Categorical Exclusion

Improvements to Int. PR-2, PR-2R San Juan Street, PR-2, Km. 153.90 UPR-RUM Entrance & La Vita Mayagüez, PR 00681

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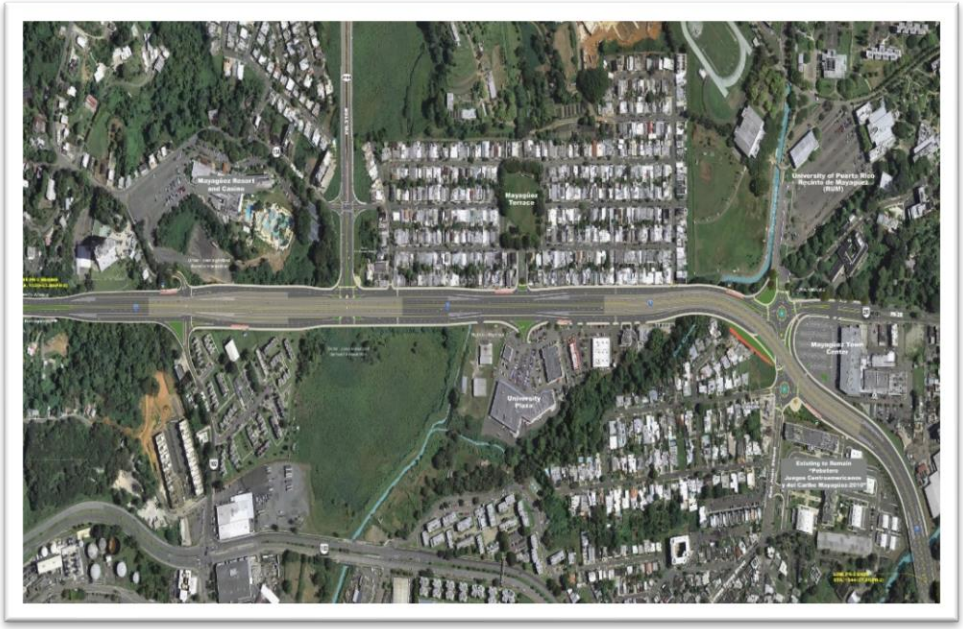

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Prepared for:

Puerto Rico Highway and Transportation Authority

Prepared by:

Alpha Engineering Group

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ACRONYM LIST

AAI	All Appropriate Inquires
AASHTO	American Association of State Highway and Transportation Officials
ACM	Asbestos Containing Material
AEG	Alpha Engineering Group
ASTM	American Society of Testing and Materials
BMP's	Best Management Practices
CALINE	California Line Source Model
CERCLA	Comprehensive Emergency Response Compensation and Liability Act
CES	Control of Erosion and Sedimentation
COE	Corps of Engineers
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
JD	Jurisdictional Determination
Km.	Kilometer
PCMS	Portable Changeable Message Signs
PRHTA	Puerto Rico Highway and Transportation Authority
dBA	Decibels
DNER	Department of Natural and Environmental Resources
EQB	Environmental Quality Board
FWS	Fish and Wildlife Service
LBP	Lead Based Paint
NAAQS	National Air Ambient Quality Standards
NOI	Notice of Intent
PRASA	Puerto Rico Aqueduct and Sewer Authority
PREPA	Puerto Rico Electric Power Authority
PWS	Public Water Supply
REC's	Recognized Environmental Conditions
ROW	Right-of-Way
RCRA	Resources Conservation and Recovery Act
SARA	Superfund Amendments Reauthorization Act
SWPPP	Storm Water Pollution Prevention Plan
SS	Service Station
STIP	State Transportation Improvement Plan
Urb.	Urbanization
UPR-RUM	University of Puerto Rico, Mayagüez campus
U.S.EPA	United States Environmental Quality Board
USGS	United States Geological Survey

1. PROJECT DESCRIPTION

The Puerto Rico Highway and Transportation Authority (PRHTA) and the Federal Highway Administration (FHWA) intends to study, evaluate design alternatives, complete the National Environmental Policy Act (NEPA) process and prepare a request of Interstate Access Modification and obtain the approval of FHWA for the following intersections of a section of Highway PR-2, Municipality of Mayagüez.

Residential, Commercial, Industrial and Public Use facilities are found along the route of proposed improvements.

The proposed improvement corridor is located on PR-2 from approximately Km. 152 to Km. 154 which passes the Castillo Condominium, the Mayagüez Resort and Casino, University Plaza and Mayagüez Terrace, UPR-RUM, and The Mayagüez Town Center, ending at “Compañía de Puerto Rico” and is bounded to the south by the bridge at the Yagüez River.

The majority of the highway, PR-2 is a four (4) lane “north-south” corridor, located in the Municipality of Mayagüez, Puerto Rico. The alternate name for this highway is the Eugenio María de Hostos Avenue (Ave.).

The highway section in its present condition is illustrated on **Figure A** below and include six signal-controlled intersections:

1. PR-2 with San Juan Street (La Vita) KM 153.90 - See **Figure B**.
2. PR-2 with PR-2R South (RUM Entrance) KM 153.90 – See **Figure C**.
3. PR-2 with PR-2R RUM North – KM 153.78 – See **Figure D**.
4. PR-2 with Chardon Street KM 153.27– See **Figure E**.
5. PR-2 with PR-3108 KM 152.86– See **Figure F**.
6. PR-2 with PR-102 KM 152.47– See **Figure G**.

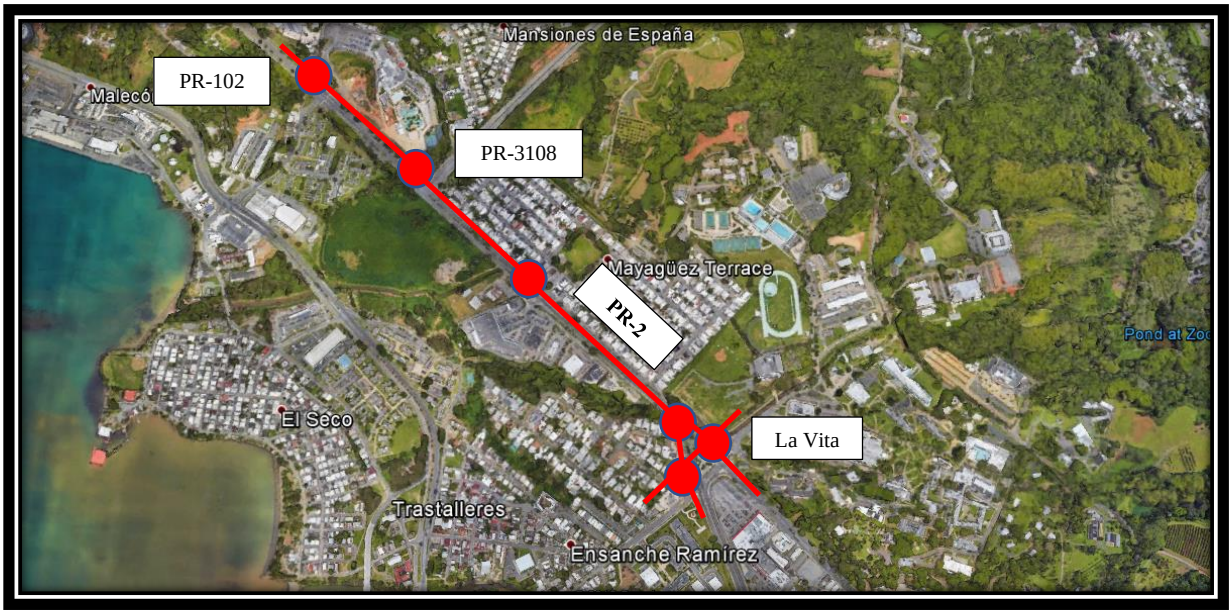

Figure A – Highway PR-2 Corridor from KM 152.18 to KM 154.35

Figure B – 1. PR-2 with San Juan Street (La Vita) - KM. 153.90

Figure C – 2. PR-2 with PR-2R South (Post Street at RUM Entrance) – KM 153.90

Figure D – 3. PR-2 with PR-2R North – KM 153.78

Figure E – 4. PR-2 with Chardon Street (Mayagüez Terrace) – KM 153.27

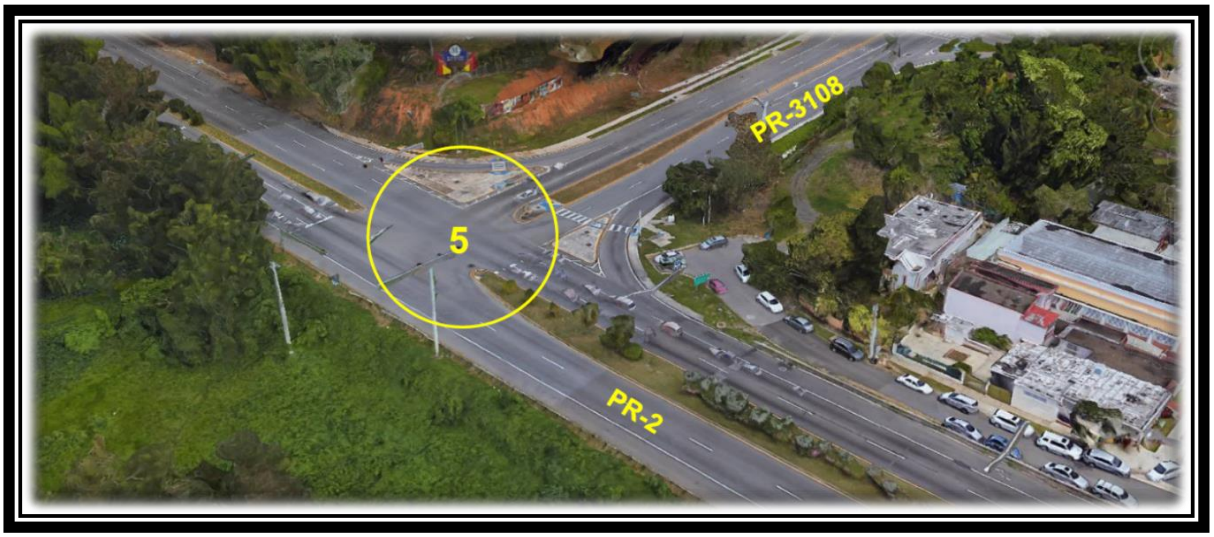

Figure F – 5. PR-2 with PR-3108 - KM 152.86

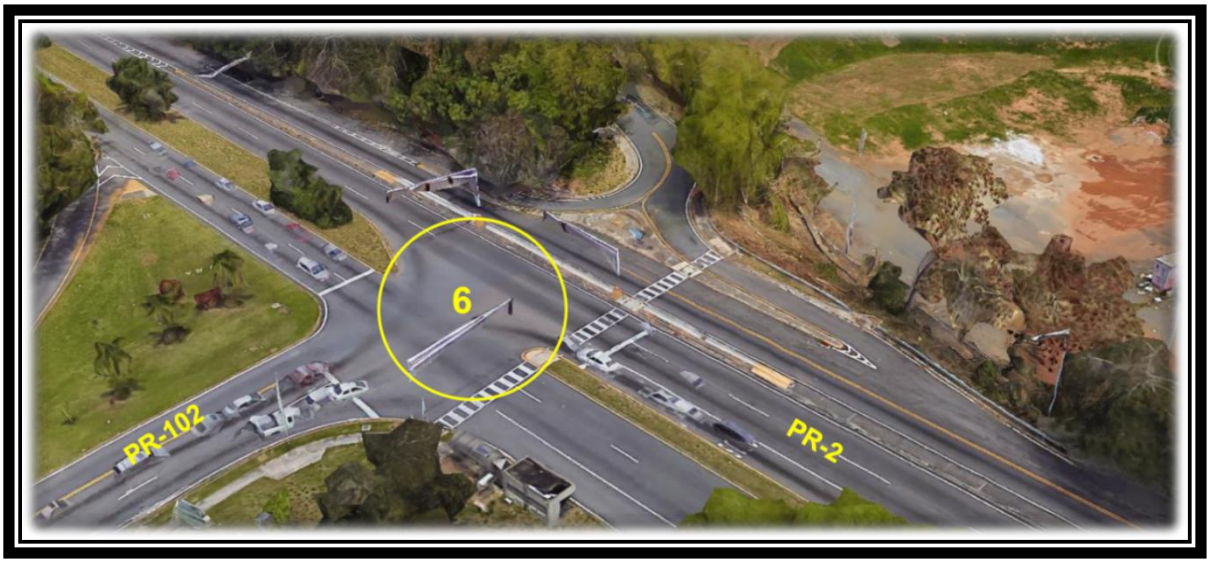

Figure G – 6. PR-2 with PR-102 – KM 152.47

La Vita Intersection has a very unconventional geometrical configuration. From North to South, there is Interstate Highway PR-2, which is the principal artery of Mayagüez, which begins in San Juan and connects with the largest municipalities in Puerto Rico, such as Arecibo in the North and Ponce in the South. As well as with the neighboring municipalities of Añasco and Hormigueros. From Northwest to Southeast there is PR-2R (Post Street) which intersects PR-2 with a skew angle of 60 degrees; to the West there is the approach of San Juan Street, and to the East there is the access to UPR Mayagüez Campus. However, PR-2 and Chardon Street Intersection is pretty conventional; to the West there is University Plaza shopping center, to the East there is the Mayagüez Terrace's access. PR-2 and PR-3108 intersection is a T Intersection. Finally, PR-2 and PR-102 intersection is a T Intersection.

These intersections have some mayor feeders pouring to it; PR-2 with an ADT (2016) 60,000, PR-2R (Post Street) with an ADT (2016) 27,000, San Juan Street with an ADT (2016) 6,700, the UPRM access with an ADT (2016) 15,000, Mayagüez Town Center shopping center, Chardon Street at Mayagüez Terrace access with an ADT (2016) 4,000-15,000, University Plaza Shopping Center, PR-3108 with an ADT (2016) 10,000 and PR-102 with an ADT (2016) 10,000.

Because of an awkward geometry, progression of signals, closeness between La Vita, Chardon Street at Mayagüez Terrace, PR-3108, PR-102 and high volume feeders, these intersections cause significant delays on PR-2 traffic.

The existing conditions at the six intersections and their connecting links were evaluated through field inspections and the collection of pertinent traffic data. This information was then analyzed to determine the present operational conditions such as level of service and capacity. This highway is currently operating with excessive travel times and deficient levels of service, which negatively impacts the economy and development of the municipality, as well as the economic initiatives, such as; the development of the Port of Mayagüez, the Port of the Americas in Ponce and the Rafael Hernández Airport in Aguadilla, among others.

The section of Highway PR-2 under study is a mixed land use area in the Municipality of Mayagüez. Such uses include: commercial, industrial, residential, university, access to hotel facilities and other land uses intermixed in the area that can be defined as local trip generators. Added to this traffic demand, is the condition of this highway as a regional traffic commuter for the area connecting the Municipality of Mayagüez with the rest of towns along this corridor.

The Puerto Rico Highways and Transportation Authority has considered that a possible solution to minimize the current deficient operating conditions of Interstate Highway PR-2 is to convert it to expressways standards, from Ponce to the Municipalities of Hormigueros, continuing the conversion of Mayagüez and Añasco.

This conversion is done in phases, starting from Ponce. Now it is necessary to evaluate the portion that crosses the Municipality of Mayagüez.

2. PURPOSE AND NEED

The purpose and need for this proposed project is to improve the existing roadway corridor of the Municipality of Mayagüez, Puerto Rico. The current PR-2 and PR-2R roadway has current vehicle congestion (heavy traffic), and geometric, alignment, and cross section problems that need to be resolved.

This project is necessary to improve the travel speed, reliability, safety, and convenience of transit in the Mayagüez area, connecting existing activity centers.

Currently there is slow and unreliable travel times due to traffic congestion along PR-2, particularly during morning and evening peak hours. Traffic congestion also occurs randomly throughout the day.

This proposed project would provide better sight distance and safety. The proposed project would help alleviate potential traffic problems during both light and heavy traffic periods.

The need for this proposed project investment is well-supported by the analysis of land use, socio-economic, traffic, and other data presented herein, (**Section 5**).

Needs include: Increase transit speeds; improve pedestrian and bicycle mobility; enhanced connection and improved access to the UPR-RUM campus; and finally increased accessibility to major activity centers for all users, including residents, employees, students, visitors, and shoppers.

As part of this project, the plan is to minimize: potential adverse impacts to historic, archaeological, and other sensitive natural resources; minimize adverse impacts to neighborhoods and communities; and minimize adverse impacts to businesses.

Part of this project and its alternatives analysis was designed to help support municipal growth initiatives and policies; encourage sustainable development and land use patterns and help improve livability.

In summary, the objectives of the proposed project are the following:

- Resolve traffic congestion and improve service levels throughout this portion of PR-2,
- Evaluate the elimination of traffic lights at the six (6) intersections.
- Evaluate the elimination of direct access to PR-2,
- Evaluate possible interchanges in substitution of traffic lights,
- Evaluate the construction of frontage road on both sides of the PR-2, for local traffic, pedestrians and cyclists who will access the PR-2 through the use of controlled access,

- Minimize the environmental impact in the construction of the proposed works.

Within the objectives of the proposed project, the following aspects will be considered:

- Operation of vehicles, pedestrians and cyclists,
- Geotechnical,
- Geometry,
- Construction costs,
- Construction and maintenance of traffic during construction,
- Acquisitions,
- Utilities,
- Future Collective Transport,
- Urban Architecture.

In the design of the proposed improvements in the reference project, we are aware and take into consideration the diversity of the different sectors of residential, institutional, commercial, and industrial nature. The proposed improvements were presented individually, through Focal Meetings, individually to each of the different sectors, in order to explain the Scope of the Project and collect comments and suggestions from each of the sectors in particular. Municipality of Mayagüez Town Center, University Plaza, El Mesón, Popeye, Advance Auto Parts, "Ensanche Ramírez" Residents Association, Mayagüez Terrace Residents Association, Mayagüez University Campus, Puerto Rico Brewery and Citizen Participation Meeting. The Minutes of all the Meetings are part of the Environmental Document in Appendix D. All the letters received were answered and included in Appendix E. We want to emphasize that, after having met with the different sectors and having presented the proposed improvements, all of them endorse the proposed project.

The esthetics, community cohesion and bicycle/pedestrian infrastructure accommodation were considered in the design and are provided as part of the proposed improvements in the reference project. The problems faced daily by cyclists and pedestrians in the existing Highway PR-2 are:

- At the present Highway PR-2 does not provide cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users. See **Figure H**.

- Lack of sidewalks continuity on streets (missing segments). See **Figures I and J**.

- Invasion of the sidewalks by Illegal parking (cars, trucks or vendors). See **Figures K & L.**

- Many sidewalks obstacles (trees, signage, utilities poles, etc.). See **Figures K & L**.

- No ramps for wheelchairs or strollers. See **Figures K & L**.

- No provision of signage and pavement marking for pedestrian crossings. See **Figures k, L, M & N**.

- Crossing Path distance of over 2 lanes without provision of Islands. See **Figures M & N**.

- Excessive time waiting on traffic signal to cross. See **Figures M & N**.

- In terms of comfort and esthetics there is trash in the pathway, followed by a lack of vegetation, flowers and an attractive landscaping design. Graffiti or abandoned buildings.

- Lack of pedestrian-focused illumination, street furniture, with opportunities for rest, shelter and shade.

Figure H – Highway PR-2 Corridor from KM 152.18 to KM 154.35

Figure I – Lack of Sidewalk Continuity between PR-102 and PR-3108.

Figure J – Lack of Sidewalk Continuity between PR-3108 and Chardon Street.

Figure K – Mayagüez Terrace Frontage Road – Gaudier Texidor Street.

Figure L – Mayagüez Terrace Frontage Road – Chardon Street.

Figure M – Highway PR-2 with San Juan Street and PR-2R (RUM Entrance).

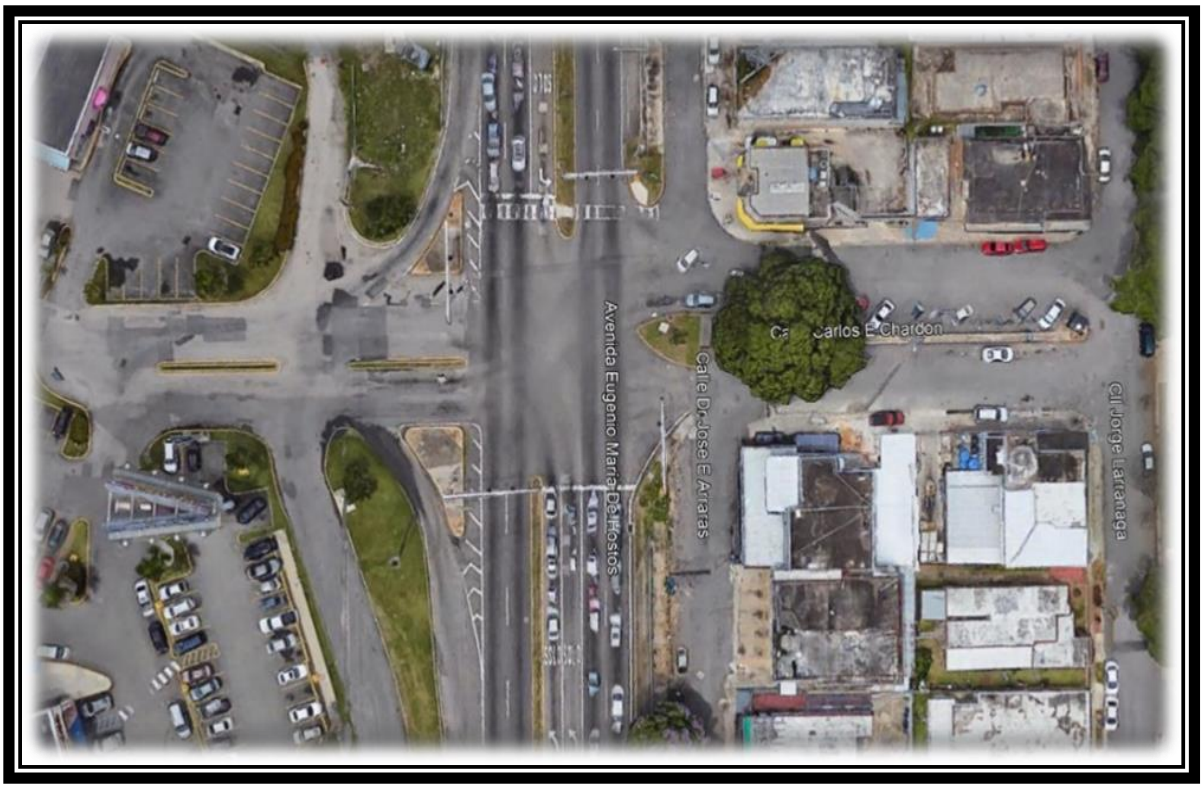

Figure N – Highway PR-2 with Chardon Street (Mayagüez Terrace).

Based on overall observations found in the Highway PR-2 section, following these are the proposed improvements that will be implemented in this project, to improve safety and accessibility to cyclists and pedestrians, as detailed in the Puerto Rico Complete Streets Plan and Design Guidelines:

- Provide cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users on Highway PR-2. See **Figures O, P and Q.**

- Provide walking and bike routes that connect areas and key “attractors” such as public transit stops, schools, work, local lunch destinations for workers, students and residents. By the construction of Frontage Roads on both sides of Highway PR-2. See **Figures O, P and Q**.

- Construction of sidewalks with suitable width on both sides of the street without obstacles. See **Figures O, P and Q**.

- Construction of ramps for wheelchairs and strollers in all intersections and mid-block crossings. See **Figures O, P and Q**.

- Provide Signs and Pavement Markings for Pedestrian and Bike in all

intersections and mid-block crossings. See **Figures O, P and Q**.

- Provision of Refuge Island in all Crossing, with path distance of less 2 lanes and short waiting time. See **Figures O, P and Q.**

- In order to improve the esthetics and safety high quality pavement surface, bike/pedestrian focused illumination, attractive landscaping design and street furniture, with opportunities for rest and shelter will be implemented as part of the improvements to Highway PR-2. See **Figures O, P and Q.**

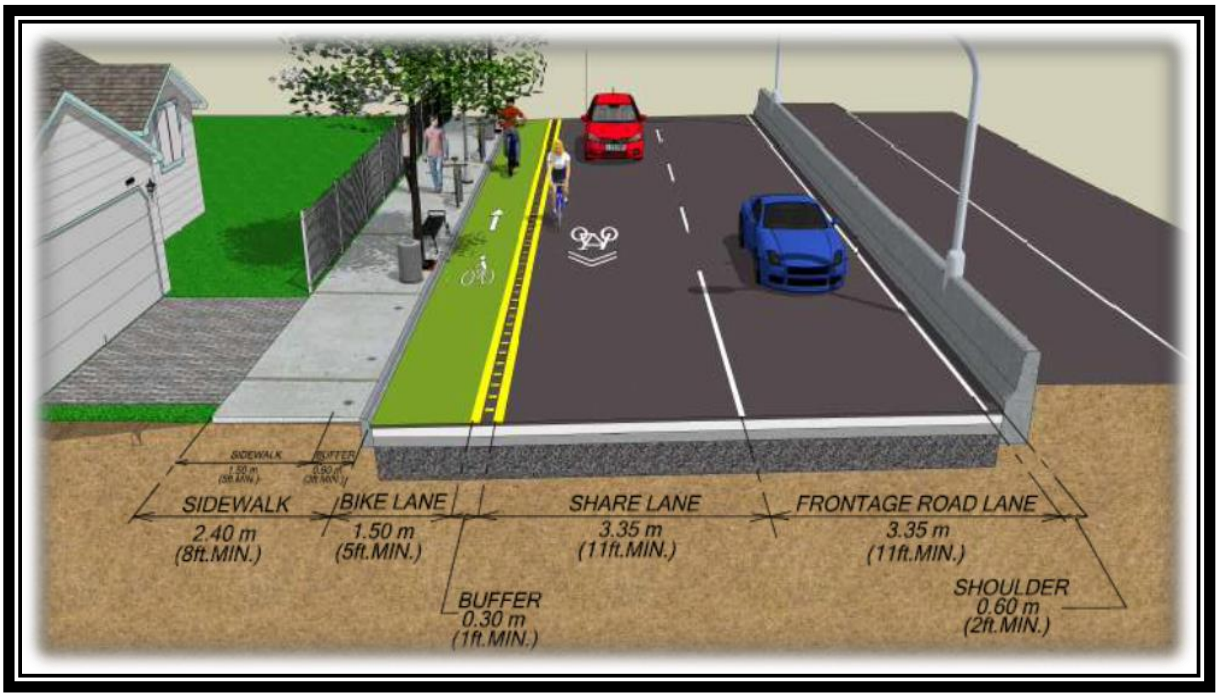

Figure O – Highway PR-2 (Mayagüez Terrace Frontage Road).

Figure P – Highway PR-2 (Mayagüez Terrace Frontage Road).987

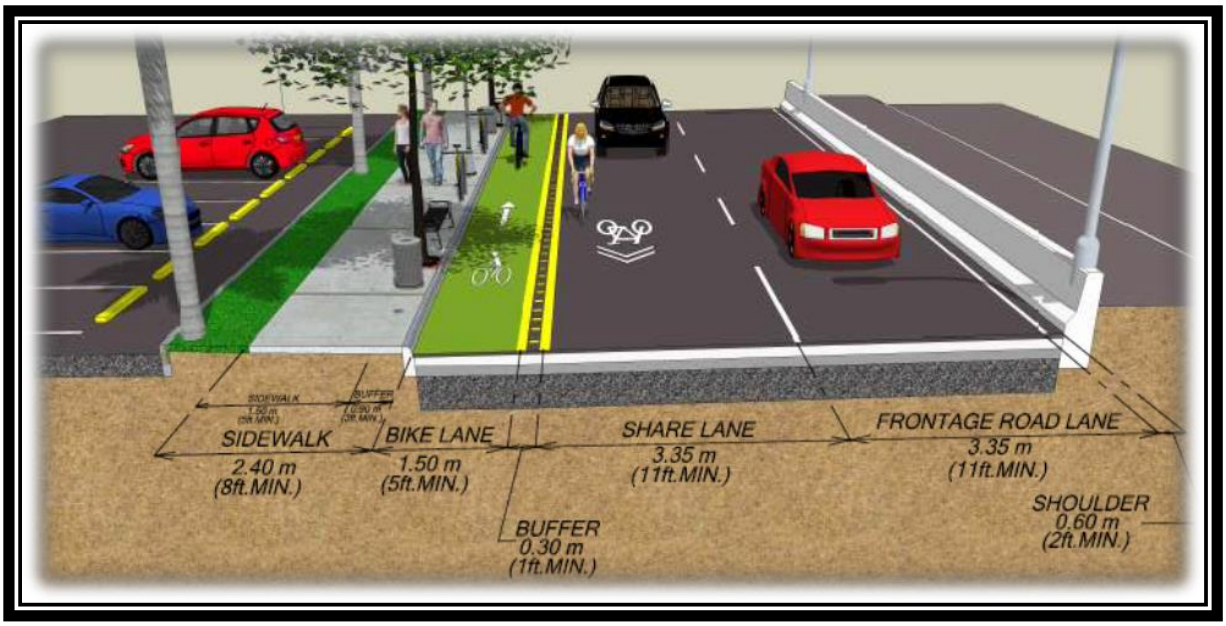

Figure Q – Highway PR-2 (University Plaza Frontage Road).

Follow the comments expressed, about the integration of the cyclist and the pedestrian with the recommendations of the Puerto Rico Complete Streets Plan and Design Guidelines. We had a meeting with the committee that wrote the Design Guides. After this meeting it was agreed to incorporate the following to the

project: See Minute of the meeting included as **Appendix D**.

a. Relocate the Bus Stops of the BRT Bus Stop and Shelter of Mayagüez Terrace East and West near the pedestrian crossing at Est. 1530 + 20 (Line PR-2).

b. In the pedestrian mid-block crossings of the Frontage Roads, include Traffic Lights for pedestrians, which would be interconnected with the Traffic Lights of the intersections of PR-3108 and PR-102.

c. Limit the speed in the Frontage Roads to 15 mph, since it is within an Urban School Zone.

d. At crosswalks and along Frontage Roads as a safety measure, implement Traffic Calming Measures, such as Raised Tables, Speed Tables, Speed Humps and Raised Pavement Markers, as well as Regulatory Traffic Signs.

e. As part of the implementation of cycling and pedestrian infrastructure in the Frontage Roads of Mayagüez Terrace and University Plaza, it is proposed:

- A Class III Bikeway: Bicycle Route (Sharrow) in both Frontage Roads, which is a shared lane in the direction of traffic where pavement marking is done with the "sharrows" and Signs of shared the road, with the purpose of warn drivers of motor vehicles that the road must be shared; as implemented in the Master Plan for Bicycles at the Mayagüez University Campus. See Typical Sections D1 & D1-A for Mayagüez Terrace Frontage Road on the East Side of PR-2 and D2 & D2-A for University Plaza Frontage Road on the West Side of PR-2 included as **Appendix D**.

- On the East Side to the shared lane on the Mayagüez Terrace Frontage Road and on the West Side to the shared lane on the University Plaza Frontage Road, a Class II Bikeway: Bicycle Lane is proposed on both Frontage Roads, which is a bicycle lane 5'-0 "wide in the opposite direction to traffic. Between the middle of the shared lane and the bicycle lane, the marking of pavement is proposed, consisting of the Yellow Double Line and some "Raised Pavement Markers" or "Rumble Strip". See Typical Sections D1 & D1-A for Mayagüez Terrace Frontage Road on the East Side of PR-2 and D2 & D2-A for University Plaza Frontage

Road on the West Side of PR-2 included as **Appendix D**.

- Sidewalks will have a minimum width of 8'-0 ". Which include a "Buffer Strip" of 2'-0 "and a sidewalk width of 6'-0" minimum. See Typical Section D1 for the Mayagüez Terrace Frontage Road on the East Side of the PR-2 and D2 for the University Plaza Frontage on the West Side of the PR-2 included as Appendix 2. Another Alternative to be evaluated as part of the final design, is the implementation of Urban Furniture by creating a "Buffer Strip" of 3'-0 "and a sidewalk width of 5'-0" minimum. This would include the Installation, within this "Buffer Strip" of 3'-0 ", Benches, Trash Can, Tree Grates and Inverted U-Type Bike Racks. See Typical Sections D1-A for the Mayagüez Terrace Frontage Road on the East Side of the PR-2 and D2-A for the University Plaza Frontage Road on the West Side of the PR-2 included as **Appendix D**.

- The proposed curbs will be Type A Mountable, without the gutter.

- For Stormwater Curb Inlets Type 2 or Type 3 will be installed, without the grill projecting into the bicycle lane.

- The Utilities of PREPA, PRTC and Cable TV will be relocated underground in order that they do not interfere with the sidewalks.

- The pavement marking of the lanes on the Frontage Roads will be 3.35 meters wide.

3. ALTERNATIVES

There are six (6) alternative layouts that have been evaluated during the selection screening and design process. As part of the screening process, an alternatives analysis was completed originally with four (4) project alternatives that were proposed and analyzed and considered for this roadway improvement project. The four (4) alternatives generally have the same alignment profile however, their geometry varies at the intersections.

One of the goals of this proposed project, in addition to reducing traffic congestion, is to preserve and extend the service life of the pavement and minimize potential environmental damage.

After incorporating several comments from designers and the PRHTA, in May 2017, a fifth alternative was added, which included a change to the proposed geometric concept. In 2018, the preferred alternative, the sixth (6th), was selected that includes a relatively minor alteration from the fifth (5th) alternative. Please see **Table1**, after figure # 6, where a comparison between them is made. Please refer to **Appendix 4** for the phases construction cost.

The review of this proposed project will include a public participation component. In Section 5.5 "*COMMUNITY AND PUBLIC INVOLVEMENT"*, it will be discussed in more details.

All six (6) alternatives include the construction of elevated bridges, roundabouts, and frontage roads at the intersections located between Km. 152 and Km. 154 of PR-2. The location and length of the elevated bridges varies in the different alternatives.

Alternative 6 is recommended to be adopted for final implementation. The six (6) different alternatives are each are briefly discussed below.

3.1 ALTERNATIVE 1

Alternative 1 consists of the construction of bypass elevated bridges for commuting traffic and the channelization of local traffic through parallel frontage roads east and west of PR-2. This includes intersection approaches of two (2) traffic circles that provide access to San Juan St. and UPR-RUM, and three (3) diamond intersections at Mayagüez Terrace, PR-3108 and PR-102 (**Figure 1, Drawing Number GR 01**).

Alternative 1 also includes the construction of two (2) viaduct bridges to be located over the existing PR-2 in order to eliminate traffic signals of five (5) of intersections.

These two (2) viaduct bridges would control the through traffic on the PR-2 corridor without any stopping. The local circulation and access on this corridor, pedestrians, cyclists, residents and commerce will be controlled by the proposed one-way frontage roads to the east and to the west along the PR-2 corridor.

At PR-2 and the San Juan Street Intersection, an urban double lane linked roundabout is proposed to eliminate the traffic signal and congestion on this intersection. A free right turn loop ramp is proposed in this intersection. Similarly, at PR-2 and PR-2R campus entrance, an intersection a double lane roundabout is proposed. A southbound left turn ramp from PR-2 to the UPR-RUM entrance is proposed under the two (2) viaduct bridges. At the intersections of PR-2 with Chardon Street, University Plaza, PR-3108 and PR-102, the local traffic will be controlled by a coordinated traffic signal system at the proposed frontage roads.

3.2 ALTERNATIVE 2

Alternative 2 consists of the construction of bypass elevated bridges at the San Juan Street and UPR-RUM intersections, and PR-3108; construction of two (2) limited access intersections at Mayagüez Terrace and PR- 102, and the construction of an underpass diamond intersection at PR-3108 (**Figure 2, Drawing Number GR 02**). Alternative 2 includes two (2) overpass bridges to be located over the existing PR-2 to eliminate traffic signals in three (3) of the major intersections. In addition, the remaining two (2) intersections, traffic signals would be eliminated at PR-2 and Chardon Street at Mayagüez Terrace Access and PR-2 and PR-102 and would have their median strip closed to prevent left turns. Only right turns would be permitted to enter and exit the secondary streets through proposed frontage roads. The elevated structures would permit U-turns without the need of traffic signals between these two intersections.

3.3 ALTERNATIVE 3

Alternative 3 consists of the construction of bypass elevated bridges for traffic at San Juan St., RUM, and PR-3108 intersections; construction of two (2) limited access intersections with right-in right-out provisions at Mayagüez Terrace and PR- 102; and the construction of an underpass diamond intersection with Texas U-Turn at PR-3108 (**Figure 3, Drawing Number GR 03**). This alternative consists in the development of one (1) overpass bridge to be located over the existing PR-2 and one (1) single T intersection of PR-3108 over PR-2, with elevated structures of Texas U-Turn and ramps to eliminate traffic signals in two (2) of the major intersections of PR-2.

The local traffic in this corridor, pedestrians, cyclists, residents and commerce will be managed by the proposed frontage roads to the east and to the west along the PR-2 corridor. The other two (2) existing signalized intersections on PR-2 and Chardon Street at Mayagüez Terrace Access and PR-2 and PR-102 will have their traffic signals eliminated, the median will be closed to left turns, and only right turns will be allowed to enter and exit the respective secondary street through the proposed frontage roads. The elevated structures will permit U-turns without the need of traffic signals between these two (2) intersections. As in Alternatives 1 and 2, at PR-2 and San Juan Street, and at PR-2 and PR-2R UPR-RUM campus entrance intersections, double lane roundabouts are proposed.

3.4 ALTERNATIVE 4

Alternative consists of the construction of bypass elevated bridges for traffic at San Juan St. and UPR-RUM intersections; construction of two (2) limited access intersections with right-in, right-out provisions at Mayagüez Terrace and PR-102, and the construction overpass bridge to be located over the existing PR-2 and half cloverleaf intersection of PR-3108 to accommodate left-turns (**Figure 4, Drawing Number GR 04**).

The other two (2) existing intersections on PR-2 and Chardon Street at Mayagüez Terrace and PR-2 and PR-102 would have their traffic signals removed. The median strip would be closed to eliminate left turns, where only right turns would be permitted. The elevated structures would permit U-turns without the necessity of traffic lights. At PR-2 and San Juan Street, and at PR-2 and PR-2R (UPR-RUM), intersections double lane roundabouts are proposed. Texas U Turns will be provided in the intersections PR-2 with San Juan Street, just at the entrance of the UPR-RUM Campus (La Vita), and PR-2 with PR- 3108.

Due to a proposed half cloverleaf intersection of PR-3108 over PR-2 to accommodate left-turns located in a vacant area, an additional subsurface cultural resources survey would be necessary.

3.5 ALTERNATIVE 5

Alternative 5 consists of the construction of bypass elevated bridges for traffic at San Juan Street, UPR-RUM, PR-3108 and PR-102 intersections; construction of a limited access intersection with right-in right-out provisions at Mayagüez Terrace; and the construction of two (2) underpass diamond intersections at PR-3108 and PR-102 (**Figure 5, Drawing Number GR 05**).

Alternative 5 includes three (3) overpass bridges to be located over the existing PR-2 to eliminate traffic signals in three (3) of the major intersections. The other two (2) intersections on PR-2 and Chardon Street at Mayagüez Terrace Access will have it traffic signals eliminated, the median will be closed to eliminate left turns, and only right turns will be permitted. At the intersection of PR-2 and PR-3108, the local traffic will be controlled by a coordinated traffic signal system at the proposed frontage roads. Texas U Turn will be provided in intersections PR-2 with San Juan Street, just at the entrance of the UPR-RUM (La Vita), PR-2 with PR-3108, and PR-2 with PR-102.

3.6 ALTERNATIVE 6

The preferred Alternative 6 consists in the development of two (2) overpass bridges to be located over the existing PR-2, in order to eliminate traffic signals in two (2) of the mayor intersections. At existing intersection of PR-2 and San Juan Street, just at the entrance of the UPR Mayagüez Campus (La Vita) and at existing intersection of PR-2 and PR-3108. (**Figure 6, Drawing Number GR 06**)**.**

The intersection on PR-2 and Chardon Street at Mayaguez Terrace Access will have their traffic signals eliminated, the median will be closed to eliminate left turns, and only right turns will be permitted to enter and exit the respective secondary street through the proposed frontage roads.

In the intersection of PR-2 and PR-102, a High Type Intersection (Continues Green T-Intersection) is proposed. The Traffic Signal in the northbound lanes will be eliminated, in order to maintain the through traffic on the PR-2 corridor and only the Traffic Signal in the southbound lanes will be installed. A future connection between PR-2 and PR-102

(Extension of PR-3108) and a construction of Right in- Right Out in the Intersection of PR-2 and PR-102, would eliminated the traffic signal in the southbound lanes. The elevated structures will permit U-turns without the need of traffic signals between these intersections.

The first of these overpass bridges on PR-2 and San Juan Street would carry the northbound lanes of the improved PR-2 roadway proposed. The second of these overpass bridge would carry southbound lanes of the improved PR-2 roadway proposed.

The second of these overpass bridge would carry southbound lanes of the improved PR-2 roadway proposed. The second of these overpass bridges on PR-2 and PR-3108 will carry the northbound lanes of the improved PR-2 roadway proposed. The second of these overpass bridge will and carry southbound lanes of the improved PR-2 roadway proposed. These two overpass bridges would control the through-traffic on the PR-2 corridor without any stop condition.

The local traffic on this corridor, pedestrian, cyclist, residents and commerce will be manage by the proposed frontage roads to the east and to the west along the PR-2 corridor. At PR-2 and San Juan Street and PR-2 and PR-2R Intersections Urban Double Lane Round bouts are proposed in order to eliminate the traffic signal and congestion on this intersection. A southbound left turn ramp from PR-2 to the RUM entrance is proposed under the two viaduct bridges. Intersection of PR-2 and PR-3108 the local traffic would be controlled by coordinate traffic signal system at the proposed frontage roads. Texas U Turn will be provided in the intersections PR-2 and San Juan Street, just at the entrance of the UPR Mayagüez Campus (La Vita), PR-2 and PR-3108.

Of the six (6) alternatives described, it is understood that Alternative 4 has a potentially greater impact capacity due to the construction of a half cloverleaf intersection in a vacant and undeveloped area west of the intersection of the PR-2 with the PR-3108. The rest of the alternatives have similar impact areas.

The Alternative 6 presents the best solution, when compared with the others, providing a non-stop traffic circulation on the main lanes

of PR-2 at a higher operational and safety standard. It is recommended by the PRHTA because:

- The geometry of the roadway would be improved, in a cost effective way with minimal impacts to the community and the environment that would reduce traffic congestion and improve level of service of these intersections along the PR-2. Please refer to **Appendix 4,** for the phases construction cost.

- The regional mobility is improved. The separation of thru traffic from local traffic induced by the proposed access modification project, would have net positive improvements on Highway PR-2 and local streets. Specifically, in 2040, the express way will operate at level of service B during A.M. and P.M. peak hours. Furthermore, the travel times during the peak hours along the expressway in the northbound and southbound directions will be notably shorter when compared to existing conditions and no-build alternative.

- The local system congestion is improved by the elimination of most of the signalized intersection along the corridor and the local mobility by the separation of turning movements from thru traffic.
- Provides more efficient movement of freight.
- Provides an efficient and safety traffic flow at entrance to UPR Mayagüez Campos, Vocational School at San Juan Street, and Chardon Street and University Plaza Commercial.

- Crashes will be reduced significantly as a result of converting Highway PR-2 to expressway from KM. 152.18 to KM. 154.48.

- Promotes and increase in the use of cycling and walking as alternative modes of transportation by providing cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users on Highway PR-2.

- Enables the physical integration of urban centers through a cycling and pedestrian network that improves accessibility to

different land uses. Which develop walkable communities, promote safe access, and ensure a desirable quality of life in the cities and communities on al sustainable way by integrating efficient and economical transportation systems that serve the needs of mobility of people, goods, services and reduce automobile dependence and emissions of gases.

- The esthetics and safety is improved by the proposed high quality pavement surface, bike/pedestrian focused illumination, attractive landscaping design and street furniture, with opportunities for rest and shelter.

ALTERNATIVE I (Figure1)

ALTERNATIVE II (Figure 2)

ALTERNATIVE III (Figure 3)

ALTERNATIVE IV (Figure 4)

ALTERNATIVE V (Figure 5)

ALTERNATIVE VI (Figure 6)

PRELIMINARY PLANS DELIVERY NO.4/ June 19, 2019

COMPARATIVE TABLE (PROPOSED SIX (6) ALTERNATIVES)
TABLE 1

INTERSTATE ACCESS REQUEST, ANALISYS AND PRELIMINARY DESIGN OF IMPROVEMENTS TO INTERSECTIONS PR-2, 2R AND SAN JUAN ST. (RUM ENTRANCE, LA VITA), PR-2 KM 153.90 MAYAGÜEZ /AC-200241 P000002441 MP-2(66)

COST ESTIMATES OF ALTERNATIVES

ITEM	RELEVANT DATA	ALTERNATIVE NO. I	ALTERNATIVE NO. II	ALTERNATIVE NO. III	ALTERNATIVE NO. IV	ALTERNATIVE NO. V MOD.	ALTERNATIVE NO. VI (Recommended Alternative)
1	LENGTH OF PROJECT	2.2913 KM. = 1.4237 MI.	2.1740 KM. = 1.3508 MI.	2.1743 KM. = 1.3510 MI.	2.1743 KM. = 1.3510 MI.	2.3640 KM. = 1.4689 MI.	2.2468 KM. = 1.3960 MI.
2	LENGTH OF STRUCTURES	3,423.00 Meters	1,916.00 Meters	1,803.83 Meters	2,161.83 Meters	2,536.34 Meters	2,004.00 Meters
3	SUPERSTRUCTURE	Adjacent Deck Bulb Tee (Deck BT-65), Two spans with steel plate girders. Deck BT-35 for Bridge over Oro Creek, Voided slab sections for short single span bridges.	Adjacent Deck Bulb Tee (Deck BT-65), Two spans with steel plate girders. Deck BT-35 for Bridge over Oro Creek, Voided slab sections for short single span bridges.	Adjacent Deck Bulb Tee (Deck BT-65), Two spans with steel plate girders. Deck BT-35 for Bridge over Oro Creek, Voided slab sections for short single span bridges.	Adjacent Deck Bulb Tee (Deck BT-65), Two spans with steel plate girders. Deck BT-35 for Bridge over Oro Creek, Voided slab sections for short single span bridges.	Adjacent Deck Bulb Tee (Deck BT-65), Two spans with steel plate girders. Deck BT-35 for Bridge over Oro Creek, Voided slab sections for short single span bridges.	Adjacent Deck Bulb Tee (Deck BT-65), Two spans with steel plate girders. Deck BT-35 for Bridge over Oro Creek, Voided slab sections for short single span bridges.
4	RIGHT OF WAY AREA	23,732.10 Sq.M. = 6.038 Cdas.	16,804.95 Sq.M. = 4.276 Cdas.	18,808.38 Sq.M. = 4.785 Cdas.	39,457.42 Sq.M. = 10.039 Cdas.	22,656.82 Sq.M. = 5.765 Cdas.	22,657.69 Sq.M. = 5.77 Cdas.
5	RIGHT OF WAY PRELIMINARY COST	$2,170,000.00	$1,600,000.00	$1,800,000.00	$3,700,000.00	$2,100,000.00	$2,100,000.00
6	STRUCTURES TO BE AFFECTED	None	None	None	None	None	None
7	BRIDGE COST ESTIMATE	$106,081,149.00	$55,963,975.00	$69,141,951.00	$72,551,281.00	$60,893,077.00	$38,414,435.00
8	PREPA UTILITIES AFFECTED	$1,379,563.00	$1,379,563.00	$1,379,563.00	$1,379,563.00	$1,379,563.00	$1,379,563.00
9	PRASA UTILITIES AFFECTED	$720,000.00	$694,800.00	$722,800.00	$652,000.00	$562,120.00	$562,120.00
10	CONSTRUCTION TIME	Similar for all alternatives	Similar for all alternatives	Similar for all alternatives	Similar for all alternatives	Similar for all alternatives	Similar for all alternatives
11	LEVEL OF SERVICE (AM PEAK, PM PEAK) YEAR 2040	SAN JUAN ST. (A, A) UPR-M (D, B) M. TERRACE (B, B) PR-3108 (B, B)	SAN JUAN ST. (A, A) UPR-M (D, C) M. TERRACE (N/A, N/A) PR-3108 (B, B)	SAN JUAN ST. (A, A) UPR-M (E, D) M. TERRACE (N/A, N/A) PR-3108 (A, B)	SAN JUAN ST. (D, D) UPR-M (E, E) M. TERRACE (N/A, N/A) PR-3108 (B, B)	SAN JUAN ST. (A, C) UPR-M (D, C) M. TERRACE (N/A, N/A) PR-3108 (B, B)	SAN JUAN ST. (A, A) UPR-M (C, C) M. TERRACE (N/A, N/A) PR-3108 (B, B)
12	SIGNALIZED INTERSECTIONS - ELIMINATED	PR-102, PR-3108, Cachardon Street at Mayagüez Terrace Access, San Juan Street and PR-2R at the UPR Mayagüez Main Entrance (La Vita)	PR-102, PR-3108, Cachardon Street at Mayagüez Terrace Access, San Juan Street and PR-2R at the UPR Mayagüez Main Entrance (La Vita)	PR-102, PR-3108, Cachardon Street at Mayagüez Terrace Access, San Juan Street and PR-2R at the UPR Mayagüez Main Entrance (La Vita)	PR-102, PR-3108, Cachardon Street at Mayagüez Terrace Access, San Juan Street and PR-2R at the UPR Mayagüez Main Entrance (La Vita)	PR-102, PR-3108, Cachardon Street at Mayagüez Terrace Access, San Juan Street and PR-2R at the UPR Mayagüez Main Entrance (La Vita)	PR-102 North, PR-3108, Cachardon Street at Mayagüez Terrace Access, San Juan Street and PR-2R at the UPR Mayagüez Main Entrance (La Vita)
13	PROJECT CONSTRUCTION COST	$120,900,000.00	$71,500,000.00	$83,600,000.00	$86,800,000.00	$75,500,000.00	$69,619,255.00

4. ENVIRONMENTAL ASPECTS

This section will discuss various environmental aspects of the proposed project including coordination and planning with the Statewide Transportation Improvement Program (STIP), land use, air quality noise, cultural resources, wildlife habitat, water quality, wetlands, flood zones, construction time and total project length, along with other related subjects.

4.1 LAND USES

The existing land use in the area is a mix of residential, commercial, industrial and public use land (**Figure 7, Land Use Map**).

The construction of the proposed project would not cause changes to existing land use within the project area.

4.2 AIR QUALITY

According to the 2015, Environmental Quality Board (EQB) Annual Environmental Report, the western part of the Puerto Rico meets the established standards for National Air Ambient Quality Standards (NAAQS).

Toxic air emissions are not expected to increase and no exceedances of NAAQS are anticipated, and no significant adverse air quality effects are expected from the proposed project. Any air emission from the proposed project work would be during construction activities. During the construction, any fugitive dust would be minimized with application of water, among other mitigation techniques, in accordance with applicable construction permits regarding fugitive dust.

On January 17, 2018 an air emission study was completed for the subject proposed project (**Appendix A**). The results of this study were that the concentrations under worst-case scenario conditions obtained were between 0.7 and 4.5 ppm for a one-hour average for the year 2020 and between 0.9 and 7.4 ppm for the year 2040. The primary air quality standard for carbon monoxide is 35 ppm for the one-hour average. The results obtained using the CALINE 4 model show levels

of carbon monoxide well below the regulatory limits, indicating that the operation of proposed action would not have a significant adverse effect the receptors.

Based on the results obtained for year 2020 it is concluded that the results of the air quality assessment indicate that levels of carbon monoxide are below the regulatory limits, indicating that the operation of the proposed action would not have a significant adverse effect upon the receivers for all alignments.

4.3 NOISE LEVELS

On November 22, 2017 a noise study was completed for the subject proposed project (**Appendix B**). The results of this study were that none of the receivers approach the Federal Highway Administration (FHWA) threshold levels and none of the calculated noise levels for the year 2020 exceeded the regulatory limit of 67 decibels (dBA) according to the Noise Abatement Criteria, as listed in Table 1, 23 CFR Part 772.

It was concluded in the noise study that for the year 2020, the estimated noise levels fluctuate between 59.2 dBA and 65.7 dBA while for the year 2040 estimated noise levels fluctuate between 60.1 dBA and 67.8 dBA.
Based on the results obtained for year 2020 it is concluded that the estimated noise level:

- Is lower than the impact level (67 dBA) established by current regulations;
- Does not meet the definition of "close to the threshold" (66 dBA or more) established by federal regulations;
- Does not meet the noise impact definition of “an increase of 10 decibels on the existing noise level (measured or estimated)”; and
- Because the study was conducted in the boundary condition of rush hour and for those receivers closest to the roads, the noise level impacting the receiver at other times and other places in the project would be expected to be lower.

Therefore, based on the study data, noise abatement measures are not necessary. Except for temporary noise levels as part of the construction of the proposed project, no significant impact on the existing noise levels would be expected for the proposed project.

4.4 TRANSPORTATION SYSTEM

The proposed project would improve the vehicle congestion and optimize traffic safety along the north-south corridor and east-west approaches. During the proposed construction, the main road would remain open for vehicular traffic. The adjacent neighborhoods and business would continue to use the PR-2 and PR-2R. Emergency access to this area would be minimally impacted during construction because PR-2 would remain open. Traffic signs and portable changeable message signs (PCMS) would be installed to help direct the traffic during the construction activities. In **Appendix C**, Maintenance of traffic (MOT) is included, also known as temporary traffic control. The MOT is a process of establishing of a work zone, providing related transportation management and temporary traffic control on streets and highways right-of-way.

This project would improve collective transportation and integrate the new proposed timetable for bus stops that the Municipality of Mayagüez will install. It is for this reason that the proposed project was coordinated with the Municipality of Mayagüez. The Municipality will be responsible for the design of bus stops, implementation and construction in coordination with the project presented in this document.

4.5 COMMUNITY AND PUBLIC INVOLVEMENT

It should be understood that no schools, institutions, or other community facilities would be negatively affected by the proposed project.

The residents of the surrounding communities in the Mayagüez Municipality, including students, faculty and staff of the UPR-RUM Campus, have been actively expressing their opinion regarding the proposed PR-2 and PR-2R Improvement Project. For the proposed project, we have talked with the merchants of the sector as well as with

the residents. In addition, there has been a discussion with the Municipal Government of Mayagüez to study the most effective alternative.

It is important to highlight, eight (8) meetings were held with the different sectors of the area adjacent to the project, with the purpose of explaining the scope of the project and collecting their opinions and suggestions. Followings, the dates of the meetings of each one of the sectors of individual form are indicated, as well as the Meeting of Citizen Participation and comments provided by stakeholders:

- **Meeting # 1 - Autonomous Municipality of Mayagüez - March 8, 2017**:

  1) The Municipality of Mayagüez is working on the development of the Port of Mayagüez. That in the Intersection of the Highway PR-2 with the PR-102, they expect a considerable flow of trucks, which we must take into consideration during the design and planning stage.
     - In the Design, planning stage and the evaluation of the recommended alternative of the Intersection of the Highway PR-2 with the PR-102, we took into the consideration the expected considerable flow of trucks, as a result of the development of the Port of Mayagüez. A future connection was also provided between intersection of Highway PR-2 with PR-3108 and PR-2 with PR-102, which would manage the expected volume of trucks with the development of the Port of Mayagüez.

- **Meeting # 2- Autonomous Municipality of Mayagüez – April 21, 2017:**

  1) Reduce the green area at the Intersection of PR-2 with San Juan Street and PR-2R.
     - The green area at the Intersection of PR-2 with San Juan Street and PR-2R was reduced.

2) Reduce the impact in the parking area in the Mayagüez Town Center.
    - The impact in the parking area in the Mayagüez Town Center was reduced. Most of the proposed improvements are in PRHTA Lot, which they have it lease to the Mayagüez Town Center.

- **Meeting # 3 – (Place): Headquarters of the Municipal Police of Mayagüez - May 11, 2017**

a) Mayagüez Town Center
b) Mayagüez Plaza
c) El Mesón
d) Popeye
e) Advance Auto Parts
f) Asociación Residentes Ensanche Ramírez
g) Domini Regis, S.E.

1. Prepare Informative and Guidance Workshops for the citizens on the proper use of the Roundabouts.
    - The Puerto Rico Highway Transportation Authority in coordination with the Municipality of Mayagüez will establish a program of orientation of the use of roundabouts to users and public in general, through Guidance Workshops, the distribution of printed propaganda, use of the press, social networks and others.
2. Include in the Design Stage adequate Traffic Signs, with the purpose of guide the users of the road, the destinations of the respective Entrance and Exit.
    - Traffic Signs with the destinations will be included as part of the proposed improvements.
3. When do you expect to start and finish the construction of the proposed works?
    - Engineer Ray Morales informed that at present we do not have a date for the start of construction. The design is expected to begin by 2020.

4. Take into consideration the School Buses that are park in San Juan Street, in front of the Pedro Pérez Fajardo Vocational School.

    - The School Buses Park in the San Juan Street were taken in consideration in the development of the alternatives.

5. They asked that, if it was possible, did we send the Power Point presentation by email to the people who requested it.

    - Engineer Ray Morales informed that we could send the presentation in PDF format by email to the people who requested it.

- **Meeting #4: – "Asociación Residentes de Mayagüez Terrace" (Place): Headquarters of the Municipal Police of Mayagüez - May 12, 2017**

1. Include parking areas in the Mayagüez Terrace Frontage Road, in the way that is possible:
    - Engineer Ray Morales informed that in the R.O.W. of Highway PR-2, there is no provision for parking. There could be a coordination between the Municipality of Mayagüez, PRHTA and the community, to identify Lots for the purpose of creating parking lots.
2. During the construction of the bridges, take into consideration the equipment to be used, in order to minimize the vibration that may occur in the residences.
    - The equipment to be used will be considered during the construction of the bridges, in order to minimize the vibration that may occur in the residences.
3. Consider the storm system of the Frontage Road in the design stage, since it is deficient and the Frontage Road is flooded with heavy rains.

- As part of the design stage, a new drainage system will be proposed in the PR-2 and in the eastern and western Frontage Roads of Mayagüez Terrace and University Plaza. In addition, Bridge #784 over Oro Creek will be replaced. These works will help alleviate drainage problems in the area.

4. Consider the existing Sanitary System in coordination with the Aqueduct and Sewer Authority.
    - The existing Sanitary System in coordination with the Aqueduct and Sewer Authority will be consider in the proposed improvements.

5. Keep access from Street 2 to the Frontage Road, before reaching the intersection of PR-3108.
    - The access from Street 2 to the Frontage Road will remain.
6. Verify access to the Frontage Road, of the residence that borders Intersection PR-3108.
    - The access to the Frontage Road of the residence that borders Intersection PR-3108 is not affected.

7. Consider in the Design Stage, the vehicular flow of Jorge Larranaga Street in one direction only.
    - Engineer Ray Morales informed that the request has to be made to the Municipality of Mayagüez. That street is out of the limits of the project.

8. See if it is possible to move a little further south, the U-Turn before reaching San Juan Street, so that they can access Gaudier Texidor Street.
    - The U-Turn before reaching San Juan Street, was moved to the south in order to give access to Gaudier Texidor Street as requested.

- **Meeting # 5 – University of PR Mayagüez Campus – April 5, 2018**

  Please refers to appendix D.

- **Meeting # 6 - Meeting of Citizen Participation - April 12, 2018**
  Please refers to appendix D.

- **Meeting # 7 – Cervecera de Puerto Rico – 9 de mayo de 2018**

The recommendations of "Cervecera de Puerto Rico" expressed in letter sent on May 12, 2018 by Maribel Montes were considered and implemented in the design of the proposed improvements which are: See letter included as **Appendix E**.

1. We recommend that the Puerto Rico Highway Authority coordinate with the Municipality of Mayagüez to establish a program of orientation of the use of roundabouts to users and public in general, either through the distribution of printed propaganda, use of the press, social networks and others.
    - The Puerto Rico Highway Transportation Authority in coordination with the Municipality of Mayagüez will establish a program of orientation of the use of roundabouts to users and public in general, through Guidance Workshops, the distribution of printed propaganda, use of the press, social networks and others.
2. The Truck Apron in Roundabouts 1 and 2 shall be 2.00 meters wide minimum with mountable curbs.
    - A Truck Apron of 2.00 meters wide with mountable curbs is provided in Roundabouts 1 and 2 as part of the proposed improvements.
3. Verify the dimension of the inscribed circle diameter so that it meets the minimum required for two-lane roundabouts, according to the guidelines of the NCHRP Report 672 - Second Edition.
    - The Proposed dimension of the inscribed circle diameter meets the required guidelines of the NCHRP Report 672 – Second Edition for two-lane roundabouts.
4. During the construction of the project, access must be provided at all times to the PR-2 north and south directions.
    - During the construction of the project, access to

the PR-2 north and south directions will be provided at all times.

- **Meeting # 8**

Follow the comments expressed, about the integration of the cyclist and the pedestrian with the recommendations of the Puerto Rico Complete Streets Plan and Design Guidelines. We had a meeting with the committee that wrote the Design Guides. After this meeting it was agreed to incorporate the following to the project: See Minute of the meeting included as **Appendix D**.

1. Relocate the Bus Stops of the BRT Bus Stop and Shelter of Mayagüez Terrace East and West near the pedestrian crossing at Est. 1530 + 20 (Line PR-2).
2. In the pedestrian mid-block crossings of the Frontage Roads, include Traffic Lights for pedestrians, which would be interconnected with the Traffic Lights of the intersections of PR-3108 and PR-102.
3. Limit the speed in the Frontage Roads to 15 mph, since it is within an Urban School Zone.
4. At crosswalks and along Frontage Roads as a safety measure, implement Traffic Calming Measures, such as Raised Tables, Speed Tables, Speed Humps and Raised Pavement Markers, as well as Regulatory Traffic Signs.
5. As part of the implementation of cycling and pedestrian infrastructure in the Frontage Roads of Mayagüez Terrace and University Plaza, it is proposed:
    a. A Class III Bikeway: Bicycle Route (Sharrow) in both Frontage Roads, which is a shared lane in the direction of traffic where pavement marking is done with the "sharrows" and Signs of shared the road, with the purpose of warn drivers of motor vehicles that the road must be shared; as implemented in the Master Plan for Bicycles at the Mayagüez University Campus. See Typical Sections D1 & D1-A for Mayagüez Terrace Frontage Road on the East Side of PR-2 and D2 & D2-A for University Plaza Frontage Road on the West Side of PR-2 included as **Appendix D**.

b. On the East Side to the shared lane on the Mayagüez Terrace Frontage Road and on the West Side to the shared lane on the University Plaza Frontage Road, a Class II Bikeway: Bicycle Lane is proposed on both Frontage Roads, which is a bicycle lane 5'-0 "wide in the opposite direction to traffic. Between the middle of the shared lane and the bicycle lane, the marking of pavement is proposed, consisting of the Yellow Double Line and some "Raised Pavement Markers" or "Rumble Strip". See Typical Sections D1 & D1-A for Mayagüez Terrace Frontage Road on the East Side of PR-2 and D2 & D2-A for University Plaza Frontage Road on the West Side of PR-2 included as **Appendix D**.

c. Sidewalks will have a minimum width of 8'-0 ". Which include a "Buffer Strip" of 2'-0 "and a sidewalk width of 6'-0" minimum. See Typical Section D1 for the Mayagüez Terrace Frontage Road on the East Side of the PR-2 and D2 for the University Plaza Frontage on the West Side of the PR-2 included as Appendix 2. Another Alternative to be evaluated as part of the final design, is the implementation of Urban Furniture by creating a "Buffer Strip" of 3'-0 "and a sidewalk width of 5'-0" minimum. This would include the Installation, within this "Buffer Strip" of 3'-0 ", Benches, Trash Can, Tree Grates and Inverted U-Type Bike Racks. See Typical Sections D1-A for the Mayagüez Terrace Frontage Road on the East Side of the PR-2 and D2-A for the University Plaza Frontage Road on the West Side of the PR-2 included as **Appendix D**.

d. The proposed curbs will be Type A Mountable, without the gutter.

e. For Stormwater Curb Inlets Type 2 or Type 3 will be installed, without the grill projecting into the bicycle lane.
f. The Utilities of PREPA, PRTC and Cable TV will be relocated underground in order that they do not interfere with the sidewalks.
g. The pavement marking of the lanes on the Frontage Roads will be 3.35 meters wide.

The recommendations of "Plan Maestro de Bicicletas del Recinto Universitario de Mayagüez" expressed in letter sent on April 18, 2018 by Ricardo E. Garcia Rosario were considered and implemented in the design of the proposed improvements which are: See letter included as **Appendix E.**

1. Provide cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users on Highway PR-2.
   • Cycling and Pedestrian infrastructure are provided as part of the proposed improvements.
2. Provide Pavement Markings 'sharrows' that warn drivers the possibility of finding cyclists.
   • Pavement Markings 'sharrows' are provided in the proposed Frontage Roads.
3. Provide Shared the Road Signs with the purpose of warning drivers of motorized vehicles that the road must be shared.
   • Shared the Road Signs and the required Signs for Traffic, Pedestrians and Cyclist will be provided.
4. Expand the bicycle lanes to the outside of the Campus, separating them from motorized traffic (preferably with physical barriers) and from pedestrians.
   • The bicycle lanes will be expanded outside the Campus and will be separated from motorized traffic and from pedestrians.

On Wednesday, March 28, 2018, the invitation to citizen participation to know and contribute to the proposed project was circulated in the "Primera Hora" Newspaper. This participation was scheduled for April 12, 2018 to be held at the Baudilio Vega Berrios Theater at 5:00 PM. Copy of the transcript (*Estinotipia*) of the citizen participation is in **(Appendix D).** As a result of citizen participation in the seven (7) presentations, written communications was received from the citizenship expressing their opinion regarding the proposed PR-2 and PR-2R Improvement Project. (**Appendix E**).

4.6 ENVIRONMENTAL JUSTICE

As part of the project, an Environmental Justice Study was conducted, as part of the results there are no construction activities that could have disproportionately high adverse effects on health or environment of minority and low-income populations. The Environmental Justice Study was completed on August 15, 2017 **(Appendix F).** Based on the analysis of the affected area, population age, minority and low-income populations or environmental factors, the Environmental Justice study concluded that, within the project area there are no areas "where actions can have disproportionately high and adverse effects on health and the environment in minority communities." In addition, the land use at the proposed locations and are not expected to negatively affect any of the low-income areas, susceptible population ranges or have an effect on the density of the population.

There are no construction activities that would directly impact the low-income areas. Based on these findings, there are no areas "where actions can have disproportionately high and adverse effects on health and the environment in low-income communities." Based on this information and the analysis conducted as part of the Environmental Justice Study, the conclusion was that there is no need to develop additional analysis of environmental justice issues for the proposed project.

The improvement of PR-2 is expected to help alleviate traffic flow, traffic congestion and provide easier access to the public use, residential and commercial areas in the immediate vicinity and in the surrounding area of the six (6) alternatives of the proposed project.

4.7 ARCHEOLOGY/HISTORIC SITES

A Phase IA Cultural Resources study was completed in November 2017. This historic and cultural resources analysis was designed to provide an overview on the existing resources within the proposed project area and to analyze the potential impacts to the human and natural environment. The study was performed to comply with Section 106 of the National Historic Preservation Act and with the Act for the Protection of the Terrestrial Archaeological Heritage of Puerto Rico (Law 112 of 20 July 1988). A copy of the Phase 1A study is included in **Appendix G**.

The assessment concluded that the potential of finding unknown cultural resources that may be affected by any of the proposed alternatives is minimal, based on the historic uses of the zone, the absence of known cultural resources within the project area, and the considerable impacts identified.

Therefore it is not recommended to carry out additional archaeological studies for Alternative 6 nor for alternatives 1, 2, 3 and 5. However, if Alternative 4 is selected, a subsurface survey should be carried out only in the area where the half cloverleaf intersection would be built.

Pursuant to 36 CFR Part 800, the PRHTA/FHWA has determined that no historic properties would be affected by Proposed Action. The Puerto Rico State Historic Preservation Office (SHPO) agreed with this determination as indicated on their letter dated January 16, 2020 (SHPO: 09-10-10-02). A copy of this letter is included in **Appendix G**.

If unexpected cultural resources are encountered at any time within the project area, work should cease in the immediate vicinity of such discoveries and SHPO would be notified. After such notification, project activities should not resume without and/or written from the SHPO.

4.8 RECREATIONAL AREAS

The proposed project is not located near any recreational area. We want to clarify that the area where the Fountain is located is not a park. It is located within the green area of an existing island created as part of the

geometry of the Intersection within the Right of Way of the Highway PR-2. It was built by the Western Bank for the Municipality of Mayagüez.

However, in the meetings held with the Municipality of Mayagüez it was reported that it would be impacted as part of the proposed works. It was agreed that it could be relocated in the green areas created as part of the new geometry proposed at the intersection, PRHTA would only be leaving the necessary infrastructure for the relocation, since FHWA does not participate in the construction of the Fountain. The Municipality of Mayagüez would be carrying out a project for the relocation of the Fountain and the landscape treatment in the green areas to remain.

The 'Pebetero' will not be impacted by the proposed works and the land belongs to the Public Buildings Authority. We understand that should not apply a 4 (f).

4.9 POTENTIAL CONTAMINATION

An Asbestos Containing Material (ACM) and Lead Based Paint (LBP) Survey was completed on July 13, 2017. No ACM was identified during this study. Of 59 test combinations for LBP, 22 positive hits for LBP were found. These positive locations were of the yellow traffic paint found on the lines, curbs and pole bottoms. Prior to construction activities, mitigation of these positive areas will be completed in accordance with applicable laws and regulations. A copy of the ACM/LBP Study can be found in **Appendix H.**

In addition, during August 2017, a Phase I Environmental Site Assessment (ESA) was completed in accordance with ASTM Practice E1527 using all appropriate inquiries (AAI). No "recognized environmental conditions" (REC's) were identified on the subject property. A copy of the Phase I ESA can be found in **Appendix I.** The purpose of the Phase I ESA is to reduce PRHTA potential environmental risk and liability associated with CERCLA and SARA environmental regulations, along the alternative routes.

Therefore, except as mentioned above, no structures with the potential for release of hazardous contaminants or substances were observed on the proposed subject project property. Except as mentioned above, no

pollutants or contaminants are anticipated to be found within the proposed project area.

4.10 AESTHETIC EFFECTS

The Project Area is in a located in a diverse area composed of public use, residential areas, industrial and commercial zones. Residents and consumers that use the area would be considered sensitive viewers. The most predominant aesthetic resources in the project area is the vegetation along the PR-2 corridor, the entrance to the UPR-RUM Campus and various monuments and memorial structures, which are part of the visual character of the area.

There would be no permanent aesthetic impacts on vegetation due to this project, since most of the improvements are within the existing Right of Way of Highway PR-2. In order that the urban context and the hybrid profile of the city of Mayagüez be harmonized, we have conceptualized the alternative for the project. By providing pedestrian, cyclist, vehicular and collective infrastructure that does not exist today. In addition, the project will create open spaces in the "La Vita" that, in coordination with the municipality, can be developed as spaces for urban enjoyment. As a result of the improvements:

- The regional mobility is improved. The separation of thru traffic from local traffic induced by the proposed access modification project would have net positive improvements on Highway PR-2 and local streets. Specifically, in 2040, the expressway will operate at level of service B during A.M. and P.M. peak hours. Furthermore, the travel times during the peak hours along the expressway in the northbound and southbound directions will be notably shorter when compared to existing conditions and no-build alternative.

- The local system congestion is improved by the elimination of most of the signalized intersection along the corridor and the local mobility by the separation of turning movements from thru traffic.

- Provides more efficient movement of freight.

- Provides an efficient and safety traffic flow at entrance to UPR Mayagüez Campos, Vocational School at San Juan Street, and Chardon Street and University Plaza Commercial.

- Crashes will be reduced significantly as a result of converting Highway PR-2 to expressway from KM. 152.18 to KM. 154.48.

- Promotes and increase in the use of cycling and walking as alternative modes of transportation by providing cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users on Highway PR-2.

- Enables the physical integration of urban centers through a cycling and pedestrian network that improves accessibility to different land uses. Which develop walkable communities, promote safe access, and ensure a desirable quality of life in the cities and communities on a sustainable way by integrating efficient and economical transportation systems that serve the needs of mobility of people, goods, services and reduce automobile dependence and emissions of gases.

- The esthetics and safety is improved by the proposed high quality pavement surface, bike/pedestrian focused illumination, attractive landscaping design and street furniture, with opportunities for rest and shelter.

On the other hand, some mitigation measures will include the planting of new trees in accordance with the reforestation plan (**Appendix J**). Only the tree inventory will be submitted in this class action process. The Reforestation Plan will be submitted at a later stage of the project.

4.11 BICYCLE AND PEDESTRIANS

(**Appendix K**).

The proposed improvements that will be implemented in this project, to improve safety and accessibility to cyclists and pedestrians, as detailed in the Puerto Rico Complete Streets Plan and Design Guidelines:

- Provide cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users on Highway PR-2. See **Figures O, P and Q.**

- Provide walking and bike routes that connect areas and key "attractors" such as public transit stops, schools, work, local lunch destinations for workers, students and residents. By the construction of Frontage Roads on both sides of Highway PR-2. See **Figures O, P and Q.**

- Construction of sidewalks with suitable width on both sides of the street without obstacles. See **Figures O, Q and Q and Appendix K**.

- Construction of ramps for wheelchairs and strollers in all intersections and mid-block crossings. See **Figures O, Q and Q and Appendix K.**
- Provide Signs and Pavement Markings for Pedestrian and Bike in all intersections and mid-block crossings. See **Figures O, Q and Q and Appendix K.**

- Provision of Refuge Island in all Crossing, with path distance of less 2 lanes and short waiting time. See **Figures O, Q and Q and Appendix K.**

- In order to improve the esthetics and safety high quality pavement surface, bike/pedestrian focused illumination, attractive landscaping design and street furniture, with opportunities for rest and shelter will be implemented as part of the improvements to Highway PR-2. See **Figures O, Q and Q and Appendix K.**

The recommendations of "Plan Maestro de Bicicletas del Recinto Universitario de Mayagüez" express in letter sent on April 18, 2018 by Ricardo E. Garcia Rosario were considered and implemented in the design of the proposed improvements which are: See letter included as **Appendix E**.

- Provide cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users on Highway PR-2.

- Provide Pavement Markings 'sharrows' that warn drivers the possibility of finding cyclists.

- Provide Shared the Road Signs with the purpose of warning drivers of motorized vehicles that the road must be shared.

- Expand the bicycle lanes to the outside of the Campus, separating them from motorized traffic (preferably with physical barriers) and from pedestrians.

4.12 UTILITIES

The Project Area has several existing utilities in place, including electricity, lighting, telephone, and water. The six (6) alternatives require the relocation of the PREPA utilities and lighting. Existing lines will be converted to an underground feeder and underground lines. Also, a new electrical lighting system will be installed throughout the project, including new street lighting poles and luminaries.

The alternatives also require relocating PRASA utilities that may include four (4) inch to 20 inch water pipes, and eight (8) inch to 12 inch sanitary sewer pipes. Those pipes that will remain in place may need to be protected with concrete. The pipes that need to be relocated or protected varies with each alternative. The existing 66 inch diameter sanitary trunk sewer will not be affected by any of the alternatives of this proposed project.

The bridge over Oro Creek is on the route of all alignment alternatives. The structure of the bridge includes two (2) reinforced concrete box culverts with clear spans of 6.00 meters and clear heights of 1.14 meters. This bridge would be partially demolished during construction and replaced.

As part of the design stage, a new drainage system will be proposed in the PR-2 and in the eastern and western Frontage Roads of Mayagüez Terrace and University Plaza. In addition, Bridge #784 over La Quebrada Oro will be replaced. These works will help alleviate drainage problems in the area.

4.13 NAVIGATION

The proposed project is not located at or near any navigation channel.

4.14 WILDLIFE AND HABITAT

A Biological study that included an inventory and review of the natural habitat of wildlife of potential threatened and endangered species was completed and is planned to be submitted to the Department of Natural and Environmental Resources (DNER) (**Appendix L)**.

There are no listed, threatened, critical or endangered species of plants or animals along the proposed project corridor. There was one (1) observed individual protected species *Polygala cowellii*, which is a tree, located inside the UPR-RUM Campus. This tree inventory will not be affected by the proposed project.

The area of the proposed project has been disturbed by institutional, urban and commercial activities for more than 50 years. The study concluded that the proposed project area does not contain any wildlife habitat with a high ecological value.

A reforestation plan was also completed on August 14, 2017 (**Appendix J**). This plan included an inventory of trees that have the potential to be impacted by the proposed project. The tree inventory included a total of 633 individuals less than four inches in diameter. The plan contemplates cutting approximately 622 trees.

As part of the future reforestation plan mitigation activities that will be included in the final plan, about 1,260, four (4) foot tall trees will be planted. Seven (7) different tree species will be include as part of this reforestation plan.

A letter will be sent to Fish and Wildlife Services (FWS) for approval and endorsement as part of this proposed project, once the design is finalized (final plans). All the requirements of this federal agency will be met.

4.15 WATER RESOURCES AND QUALITY

The Water Quality Status for Rio Yagüez (PRWR79A), provided by the USEPA, stated that water quality in this river was impaired for aquatic life, recreation (primary and secondary contact) and as a source for drinking water supply. The causes for impairment, in 2016, were: total coliforms and turbidity. The Water Quality Status for Quebrada Oro (Oro Creek) (PRWQ80A), stated that water quality in this creek was impaired for recreation (primary and secondary contact). The causes for impairm 50 in 2016, were fecal coliforms.

No impact is anticipated during construction to the Rio Yagüez or Oro Creek.

A Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the Notice of Intent (NOI) submittal. The SWPPP would address temporary and permanent water pollution control measures implemented in conformance with the Best Management Practices (BMP's). An Environmental Quality Board (EQB) Erosion and Sedimentation Control Plan (CES Plan) will also be completed as part of the construction permitting and to control any potential sediments from reaching any water bodies.

4.16 GROUNDWATER

The proposed project is not expected to have any impact to groundwater. No public water supply (PWS) systems were found in the immediate vicinity of the proposed project layout alternatives.

According the USGS database, there was a well identified as CIND 4 Well, which was measured in October of 2002 with depth of 5.83 feet below ground surface. This well was built in September of 1954 is 100 feet deep. It location is approximately ¼ mile south-east of the entrance to UPR-RUM.

A Soil Survey was completed on February 6, 2017, specifically for this proposed project. A copy of this soil survey is found in **Appendix M.** It includes additional data on groundwater depth inside the proposed project footprint. The depth to the water table, from the six (6) borings that were completed, range between approximately 13 to 15 feet below ground surface.

4.17 COASTAL ZONE CONSISTENCY

The Project area is located outside of coastal and/or marine zones.

4.18 WETLANDS

A Wetlands Jurisdictional Determination (JD) was prepared in May, 2018 **(Appendix N).**

This JD included the systematic sampling and collection of soils, vegetation, and hydrology along the proposed project corridor for all six (6)) Alternatives (study area).

Wetlands were found within the study area including creeks and associated patches, mainly related to herbaceous coverage. Several drainage channels and creeks exist within the study area and should not be impacted by the proposed highway project.

After evaluating the six (6) proposed alternatives, these are the impact results:

Table 2: Comparative Table (Proposed Six (6) Alternatives) Wetlands Impact

Alternative	Uplands	Wetlands	Impact	Mitigation
I	NA	NA	NA	NA
II	NA	NA	NA	NA
III	NA	NA	NA	NA
IV	NA	NA	NA	NA
V	NA	NA	NA	NA
VI	NA	NA	0.39acres	NA NWP

If impacts are foreseen, then a Joint Permit would be submitted with the JD and Mitigation Plan. If avoidance is adopted, a Non Permit Required can be requested to the Corps of Engineers (COE).

The wetlands that were found have the potential to be under Federal Jurisdiction under the Clean Water Act 404. Wetlands within the study area are considered to be low value, however all potential impacts to regulated aquatic resources and jurisdictional wetlands would be avoided.

4.19 FLOOD ZONE

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) #C0985J and the National Flood Hazard Layer (NFHL), the proposed project is located in an un-shaded Zone X which indicates minimal risk areas outside the 1% and 0.2% annual-chance floodplains (**Figure 8**). Therefore, it is interpreted that the proposed project is located outside both the 100 year and 500 year flood zones and outside the regulated floodway of the Rio Yagüez. This flood map was jointly produced by FEMA and the Puerto Rico Planning Board.

4.20 PROJECT SCHEDULE

According to the designers, the construction of the proposed project is estimated to be approximately two (2) years. The project is founded up to the design phase.

5.0 ENVIRONMENTAL COMMITMENTS

The proposed project will have the following environmental commitments:

- The construction of the proposed project would not cause changes to existing land use within the project area. The construction of the project does not require the relocation of families, or businesses.
- The residents of the Mayaguez Terrace Urbanization, will not have an adverse impact to its visualization, since the difference of elevation of the proposed PR-2, will not extend there.
- The erosion and sedimentation control measures will be fully complied with along the proposed alignment. Similarly, the fugitive dust resulting from the construction activities will be constantly monitored and mitigated by implementing the best engineering practices.

- There will not be a permanent aesthetic impact on the vegetation due to this project, since most of the improvements are within the Right of Way existing on the highway PR-2.
- In terms of air quality, by 2020, the operation of the proposed action would not have a significant adverse effect on the receivers for all alignments, since it is expected that carbon monoxide levels will be below regulatory limits.
- In terms of noise levels, by 2020, the estimated noise levels fluctuate between 59.2 dBA and 65.7 dBA. Therefore, no significant impact on the existing noise levels would be expected for the proposed project.
- In terms of transportation, the proposed project would improve the vehicle congestion and optimize traffic safety along the north-south corridor and east-west approaches.
- Taking into consideration environmental justice, it will be taken into account that the proposed project does not have disproportionately high and adverse effects on the area, effects on health and the environment in minority communities.
- Based on the archaeological study Phase IA prepared for the six (6) alternatives, it is not expected to find any archaeological findings and their probabilities are minimal. If any archaeological findings are found during the construction activities, it will proceed to fully comply with its notification and carry out the entire process required by the local and federal agencies.
- There is a genuine commitment of the proposed project to find during the construction activities any species of flora or fauna that is listed, threatened or endangered, the area will be protected and local and federal agencies will be notified to its protection and management.
- Provide cycling and pedestrian infrastructure to improve mobility, accessibility and safety for all users on Highway PR-2.
- It is proposed, in another stage, to present a Reforestation Plan to the Department of Natural and Environmental Resources for the project.
- An application for permission for the construction and protection of wetlands and bodies of water will be submitted to the United States Corps of Engineers (USACE).
- Any material with lead content will be removed, according to the existing EQB regulations.
- In order to improve the esthetics and safety high quality pavement surface, bike/pedestrian focused illumination, attractive landscaping

design and street furniture, with opportunities for rest and shelter will be implemented as part of the improvements to Highway PR-2.

- The bridge over Oro Creek is on the route of all alignment alternatives. This bridge would be demolished during construction and replaced. It is proposed at a later stage, to submit the corresponding permits of the United States Corps of Engineers.
- If unexpected cultural resources are encountered at any time within the project area, work should cease in the immediate vicinity of such discoveries and SHPO would be notified. After such notification, project activities should not resume without and/or written from the SHPO.

5 CONCLUSIONS

An alternatives analysis was prepared for this Categorical Exclusion Report. PR-2 and PR-2R is one of the most important roads for access to Mayagüez and UPR-RUM and other institutions, business and communities in the area. This corridor road provides access to the center of Mayagüez, and outlying Municipalities of Añasco, Aguada, Horimgueros, Cabo Rojo, and Rincón.

The proposed work would meet current design and functional standards improving the safety of the user and allow the efficient use of any type of vehicles through the proposed project.

Several studies were completed as part of this process, including: Site Survey; Air Study; Noise Study; Environmental Justice Study; Cultural Resources Study; ACM/LBP Study; Phase I ESA; Reforestation Plan; Flora & Fauna and a Wildlife Habitat Study; Soil Survey; and a Wetlands Jurisdictional Determination study.

No endangered species or their habitats would be affected by the proposed project. The proposed action would not affect the existing flood levels. No potential impacts to the air, noise, cultural resources or the human health or the environment has been identified by the above studies.

Also, all applicable environmental issues have been or would be addressed prior to and/or during the construction of the proposed project, in compliance with the applicable laws and regulations.

The Project is included in the Statewide Transportation Improvements Program (STIP) 2019-2022, Item 14, page FHWA-13, for the Design Phase in Fiscal Year

2022 with an estimated cost of $2,000,000.00 and for future investment the phases of ROW with a total cost of $1,000,000.00 and Construction with an estimated cost of $12,000,000.00. The project number is AC-200241(P000002441 / MP-2(66)) with ZP-20 funds.

CE was prepared in accordance with 40 Code of Federal Regulations (CFR) Part 1500, Council on Environmental Quality Regulations for Implementing the Procedure Requirements of the National Environmental Policy Act of 1969 as amended; 23 CFR Part 771, Federal Highway Administration (FHWA) Environmental Impact and Related Procedures; and the Puerto Rico Environmental Public Policy Act as amended.

PRHTA determined that Proposed Action can be classified as a Class Action Type II according to 23 Code of Federal Regulations (CFR), Section 771.117(d)(7). We are hereby requesting FHWA concurrence with our determination.

Alexandra Velázquez Delgado, PE
Director
Programming and Special Studies Area
Puerto Rico Highway and Transportation Authority

Concur:

CRISTOBAL AFANADOR-HERNANDEZ
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Federal Highway Administration

April 6, 2020
Date