

Benefit Cost Analysis for the San Juan Multi-Modal Transportation System: Infrastructure and Safety Improvements

Final

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EXECUTIVE SUMMARY

The Puerto Rico Infrastructure Financing Authority (PRIFA) requests \$12.44 million in TIGER funds as part of the \$24.87 million project for the Improvements to the Puerta de Tierra Pedestrian Walkway and connections to Puerto Rico's Convention Center District, San Juan's Central Park, the Puerto Rico Coliseum, Acuaexpreso ferry and Tren Urbano rail services, and San Juan's Hato Rey district.

The proposed project is part of ongoing public works enhancements to Puerta de Tierra's transportation infrastructure, including increased accessibility via pedestrian walkways, cycling paths, and optimized mass-transit. Currently, the first two improvement phases are under construction. These phases include centralizing the Islet of San Juan's bus routes, building state-of-the-art bus stops, and improving pedestrian surfaces in the Puerta de Tierra district. Phases 3, 4, and 5 are undergoing design and will proceed to bidding process in Q3 2014. The proposed project includes phases 6 to 9, which involve continued improvements to Puerta de Tierra's local roads and completion of the district's pedestrian walkway and cycling path circuit loop in Puerta de Tierra as well as to Puerto Rico's Convention Center, Central Park and Coliseums. The economic benefits of the proposed development can be summarized as follows:

TABLE 1: PROJECT ECONOMIC BENEFITS SUMMARY

Current Status / Baseline	Change to Baseline (20 year period) + or -	Types of Impacts	Population / Drivers Affected	Type of Benefit	Summary of Results (NPV 20 years, mil\$)	Page in Ref.
70,437 ADT	-6,575 ADT	Maintenance & Repairs Savings	63,862 vpd	State of Good Repair	\$3.15	11
60.14 million hours	-4.33 million hours	Travel Time Savings	63,862 vpd	Economic Comp.	\$12.67	12
70,437 ADT	-6,575 ADT	Operating Cost Savings	63,862 vpd	Economic Comp.	\$47.14	13
23,179 accidents	-10,440 accidents	Reduced Accidents	63,862 vpd	Safety	\$25.89	15
2.1 million tons CO2	-136,725 tons CO2	Emission Benefits	63,862 vpd	Sustainability	\$8.87	16
0 people	+625 people	Transit and Bicycle path Benefits	63,862 vpd	Livability / Quality of Life	\$7.76	18
70,437 ADT	-6,575 ADT	Noise Pollution Reduction	63,862 vpd	Livability / QL	\$0.32	20
Life-Cycle Benefit (in millions of dollars):					\$105.79	-

The proposed urban development cost can be summarized as follows:

TABLE 2: PROPOSED URBAN DEVELOPMENT COST

Year	(in thousands of dollars)			TOTAL COSTS (in dollars)	
	Construction	SUBSEQUENT COSTS		Constant Dollars	Present Value
		Maint./ Op.	Rehab.		
Construction Period					
1	\$8			\$8,333	\$8,333
2	104			103,547	97,686
3	12,701			12,700,810	11,303,676
4	12,058			12,057,795	10,123,957
Project Open					
1		\$1,408		\$1,408,486	\$1,115,653
2		1,408		1,408,486	1,052,503
3		1,408		1,408,486	992,927
4		1,408		1,408,486	936,724
5		1,408		1,408,486	883,702
6		1,408		1,408,486	833,681
7		1,408		1,408,486	786,491
8		1,408		1,408,486	741,973
9		1,408		1,408,486	699,974
10		1,408		1,408,486	660,353
11		1,408		1,408,486	622,975
12		1,408		1,408,486	587,712
13		1,408		1,408,486	554,445
14		1,408		1,408,486	523,062
15		1,408		1,408,486	493,454
16		1,408		1,408,486	465,523
17		1,408		1,408,486	439,173
18		1,408		1,408,486	414,314
19		1,408		1,408,486	390,862
20		1,408		1,408,486	368,738
Total	\$24,870	\$28,170	\$0	\$53,040,205	\$35,097,889

The Total Life Cycle Cost is the total net present value (NPV) of the construction and maintenance cost of the proposed roads and urban infrastructure. The NPV of the total life cycle cost for the proposed development is of \$35.1 million. A benefit cost ratio of 3.0 results by dividing the life-cycle benefits from the life-cycle cost of the proposed development. A BC ratio greater than (1) signifies that the proposed project is beneficial and economically feasible. As of this analysis the proposed urban infrastructure development is beneficial and economically feasible.

INTRODUCTION

Estudios Técnicos Inc., was engaged by the Puerto Rico Infrastructure Financing Authority (PRIFA) to conduct a cost-benefit analysis for the proposed improvements to the Puerta de Tierra pedestrian walkways and connections to the Convention Center and Coliseum in the Municipality of San Juan, Puerto Rico. The analysis was completed for PRIFA as a requirement of a discretionary grant application for the TIGER VI program and it was conducted in accordance with the benefit-cost methodology as recommended by the US DOT in the Federal Register, OMB Circulars A-4, A-94 and the *2014 Benefit-Cost Analysis Guidance for Tiger Grant*.

PROJECT DESCRIPTION

The Puerto Rico Infrastructure Financing Authority (PRIFA) requests \$12.44 million in TIGER funds as part of the \$24.87 million project for the Improvements to the Puerta de Tierra Pedestrian Walkway and connections to Puerto Rico's Convention Center District, San Juan's Central Park, Acuaexpreso ferry and Tren Urbano rail services, the Puerto Rico Coliseum, and San Juan's Hato Rey district.

The proposed project is part of ongoing public works enhancements to Puerta de Tierra's transportation infrastructure, including public increased accessibility via pedestrian walkways, cycling paths, and optimized mass-transit. Currently, the first two improvement phases are under construction. These phases include centralizing the Islet of San Juan's bus routes, building state-of-the-art bus stops, and improving pedestrian surfaces in the Puerta de Tierra district. Phases 3, 4, and 5 are undergoing design and will proceed to bidding process in Q3 2014. The proposed project includes phases 6 to 9 which are the continued improvements to local roads in Puerta de Tierra as well as to Puerto Rico's Convention Center, Central Park and Coliseums.

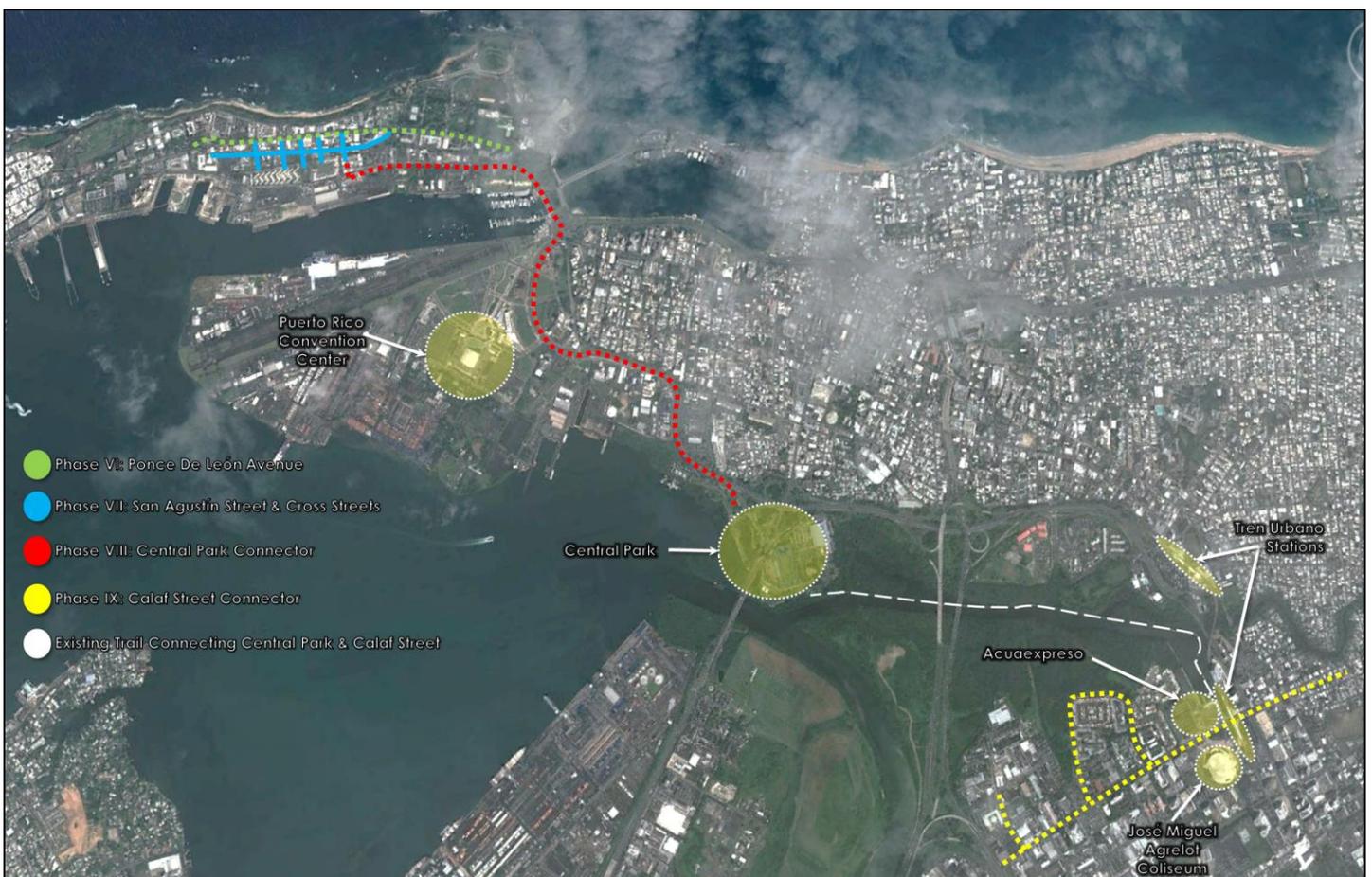


FIGURE 1: PROPOSED PROJECT IMPROVEMENTS TO PUERTA DE TIERRA ROADS, WALKWAYS AND CONNECTION TO THE CENTRAL PARK, CONVENTION CENTER AND COLISEUM IN SAN JUAN

Each improvement phase proposed within this Grant Application has independent utility. Each phase also facilitates ladders of opportunity by: creating and improving connections between our citizenry and important centers of employment, education, and services; removing barriers to connected transportation systems; and promoting labor development and mobility to generate regional and economic growth.

A brief description of each construction phase is described below:

- **Phase 6** – This phase considers the improvements of 1.11 miles of existing walkways and new bicycle paths adjacent to Ponce De Leon Avenue. This phase will also convert Ponce de León Avenue from a one-way road to a two-way thoroughfare with orderly parallel parking spaces on both sides. This segment will link Old San Juan to Condado through Puerta de Tierra's business district along Ponce de León Avenue.
- **Phase 7** – this phase consists of two components: (1) improvements to San Agustín Street's urban landscape to increase mobility and accessibility; and (2) improvements to 4 principal cross streets that will connect the new, state-of-the-art metro-bus stops to the district's neighborhoods, a 0.9 mile pedestrian walkway, and main traffic arteries.
- **Phase 8** – This important phase consists of a 1.74 mile pedestrian and cycling path between Luis Muñoz Rivera Park in the Islet of San Juan and Central Park in mainland San Juan. Central Park Connector will combine with Paseo Lineal Martí Coll to form a 3.82 mile pedestrian and cycling corridor that provides a non-motorized connection from Puerto Rico's main government and tourism hubs in the Islet of San Juan to the island's main financial and commercial hubs in San Juan's Hato Rey district. This pedestrian and cycling corridor will also provide Islet of San Juan residents, commuters, and visitors a safe, reliable, non-motorized connection directly to Puerto Rico's regional ferry and rail service in Hato Rey.
- **Phase 9** – This phase will provide multi-modal transportation connections across mixed-use, low-income, commercial, and banking communities along Juan Calaf Street and select transversal streets in San Juan's Hato Rey district. Improvements include surface enhancements, dedicated cycling lanes and a continuous pedestrian walkway. The 2.34 mile pedestrian walkway and bicycle path in Calaf Street will connect socio-economically diverse communities to maritime, rail, metro-bus, cycling, and pedestrian transportation access points.

Please refer to *Appendix 1* for more maps detailing the proposed construction and phases. Following is the project schedule of completion for all proposed construction phases of the Puerta de Tierra Walkways, roads, and connectors in San Juan:

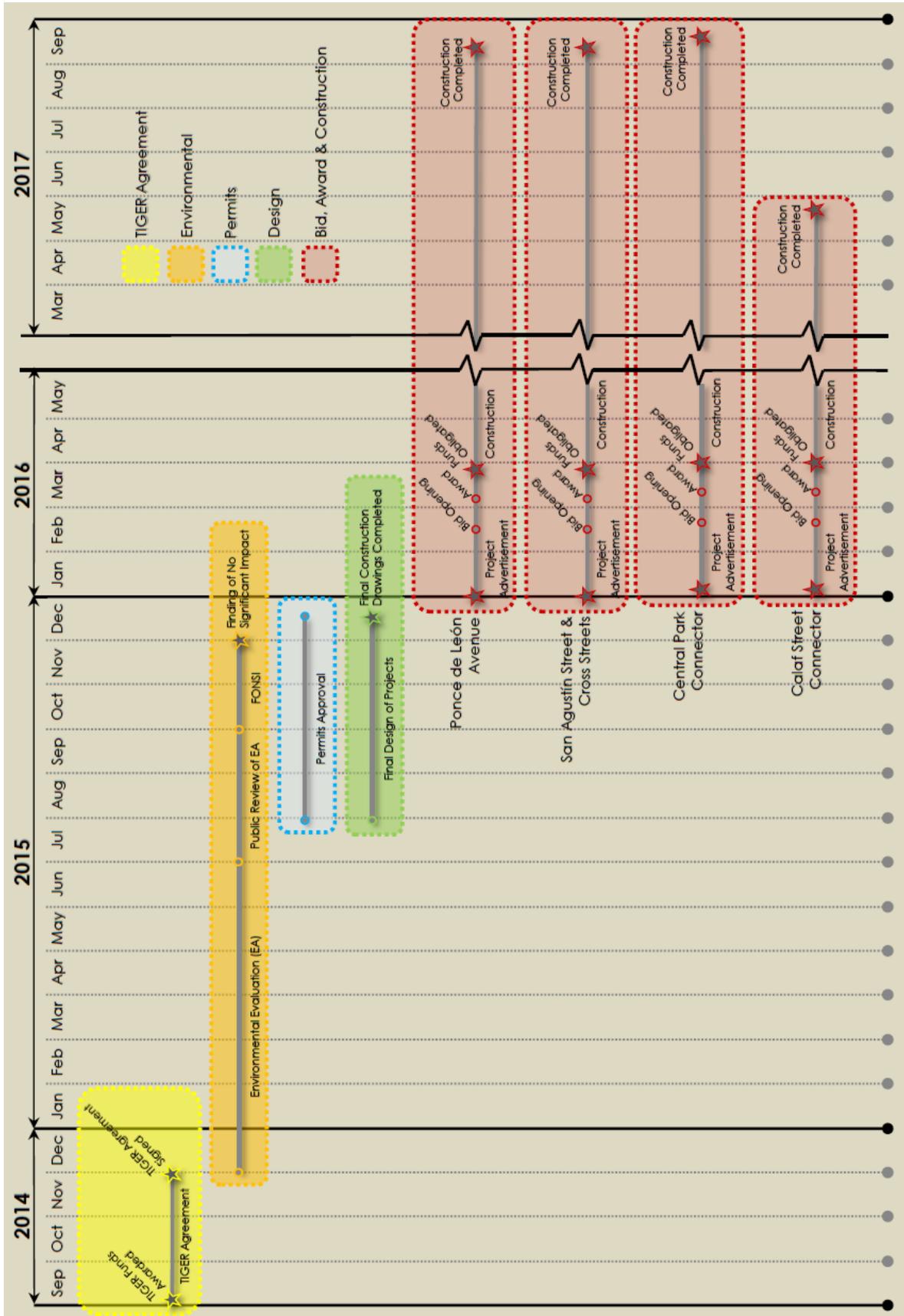


FIGURE 2: SCHEDULE OF COMPLETION FOR ALL PROPOSED CONSTRUCTION

ASSUMPTIONS

The Benefit/Cost ratio is computed by dividing the increase in benefits by the increase in costs of construction and land acquisition. Thus, the B/C ratio shows the incremental benefits or costs for the build scenario in comparison to the "no-build" scenario. Some of the assumptions used in the benefits calculations are as follows.

Traffic Generation Model

As per the information provided by consulting firm Steer Davies Gleave, the Actual Average Daily Traffic (ADT) in the main intersection of Puerta de Tierra Island (from Dos Hermanos Bridge to the entrance of Third Millennium Park) is of 20,495. The Actual ADT for the impacted length of PR-1 / Baldorioty Ave. is 16,384 and Calaf Street is 33,558 vehicles. For the purpose of the cost benefit analysis the average daily traffic (ADT) of the three impacted roads are added and it is assumed that the actual average travel speed in these roads is of 35 mph. The total ADT for the three roads is of 70,437.

The demand projection model performed by Steer Davis Gleave resulted in the following 20-year traffic forecasts if the urban infrastructure development was built or not built.

- **No Build Scenario** – Traffic increase of 1% each year creating a combined ADT of 85,096 in the entrance of Puerta de Tierra and the old city of San Juan, PR-1 and Calaf Street.
-
- **Build Scenario** – Due to better road conditions and improved pedestrian and bicycle paths traffic congestion will decrease in the impacted roads from 70,437 to 63,862 vehicles per day. This assumes a decongestion of 6,575 vehicles per day. Also, the traffic decongestion assumes that average speeds in the impacted roads will remain to 35 mph and that the vehicle miles traveled (VMT) will remain the same since it is improvements to existent roads.

Traffic projections were estimated based on the calculations published by the Trip Generation Manual, 7th Edition by ITE, the transit generation program TRICS, and the SATURN traffic network model.

Economic Assumptions

To evaluate the benefits and the present value of the costs the following were considered:

1. **Evaluation Periods:** A construction period of four years and an evaluation period of 20 years after the project is completed.
2. **Economic Update Factor:** Based on the historical price index of Gross Domestic Product (GDP) growth for Puerto Rico an economic update factor of 2.5% each year or 1.64 economic index factor (1.025^{20}) is assumed. GDP and Growth information was acquired from the Puerto Rico Planning Board in their publication *Economic Report to the Governor 2013*. An average discount rate of 6% was used to calculate the present value
3. **Average Hourly Wage:** an average wage of \$13.12 per hour in Puerto Rico for 2014 was obtained from Puerto Rico's Department of Labor.
4. **Average Fuel Price:** average fuel prices of \$3.51 per gallon for regular gasoline were obtained from Puerto Rico Department of Consumer Affairs (DACO). Diesel fuel prices were not used because it is assumed that trucks will be limited in the proposed roads of the Science City Urban Infrastructure.
5. **Sales and Fuel Taxes:** State tax rate of 5.5% and average local sales tax rate of 1.5% for San Juan was obtained from the Puerto Rico Department of Treasury (Hacienda).
6. **Cost of Highway Accidents and Fatalities:** were based on Federal averages and the TIGER BCA Resource Guide 2014 that suggest values of injuries by type of AIS level. The suggested values by accident were adjusted to Puerto Rico economy by applying the ratio of personal income between Puerto Rico and the United States, and by taking into account Puerto Rico's inflation trends. The adjustment factor considered in cost per injury was of 38.8% since Puerto Rico's personal income per capita is 38.8% below the United States.

TABLE 3: COST PER INJURY

AIS Level	Description	US	PR
AIS 6	Unsurvivable	\$ 9,200,000	\$ 5,630,932
AIS 5	Critical	\$ 5,455,600	\$ 3,339,141
AIS 4	Severe	\$ 2,447,200	\$ 1,497,802
AIS 3	Serious	\$ 966,000	\$ 591,228
AIS 2	Moderate	\$ 432,400	\$ 264,569
AIS 1	Minor	\$ 27,600	\$ 16,887
AIS 0	No Injury - PDO	\$ 2,816	\$ 1,723

Source: FHA, FHWA, TIGER BCA Resource Guide 2014

7. **State Highway Accident Rates:** Accident rates were obtained from the historical statistics of Puerto Rico's Department of Highway and Transportation.
8. **Project Design and Project Costs:** were provided by the client (PRIFA).

9. **Emission Rates / Tables:** emission rates were obtained from the California Air Resources Board, EMFAC 2011. Below the emission tables:

TABLE 4: EMISSIONS TABLE

EMISSIONS FACTORS (g/mi)							
Year 1							
Mode	Speed	CO	CO ₂	NO _x	PM ₁₀	SO _x	VOC
Auto	0	5.2339	79.62	0.3731	0.0044	0.0000	0.7131
	5	5.7109	1200.44	0.4530	0.0640	0.0122	0.6503
	10	4.7606	891.61	0.3940	0.0575	0.0091	0.4751
	11	4.6222	850.74	0.3852	0.0567	0.0087	0.4539
	12	4.4838	809.87	0.3764	0.0559	0.0083	0.4326
	13	4.3453	769.00	0.3677	0.0551	0.0079	0.4114
	14	4.2069	728.13	0.3589	0.0543	0.0075	0.3901
	15	4.0685	687.26	0.3502	0.0535	0.0071	0.3689
	16	3.9674	659.79	0.3438	0.0531	0.0068	0.3558
	17	3.8664	632.31	0.3373	0.0526	0.0065	0.3428
	18	3.7653	604.84	0.3309	0.0521	0.0063	0.3298
	19	3.6643	577.36	0.3245	0.0516	0.0060	0.3168
	20	3.5632	549.88	0.3181	0.0512	0.0057	0.3038
	21	3.4877	531.23	0.3134	0.0509	0.0055	0.2958
	22	3.4122	512.58	0.3087	0.0506	0.0053	0.2878
	23	3.3367	493.93	0.3040	0.0503	0.0051	0.2798
	24	3.2612	475.28	0.2993	0.0500	0.0050	0.2718
	25	3.1857	456.63	0.2947	0.0497	0.0048	0.2638
	30	2.9010	393.55	0.2781	0.0487	0.0041	0.2387
	35	2.6883	351.97	0.2672	0.0481	0.0037	0.2231
	40	2.5368	326.63	0.2609	0.0477	0.0034	0.2142
	45	2.4427	314.51	0.2589	0.0475	0.0033	0.2104
	50	2.4093	314.17	0.2609	0.0474	0.0033	0.2111
	60	2.5851	350.18	0.2774	0.0476	0.0037	0.2270
	70	3.2311	418.75	0.3038	0.0481	0.0044	0.2647
	80	4.4902	420.01	0.3079	0.0482	0.0044	0.3186

EMISSIONS FACTORS (g/mi)							
Year 20							
Mode	Speed	CO	CO ₂	NO _x	PM ₁₀	SO _x	VOC
Auto	0	1.3628	80.38	0.0771	0.0049	0.0000	0.2019
	5	1.3760	1208.90	0.1323	0.0584	0.0122	0.1693
	10	1.2511	898.02	0.1160	0.0534	0.0091	0.1286
	11	1.2273	856.86	0.1135	0.0528	0.0087	0.1235
	12	1.2034	815.71	0.1109	0.0523	0.0083	0.1185
	13	1.1796	774.55	0.1084	0.0517	0.0079	0.1135
	14	1.1558	733.40	0.1058	0.0511	0.0075	0.1085
	15	1.1320	692.24	0.1033	0.0505	0.0071	0.1035
	16	1.1120	664.57	0.1014	0.0502	0.0068	0.1005
	17	1.0920	636.90	0.0994	0.0499	0.0065	0.0975
	18	1.0721	609.23	0.0975	0.0495	0.0062	0.0944
	19	1.0521	581.56	0.0955	0.0492	0.0060	0.0914
	20	1.0322	553.89	0.0936	0.0488	0.0057	0.0884
	21	1.0154	535.11	0.0921	0.0486	0.0055	0.0865
	22	0.9985	516.34	0.0906	0.0484	0.0053	0.0847
	23	0.9817	497.56	0.0891	0.0482	0.0051	0.0828
	24	0.9649	478.79	0.0876	0.0480	0.0049	0.0809
	25	0.9481	460.01	0.0862	0.0478	0.0048	0.0791
	30	0.8774	396.50	0.0806	0.0472	0.0041	0.0734
	35	0.8188	354.67	0.0767	0.0468	0.0037	0.0701
	40	0.7716	329.19	0.0740	0.0465	0.0034	0.0686
	45	0.7362	317.03	0.0726	0.0464	0.0033	0.0685
	50	0.7144	316.79	0.0723	0.0463	0.0033	0.0699
	60	0.7293	353.35	0.0750	0.0464	0.0037	0.0780
	70	0.9173	422.99	0.0806	0.0468	0.0044	0.0984
	80	1.6204	425.77	0.0828	0.0469	0.0044	0.1463

Source: California Air Resources Board, EMFAC 2011

Notes: 1) Zero mph corresponds to starts, 2) Other emissions factors include idling emissions and exclude diurnal and evaporative emissions, 3) Five mph is best estimate for idling

Benefits such as travel time savings, operating costs, accident reductions, and Emission Costs and factors were calculated using the formulas in the Cal-B/C model v5.0¹. The model was modified to account for Puerto Rico's economic factors (discount rates, update factor, value of time / hourly rate, gasoline price, accident costs) as previously discussed. All other benefits and costs were estimated by Estudios Técnicos, Inc. using FHA parameters. Based on these parameters, we can calculate the economic benefits of the proposed urban infrastructure.

¹ Latest model available at Caltrans http://www.dot.ca.gov/hq/tpp/offices/eab/LCBC_Analysis_Model.html

ECONOMIC BENEFITS

The following identifies and groups the benefits included in the Benefit Cost analysis for the Puerta de Tierra road and walkway improvements and connections.

State of Good Repair

Maintenance and Repair Savings – Reduction in Pavement Damage

Pavement damage is caused by automobile traffic for each mile traveled. Since the proposed improvements will reduce traffic, the maintenance to the roads impacted will also reduce. Overall, there will be less damage to the highways and roads that will be impacted by the improvements and the proposed pedestrian walkways and bicycle paths. The proposed development and the overall roadway system will remain in better condition.

This analysis uses the U.S. Federal Highway Administration's Federal Highway May 2000 Addendum to the 1997 Federal Highway Cost Allocation Study, table 13², which states that automobiles in urban highways and roads incur a marginal cost to pavement of 0.1 cents per vehicle-mile traveled. This rate was adjusted to 2017 dollars, when the roads and paths are expected to be operational. If we take into consideration that the improvements will decrease vehicles per day by 6,575 the first year of operations and the miles traveled are of 3.72 miles, then we can estimate that the savings of future maintenance and repairs of paving PR-1, Muñoz Rivera Expressway and Calaf Street would be of \$3.15 million dollars.

This benefit calculation considers the present value, an increase in ADT and pavement marginal cost of 1% each year.

TABLE 5: PAVEMENT MAINTENANCE & REPAIR SAVINGS

Operational Year	Reduced ADT	Miles VMT	Marginal Cost per VMT	Constant Dollars	Present Value of Benefits / Savings
1	6,575	3.72	0.0260	\$ 232,116	\$ 183,858
2	6,641	3.72	0.0270	\$ 243,454	\$ 181,923
3	6,707	3.72	0.0280	\$ 254,995	\$ 179,762
4	6,774	3.72	0.0290	\$ 266,743	\$ 177,400
5	6,842	3.72	0.0300	\$ 278,701	\$ 174,860
6	6,910	3.72	0.0310	\$ 290,871	\$ 172,166
7	6,979	3.72	0.0320	\$ 303,256	\$ 169,337
8	7,049	3.72	0.0330	\$ 315,860	\$ 166,391
9	7,120	3.72	0.0340	\$ 328,686	\$ 163,347
10	7,191	3.72	0.0350	\$ 341,737	\$ 160,220
11	7,263	3.72	0.0360	\$ 355,016	\$ 157,024
12	7,336	3.72	0.0370	\$ 368,526	\$ 153,773
13	7,409	3.72	0.0380	\$ 382,271	\$ 150,480
14	7,483	3.72	0.0390	\$ 396,254	\$ 147,155
15	7,558	3.72	0.0400	\$ 410,479	\$ 143,809
16	7,633	3.72	0.0410	\$ 424,948	\$ 140,451
17	7,710	3.72	0.0420	\$ 439,666	\$ 137,090
18	7,787	3.72	0.0430	\$ 454,636	\$ 133,733
19	7,865	3.72	0.0440	\$ 469,861	\$ 130,389
20	7,943	3.72	0.0450	\$ 485,345	\$ 127,062
Total Savings / Benefits				\$7,043,421	\$ 3,150,228

² Addendum to the 1997 Federal Highway Cost Allocation Study Final Report U.S. Department of Transportation Federal Highway Administration May 2000 - <https://www.fhwa.dot.gov/policy/hcas/addendum.htm>

TABLE 6: SUMMARY OF TRAVEL BENEFITS

Year	Present Value of Travel Time Benefits	Constant Dollars	Total Per-Hrs of Time Saved
1	\$767,495	\$968,944	147,930
20	\$526,656	\$2,011,695	307,129
2	\$750,608	\$1,004,483	153,356
3	\$734,186	\$1,041,457	159,001
4	\$718,232	\$1,079,955	164,879
5	\$702,745	\$1,120,069	171,003
6	\$687,728	\$1,161,902	177,390
7	\$673,180	\$1,205,563	184,055
8	\$659,102	\$1,251,173	191,019
9	\$645,494	\$1,298,860	198,299
10	\$632,354	\$1,348,766	205,919
11	\$619,684	\$1,401,045	213,900
12	\$607,481	\$1,455,863	222,269
13	\$595,746	\$1,513,403	231,054
14	\$584,477	\$1,573,864	240,285
15	\$573,675	\$1,637,464	249,994
16	\$563,339	\$1,704,439	260,220
17	\$553,470	\$1,775,052	271,000
18	\$544,066	\$1,849,586	282,380
19	\$535,128	\$1,928,354	294,405
Total	\$12,674,845	\$28,331,938	4,325,487

Source: Formulas and Calculations from Edited Cal B/C Model and ETI Estimates

The results of the travel time benefits are about 4.3 million hours of time saved over a 20-year period or an average of 216,274 hours of time saved per year. Time savings arise from less congestion due to fewer cars in the improved roads which translate into a net present value savings of \$12.7 million over a 20 year period.

Vehicle Operating Cost (VOC) Savings

Another benefit of constructing the proposed set of roads is that it would create savings in vehicle operating costs (fuel use, vehicle wear and tear, etc. due to improved speed). These benefits are calculated as follows:

1. Using the base and future-year ADT projections we multiply the affected segment length to find annual VMT (Vehicle-Miles-Traveled) in scenarios, BUILD and NO BUILD, as well as the difference (VMT savings).
2. Then, annual VMT savings are multiplied by the fuel consumption and the unit fuel cost to find the dollar value for fuel VOC savings. Annual VMT savings are multiplied by unit non-fuel VOC to find the dollar value of non-fuel VOC savings. Fuel rates used where \$3.51 for regular gasoline. It is assumed that trucks will not take the proposed roads in the Puerta de Tierra and Hato Rey Urban Infrastructure.
3. Future annual values of VOC savings are discounted to obtain their present value.

The figure below recaps the formulas used in the Vehicle Operating Cost Benefits calculation.

Formulas:			
Vehicle-Miles Traveled = Affected Length x Avg. Annual Volume		Non-Fuel Cost = VMT x Cost Per Mile	
veh-miles/yr	miles	vehicles/yr	dollars
Fuel Cost = VMT x Fuel Consumption x Fuel Price		Benefit = Existing Cost - New Cost	
dollars	gallons/mile	\$/gallon	\$/miles

FIGURE 4: FORMULAS USED IN THE VEHICLE OPERATING COST BENEFITS

TABLE 7: SUMMARY OF VEHICLE OPERATING BENEFITS

Year	Peak Non-HOV	Non-Peak Non-HOV	Present Value of Veh Op Cost Benefits	Constant Dollars
1	\$3,494,393	\$1,829,659	\$5,324,052	\$6,721,493
20	\$239,162	\$374,757	\$613,919	\$2,345,015
2	\$3,159,021	\$1,723,629	\$4,882,650	\$6,534,087
3	\$2,850,420	\$1,490,407	\$4,340,827	\$6,157,546
4	\$2,566,633	\$1,481,237	\$4,047,870	\$6,086,499
5	\$2,305,840	\$1,387,840	\$3,693,680	\$5,887,165
6	\$2,066,347	\$1,156,380	\$3,222,728	\$5,444,731
7	\$1,846,579	\$1,053,969	\$2,900,549	\$5,194,441
8	\$1,645,070	\$1,057,421	\$2,702,491	\$5,130,135
9	\$1,460,457	\$870,664	\$2,331,121	\$4,690,673
10	\$1,291,472	\$833,323	\$2,124,796	\$4,532,036
11	\$1,136,939	\$797,619	\$1,934,558	\$4,373,851
12	\$995,762	\$719,103	\$1,714,865	\$4,109,773
13	\$866,925	\$657,416	\$1,524,340	\$3,872,361
14	\$749,482	\$594,476	\$1,343,959	\$3,618,975
15	\$642,558	\$421,073	\$1,063,631	\$3,035,964
16	\$545,336	\$473,432	\$1,018,768	\$3,082,385
17	\$457,063	\$468,632	\$925,695	\$2,968,828
18	\$377,035	\$324,977	\$702,011	\$2,386,532
19	\$304,602	\$418,006	\$722,609	\$2,603,947
Total	\$29,001,096	\$18,134,022	\$47,135,118	\$88,776,440

Source: Formulas and Calculations from Edited Cal B/C Model and ETI Estimates

The present value of the vehicle savings in operating cost benefits are of \$47.1 million over a 20-year period, which average to a savings of \$2.35 million each year.

Accident Cost Savings

The benefits of accident cost savings are calculated as follows:

1. The aggregated accident cost (per million miles) is determined by multiplying the accident rate by accident cost for each type of accident and adding the results. Transit accident cost savings are calculated similarly, except that the aggregate accident cost is calculated by accident event (i.e. fatality, injury, property damage) rather than accident type.

- Annual VMT (in million miles) is multiplied by aggregate accident cost (**established in parameters**), to result in the annual cost of accidents for both scenarios, BUILD and NO BUILD.
- The difference (BUILD minus NO BUILD, change in accident cost) is discounted to find the present value of future safety benefits.

The figure below recaps the formulas used in the Accident Reduction Benefits calculation.

Formulas:			
Vehicle-Miles Traveled = Affected Length x Avg Volume	Transit Acc Cost = Veh-Miles x Acc Cost/Mile		
veh-miles/yr	miles	vehicles/yr	
Hwy Acc Cost = (VMT x Rate x Cost/Mile) by Acc Type		Transit Acc Cost/Mile from PARAMETERS	

FIGURE 5: FORMULAS USED IN THE ACCIDENT REDUCTION BENEFITS CALCULATION

TABLE 8: SUMMARY OF ACCIDENT REDUCTION BENEFITS

Year	Peak Non-HOV	Non-Peak Non-HOV	Present Value of Accident Benefits	Constant Dollars
1	\$1,222,928	\$828,965	\$2,051,892	\$2,590,467
20	\$442,251	\$299,781	\$742,032	\$2,834,377
2	\$1,159,423	\$785,918	\$1,945,340	\$2,603,304
3	\$1,099,189	\$745,088	\$1,844,277	\$2,616,142
4	\$1,042,059	\$706,362	\$1,748,421	\$2,628,979
5	\$987,875	\$669,633	\$1,657,508	\$2,641,816
6	\$936,486	\$634,799	\$1,571,286	\$2,654,654
7	\$887,750	\$601,763	\$1,489,513	\$2,667,491
8	\$841,530	\$570,433	\$1,411,964	\$2,680,329
9	\$797,699	\$540,722	\$1,338,421	\$2,693,166
10	\$756,133	\$512,547	\$1,268,680	\$2,706,003
11	\$716,717	\$485,829	\$1,202,546	\$2,718,841
12	\$679,341	\$460,493	\$1,139,834	\$2,731,678
13	\$643,900	\$436,469	\$1,080,368	\$2,744,515
14	\$610,294	\$413,689	\$1,023,983	\$2,757,353
15	\$578,429	\$392,090	\$970,519	\$2,770,190
16	\$548,217	\$371,610	\$919,827	\$2,783,028
17	\$519,571	\$352,193	\$871,764	\$2,795,865
18	\$492,412	\$333,783	\$826,195	\$2,808,702
19	\$466,663	\$316,329	\$782,992	\$2,821,540
Total	\$15,428,867	\$10,458,494	\$25,887,361	\$54,248,440

Source: Formulas and Calculations from Edited Cal B/C Model and ETI Estimates

The present value of Accident Reduction benefits are of \$10.46 million over a 20-year period.

Environmental Sustainability

Emission Reduction Benefits

The benefits of emission reductions are calculated as follows:

Emissions Reductions Savings

The benefits of highway emission reductions are calculated as follows:

1. The aggregate emissions cost (per mile) is calculated by multiplying the emissions rate (see parameters) by the emissions cost for each type of emission and adding the results.
2. Annual VMT (in miles) is then multiplied by the aggregate emissions cost to result in the annual emissions cost, with and without the project (Build or No Build).
3. The difference in scenarios (BUILD minus NO BUILD, change in emissions cost) is discounted to find the present value of future emissions benefits.

The figure below recaps the formulas used in the Emissions Reductions Benefits calculation.

Formulas:	
$\text{Vehicle-Miles Traveled} = \text{Affected Length} \times \text{Avg. Annual Volume}$ <p>veh-miles/yr miles vehicles/yr</p>	$\text{Transit Em Cost} = (\text{Veh-Miles} \times \text{Rate} \times \text{Cost/Mile}) \text{ by Em Type}$
$\text{Hwy Emissions Cost} = (\text{VMT} \times \text{Rate} \times \text{Cost/Mile}) \text{ by Emissions Type}$	

FIGURE 6: FORMULAS USED IN THE EMISSIONS REDUCTIONS BENEFITS CALCULATION

TABLE 9: SUMMARY IF EMISSION REDUCTION BENEFITS

Year	Peak Non-HOV	Non-Peak Non-HOV	Present Value of Emission Benefits	Constant Dollars	ADDITIONAL CO ₂ EMISSIONS	
					tons/yr	PV \$/yr
1	\$711,679	\$355,348	\$1,067,028	\$1,347,098	(9,417)	(\$298,739)
20	\$41,554	\$76,478	\$118,032	\$450,853	(4,763)	(\$72,756)
2	\$647,279	\$338,551	\$985,830	\$1,319,262	(9,297)	(\$283,800)
3	\$587,639	\$292,952	\$880,591	\$1,249,135	(8,629)	(\$253,469)
4	\$532,433	\$298,873	\$831,306	\$1,249,976	(8,842)	(\$249,936)
5	\$481,356	\$286,747	\$768,103	\$1,224,240	(8,725)	(\$237,323)
6	\$434,124	\$236,307	\$670,431	\$1,132,678	(7,863)	(\$205,800)
7	\$390,471	\$217,600	\$608,071	\$1,088,963	(7,558)	(\$190,339)
8	\$254,293	\$162,213	\$416,507	\$790,654	(7,846)	(\$190,155)
9	\$227,843	\$131,740	\$359,583	\$723,551	(6,950)	(\$162,071)
10	\$203,363	\$128,371	\$331,734	\$707,565	(6,916)	(\$155,188)
11	\$180,720	\$126,725	\$307,444	\$695,102	(6,883)	(\$148,626)
12	\$159,789	\$116,175	\$275,965	\$661,366	(6,535)	(\$135,779)
13	\$140,456	\$108,101	\$248,557	\$631,422	(6,223)	(\$124,435)
14	\$122,611	\$99,756	\$222,367	\$598,783	(5,906)	(\$113,633)
15	\$106,153	\$68,628	\$174,781	\$498,884	(4,660)	(\$86,280)
16	\$90,987	\$83,705	\$174,692	\$528,547	(5,225)	(\$93,082)
17	\$77,024	\$87,820	\$164,844	\$528,677	(5,337)	(\$91,497)
18	\$64,182	\$59,860	\$124,042	\$421,690	(4,054)	(\$66,871)
19	\$52,383	\$82,806	\$135,188	\$487,157	(5,096)	(\$80,893)
Total	\$5,506,337	\$3,358,757	\$8,865,094	\$16,335,602	(136,725)	(\$3,240,673)

The present value of the emission reduction benefits are of \$8.87 million over a 20-year period, which average to approximate savings of \$443,255 each year.

Livability / Quality of Life

Walking and Bicycle path benefits

The proposed development will provide a walking trail of approximately 6.09 miles and a biking path of 4.7 miles. With the new walking and biking trails the section of Hato Rey will be connected to the island of old San Juan. For the purpose of this analysis the new construction and improvements of 6.09 miles of pedestrian walkway as well as 4.7 miles of cycling path are considered. The societal benefits of walking and biking in the proposed paths can be measured in two ways. First, the individual benefits which extend life expectancy by reducing certain diseases such as heart disease, type II diabetes, and the medical expenses the individual will pay. The other benefit considered is an external benefit at large from the improved health of the individual thus reducing costs in subsidized medical care, emergency room visits, and marginal reductions in group health insurance rates. The following table monetizes these benefits accordingly.

TABLE 10: HEALTH BENEFITS FROM WALKING & BIKING

	Walking Benefits	Biking Benefits
Internal Health	25 cents per walking mile	10 cents per biking mile
External Health	25 cents per walking mile	10 cents per biking mile
Total Health Benefit	50 cents per walking mile	20 cents per biking mile

Source: Victoria Transportation Institute

The source of the value of these benefits is the Victoria Transport Policy Institute³. To obtain the monetary value of developing the walking and bike trail we estimate that 625⁴ people will use these trails per day for the first year of operations. Out of the total it is estimated that 90.6% (566) will walk and that the rest 9.4%(59) will use the bike trails. To arrive at the net present value of the 20-year benefit of developing these trails we assume a 1% increase per year in the use of these trails as well as in the increase in health benefits. The following tables detail the benefits of walking and biking through the proposed trails in Puerta de Tierra, Central Park and Hato Rey.

TABLE 11: NET PRESENT VALUE OF HEALTH BENEFITS FROM WALKING

Operational Year	People Walking per day	Miles	Benefits per walking mile	Current Dollars	Present Value of Health Benefits
1	566	6.1	0.5000	\$ 629,067	\$ 528,176
2	572	6.1	0.5050	\$ 641,711	\$ 508,295
3	577	6.1	0.5101	\$ 654,609	\$ 489,162
4	583	6.1	0.5152	\$ 667,767	\$ 470,749
5	589	6.1	0.5203	\$ 681,189	\$ 453,030
6	595	6.1	0.5255	\$ 694,881	\$ 435,977
7	601	6.1	0.5308	\$ 708,848	\$ 419,566
8	607	6.1	0.5361	\$ 723,096	\$ 403,773
9	613	6.1	0.5414	\$ 737,630	\$ 388,574
10	619	6.1	0.5468	\$ 752,456	\$ 373,948
11	625	6.1	0.5523	\$ 767,581	\$ 359,872
12	631	6.1	0.5578	\$ 783,009	\$ 346,326
13	638	6.1	0.5634	\$ 798,748	\$ 333,289
14	644	6.1	0.5690	\$ 814,802	\$ 320,744
15	651	6.1	0.5747	\$ 831,180	\$ 308,671
16	657	6.1	0.5805	\$ 847,887	\$ 297,052
17	664	6.1	0.5863	\$ 864,929	\$ 285,870
18	670	6.1	0.5922	\$ 882,314	\$ 275,110
19	677	6.1	0.5981	\$ 900,049	\$ 264,754
20	684	6.1	0.6041	\$ 918,140	\$ 254,788
Total Benefits from Walking				\$ 15,299,892	\$ 7,517,726

³ Victoria Transport Policy Institute <http://www.vtppi.org/tdm/tdm102.htm>

⁴ Estimated value was calculated by transit report prepared by steer davis gleave

TABLE 12: NET PRESENT VALUE OF HEALTH BENEFITS FROM BIKING

Operational Year	People Biking per day	Miles	Benefits per biking mile	Current Dollars	Present Value of Health Benefits
1	59	4.7	0.2000	\$ 20,243	\$ 16,996
2	60	4.7	0.2020	\$ 20,650	\$ 16,357
3	60	4.7	0.2040	\$ 21,065	\$ 15,741
4	61	4.7	0.2061	\$ 21,488	\$ 15,148
5	61	4.7	0.2081	\$ 21,920	\$ 14,578
6	62	4.7	0.2102	\$ 22,361	\$ 14,029
7	63	4.7	0.2123	\$ 22,810	\$ 13,501
8	63	4.7	0.2144	\$ 23,269	\$ 12,993
9	64	4.7	0.2166	\$ 23,736	\$ 12,504
10	65	4.7	0.2187	\$ 24,213	\$ 12,033
11	65	4.7	0.2209	\$ 24,700	\$ 11,580
12	66	4.7	0.2231	\$ 25,197	\$ 11,145
13	66	4.7	0.2254	\$ 25,703	\$ 10,725
14	67	4.7	0.2276	\$ 26,220	\$ 10,321
15	68	4.7	0.2299	\$ 26,747	\$ 9,933
16	68	4.7	0.2322	\$ 27,284	\$ 9,559
17	69	4.7	0.2345	\$ 27,833	\$ 9,199
18	70	4.7	0.2369	\$ 28,392	\$ 8,853
19	71	4.7	0.2392	\$ 28,963	\$ 8,520
20	71	4.7	0.2416	\$ 29,545	\$ 8,199
Total Benefits from Biking				\$ 492,339	\$ 241,915

The total benefits of walking and bicycling in the proposed development area estimated at \$7.76 million.

TABLE 13: HEALTH BENEFITS FROM WALKING & BIKING

Type of Benefit	Current Dollars	Present Value
From Walking	\$ 15,299,892	\$ 7,517,726
From Biking	\$ 492,339	\$ 241,915
Total Health Benefits	\$ 15,792,231	\$ 7,759,641

Noise Pollution Reduction benefits

The reductions in vehicle miles traveled (VMT) create a more livable environment by creating reductions in noise pollution.

This analysis assumes a cost of noise of \$0.001 per vehicles and miles traveled, as expressed by the U.S. Federal Highway Administration's Federal Highway May 2000 Addendum to the 1997 Federal Highway Cost Allocation Study, table 13⁵. This rate was adjusted to 2017 dollars, when the walkways, paths, and improved roads are expected to be operational. If we take into consideration that the traffic will be reduced by 6,575 the first year of operations (increasing 1% each year) and that each car traveled 3.72 miles each day, then we can estimate that the 20-year benefit of noise reduction by developing the proposed urban infrastructure will be of \$315,023. This benefit considers the present value, an increase in ADT and pavement marginal cost of 1% each year.

TABLE 14: PRESENT VALUE OF NOISE POLLUTION REDUCTION

Operational Year	Reduced ADT	Miles VMT	Marginal Cost per VMT	Constant Dollars	Present Value of Benefits / Savings
1	6,575	3.72	0.0026	\$ 23,212	\$ 18,386
2	6,641	3.72	0.0027	\$ 24,345	\$ 18,192
3	6,707	3.72	0.0028	\$ 25,500	\$ 17,976
4	6,774	3.72	0.0029	\$ 26,674	\$ 17,740
5	6,842	3.72	0.0030	\$ 27,870	\$ 17,486
6	6,910	3.72	0.0031	\$ 29,087	\$ 17,217
7	6,979	3.72	0.0032	\$ 30,326	\$ 16,934
8	7,049	3.72	0.0033	\$ 31,586	\$ 16,639
9	7,120	3.72	0.0034	\$ 32,869	\$ 16,335
10	7,191	3.72	0.0035	\$ 34,174	\$ 16,022
11	7,263	3.72	0.0036	\$ 35,502	\$ 15,702
12	7,336	3.72	0.0037	\$ 36,853	\$ 15,377
13	7,409	3.72	0.0038	\$ 38,227	\$ 15,048
14	7,483	3.72	0.0039	\$ 39,625	\$ 14,715
15	7,558	3.72	0.0040	\$ 41,048	\$ 14,381
16	7,633	3.72	0.0041	\$ 42,495	\$ 14,045
17	7,710	3.72	0.0042	\$ 43,967	\$ 13,709
18	7,787	3.72	0.0043	\$ 45,464	\$ 13,373
19	7,865	3.72	0.0044	\$ 46,986	\$ 13,039
20	7,943	3.72	0.0045	\$ 48,534	\$ 12,706
Total Savings / Benefits				\$ 704,342	\$ 315,023

⁵ Addendum to the 1997 Federal Highway Cost Allocation Study Final Report U.S. Department of Transportation Federal Highway Administration May 2000 - <https://www.fhwa.dot.gov/policy/hcas/addendum.htm>

ECONOMIC COSTS

Initial Investment

The total initial investment of the proposed urban development is \$24.87 million. This includes hard and soft construction costs including contingencies (please refer to appendix 2 for the breakdown of the initial construction costs). This cost is considered the initial investment of the proposed development.

In addition to the construction costs, road maintenance costs of \$1,408,000 per year are considered in the operation phase of the road for a 20 year period.

The following table details the project initial construction cost as well as the 20 year operational cost.

TABLE 15: PROJECT INITIAL CONSTRUCTION COST AND OPERATIONAL COST

Year	(in thousands of dollars)			TOTAL COSTS (in dollars)	
	Construction	SUBSEQUENT COSTS		Constant Dollars	Present Value
		Maint./ Op.	Rehab.		
Construction Period					
1	\$8			\$8,333	\$8,333
2	104			103,547	97,686
3	12,701			12,700,810	11,303,676
4	12,058			12,057,795	10,123,957
Project Open					
1		\$1,408		\$1,408,486	\$1,115,653
2		1,408		1,408,486	1,052,503
3		1,408		1,408,486	992,927
4		1,408		1,408,486	936,724
5		1,408		1,408,486	883,702
6		1,408		1,408,486	833,681
7		1,408		1,408,486	786,491
8		1,408		1,408,486	741,973
9		1,408		1,408,486	699,974
10		1,408		1,408,486	660,353
11		1,408		1,408,486	622,975
12		1,408		1,408,486	587,712
13		1,408		1,408,486	554,445
14		1,408		1,408,486	523,062
15		1,408		1,408,486	493,454
16		1,408		1,408,486	465,523
17		1,408		1,408,486	439,173
18		1,408		1,408,486	414,314
19		1,408		1,408,486	390,862
20		1,408		1,408,486	368,738
Total	\$24,870	\$28,170	\$0	\$53,040,205	\$35,097,889

RESULTS

The proposed construction of the Puerta de Tierra Pedestrian Walkways, Road Improvements and Connections are beneficial with a benefit cost ratio greater than 1.

TABLE 16: BENEFIT COST ANALYSIS SUMMARY

	Costant - Total for 20 years	NPV	Annual Average
LIVABILITY			
Transit & Bicycle Path Benefits	\$ 15,792,231	\$ 7,759,641	\$ 387,982
Noise Pollution Reduction	\$ 704,342	\$ 315,023	\$ 15,751
TOTAL	\$ 16,496,573	\$ 8,074,664	\$ 403,733
ECONOMIC COMPETITIVENESS			
Travel Time Savings	\$ 28,331,938	\$ 12,674,845	\$ 633,742
Operating Cost Savings	\$ 88,776,440	\$ 47,135,118	\$ 2,356,756
TOTAL	\$ 117,108,378	\$ 59,809,964	\$ 2,990,498
SAFETY			
Fatalities	\$ 27,402,364	\$ 13,076,411	\$ 653,821
Injuries	\$ 8,916,871	\$ 4,255,132	\$ 212,757
Property Damage	\$ 17,929,205	\$ 8,555,819	\$ 427,791
TOTAL	\$ 54,248,440	\$ 25,887,361	\$ 1,294,368
STATE OF GOOD REPAIR			
Pavement Maintenance & Repair Savings	\$ 7,043,421	\$ 3,150,228	\$ 157,511
TOTAL	\$ 7,043,421	\$ 3,150,228	\$ 157,511
ENVIRONMENTAL			
Emission Benefits	\$ 10,364,054	\$ 5,624,422	\$ 281,221
Savings in CO2 (\$)	\$ 5,971,548	\$ 3,240,673	\$ 162,034
Savings in CO2 (tons)	136,725	136,725	6,836
TOTAL	\$ 16,335,602	\$ 8,865,094	\$ 443,255
Total Benefits - Life Cycle Benefit		\$ 105,787,311	\$ 5,289,366
Initial Investment & Maintenance - Life Cycle Cost		\$ 35,097,889	
Benefit Cost Ratio		3.01	

OTHER PROJECT BENEFITS NOT QUANTIFIED IN B/C ANALYSIS

The proposed construction of the Puerta de Tierra Infrastructure has other benefits that are not previously discussed in the Benefit Cost analysis. These benefits are not included in the analysis because most of these benefits are qualitative benefits for society and are difficult to quantify and monetizing these benefits. These additional benefits include:

- Improves Economic Productivity in existing shops and businesses adjacent to improved roads and pathways.
- Reliability of a multimodal transportation system that will fully integrate pedestrian, cycling, metro-bus, automotive, maritime, and rail transportation in key points of Puerto Rico's capital city of San Juan.
- Promotes walking and bicycling from Hato Rey to San Juan.
- Improves Tourist Management – transportation options for recreational travel and reduces automobile traffic in touristic areas such as Old San Juan, the Convention Center, Central Park and the Financial District of Hato Rey.
- Improves personal safety, and supports other objectives such as transportation choice, community interaction and reduced automobile traffic.
- The walking and biking trails will increase ridership in the Tren Urbano (Urban Train system) specifically in the Roosevelt and Hato Rey stops. These stops host approximately 450,000 riders per year that can increase 1% each year due to walking and cycling incentives. The impact of this construction would be a yearly increase of 50,000 riders. The economic value of the ridership increase is of \$37,500 per year, considering that the average rate per ride is \$0.75.
- The improvements will impact low income communities including:

TABLE 17: LOW INCOME COMMUNITIES IMPACTED BY PROPOSED PROJECT

Phase	Low Income Communities	Population	% Population at or below poverty level	Population at Poverty Level	Unemployment Rate
Phase 6 & Phase 7: Ponce de León Ave.; San Agustín & Cross Streets	Old San Juan	2,510	33%	824	21.9%
	Puerta de Tierra	3,783	55%	2,096	24.2%
	Sub-Total	6,293	46%	2,920	
Phase 8: Central Park Connector	Hipódromo	1,602	49%	787	25.0%
	Miramar	4,419	22%	955	10.2%
	Tras Talleres	2,009	51%	1,033	16.5%
	Sub-Total	8,030	35%	2,774	
Phase 9: Calaf Connector	Eleanor Roosevelt	3,743	24%	910	8.9%
	Floral Park	1,199	53%	629	N/A
	Las Monjas	6,681	42%	2,779	20.4%
	Martín Peña	4,828	23%	1,101	6.1%
	Quintana	7,780	57%	4,427	23.5%
Sub-Total	24,231	41%	9,846		
Total for Proposed Project		38,554	40%	15,540	

APPENDIX 1 – MAPS

This appendix illustrates additional maps of the proposed Puerta de Tierra roads and walkway improvements in the municipality of San Juan.

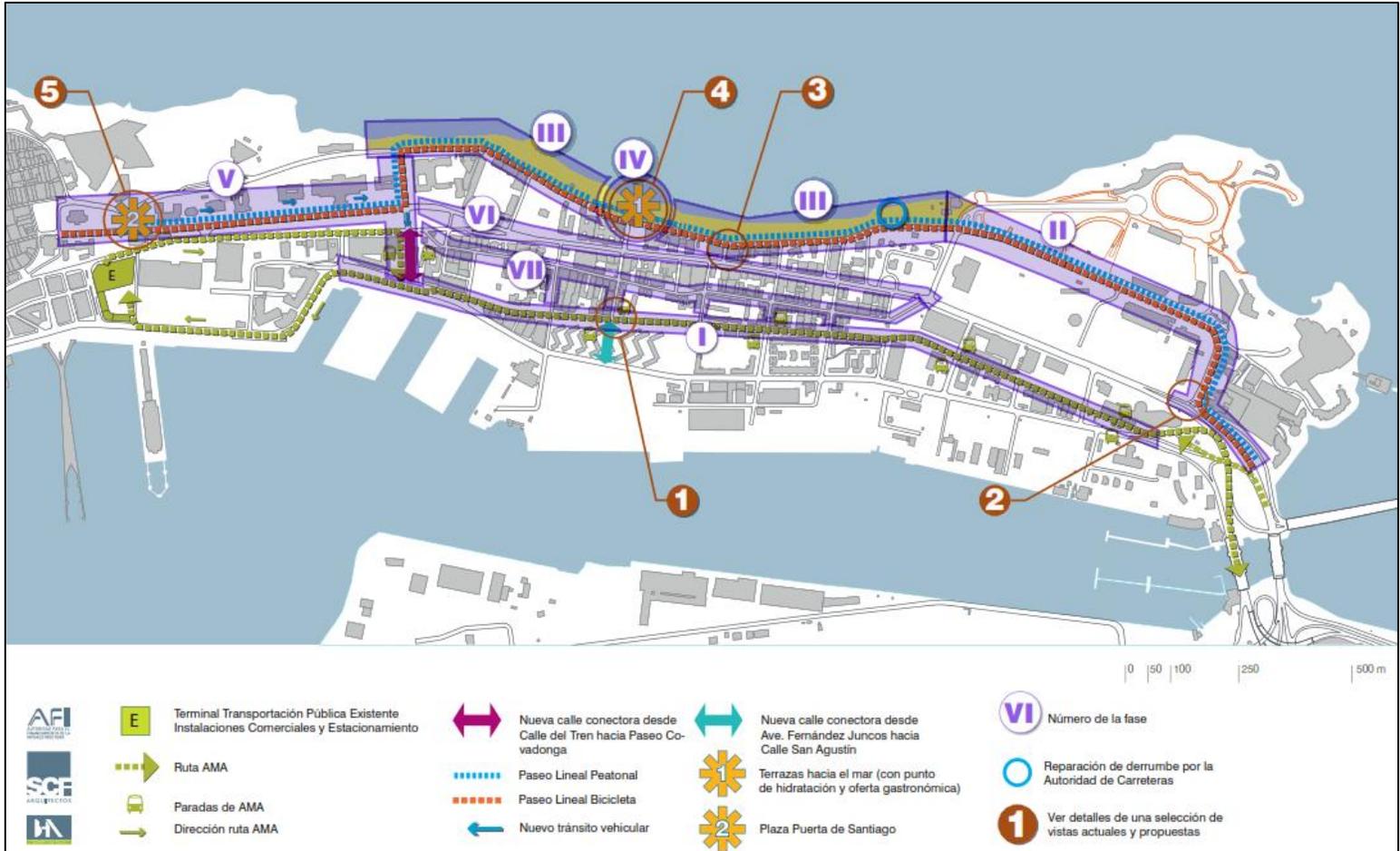


FIGURE 7: PASEO PUERTA DE TIERRA CONSTRUCTION PHASES 1 THROUGH 7, SAN JUAN ISLET



FIGURE 8: PROPOSED CONSTRUCTION PHASES 6 THROUGH 7 FROM PUERTA DE TIERRA TO HATO REY



FIGURE 9: PROPOSED CONSTRUCTION PHASE 8 FROM MUÑOZ RIVERA PARK TO CENTRAL PARK

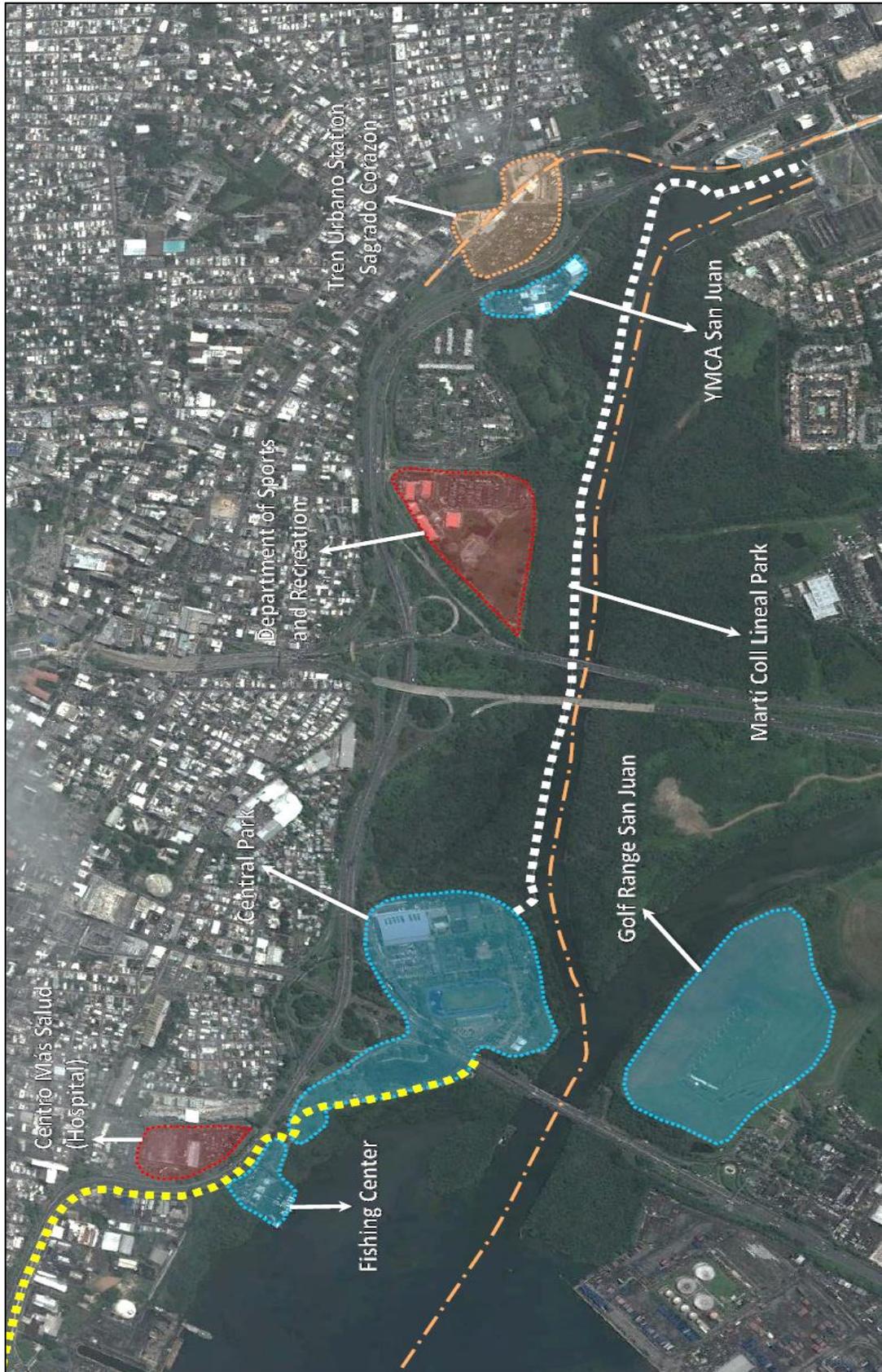


FIGURE 10: PROPOSED CONSTRUCTION PHASE 8 AND EXISTING MARTÍ COLL WALKWAY CONNECTING CENTRAL PARK AND HATO REY

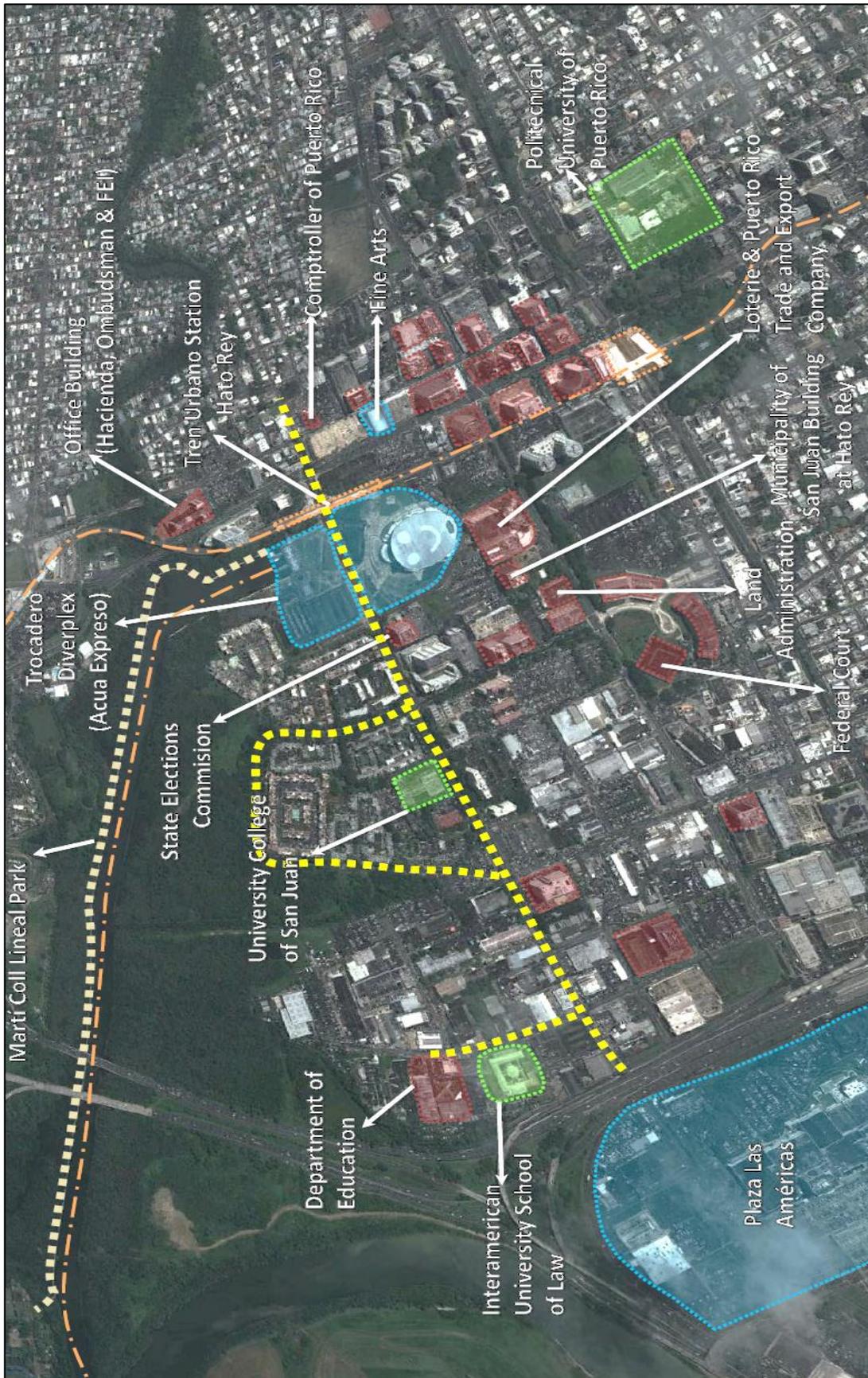


FIGURE 11: PROPOSED CONSTRUCTION PHASE 9 IN CALAF STREET, HATO REY, SAN JUAN

APPENDIX 2 – CONSTRUCTION COSTS

TABLE 18: DEVELOPMENT BUDGET

Phase/Concept	Project Budget			Funds Allocation		
	Base Cost	Contingency	Total	TIGER Funds	State Funds	Local Funds
VI Ponce de León Avenue						
- Administration	99,480.00	29,580.00	129,060.00	0.00	129,060.00	0.00
- Management	81,700.00	18,900.00	100,600.00	0.00	100,600.00	0.00
- Insurance	76,089.38	9,973.50	86,062.88	0.00	86,062.88	0.00
- Inspection	396,540.00	132,180.00	528,720.00	0.00	528,720.00	0.00
- Construction	7,237,520.49	723,752.05	7,961,272.54	4,522,798.10	1,001,630.32	2,436,844.12
- Total	7,891,329.87	914,385.55	8,805,715.42	4,522,798.10	1,846,073.20	2,436,844.12
VII San Agustín & Cross Streets						
- Administration	99,480.00	19,720.00	119,200.00	0.00	119,200.00	0.00
- Management	81,700.00	12,600.00	94,300.00	0.00	94,300.00	0.00
- Insurance	57,209.44	6,932.26	64,141.70	0.00	64,141.70	0.00
- Inspection	396,540.00	88,120.00	484,660.00	0.00	484,660.00	0.00
- Construction	5,139,749.00	513,974.90	5,653,723.90	3,211,879.96	711,311.07	1,730,532.87
- Total	5,774,678.44	641,347.16	6,416,025.60	3,211,879.96	1,473,612.77	1,730,532.87
VIII Central Park Connector						
- Administration	99,480.00	19,720.00	119,200.00	0.00	119,200.00	0.00
- Management	81,700.00	12,600.00	94,300.00	0.00	94,300.00	0.00
- Insurance	42,649.58	5,476.28	48,125.86	0.00	48,125.86	0.00
- Inspection	396,540.00	88,120.00	484,660.00	0.00	484,660.00	0.00
- Construction	3,521,987.50	352,198.75	3,874,186.25	2,200,924.81	487,422.38	1,185,839.06
- Total	4,142,357.08	478,115.03	4,620,472.11	2,200,924.81	1,233,708.24	1,185,839.06
IX Calaf Street Connector						
- Administration	79,760.00	19,720.00	99,480.00	0.00	99,480.00	0.00
- Management	69,100.00	12,600.00	81,700.00	0.00	81,700.00	0.00
- Insurance	44,645.21	5,906.49	50,551.70	0.00	50,551.70	0.00
- Inspection	308,420.00	88,120.00	396,540.00	0.00	396,540.00	0.00
- Construction	4,000,000.00	400,000.00	4,400,000.00	2,499,639.54	553,576.50	1,346,783.95
- Total	4,501,925.21	526,346.49	5,028,271.70	2,499,639.54	1,181,848.20	1,346,783.95
Total for San Juan Multimodal Transportation System						
- Administration	378,200.00	88,740.00	466,940.00	0.00	466,940.00	0.00
- Management	314,200.00	56,700.00	370,900.00	0.00	370,900.00	0.00
- Insurance	220,593.61	28,288.53	248,882.14	0.00	248,882.14	0.00
- Inspection	1,498,040.00	396,540.00	1,894,580.00	0.00	1,894,580.00	0.00
- Construction	19,899,256.99	1,989,925.70	21,889,182.69	12,435,242.41	2,753,940.28	6,700,000.00
- Total	22,310,290.60	2,560,194.23	24,870,484.83	12,435,242.41	5,735,242.41	6,700,000.00
				50.00%	23.06%	26.94%