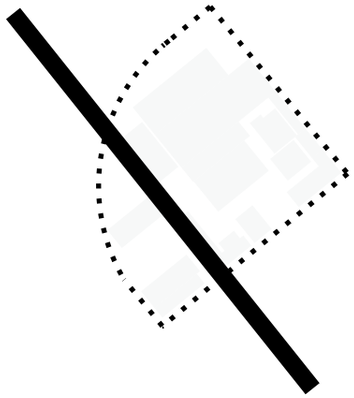
R=0.5m
0.2m*0.5m

References

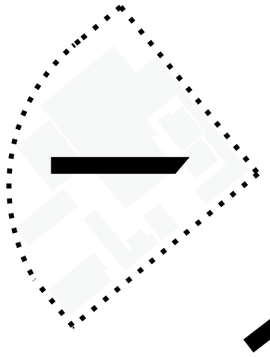
Traffic center+Import company
4200m^2



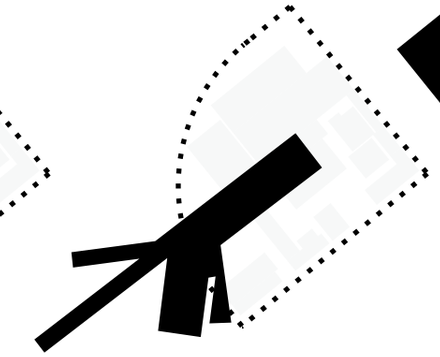
Fishermen warehouses in the port of Cangas
900m^2



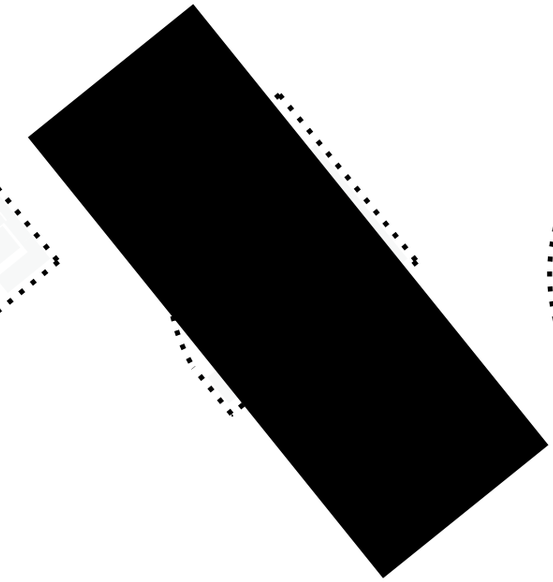
Bus Station in Osijek
11000m^2



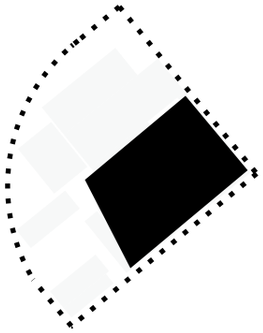
Faaborg Harbor Bath
20000m^2



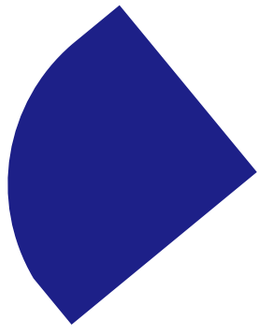
Fun Palace
24000m^2



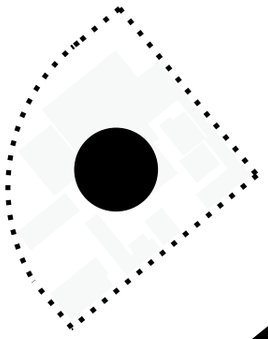
Box Park
2600m^2



Site
7800m^2

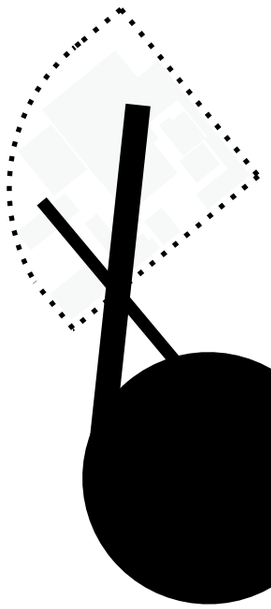


Electric Vehicle Charging Stations

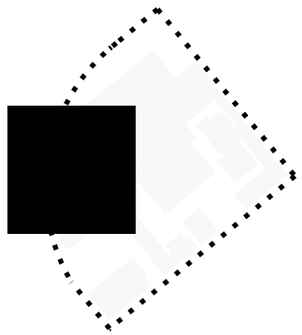


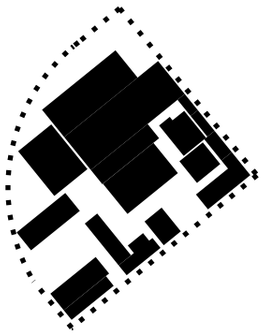
Jean-Jacques Bosc Bridge
44m*545m

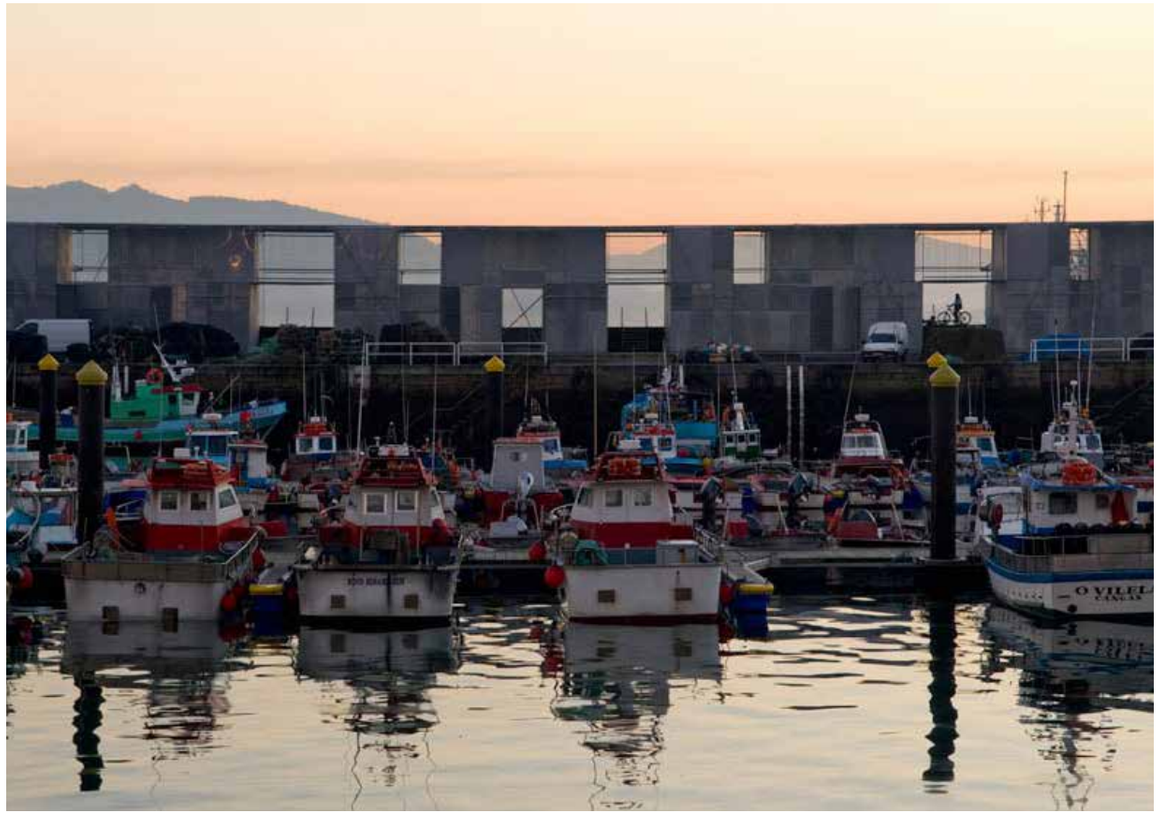
Shared Space at the US-Mexico Border

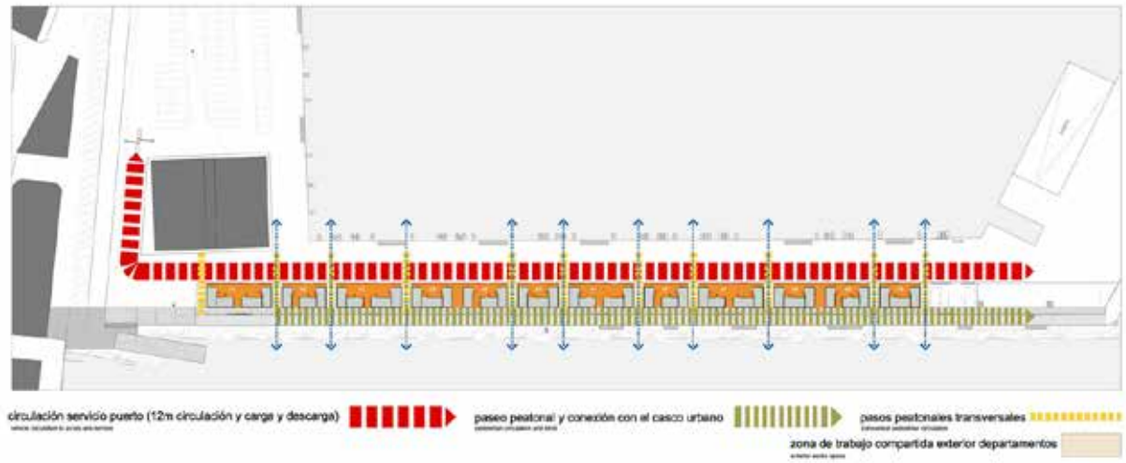


Shared Space at the US-Mexico Border
22000m^2



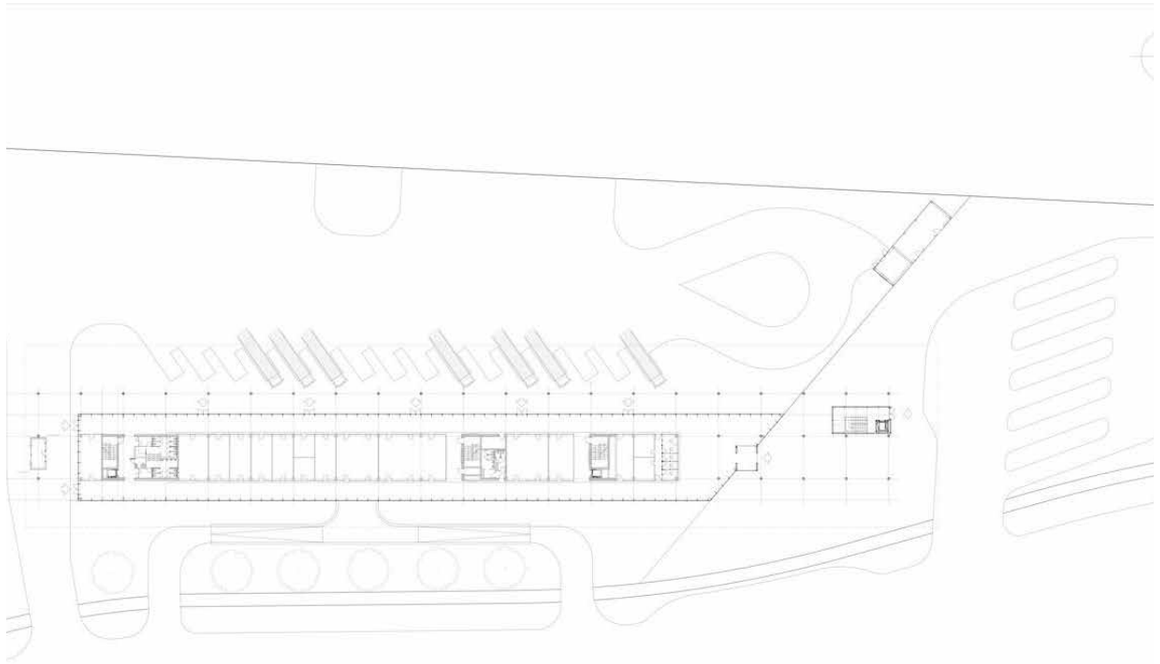






Fishermen warehouses in the port of Cangas / Irisarri + Piñera

Architects: Irisarri + Piñera
Location: Cangas, Pontevedra, Spain
Area: 897.0 sqm
Project Year: 2003
Photographs: Manuel Gonzalez Vicente



SITE PLAN

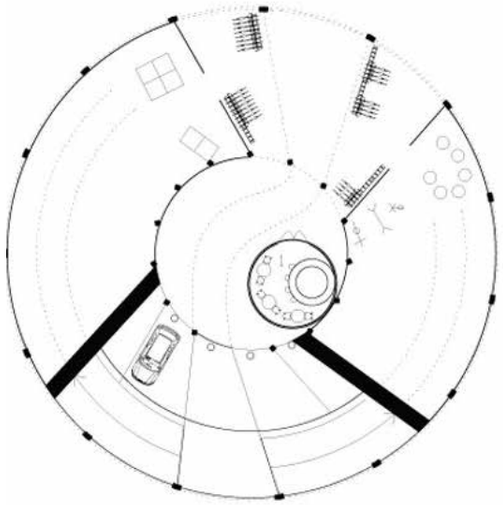
0 10 20 30 40

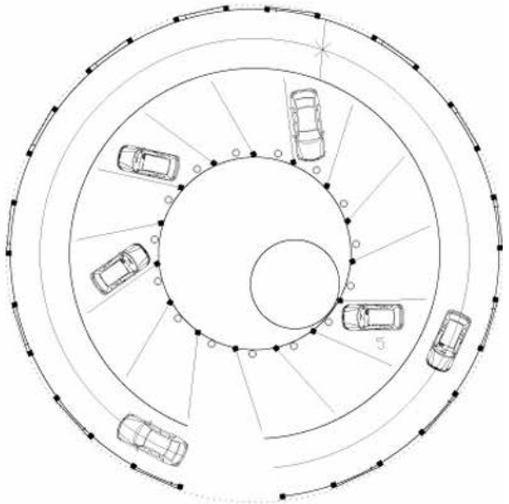
Bus Station in Osijek / Rechner

Architects: Rechner
Location: Osijek, Croatia
Site area: 21,199 sqm
Built area: 11,066 sqm
Completion: 2011

Faaborg Harbor Bath / URBAN AGENCY + JDS + CREO ARKITEKTER

Architects: JDS, URBAN AGENCY, CREO ARKITEKTER A/S
Location: Faaborg, Denmark
Area: 20100.0 sqm
Project Year: 2014





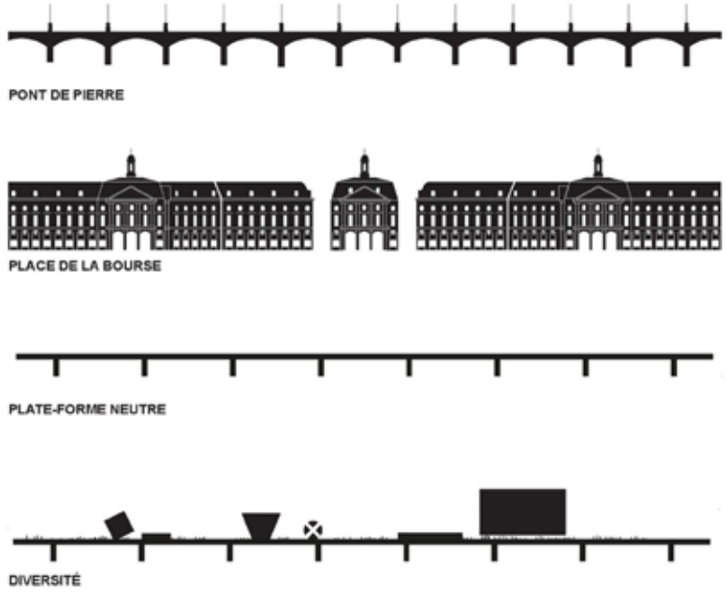
KKA Designs Electric Vehicle Charging Stations in Sweden

Architects: Kjellgren Kaminsky Architecture
Project Year: 2013

1. car parking in Cuba= car museum

2. new energy cars, people need to WAIT while charging. This is same as Cubans wating for buses. maybe combine these behaviours.

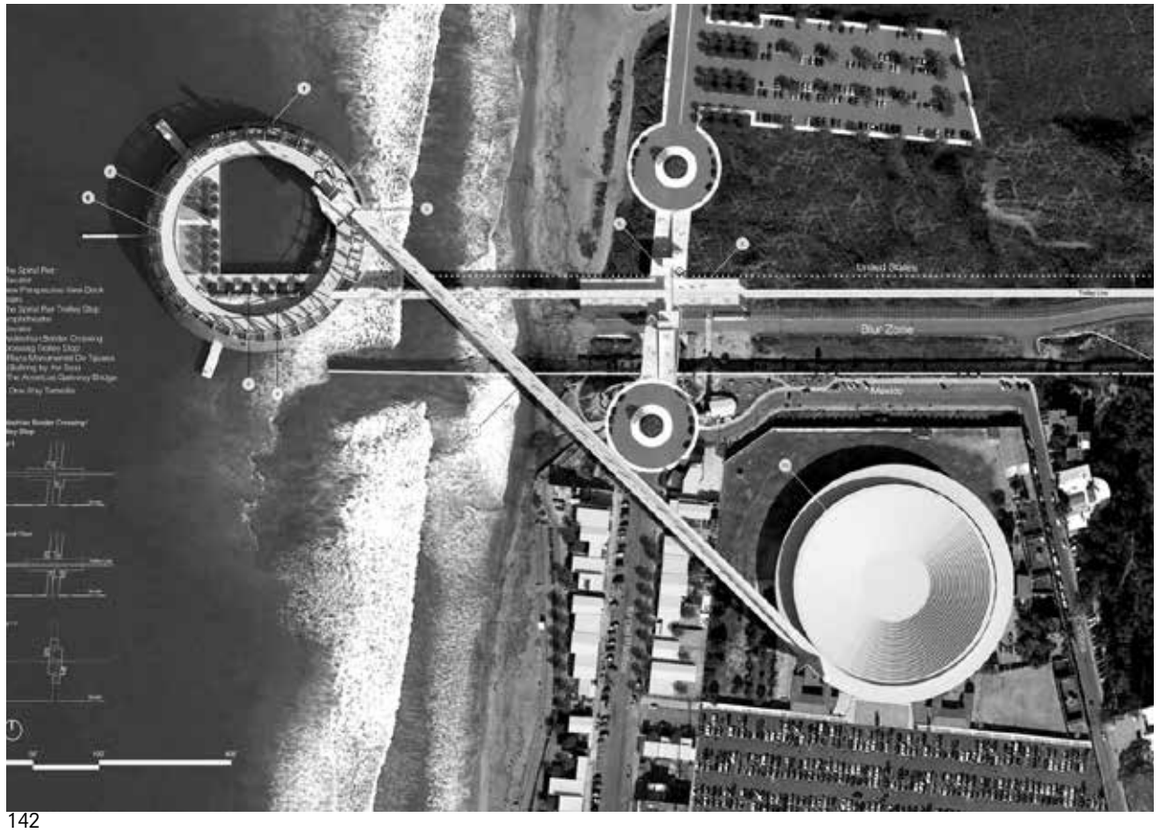
3. extrude along ROUTE= space



Jean-Jacques Bosc Bridge

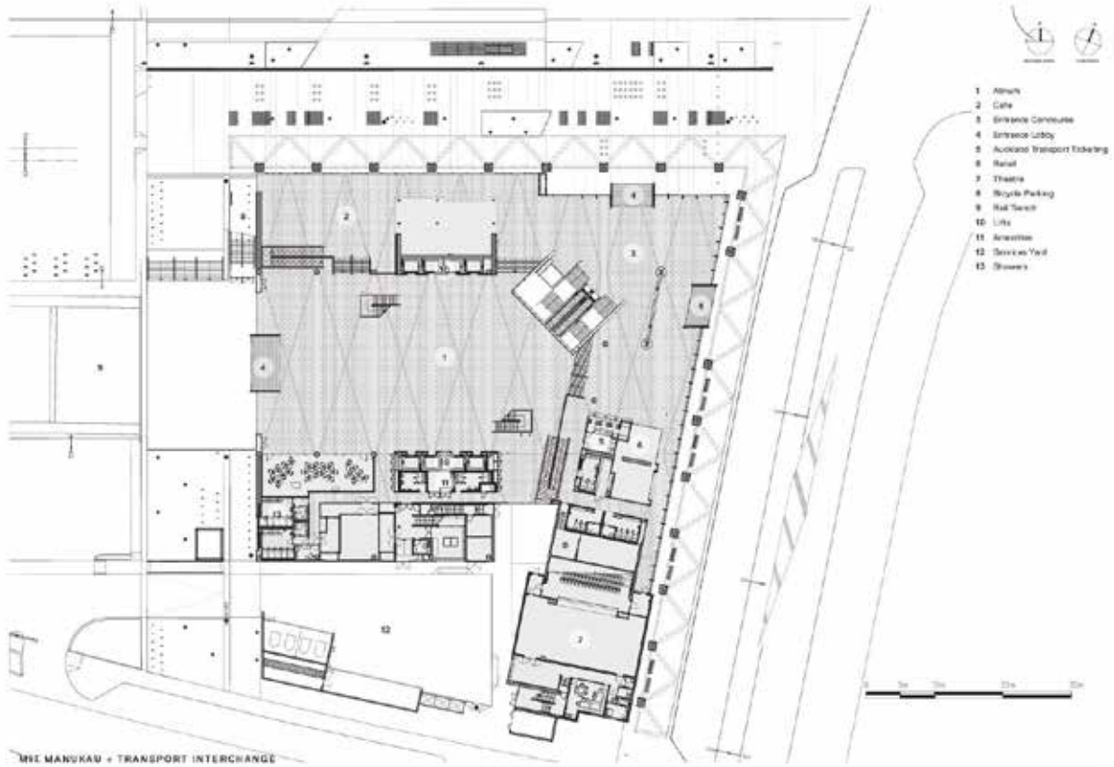
Architect: OMA
Location: Bordeaux, France
Scale: 44m by 545m
Project Year: scheduled for completion in 2018

"a generous new public space"
"an urban planning intervention" for the city



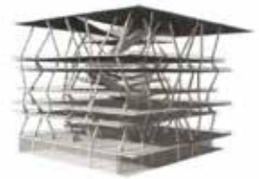
"La Línea Borrosa" Proposes a Shared Space at the US-Mexico Border

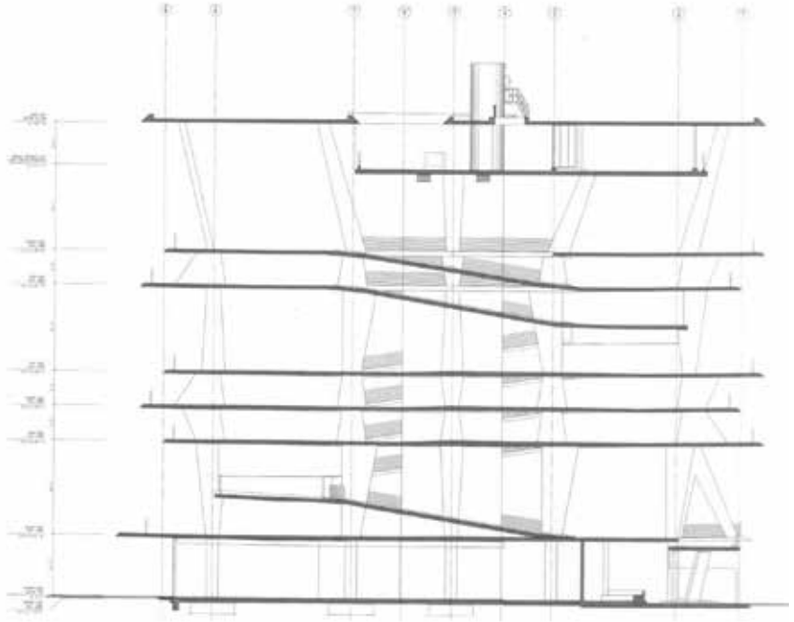
Student Patrick Cordelle
Location Tijuana, Baja California, Mexico
School California Polytechnic State University, San Luis Obispo
Studio Studio 400
ProfessorKaren Lange
Project Year2015



MIT Manukau & Transport Interchange / Warren and Mahoney

Architects Warren and Mahoney
Location Manukau Station Road, Manukau, Auckland 2104, New Zealand
Project ArchitectMike Jackson
Area20000.0 sqm
Project Year2014



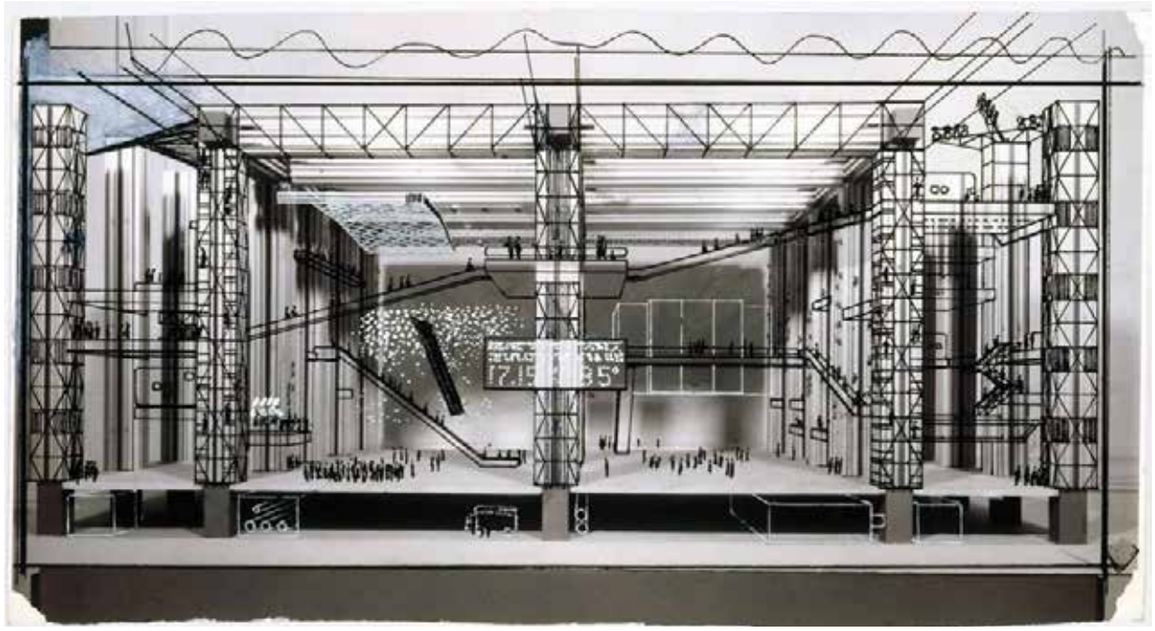


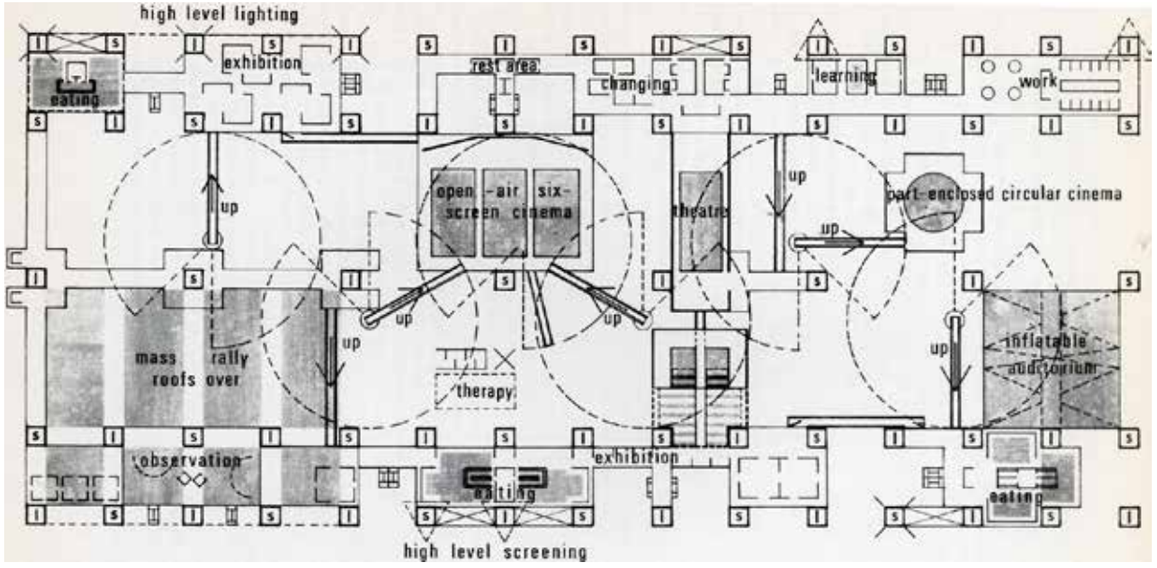
1111 Lincoln Road Car Park

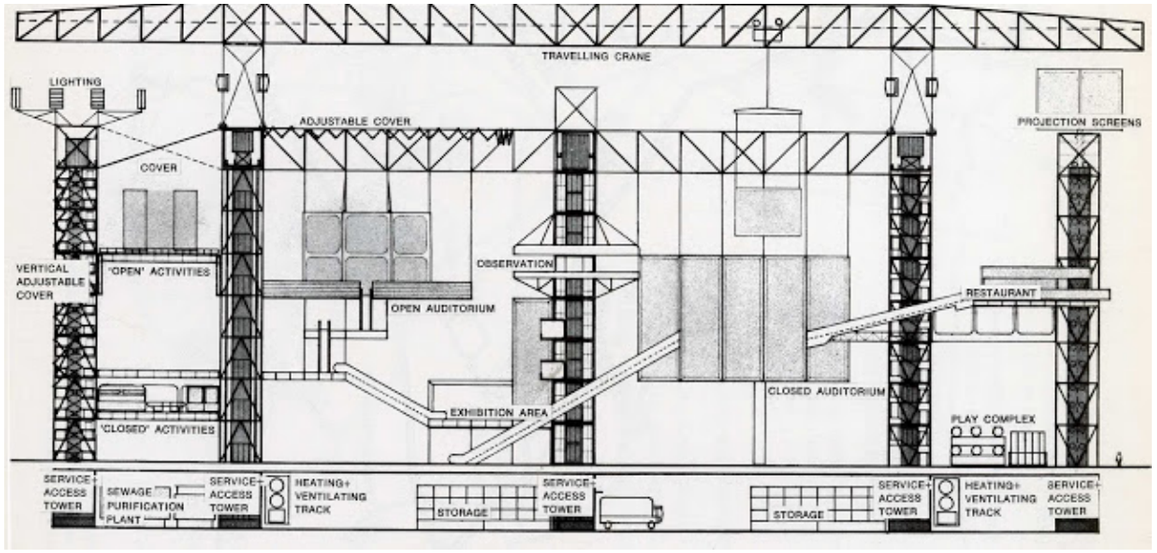
Herzog & de Meuron

Building Components:
Car Park Structure, Existing Building, Suntrust Building, Promenade and Public Plaza

Site Area: 2,510sqm
Building Footprint: 2,125sqm
Building Dimensions: Length 51.5m, Width 49.5m, Height 37.8m
Gross Floor Area: 22,575sqm
Program:
- Car Park: 300-space multilevel parking facility
- Retail Concept Stores: Car park structure (ground floor and level 5): Total Area: 3,716sqm
- Residencies: Car park structure: 1 roof house and garden (approx. 490sqm)
- Restaurants
- Event Space: Level 7: 2,360sqm / 25,400sqft including circulation
- Promenade and Public Plaza: Mature cypress and oak trees, black and white pavement pattern composed of pedra portugesa stones
- Glass pavilion by artist Dan Graham





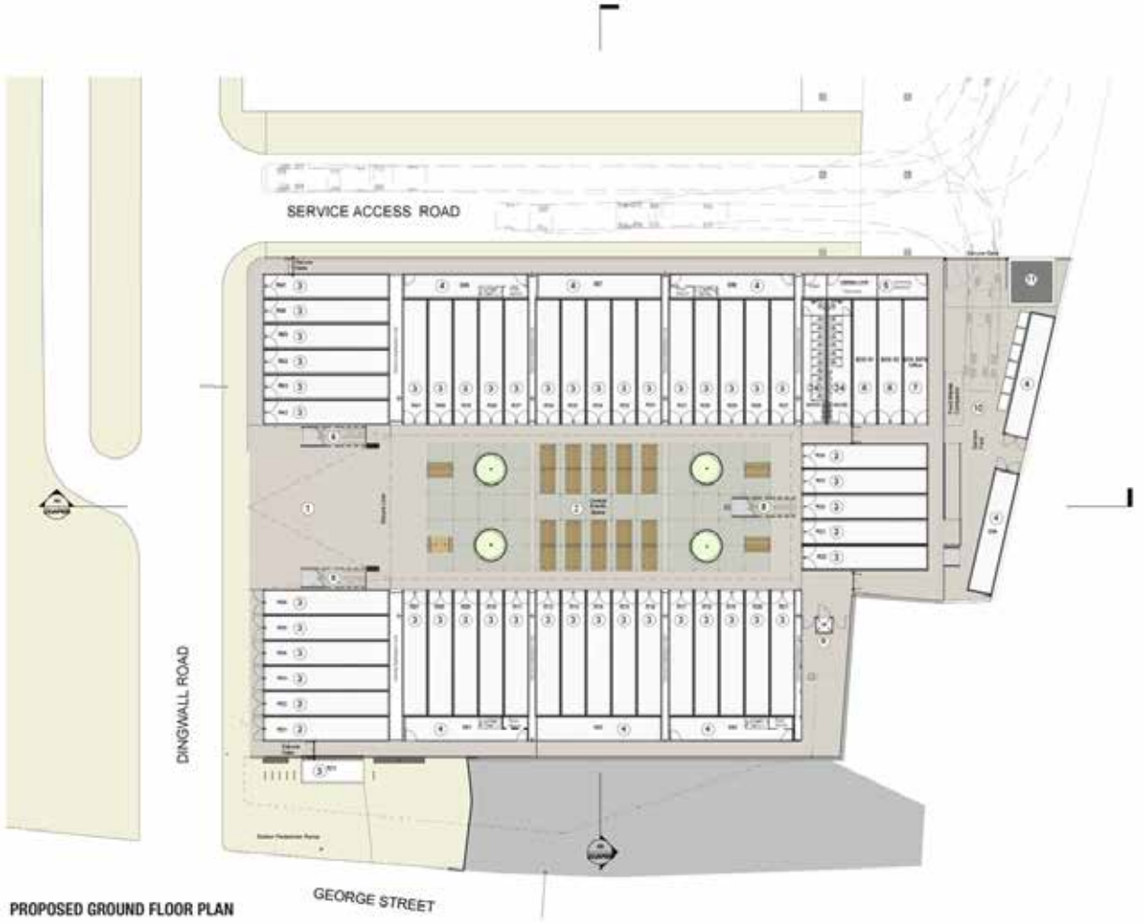


Fun Palace

Cedric Price

year of concept: 1964
possible site: London
scale: 237m*110m

Price thought of the Fun Palace in terms of process, as events in time rather than objects in space, and embraced indeterminacy as a core design principle.



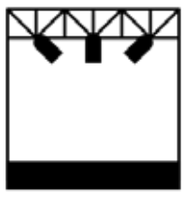
PROPOSED GROUND FLOOR PLAN

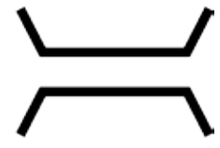
Boxpark Croydon / BDP

ArchitectsBDP
LocationCroydon, United Kingdom
Area2622.0 m2
Project Year2016
PhotographsNick Caville

FUN BRIDGE

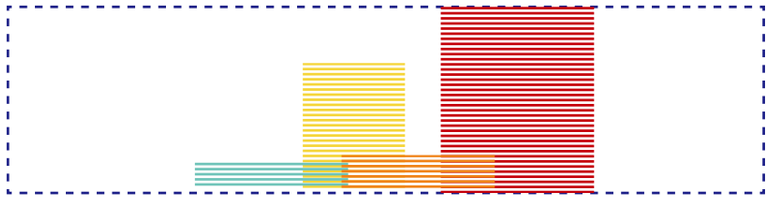
Transport Hub + Bridge

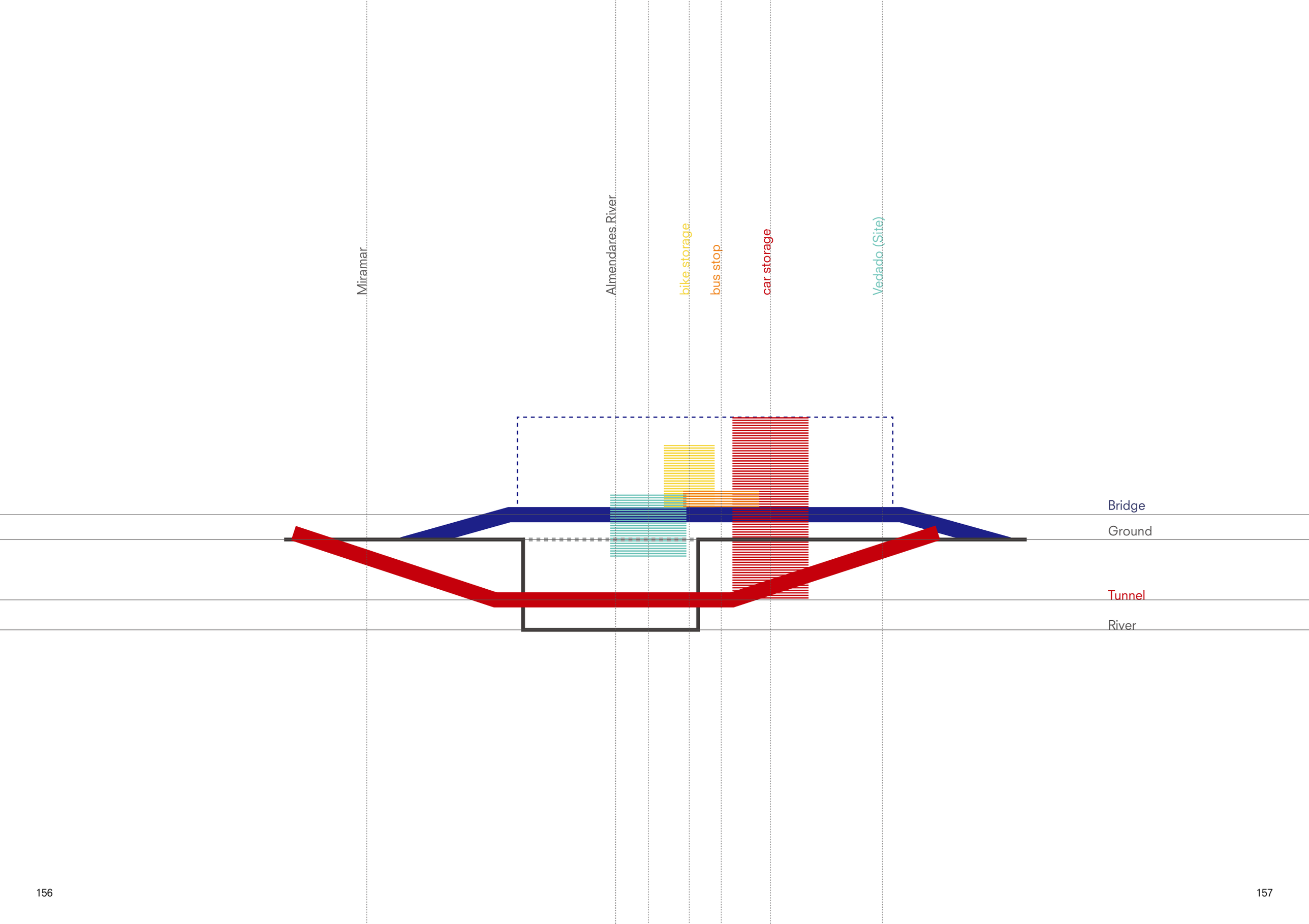


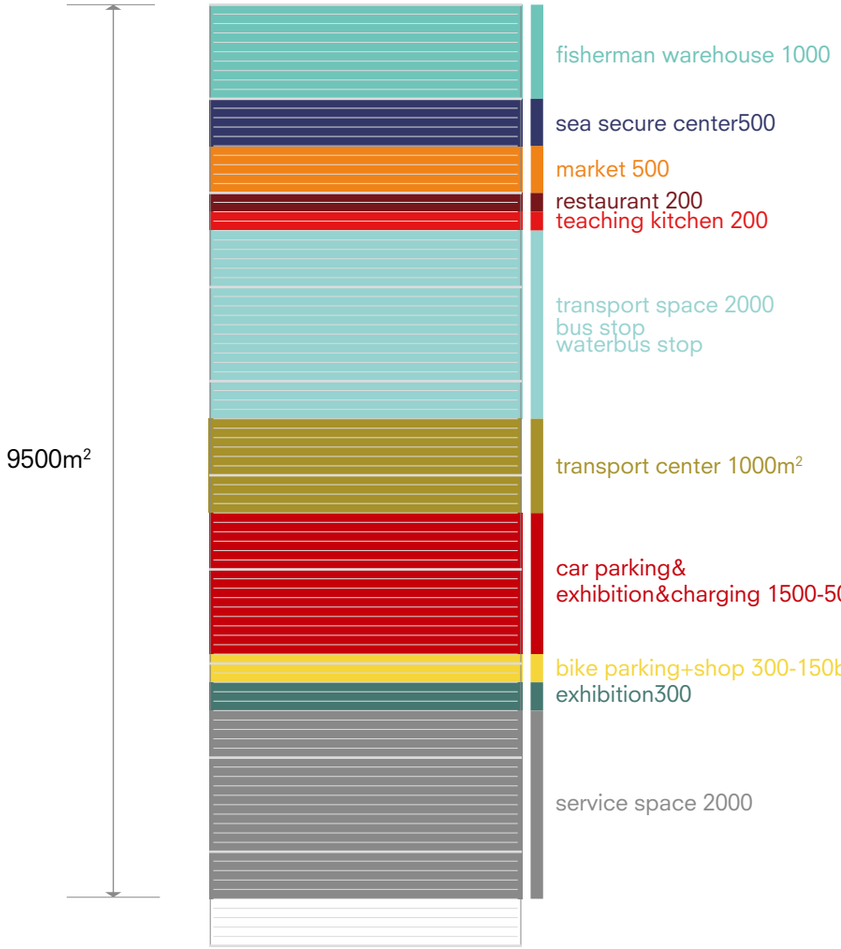


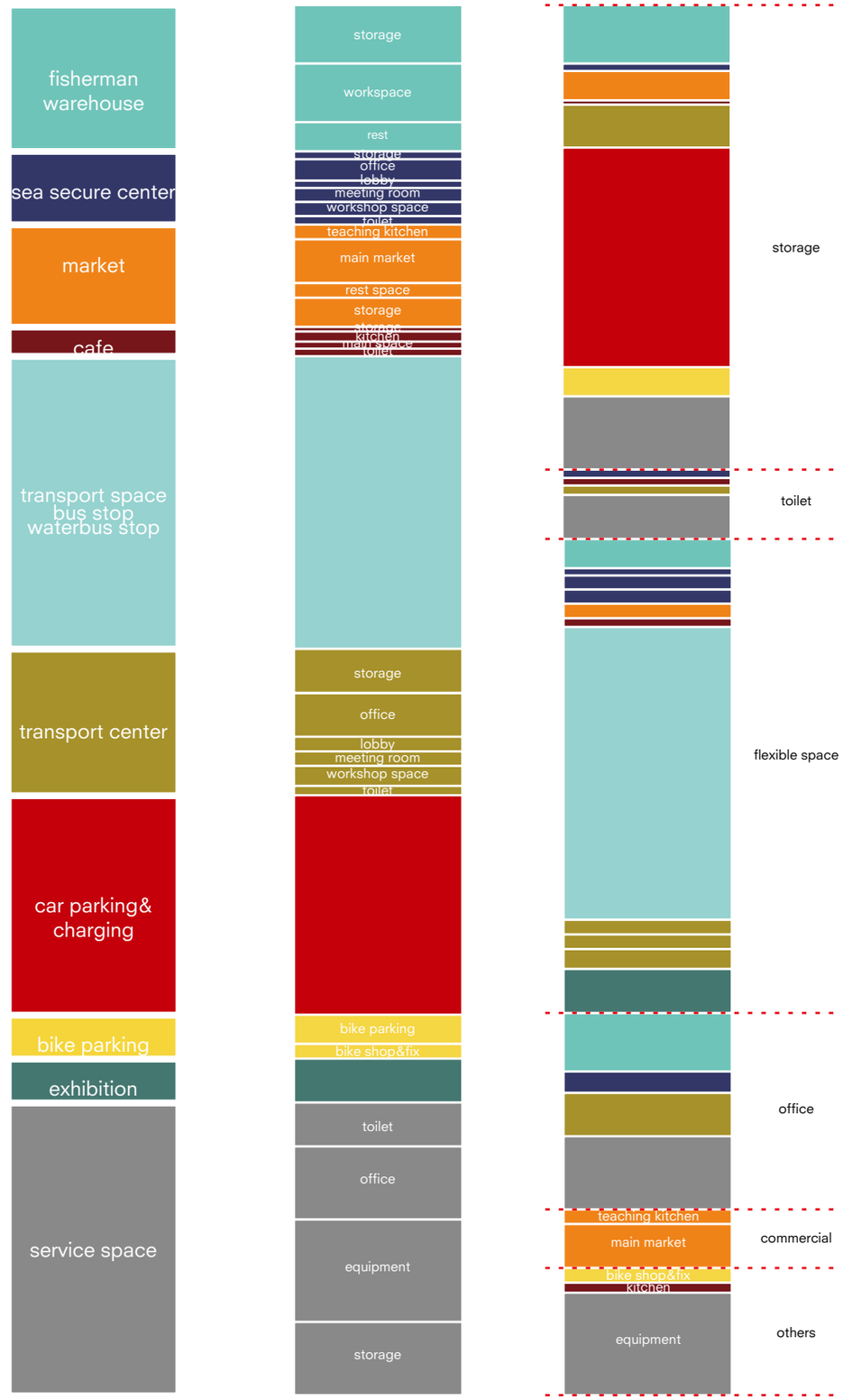
Transport Hub

Bridge




Miramar
Almendares River
bike storage
bus stop
car storage
Vedado (Site)
Bridge
Ground
Tunnel
River


9500m²
fisherman warehouse 1000
sea secure center500
market 500
restaurant 200
teaching kitchen 200
transport space 2000
bus stop
waterbus stop
transport center 1000m²
car parking&
exhibition&charging 1500-50cars
bike parking+shop 300-150bikes
exhibition300
service space 2000


fisherman warehouse
sea secure center
market
cafe
transport space
bus stop
waterbus stop
transport center
car parking&
charging
bike parking
exhibition
service space
storage
workspace
rest
storage
office
lobby
meeting room
workshop space
toilet
teaching kitchen
main market
rest space
storage
storage
kitchen
main space
toilet
storage
office
lobby
meeting room
workshop space
toilet
bike parking
bike shop&fix
toilet
office
equipment
storage
storage
toilet
flexible space
office
commercial
others
teaching kitchen
main market
bike shop&fix
kitchen
equipment

CUBA