



## Cuba's Surface Transportation Network

### Roads, Bridges and Railroad

One of the Island country's strong points is its transportation system, which is in acceptable condition. Cuba is about the size of Pennsylvania and it has more than 37,815 miles of roads. Of these, 9,610 miles are paved and 7,391 miles have gravel surface. The road network will require less investment to upgrade than other parts of the infrastructure. There is a relatively new intra-island expressway, but at the same time there are only 800 (315 operational 24 hours) gas stations in the country, of which 120 are located in Havana. This market report provides information regarding unique opportunities in Cuba's surface transportation network, as well as key potential trade and commercial issues involving roads, bridges and the railroad in Cuba (fig.1).

#### Background

By the time of the 1959 Revolution, Cuba had one of the most extensive road networks in Latin America. Since

then, further expansion was undertaken, but lack of road maintenance is a problem. The extensive highway system transects the island, but as it was built for both economic and military purposes, in many cases it bypasses cities and towns, connecting them through secondary roads.

Secondary roads in Cuba make up the majority of unpaved roads on the island. These minor roads have traditionally comprised the most neglected part of the nation's road system, especially in the eastern part of the country. The absence of road lighting makes driving at night dangerous. This danger is exacerbated by the fact that some cars and most bicycles lack running lights or reflectors. Road signals, where they exist, are often confusing. Most Cuban cars are old, in poor condition, and lack turn signals and other standard safety equipment. Secondary rural roads are narrow, and some are in such bad condition as to be impassable by cars.



Fig. 1: Bridge of the Via Blanca highway at Bacunayagua (Matanzas province) in Cuba.

## Road System and Ground Transportation

The all-season road network is 37,815 miles in length, up to half of which is paved. The main highway is the 750-mile Central Highway that runs the length of the island, from Pinar del Rio in the west of the country to Santiago in the east. Nearly all of Cuba's cities, towns, airports, harbors and agricultural areas are accessible by Cuba's 9,610 miles of paved roads. Only a few towns in the mountainous and coffee producing regions must be reached by unpaved roads.

The highway cargo transportation is 8 million metric tons (1994) and 17.9 mmt (2014); 63% of this cargo is transported under the auspices of the Ministry of Transportation; 8% under the Ministry of the Revolutionary Armed Forces; 7% under AZCUBA (the Sugar Industry monopoly), 11% under local authorities and municipalities. The balance of 11% is operated by private and cooperative trucking, this percentage is growing fast.

### Cargo Movement

There are several notable problems with Cuba's highway cargo transportation: There is a limited number of gas stations in the entire country. The trucks and equipment used for cargo movements are from many different countries of origin, and the equipment tends to be varied, incompatible, poorly maintained, and in bad shape. An official campaign to "re-motor" the equipment is on-going with many trucks forced to be de-commissioned from moving cargo. Perhaps the most notable constraint of cargo transportation using the national highway network is that the country's warehousing facilities are better suited for railroad cargo operations. In many cases warehouses have very few if any truck docks. Often, trucks use the railroad facilities to handle general cargo. This problem is much more acute for refrigerated cargoes.

### Primary Highways

The expressways (four or more lanes) in Cuba are developed as follows:



Fig. 2: Newly repaired highway Havana –Mariel

1. **National Expressway "A1"** connects Havana Westward to Pinar del Rio (96 miles) and Eastward to Punta Diamante (Sancti Spiritus province), with a total of 263 miles. In the West, the connector includes 20 miles of a six lane highway, and 76 miles of a four lane highway. The western branch of this highway passes through Artemisa, San Cristobal and Consolacion del Sur. The eastern branch has 23 miles with eight lanes, 40 miles with six lanes and 200 miles with four lanes. In the easternmost part of Cuba there is another segment comprising 47 miles at the entrance (and into) of the city of Santiago de Cuba, with two wings, one to Guantanamo and one

to San Luis-Alto Cedro, all of 4 lanes. As a whole, the "A1" National Expressway has 406 miles completed (369.8 miles operational) and 153 miles still under (non-active) construction. The main drawback of the "A1" expressway is that it doesn't directly connect yet the two most important cities and industrial centers in the country, Havana and Santiago de Cuba. Another constraint is the almost absolute lack of gas stations and service centers along the route (there are only eight in 406 miles). The National Expressway was built mainly for military purposes; therefore, it bypasses cities and towns, connecting with them through secondary branches. The connectors are only partially completed. All the junctions with other roads and railroads are at level with barriers, etc.

2. **Via Blanca Expressway** connects Havana City-Matanzas-Varadero-Cardenas, with a total of 114.4 miles of a four-lane road. It has several of the most impressive bridges in the country-- Bacunayagua, Canimar, and others.

3. **Havana-Mariel Expressway** has 20.6 miles and four lanes. Developed along the northern coast of the western part of Cuba, this expressway connects several important industries with Havana's downtown.

4. **Havana Turnpike.** It is a 75-mile, eight-lane highway surrounding Havana City, from La Lisa suburban area in the west to Cojimar in the east. It connects, for instance, the Jose Marti International Airport with the beaches east of Havana, bypassing the city's downtown and with the National Expressway through the East-West Havana City expressway (included in the 72 miles, it has 14 miles by itself).

5. **Havana-Melena Expressway.** This modern road is four-lanes, 20 miles long. It crosses the Havana province through the most important industrial and agricultural areas, the large barracks and military airfield at Managua, ending at Melena del Sur and Batabano. The last town and coastal port is the connection to Isle of Pines using ferries and hovercraft (two ferries per day, six trips of passenger hovercraft per day).

6. **Mediodia Expressway (Havana – San Antonio).** Four lane highway connecting the southern part of Havana with the western portion of Artemisa province. San Antonio AB the headquarter of the Cuban Air Force is located in that area. The Cargo Terminal from Jose Marti International Airport is planned to be converted for passenger service, and a new terminal is under construction at San Antonio AB.

Ground transportation is readily available throughout Cuba, with the larger hotel companies providing this service through subsidiaries. In the case of Cubanacan S.A., all ground transportation is coordinated through Veracuba state enterprise located in Havana. Veracuba's inventory includes 500 busses of different capacities, 1,500 rental cars and 2,000 taxis. Recently info shows a substantial increase of the bus systems, with 1,000 tourism busses acquired through a credit line in China.

Transtur is an independent company specializing in ground transportation for tourists. The company has been in operation for more than seven years and is currently the largest operator of ground transportation services in the country. Similar to Veracuba, Transtur operates busses and mini-busses, and provides car rental through Transautos (725 vehicles) and taxis through Turistaxi (600 taxi cabs).

Cuba's motor pool is in dire need of modernization. Apart from the American clunker of 1950s vintage, in the course of the 35 years under the current government, Cuba has received

sporadic supplies of Argentine built American and French products (1970s), Italian Alfa Romeos (late 1970s and 1980s), Soviet built Lada automobiles (basically a knockoff of the 20-year old Fiat 124 design) and modern Japanese and Korean compacts used mainly by rental agencies. Parts are in short supply and some vehicles have been cannibalized for parts. Cuba's heavy transportation equipment is in no better shape. The amount of cars in the Island at the end of 2014 was reported as 438,200 units, both private or government (it does not include cars in military services), and 30, 000 commercial vehicles.

### Organizational & Governance Structure

An agency within the Cuban Ministry of Transport, *the Dirección de Seguridad e Inspección Automotor* (DSIA), performs some similar functions to those of the *National Highway Traffic Safety Administration* (NHTSA) in the United States. There are several other agencies within and outside the Ministry that also perform functions related to traffic safety. However, no information is available to determine how well coordinated the activities of these organizations are.

Sign	Expressway	Route	Length	Notes
	A1 (Autopista Nacional)	Havana-Santa Clara-Sancti Spíritus-Ciego de Ávila-Camagüey-Las Tunas- Bayamo-Santiago de Cuba-Guantánamo	900 km (562.5 mi)	Operating sections are: Havana-Taquasco (354 km,) Palma Soriano-Santiago (43 km) La Maya-Guantánamo (41 km) and planned.
	A4 (Autopista Este-Oeste)	Havana-Artemisa-Pinar del Río	156 km (96 mi)	
<b>8</b>	Vía Blanca	Havana-Matanzas-Varadero	183 km (114.4 mi)	Toll road from Matanzas to Varadero
<b>6</b>	Autopista del Mediodía	Havana-San Antonio de los Baños	17 km (10.6 mi)	Incorporates the San Pedro Highway Strip, designed to be usable as an aircraft runway
<b>11</b>	Autopista La Habana-Melena	Havana-Melena del Sur	32 km (20 mi)	...
<b>7</b>	Autopista La Habana-Mariel	Havana-Mariel	33 km (20.6 mi)	...

<b>3</b>	Havana Ring Road (Primer Anillo de La Habana)	Havana (from Boyeros to Havana Harbor area)	36 km (22.5)	Beltway serving Havana
<b>16</b>	Autopista de la Isla de la Juventud	Nueva Gerona-La Fe	20 km (12.5 mi)	Located in the Isle of Youth

### Railroad System in Cuba

With 9,270 miles of track, Cuba's main railway system presents unique opportunities for cargo transportation. The country maintains one of the Caribbean's two remaining passenger railroads (the other is in Jamaica). The sugar industry, Cuba's largest, uses approximately 5,900 miles of railroad track to transport cane from the fields to the mills, but the railroad equipment needs to be upgraded and modernized.

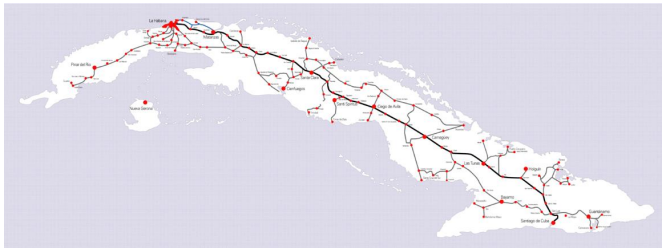
The overwhelming majority of the Cuban population has ready access to railroad service. Railroad transportation has played an important part in Cuba’s economy for many decades, hauling primarily sugar and tobacco commodities. Passengers using railroad transportation has been equally important, particularly during the last decade as gasoline and diesel fuel shortages/rationing have reduced automotive traffic.

Equipment problems, however, are many. In addition to great diversity of equipment, the system is plagued with poor maintenance of rolling stock and tracks, and lack of fuel. As of 2003, the island's railroad system had about 8 thousand miles of track. Forty percent of the system is dedicated to freight/passenger service; the balance to the sugar sector is in full decline. Most of the narrow gauge track is now effectively out of commission or was converted to standard track gauge. The railroads comprise about 7,955 miles of track, of which 3,045 miles carry both passenger traffic and cargo.

Beginning in the late 1970s, the reconstruction of the Central Railroad network was initiated in order to increase its speed, capacity and safety. The railroad equipment included diesel locomotives manufactured in the Soviet Union and Hungary, as well as a number made in Argentina. In spite of these efforts, the equipment, particularly the locomotives, remain inefficient in the use of fuel by comparison to North American and European standards. Recently second hand equipment from Canada, and brand new equipment from China has been incorporated and most of the Soviet bloc locomotives discontinued.

Generally, the main lines have been rehabilitated and maintained to high standards with heavy rail and concrete ties: speeds of 70 mph+ are common. Inter-city passenger trains are generally slower due to frequent stops, but they are well patronized; while reserved seats are sold, standing is common.

There are 1,256 railway stations in Cuba, of which 258 are considered in good operational condition, including warehouse facilities, tanking for fuels, some with repair shops, etc. There are a number of industrial facilities for assembly and reconstruction of boxcars, specialized railcars, and the production of rails, wheels and spare parts. There are twenty-four maintenance and repair shops scattered around the country, the largest at Havana (2) and Camaguey.



**Fig. 3: Railroad network in Cuba**

Railway is one of the most important transportation systems in the country, accounting for 43% of cargoes and 37% of passengers, for long haul trips it is still a higher percentage.

- Total: 11,968 km (4,226 km + 7,742 km)
- standard gauge: 4,226 km 1,435 mm (4 ft 8 1/2 in) gauge (140 km electrified)
- note: an additional 7,742 km of track is used by sugar plantations; about 65% of this track is standard gauge; the rest is narrow gauge (2003)

Cuba built the first railway system in the Spanish empire, before the 1848 start in the Iberian peninsula. While the rail infrastructure dates from colonial and early republican times, passenger service along the principal Havana to Santiago corridor is increasingly reliable and popular with tourists who can purchase tickets in Cuban convertible pesos. As with most public transport in Cuba, the vehicles used are second hand, and the flagship Tren Francés ("French train") between Havana and Santiago de Cuba is operated by coaches originally used in Europe between Paris and Amsterdam on the ex-TEE express. The train is formed by 12 coaches and a Chinese-built locomotive.



**Fig. 4: Santiago de Cuba Train Station**

With the order of 12 new Chinese locomotives, built specially for Cuban Railways at China Northern Locomotives and Rolling Stock Works, services have been improving in reliability. Those benefiting the most are long distance freight services with the French train Havana-Santiago being the only passenger train using one of the new Chinese locomotives regularly. Various orders are in place for 100 locomotives from China and various freight wagons and passenger coaches.

Metro systems are not present in the island, although a suburban rail network exists in Havana. Urban tramways worked until the half of 20th century in the cities of Havana, Matanzas, Cárdenas, Cienfuegos, Camagüey and Santiago de Cuba.

Ferrocarriles de Cuba uses 1,435 mm (4 ft. 8 1/2 in) (standard gauge) that extends from Guane (province Pinar del Río) in the westernmost part of the island up to the bay of Guantánamo in the eastern part. The 835 km central railway runs from Havana to Santiago de Cuba in the eastern region. Most of the 4,226 km is diesel with 140 km electrified. The flagship Train Number 1 travels between Havana and Santiago de Cuba. Other long distance passenger services link Havana to Pinar del Río (western railway), Cienfuegos (South branch), Sancti Spiritus, Bayamo-Manzanillo and Guantanamo. The network connects the six first level ports in Cuba: Havana, Mariel, Matanzas, Cienfuegos, Nuevitás and Santiago de Cuba, as well as, all province capital cities.



**Fig. 5: Double track line Havana – Mariel Special Economic Zone**

The Hershey Electric Railway is an electrified railway from Havana to Matanzas that was built by the Hershey Company in order to transport workers and products after it had bought sugar plantations in 1916. It is a commuter service running in northern Havana and Matanzas provinces using some original equipment.



**Fig. 6: Havana – Matanzas Hershey suburban train**

On September 25, 2007, investors from the Venezuelan Bank for Socio-Economic Development (BANDES) reached an agreement with transportation officials in Cuba to invest US\$100 million for infrastructure improvements and repairs to Cuba's rail network. The work is expected to help increase the average speed of trains on Cuba's railways from 40 km/h (25 mph) to 100 km/h (62 mph). As part of the agreement, Cuban engineers will also work on similar projects on Venezuela's rail network. In October 2007, the

Cuban railways ordered two hundred passenger cars and 550 freight wagons from Iranian manufacturer Wagon Pars. Deliveries started in 2009 and completed in 2012. In May 2010, the Cuban government announced wide-ranging plans to repair the railway network, buy new rolling stock, and open four centers for training railway workers.

Model	Manufacturer	Numbers	Notes
TE114K Diesel locomotive [ru]	Voroshilovgrad Locomotive Factory, USSR	108	
TEM2TK Diesel locomotive [ru]	Bryansk Engineering Works [ru], USSR	79	
DVM-9 diesel electric locomotive	Ganz-MÁVAG, Hungary	70	
MX624 Diesel locomotive	MLW, Canada	50	imported in 1976
G8 Diesel locomotive	General Motors Electro-Motive Division, USA	51	
TEM4 Diesel locomotive	Bryansk Engineering Works [ru], USSR	40	
O40-DE diesel electric locomotive	Brissonneau et Lotz, France	42	Similar to French BB 63000 [fr]
TEM15 Diesel locomotive	Voroshilovgrad Locomotive Factory, USSR	25	
M62K Diesel locomotive	Voroshilovgrad Locomotive Factory, USSR	20	
C30-7 Diesel locomotive	GE Transportation Systems, USA	19	Acquired via Mexico
BR 771 railbusses [de]	VEB Waggonbau Bautzen, GDR	17	all sold after 2000
BR 971 railbusses [de]	VEB Waggonbau Bautzen, GDR	3	
BR 772 railbusses [de]	VEB Waggonbau Bautzen, GDR	15	
BR 972 railbusses [de]	VEB Waggonbau Bautzen, GDR	22	
DF7G-C diesel electric locomotive	CNR Beijing February 7 Locomotive Works, China	47/112	again supplied 2005/2006/2008–2009–2010
DF7K-C diesel electric locomotive	CNR, China	5	First 5 arrived in 2008
GMD1 Diesel locomotive	General Motors Electro-Motive Division, Canada	20	From Canadian National Railway to Cuba in 1999

Passenger coaches	Hawker Siddeley Canada, Canada	assorted	From Ferrocarriles Nacionales de México
TEE Mistral 69			From SNCF

## Havana Commuter Railway

The Havana Suburban Railway is a passenger rail network serving the city of Havana, capital of Cuba, and its suburbs. Owned by the national company Ferrocarriles de Cuba, it represents the one of the two suburban rail systems of the Caribbean (the other at San Juan, Puerto Rico).

Outside Havana, the network serves some towns of its metropolitan area in Artemisa and Mayabeque provinces. A little part of Matanzas Province is served by the only electrified line of Cuba, the Hershey Electric Railway from Havana Casablanca station to Matanzas.

Plans for the construction of a rapid transit network in Havana had already been studied in 1921. Other plans for a subway, based on Russian networks, were studied in the late 1970s and 1980s, due to the relations between Cuba and the USSR. After the Soviet dissolution of 1991 and to the consequent lack of funds of Cuban government, the plans for a Havana Metro were abandoned.

The network consists of 8 lines, departing from the 3 terminal stations of Havana: Central (4 lines), Tulipán (or 19 de Noviembre, 3 lines) and Casablanca (1 line).

<b>1</b>	Havana Central ↔ Hv Cotorro ↔ San José de las Lajas ↔ Güines ↔ Palos
<b>2</b>	Havana Central ↔ Hv Calabazar ↔ Hv Aeropuerto T1 ↔ Hv Santiago de Las Vegas ↔ Bejucal
<b>3</b>	Havana Central ↔ Hv Parque Lenin ↔ Hv ExpoCuba
<b>4</b>	Havana Central ↔ Hv Guanabo Viejo ↔ Hv Playa de Guanabo[3]
<b>5</b>	Havana Tulipán ↔ Hv Rincón ↔ San Antonio de los Baños
<b>6</b>	Havana Tulipán ↔ Hv Rincón ↔ Güira de Melena ↔ Alquízar ↔ Artemisa (West Line)
<b>7</b>	Havana Tulipán ↔ Hv Rincón ↔ Bejucal ↔ Batabanó (South Line)
<b>8</b>	Havana Casablanca ↔ Hv Guanabo Viejo ↔ Santa Cruz del Norte ↔ Matanzas (Hershey Line)

**Note: the stations marked with "Hv" are located in the city of Havana.**

The network has limited use as urban transport inside the densely populated areas of the city and is primarily conceived to serve the suburbs and towns surrounding the capital. The price is very cheap and is subsidized by the government. Train frequency is low and varies between 2 and 5 daily departures per route and convoys are composed of 2 or 3 cars and diesel locomotives . Several stations are linked to the MetroBus, a bus network and the principal public urban transport of Havana. On 2015 the Cuban government is making efforts to revitalize the rail network and expand the service, including a more effective inter-modal system.

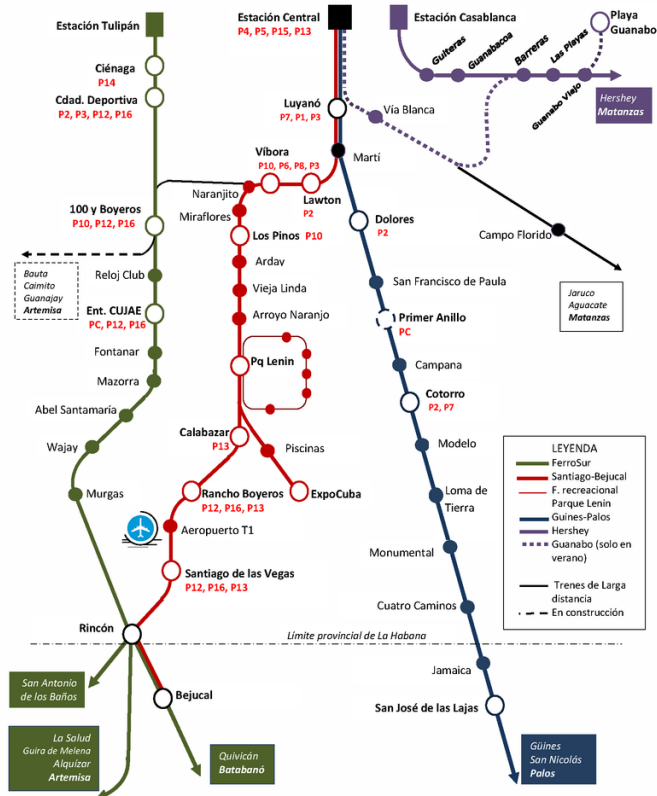


Fig. 7: Sketch of Havana Suburban Railway System

Annual passengers transported 2009-14						
	2009	2010	2011	2012	2013	2014
Total	7.7	10.0	10.5	10.8	10.9	11.5
Passengers	million	million	million	million	million	million

Long-distance intercity rail lines from Havana Central Station		
Train Route #	Destination	Notes
1	Santiago de Cuba	<ul style="list-style-type: none"> <li>The express flagship "Tren Francés" ("French Train").</li> <li>Stops in Santa Clara and Camagüey.</li> <li>Offers "first class" service with air-conditioning, and cafeteria car.</li> </ul>
3	Ciego de Ávila	Final destination is the city of Morón
11	Santiago de Cuba	<ul style="list-style-type: none"> <li>Stops in all major cities.</li> <li>Services offered: buffet, air-conditioning, reclining seats, restrooms, and hostesses.</li> </ul>

11/30	Guantánamo	via Santiago de Cuba
13	Bayamo	-
13/32	Manzanillo	via Bayamo
15	Holguín	<ul style="list-style-type: none"> <li>Stops in all major cities. Not air-conditioned.</li> <li>Services offered: restrooms, reclining seats, and hostesses.</li> </ul>
17	Sancti Spiritus	-
19	Cienfuegos	Evening departure
21	Cienfuegos	Morning departure
23	Pinar del Río	-

## Importance of Railroads to Cuba's National Economic Development

Rail transportation has played an important part in Cuba's economy for many decades, with its railroad hauling primarily sugar and tobacco commodities. The overwhelming majority of the Cuban population has ready access to railroad service.

Cuba's railroad, the Union de Ferrocarriles de Cuba (UFC), is operated as a fully integrated state enterprise by Cuba's Ministry of Transport. Current staffing remains high for the size and volume generated by this system.

Although the rail infrastructure is in need of maintenance, upgrading and/or modernization, a more critical need in the near term is the replacement of locomotives and other rolling stock.

Intermodal (rail/truck/maritime) traffic between Cuba and the U.S. will be vital to successfully transition the controlled economy to a free market-driven economy. Such economic transition must occur quickly and effectively in order to achieve efficient, on-time delivery of services to potential customers, both in the U.S. and Cuba. Furthermore, container traffic moved by rail to distribution centers and/or the end customer is vital for the UFC itself to become profitable.

Currently, rail access to/from ports appears to be haphazard. Access to piers often is nonexistent, inadequate, e.g., one rail spur only, or in need of maintenance and repairs. Since intermodal traffic would be a major key to economic success in a free Cuba, every effort should be made early on to focus on improving rail access to/from ports.

Cuba's railroad is currently operated as a fully integrated state enterprise by Cuba's Ministry of Transport. The UFC employs approximately 23,000 staff, although moderate staff reductions have been made in recent years. Current staffing remains high for the size and volume generated by this system, but is not atypical from other government-owned and -operated systems around the world.

The UFC operates approximately 3,200 miles (5,000 km) of so-called standard gauge track. The main artery of this standard gauge line runs along the spine of Cuba, which has been nominally maintained, including for purposes of military shipments. An additional 4,400 miles (7,000 km) of predominantly narrow-gauge rail trackage is operated by

approximately 80 plantation railroads that haul cargo to and from the UFC mainlines. The majority of commodities carried are related to the tobacco and sugar industries. According to various economic reports and databases, more than 70 plantations and their related rail systems have ceased operation in recent years.

Only 95 miles of tracks in Cuba are electrified. This electrified section is used for commuter passenger traffic between Havana and Matanzas.



**Fig. 8: Passenger train departing Havana to Santiago de Cuba**

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A1 project through Granma and Holguín provinces is yet undefined

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Cuban Railways at seat61.com

## For more information, contact:

BG Consultants, Inc.

Tel: 1 (305) 884-0441

Email: [info@BGConsultants.net](mailto:info@BGConsultants.net)

Web: [www.BGConsultants.net](http://www.BGConsultants.net)

PO Box 546135

Miami, FL 33154

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