

## ABSTRACT

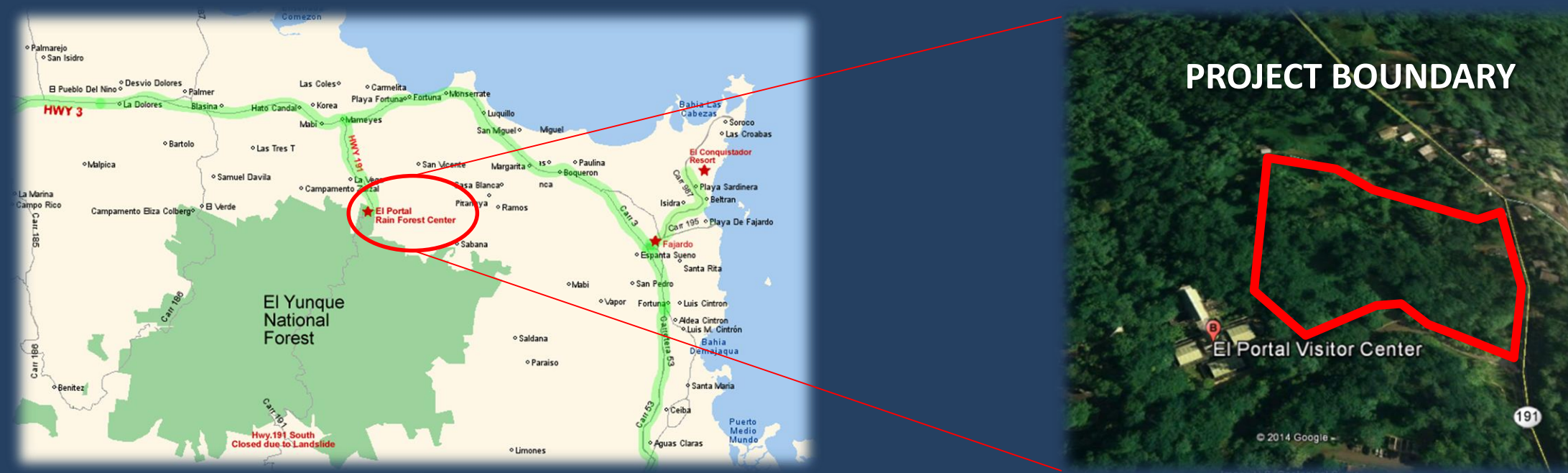
El Yunque National Forest Welcome Center is an auto-sustainable, LEED certified structure designed to provide free of charge forest information and to supply its visitors with basic amenities including a parking area with the capacity for a prolonged visit. The design also includes a transit terminal for visitors which also has the potential to serve as a terminal for a possible transportation system. The welcome center will be architecturally compatible to the existing visitor center, El Portal. The admission charge station of El Portal will be relocated to the structure's main entrance and its pedestrian bridge will be extended, allowing both facilities to work in harmony with each other.

## INTRODUCTION

El Yunque National Forest is the only tropical forest in Puerto Rico to be operated by the United States Forest Service (U.S.F.S), making it a unique site which receives over 1 million visitors annually. When the forest's main road (PR-191) reaches its capacity at 500 vehicles, the U.S. Forest Service rangers are forced to close the forest's entrance. The lack of knowledge of the diverse activities to do within the forest causes congestion at the main attractions, while other areas are not visited. El Yunque has a visitor center that facilitates information about these different activities, known as El Portal, but it having an entrance fee limits the amount of visitors who would otherwise take advantage of the information it provides.

El Yunque National Forest Welcome Center will be a facility which will operate alongside El Portal Visitor Center, providing basic amenities and information to visitors. The facilities would be connected to each other through an extension of El Portal's current pedestrian bridge, while its charge station will be relocated to the entrance of the structure, rather than the entrance of its parking area. El Portal's parking area, which would now be accessible freely, along with a new parking for the welcome center, can accommodate prolonged visit demands for the proposed facilities. The new welcome center will include a transit terminal, which would function as a terminal for a possible transportation system within the forest, as well as receive visitors in large buses that previously could not enter the forest because of their size.

## LOCATION

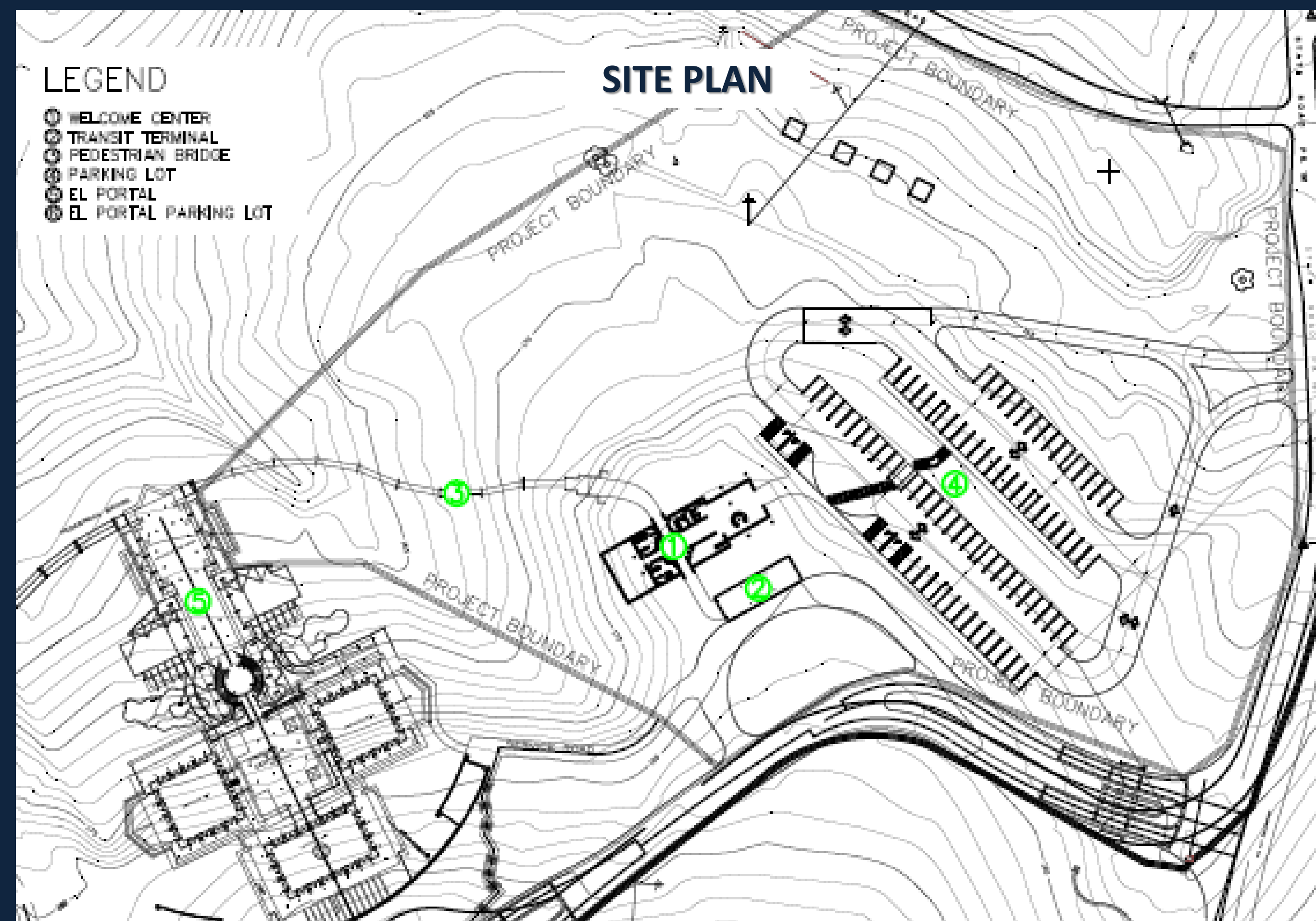


## OBJECTIVES

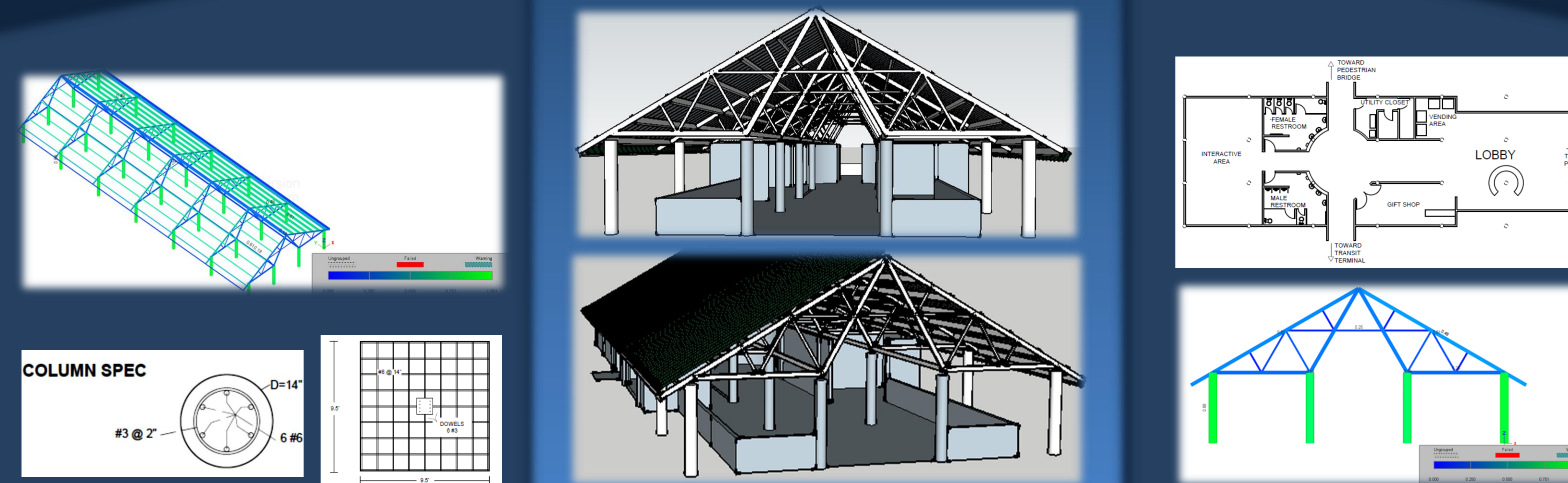
Design a welcome center on El Yunque National Forest that's architecturally compatible to El Portal Visitor Center. The new structure shall provide free of charge access to the forest's information along with some basic amenities such as: an information desk, restrooms, vending machines area, gift shop, an open interactive area and a parking area that complies with a prolonged visit capacity.

## REQUIREMENTS AND CONSTRAINTS

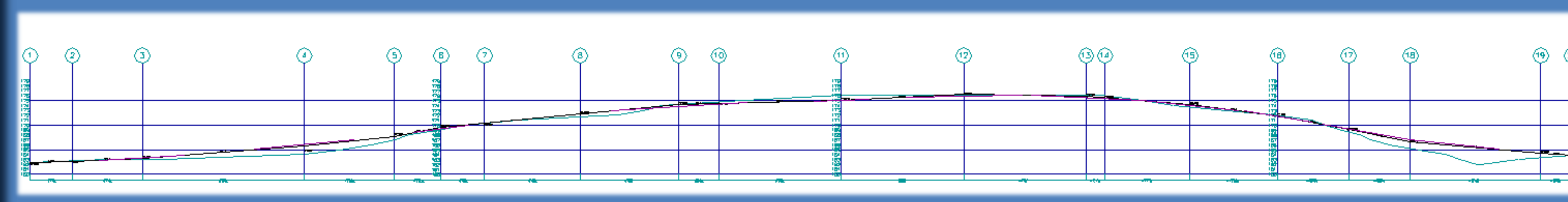
The proposed capital budget of this project is \$4 million. The design must be self-sustainable; it must be one, which requires minimal maintenance cost and its operational expenses maintained as low as possible. The design must also be eco-friendly, promoting the conservation of electric energy using natural lighting, reducing water consumption by recollecting and using pluvial waters for bathrooms and irrigation, and using certified eco-friendly materials which will allow the project to qualify for a LEED certification. An important detail to also have in consideration is the site's location which will be adjacent to El Portal and the local road PR-191. It is also limited by the available lot area, its accessibility, and topography.



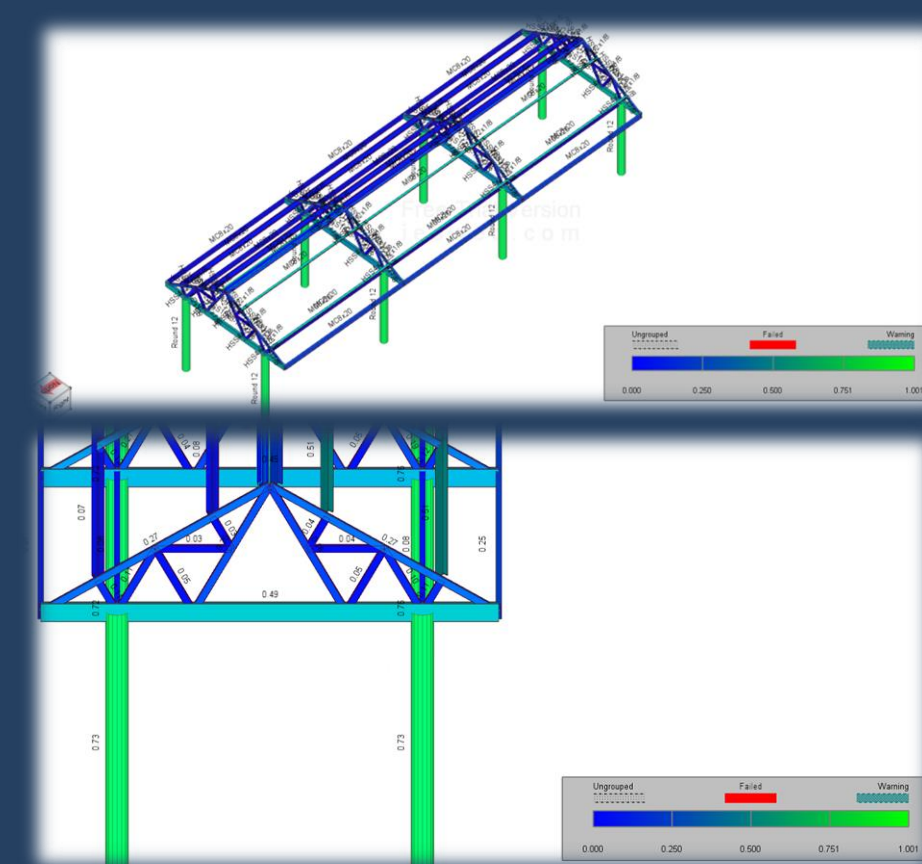
## WELCOME CENTER STRUCTURE



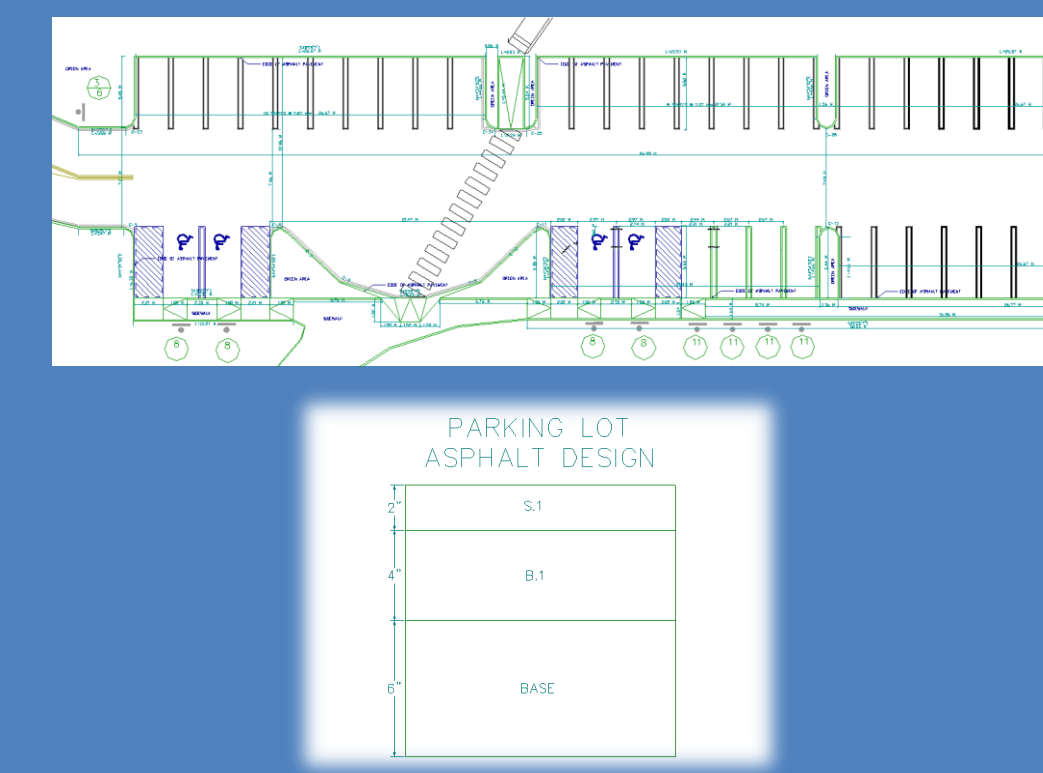
## PARKING LOT VERTICAL ALIGNMENT



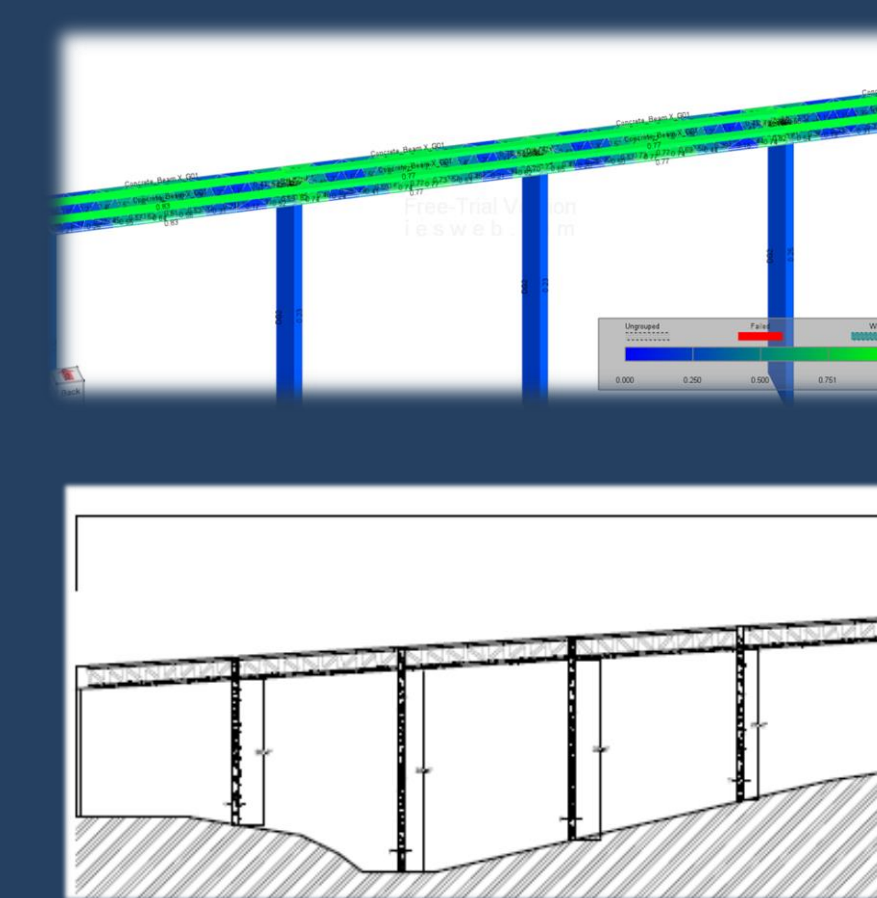
## TRANSIT TERMINAL



## PARKING LOT



## PEDESTRIAN BRIDGE



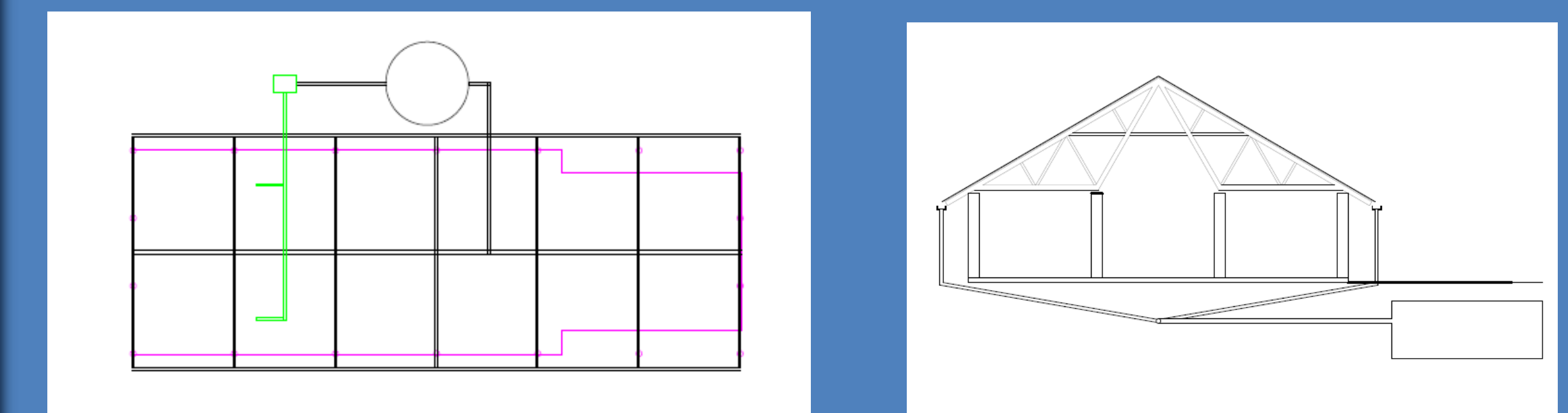
## LEED CERTIFICATION

Topics	Points
Sustainable Sites	23
Water Efficiency	10
Energy & Atmosphere	3
Materials & Resources	2
Indoor Environmental Quality	11
Innovation in Design	1
Regional Priority	1
<b>Total Credits</b>	<b>51</b>

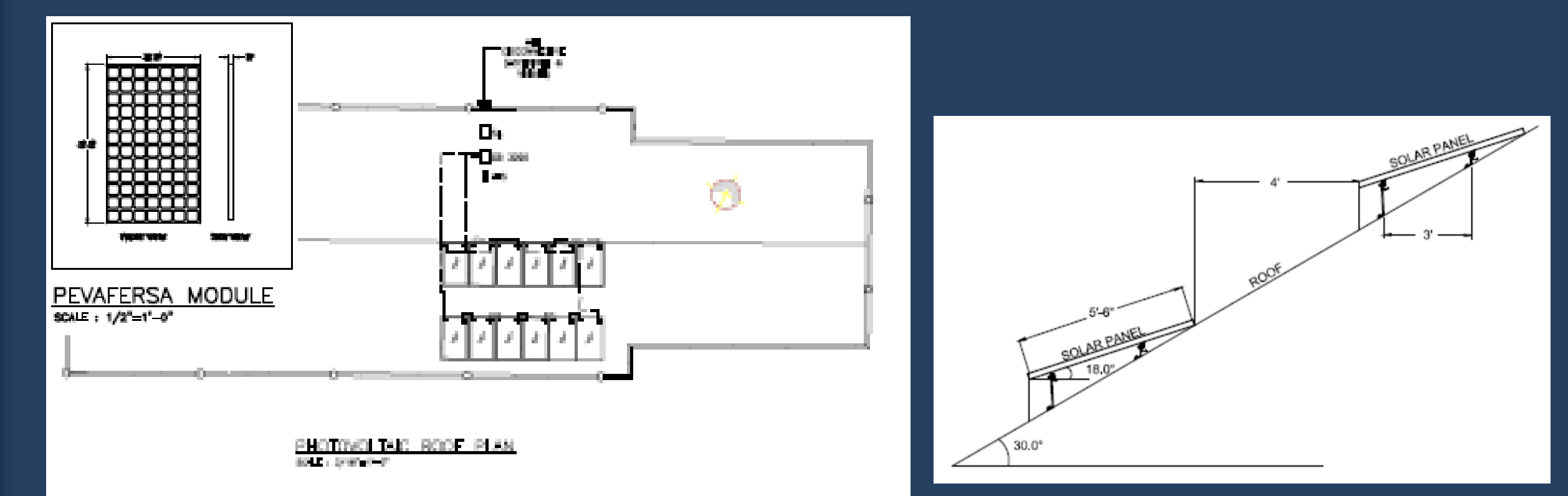
Certification	Points
<b>Certified</b>	40 - 49 Points
<b>Silver</b>	50 - 59 Points
<b>Gold</b>	60 - 79 Points
<b>Platinum</b>	80 Points and above



## WATER HARVESTING SYSTEM



## SOLAR PANELS



## COST BREAKDOWN

Item No.	Description	Material Cost Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost Unit	Total Equipment Cost	Direct Cost Unit	Total Direct Costs
	Transit Terminal	\$12,157.58	\$148,313.62	\$15,488.33	\$78,437.45	\$16,685.40	\$34,339.62	\$34,782.12	\$261,090.69
	Pedestrian Bridge	\$9,808.61	\$91,621.44	\$14,895.51	\$187,713.48	\$19,075.10	\$40,797.82	\$36,177.45	\$320,132.74
	El Yunque Welcome Center	\$116,802.03	\$722,558.54	\$35,214.32	\$349,998.54	\$22,408.55	\$68,674.84	\$162,088.90	\$1,138,593.35
	YWC Parking Lot	\$62,607.77	\$725,868.94	\$30,851.12	\$506,977.19	\$24,991.76	\$191,302.04	\$103,325.65	\$1,422,898.17
	<b>TOTAL</b>	<b>\$201,375.99</b>	<b>\$1,688,362.54</b>	<b>\$96,449.28</b>	<b>\$1,123,126.66</b>	<b>\$83,160.81</b>	<b>\$335,114.32</b>	<b>\$336,374.12</b>	<b>\$3,142,714.95</b>
Subtotal Direct Construction Cost									
	Design Contingency				2.00%				\$62,854.30
<b>Total Direct Construction Cost</b>									
	Standard General Conditions				0.00%				\$0.00
	Government General Conditions				3.00%				\$94,281.45
<b>Subtotal Net Construction Cost</b>									
	Overhead				8.50%				\$267,130.77
	Profit				10.00%				\$314,271.49
<b>Estimated Net Construction Cost</b>									<b>TOTAL \$3,881,252.96</b>

## CONCLUSION

The project proposes the development of El Yunque Welcome Center to improve the access of information to visitors, while not reducing the visitor rate of El Portal. The provided transit terminal will allow the implementation of an internal transportation system which would reduce internal park congestion during high seasons. The total estimated cost of the project is \$3,881,252.96, well with the capital budget of \$4,000,000 required by the USFS. The operational budget of \$99,990.00 annually is also below the \$100,000/year budget. The proposed project contains several self-sustainable measures, which is why it is expected to obtain a LEED Silver Certification.