



**U.S. Department of Housing and Urban  
Development**

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Washington, DC 20410  
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# **Environmental Assessment Determinations and Compliance Findings for HUD-assisted Projects 24 CFR Part 58**

## **Project Information**

**Project Name:** Geometric Improvements to PR-2 & PR-6 Intersection (PR-CRP-001109)

**Responsible Entity:** Puerto Rico Department of Housing (PRDOH)

**Grant Recipient** (if different than Responsible Entity): Municipality of Bayamón

**State/Local Identifier:** Puerto Rico / Bayamón

**Preparer:** Gray Jones, Environmental Planner, ICF and Mildred Guzman, Sr. Environmental Scientist, ICF

**Certifying Officer Name and Title:** Pedro A. De León Rodríguez, MSEM/Permits and Environmental Compliance Specialist

**Consultant** (if applicable): ICF

**Direct Comments to:** PR Department of Housing at [environmentcdbg@vivienda.pr.gov](mailto:environmentcdbg@vivienda.pr.gov)

**Project Location:** Intersection between State Roads PR-2 (at km. 9.8) and the PR-6 (at km. 0.0);  
Lat/Long: 18.396966°, -66.138431° ;

Cadaster number for roads: PR-6: 720-021-000-06; PR-2: 720-021-000-02 (obtained from  
<https://gis.jp.pr.gov/mipr/>)

Cadaster number for properties: 085-028-839-04-901, 085-019-004-48-904 (obtained from  
<https://catastro.crimpr.net/cdprpc/> )

### **Description of the Proposed Project** [24 CFR 50.12 & 58.32; 40 CFR 1508.25]:

The Autonomous Municipality of Bayamon (AMB) proposes geometric improvements on the intersection of State Roads PR-2 (at km. 9.8) and PR-6 (at km. 0.0) to replace the traffic light system with a roundabout design and elevated bridge to reduce the traffic congestion during peak hours. This intersection serves as a key community corridor connecting East and West Bayamon's commercial and residential areas. The transit during Hurricanes Maria and Irma was vastly affected by the lack of power, and the proposed project will minimize this problem by redirecting traffic movements out from the main traffic light system in the jurisdiction.

The proposed geometrical improvements in the intersection will provide all necessary movements (including a new flyover bridge) to attend PR-6, Villa España community, PREPA facilities, La Caridad frontage road and PR-2. The project will also include PR-2 lanes realignment, a reversible lane to San Juan, utilities work (PRASA, PREPA, communications, etc.) and maintenance of traffic (MOT) plans to minimize congestion levels during construction. The redesign of this intersection will respond to the growing needs of this economic area, serving residential and commercial, medical and student needs. Also, the action will help to increase community resilience during emergency events. The geometric improvements will also increase the fluidity of traffic movement, which has historically demonstrated the potential to improve the area's economic activity.

The project includes the following activities:

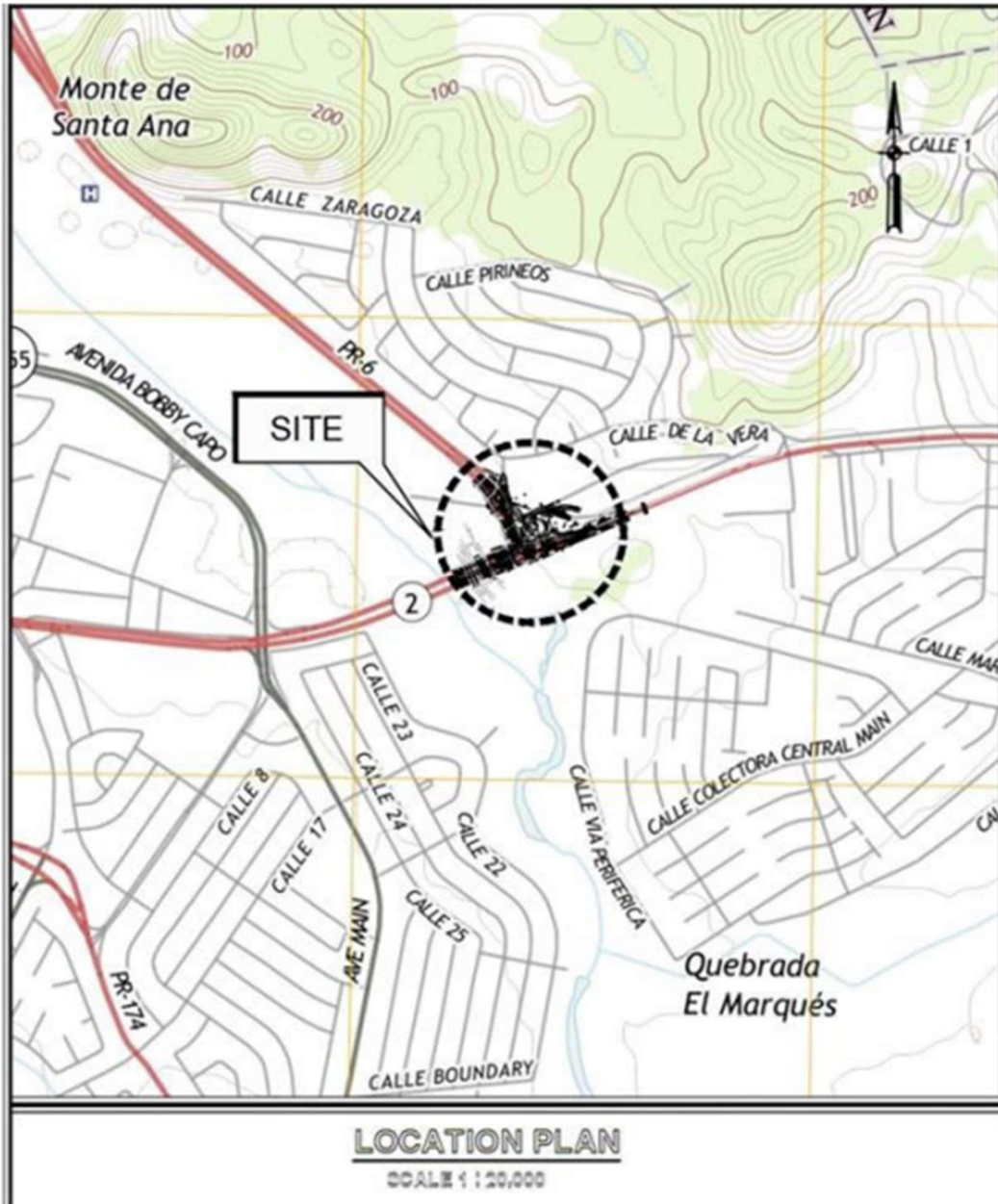
- Pavement removal and installation of new pavement,
- Construction of sidewalks,
- Construction of curbs, gutters, barriers, and guardrails,
- Construction of retaining wall,
- Construction of concrete island,
- Removal and installation of infrastructure,
- Improvement and redesign of the traffic lighting system,

The project will service residential and commercial areas benefitting east and west of the Bayamon River, especially residents and the low and moderate-income community, improving mobility, access, and safety, while supporting commercial investments with more fluid movement of the community. There are also three train stations that will benefit from this project: Jardines, Bayamón and Deportivo. The roundabout will also serve as an evacuation route in the event of a natural disaster, providing access routes to primary expressways and clearance routes in the event of tsunamis.

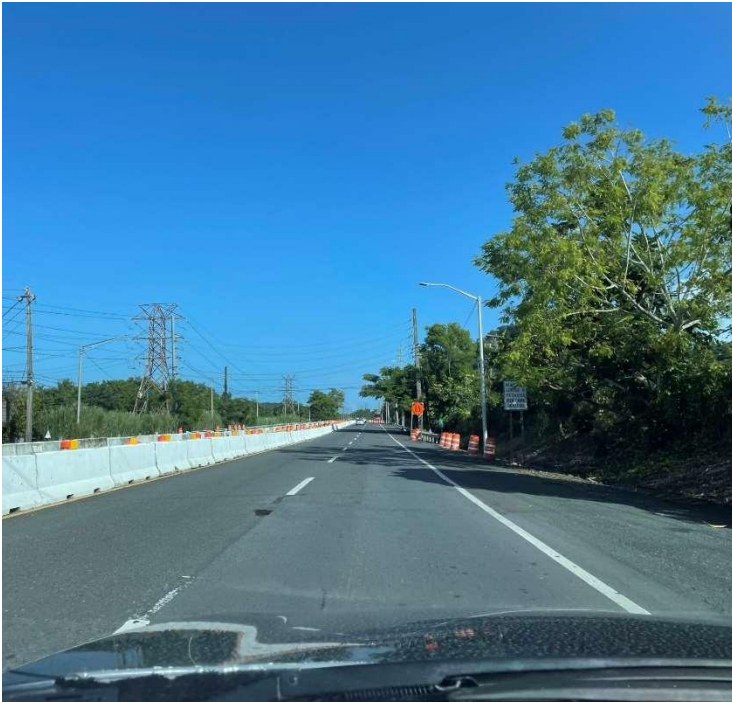
Project location and photos of actual conditions in the area can be seen below. Construction drawings are 100% completed (refer to Attachment 1). The estimated construction period is 24 months. The sole source of funding for this project is expected to be obtained through CDBG-DR funds.



PROJECT LOCATION OF: Roundabout PR-2 & PR-6



Photos of Project Area:







**Statement of Purpose and Need for the Proposal** [40 CFR 1508.9(b)]:

Road PR-2 is one of the main highways in the Puerto Rico metropolitan area, with heavy traffic in peak hours. This intersection serves as a key community corridor connecting East and West Bayamon commercial and residential areas. The transit during Irma and Maria hurricanes was vastly affected by the lack of power that resulted in an island-wide outage, as traffic lighting system was out of service. The proposed project will minimize such problems by redirecting traffic movements out from the main traffic light system in the jurisdiction. This will improve traffic safety as well as the safety of emergency personnel.

**Existing Conditions and Trends** [24 CFR 58.40(a)]:

The project will be developed at the intersection of State Roads PR-2 (at km. 9.8) and PR-6 (at km. 0.0) which is located in the Municipality of Bayamon. The location is within an urban area with residential subdivisions, churches, a school, and commercial businesses within a 0.5 mi radius. A substation from the electrical grid (Subestación Bayamón) borders the project area to the west, a church and residences border the project area to the north and northeast, an open grassy field borders the area to the east, a forested lot, school, and an apartment complex borders the area to the southeast, and a forested lot and railway borders the area to the south.

A traffic study was carried out which describes the current conditions at the intersection (study can be found in the appendices of this document). The intersection is affected and directly affects the operation of three other intersections, so its study was evaluated as a whole. The information reads:

The intersection is affected and directly affects the operation of three other intersections. One of these intersections is the access to a facility of the Electric Power Authority. The latter does not generate significant conflicts for the other intersections, so it will not be considered in the analysis. In general terms, PR-2 runs from East to West with two and three lanes per direction while PR-6 runs from North to South with two lanes per direction. The intersections on the network are all “T” type with channelized right turns and short left turn lanes.

The existing condition in the network under study, during the morning peak period, shows acceptable delays and service levels. Our field visit revealed that a strong vehicular flow uses the marginal road of PR-2 from PR-6 in a northerly direction, with the purpose of moving east during morning rush hour without going through the PR-2 traffic lights. The movements with the worst levels of service during this period were the exit from Urb. Villa España and the aforementioned turn to the left from PR-6 to the marginal area of PR-2. Of these, the most critical is the turn to the left, since it blocks one of the two lanes of PR-6 in the North access of that intersection.

The peak period in the afternoon, in the network under study shows acceptable delays and service levels. As expected, the movements with the greatest delay are those corresponding to the movements on minor roads. However, the acceptable delay is the eastern access of PR-2 is accompanied by a significant queue of about 26 vehicles per lane; although it dissipates quickly.

**Funding Information**

Grant Numbers	HUD Program	Funding Amount
B-17-DM-72-0001	Community Development Block Grant - Disaster Recovery (CDBG-DR)	\$11,938,162,230.00
B-18-DP-72-0001		
B-19-DP-78-0002		
B-18-DE-72-0001		

**Estimated Total HUD Funded Amount:** \$15,037,481.00

**Estimated Total Project Cost** (HUD and non-HUD funds) [24 CFR 58.32(d)]: \$15,037,481.00 (HUD will be the only source of funding for this project)

**Compliance with 24 CFR 50.4, 58.5, and 58.6 Laws and Authorities**

Record below the compliance or conformance determinations for each statute, executive order, or regulation. Provide credible, traceable, and supportive source documentation for each authority. Where applicable, complete the necessary reviews or consultations and obtain or note applicable permits of approvals. Clearly note citations, dates/names/titles of contacts, and page references. Attach additional documentation as appropriate.

Compliance Factors: Statutes, Executive Orders, and Regulations listed at 24 CFR §58.5 and §58.6	Are formal compliance steps or mitigation required?	Compliance determinations
<b>STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR 50.4 and 58.6</b>		
<b>Airport Hazards</b>  24 CFR Part 51 Subpart D	Yes No <input type="checkbox"/> <input checked="" type="checkbox"/>	The project site is not within 15,000 feet of a military airport and is not within 2,500 feet of a civilian airport. The Project site is 4.36 miles southwest of the Fernando Luis Ribas Dominicci Airport and 8.59 miles west of Luis Muñoz Marín International Airport (joint military). The project is in compliance with 24 CFR Part 51 Subpart D, and no formal compliance steps or mitigation are required. <i>See Attachment 2 Distance to Airports Map</i>
<b>Coastal Barrier Resources</b>  Coastal Barrier Resources Act, as amended by the Coastal Barrier Improvement Act of 1990 [16 USC 3501]	Yes No <input type="checkbox"/> <input checked="" type="checkbox"/>	The closest Coastal Barrier Resources System unit is PR-86P, Punta Salinas, which is approximately 5.3 miles to the northwest of the project site. Because no CBRS units are located proximate to the project site, the

		project is in compliance with the Coastal Barrier Resources Act. No formal compliance steps or mitigation are required. <i>See Attachment 3 Coastal Barrier Resources Map</i>
<b>Flood Insurance</b>  Flood Disaster Protection Act of 1973 and National Flood Insurance Reform Act of 1994 [42 USC 4001-4128 and 42 USC 5154a]	Yes    No <input type="checkbox"/> <input checked="" type="checkbox"/>	According to the Flood Insurance Rate Map issued by FEMA (Panel 72000C0345J, effective 11/18/2009) the project is NOT located within a Special Flood Hazard Area (SFHA) but is within areas of 0.2% annual chance flood, also known as 500-year floodplain. Because this is not considered a critical action and due to the nature of the project (roadways) there is no requirement to obtain flood insurance. No formal compliance steps or mitigation are required. <i>See Attachment 4.a. for Flood Insurance Rate Map</i>
<b>STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR 50.4 &amp; 58.5</b>		
<b>Clean Air</b>  Clean Air Act, as amended, particularly section 176(c) & (d); 40 CFR Parts 6, 51, 93	Yes    No <input type="checkbox"/> <input checked="" type="checkbox"/>	The project site is located in a non-attainment area for SO2 1-hr (2010 standard). However, there will be no new construction or conversion of land use facilitating the development of public, commercial, or industrial facilities or five or more dwelling units. Also, the project does not involve the installation of permanent stationary air emission sources. The project is therefore in compliance with the Clean Air Act and 40 CFR Parts 6, 51, and 93. No formal compliance steps or mitigation are required. <i>See Attachment 5 EPA Green Book and Nonattainment/Maintenance Map</i>
<b>Coastal Zone Management</b>  Coastal Zone Management Act, sections 307(c) & (d)	Yes    No <input type="checkbox"/> <input checked="" type="checkbox"/>	Puerto Rico contains a designated coastal zone in accordance with the Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. 1451 et seq). Per Puerto Rico's Coastal Zone Management Program, the inland boundaries of the coastal zone include coastal strips on the main island of Puerto Rico extending 1,000 meters from the shoreline, and additional distances where



		<p>necessary to assure the inclusion of key natural systems of the coast. Based on this definition and after review of Puerto Rico’s coastal zone boundaries, the project site is not located within the defined coastal zone. The proposed project site is over 3.0 kilometers south of the nearest coastal zone boundary. The project is therefore in compliance with the CZMA, sections 307(c) and (d). No formal compliance steps or mitigation are required. <i>See Attachment 6 Coastal Zone Boundary Map</i></p>
<p><b>Contamination and Toxic Substances</b></p> <p>24 CFR Part 50.3(i) &amp; 58.5(i)(2)</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>A review of U.S. Environmental Protection Agency (EPA) databases, including Resource Conservation and Recovery Act (RCRA) Information, air pollution data, National Pollutant Discharge Elimination System (NPDES), Toxics Release Inventory (TRI), Superfund Enterprise Management System, Brownfields Assessment, Cleanup and Redevelopment Exchange System, and Toxic Substances Control Act was undertaken to determine if any sites of concern were located within an approximate 3,000 feet (0.6-mile) radius of the project site. In addition to EPA database, the PR Planning Board’s website was also used as reference to obtain information related to nearby Underground Storage Tanks (UST) and Environmental Incidents. Photographic evidence from the Historic Preservation assessment and other readily available information sources (Google Earth Pro, Google Maps) were used to determine past uses in the project area. Since the river is located to the West of the project site, it creates a natural barrier that limits the transport of contaminants in the soil or groundwater (according to Veve, TD et al. – see Attachment 7). Thus, sites to the West of the river were not considered in this assessment. Only sites to the East of the river, and within a radius of 3,000 feet (0.6 mi) were reviewed.</p> <p>EPA’s database provided information of sites identified as RCRA facilities, or</p>

handlers of hazardous waste. The nearest site is located some 60 ft to the south of the southern project boundary. Based on the facility's name, it may have been a fuel service station. No additional information was found related to this property, even though direct inquiries were made to the Underground Storage Tank (UST) offices in the Department of Natural and Environmental Resources (DNER) and via email to the EPA. However, soil movement activities will occur some 120 feet to the north of the identified site, and since the hydraulic downgradient (refer to information in Attachment 7) in general terms, is directed towards the river, there is limited probabilities that any previously unidentified contamination source will affect the proposed development or its intended use. Other sites identified in the EPA database do not pose significant concern due to the nature of the activities and/or the distance from the project limit (see details in Attachment 7).

Information obtained from MIPR, PR Planning Board's website, revealed that there was an "Environmental Incident" in the electrical facility located adjacent, West of the project site. Information was requested via email to the current facility administrator, LUMA. The Environmental Director indicated that an incident occurred more than 20 years ago that resulted in a spill at this site. However, there was mobilization and clean up and the spill did not reach the river. No other specific documentation was provided or found in the readily available databases. This incident occurred downgradient from the proposed project area, so it not expected that it will affect the proposed development or its intended use.

Information from MIPR also led to the identification of 2 UST within the 3,000 ft radius. One is located at an estimated 1,127



feet to the East of the project limit and is listed in the DRNA's Active Leaking Underground Storage Tank (LUST) list. The DRNA has UST files for public review, by request, and this site's file was accessed and revised at the agency's offices. The information showed that the Environmental Quality Board requested a corrective action plan in 2013, but this plan was not in the file. The site is over 2,300 feet from the area where the active excavation will occur within the project. Although a potential contamination source, there is no information that suggests that contamination from the site may affect the proposed development or its intended use.

Regarding past uses of the project site, information readily available from web sources shows that the project area was heavily developed for residential and possibly commercial purposes in the 1990's. Yet, the specific uses of the individual lots are difficult to determine, as information is not readily available.

The proposed project intends to rearrange traffic configuration by constructing a roundabout and other traffic-management infrastructure. This activity will not add sensitive receptors or increase residential density. Thus, any existing or prior uses or activities in areas surrounding the site are not expected to impact the proposed action. The identified sites would not affect the health and safety of project occupants, because there would be no occupants resulting from the proposed project, nor would they conflict with the intended use of the site.

Since the area has been actively developed and used during the 70 years, there is no guarantee that the project area is free from contamination. However, from the multiple sources of information reviewed, there is no direct and unequivocal evidence that the

		<p>project site is contaminated or otherwise unsuitable for the proposed project. Should there be any hazards, the property owner (the Municipality of Bayamon) will be responsible for any remediation or mitigation measures necessary, as per rule of law.</p> <p>This summarizes the compliance review performed to meet 24 CFR Part 58.5(i)(2). Based on the information presented, no formal compliance steps or mitigation are required at this moment. See Attachment 7 for supporting documents.</p>
<p><b>Endangered Species</b></p> <p>Endangered Species Act of 1973, particularly section 7; 50 CFR Part 402</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>The proposed action’s activities will occur within existing Rights of Way of roads, bridges and highways. Based on the location and scope of the project components, the proposed may seek coverage under the Blanket Clearance Letter issued by the US Fish and Wildlife Service (USFWS) for HUD projects, dated January 14, 2013. Based on this criterion, the action has been determined to result in no adverse effects to federally listed species under USFWS jurisdiction. A Self-Certification document was prepared. Thus, the project is in compliance with the Endangered Species Act of 1973 and 50 CFR Part 402. No formal compliance steps or mitigation are required.</p> <p>However, if a Puerto Rican Boa is found in the project action site, work shall cease until the Boa moves off on its own. If the Boa does not move off, the Construction Manager shall contact the Puerto Rico Department of Natural and Environmental Resources (DNER) and ask for them to relocate the Boa.</p> <p><i>See Attachment 8 for USFWS Blanket Clearance Letter documentation</i></p>
<p><b>Explosive and Flammable Hazards</b></p> <p>24 CFR Part 51 Subpart C</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>The proposed project, reconstruction, and redesign of an existing intersection will not increase residential density and is not an area where people are likely to congregate. Additionally, the project is not a facility that stores, handles, or processes conventional</p>

		fuels, hazardous gases, or chemicals of an explosive or flammable nature, and as such, does not pose a risk of injury in the event of a fire or an explosion to nearby residences or other areas where people may congregate or be present. Therefore, the proposed action is in compliance with 24 CFR Part 51 Subpart C. No formal compliance steps or mitigation are required.
<p><b>Farmlands Protection</b></p> <p>Farmland Protection Policy Act of 1981, particularly sections 1504(b) and 1541; 7 CFR Part 658</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>According to the information from the Natural Resources Conservation Service, most of the project footprint is located in areas classified as “Not prime farmland” while a portion of the project is within “Prime farmland”. However, the prime farmland area corresponds to areas that have been developed as road PR-2. The proposed action does not include activities that are subject to the Farmland Protection Policy Act of 1981, which includes new construction, acquisition of undeveloped land, or conversion of land uses that could potentially convert one land use to another. Thus, the proposed action is in compliance with the Farmlands Protection Policy Act of 1981. No formal compliance steps or mitigation are required. <i>See Attachment 9 Farmland Classification Map.</i></p>
<p><b>Floodplain Management</b></p> <p>Executive Order 11988, particularly section 2(a); 24 CFR Part 55</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>Per the Advisory Base Flood Elevation (ABFE) map, the project is within the boundary of the 0.2% Annual Chance Flood, also known as 500-year floodplain. Since the project is considered a non-critical action, it is allowed to proceed without additional Floodplain Management requirements. The project is therefore in compliance with Executive Order 11988 and 24 CFR Part 55. No formal compliance steps or mitigation are required. <i>See Attachment 4.b. for ABFE Map</i></p>
<p><b>Historic Preservation</b></p> <p>National Historic Preservation Act of 1966, particularly sections 106 and 110; 36 CFR Part 800</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>Section 106 consultation was performed for the project. On August 17, 2023, SHPO issued their concurrence with the finding of “no historic properties affected within the project’s area of potential effects.” Thus, no mitigation measures are required the project</p>

		complies with the National Historic Preservation Act. <i>See Attachment 10 SHPO Consultation docs.</i>
<p><b>Noise Abatement and Control</b></p> <p>Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978; 24 CFR Part 51 Subpart B</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>The proposed action does not include new construction for residential use or rehabilitation of an existing residential property. Increased noise due to construction activities will be temporary and incidental to this phase. It is not anticipated that the project will introduce new permanent noise sources which would interfere with surrounding uses during operation. In general, the project area will be used for the same purpose before and after project completion.</p> <p>It should be noted that the Villa España development, adjacent to the project area, has a concrete wall that serves as a noise wall. Six feet high concrete walls could reduce the noise levels at the adjacent residences up to 8 db(A). This reduction complies with the 2011 Puerto Rico Department of Transportation and Public Works Noise Policy.</p> <p>The proposed action is in compliance with the Noise Control Act of 1972 and 24 CFR Part 51 Subpart B. No formal compliance steps or mitigation are required.</p>
<p><b>Sole Source Aquifers</b></p> <p>Safe Drinking Water Act of 1974, as amended, particularly section 1424(e); 40 CFR Part 149</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>The proposed action includes activities beyond acquisition, leasing, or rehabilitation of existing buildings. However, the project site is not located on a sole source aquifer and is therefore in compliance with the Safe Water Drinking Act of 1974 and 40 CFR Part 149. It is worth noting that there are no sole source aquifers in Puerto Rico. No formal compliance steps or mitigation are required. <i>See Attachment 11 Sole Source Aquifers Map.</i></p>
<p><b>Wetlands Protection</b></p> <p>Executive Order 11990, particularly sections 2 and 5</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>Based on a review of the U.S. Fish and Wildlife Service’s National Wetlands Inventory, a mapped freshwater emergent wetland overlaps a portion of the southwest portion of project site. However, the project is located in previously impacted areas</p>

		<p>where pylons for electric utilities, sanitary water lines, potable water lines and existing drainage system have been built.</p> <p>A site visit was conducted by the project designer’s biologist on July 11, 2023, to assess if the area has Wetland characteristics. No wetlands indicators were identified in the area. Therefore, it has been determined that the project will not impact an on- or off-site wetland, and the project is in compliance with Executive Order 11990. No formal compliance steps or mitigation are required. <i>See Attachment 12 Wetlands Map and Attachment 13 Site Inspection Report</i></p>
<p><b>Wild and Scenic Rivers</b></p> <p>Wild and Scenic Rivers Act of 1968, particularly section 7(b) and (c)</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>There are three designated wild and scenic rivers in Puerto Rico, all of which are in El Yunque National Forest, approximately 27 miles to the east of the project site. The proposed action is therefore not in proximity to a wild, scenic, or recreational river and is in compliance with the Wild and Scenic Rivers Act of 1968. No formal compliance or mitigation steps are required. <i>See Attachment 14 Wild and Scenic Rivers Map</i></p>
<b>ENVIRONMENTAL JUSTICE</b>		
<p><b>Environmental Justice</b></p> <p>Executive Order 12898</p>	<p>Yes    No</p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>	<p>The project is not expected to create adverse environmental impacts and would not create an adverse and disproportionate environmental impact or aggravate an existing impact. The action is being undertaken to improve the flow of vehicular and pedestrian traffic for a community corridor connecting East and West Bayamon commercial and residential areas. The action will take place within existing rights-of-way, there will be no displacement of communities or new limitations in the use of the facilities. The project is expected to have an overall beneficial impact on the community and would not result in any unmitigated impacts. Therefore, the project will not result in disproportionately adverse impact on sensitive populations. Based on the above, the project is in compliance with</p>

		Executive Order 12898. No formal compliance or mitigation steps are required.
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**Environmental Assessment Factors** [24 CFR 58.40; Ref. 40 CFR 1508.8 &1508.27] Recorded below is the qualitative and quantitative significance of the effects of the proposal on the character, features and resources of the project area. Each factor has been evaluated and documented, as appropriate and in proportion to its relevance to the proposed action. Verifiable source documentation has been provided and described in support of each determination, as appropriate. Credible, traceable and supportive source documentation for each authority has been provided. Where applicable, the necessary reviews or consultations have been completed and applicable permits of approvals have been obtained or noted. Citations, dates/names/titles of contacts, and page references are clear. Additional documentation is attached, as appropriate. **All conditions, attenuation or mitigation measures have been clearly identified.**

**Impact Codes:** Use an impact code from the following list to make the determination of impact for each factor.

- (1) Minor beneficial impact
- (2) No impact anticipated
- (3) Minor Adverse Impact – May require mitigation
- (4) Significant or potentially significant impact requiring avoidance or modification which may require an Environmental Impact Statement

Environmental Assessment Factor	Impact Code	Impact Evaluation
<b>LAND DEVELOPMENT</b>		
Conformance with Plans / Compatible Land Use and Zoning / Scale and Urban Design	1	The project site is located near to a residential urban area and within the existing rights-of-way. The adjacent lots consist of residences, condominiums, small businesses, grocery stores, churches, and small eateries. During construction, minor impacts will occur to the local urban area due to the presence of construction vehicles and impeded traffic. The added roundabout will retain the current land use of the project area and improve the traffic flow in the area during operations.  Land classification for the area of the project is identified as “urban soil” the municipality’s Soil Classification Map. The area has two different qualification categories which are High density residential and “Dotacional General” which is basically an area where many uses are allowed (this is the same qualification that the current roads have). Therefore, the proposed use is aligned with the current zoning and land use.
Soil Suitability/ Slope/ Erosion/ Drainage/ Storm Water Runoff	3	<b>Soil Suitability</b> -The proposed Project is feasible from a geotechnical standpoint. According to the geotechnical investigation, the proposed building can be safely constructed, and the site developed, according to their

		<p>conclusions and recommendations discussed. Please refer to Attachment 15 for Geotechnical Investigation documents.</p> <p><b>Sedimentation and erosion controls</b> will be implemented to comply with both local and federal regulations. As the project area is over one acre, compliance with the EPA NPDES Construction General Permit will be required. Compliance measures include the development of a Stormwater Pollution Prevention Plan (SWPPP), erosion and sediment controls and pollution prevention practices, stormwater inspections, and compliance with any State, Tribal, or territory-specific requirements in Part 9 of the permit. A Sedimentation and Erosion Control Plan will also be required per location regulations due to excavation volumes estimated over 35,000 cubic meters. The activities will also trigger compliance with state permits related to erosion control in order to proceed to construction.</p> <p><b>Stormwater runoff</b> will be discharged at different points in the existing curbs and gutters along PR-2 and PR-6 during construction. A number of additional curb inlets are included in the construction drawings. A number of measures will be implemented to prevent erosion and soil displacement during the construction period. See sheets 41-47 included in Attachment 1 for more information. Minimal impacts will occur during operations because the site will have soil stabilization measures in place prior to operation.</p>
<p>Hazards and Nuisances including Site Safety and Noise</p>	<p>2</p>	<p><b>Hazards</b> Based on findings presented above in Contamination and Toxic Substances, the project site is fully surrounded by residential and commercial uses that do not involve the above ground storage of explosive or flammable materials. During construction, OSHA regulations will be followed to address any construction operational hazards. The Project does not involve explosives or Hazards flammable materials or operations. No hazards are expected to be managed or encountered during the operation.</p> <p>The most common hazards in the area include fires, earthquakes, and hurricanes. As this project is designed to improve resiliency of the transportation network of the area, the construction of this project would be of benefit during a hazard. Mobility of first response and emergency assistance vehicles during or after a hazard would be improved, and the likelihood of traffic accidents at the intersection would be reduced, per the traffic study discussed in <i>Existing Conditions and Trends</i>. ADA compliance and pedestrian</p>

safety are also incorporated in the design, as the project will comply with current construction codes and standards.

**Noise**

Construction noise would be temporary and mitigated as per Regulations for Noise Pollution Control of the Department of Natural and Environmental Resources (DNER - formerly the Environmental Quality Board). Noise will be incidental to the construction period and the activities being performed during this phase. Contractors will be required to follow OSHA regulations to mitigate employee noise exposure, which may include the use of ear protection.

The proposed project consists of the construction of a roundabout to create a better intersection between State Roads PR-2 and PR-6. The noise generated by road traffic is more disturbing near junctions, where multiple flows are intersecting. A Traffic Noise Study has not been conducted for this project. Even though, the proposed project will not generate an increase of the current traffic volume, but the proposed intersection will be 80 meters to the south of the Villa España Residential Development. The current intersection is 150 meters to the south.

Under ideal conditions, a line noise source (such as constant flowing traffic on a busy highway) decreases at a rate of approximately 3 dB each time the distance doubles. In the case of the proposed project, the distance from Villa España to the proposed roundabout is decreased by a half, so the noise level will increase approximately 3 db(A). The smallest change in noise level that a human ear can perceive is about 3 dB(A). Based on this rule of thumb, we understand that the noise increases generated by the project operation will not impact the residential area.

Villa España residence adjacent to the project area has a concrete wall that serves as a noise wall. Six feet high concrete walls could reduce the noise levels at the adjacent residences up to 8 db(A). This reduction complies with the 2011 Puerto Rico Department of Transportation and Public Works Noise Policy.

**Nuisance**

The construction activity will introduce nuisances that include traffic control, dust and noise. These are expected to directly affect surrounding areas and traffic flow in both



		roadways. Several measures will be taken to reduce the impact of these nuisances, which include adequate maintenance of traffic plan, fugitive dust control and limiting the activities at nighttime. Construction activities at night may be necessary to reduce traffic conflict, increase worker safety, and advance the construction process. Road users will be notified of nighttime construction activities via signs, web notices and municipal information outlets. The nuisance will be incidental to the construction phase and will vary in intensity depending on the activities being performed. Once in operation, any nuisance associated with the construction will be eliminated.
Energy Consumption	2	The Project will meet current federal and local codes concerning energy consumption. Construction machinery will not be connected to the grid, so minimal to no impact is expected during the construction period. The project site is served by LUMA, who serves the existing infrastructure at the site. See Attachment 16 for LUMA's written endorsement of the project. No utility disruptions are anticipated during construction. The project would incorporate a utility grid connection due to the relocation of lighting, however, there would be minimal to no impact to energy consumption during the project's operations. See sheets 94-106 and 108-118 of Attachment 1 for more information.

Environmental Assessment Factor	Impact Code	Impact Evaluation
<b>SOCIOECONOMIC</b>		
Employment and Income Patterns	1	The project is in a mostly low/moderate income area. This new construction will create 20 temporary jobs during the construction period, creating a temporary beneficial impact. Once in operation, the activity will benefit the low/mod population that use the roads in this area. Since there will not be a toll, there are no limitations to the use of the roads. Thus, the activity should benefit citizens of all income.
Demographic Character Changes, Displacement	2	There is no displacement as the project area will continue its current use as a traffic intersection after the project is completed. No demographic changes will occur as a result of this project.

Environmental Assessment Factor	Impact Code	Impact Evaluation
<b>COMMUNITY FACILITIES AND SERVICES</b>		
Educational and Cultural Facilities	2	The area will experience an overall benefit due to improved mobility. However, there will be no direct impacts to

		educational and cultural facilities because there are none in the area of direct impact.
Commercial Facilities	1	Temporary, minor adverse impacts may occur due to construction when traffic mobility may be limited. However, significant beneficial impacts will occur during the project's operation. This intersection serves as a key community corridor connecting East and West Bayamon commercial and residential areas. The Project will improve traffic flow and mobility, thus benefiting the commercial facilities established in the vicinity after construction is completed.
Health Care and Social Services	2	The area will experience an overall benefit due to improved mobility. However, the activity does not envision direct impacts to health care and social services.
Solid Waste Disposal / Recycling	2	<p>During construction, some debris and waste materials are expected to be generated. It is estimated that 1.5 cubic yards per week of domestic waste and about 300 cubic meters of asphalt will be produced. All materials would be properly managed and disposed of at approved solid waste facilities or recycled in compliance with applicable pertinent federal and local requirements. As greater than 10 employees are expected to be working during the construction period, Law 70 of the La Autoridad de Desperdicios Sólidos (ADS) requires that a recycling plan be developed.</p> <p>No waste is expected to be generated during project operations. Therefore, no impacts to solid waste disposal or recycling facilities are anticipated and no waste management plans will be required.</p>
Waste Water / Sanitary Sewers	2	<p>Sanitary pipelines and sanitary manholes will be relocated during the construction period, and any interconnections to the existing lines in service will be completed by PRASA personnel. The construction activities will not result in generation of wastewater. It will be the contractor's responsibility to obtain portable toilets for construction workers and follow all applicable regulations. No interruptions to service due to construction are anticipated. No impacts to wastewater or sanitary services are expected during operations.</p> <p>Additional PRASA specifications will be requested in the construction permit phase. Please refer to sheets UTS-01 to UTS-07 of Attachment 1 for more information.</p>
Water Supply	2	Water may be required for dust control during construction; however, this is not permitted to be taken from PRASA's water system per sheet 39 of Attachment 1. During the construction period, contractors are responsible for providing water needed at the site. Pipelines, meter boxes, and valves

		<p>will be relocated during the construction period, and any interconnections to the existing lines in service will be completed by PRASA personnel. No interruptions to the potable water supply are expected during the construction phase. Additional PRASA specifications will be requested in the construction permit phase. Please refer to sheets UTW-01 to UTW-04 of Attachment 1 for more information</p> <p>The operation will not require significant use of water; thus the proposed project will not have any direct impact on the potable water distribution supply.</p>
Public Safety - Police, Fire and Emergency Medical	1	<p>Being in an urban region, the site benefits from public safety, police, fire and emergency medical facilities established and operating in the area. Aside from possible traffic impacts, no direct impact on these services is expected during construction of the project. Long-term benefits will occur to emergency services and to the public due to faster travel times, better access control, fewer accidents, and less delay at the intersection during project operations. The roundabout will also serve as an evacuation route in the event of a natural disaster, providing access routes to primary expressways and clearance routes in the event of tsunamis.</p>
Parks, Open Space and Recreation	2	<p>The proposed activity will not have any impact on parks or open spaces that may be used for recreation. On the North-East border of the project area there is a concrete slab of what appears to have been a basketball court. This area is not part of the Villa España development because it is outside of the development's limits. The slab does not have any markings, and there is no lighting, benches or basketball hoop poles. According to aerial images, the area has not been conditioned since at least 1994. Since the area is not in use and abandoned, it will be eliminated as part of the proposed project. Since it is not currently in use, no adverse effect will result by its elimination.</p>
Transportation and Accessibility	1	<p>Temporary, minor adverse impacts may occur to traffic due to construction. Long-term benefits will occur to transportation and accessibility due to faster travel times, better access control, fewer accidents, and less delay at the intersection. The impacted areas will include: Juan Sanchez Ward (with large communities like Villa España, Jardines de Caparra, Santa Cruz, Santa Rosa new residential/commercial complex to be constructed in the Cambija locality), Barrio Pueblo Ward (includes all Central District communities), and Minillas Ward (with large communities like Lomas Verdes and Río Bayamón). There are also 3 train stations that are expected to benefit from this project: Jardines, Bayamón and Deportivo.</p>

Environmental Assessment Factor	Impact Code	Impact Evaluation
<b>NATURAL FEATURES</b>		
Unique Natural Features, Water Resources	2	There are no unique natural features nor water resources within this area. The project area is a previously disturbed site in an urban area.
Vegetation, Wildlife	3	<p>According to project drawings (refer to sheets RD-01 to RD-05), the proposed activity will impact at least 52 trees of 15 different types. Of these 15 species, only one, the Royal Palm (<i>Roystonea borinquena</i>) is native, but not threatened or of conservation concern. Therefore, there is not be any adverse effect to flora of conservation concern.</p> <p>The USFWS Information for Planning and Consultation (IPaC) report indicates the following species are potentially affected by activities in this location: the Puerto Rican Boa (Endangered) and the Palo De Rosa plant (Threatened). The Palo De Rosa plant was not listed in the Tree Inventory Table included in sheet RD-04, therefore is not present in the project area. Also, the area is not designated as a critical habitat for any species nor is it near to another critical habitat area (see Critical Habitat Map in Attachment 8). Finally, the data in this location indicates there are no migratory birds of conservation concern expected to occur in the project area. Therefore, no mitigation activities need to be established for these.</p> <p>If a Puerto Rican Boa is found in the project action site, work shall cease until the Boa moves off on its own. If the Boa does not move off, the CM shall contact the Puerto Rico Department of Natural and Environmental Resources and ask for them to relocate the Boa.</p> <p>Local regulations will require that mitigation be implemented for the loss of trees. This may result in replanting and/or compensatory mitigation. This will be agreed with the Department of Natural and Environmental Resources.</p>
Climate Change	2	The Proposed Action is intended to improve resiliency against emergency events, such as natural disasters, by allowing traffic mobility in a critical metropolitan area. The EPA predicts that rising sea levels as a result of climate change will exacerbate existing coastal flooding and may also result in more frequent and severe hurricanes in Puerto Rico (EPA 2016). This project will be designed to last in the face of increased natural disasters, as well as provide

		additional resiliency and safety to local residents as a result of climate change impact.
Other Factors	2	There are no other factors that affect the environment with this Project.

**Additional Studies Performed:**

- Geotechnical Investigation for State Road PR-2 & PR-6 Intersection, Geometric Improvements, Municipality of Bayamon, Puerto Rico (BGE 2023-118). May 30, 2023 Baiges Geotechnical Engineers (BGE), LLC (Attachment 15)
- Viability study (Análisis de Viabilidad para mejoras geométricas en intersecciones Bayamón) by Traffic Engineering Consultants, PSC / CMA Architects & Engineers, LLC, November 2022 (Attachment 16)

**Field Inspection** (Date and completed by): Field inspection was performed by Mildred M Guzman, ICF Environmental Consultant, on May 3, 2023.

**List of Sources, Agencies and Persons Consulted** [40 CFR 1508.9(b)]:

1. AAA, 05/01/2020 (Attachment 18)
2. ACT, 06/21/2023 (Attachment 19)
3. PR Planning Board MIPR <https://gis.jp.pr.gov/mipr/>
4. PR CRIM <https://catastro.crimpr.net/cdprpc/>
5. CMA ARCHITECTS & ENGINEERS LLC and ICF. 2023. Advisory Base Flood Elevation Map. Accessible at: <https://gis-r2-fema.hub.arcgis.com/pages/puertorico>
6. CMA ARCHITECTS & ENGINEERS LLC and ICF. 2023. FEMA FIRM Flood Insurance Rate Map. Accessible at: <https://gis-r2-fema.hub.arcgis.com/pages/puertorico>
7. EPA. 2023. Envirofacts. Accessible at: <https://nepassisttool.epa.gov/nepassist/nepamap.aspx>
8. EPA. 2023. Puerto Rico Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Accessible at: [https://www3.epa.gov/airquality/greenbook/anayo\\_pr.htm](https://www3.epa.gov/airquality/greenbook/anayo_pr.htm)
9. EPA. Sole Source Aquifers. 2023. Accessible at: <https://nepassisttool.epa.gov/nepassist/nepamap.asp>
10. EPA. 2016. What Climate Change Means for Puerto Rico. Accessible at chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/<https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-pr.pdf>
11. EPA Office of Air and Radiation (OAR) - Office of Air Quality Planning and Standards (OAQPS), Nonattainment Areas (MapServer). Accessible at: [https://gispub.epa.gov/arcgis/rest/services/OAR\\_OAQPS/NonattainmentAreas/MapServer](https://gispub.epa.gov/arcgis/rest/services/OAR_OAQPS/NonattainmentAreas/MapServer)
12. Federal Aviation Administration (FAA). 2023. National Transportation Atlas Database. Accessible at: <https://www.bts.gov/ntad>
13. Junta de Planificación. 2023. PUERTO RICO INTERACTIVO Mapa Interactivo de Puerto Rico. Accessible at: <https://gis.jp.pr.gov/mipr/>
14. LUMA, 03/30/2023 (Attachment 17)

15. NOAA. 2018. US Coastal Zone Management Act boundary (Ver. 20180830). Accessible at: <https://koordinates.com/layer/20522-us-coastal-zone-management-act-boundary/>
16. NRCS. 2023. Web Soil Survey. Accessible at: <https://websoilsurvey.nrcs.usda.gov/app/>
17. SHPO Section 106 Consultation, (Attachment 10)
18. USFWS. 2023. IPaC Report. Accessible at: <https://ipac.ecosphere.fws.gov/location/index>
19. USFWS. 2023. National Wetlands Inventory. Accessible at: <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper>
20. USFWS. 2023. US Coastal Barrier Resources System Mapper (Version 2). Accessible at: <https://fwsprimary.wim.usgs.gov/CBRSMapper-v2/>

### **List of Permits Obtained:**

Permits/endorsements will be submitted once the design process is complete, and all recommendations received from Agencies are included.

### **Public Outreach [24 CFR 50.23 & 58.43]:**

On November 29, 2022, the Autonomous Municipality of Bayamón published an article in *El Nuevo Dia* newspaper entitled "Mayor Ramón Luis Rivera Cruz seeks options to alleviate traffic in Bayamón", which mentions the geometric improvement project at the intersection of highways PR-2 and PR-6.

As a result of the Environmental Review process, a combined public notice for the proposed project, *Finding of No Significant Impact and Notice of Intent to Request Release of Funds* (FONSI-NOI-RROF), will be published in a newspaper of island-side circulation. This notice will have a Spanish translation. Any substantive comments received will be addressed and incorporated into the final environmental assessment document.

### **Cumulative Impact Analysis [24 CFR 58.32]:**

The proposed project will not contribute to adverse cumulative effects on environmental resources. Recovery efforts in the Bayamón region include rehabilitation, demolition, reconstruction and new construction of private and public structures and infrastructure. Bayamón is undergoing recovery efforts from the damage inflicted by Hurricanes Maria and Irma as are many communities within Puerto Rico. Cumulatively, recovery projects in combination with the proposed action may have a temporary impact on air quality, noise, traffic, wetlands, and surface waters during construction activities, but will have a net long-term benefit to the human environment at the local and regional level. The proposed action will provide a small contribution to improving air quality, transportation, economic growth, and public safety once completed. The project will improve and promote safe and efficient access for pedestrians and the commercial businesses near the project area which will positively influence traffic flow. The proposed actions are not anticipated to substantially contribute to further adverse cumulative environmental effects.

### **Alternatives [24 CFR 58.40(e); 40 CFR 1508.9]**

No other comparable action alternatives were considered. The project entails the geometric improvements on the intersection of State Road PR-2 km. 9.8 and the PR-6 km. 0.0 to replace the traffic light system with a roundabout design and elevated bridge to reduce the traffic congestion during peak hours. The transit during Hurricanes Maria and Irma was vastly affected by the lack of power, and the proposed project will minimize this problem by redirecting traffic movements

out from the main traffic light system in the jurisdiction. Improvements to other locations within the region would not address the need and intended goals of the State Road PR-2 corridor.

**No Action Alternative** [24 CFR 58.40(e)]:

A No Action Alternative was considered and rejected because the no action alternative would not address the economic revitalization, and rehabilitation needs of Bayamón.

**Summary of Findings and Conclusions:**

The proposed action involves the geometric improvements on the intersection of State Roads PR-2 (at km. 9.8) and PR-6 (at km. 0.0) to replace the traffic light system with a roundabout design and elevated bridge to reduce the traffic congestion during peak hours. This intersection serves as a key community corridor connecting East and West Bayamon commercial and residential areas. The transit during Hurricanes Maria and Irma was vastly affected by the lack of power, and the proposed project will minimize this problem by redirecting traffic movements out from the main traffic light system in the jurisdiction.

The proposed action aims to respond to the growing needs of this economic area, serving residential and commercial, medical and student needs. At the same time, community resilience will increase during emergency events. The geometric improvements will also increase the fluidity of traffic movement, which has historically demonstrated the potential to improve the area's economic activity.

There would be no changes to flood volume or base flood elevation as a result of the project. The infrastructure improvements within the project area will not result in additional flooding risk to other properties in the vicinity.

Completion of this environmental review and associated consultation confirms that the proposed project would not have a significant environmental impact and that further assessment is not necessary. HUD funding of the proposed action will not have a significant impact on the quality of the human environment.

Based upon the analysis documented in this EA, construction and operation of the proposed action complies with the requirements of applicable statutory authorities and would have no significant impact on the environment. The proposed improvements would provide a net benefit to State Road PR-2 from an economic (improved character, competitiveness and modernized access for business), mobility and connectivity (reduced congestion), air quality (reduced idling), and public safety standpoint.

### **Mitigation Measures and Conditions [40 CFR 1505.2(c)]**

Summarize below all mitigation measures adopted by the Responsible Entity to reduce, avoid, or eliminate adverse environmental impacts and to avoid non-compliance or non-conformance with the above-listed authorities and factors. These measures/conditions must be incorporated into project contracts, development agreements, and other relevant documents. The staff responsible for implementing and monitoring mitigation measures should be clearly identified in the mitigation plan.

Law, Authority, or Factor	Mitigation Measure
<p>National Pollutant Discharge Elimination System (NPDES), Environmental Protection Agency (EPA)</p> <p>Department of Natural and Environmental Resources (DNER) Commonwealth of Puerto Rico</p>	<p>Storm Water Pollution Prevention Plan (SWPPP) – Construction General Permit (CGP). Required for construction projects with an area greater than one acre.</p> <p>Examples of stormwater pollution mitigation measures:</p> <ul style="list-style-type: none"> <li>• Erosion control, such as dust control, mulching, permanent seeding, land grading, and riprap</li> <li>• Runoff control, such as grass-lined channels and land grading</li> <li>• Sediment control, such as brush barrier, compost filter berms and socks, filter berms and silt fences.</li> </ul>
<p>Puerto Rico Environmental Quality Board and USDA – Natural Resources Conservation Services</p>	<p>Erosion Control and Sediment Prevention Plan (ECSPP)</p>
<p>NESC and LUMA</p>	<p>Achieve safety clearances required by the NESC and LUMA for the transmission and distribution lines.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>Locate power poles and lines as far as possible from the roundabout area, for safety reasons.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>Aerial and underground communication utilities, such as manholes, conduits, posts, etc., will not be allowed inside the roundabout, therefore, these must be relocated outside said area, for safety reasons, and to avoid affecting traffic and the roundabout in case of utility maintenance.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>If it is proposed to bury telecommunications infrastructure of several companies located on the same route, these works must be carried out using joint trenches.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>For safety reasons, the roundabout, including the area of the intersection of state highways, must have lighting levels greater than “2 fc.”, or in accordance with the standards established for the type of road. Likewise, ensure that adequate transition lighting levels are provided.</p>



<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>The lighting of the project must extend to the limits of the project, and it must be completely new. The area under the bridge must be provided with underpass luminaires.</p>
<p>LUMA; Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>The plan must include the information and specifications of the poles and LED luminaires proposed for the project, which must provide the lighting levels and uniformity (3:1) required for this area. Likewise, the luminaire must meet the specifications required by LUMA and this Authority.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos; Water and Sewer Authority</p>	<p>All PRASA utility symbols must conform to the standards established by the Water and Sewer Authority (AAA), including line symbols.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>Aerial and underground utilities will not be allowed crossing the roundabout area, therefore, the lines must be installed or relocated outside of this area. Likewise, manholes will not be allowed to be installed in central island areas, for safety and maintenance reasons.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos; AASHTO; FHWA</p>	<p>The design of the proposed project must comply with “A Policy on Geometric Design of Highways 2018” of the “American Association Of State Highway and Transportation Officials” (AASHTO), the guidelines of the Federal Highway Administration (FHWA, for its “Roundabouts: An Informational Guide, Second Edition- 2010 (NCHRP Report 672)”, “Roundabouts Technical Summary”, with the current “American Association Of State Highway and Transportation Officials” (AASHTO) Manual. In turn, the “Roadside Design Guide”, in force, the “Separated Bike Lane Planning and Design Guide” of the “Federal Highway Administration (FHWA)”, the Complete Street Planning and Design Guides, the “ Public Right-of Way Accessibility Guidelines (PROWAG)” and with the Puerto Rico Comprehensive Bicycle and Pedestrian Plan, adopted by the MPO in September 2018 (<a href="https://act.dtop.pr.gov/Bikeand-Ped-OCT262018-Final.pdf">https://act.dtop.pr.gov/Bikeand-Ped-OCT262018-Final.pdf</a>).</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos; ADA Act (Sec. 204 – 2010 ADA Standards for Accessible Design)</p>	<p>Sidewalks and all public spaces must facilitate access and mobility for all persons who use them, regardless of their abilities or abilities, in accordance with the requirements of the ADA Act (Sec. 204 – 2010 ADA Standards for Accessible Design) and the principles of “Complete Streets” and “Universal Design” (see: Complete Streets Plan and Design Guides for Puerto Rico at <a href="https://act.dtop.pr.gov/PR-Complete-Streets-Plan-and-Design -GuidelinesFinal.pdf">https://act.dtop.pr.gov/PR-Complete-Streets-Plan-and-Design -GuidelinesFinal.pdf</a></p>

<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>It is recommended that sidewalks be designed and constructed with a material that is easy to maintain, and that do not represent a danger in the future (loose or broken slabs, etc.) for people walking through the area</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos; US Access Board</p>	<p>According to the “US Access Board”, the design of diagonal ramps or corner-type ramps should be avoided, as they constitute a risk for blind people. It is recommended to design individual ramps for each direction you cross. Therefore, ramps for people with functional diversity must be designed in accordance with the model plans of this Authority, they must be aligned with each other and cannot be located in the radii of curvature of the intersections.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos</p>	<p>Grates, covers, and other accessories should not be located on ramps, rest areas in front of ramps, transitions to ramps and gutters within the pedestrian access route. and. The design must effectively address possible storm drainage problems in the area (accumulation of water), specifically on the sidewalks and ramps therein.</p>
<p>Departamento de Desarrollo Económico y Comercio de PR Oficina de Gerencia de Permisos; Article 31 of the Regulations for the Control of Access and Construction Works or Facilities on Public Roads of Puerto Rico</p>	<p>Article 31 of the Regulations for the Control of Access and Construction Works or Facilities on Public Roads of Puerto Rico, as amended, establishes that the concessionaire will be obliged to relocate any electrical, telephone, lighting or other type or pipes used for public services and any obstacle that could interfere with the proposed works or facilities for which permission must be obtained from the corresponding agency or company.</p>

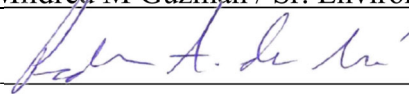
**Determination:**

**Finding of No Significant Impact** [24 CFR 58.40(g)(1); 40 CFR 1508.27]  
The project will not result in a significant impact on the quality of the human environment.

**Finding of Significant Impact** [24 CFR 58.40(g)(2); 40 CFR 1508.27]  
The project may significantly affect the quality of the human environment.

Preparer Signature:  Date: October 23, 2023

Name/Title/Organization: Mildred M Guzman / Sr. Environmental Specialist/ ICF

Certifying Officer Signature:  Date: 11/30/2023

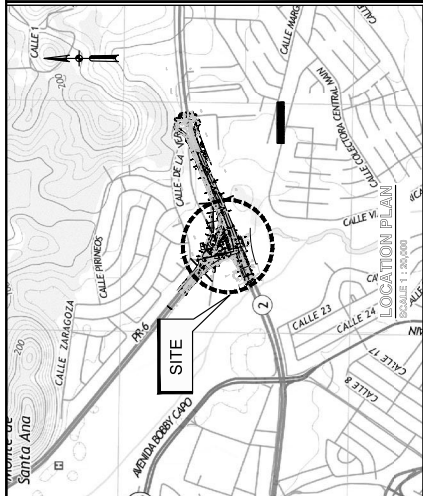
Name/Title: Pedro A. de León Rodríguez, MSEM/Permits and Environmental Compliance Specialist CDBG-DR/MIT Program

This original, signed document and related supporting material must be retained on file by the Responsible Entity in an Environmental Review Record (ERR) for the activity/project (ref: 24 CFR Part 58.38) and in accordance with recordkeeping requirements for the HUD program(s).

## List of attachments

<b>1</b>	Project Drawings
<b>2</b>	Distance to Airports Map
<b>3</b>	Coastal Barrier Resources Map
<b>4</b>	Flood Maps: 4.a. Flood Insurance Rate Map 4.b. Advisory Base Flood Elevation Map
<b>5</b>	EPA Green Book and Nonattainment/Maintenance Map
<b>6</b>	Coastal Zone Boundary Map
<b>7</b>	Contamination and Toxic Substances - Supporting information
<b>8</b>	US Fish and Wildlife Service Blanket Clearance Letter Documentation and Critical Habitat Map IPAC Report
<b>9</b>	Farmland Classification Map
<b>10</b>	SHPO Consultation Documents
<b>11</b>	Sole Source Aquifers Map
<b>12</b>	Wetlands Map
<b>13</b>	Wetlands Site Visit Report and Photos – July 11, 2023
<b>14</b>	Wild and Scenic Rivers Map
<b>15</b>	Geotechnical Investigation – May 30, 2023
<b>16</b>	Viability Study – November 2022
<b>17</b>	LUMA Report – March 30, 2023
<b>18</b>	Autoridad de Acueductos y Alcantarillados (AAA) Recommendations Letter April 30, 2020
<b>19</b>	Autoridad de Carreteras y Transportacion (ACT) Recommendation Letter June 21, 2023

**Attachment 1: Project Plans**



# PR-2 & PR-6

# INTERSECTION GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

## INDEX OF DRAWINGS:

SHEET NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	SHEET NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	SHEET NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
00	TITLE SHEET, LOCATION PLAN & INDEX OF DRAWINGS	GR-01	MAINTENANCE OF TRAFFIC PHASE VI	34	MAINTENANCE OF TRAFFIC PHASE VI	MOT-18	INTERSECTION DETAILS	65	INTERSECTION DETAILS	ID-01	
01	INDEX OF DRAWINGS	GR-02	MAINTENANCE OF TRAFFIC TYPICAL APPLICATION DIAGRAMS	35	MAINTENANCE OF TRAFFIC TYPICAL APPLICATION DIAGRAMS	MOT-19	INTERSECTION DETAILS	66	INTERSECTION DETAILS	ID-02	
02	GENERAL NOTES AND LEGEND	GR-03	MAINTENANCE OF TRAFFIC SIGN DATA TABLE	36	MAINTENANCE OF TRAFFIC SIGN DATA TABLE	MOT-20	INTERSECTION DETAILS	67	INTERSECTION DETAILS	ID-03	
03	TYPICAL SECTIONS	GR-04	MAINTENANCE OF TRAFFIC GUIDE SIGN DETAILS	37	MAINTENANCE OF TRAFFIC GUIDE SIGN DETAILS	MOT-21	PAVEMENT PLAN	68	PAVEMENT PLAN	PMD-01	
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06	TYPICAL SECTIONS	GR-07	EROSION CONTROL PLAN PHASE I	40	MAINTENANCE OF TRAFFIC GUIDE SIGN DETAILS	MOT-24	PAVEMENT PLAN				
07	TYPICAL SECTIONS	GR-08	EROSION CONTROL PLAN PHASE II	41	EROSION CONTROL PLAN PHASE I	EC-01	EROSION CONTROL PLAN PHASE I	71	EROSION CONTROL PLAN PHASE I	DR-01	
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10	VERTEX DATA TABLES	GR-11	EROSION CONTROL PLAN PHASE V	44	EROSION CONTROL PLAN PHASE IV	EC-04	EROSION CONTROL PLAN PHASE IV	74	EROSION CONTROL PLAN PHASE IV	DR-04	
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15	DEMOLITION PLAN	GR-16	SOIL SURVEY AND BORING LOGS PLANS FROM STA 2+20.00 TO STA 4+00.00 (LINE PR6-W)	49	SOIL SURVEY AND BORING LOGS PLANS FROM STA 4+80.00 TO STA 7+07.70 (LINE PR2-WB)	SS-02	SOIL SURVEY AND BORING LOGS PLANS FROM STA 4+80.00 TO STA 7+07.70 (LINE PR2-WB)	79	DRAINAGE PROFILE	DR-09	
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17	MAINTENANCE OF TRAFFIC GENERAL NOTES	MOT-01	LAYOUT PLAN	51	PROFILES, LINES PR-2	SS-04	PROFILES, LINES PR-2	81	DRAINAGE PROFILE	DR-11	
18	MAINTENANCE OF TRAFFIC CONSTRUCTION SCHEDULE	MOT-02	LAYOUT PLAN	52	BORING LOGS PLANS FROM BORING NO. B-1 TO BORING NO. B-7	SS-05	BORING LOGS PLANS FROM BORING NO. B-1 TO BORING NO. B-7	82	DRAINAGE PROFILE	DR-12	
19	MAINTENANCE OF TRAFFIC PHASE I	MOT-03	LAYOUT PLAN	53	BORING LOGS PLANS FROM BORING NO. B-1 TO BORING NO. B-7	SS-06	BORING LOGS PLANS FROM BORING NO. B-1 TO BORING NO. B-7	83	P.R.A.S.A. UTILITIES LEGEND AND NOTES	UTW-01	
20	MAINTENANCE OF TRAFFIC PHASE I	MOT-04	PROFILE LINE PR-2 WB	54	BORING LOGS PLANS FROM BORING NO. B-1 TO BORING NO. B-7	SS-07	BORING LOGS PLANS FROM BORING NO. B-1 TO BORING NO. B-7	84	P.R.A.S.A. UTILITIES PLAN	UTW-02	
21	MAINTENANCE OF TRAFFIC PHASE II	MOT-05	PROFILE LINE PR-6, VEA & LUMA ACCESS	55	BORING LOGS PLANS FROM BORING NO. B-11 TO BORING NO. B-14	SS-08	BORING LOGS PLANS FROM BORING NO. B-11 TO BORING NO. B-14	85	P.R.A.S.A. UTILITIES PLAN	UTW-03	
22	MAINTENANCE OF TRAFFIC PHASE II	MOT-06	PROFILE LINE PR-2 WB	56	LAYOUT PLAN	PP-01	LAYOUT PLAN	86	P.R.A.S.A. UTILITIES PLAN	UTW-04	
23	MAINTENANCE OF TRAFFIC PHASE II	MOT-07	PROFILE LINE PR-6, VEA & LUMA ACCESS	57	LAYOUT PLAN	PP-02	LAYOUT PLAN	87	P.R.A.S.A. SANITARY UTILITIES LEGEND AND NOTES	UTS-01	
24	MAINTENANCE OF TRAFFIC PHASE III	MOT-08	GRADING PLAN	58	LAYOUT PLAN	PP-03	LAYOUT PLAN	88	P.R.A.S.A. SANITARY UTILITIES PLAN	UTS-02	
25	MAINTENANCE OF TRAFFIC PHASE III	MOT-09	GRADING PLAN	59	PROFILE LINE PR-2 WB	PP-04	PROFILE LINE PR-2 WB	89	P.R.A.S.A. SANITARY UTILITIES PLAN	UTS-03	
26	MAINTENANCE OF TRAFFIC PHASE III	MOT-10	GRADING PLAN	60	PROFILE LINE PR-6, VEA & LUMA ACCESS	PP-05	PROFILE LINE PR-6, VEA & LUMA ACCESS	90	P.R.A.S.A. SANITARY UTILITIES PLAN	UTS-04	
27	MAINTENANCE OF TRAFFIC PHASE IV	MOT-11	GRADING PLAN	61	PROFILE LINE MARG	PP-06	PROFILE LINE MARG	91	P.R.A.S.A. SANITARY FORCE LINE PROFILE LINE S1	UTS-05	
28	MAINTENANCE OF TRAFFIC PHASE IV	MOT-12	GRADING PLAN	62	GRADING PLAN	PP-07	GRADING PLAN	92	P.R.A.S.A. SANITARY FORCE LINE PROFILE LINE S1	UTS-06	
29	MAINTENANCE OF TRAFFIC PHASE IV	MOT-13	GRADING PLAN	63	GRADING PLAN	PP-08	GRADING PLAN	93	P.R.A.S.A. SANITARY UTILITIES STANDARD DETAILS	UTS-07	
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31	MAINTENANCE OF TRAFFIC PHASE V	MOT-15	GRADING PLAN								
32	MAINTENANCE OF TRAFFIC PHASE V	MOT-16	GRADING PLAN								
33	MAINTENANCE OF TRAFFIC PHASE VI	MOT-17	GRADING PLAN								

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BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

PR-2 AND PR-6

SCALE AS SHOW

TITLE SHEET, LOCATION PLAN & INDEX OF DRAWINGS

GR 01

DATE	BY	REVISIONS
07/27/23		

DATE	
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DRAWING	
CHECKED	
FINAL CHECK	07/27/23



MUNICIPALITY OF BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

PUERTO RICO

REVISONS

NOT TO SCALE

INDEX OF DRAWINGS

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89	LUMA ELECTRICAL UTILITIES PLAN	UTE-06											
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123	TEMPORARY TRAFFIC SIGNAL PHASE III	TSS-08											
124	TEMPORARY TRAFFIC SIGNAL SEQUENCE OPERATION PHASE III	TSS-09											
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158	GROSS SECTIONS LINE PR-2WB & PR-ZEB	CS-06											
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DRAWINGS	
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BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

NOT TO SCALE

GENERAL NOTES AND LEGEND

GR 03

**LEGEND.**

FEATURE	SYMBOL	EXISTING	REMARKS
CENTER LINE	---	---	IDENTIFY
SURVEY MONUMENT	A		IDENTIFY
SPOT ELEVATION	1425		IDENTIFY
BENCH MARK	BM X No.3		IDENTIFY
HORIZONTAL P.I.	⊙		TRUE
NORTH ARROW	↖		MAGNETIC
CONTOUR LINES	170		IDENTIFY ROAD
PAVEMENT	SW		IDENTIFY
SIDEWALK	SW		IDENTIFY
CURB	---		IDENTIFY TYPE
GUARD RAIL	---		IDENTIFY TYPE
BARRIER	---		IDENTIFY
BARRIERA	---		IDENTIFY TYPE
RETAINING WALL	---		IDENTIFY TYPE
CONC. PARAPETS	---		IDENTIFY TYPE
BARBED WIRE FENCE	---		IDENTIFY TYPE
CHAIN LINK FENCE	---		IDENTIFY TYPE
PROPERTY LINE (o)	---		IDENTIFY IF C.O.A.
ACCESS CONTROL	---		IDENTIFY LIMITS
TOP OF CUT	10.0		IDENTIFY SIZE
TOE OF SLOPE	10.0		AS PER TYPE
PIPES	OR		IDENTIFY
HEADWALLS	OR		IDENTIFY
MANHOLE	OR		IDENTIFY
INLETS	OR		IDENTIFY
WATER COURSE	---		IDENTIFY
DITCH	---		IDENTIFY
PAVED DITCH	---		IDENTIFY
LAKE OR POND	---		IDENTIFY IF REQ.
SWAMP	---		IDENTIFY IF REQ.
WOODS	---		IDENTIFY IF REQ.
TREES	---		IDENTIFY IF REQ.
EDGE OF WOODS	---		IDENTIFY IF REQ.
HEDGE	---		IDENTIFY
RIP RAP	---		IDENTIFY
RIP RAP PAVING	---		IDENTIFY
ROCK	---		IDENTIFY
BUILDING	---		IDENTIFY TYPE, ETC.
FOUNDATION	---		IDENTIFY
BLDG TO DEMOLISH	---		IDENTIFY
SIGNS, GROUND, MTD	---		UPPER = CODE
PROP. SIGN IDENT.	---		LOWER = LOCATION
TRAFFIC DETECTOR	---		
PALM TREES	---		
MATCH TO EXISTING	---		
LUMINARY	---		
ELECTRICAL OR TELEPHONE POLE AND JUNK WIRE	---		
DIRT ROAD	---		
CHAIN LINK FENCE	---		

**ABBREVIATIONS.**

ABUTMENT	ABUT.
AGGREGATE	AGR.
ALUMINUM	AL.
ASBESTOS	ASB.
BACKSIGHT	BK.
BASED WIRE FENCE	B.W.F.
BALL VALVE	B.V.
BENCH MARK	B.M.
BITUMINOUS CONCRETE	BIT. CONC.
BUILDINGS COATED CORRUGATED METAL PIPE	B.C.C.M.P.
BUILDING GRADE	B.G.
CAST IRON PIPE	C.I.P.
CATCH BASIN	C.B.
CENTER TO CENTER	C. TO C.
COATED	C.D.
COMMUNICATION	COM.
CONCRETE	CONC.
COORDINATES	COORD.
CORRUGATED METAL PIPE	C.M.P.
CURB METER	C.M.
CURVE TO SPIRAL	C.S.
CUT	C.
DIAMETER	DIA.
DRIVEWAY	DRW.
END TO END	E. TO E.
ENGINEER	ENGR.
EXCAVATION	EXC.
EXISTING GROUND	EX.G.
EXPANSION	EXP.
EXTERNAL DISTANCE	E.D.
EXTREME HIGH WATER	E.H.W.
FEDERAL AID	F.A.
FEDERAL AID SECONDARY	F.A.S.
FILL	F.
FORWARD	FWD.
GALVANIZED IRON	G.I.
GAS VALVE	G.V.
GRAVEL	GRV.
HEADWALL	HW
HORIZONTAL	HRK.
HYDRANT	HYD.
INVERT ELEVATION	I.E.
JUNCTION BOX	J.B.
LENGTH OF CURVE	L.
MAIN POLE	M.P.
MAN LINE	M.L.
MAXIMUM	MAX.
MEAN HIGH WATER	M.H.W.
MINIMUM	MIN.
MONUMENT	MON.

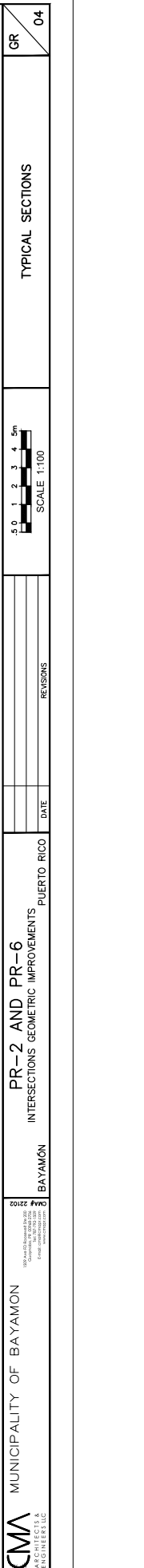
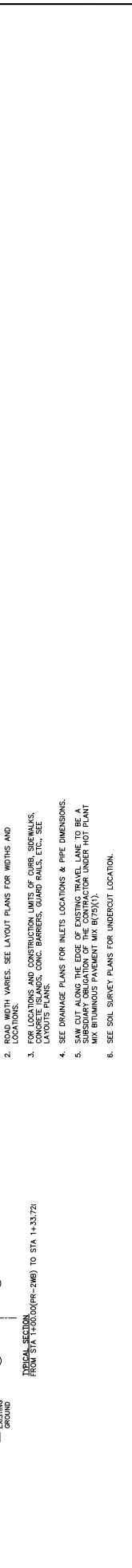
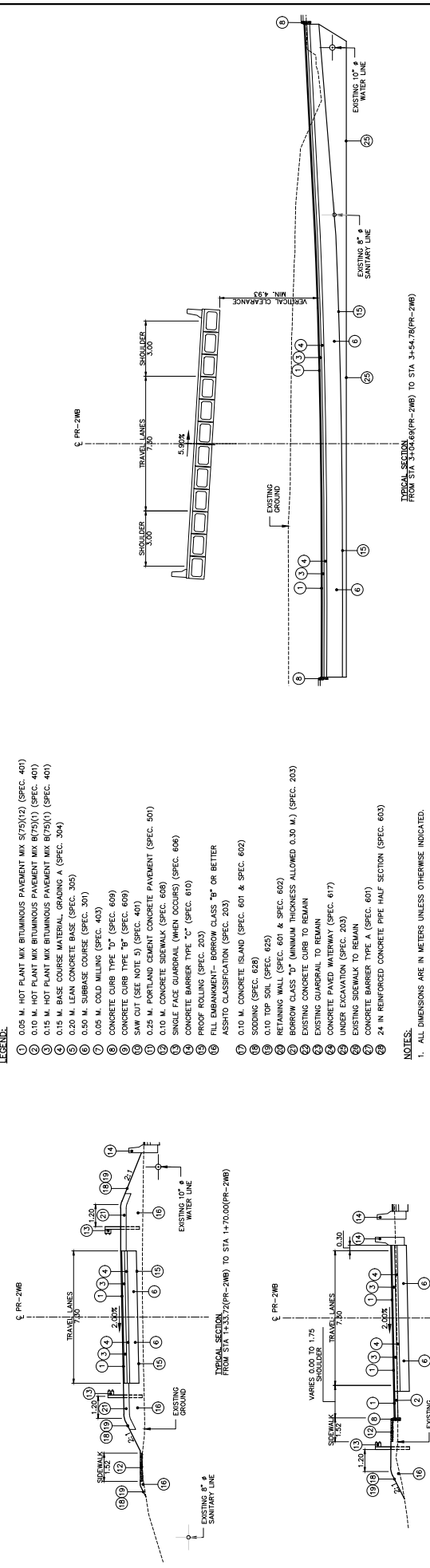
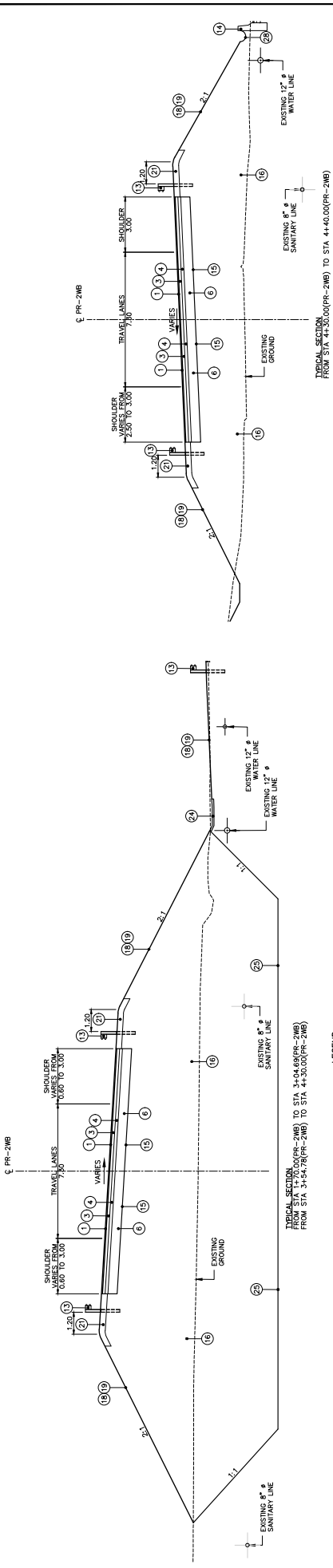
**GENERAL NOTES:**

- 1 - METRIC SYSTEM HAS BEEN USED THROUGHOUT THE PROJECT UNLESS OTHERWISE SPECIFIED.
- 2 - ALL ELEVATIONS ARE REFERRED TO THROUGH BY THE MEANS OF GPS AND GIVEN IN METERS, AND GEOID-18 MODELS.
- 3 - THE HORIZONTAL CONTROL ARE REFERRED TO THE STATE PLANE COORDINATE SYSTEM FOR PUERTO RICO AND THE US VIRGIN ISLANDS, NAD83, EPOCH 2010, ADJUSTMENT 2011, LAMBERT PROJECTION.
- 4 - NORTH ARROW INDICATION POINTS TO TRUE NORTH.
- 5 - NEW CONSTRUCTION SHALL MEET HORIZONTAL AND VERTICAL ALIGNMENTS OF EXISTING FACILITIES.
- 6 - ATTENTION IS CALLED TO ALL UTILITIES THAT THERE ARE UTILITIES INSTALLED IN THE VICINITY OF THE PROJECT. THESE UTILITIES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING UTILITIES: CLARK P&L, U.S. ENERGY, CH, WHICH ARE THE PROPERTY OF THE FOLLOWING: PUERTO RICO AQUEDUCT AND SEWER AUTHORITY AND CABLE TV .
- 7 - FOR STANDARD MODELS DRAWINGS, REFER TO THE STANDARD DRAWINGS BOOK ADOPTED BY THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY.
- 8 - EXISTING PAVEMENT AREAS THAT COULD BE AFFECTED DURING THE CONSTRUCTION SHALL BE REPAIRED. THIS WORK SHALL BE A SUBSIDIARY OBLIGATION UNDER SPEC. 401 AND ITS PAY ITEMS.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	02	178

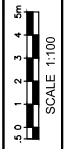


HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	03	178



- LEGEND:
- 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX S75(X)12 (SPEC. 401)
  - 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1) (SPEC. 401)
  - 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1) (SPEC. 401)
  - 0.15 M. BASE COURSE MATERIAL GRADING A (SPEC. 304)
  - 0.20 M. LEAN CONCRETE BASE (SPEC. 305)
  - 0.50 M. SUBBASE COURSE (SPEC. 301)
  - 0.05 M. COLD MILLING (SPEC. 403)
  - CONCRETE CURB TYPE "D" (SPEC. 609)
  - CONCRETE CURB TYPE "B" (SPEC. 609)
  - SAW CUT (SEE NOTE 5) (SPEC. 401)
  - 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 601)
  - 0.10 M. CONCRETE SIDEWALK (WHEN OCCURS) (SPEC. 606)
  - SINGLE FACE GUARDRAIL (WHEN OCCURS) (SPEC. 606)
  - CONCRETE BARRIER TYPE "C" (SPEC. 610)
  - PROOF ROLLING (SPEC. 203)
  - FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
  - ASHTO CLASSIFICATION (SPEC. 203)
  - 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
  - SODDING (SPEC. 628)
  - 0.10 TOP SOIL (SPEC. 625)
  - RETAINING WALL (SPEC. 601 & SPEC. 602)
  - BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
  - EXISTING CONCRETE CURB TO REMAIN
  - EXISTING GUARDRAIL TO REMAIN
  - CONCRETE PAVED WATERWAY (SPEC. 617)
  - UNDER EXCAVATION (SPEC. 203)
  - EXISTING SIDEWALK TO REMAIN
  - CONCRETE BARRIER TYPE A (SPEC. 601)
  - 24 IN REINFORCED CONCRETE PIPE HALF SECTION (SPEC. 603)

- NOTES:
- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
  - ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
  - FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB, SIDEWALKS, CONCRETE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUT PLANS.
  - SEE DRAINAGE PLANS FOR INLETS LOCATIONS & PIPE DIMENSIONS.
  - SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A CONCRETE CURB TYPE "D" OR "B" FOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1).
  - SEE 50M SURVEY PLANS FOR UNDERCUT LOCATION.



REVISIONS	DATE

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

BAYAMÓN

PROJECT NO. 2202

MUNICIPALITY OF BAYAMÓN



WORK	DATE
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	

BY	DATE

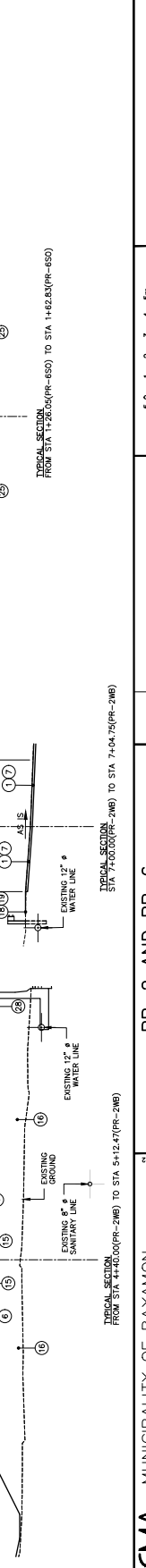
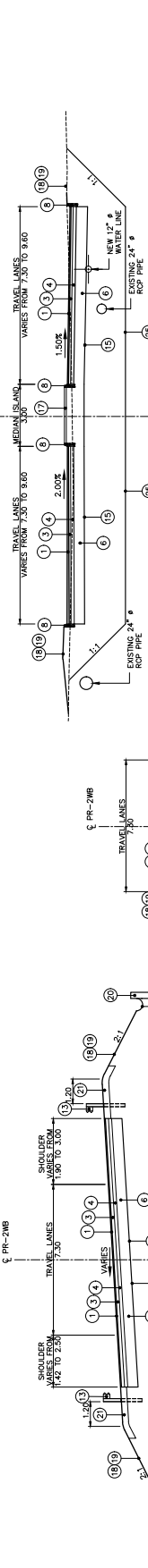
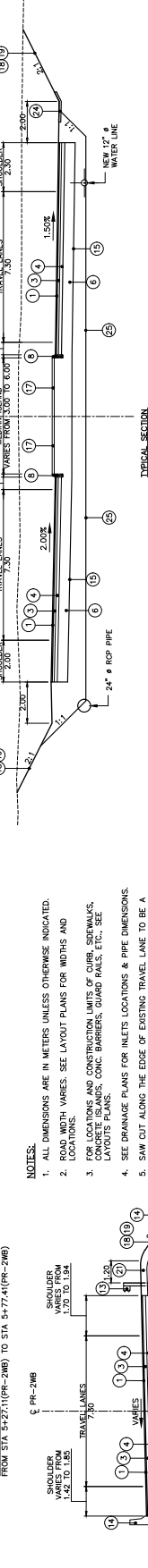
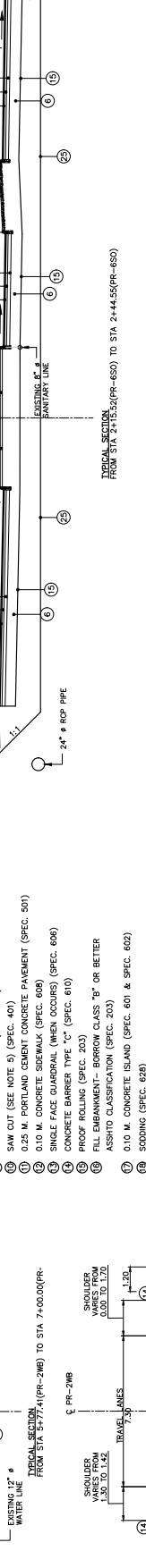
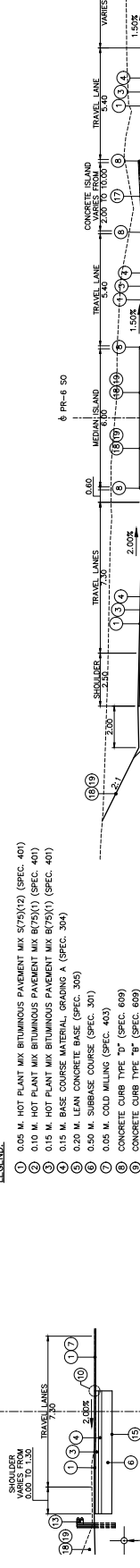
07/27/23

GR 04

TYPICAL SECTIONS

DATE	07/27/23
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DRAWING	DATE
CHECK	DATE
FINAL CHECK	DATE

PROJECT	PR-2 AND PR-6
MUNICIPALITIES	BAYAMÓN
ISLAND	P.R.
FISCAL YEAR	2023
SHEET NO.	04
TOTAL SHEETS	178



- LEGEND:**
- ① 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX S(75)(12) (SPEC. 401)
  - ② 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(17) (SPEC. 401)
  - ③ 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(17) (SPEC. 401)
  - ④ 0.20 M. LEAN CONCRETE BASE (SPEC. 304)
  - ⑤ 0.50 M. SUBBASE COURSE (SPEC. 301)
  - ⑥ 0.05 M. COLD MILLING (SPEC. 403)
  - ⑦ CONCRETE CURB TYPE "D" (SPEC. 609)
  - ⑧ CONCRETE CURB TYPE "B" (SPEC. 609)
  - ⑨ SAW CUT (SEE NOTE 5) (SPEC. 401)
  - ⑩ 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
  - ⑪ 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
  - ⑫ SINGLE FACE GUARDRAIL (WHEN OCCURS) (SPEC. 606)
  - ⑬ CONCRETE BARRIER TYPE "C" (SPEC. 610)
  - ⑭ CONCRETE BARRIER TYPE "B" OR BETTER
  - ⑮ FILL EMBANKMENT - BORROW CLASS (SPEC. 203)
  - ⑯ ASSHTO CLASSIFICATION (SPEC. 203)
  - ⑰ 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
  - ⑱ SODDING (SPEC. 638)
  - ⑲ 0.10 TOP SOIL (SPEC. 601 & SPEC. 602)
  - ⑳ RETAINING WALL (SPEC. 601 & SPEC. 602)
  - ㉑ BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
  - ㉒ EXISTING CONCRETE CURB TO REMAIN
  - ㉓ EXISTING GUARDRAIL TO REMAIN
  - ㉔ CONCRETE PAVED WATERWAY (SPEC. 617)
  - ㉕ UNDER EXCAVATION (SPEC. 203)
  - ㉖ EXISTING SIDEWALK TO REMAIN
  - ㉗ CONCRETE BARRIER TYPE A (SPEC. 601)
  - ㉘ 24 IN REINFORCED CONCRETE PIPE HALF SECTION (SPEC. 603)

- NOTES:**
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
  2. ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCAL WIDTH VARIES.
  3. FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB, SIDEWALKS, CONCRETE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUTS PLANS.
  4. SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
  5. SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(17).
  6. SEE SOIL SURVEY PLANS FOR UNDERCUT LOCATION.

DATE	07/27/23
DESIGN	BY
DRAWING	DATE
CHECK	DATE
FINAL CHECK	DATE

PROJECT	PR-2 AND PR-6
MUNICIPALITY OF BAYAMÓN	BAYAMÓN
INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO
DATE	
REVISIONS	
SCALE	1:100
SCALE BAR	0 1 2 3 4 5m

**CMA ARCHITECTS & ENGINEERS**

155 CALLE BOULEVARD #200  
SAN JUAN, P.R. 00906  
TEL: (787) 763-1111  
WWW.CMA-ARCHITECTS.COM

**GR 05**

**TYPICAL SECTIONS**

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	DATE
						07/27/23

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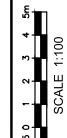
MUNICIPALITY OF BAYAMON

#442282  
100 Calle De Los Rios, P.O. Box 2000  
Bayamón, P.R. 00961-2000  
Tel: (787) 265-1234  
Fax: (787) 265-1235

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISIONS



TYPICAL SECTIONS

GR 06

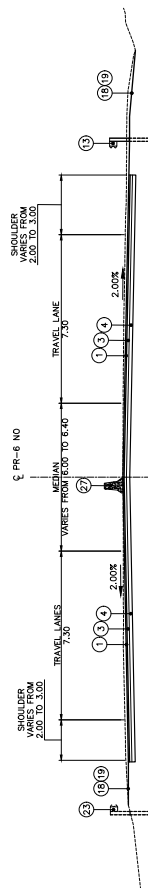
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	06	178

**LEGEND:**

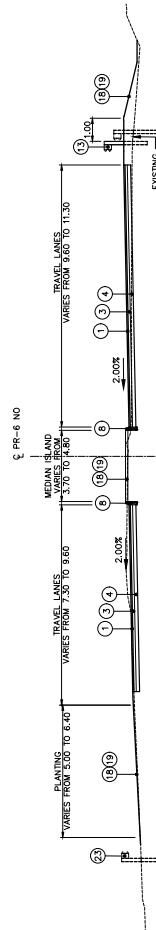
- 1 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MK 5(75)(12) (SPEC. 401)
- 2 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MK 8(75)(1) (SPEC. 401)
- 3 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MK 8(75)(1) (SPEC. 401)
- 4 0.15 M. BASE COURSE MATERIAL, GRADING A. (SPEC. 304)
- 5 0.20 M. LEAN CONCRETE BASE (SPEC. 305)
- 6 0.50 M. SUBBASE COURSE (SPEC. 301)
- 7 0.05 M. COLD MILLING (SPEC. 403)
- 8 CONCRETE CURB TYPE "D" (SPEC. 609)
- 9 CONCRETE CURB TYPE "B" (SPEC. 609)
- 10 SAW CUT (SEE NOTE 5) (SPEC. 401)
- 11 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
- 12 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
- 13 SINGLE FACE GUARDRAIL (WHEN OCCURS) (SPEC. 606)
- 14 CONCRETE BARRIER TYPE "C" (SPEC. 610)
- 15 PROOF ROLLING (SPEC. 203)
- 16 FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
- 17 ASSHTO CLASSIFICATION (SPEC. 203)
- 18 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
- 19 SOODING (SPEC. 628)
- 20 0.10 TOP SOIL (SPEC. 625)
- 21 RETAINING WALL (SPEC. 601 & SPEC. 602)
- 22 BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
- 23 EXISTING CONCRETE CURB TO REMAIN
- 24 EXISTING GUARDRAIL TO REMAIN
- 25 CONCRETE PAVED WATERWAY (SPEC. 617)
- 26 UNDER EXCAVATION (SPEC. 203)
- 27 EXISTING SIDEWALK TO REMAIN
- 28 CONCRETE BARRIER TYPE A. (SPEC. 601)
- 29 24 IN REINFORCED CONCRETE PIPE HALF SECTION (SPEC. 603)

**NOTES:**

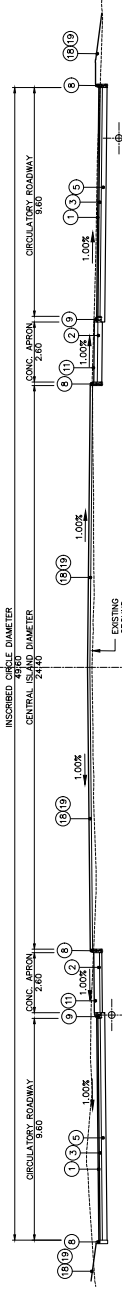
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
3. FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB, SIDEWALKS, GUARDRAILS, CONC. BARRIERS, GUARD RAILS, E.T.C., SEE LAYOUT'S PLANS.
4. SEE DRAINAGE PLANS FOR INLETS LOCATIONS & PIPE DIMENSIONS.
5. SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MK 8(75)(1).
6. SEE SOL SURVEY PLANS FOR UNDERCUT LOCATION.



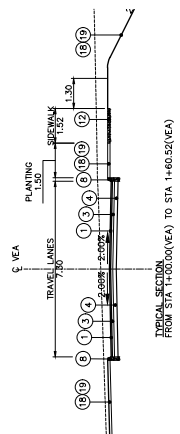
TYPICAL SECTION FROM STA 2+26.62(PR-6NO) TO STA 3+00.00(PR-6NO)



TYPICAL SECTION FROM STA 1+26.62(PR-6NO) TO STA 2+26.62(PR-6NO)



TYPICAL SECTION FROM STA 1+40.00(PR-6NO) TO STA 1+26.05(PR-6NO)



TYPICAL SECTION FROM STA 1+40.00(VEA) TO STA 1+40.52(VEA)

DATE	BY	DESIGN	WORK
07/27/23			
		FINAL CHECK	FINAL PLANS
		CHECK	
		DRAWING	
		DESIGN	

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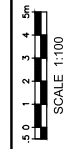
MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

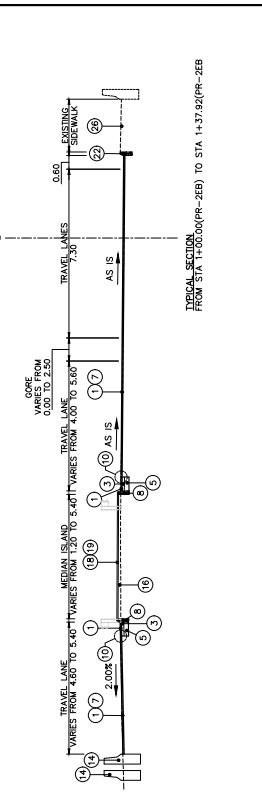
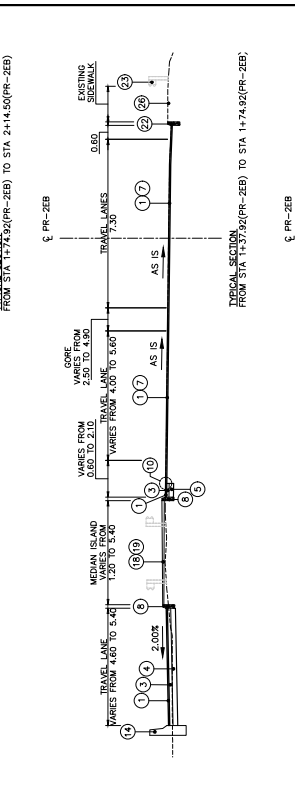
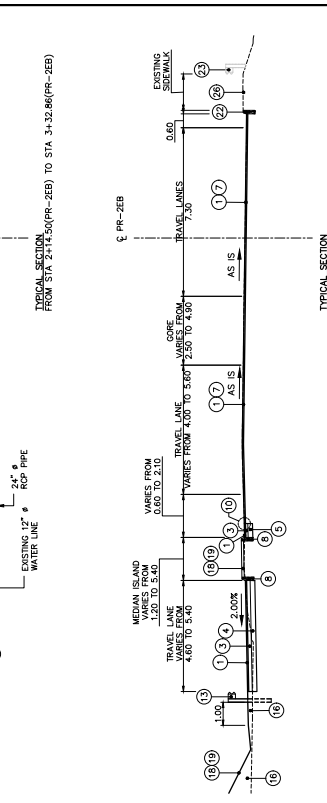
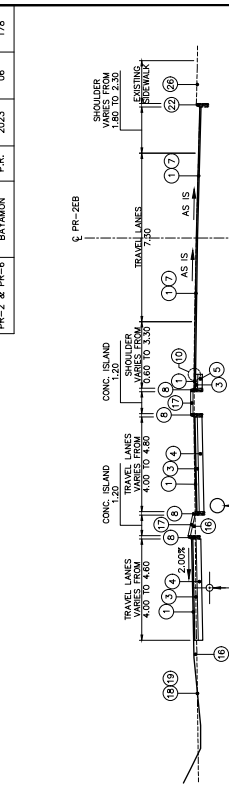
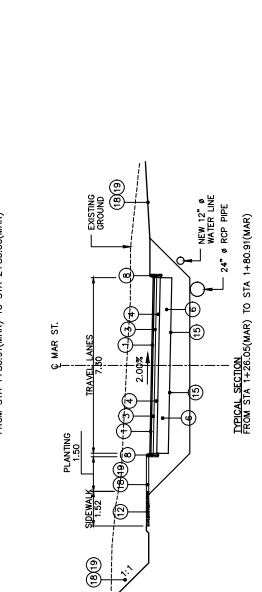
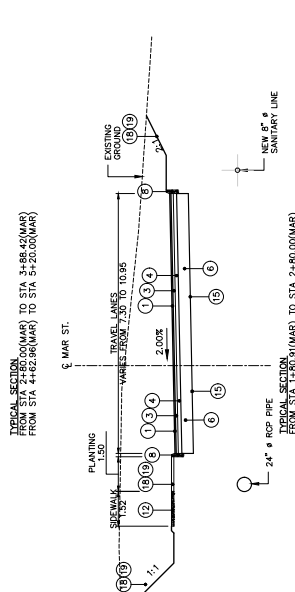
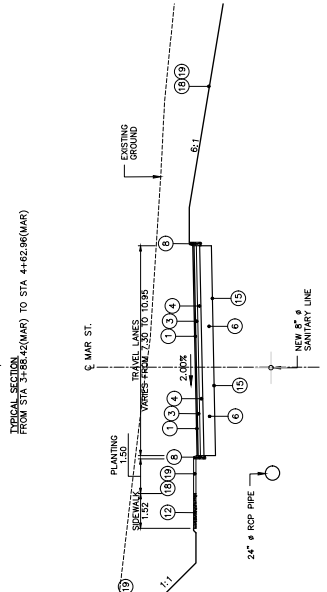
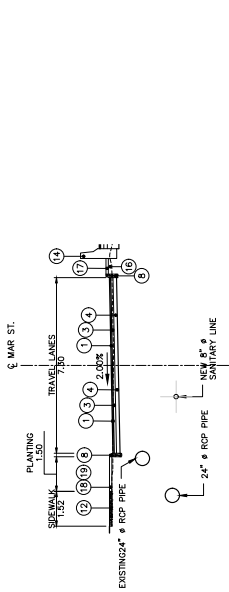
REVISIONS	DATE



TYPICAL SECTIONS

GR 07

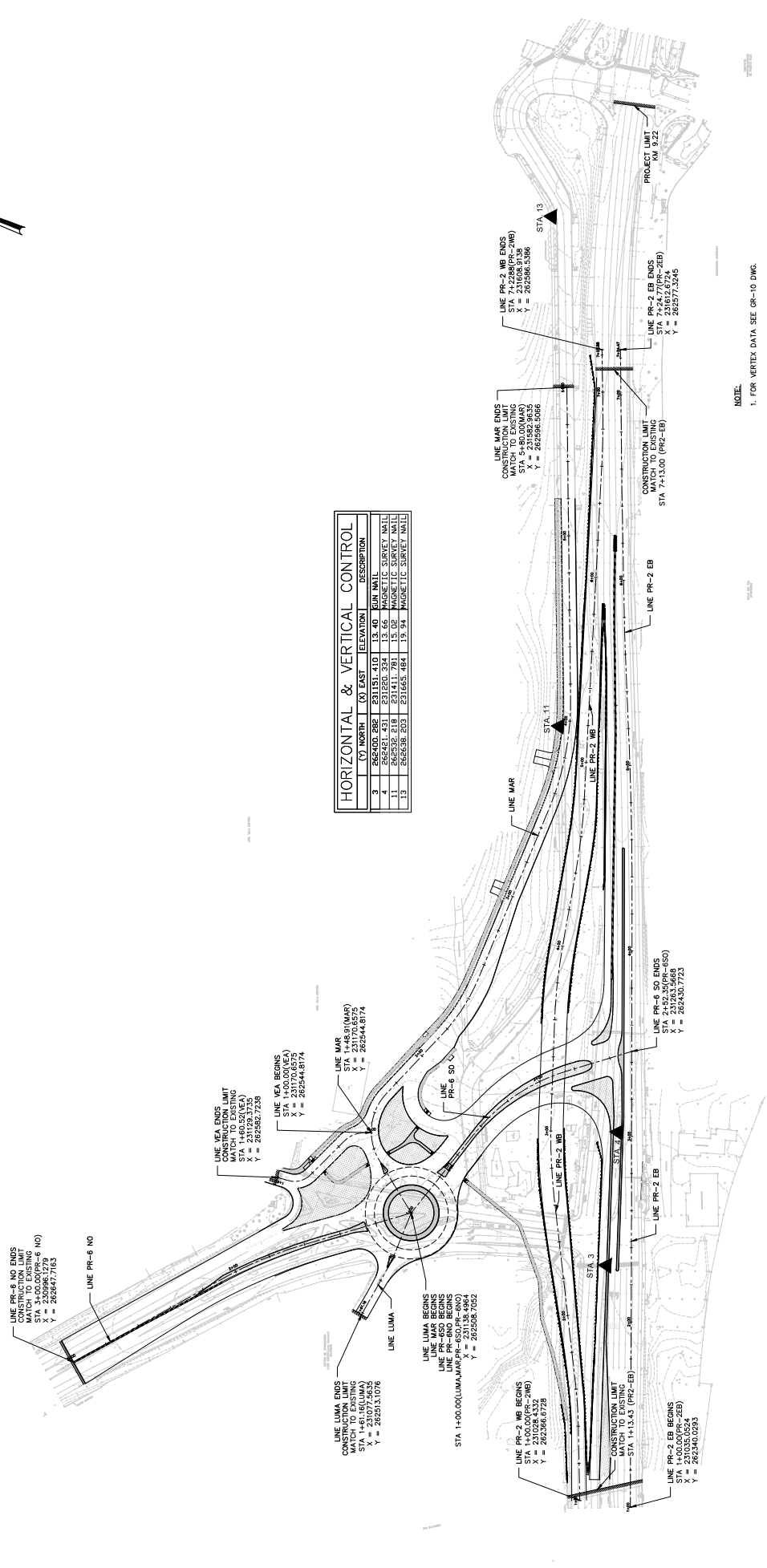
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	06	178



- LEGEND:**
- 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIN. ST75(12) (SPEC. 401)
  - 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIN. BT75(11) (SPEC. 401)
  - 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIN. BT75(11) (SPEC. 401)
  - 0.15 M. BASE COURSE WITH STABILIZING AGENT (SPEC. 304)
  - 0.20 M. LEAN CONCRETE BASE (SPEC. 303)
  - 0.20 M. SUBBASE COURSE (SPEC. 301)
  - 0.05 M. COLD MILLING (SPEC. 403)
  - CONCRETE CURB TYPE "D" (SPEC. 609)
  - SAW CUT (SEE NOTE 5) (SPEC. 401)
  - 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
  - 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
  - SINGLE FACE GUARDRAIL (WHEN OCCURS) (SPEC. 606)
  - CONCRETE BARRIER TYPE "C" (SPEC. 611)
  - PROF. ROLLING (SPEC. 203)
  - FILL EMPANONMENT - BORROW CLASS "B" OR BETTER (SPEC. 203)
  - ASH/TO CLASSIFICATION (SPEC. 203)
  - 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
  - SODDING (SPEC. 628)
  - 0.10 TOP SOIL (SPEC. 623)
  - RETAINING WALL (SPEC. 601 & SPEC. 602)
  - BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
  - EXISTING CONCRETE CURB TO REMAIN
  - EXISTING GUARDRAIL TO REMAIN
  - CONCRETE PAVED WATERWAY (SPEC. 617)
  - UNDER EXCAVATION (SPEC. 203)
  - EXISTING SIDEWALK TO REMAIN
  - CONCRETE BARRIER TYPE A (SPEC. 601)
  - 24 IN REINFORCED CONCRETE PIPE HALF SECTION (SPEC. 603)

- NOTES:**
- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
  - ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
  - FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB, SIDEWALKS, CONCRETE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUTS PLANS.
  - SEE DRAINAGE PLANS FOR INLETS, TRAVEL LANE & PIPE DIMENSIONS.
  - SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MIN. BT75(11).
  - SEE SOIL SURVEY PLANS FOR UNDERCUT LOCATION.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	08	178



	(V) NORTH	(O) EAST	ELEVATION	DESCRIPTION
3	262400.282	231151.410	13.40	GIN MAIL
4	262421.431	231250.394	13.65	MAGNETIC SURVEY MAIL
5	262421.431	231250.394	13.65	MAGNETIC SURVEY MAIL
13	262528.203	231465.484	13.94	MAGNETIC SURVEY MAIL

 SCALE 1:1,000	REVISIONS <table border="1"> <tr><th>NO.</th><th>DATE</th><th>DESCRIPTION</th></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>	NO.	DATE	DESCRIPTION							LAYOUT CONTROL PLAN GR 09
		NO.	DATE	DESCRIPTION							
MUNICIPALITY OF BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS BAYAMÓN PUERTO RICO											

NOTE:  
1. FOR VERTICE DATA SEE GR-10 DWG.

DATE	BY	WORK
07/27/23		
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		



PROJECT NO. 2202  
 BAYAMÓN



VERTEX	CURVE ELEMENTS				COORDINATES				BEARING	DISTANCE FROM VERTEX TO VERTEX	REMARKS
	Δ	R	T	E	L	X	Y	Z			
PC/STA1+00.00(-4)											LINE 1-4 BEGINS
PT/STA1+14.81(-4)											LINE 1-4 ENDS

VERTEX	CURVE ELEMENTS				COORDINATES				BEARING	DISTANCE FROM VERTEX TO VERTEX	REMARKS
	Δ	R	T	E	L	X	Y	Z			
PC/STA1+00.00(-1)											LINE 1-3 BEGINS
PT/STA2+48.22(-1)											LINE 1-3 ENDS

VERTEX	CURVE ELEMENTS				COORDINATES				BEARING	DISTANCE FROM VERTEX TO VERTEX	REMARKS
	Δ	R	T	E	L	X	Y	Z			
PC/STA1+00.00(-5)											LINE 1-5 BEGINS
PT/STA3+31.87(-5)											LINE 1-5 ENDS

VERTEX	CURVE ELEMENTS				COORDINATES				BEARING	DISTANCE FROM VERTEX TO VERTEX	REMARKS
	Δ	R	T	E	L	X	Y	Z			
PC/STA1+00.00(-2)											LINE 2 BEGINS
PT/STA2+48.22(-2)											LINE 2 ENDS

VERTEX	CURVE ELEMENTS				COORDINATES				BEARING	DISTANCE FROM VERTEX TO VERTEX	REMARKS
	Δ	R	T	E	L	X	Y	Z			
PC/STA1+00.00(-6)											LINE 1-6 BEGINS
PT/STA3+16.61(-6)											LINE 1-6 ENDS

VERTEX	CURVE ELEMENTS				COORDINATES				BEARING	DISTANCE FROM VERTEX TO VERTEX	REMARKS
	Δ	R	T	E	L	X	Y	Z			
PC/STA1+00.00(-3)											LINE 1-3 BEGINS
PT/STA2+48.22(-3)											LINE 1-3 ENDS

**CMA** ARCHITECT & ENGINEERS  
 155 GARDEN STREET, SUITE 2202  
 BAYAMON, PUERTO RICO 00957  
 TEL: (787) 252-1100 FAX: (787) 252-1101  
 WWW.CMA-PR.COM

MUNICIPALITY OF BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PR-2 AND PR-6  
 BAYAMON  
 PUERTO RICO  
 DATE: [ ]

NOT TO SCALE  
 REVISIONS

VERTEX DATA TABLES  
 GR: 11

DATE	07/27/23
DESIGN	
PERMANENT	
REVISIONS	
BY	
FINAL CHECK	
FINAL PLANS	



MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

NOT TO SCALE

VERTEX DATA TABLES

GR 12

HIGHWAY	PR-2 & PR-6
MUNICIPALITIES	BAYAMON
ISLAND	P.R.
FISCAL YEAR	2023
SHEET NO.	11
TOTAL SHEETS	178

VERTICE DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	X			
STA1+00.00(-)									LINE 1-7 BEGINS
V1 (L) (-)	22.9642*	28.360	5.670	0.861	11.192	262455.6042	231935.9787	19.261	LINE 1-7 BEGINS
PC-1 (V) (-)						262448.6366	231277.7014	19.261	VERTEX
PT-1 (V) (-)						262448.7777	231272.0333	10.844	STA1+24.86(-)
PC-2 (V) (-)						262445.2940	231262.8014	10.844	STA1+34.48(-)
PT-2 (V) (-)						262451.2547	231261.8058	6.137	STA1+38.81(-)
PC-3 (V) (-)						262452.4939	231260.8346	6.807	STA1+40.21(-)
PT-3 (V) (-)						262455.7337	231259.2438	6.807	STA1+45.61(-)
PC-4 (V) (-)						262446.5460	231262.6398	16.157	STA1+46.64(-)
PT-4 (V) (-)						262444.2008	231264.3512	16.157	STA1+57.45(-)
PC-5 (V) (-)						262445.1499	231275.1686	10.837	STA1+66.64(-)
PT-5 (V) (-)						262452.4566	231264.4566	10.837	STA1+81.28(-)
PC-6 (V) (-)						262454.4516	231264.1164	22.470	STA1+81.28(-)
PT-6 (V) (-)						262459.6214	231267.9302	14.973	LINE 1-7 ENDS

VERTICE DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	X			
STA1+00.00(-)									LINE 1-8 BEGINS
V1 (L) (-)	19.4837*	15.000	2.822	0.227	5.191	262434.9064	231151.0712	82.677	LINE 1-8 BEGINS
PC-1 (V) (-)						262435.9064	231248.2971	24.644	STA1+04.70(-)
PT-1 (V) (-)						262433.6572	231243.6805	24.644	STA1+09.88(-)
PC-2 (V) (-)						262438.0097	231258.4864	9.114	STA1+22.35(-)
PT-2 (V) (-)						262438.2844	231264.3735	9.892	STA1+27.51(-)
PC-3 (V) (-)						262438.6862	231271.3262	102.422	STA1+29.38(-)
PT-3 (V) (-)						262476.1058	231362.9639	102.422	STA1+42.72(-)
PC-4 (V) (-)						262476.3285	231363.5722	144.944	STA1+48.81(-)
PT-4 (V) (-)						262475.2127	231363.3546	144.944	STA1+54.44(-)
PC-5 (V) (-)						262474.9885	231363.4033	1.197	STA1+57.45(-)
PT-5 (V) (-)						262483.4467	231354.5193	1.197	STA1+66.64(-)
PC-6 (V) (-)						262483.8721	231150.6889	83.346	STA1+81.28(-)
PT-6 (V) (-)						262484.4894	231151.0712	83.346	LINE 1-8 ENDS

VERTICE DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	X			
STA1+00.00(-)									LINE 1-9 BEGINS
V1 (L) (-)	13.0715*	59.250	6.840	0.394	13.620	262425.4381	231214.2176	189.236	LINE 1-9 BEGINS
PC-1 (V) (-)						262425.4381	231220.6498	26.432	STA1+42.46(-)
PT-1 (V) (-)						262435.9941	231237.7740	26.432	STA1+48.02(-)
PC-2 (V) (-)						262448.3939	231233.2300	26.432	STA1+54.04(-)
PT-2 (V) (-)						262455.6562	231229.7437	26.432	STA1+60.02(-)
PC-3 (V) (-)						262455.0667	231234.3396	23.392	STA1+66.07(-)
PT-3 (V) (-)						262438.8019	231245.7409	23.392	STA1+72.00(-)
PC-4 (V) (-)						262454.1878	231244.6161	29.303	STA1+78.01(-)
PT-4 (V) (-)						262426.5275	231227.9861	27.742	STA1+84.00(-)
PC-5 (V) (-)						262398.0347	231148.3389	84.026	STA1+90.00(-)
PT-5 (V) (-)						262398.0347	231148.3389	84.026	STA1+96.00(-)
PC-6 (V) (-)						262356.9900	231096.6036	61.748	STA1+102.00(-)
PT-6 (V) (-)						262356.9250	231046.1050	12.188	LINE 1-9 ENDS







WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

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ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

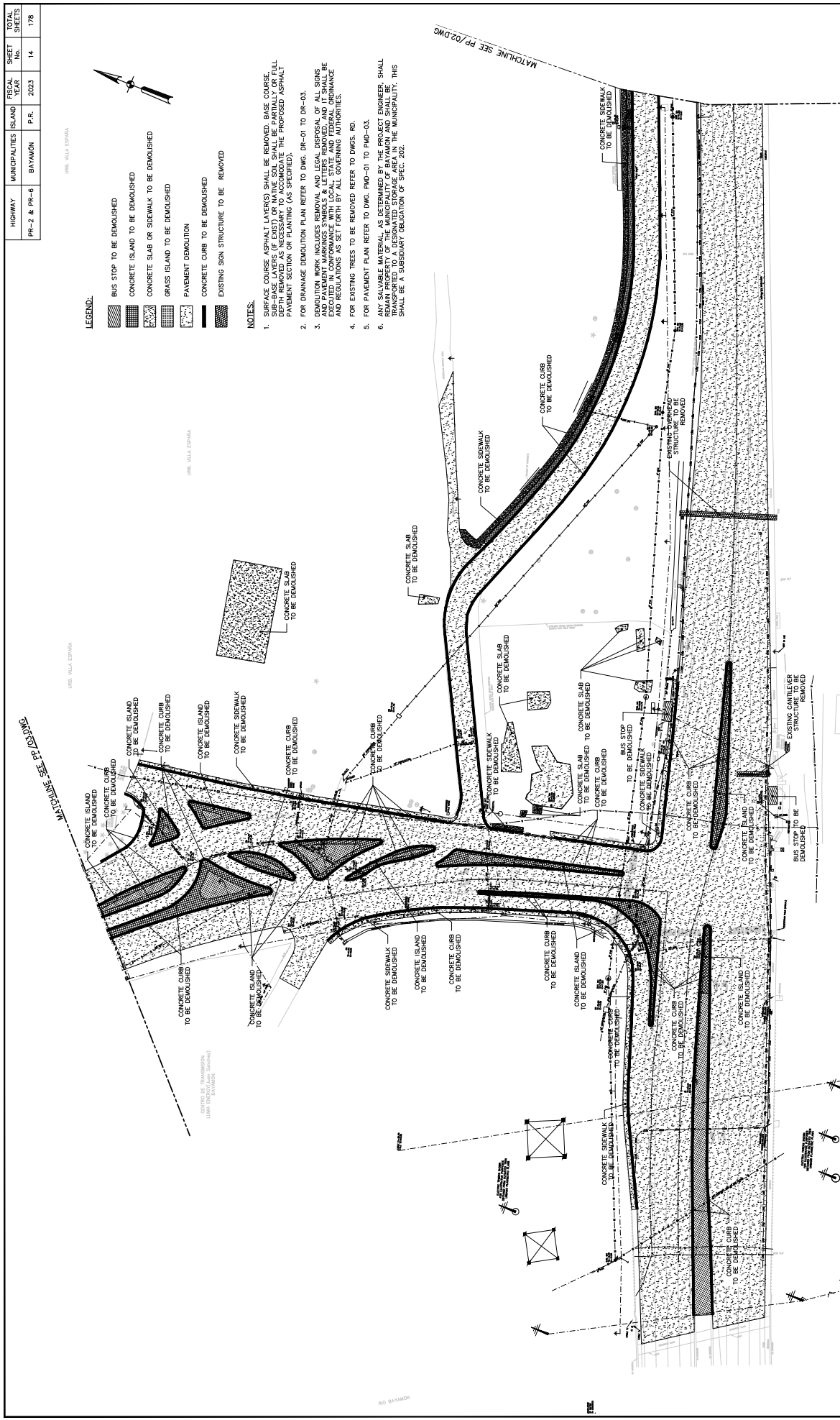
PUERTO RICO

NO.	DATE	REVISIONS



DEMOLITION PLAN

GR 15



**LEGEND:**

- BUS STOP TO BE DEMOLISHED
- CONCRETE ISLAND TO BE DEMOLISHED
- CONCRETE SLAB OR SIDEWALK TO BE DEMOLISHED
- CONCRETE ISLAND TO BE DEMOLISHED
- PAVEMENT DEMOLITION
- CONCRETE CURB TO BE DEMOLISHED
- EXISTING SIGN STRUCTURE TO BE REMOVED

**NOTES:**

1. SURFACE COURSE ASPHALT LAYERS SHALL BE REMOVED. BASE COURSE SHALL BE REMOVED TO A MINIMUM DEPTH OF 12 INCHES. ALL DEPTH REMOVED AS NECESSARY TO ACCOMMODATE THE PROPOSED ASPHALT PAVEMENT SECTION OR PLANTING (AS SPECIFIED).
2. FOR DRAINAGE DEMOLITION PLAN REFER TO DWG. DR-01 TO DR-03.
3. DEMOLITION WORK INCLUDES REMOVAL AND LEGAL DISPOSAL OF ALL SIGNS AND PAVEMENT MARKINGS, SYMBOLS, & LETTERS REMOVED, AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS, ORDINANCES AND REGULATIONS AS SET FORTH BY ALL GOVERNING AUTHORITIES.
4. FOR EXISTING TREES TO BE REMOVED REFER TO DWGS. RD.
5. FOR PAVEMENT PLAN REFER TO DWG. PMG-01 TO PMG-03.
6. ALL PAVERS AND OTHER TRADES SHALL BE REQUIRED TO REMAIN ON SITE UNTIL ALL MATERIALS TO BE REMOVED AND/OR DEMOLISHED REMAIN TRANSPORTED TO A DESIGNATED STORAGE AREA IN THE MUNICIPALITY. THIS SHALL BE A SUBSIDIARY OBLIGATION OF SPEC. 202.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	14	178

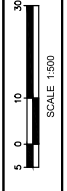
WORK	BY	DATE
DESIGN		
DRAWING		
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FINAL CHECK	FINAL PLANS	07/27/23

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

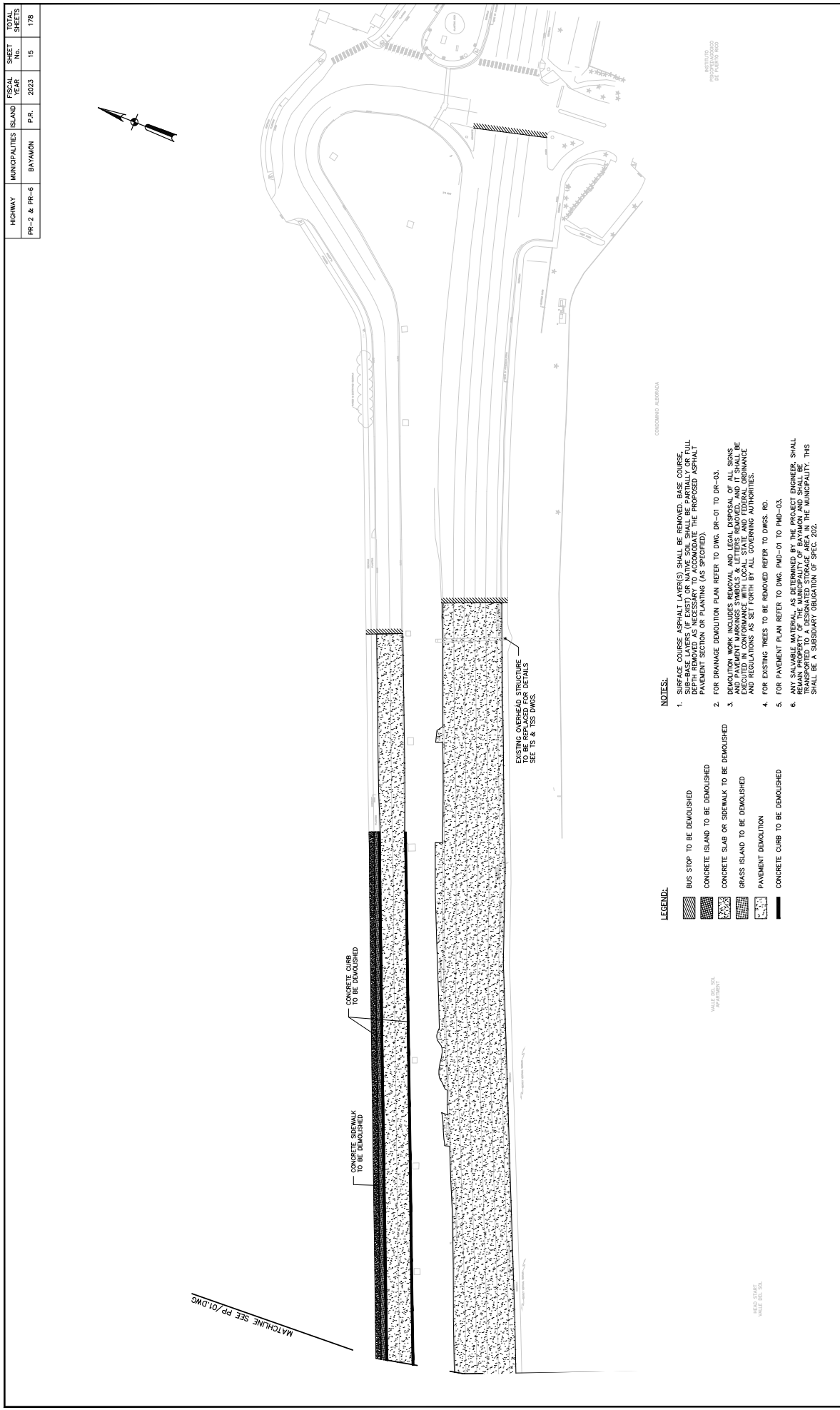
BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PR-2 AND PR-6  
PUERTO RICO

NO.	DATE	REVISIONS



DEMOLITION PLAN

GR 16



- LEGEND:**
- BUS STOP TO BE DEMOLISHED
  - CONCRETE ISLAND TO BE DEMOLISHED
  - CONCRETE SLAB OR SIDEWALK TO BE DEMOLISHED
  - GRASS ISLAND TO BE DEMOLISHED
  - PAVEMENT DEMOLITION
  - CONCRETE CURB TO BE DEMOLISHED

- NOTES:**
1. SURFACE COURSE ASPHALT LAYER(S) SHALL BE REMOVED. BASE COURSE, SUB-BASE LAYERS (IF EXIST) OR NATIVE SOIL SHALL BE PARTIALLY OR FULLY REMOVED TO EXPOSE THE PROPOSED ASPHALT PAVEMENT SECTION OR PLANTING (AS SPECIFIED).
  2. FOR DRAINAGE DEMOLITION PLAN REFER TO DWG. DR-01 TO DR-03.
  3. DEMOLITION WORK INCLUDES REMOVAL AND LEGAL DISPOSAL OF ALL SIGNS AND PAVEMENT MARKINGS (SYMBOLS & LETTERS REMOVED, AND IT SHALL BE EXECUTED IN CONFORMANCE WITH LOCAL, STATE AND FEDERAL ORDINANCE AND REGULATIONS AS SET FORTH BY ALL GOVERNING AUTHORITIES.
  4. FOR EXISTING TREES TO BE REMOVED REFER TO DWGS. RD.
  5. FOR PAVEMENT PLAN REFER TO DWG. PMD-01 TO PMD-03.
  6. ANY SALVABLE MATERIAL, AS DETERMINED BY THE PROJECT ENGINEER, SHALL BE STORED IN A DESIGNATED STORAGE AREA IN THE MUNICIPALITY. THIS SHALL BE A SUBSIDIARY OBLIGATION OF SPEC. 202.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	15	178

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

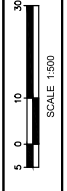


MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

PR-2 AND PR-6

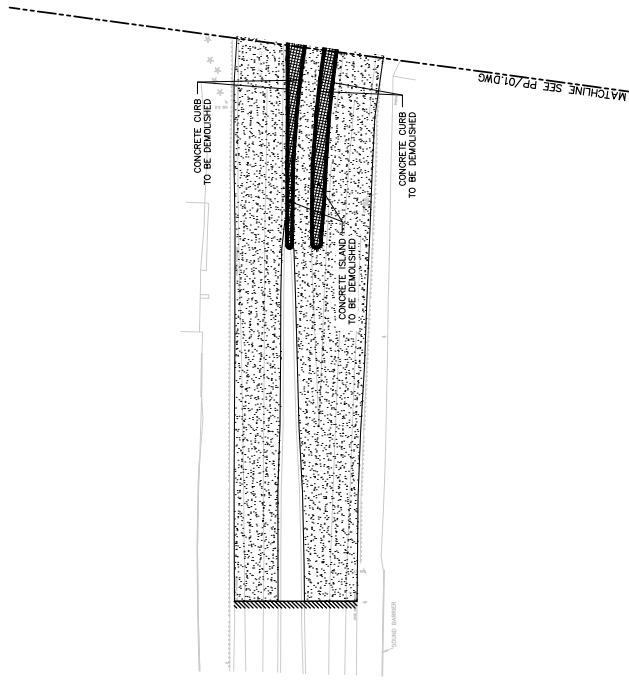
REVISIONS	DATE



DEMOLITION PLAN

GR 17

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	16	178



LEGEND:

- BUS STOP TO BE DEMOLISHED
- CONCRETE ISLAND TO BE DEMOLISHED
- CONCRETE SLAB ON SIDEWALK TO BE DEMOLISHED
- GRASS ISLAND TO BE DEMOLISHED
- PAVEMENT DEMOLITION
- CONCRETE CURB TO BE DEMOLISHED

NOTES:

1. SURFACE COURSE ASPHALT LAYER(S) SHALL BE REMOVED. BASE COURSE, SUB-BASE LAYERS (IF EXIST) OR NATIVE SOIL SHALL BE PARTIALLY OR FULLY REMOVED TO EXPOSE THE PROPOSED ASPHALT PAVEMENT SECTION OR PLANTING (AS SPECIFIED).
2. FOR DRAINAGE DEMOLITION PLAN REFER TO DWG. PR-01 TO DR-03.
3. DEMOLITION WORK INCLUDES REMOVAL AND LEGAL DISPOSAL OF ALL SIGNS AND PAVEMENT MARKINGS SYMBOLS & LETTERS REMOVED, AND IT SHALL BE EXECUTED IN CONFORMANCE WITH LOCAL STATE AND FEDERAL ORDINANCE AND REGULATIONS AS SET FORTH BY ALL GOVERNING AUTHORITIES.
4. FOR EXISTING TREES TO BE REMOVED REFER TO DWGS. RD.
5. FOR PAVEMENT PLAN REFER TO DWG. PMD-01 TO PMD-03.
6. ANY SALVABLE MATERIAL, AS DETERMINED BY THE PROJECT ENGINEER, SHALL BE STORED IN A DESIGNATED STORAGE AREA IN THE MUNICIPALITY. THIS MATERIAL SHALL BE TRANSPORTED TO A DESIGNATED STORAGE AREA IN THE MUNICIPALITY. THIS SHALL BE A SUBSIDIARY OBLIGATION OF SPEC. 202.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	17	178

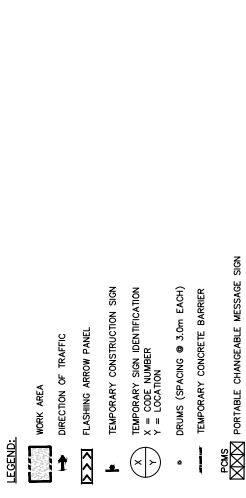
**GENERAL NOTES**

- NO WORK OTHER THAN MOBILIZATION, TRAFFIC CONTROL, AND PROJECT FIELD OFFICE, SHALL BE PERFORMED UNTIL THE PROGRESS SCHEDULE IS APPROVED BY THE ENGINEER.
- ALL TEMPORARY CONTROL DEVICES SHALL COMPLY WITH THE SUPPLEMENTAL SPECIFICATION NUMBER 638B TO THE STANDARD SPECIFICATION OF TRAFFIC OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005 EDITION.
- EQUIPMENT, MATERIALS, AND OTHER DEVICES USED FOR CONSTRUCTION SHALL BE REMOVED FROM THE ROADWAY AFTER WORK HOURS AND SHALL BE STAGED AT A MINIMUM OF 10 METERS FROM THE TRAVEL WAY. THE DRUM SPACING SHALL BE 3 METERS.
- ANY ALTERATION TO THE SCHEDULE MAY IMPROVE TRAFFIC OPERATIONS WITHIN THE CONSTRUCTION AREA. SUCH ALTERATIONS SHALL BE SUBMITTED TO THE ENGINEER AT LEAST TWENTY ONE (21) CALENDAR DAYS IN ADVANCE TO THE PROPOSED DATE OF IMPLEMENTATION FOR REVIEW. IF THE PROPOSED ALTERATION IS APPROVED IT SHALL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER THE INSTALLATION OF TEMPORARY CONTROL DEVICES. THE CONTRACTOR SHALL NOT COMMENCE ANY OF THE CONSTRUCTION PHASES WITHOUT A PUBLIC NOTICE IS ISSUED OR WITHOUT DIRECT CONSENT FROM THE ENGINEER.
- THE CONSTRUCTION SIGNS INSTALLATION SHOULD BE IN ACCORDANCE TO THE TEMPORARY TRAFFIC SIGNS MOUNTING DETAILS.
- THE CONTRACTOR SHALL FURNISH TEMPORARY CONTROL DEVICES THAT MEET THE MANUAL FOR ASSESSING EXISTING SAFETY HARDWARE (MASH) CRITERIA FOR THE APPLICABLE CRASH WORTHINESS STANDARD.
- ALL EXISTING SIGNS AND TRAFFIC CONTROL SIGNS DETERMINED BY THE ENGINEER TO BE UNNECESSARY OR CONTRADICTORY TO THE APPLICABLE CONSTRUCTION SIGNS AND OPERATION, SHALL BE IMMEDIATELY COVERED WITH RED PAPER OR REMOVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF THE EXISTING SIGNS THAT ARE NOT COVERED. THIS WORK IS A SUBSIDIARY OBLIGATION OF THE CONTRACT UNDER SPEC. 638B, "MAINTENANCE AND PROTECTION OF TRAFFIC" PAY ITEMS.
- DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL TAKE ALL THE NECESSARY PRECAUTIONS AND MEASURES TO AVOID FALLING DEBRIS, TOOLS, EQUIPMENT OR ANY OTHER MATERIALS INTERFERENCE OR OBSTRUCTION TO THE TRAVEL WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF THE EXISTING SIGNS THAT ARE NOT COVERED. THIS WORK IS A SUBSIDIARY OBLIGATION OF THE CONTRACT UNDER SPEC. 638B, "MAINTENANCE AND PROTECTION OF TRAFFIC" PAY ITEMS.
- THE CONTRACTOR SHALL MAINTAIN ACCESS AT ALL TIMES TO ADJACENT PROPERTIES DURING CONSTRUCTION. THIS WORK WILL REQUIRE COORDINATION WITH BUSINESSES AND PRIVATE OWNERS. ALL THE MATERIALS, EQUIPMENT, AND TOOLS SHALL BE STORED IN AN APPROPRIATE MANNER TO AVOID OBSTRUCTION OF TRAFFIC UNDER SPEC. 638B, "MAINTENANCE AND PROTECTION OF TRAFFIC" PAY ITEMS.
- NO EXCAVATION AND / OR PAVEMENT REPAIRS ARE ALLOWED WITHIN THE TRAVEL WAY WHEN THE CONTRACTOR OR ITS PERSONNEL IS NOT WORKING AND PHYSICALLY PRESENT AT THE WORK SITE.
- IN CASE THERE ARE OBSTACLES AFFECTED THE EXISTING SIGNAGE, THE CONTRACTOR SHALL PROVIDE ADEQUATE ILLUMINATION IN THE AFFECTED AREA, THE GLARE OF THE TEMPORARY ILLUMINATION SHOULD NOT AFFECT THE DRIVER'S VISIBILITY.
- ALL EXISTING STORM DRAINAGE SYSTEMS BE KEPT FUNCTIONING AT ALL TIMES AND PROVIDE MEANS TO PREVENT CLOGGING OF THESE SYSTEMS DURING CONSTRUCTION. THIS APPLIES ON ALL PHASES OF CONSTRUCTION.
- IN ALL CONSTRUCTION OPERATIONS UNDER THIS CONTRACT, ALL PRECAUTIONS SHALL BE EXERCISED IN ORDER TO PROTECT THE EXISTING INFRASTRUCTURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING INFRASTRUCTURE IN ANY MANNER NECESSARY TO AVOID UNNECESSARY INTERFERENCES TO TRAFFIC.
- REPAIRS OF DAMAGE TO EXISTING INFRASTRUCTURE CAUSED BY CONSTRUCTION OPERATION OR EQUIPMENT SHALL BE CONTRACTOR'S RESPONSIBILITY AND UNDERLIE AT THE CONTRACTOR'S EXPENSE.
- RICO HIGHWAY AND TRANSPORTATION AUTHORITY STANDARD DRAWINGS, 2012 EDITION. REFER TO THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY STANDARD DRAWINGS, 2012 EDITION.
- FOR TEMPORARY PEDESTRIAN SAFETY NET PROTECTION USE HIGH DENSITY POLYETHYLENE WITH ULTIMATE TENSILE STRENGTH OF 350 LB/YD AS PER A.S.T.M. D6968. COLOR: INTERNATIONAL ORANGE (SPEC. 638B)

- NIIGHTIME CONSTRUCTION GENERAL NOTES:**
- NIIGHTIME CONSTRUCTION SHALL ONLY BE PERMITTED BETWEEN THE HOURS OF 8:00 PM AND 5:00 AM SUNDAY THRU THURSDAY. CONTRACTOR'S VEHICLES SHALL BE EQUIPPED WITH ROTATING AMBER LIGHTS WHEN IN USE ON THE ROADWAY DURING NIGHT WORK.
  - LIGHTING SHALL BE PROVIDED FOR NIIGHTIME OPERATIONS. SEE SPECIAL PROVISION 938 "LIGHTING FOR NIIGHTIME CONSTRUCTION, 2005 EDITION."
  - LANE CLOSURES SHALL BE STARTED AT LOCATIONS PROVIDING OPTIMUM VISIBILITY.
  - MILLING AND RESURFACING, PAVEMENT MARKING AND ANY OTHER WORK THAT REQUIRE LANE CLOSURE SHALL BE PERFORMED DURING NIIGHTIME.

MPH	TAPER LENGTH (Mts.)	BUFFER SPACE* (Mts.)
< 25	35	47
25	45	57
35	75	76
40	98	93
50	135	130
55	201	151
60	235	167
65	235	197

\*Tiger length (L) and Buffer Space for a typical lane of 30.5 mts.



**CMA ARCHITECTS & ENGINEERS**

MUNICIPALITY OF BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

PUERTO RICO

DATE: 07/27/23

BY: [Signature]

DESIGN: [Signature]

DRAWING: [Signature]

CHECK: [Signature]

FINAL CHECK: [Signature]

NOT TO SCALE

MAINTENANCE OF TRAFFIC GENERAL NOTES

MOT 01

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK
		CHECK
		REVISIONS
		DESIGN
		DRAWINGS



MUNICIPALITY OF BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

PR-2 AND PR-6  
 BAYAMON

DATE	REVISIONS

NOT TO SCALE  
 MAINTENANCE OF TRAFFIC  
 CONSTRUCTION SCHEDULE

MOT 02

CONSTRUCTION SCHEDULE TABLE

LOCATION	PHASES	STAGES	CONSTRUCTION ACTIVITY TYPE DESCRIPTION	MOT APPLICATION	WORKING HOURS	PCMS - MESSAGE						
PR-6 FROM KM 9.15 TO KM 9.40	PHASE I	STAGE 1	1. INSTALL TEMPORARY CONSTRUCTION SIGNS, CHANNELIZING DEVICES AND TEMPORARY PAVEMENT MARKINGS.	IV (MOT-20) V (MOT-20)	9AM TO 3PM	N/A						
		STAGE 2	1. CONSTRUCTION OF FRONTAGE ROAD, CURB, PLANTING STRIP, SIDEWALK, AND ANY OTHER INCIDENTAL WORK. 2. REMOVE EXISTING PIPES AND DRAINAGE STRUCTURES (REFER TO DRAINAGE DEMOLITION PLANS). 3. CONSTRUCTION OF DRAINAGE AND SANITARY SYSTEMS. 4. CONSTRUCTION OF SIDEWALK, CURB, PLANTING STRIP, AND PLANTING STRIPS AS SHOWN ON PLANS.	MOT-03 MOT-04	9AM TO 3PM							
		STAGE 3	1. REMOVE ALL TEMPORARY CONSTRUCTION SIGNS AND CHANNELIZING DEVICES THAT ARE NOT REQUIRED DURING PHASE II CONSTRUCTION.	IV (MOT-20) V (MOT-20)	9AM TO 3PM							
PR-2 FROM KM 9.15 TO KM 9.40	PHASE II	STAGE 1	1. INSTALL TEMPORARY CONSTRUCTION SIGNS, CHANNELIZING DEVICES AND TEMPORARY PAVEMENT MARKINGS. 2. CONSTRUCTION OF EMBANKMENT SEGMENT, ROADWAY, AND ANY OTHER INCIDENTAL WORK. 3. CONSTRUCTION OF BRIDGE ABUTMENT WALLS, PIER, AASHTO BOX BEAMS, BRIDGE DECK AND ANY OTHER INCIDENTAL WORK. 4. CONSTRUCTION OF PR-6 SEGMENT AS SHOWN ON PLANS. 5. REMOVE EXISTING PIPES AND DRAINAGES STRUCTURES (REFER TO DRAINAGE DEMOLITION PLAN). 6. REMOVE EXISTING PR-2 AND PR-6 RAISED CONCRETE ISLANDS AS SHOWN ON MOT PLANS. 7. REMOVE EXISTING TEMPORARY TRAFFIC SIGNALS. 8. REMOVE EXISTING PR-2 AND PR-6 RAISED CONCRETE ISLANDS AS SHOWN ON MOT PLANS. 9. REMOVE/RELOCATE/CONSTRUCT UTILITY FACILITIES. 10. CONSTRUCTION OF DRAINAGE AND SANITARY SYSTEMS.	IV (MOT-20) V (MOT-20)	9AM TO 3PM	<table border="1"> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>REVERSIBLE CERRAJO 450 MTS</td> </tr> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>600 MTS ADELANTE</td> </tr> </table>	CARRETERA EN CONSTRUCCION	REVERSIBLE CERRAJO 450 MTS	CARRETERA EN CONSTRUCCION	600 MTS ADELANTE		
		CARRETERA EN CONSTRUCCION	REVERSIBLE CERRAJO 450 MTS									
		CARRETERA EN CONSTRUCCION	600 MTS ADELANTE									
STAGE 2	1. CONSTRUCTION OF ROUNDABOUT CENTRAL AND MEDIAN RAISED ISLAND, OF SIDEWALK. 2. INSTALLATION OF PERMANENT TRAFFIC SIGNALS. 3. REMOVE TEMPORARY TRAFFIC SIGNAL. 4. CONSTRUCTION OF DRAINAGE SYSTEMS.	MOT-05 MOT-06 MOT-07	9AM TO 3PM									
STAGE 3	1. REMOVE ALL TEMPORARY CONSTRUCTION SIGNS AND CHANNELIZING DEVICES THAT ARE NOT REQUIRED DURING PHASE III CONSTRUCTION.	IV (MOT-20) V (MOT-20)	9AM TO 3PM									
PR-6 FROM KM 9.15 TO KM 9.40	PHASE III	STAGE 1	1. INSTALL TEMPORARY CONSTRUCTION SIGNS, CHANNELIZING DEVICES AND TEMPORARY PAVEMENT MARKINGS. 2. CONSTRUCTION OF EMBANKMENT SEGMENT, ROADWAY, AND ANY OTHER INCIDENTAL WORK. 3. CONSTRUCTION OF PR-6 SEGMENT AS SHOWN ON PLANS. 4. REMOVE EXISTING TRAFFIC SIGNALS AND UTILITY FACILITIES. 5. REMOVE EXISTING PIPES AND DRAINAGES STRUCTURES (REFER TO DRAINAGE DEMOLITION PLAN). 6. REMOVE EXISTING PR-2 BUS STOPS. 7. CONSTRUCTION OF DRAINAGE AND SANITARY SYSTEMS. 8. CONSTRUCTION OF SIDEWALK.	IV (MOT-20) V (MOT-20)	9AM TO 3PM	<table border="1"> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>REVERSIBLE CERRAJO 450 MTS</td> </tr> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>600 MTS ADELANTE</td> </tr> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>450 MTS ADELANTE</td> </tr> </table>	CARRETERA EN CONSTRUCCION	REVERSIBLE CERRAJO 450 MTS	CARRETERA EN CONSTRUCCION	600 MTS ADELANTE	CARRETERA EN CONSTRUCCION	450 MTS ADELANTE
		CARRETERA EN CONSTRUCCION	REVERSIBLE CERRAJO 450 MTS									
		CARRETERA EN CONSTRUCCION	600 MTS ADELANTE									
CARRETERA EN CONSTRUCCION	450 MTS ADELANTE											
STAGE 2	1. COLD MILLING AND RESURFACING. 2. INSTALL PAVEMENT MARKING AND PERMANENT TRAFFIC SIGNALS. 3. INSTALL RAISED PAVEMENT MARKERS, AND ANY OTHER INCIDENTAL WORK.	MOT-08 MOT-09 MOT-10	9AM TO 3PM									
STAGE 3	1. REMOVE ALL TEMPORARY CONSTRUCTION SIGNS AND CHANNELIZING DEVICES THAT ARE NOT REQUIRED DURING PHASE IV CONSTRUCTION.	IV (MOT-20) V (MOT-20)	9AM TO 3PM									

CONSTRUCTION SCHEDULE TABLE

LOCATION	PHASES	STAGES	CONSTRUCTION ACTIVITY TYPE DESCRIPTION	MOT APPLICATION	WORKING HOURS	PCMS - MESSAGE				
PR-6 FROM KM 9.15 TO KM 9.40	PHASE IV	STAGE 1	1. INSTALL TEMPORARY CONSTRUCTION SIGNS, CHANNELIZING DEVICES AND TEMPORARY PAVEMENT MARKINGS.	IV (MOT-20) V (MOT-20)	9AM TO 3PM	<table border="1"> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>REVERSIBLE CERRAJO 450 MTS</td> </tr> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>600 MTS ADELANTE</td> </tr> </table>	CARRETERA EN CONSTRUCCION	REVERSIBLE CERRAJO 450 MTS	CARRETERA EN CONSTRUCCION	600 MTS ADELANTE
		CARRETERA EN CONSTRUCCION	REVERSIBLE CERRAJO 450 MTS							
		CARRETERA EN CONSTRUCCION	600 MTS ADELANTE							
STAGE 2	1. CONSTRUCTION OF PR-6 AND PR-2 ROADWAY SEGMENTS AS SHOWN ON PLANS. 2. REMOVE EXISTING PIPES AND DRAINAGES STRUCTURES (REFER TO DRAINAGE DEMOLITION PLANS). 3. CONSTRUCTION OF DRAINAGE SYSTEMS. 4. CONSTRUCTION OF SIDEWALK.	MOT-11 MOT-12 MOT-13	9AM TO 3PM							
STAGE 3	1. REMOVE ALL TEMPORARY CONSTRUCTION SIGNS AND CHANNELIZING DEVICES THAT ARE NOT REQUIRED DURING PHASE V CONSTRUCTION.	IV (MOT-20) V (MOT-20)	9AM TO 3PM							
PR-2 FROM KM 9.15 TO KM 9.40	PHASE V	STAGE 1	1. INSTALL TEMPORARY CONSTRUCTION SIGNS, CHANNELIZING DEVICES AND TEMPORARY PAVEMENT MARKINGS. 2. CONSTRUCTION OF ROUNDABOUT CENTRAL AND MEDIAN RAISED ISLAND, OF SIDEWALK. 3. INSTALLATION OF PERMANENT TRAFFIC SIGNALS. 4. REMOVE TEMPORARY TRAFFIC SIGNAL. 5. CONSTRUCTION OF DRAINAGE SYSTEMS.	IV (MOT-20) V (MOT-20)	9AM TO 3PM	<table border="1"> <tr> <td>CARRETERA EN CONSTRUCCION</td> <td>600 MTS ADELANTE</td> </tr> </table>	CARRETERA EN CONSTRUCCION	600 MTS ADELANTE		
		CARRETERA EN CONSTRUCCION	600 MTS ADELANTE							
		STAGE 2	1. CONSTRUCTION OF ROUNDABOUT CENTRAL AND MEDIAN RAISED ISLAND, OF SIDEWALK. 2. INSTALLATION OF PERMANENT TRAFFIC SIGNALS. 3. REMOVE TEMPORARY TRAFFIC SIGNAL. 4. CONSTRUCTION OF DRAINAGE SYSTEMS.	MOT-14 MOT-15 MOT-16	9AM TO 3PM					
STAGE 3	1. REMOVE ALL TEMPORARY CONSTRUCTION SIGNS AND CHANNELIZING DEVICES.	IV (MOT-20) V (MOT-20)	9AM TO 3PM							
PR-6 FROM KM 9.15 TO KM 9.40	PHASE VI	STAGE 1	1. INSTALL TEMPORARY CONSTRUCTION SIGNS AND CHANNELIZING DEVICES.	IV (MOT-20) V (MOT-20)	9AM TO 3PM	N/A				
		STAGE 2	1. COLD MILLING AND RESURFACING. 2. INSTALL PAVEMENT MARKING AND PERMANENT TRAFFIC SIGNALS. 3. INSTALL RAISED PAVEMENT MARKERS, AND ANY OTHER INCIDENTAL WORK.	MOT-17 MOT-18 MOT-19 MOT-19 MOT-19 MOT-20 MOT-20	9AM TO 3PM					
		STAGE 3	1. REMOVE ALL TEMPORARY CONSTRUCTION SIGNS AND CHANNELIZING DEVICES.	IV (MOT-20) V (MOT-20)	9AM TO 3PM					

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	18	178

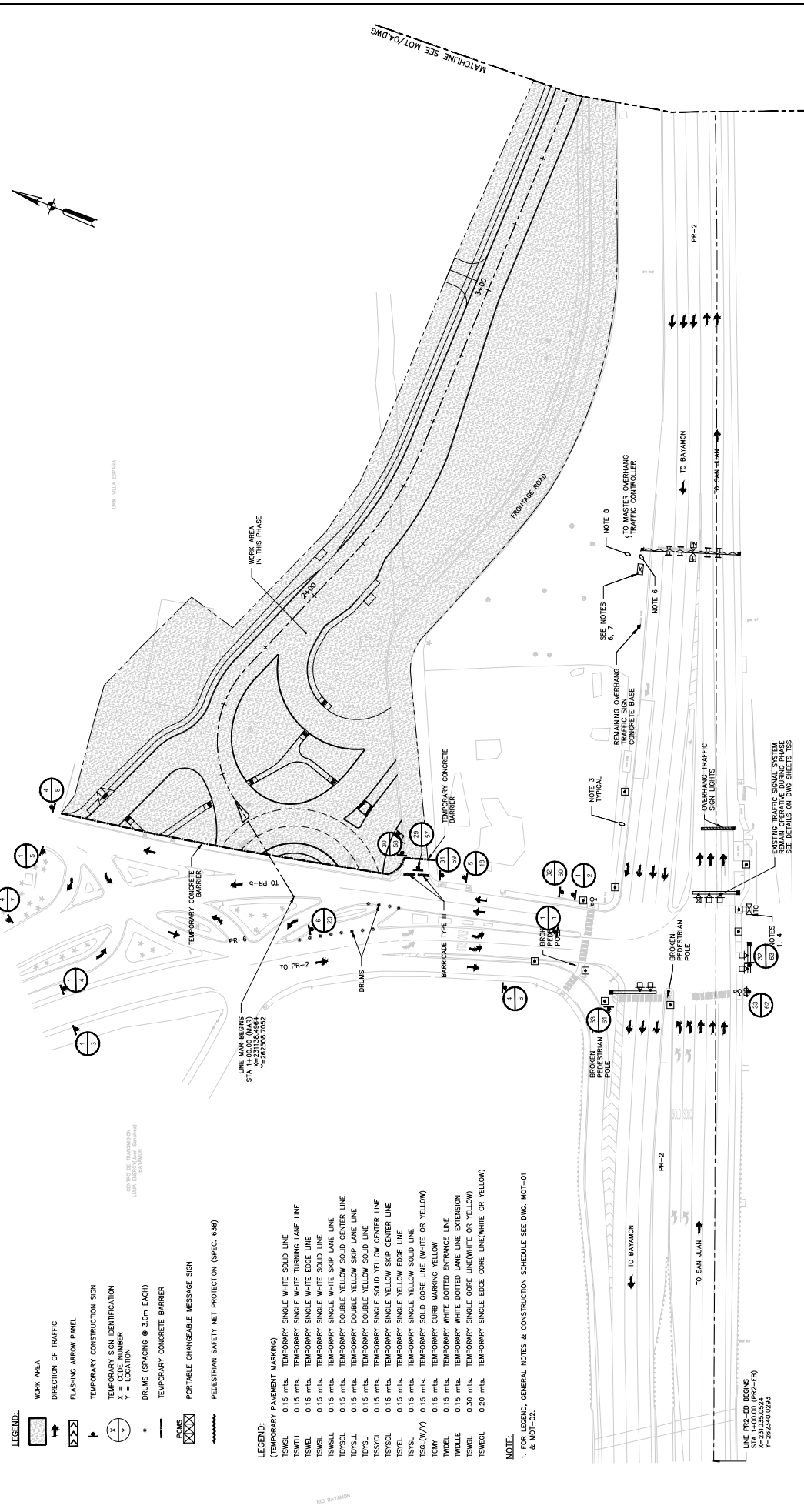
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	19	178

URB. VILLA ESPAÑA



URB. VILLA ESPAÑA

URB. VILLA ESPAÑA



**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- FLASHING ARROW PANEL
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER
- PCMS
- PORTABLE CHANGEABLE MESSAGE SIGN
- PEDESTRIAN SAFETY NET PROTECTION (SPEC. 6.39)

**LEGEND:**  
(TEMPORARY PAVEMENT MARKING)

- TSWLL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LINE
- TSWL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LINE
- TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
- TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW SKIP CENTER LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SKIP CENTER LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE SOLID CORE LINE (WHITE OR YELLOW)
- TSWLL 0.15 mts. TEMPORARY CURB MARKING YELLOW
- TSWLL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
- TSWLL 0.15 mts. TEMPORARY WHITE DOTTED LINE LINE EXTENSION
- TSWLL 0.30 mts. TEMPORARY SINGLE CORE LINE (WHITE OR YELLOW)
- TSWLL 0.20 mts. TEMPORARY SINGLE EDGE CORE LINE (WHITE OR YELLOW)

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

MOT 03

MAINTENANCE OF TRAFFIC  
PHASE I



NO.	REVISIONS	DATE

PUERTO RICO

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

#40 2282

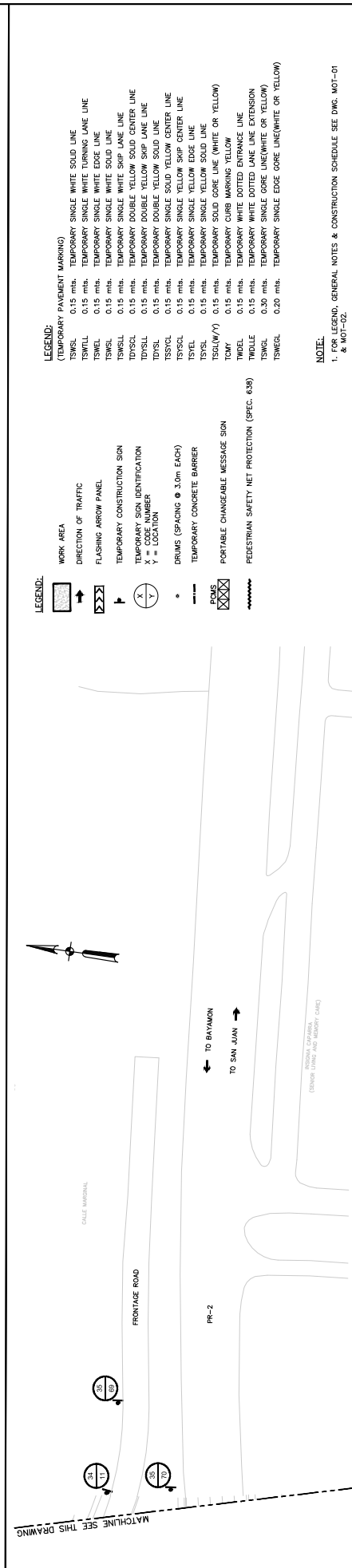
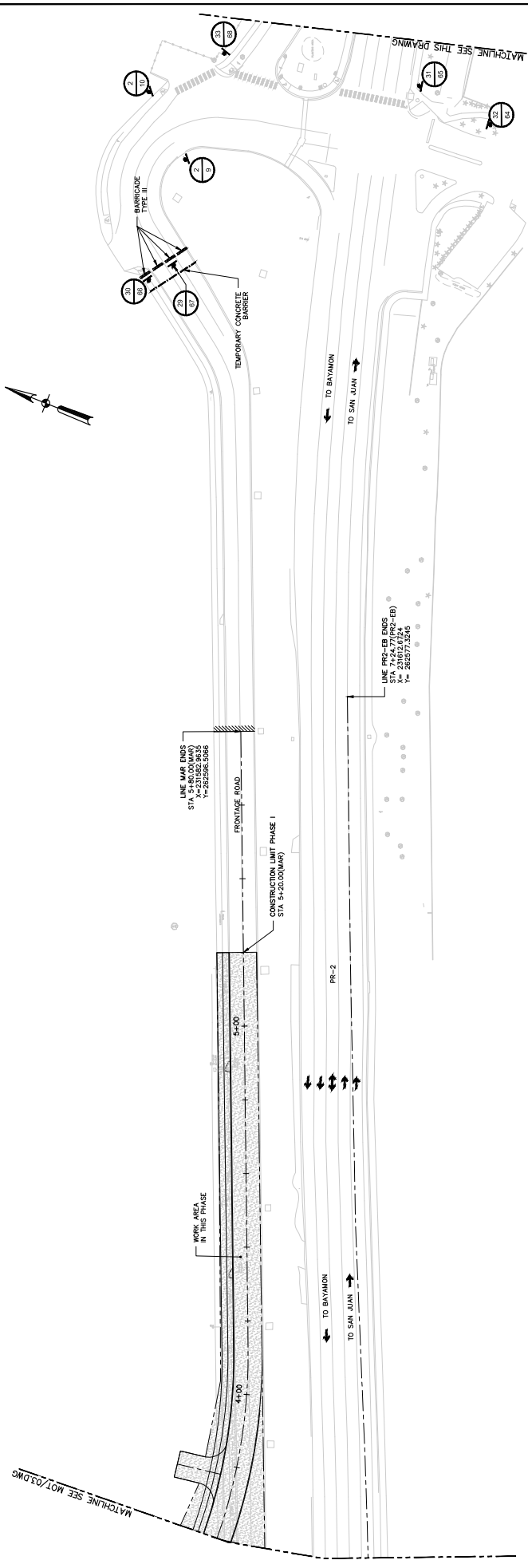
MUNICIPALITY OF BAYAMÓN

CMA ARCHITECT & ENGINEERS

DATE	BY	DESIGN	CHECK	FINAL CHECK
07/27/23				



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	20	178



- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - FLASHING ARROW PANEL
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - X = CODE NUMBER
  - Y = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER
  - PORTABLE CHANGEABLE MESSAGE SIGN
  - PEDESTRIAN SAFETY NET PROTECTION (SPEC. 6.39)

- LEGEND:**
- (TEMPORARY PAVEMENT MARKING)
- TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TSWTL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LANE LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LANE LINE
  - TDVSL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
  - TDVSL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP LANE LINE
  - TSVYL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW CENTER LINE
  - TSVYL 0.15 mts. TEMPORARY SINGLE YELLOW SKIP CENTER LINE
  - TSVEL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE
  - TSVLL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
  - TSVLL 0.15 mts. TEMPORARY SINGLE YELLOW SKIP LINE
  - TSVLL (W/Y) 0.15 mts. TEMPORARY CURB MARKING YELLOW
  - TSVLL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
  - TSVLL 0.15 mts. TEMPORARY WHITE DOTTED LANE LINE EXTENSION
  - TSWLE 0.30 mts. TEMPORARY SINGLE GORE LINE(WHITE OR YELLOW)
  - TSWLE 0.20 mts. TEMPORARY SINGLE GORE LINE(WHITE OR YELLOW)

**NOTE:**

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

DATE	BY	DATE	BY
07/27/23			

FINAL CHECK	DATE
DESIGN	
DRAWING	
REVISIONS	

SCALE 1:500	0 10 20 30
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DATE	REVISIONS

**MUNICIPALITY OF BAYAMÓN**

**PR-2 AND PR-6**

**INTERSECTIONS GEOMETRIC IMPROVEMENTS**

**PUERTO RICO**

**CMA ARCHITECT & ENGINEERS**

185 CALLE DEL OCEANO #200  
SAN JUAN, PUERTO RICO 00906  
TEL: (787) 763-1234  
WWW.CMA-ARCHITECT.COM

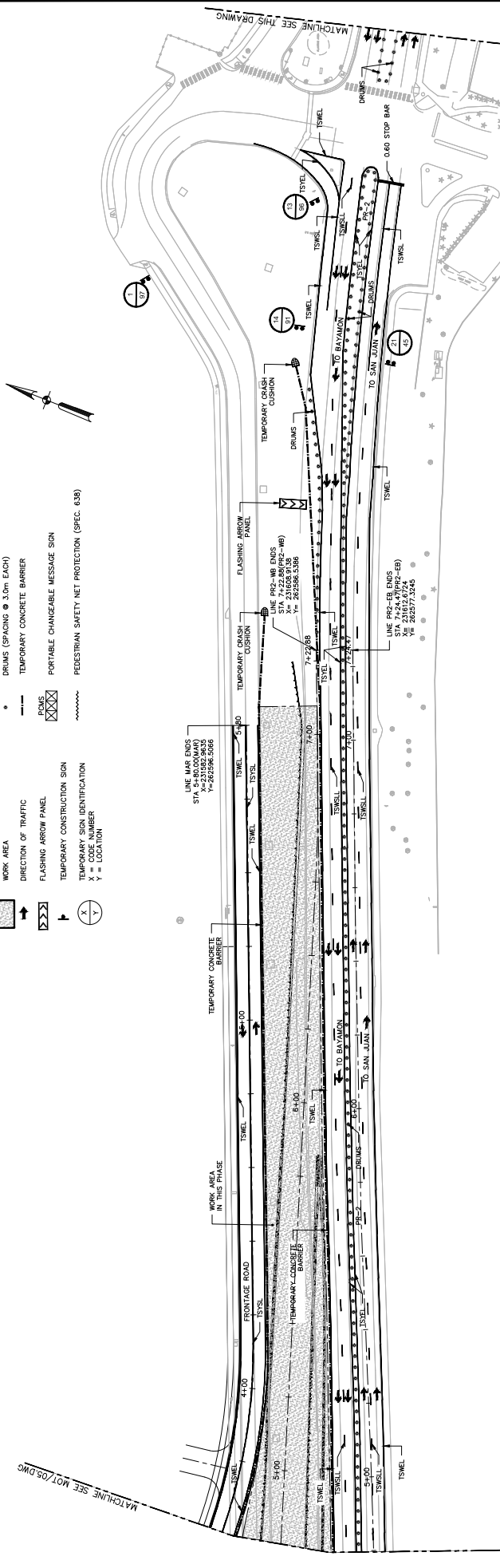
**MOT 04**

**MAINTENANCE OF TRAFFIC**

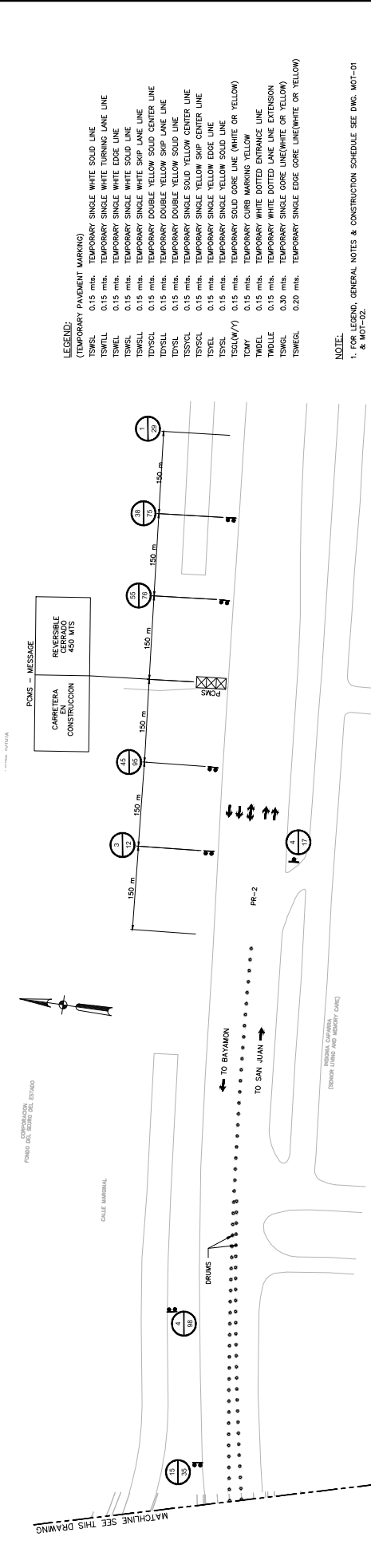
**PHASE I**



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	22	178



- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - FLASHING ARROW PANEL
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - X = CODE NUMBER
  - Y = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER
  - PORTABLE CHANGEABLE MESSAGE SIGN
  - PEDESTRIAN SAFETY NET PROTECTION (SPEC. 6.18)
  - PCS
  - TEMPORARY CRASH CUSHION
  - FLASHING ARROW PANEL
  - TEMPORARY CRASH CUSHION
  - LINE MARK ENDS
  - LINE MARK ENDS



- LEGEND:**
- (TEMPORARY PAVEMENT MARKING)
- TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LANE LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LANE LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW SKIP LANE LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID EDGE LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID CORNER LINE
  - TSWLL 0.15 mts. TEMPORARY SOLID CORNER LINE (WHITE OR YELLOW)
  - TSWLL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
  - TSWLL 0.15 mts. TEMPORARY WHITE DOTTED LANE LINE EXTENSION
  - TSWLL 0.30 mts. TEMPORARY SINGLE GORE LINE (WHITE OR YELLOW)
  - TSWLL 0.20 mts. TEMPORARY SINGLE GORE EDGE LINE (WHITE OR YELLOW)

**NOTE:**  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK FINAL PLANS
		CHECK
		DESIGN
		DRAWINGS
		REVISIONS

MUNICIPALITY OF BAYAMÓN  
BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

PR-2 AND PR-6  
MAINTENANCE OF TRAFFIC PHASE II

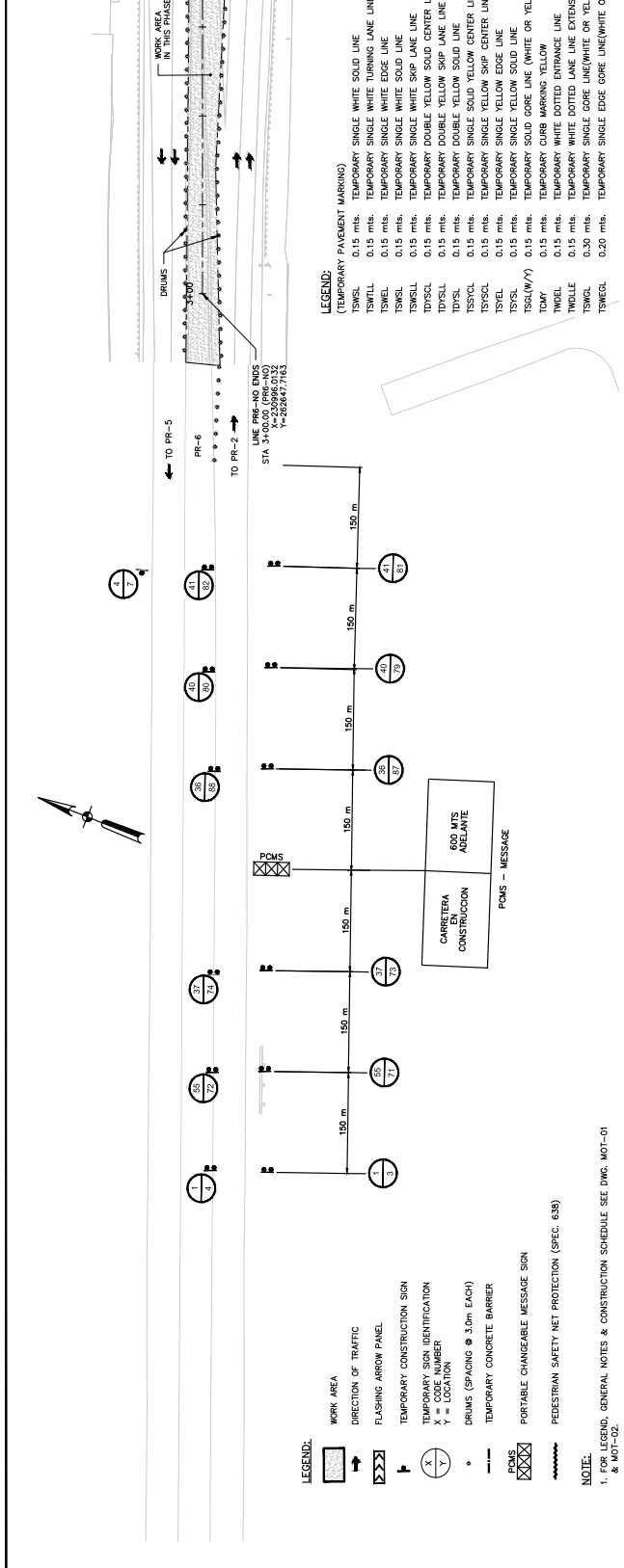
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CMA ARCHITECT & ENGINEERS

180 CALLE DEL COMERCIO #200  
SAN JUAN, PUERTO RICO 00910  
TEL: (787) 492-2222  
WWW.CMAAEC.COM

PROJECT # 2218

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	23	178

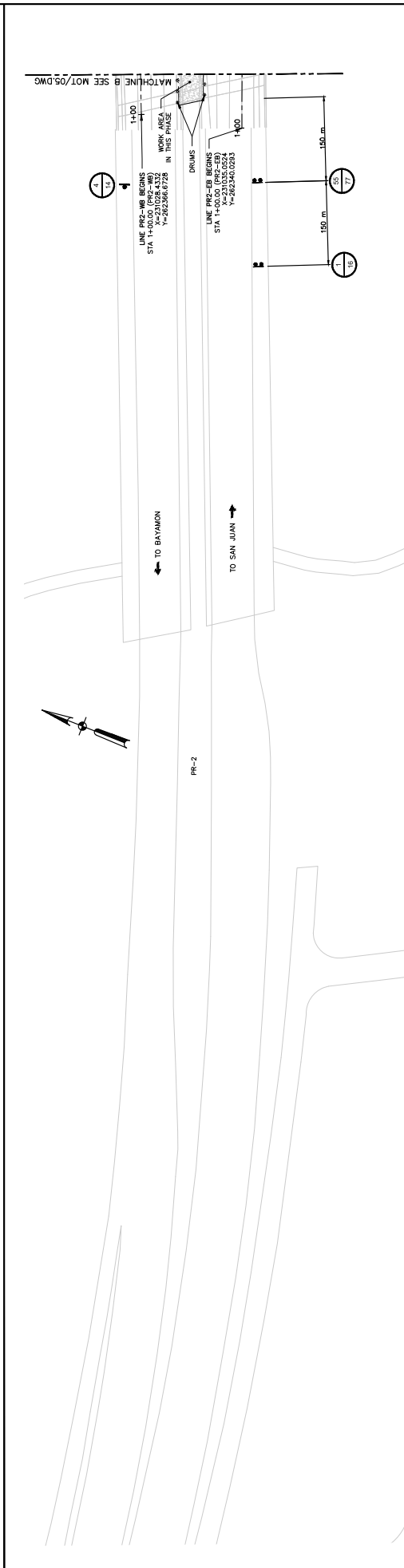


**LEGEND:**  
(TEMPORARY PAVEMENT MARKING)

TSWSL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE  
 TSWLL 0.15 mts. TEMPORARY SINGLE WHITE DOTTED LINE  
 TSWEL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE  
 TSWSL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LINE  
 TDSWL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LINE  
 TDSLL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP LINE  
 TDSYL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW CENTER LINE  
 TSYSL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW SKIP CENTER LINE  
 TSYEL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE  
 TSYSL(W/Y) 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE (WHITE OR YELLOW)  
 TCMY 0.15 mts. TEMPORARY CURB MARKING YELLOW  
 TMDL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE  
 TMDLLE 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE EXTENSION  
 TSWGL 0.30 mts. TEMPORARY SINGLE GORE LINE (WHITE OR YELLOW)  
 TSWGL 0.20 mts. TEMPORARY SINGLE GORE LINE (WHITE OR YELLOW)

**LEGEND:**  
WORK AREA  
 DIRECTION OF TRAFFIC  
 FLASHING ARROW PANEL  
 TEMPORARY CONSTRUCTION SIGN  
 X = CODE NUMBER  
 Y = LOCATION  
 DRUMS (SPACING @ 3.0m EACH)  
 TEMPORARY CONCRETE BARRIER  
 PORTABLE CHANGEABLE MESSAGE SIGN  
 PEDESTRIAN SAFETY NET PROTECTION (SPEC. 6.38)

**NOTE:**  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.



**LEGEND:**  
(TEMPORARY PAVEMENT MARKING)

TSWSL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE  
 TSWLL 0.15 mts. TEMPORARY SINGLE WHITE DOTTED LINE  
 TSWEL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE  
 TSWSL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LINE  
 TDSWL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LINE  
 TDSLL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP LINE  
 TDSYL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW CENTER LINE  
 TSYSL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW SKIP CENTER LINE  
 TSYEL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE  
 TSYSL(W/Y) 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE (WHITE OR YELLOW)  
 TCMY 0.15 mts. TEMPORARY CURB MARKING YELLOW  
 TMDL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE  
 TMDLLE 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE EXTENSION  
 TSWGL 0.30 mts. TEMPORARY SINGLE GORE LINE (WHITE OR YELLOW)  
 TSWGL 0.20 mts. TEMPORARY SINGLE GORE LINE (WHITE OR YELLOW)

**LEGEND:**  
WORK AREA  
 DIRECTION OF TRAFFIC  
 FLASHING ARROW PANEL  
 TEMPORARY CONSTRUCTION SIGN  
 X = CODE NUMBER  
 Y = LOCATION  
 DRUMS (SPACING @ 3.0m EACH)  
 TEMPORARY CONCRETE BARRIER  
 PORTABLE CHANGEABLE MESSAGE SIGN  
 PEDESTRIAN SAFETY NET PROTECTION (SPEC. 6.38)

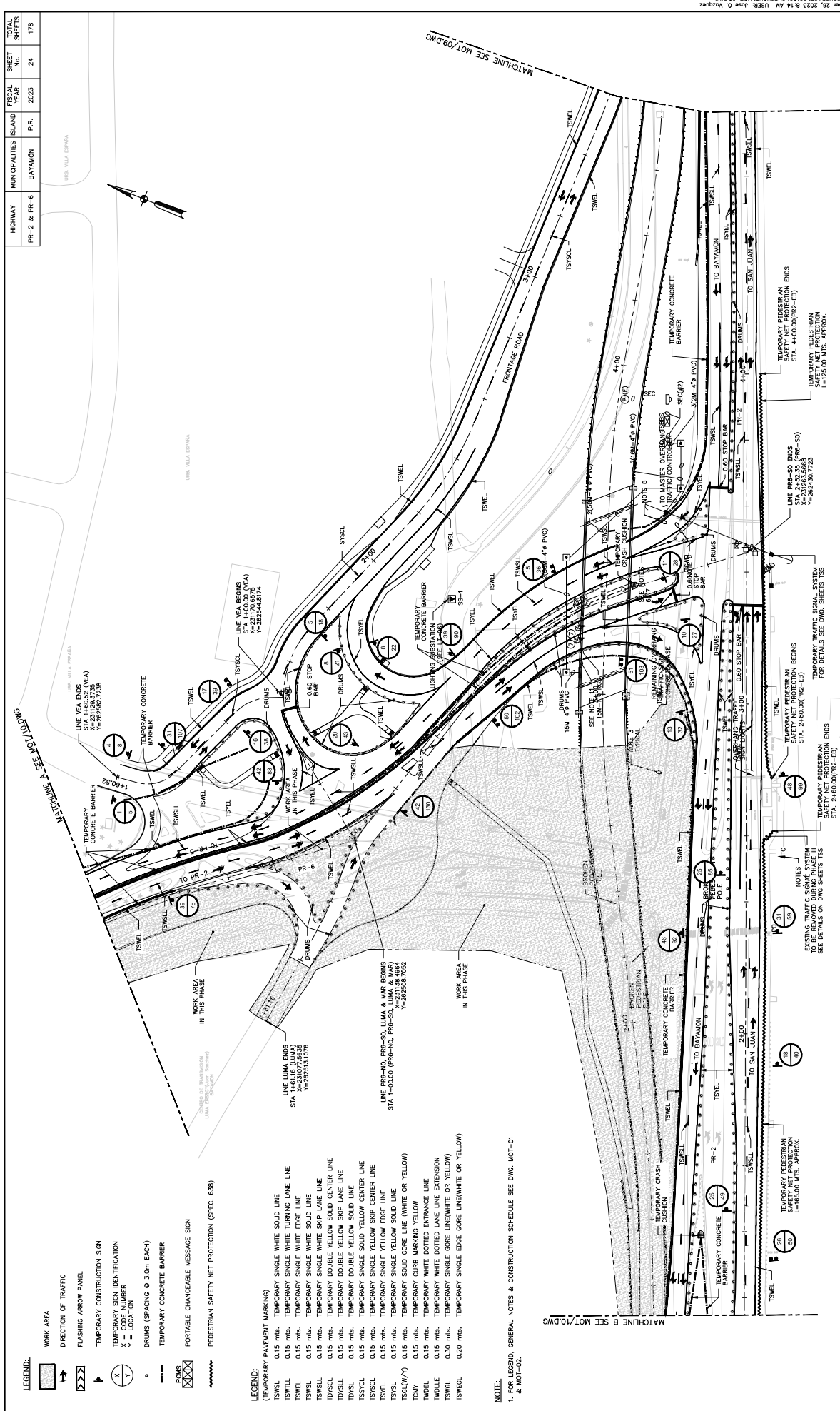
**NOTE:**  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

	MUNICIPALITY OF BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	DATE	REVISIONS	MAINTENANCE OF TRAFFIC	MOT
	BAYAMÓN	PR-2 AND PR-6				PHASE II	07

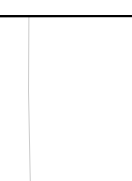
1500 Calle De La Universidad, Suite 2000  
 San Juan, Puerto Rico 00925  
 Phone: (787) 762-1234  
 Email: info@cmaae.com

WORK	BY	DATE
DESIGN		
DRAWINGS		
CHECK		
FINAL CHECK	07/27/23	FINAL PLANS

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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	24	178



**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- FLASHING ARROW PANEL
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER
- FOAMS
- PORTABLE CHANGEABLE MESSAGE SIGN
- PEDESTRIAN SAFETY NET PROTECTION (SPEC. 638)

**LEGEND:**

(TEMPORARY PAVEMENT MARKING)

- TSW/LL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
- TSW/LL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LANE LINE
- TSW/LL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
- TSW/LL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
- TSW/LL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LANE LINE
- TSW/LL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LANE LINE
- TSW/LL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP LANE LINE
- TSW/LL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
- TSW/LL 0.15 mts. TEMPORARY SINGLE YELLOW SKIP CENTER LINE
- TSW/LL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID CENTER LINE
- TSW/LL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
- TSW/LL 0.15 mts. TEMPORARY SOLID CORE LINE (WHITE OR YELLOW)
- TSW/LL 0.15 mts. TEMPORARY CURB MARKING YELLOW
- TW/EL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
- TW/EL 0.15 mts. TEMPORARY WHITE DOTTED LANE LINE EXTENSION
- TW/EL 0.30 mts. TEMPORARY SINGLE CORE LINE (WHITE OR YELLOW)
- TW/EL 0.20 mts. TEMPORARY SINGLE EDGE CORE LINE (WHITE OR YELLOW)

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK
		FINAL CHECK
		DESIGN
		REVISIONS

DATE	DATE	REVISIONS

MOT	08
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**MAINTENANCE OF TRAFFIC**  
**PHASE III**

**CMA** ARCHITECTS & ENGINEERS  
 185 Calle de las Américas, Suite 300  
 Bayamón, PR 00961  
 Phone: (787) 263-1100  
 Fax: (787) 263-1101  
 Email: info@cma-pr.com

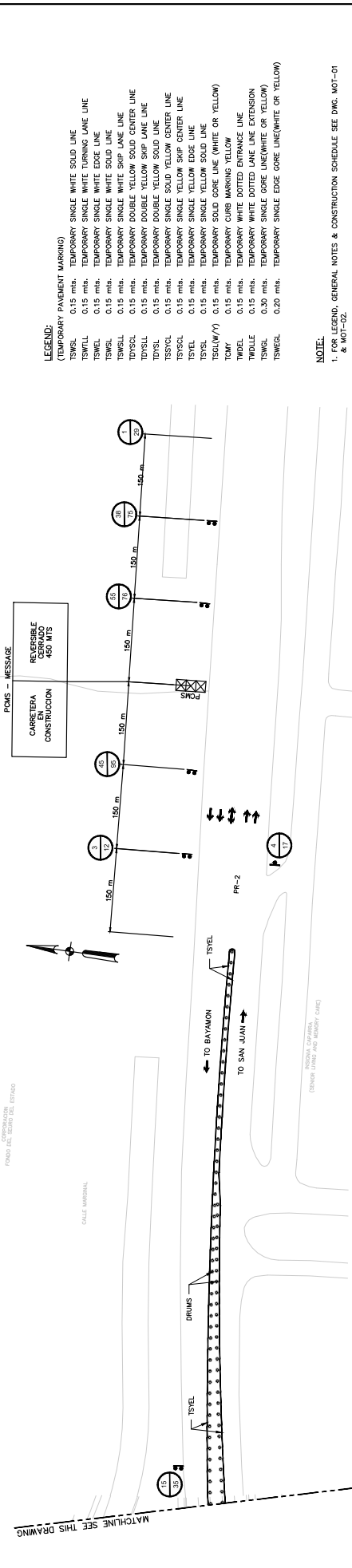
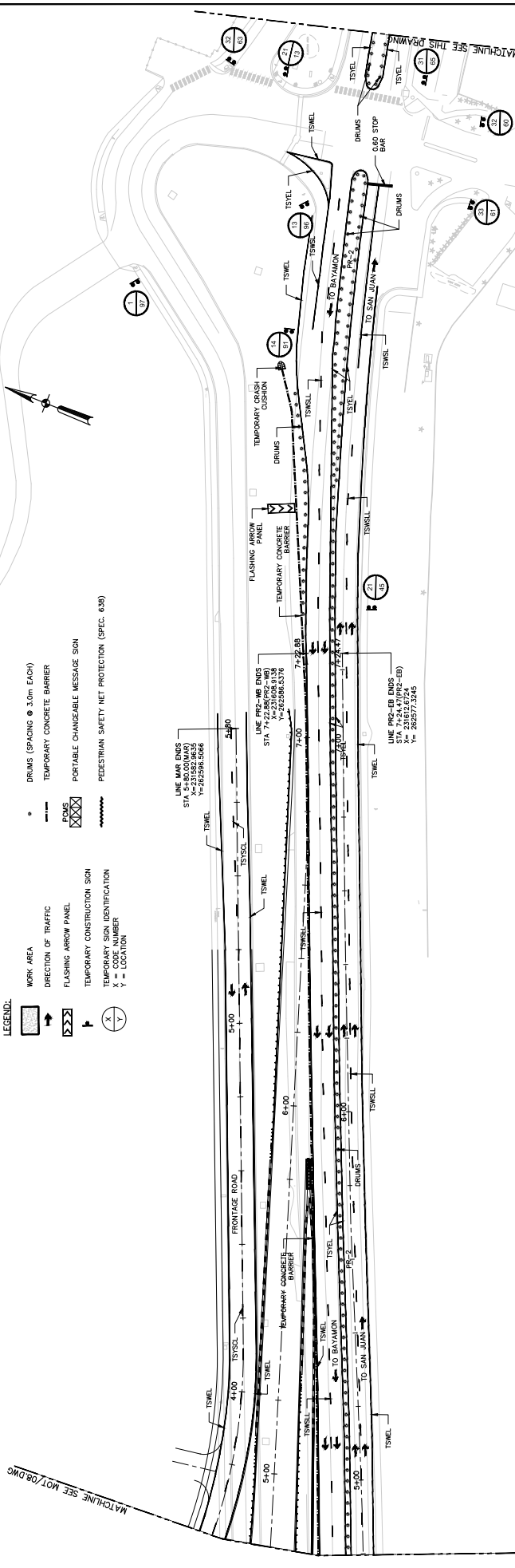
**BAYAMÓN**

**PR-2 AND PR-6**  
**INTERSECTIONS GEOMETRIC IMPROVEMENTS**  
**PUERTO RICO**

**MUNICIPALITY OF BAYAMÓN**

SCALE 1:500  
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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	25	178



**NOTE:**

- FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

**REVISIONS**

NO.	DATE	DESCRIPTION

**SCALE:** 1:500

**PROJECT INFORMATION:**

MUNICIPALITY OF BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN  
 PUERTO RICO

**CLIENT:** #44 2218

**ARCHITECT & ENGINEERS:** CMA ARCHITECT & ENGINEERS

**DATE:** 07/27/23

**BY:**

**WORK:**

**DESIGN:**

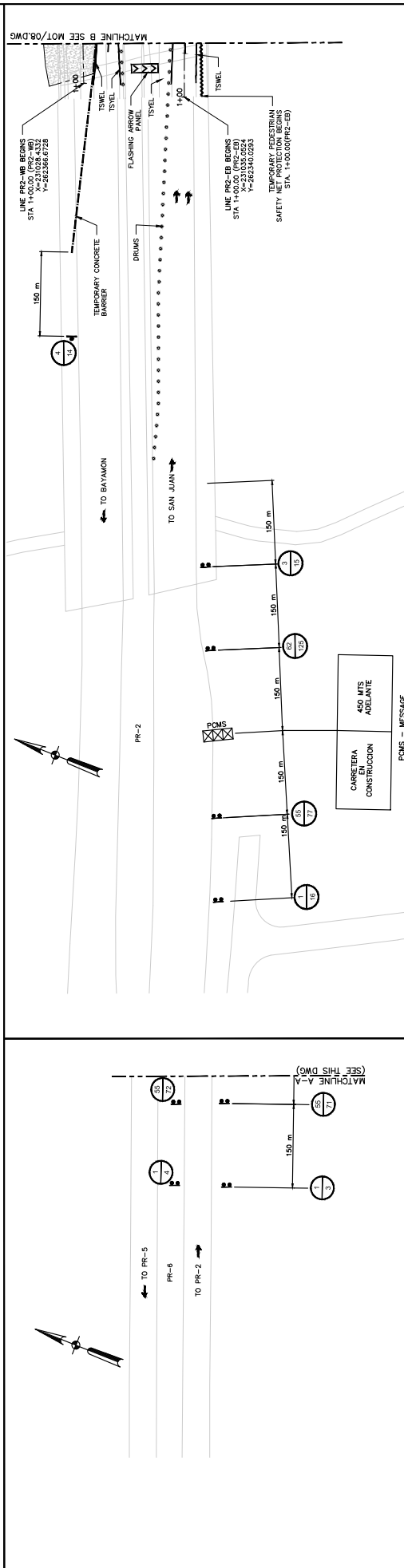
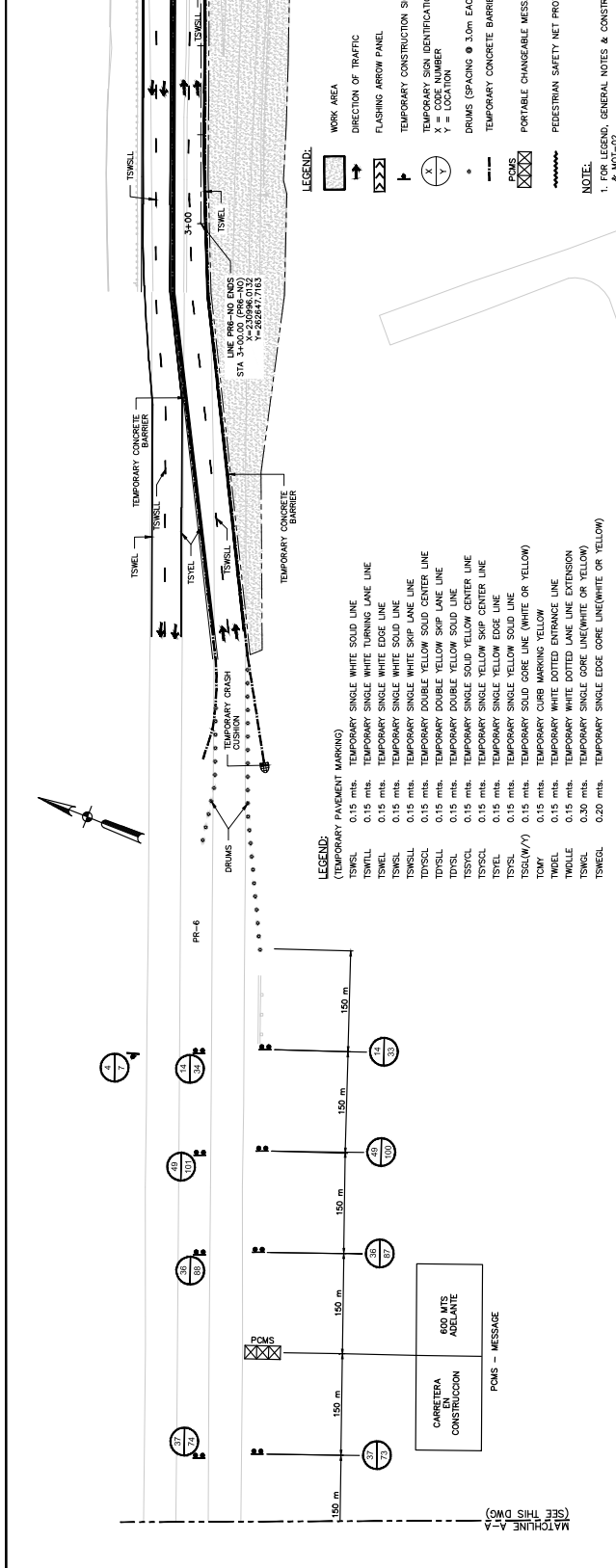
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**DATE:**

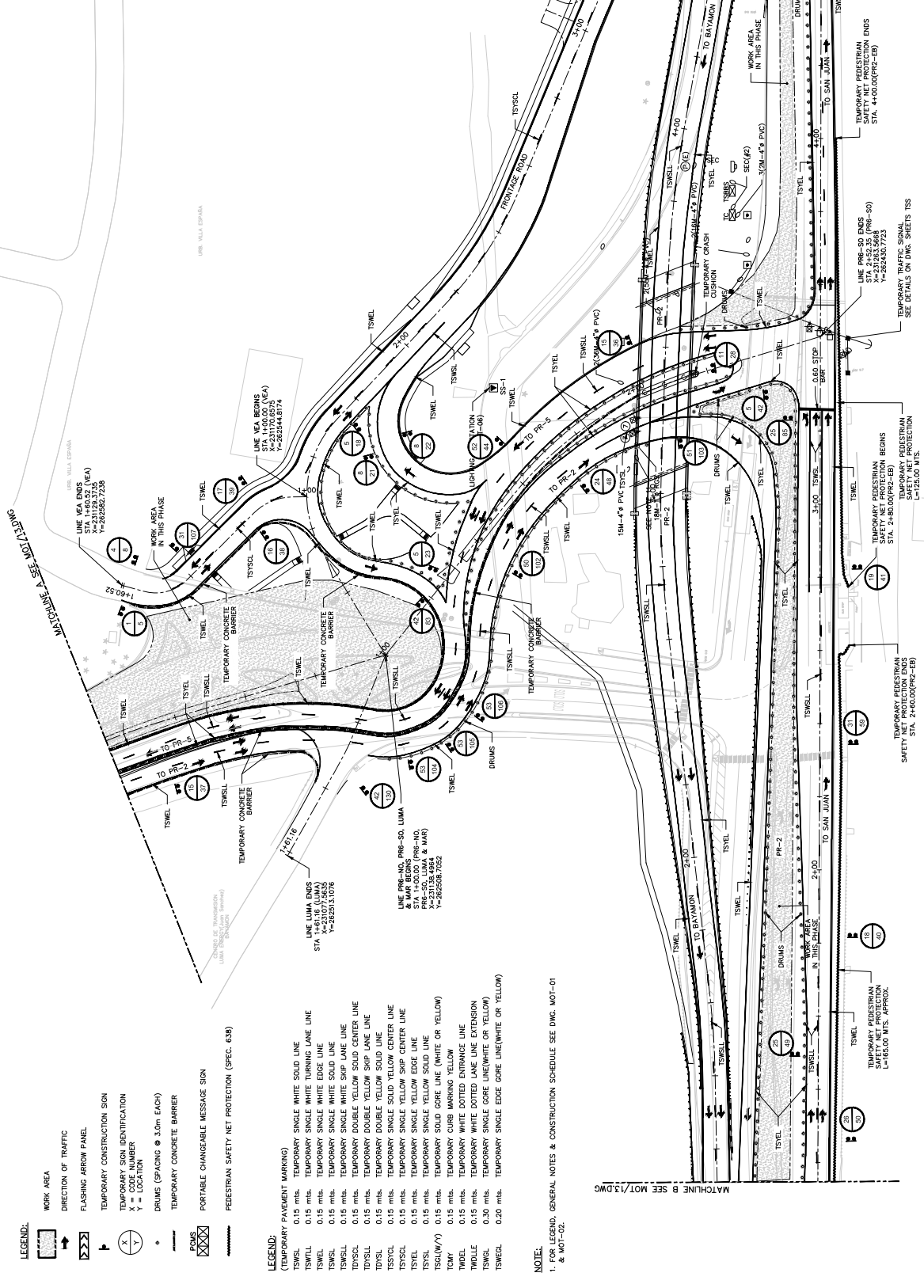
ROADWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	26	178



MUNICIPALITY OF BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	BAYAMÓN	PR-2 AND PR-6	PUERTO RICO	DATE	REVISIONS
					DATE	REVISIONS
CMA ARCHITECT & ENGINEERS 155 CALLE DEL ORO #200 SAN JUAN, PUERTO RICO 00906 TEL: (787) 762-1234 FAX: (787) 762-1235 WWW.CMAARCHITECT.COM				#A4 2202 07/27/23		MOT 10

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	27	178



- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - FLASHING ARROW PANEL
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - TEMPORARY CONCRETE BARRIER
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER
  - PORTABLE CHANGEABLE MESSAGE SIGN
  - PEDESTRIAN SAFETY NET PROTECTION (SPEC. Q.38)
- LEGEND:**
- (TEMPORARY PAVEMENT MARKING)
  - TWSL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TWSLL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LANE LINE
  - TWSSL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TWSS 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TWSSA 0.15 mts. TEMPORARY SINGLE WHITE SKIP LANE LINE
  - TWSSLA 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
  - TWSSLL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP CENTER LINE
  - TWSSYLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LINE
  - TWSSYSL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW CENTER LINE
  - TWSSYL 0.15 mts. TEMPORARY SINGLE YELLOW CENTER LINE
  - TWSSYEL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE
  - TWSSYL(W) 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
  - TWSSYL(W) 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
  - TCMY 0.15 mts. TEMPORARY CURB MARKINGS YELLOW
  - TWEL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
  - TWELLE 0.15 mts. TEMPORARY WHITE DOTTED LANE LINE EXTENSION
  - TWELLE 0.30 mts. TEMPORARY SINGLE CORNER LINE (WHITE OR YELLOW)
  - TWEL 0.20 mts. TEMPORARY SINGLE EDGE CORNER (WHITE OR YELLOW)

**NOTE:**  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

**CMA ARCHITECTS & ENGINEERS**  
185 Calle del Comercio #400 Bayamón, P.R. 00961  
Tel: (787) 268-1100 Fax: (787) 268-1101

**BAYAMÓN**

INTERSECTIONS GEOMETRIC IMPROVEMENTS

**PR-2 AND PR-6**

MAINTENANCE OF TRAFFIC

**PHASE IV**

DATE: 07/27/23  
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CHECK: [Signature]  
DESIGN: [Signature]  
DRAWING: [Signature]  
FINAL CHECK: [Signature]

MOT 11

REVISIONS

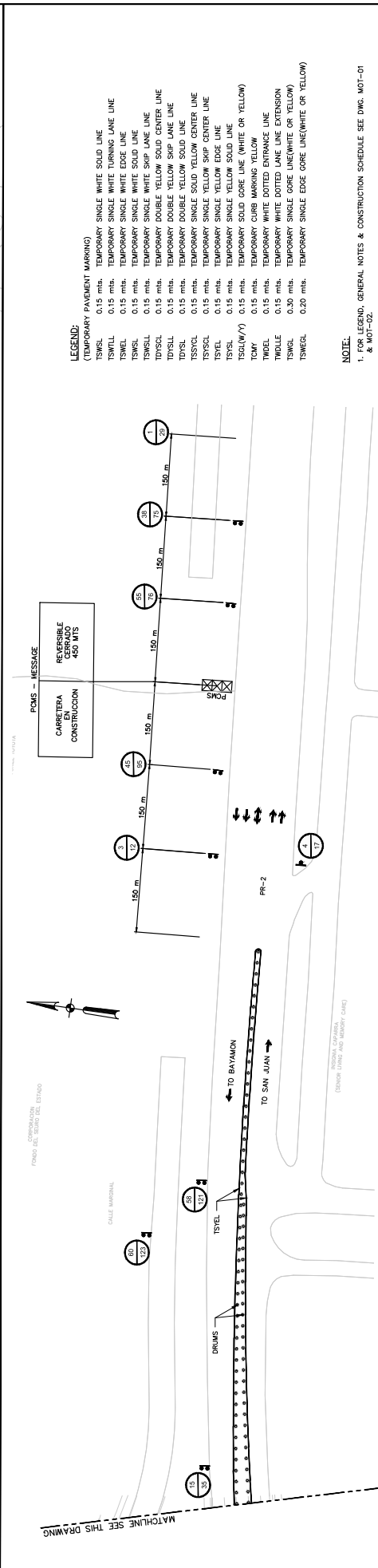
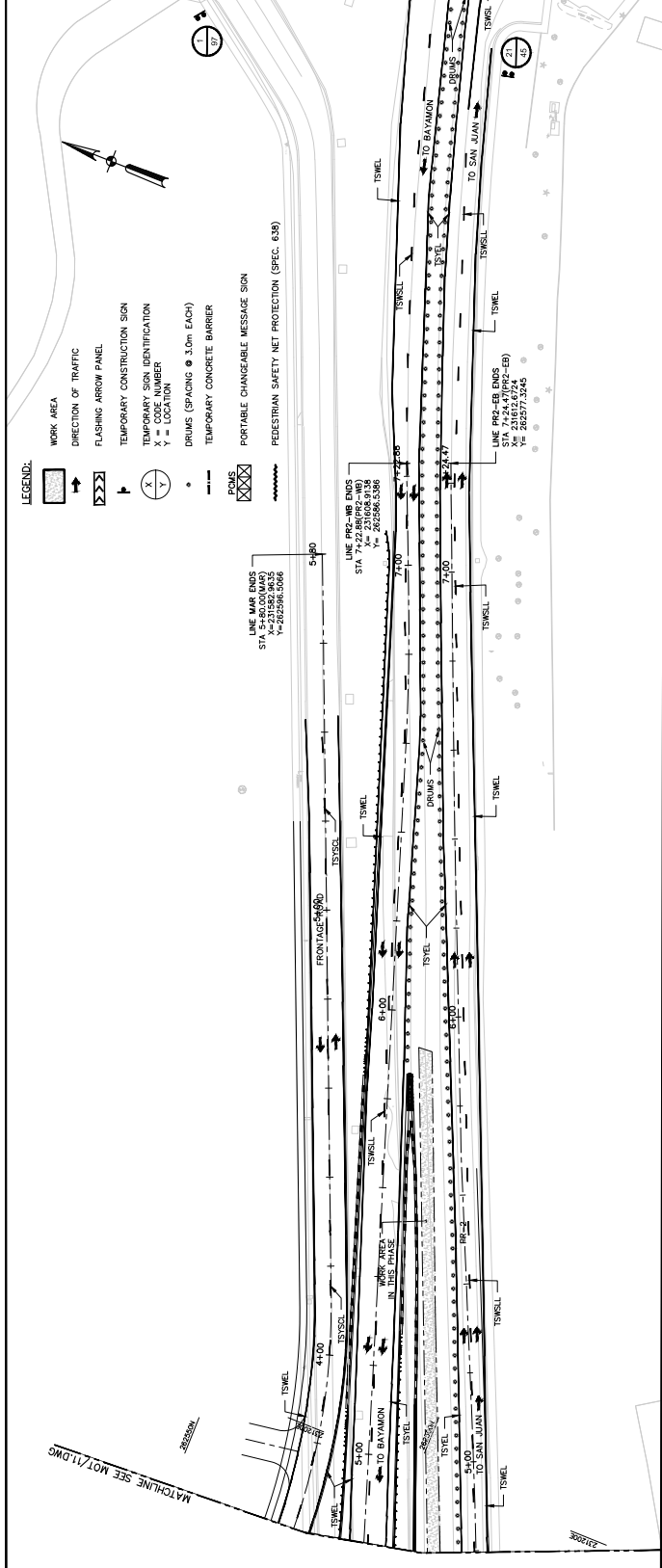
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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	28	178



DATE	BY	07/27/23
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

**CMA ARCHITECT & ENGINEERS**

MUNICIPALITY OF BAYAMÓN

BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

MAINTENANCE OF TRAFFIC PHASE IV

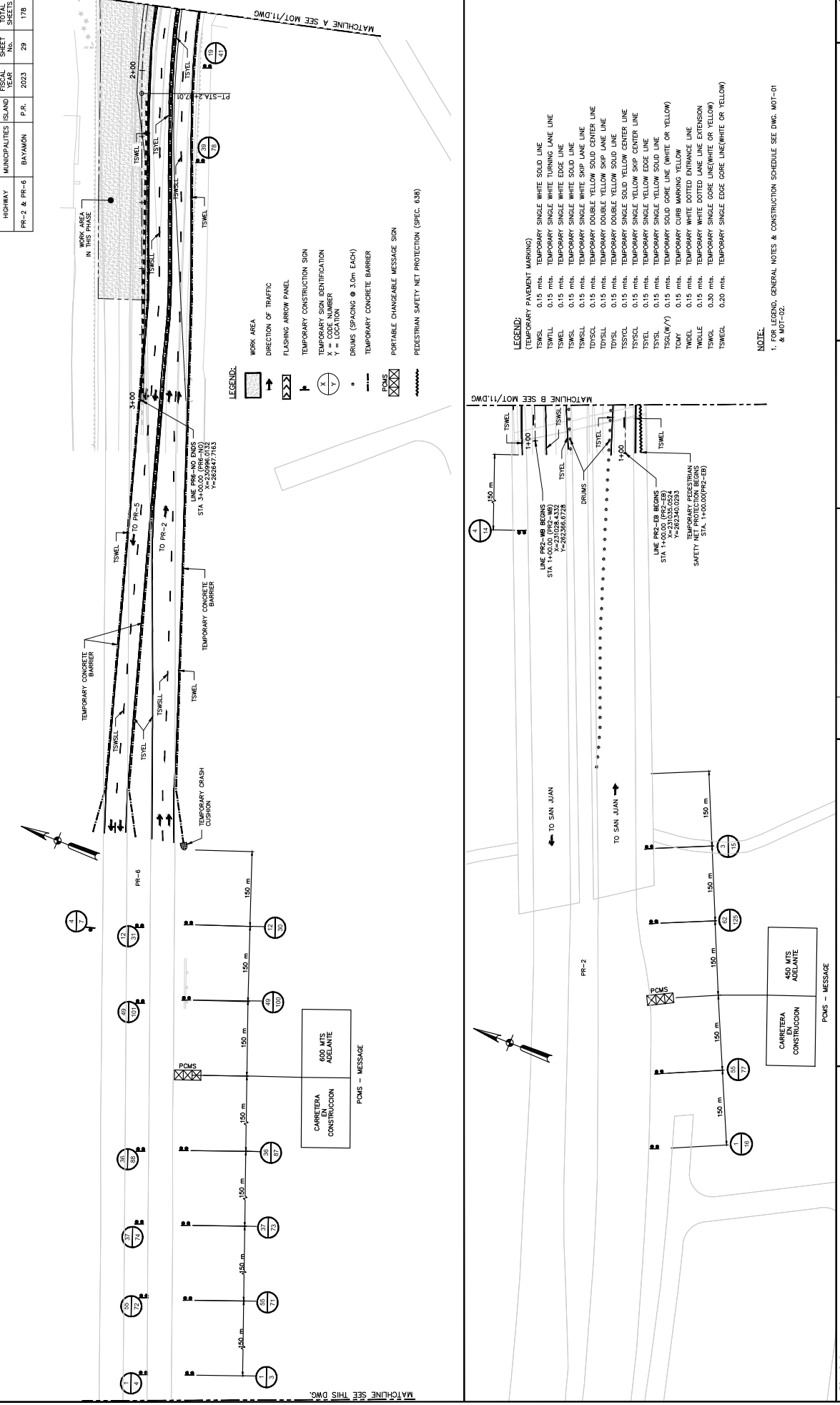
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DATE

REVISIONS

MOT 12

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	29	178



DATE	BY	REVISIONS
07/27/23		

**MUNICIPALITY OF BAYAMÓN**

**PR-2 AND PR-6**

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

**MOT**

**13**

SCALE 1:500

NO.	DATE	REVISIONS

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DESIGN: [Signature]	DATE: [Signature]
DRAWINGS: [Signature]	DATE: [Signature]
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FINAL CHECK: [Signature]	DATE: [Signature]

WORK	DATE	BY

MUNICIPALITY OF BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PR-2 AND PR-6

DATE: 07/27/23  
 BY: [Signature]  
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REVISIONS

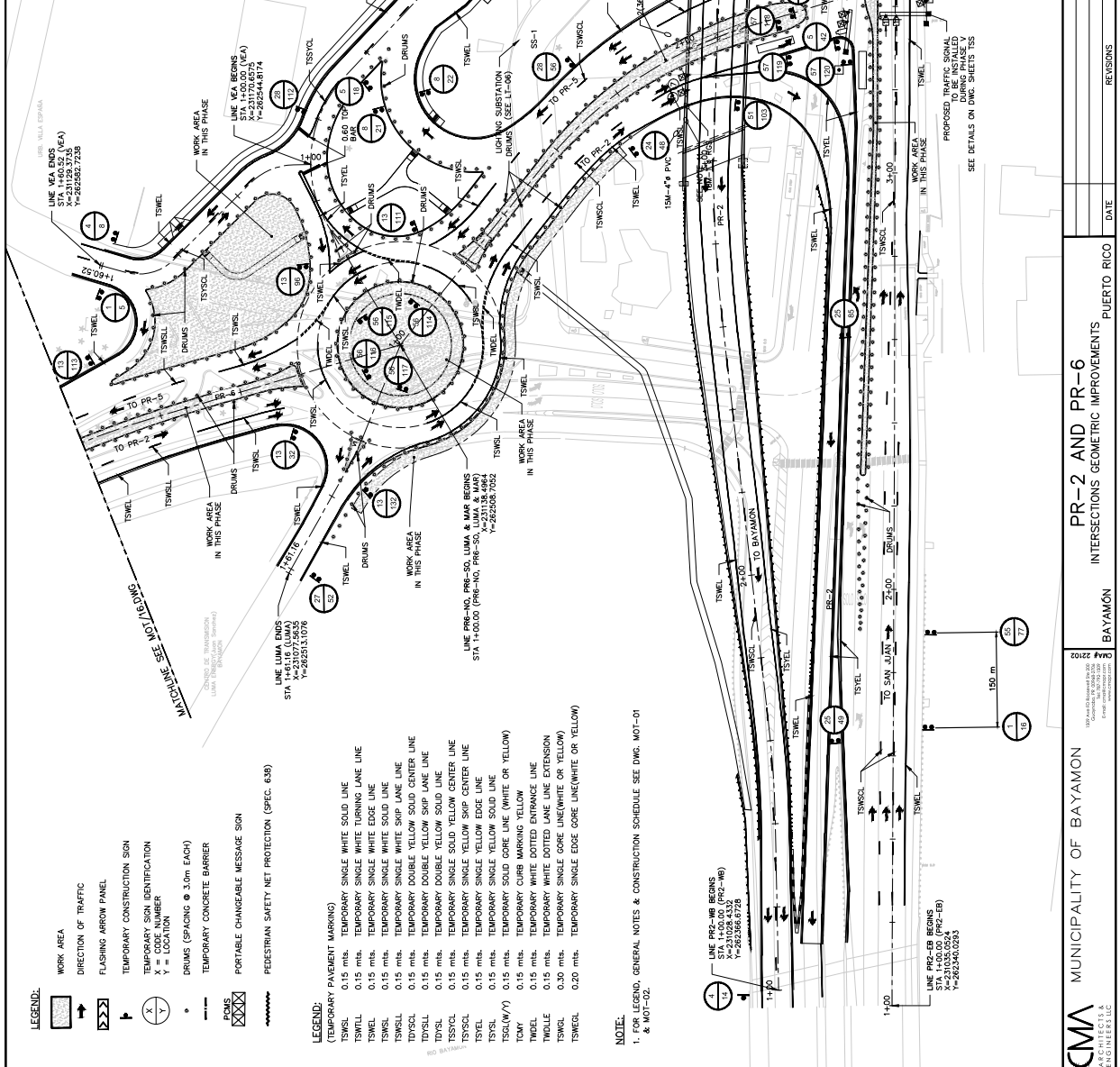
NO.	DATE	REVISIONS

MAINTENANCE OF TRAFFIC  
 PHASE V

SCALE: 1:500

5 0 10 30

MOT 14



LEGEND:

- WORK AREA
- DIRECTION OF TRAFFIC
- FLASHING ARROW PANEL
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION NUMBER
- X = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER
- PCMS
- PORTABLE CHANGEABLE MESSAGE SIGN
- PEDESTRIAN SAFETY NET PROTECTION (SPEC. 6.38)

LEGEND:

- (TEMPORARY PAVEMENT MARKING)
- 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
- 0.15 mts. TEMPORARY SINGLE WHITE TURNING LANE LINE
- 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
- 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
- 0.15 mts. TEMPORARY SINGLE WHITE SKIP LANE LINE
- 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
- 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP CENTER LINE
- 0.15 mts. TEMPORARY SINGLE SOLID YELLOW CENTER LINE
- 0.15 mts. TEMPORARY SINGLE YELLOW SKIP CENTER LINE
- 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE
- 0.15 mts. TEMPORARY SINGLE CORE LINE (WHITE OR YELLOW)
- 0.15 mts. TEMPORARY CURB MARKING YELLOW
- 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
- 0.15 mts. TEMPORARY DOTTED LANE LINE EXTENSION
- 0.30 mts. TEMPORARY WHITE CENTER LINE
- 0.30 mts. TEMPORARY WHITE EDGE LINE (WHITE OR YELLOW)
- 0.20 mts. TEMPORARY SINGLE EDGE CORE LINE (WHITE OR YELLOW)

NOTE:

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. DOT-01 & DOT-02.

MATCHLINE SEE DOT-13/15.DWG

MATCHLINE SEE MOT-15.DWG

URB. VILLA ESPARSA

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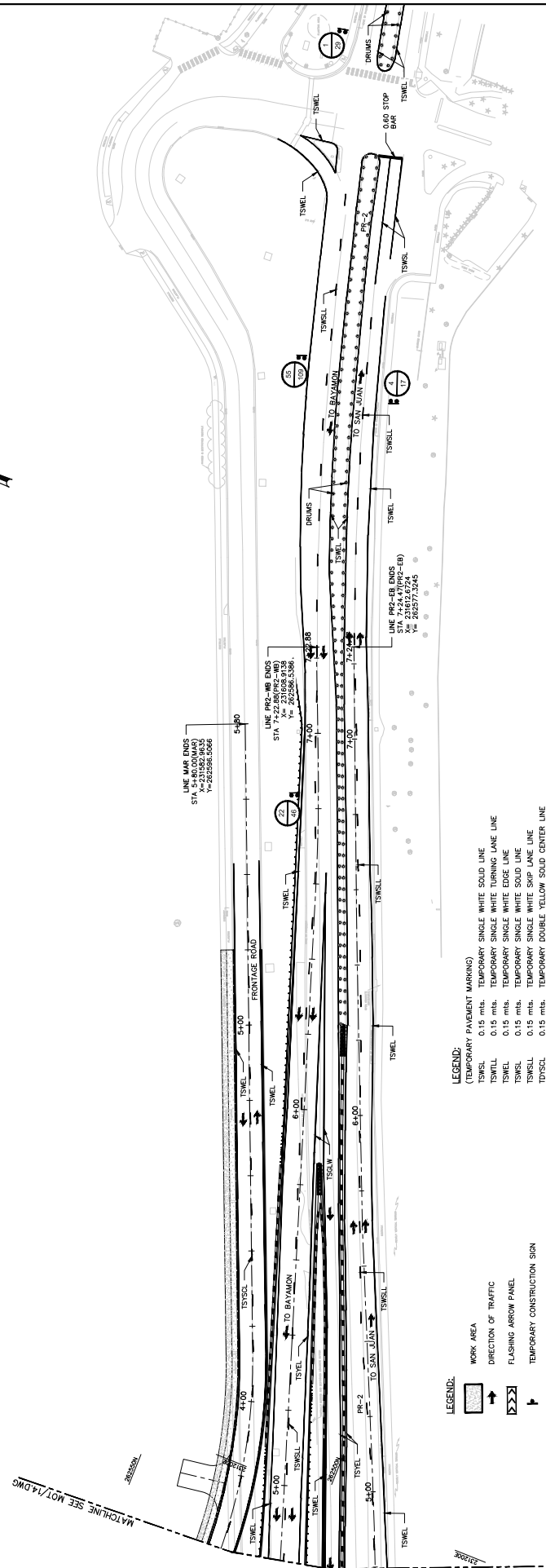
URB. VILLA ESPARSA

URB. VILLA ESPARSA

URB. VILLA ESPARSA

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	31	178

RESERVOIR, E. COSTA



- LEGEND:**
- |  |  |  |   |
|--|--|--|---|
|  | WORK AREA  |  | (TEMPORARY PAVEMENT MARKING)                                      |
|  | DIRECTION OF TRAFFIC   |  | TSWSL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE                 |
|  | FLASHING ARROW PANEL   |  | TSWTL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LINE               |
|  | TEMPORARY CONSTRUCTION SIGN  |  | TSWEL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE                  |
|  | TEMPORARY SIGN IDENTIFICATION  |  | TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SLIP LINE                  |
|  | X = CODE NUMBER  |  | TDYSL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE         |
|  | Y = LOCATION   |  | TDYEL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID EDGE LINE           |
|  | DRUMS (SPACING @ 3.0m EACH)  |  | TSYCL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW CENTER LINE         |
|  | TEMPORARY CONCRETE BARRIER   |  | TSYSL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW SLIP CENTER LINE    |
|  | PORTABLE CHANGEABLE MESSAGE SIGN   |  | TSYEL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE                 |
|  | PEDESTRIAN SAFETY NET PROTECTION (SEC. 638)                                    |  | TSYSL 0.15 mts. TEMPORARY SOLID YELLOW SOLID LINE                 |
|  | NOTE:  |  | TSCL(M/Y) 0.15 mts. TEMPORARY SOLID CORE LINE (WHITE OR YELLOW)   |
|  | 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02. |  | TCMY 0.15 mts. TEMPORARY CURB MARKING YELLOW                      |
|  |  |  | TWDL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE               |
|  |  |  | TWDLLE 0.15 mts. TEMPORARY WHITE DOTTED LANE LINE EXTENSION       |
|  |  |  | TSWGL 0.30 mts. TEMPORARY SINGLE GORE LINE (WHITE OR YELLOW)      |
|  |  |  | TSWGL 0.20 mts. TEMPORARY SINGLE EDGE CORE LINE (WHITE OR YELLOW) |

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

SCALE 1:500

5 0 10 30

DATE

REVISIONS

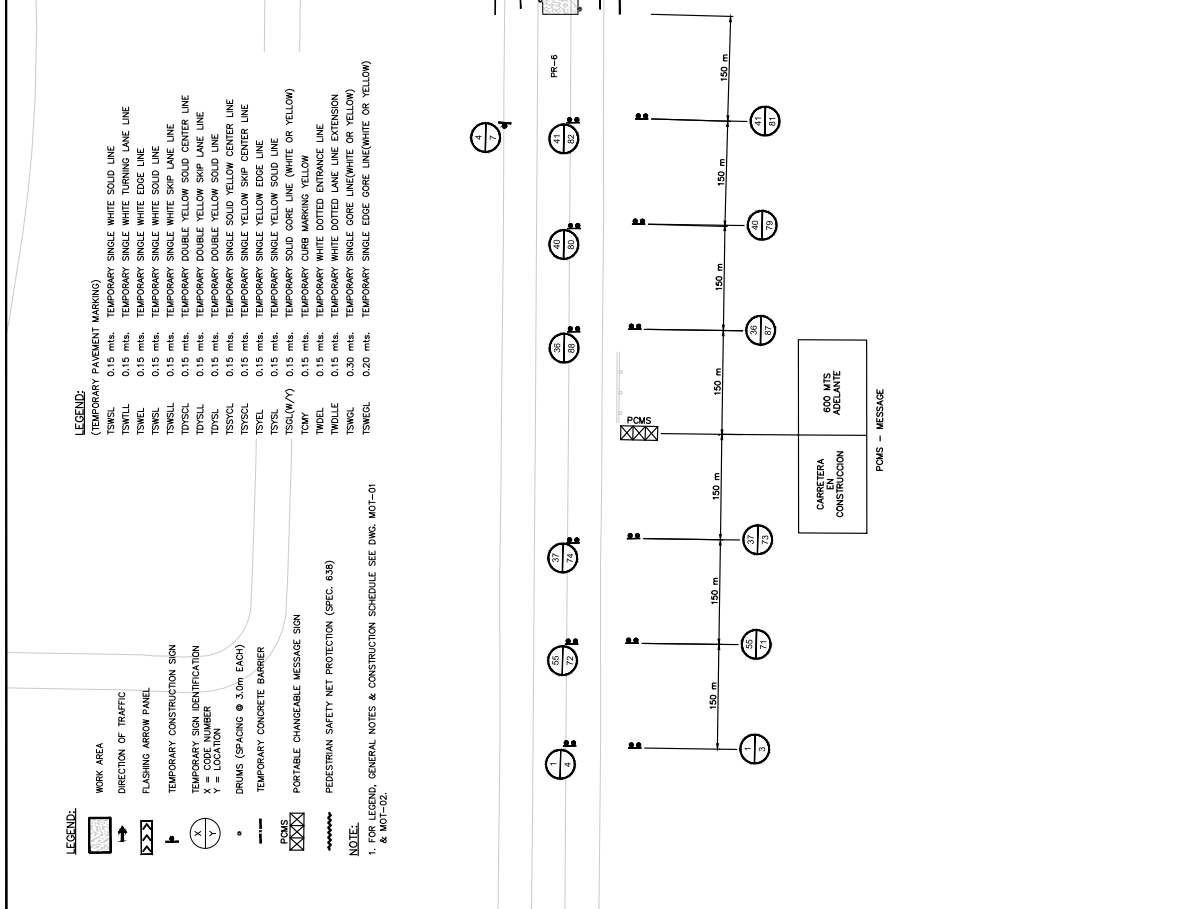
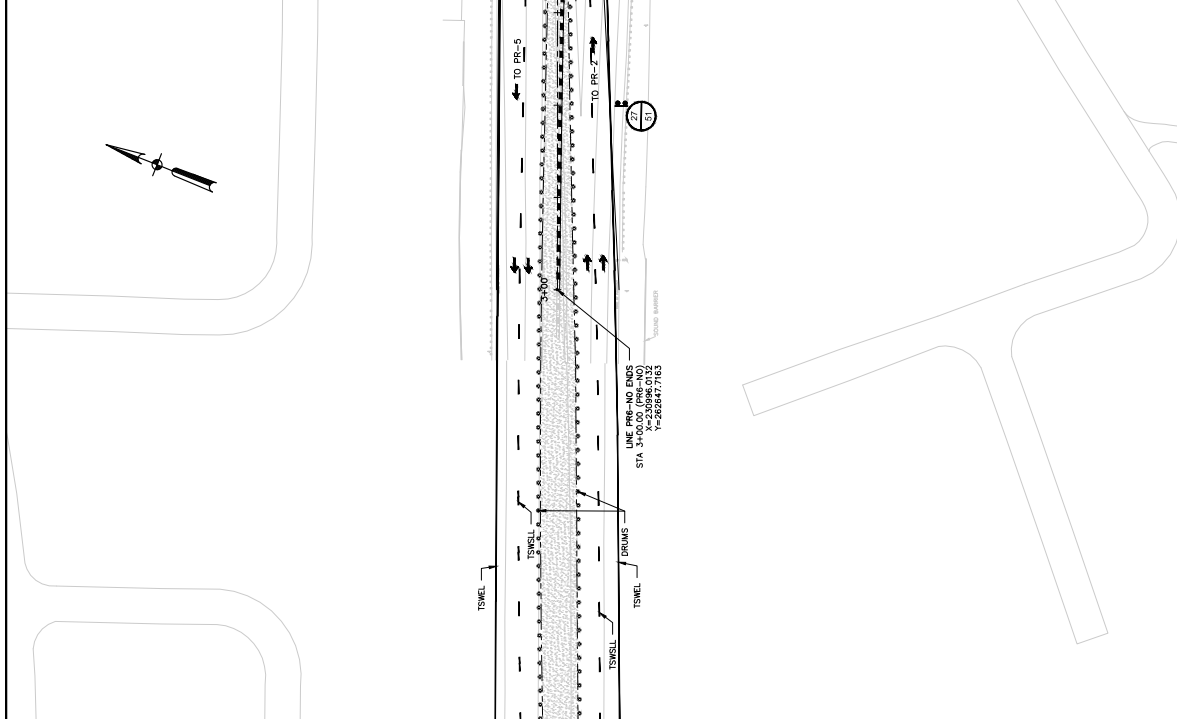
MOT 15

MAINTENANCE OF TRAFFIC PHASE V

07/27/23

CMA ARCHITECT & ENGINEERS

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	32	178



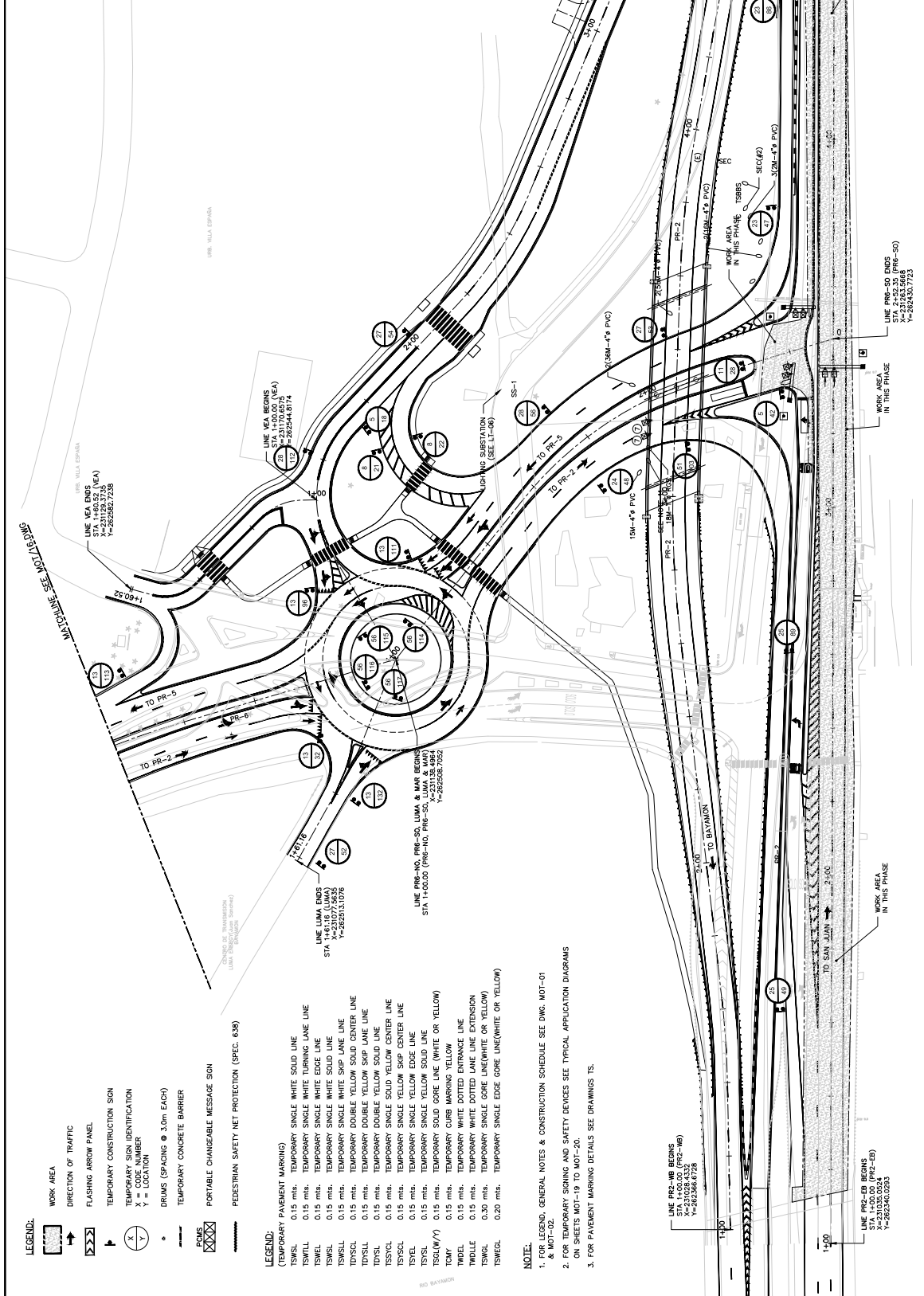
- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - FLASHING ARROW PANEL
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION NUMBER
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER
  - PORTABLE CHANGEABLE MESSAGE SIGN
  - PEDESTRIAN SAFETY NET PROTECTION (SPEC. 6.38)
- LEGEND:**
- (TEMPORARY PAVEMENT MARKING)
  - TSWEL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LANE LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LANE LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LANE LINE
  - TSWEL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
  - TSWEL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP LANE LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE SOLID YELLOW SMP CENTER LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
  - TSWEL 0.15 mts. TEMPORARY SOLID GORE LINE (WHITE OR YELLOW)
  - TSWEL 0.15 mts. TEMPORARY CUB MARKING YELLOW
  - TSWEL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
  - TSWEL 0.15 mts. TEMPORARY WHITE DOTTED EXIT LINE (OR YELLOW)
  - TSWEL 0.20 mts. TEMPORARY SINGLE GORE LINE (WHITE OR YELLOW)

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.

	MUNICIPALITY OF BAYAMÓN	BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	DATE	REVISIONS
	PR-2 AND PR-6					
#42218 100 Calle de la Industria #200 Bayamón, PR 00961 Phone: (787) 265-1234 Email: info@cmaee.com						
MOT MAINTENANCE OF TRAFFIC PHASE V		SCALE 1:500 0 10 30		16		

DATE	BY	DESIGN	DRAWING	CHECK	FINAL PLANS
07/27/23					

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	33	178



DATE	BY	DESIGN	REVISIONS
07/27/23			

**CMA** ARCHITECT & ENGINEERS

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

MAINTENANCE OF TRAFFIC PHASE VI

SCALE 1:500

DATE

MOT 17

**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- FLASHING ARROW PANEL
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- TEMPORARY SIGN NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER
- POIS
- PORTABLE CHANGEABLE MESSAGE SIGN
- PEDESTRIAN SAFETY NET PROTECTION (SPEC. 638)

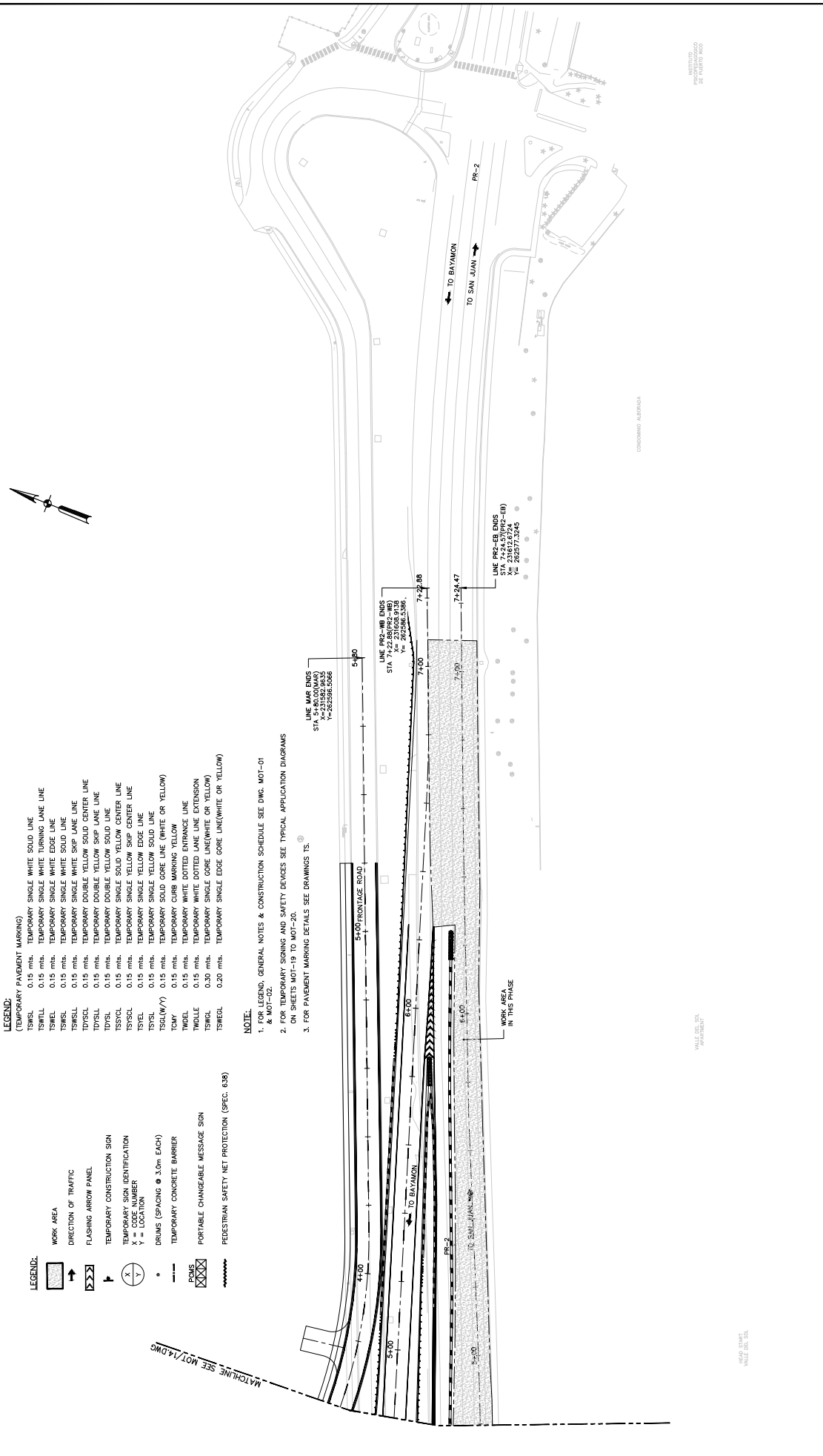
**LEGEND:**

- (TEMPORARY PAVEMENT MARKING)
- TSWSL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE WHITE DOTTED LINE
- TSWEL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
- TSWEL 0.15 mts. TEMPORARY SINGLE WHITE SKIP LINE
- TSWSL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LINE
- TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP LINE
- TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LINE
- TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW CENTER LINE
- TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW CENTER LINE
- TSWEL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE
- TSWEL 0.15 mts. TEMPORARY SINGLE YELLOW SOLID LINE
- TSW(L/W) 0.15 mts. TEMPORARY CURB MARKING YELLOW
- TSW(L/W) 0.15 mts. TEMPORARY CURB MARKING YELLOW
- TDWEL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
- TDWEL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
- TSWEL 0.30 mts. TEMPORARY SINGLE EDGE CORE LINE(WHITE OR YELLOW)
- TSWEL 0.20 mts. TEMPORARY SINGLE EDGE CORE LINE(WHITE OR YELLOW)

**NOTE:**

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.
2. FOR TEMPORARY SIGNING AND SAFETY DEVICES SEE TYPICAL APPLICATION DIAGRAMS ON SHEETS MOT-19 TO MOT-20.
3. FOR PAVEMENT MARKING DETAILS SEE DRAWINGS IS.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	34	178



- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - FLASHING ARROW PANEL
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - TEMPORARY SIGN NUMBER
  - X = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER
  - PORTABLE CHANGEABLE MESSAGE SIGN
  - PEDESTRIAN SAFETY NET PROTECTION (SPEC. 618)
- (TEMPORARY PAVEMENT MARKING)**
- TSWLL 0.15 mts. TEMPORARY SINGLE WHITE SOLID LINE
  - TSWTL 0.15 mts. TEMPORARY SINGLE WHITE TURNING LANE LINE
  - TSWEL 0.15 mts. TEMPORARY SINGLE WHITE EDGE LINE
  - TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SKIP LANE LINE
  - TSWLL 0.15 mts. TEMPORARY DOUBLE YELLOW SOLID LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW SKIP CENTER LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE YELLOW EDGE LINE
  - TSWLL 0.15 mts. TEMPORARY SINGLE CORE LINE (WHITE OR YELLOW)
  - TSWLL 0.15 mts. TEMPORARY CURB MARKING YELLOW
  - TSWLL 0.15 mts. TEMPORARY WHITE DOTTED ENTRANCE LINE
  - TSWLL 0.15 mts. TEMPORARY WHITE DOTTED LANE LINE EXTENSION
  - TSWLL 0.30 mts. TEMPORARY SINGLE CORE LINE (WHITE OR YELLOW)
  - TSWLL 0.30 mts. TEMPORARY SINGLE EDGE CORE LINE (WHITE OR YELLOW)

**NOTE:**

- FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01 & MOT-02.
- FOR TEMPORARY SIGNING AND SAFETY DEVICES SEE TYPICAL APPLICATION DIAGRAMS ON SHEETS MOT-19 TO MOT-20.
- FOR PAVEMENT MARKING DETAILS SEE DRAWINGS TS.

LINE MARK ENDS  
STA 5+48.00 (WB)  
X = 262596.5286  
Y = 262596.5286

LINE PR-2 LINE ENDS  
STA 7+22.88 (PC-WB)  
X = 262596.5286  
Y = 262596.5286

LINE PR-6 LINE ENDS  
STA 2+14.00 (PC-EB)  
X = 262577.3245  
Y = 262577.3245

**CMA** MUNICIPALITY OF BAYAMÓN

**ARCHITECT & ENGINEERS**

PROJECT # 2218

BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

PR-2 AND PR-6

MAINTENANCE OF TRAFFIC PHASE VI

SCALE 1:500

DATE

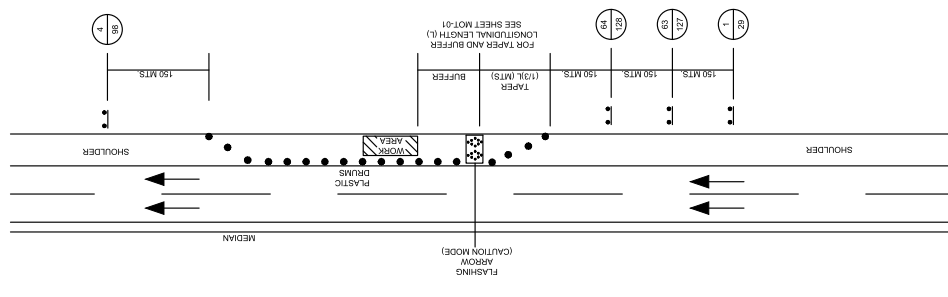
REVISIONS

MOT 18

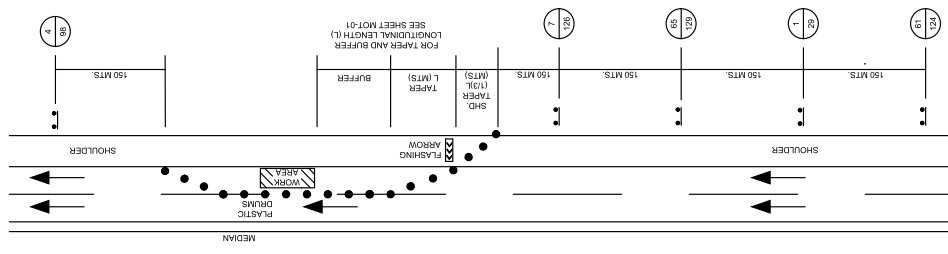
DATE	BY	DESIGN	DRAWING	CHECK	FINAL PLANS
07/27/23					

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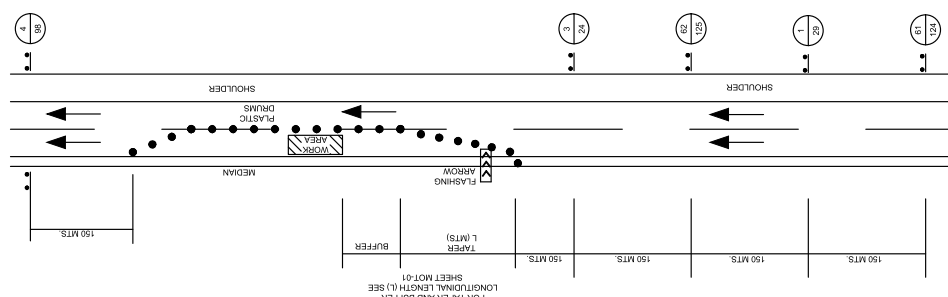
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	35	178



TYPICAL APPLICATION DIAGRAM III  
 SHOULDER CLOSURE FOR INTERMEDIATE TERM WORK IN URBAN EXPRESSWAYS



TYPICAL APPLICATION DIAGRAM II  
 RIGHT LANE CLOSURE FOR INTERMEDIATE TERM WORK IN URBAN EXPRESSWAYS



TYPICAL APPLICATION DIAGRAM I  
 LEFT LANE CLOSURE FOR INTERMEDIATE TERM WORK IN URBAN EXPRESSWAYS

MOT 19

MAINTENANCE OF TRAFFIC  
 TYPICAL APPLICATION DIAGRAMS

NOT TO SCALE

REVISIONS	DATE

PUERTO RICO

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

CM# 22102

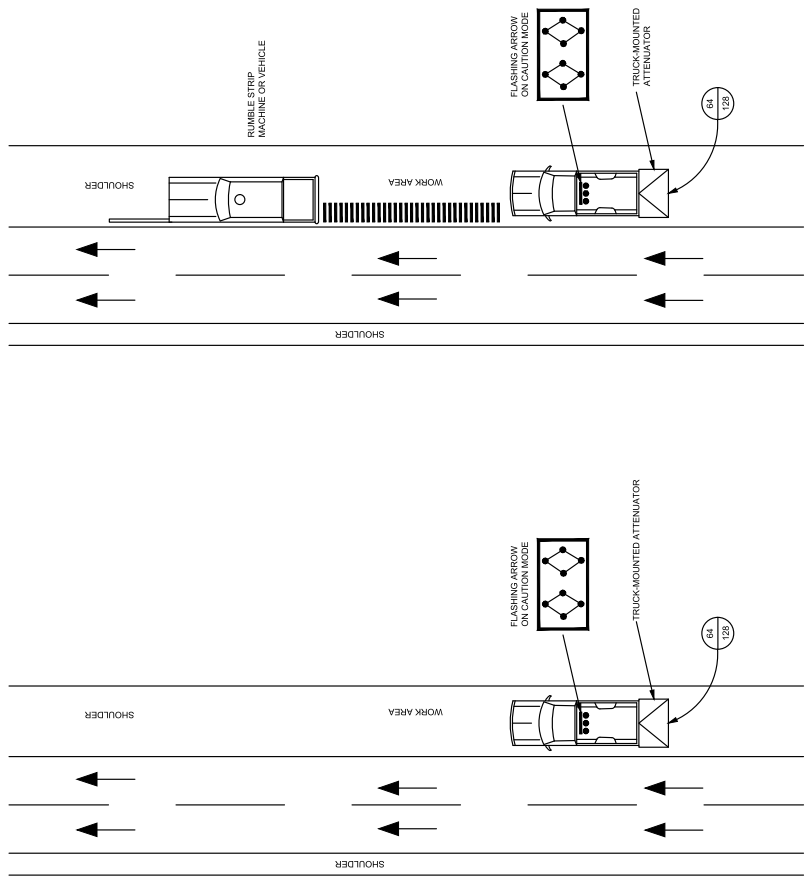
MUNICIPALITY OF BAYAMÓN



WORK	BY	DATE
DESIGN		
DRAWING		
REVISION		
CHECK		
FINAL CHECK		



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	36	178



TYPICAL APPLICATION DIAGRAM I.V  
 INSIDE AND OUTSIDE SHOULDER CLOSURE MOBILE OPERATION

TYPICAL APPLICATION DIAGRAM I.V  
 INSIDE AND OUTSIDE SHOULDER CLOSURE MOBILE OPERATION FOR TEMPORARY AND PERMANENT TRAFFIC SIGNS INSTALLATION

MOT 20

MAINTENANCE OF TRAFFIC  
 TYPICAL APPLICATION DIAGRAMS

NOT TO SCALE

REVISES	DATE

PUERTO RICO

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

CH# 2212

MUNICIPALITY OF BAYAMÓN

CMA ARCHITECT & ENGINEERS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		
FINAL PLANS		07/27/23

DATE	BY	REVISIONS
07/27/23		
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

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MUNICIPALITY OF BAYAMON  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6  
PUERTO RICO

DATE	REVISIONS

NOT TO SCALE

MAINTENANCE OF TRAFFIC  
SIGN DATA TABLE

MOT	21
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ISLAND	BAYAMON
PR-2 & PR-6	
FISCAL YEAR	2023
SHEET NO.	37
TOTAL SHEETS	178

SIGN DATA TABLE

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF SIGN PANELS	OVERHEAD STRUCTURE TYPE	REFERENCE MANUAL	TOTAL ITEM
23	47, 86	RJ-5(D)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
24	48	D1-2		54" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
25	49, 85	RJ-5(U)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
26	50	D1-3b		72" X 42"	N/A	SEE D.T.P.W. MANUAL 2020	1
27	51, 53, 54	W2-6		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	4
28	55, 56, 111	W3-2a		24" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	3
29	57, 67	R11-2		48" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
30	58, 66	.		30" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	2
31	59, 65, 107	M4-6b		24" X 18"	N/A	SEE D.T.P.W. MANUAL 2020	3
32	60, 63, 64	M4-6b		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	3

SIGN DATA TABLE

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF SIGN PANELS	OVERHEAD STRUCTURE TYPE	REFERENCE MANUAL	TOTAL ITEM
12	30, 31	W1-4b (D)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
13	35, 36, 111, 113, 132	R1-2		30" X 30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	5
14	33, 34, 91	W1-4b (U)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	3
15	35, 36, 37	R4-9		60" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	3
16	38	M4-5 M4-5 M1-6b M1-6b M6-3 M6-3		24" X 12" 24" X 12" 36" X 36" 36" X 36" 21" X 15" 21" X 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
17	39	.		60" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	1
18	40	M5-1 M5-2 M1-6b M1-6b M6-1(U) M6-3		24" X 12" 24" X 12" 36" X 36" 36" X 36" 21" X 15" 21" X 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
19	41	M4-9		42" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
20	43, 131	M4-9		42" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
21	43, 45	M4-9		42" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
22	46	M4-5 M3-2 M1-6b M1-6b M6-2(U) M6-3		24" X 12" 24" X 12" 36" X 36" 36" X 36" 21" X 15" 21" X 15"	N/A	SEE D.T.P.W. MANUAL 2020	1

SIGN DATA TABLE

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF SIGN PANELS	OVERHEAD STRUCTURE TYPE	REFERENCE MANUAL	TOTAL ITEM
1	1, 2, 3, 4, 5, 16, 25, 97	W20-1		48" X 48"	N/A	SEE D.T.P.W. MANUAL 2020	8
2	9, 10	R11-3a		60" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	2
3	12, 15, 24	W4-2(U)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	3
4	6, 7, 6, 14, 17, 96	G20-2		50" X 20"	N/A	SEE D.T.P.W. MANUAL 2020	6
5	18, 23, 42	R3-1		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	3
6	18, 20	R3-2		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
7	126	W4-2(D)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
8	21, 22	R6-1		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
10	27	W4-1(D)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
11	28	R4-7		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1

DATE	BY
07/27/23	
DESIGN	
DRAWINGS	
CHECK	
FINAL CHECK	

07/27/23 CMAA ARCHITECTS & ENGINEERS

CMAA ARCHITECTS & ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISONS

NOT TO SCALE

MAINTENANCE OF TRAFFIC SIGN DATA TABLE

MOT 22

ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
P.R.	2023	38	178

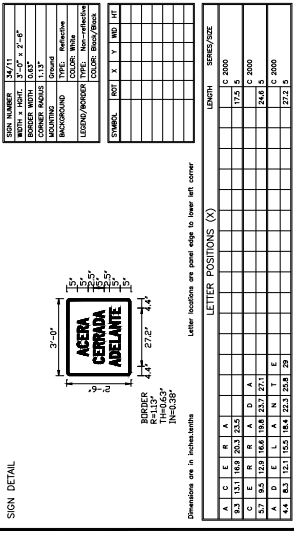
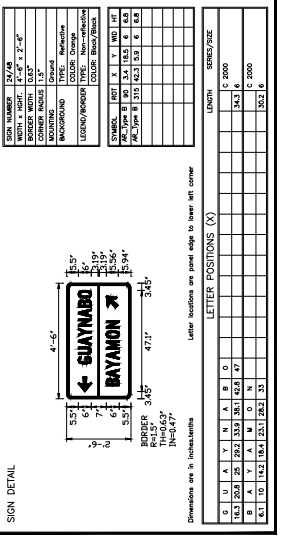
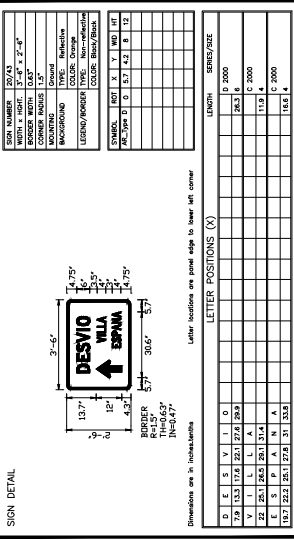
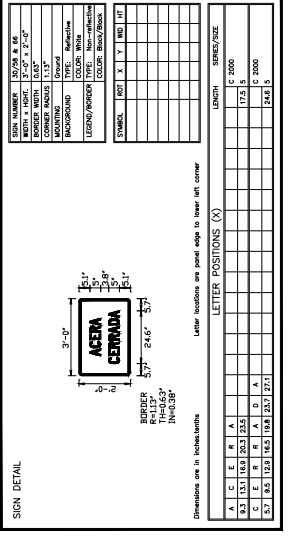
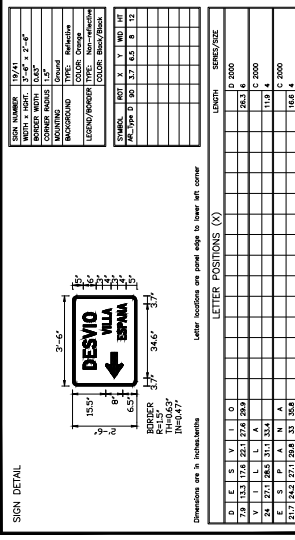
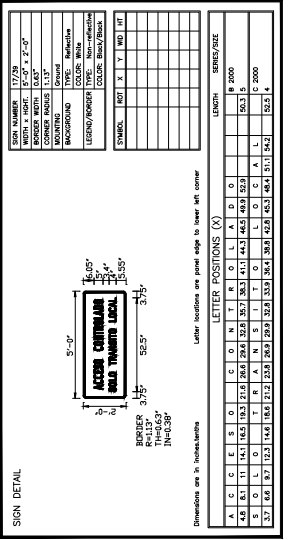
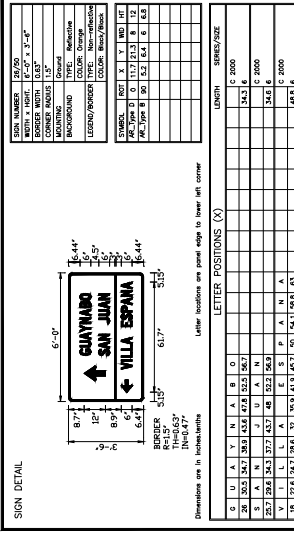
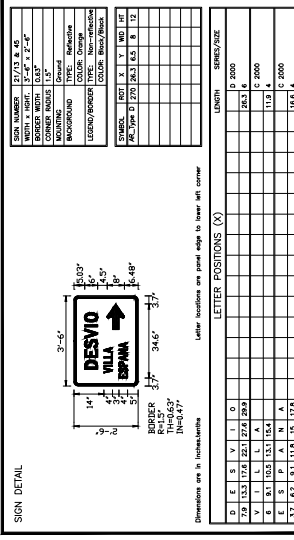
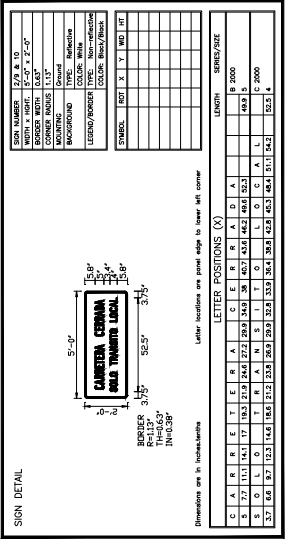
PR-2 & PR-6 BAYAMON

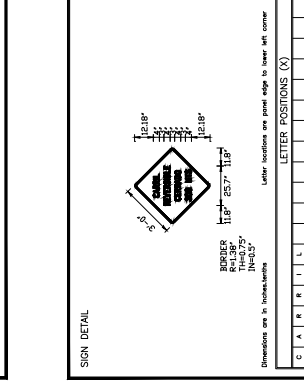
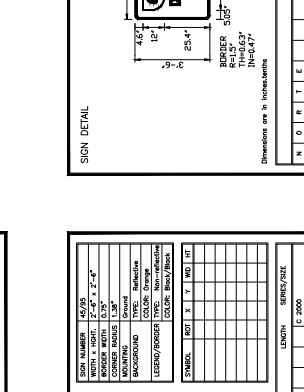
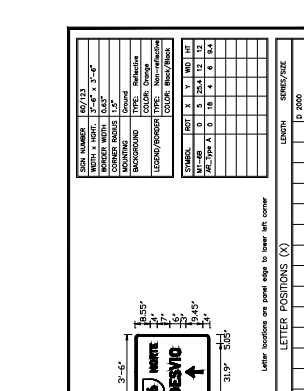
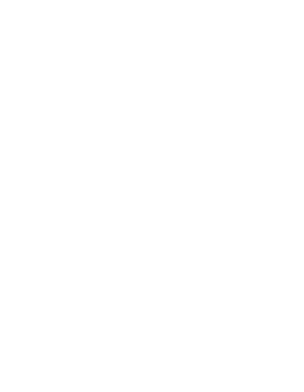
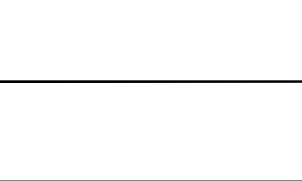
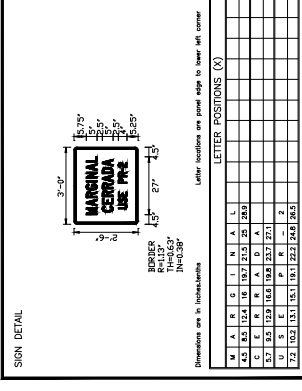
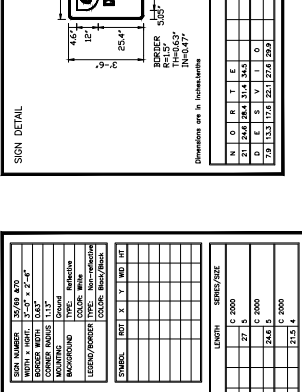
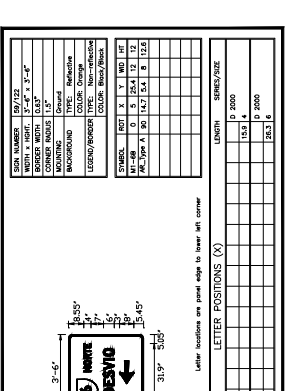
SIGN DATA TABLE

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF PANELS	OVERHEAD SIGN TYPE	REFERENCE MANUAL	TOTAL ITEM
33	61, 62, 68	M4-6b		36" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	3
34	11	.		36" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
35	69, 70	.		36" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
36	67, 68	R2-1		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
37	73, 74	R2-6a (PR)		30" X 48"	N/A	SEE D.T.P.W. MANUAL 2020	2
38	75	R2-6a (PR)		30" X 48"	N/A	SEE D.T.P.W. MANUAL 2020	1
39	76, 90	W8-6a (PR)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
40	79, 80	W21-5 (I) (PR)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
41	81, 82	W21-5		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
42	83, 130	R1-1 R2-2		30" X 30" 30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF PANELS	OVERHEAD SIGN TYPE	REFERENCE MANUAL	TOTAL ITEM
44	84	W12-1		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
45	95	.		36" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
46	92	R9-3a		24" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	1
47	83	M3-4 M3-1 M1-6b M1-6b M6-3 M6-1(0)		24" X 12" 36" X 36" 21" X 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
48	99	.		48" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
49	100, 101	W20-1		48" X 48"	N/A	SEE D.T.P.W. MANUAL 2020	2
50	102	W3-3		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
51	103	M3-2 M3-4 M1-6b M1-6b M6-1(0) M6-2(0)		24" X 12" 36" X 36" 21" X 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
52	44	W12-2		24" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	1
53	104, 105, 106	W1-8(0)		18" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	3

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF PANELS	OVERHEAD SIGN TYPE	REFERENCE MANUAL	TOTAL ITEM
55	71, 72, 76, 77, 109	R2-1		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	5
56	114, 115, 116, 117	R6-4a		48" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	4
57	118, 119, 120	R1-1		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	3
58	121	M4-9		42" X 42"	N/A	SEE D.T.P.W. MANUAL 2020	1
59	122	M4-9		42" X 42"	N/A	SEE D.T.P.W. MANUAL 2020	1
60	123	M4-9		42" X 42"	N/A	SEE D.T.P.W. MANUAL 2020	1
61	124	Q20-1		60" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
62	125	W20-5(0)		36" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
63	127	W21-5(0) (PR)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
64	128	W21-5		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
65	129	W20-5 (0)		36" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	1

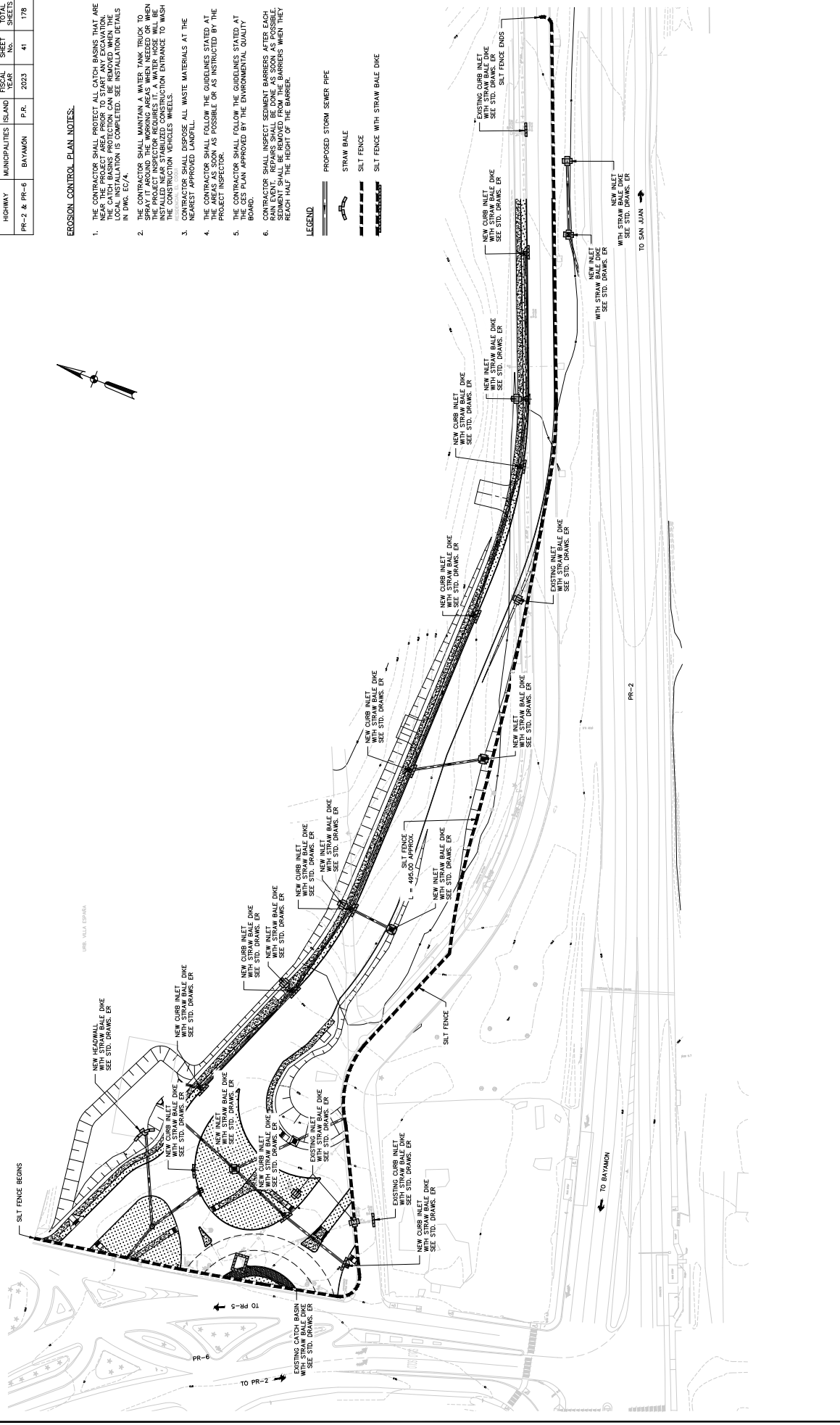




HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	41	178

**EROSION CONTROL PLAN NOTES:**

- THE CONTRACTOR SHALL PROTECT ALL CATCH BASINS THAT ARE NEAR THE PROJECT AREA PRIOR TO STARTING ANY EXCAVATION. THE CATCH BASIN PROTECTION CAN BE REMOVED WHEN THE USCA TEST METHOD IS COMPLETED. SEE INSTALLATION DETAILS IN DWG. EC/4.
- THE CONTRACTOR SHALL MAINTAIN A WATER TANK TRUCK TO SPRAY IT AROUND THE WORKING AREAS WHEN NEEDED OR WHEN THE CONSTRUCTION VEHICLES WHEELS. THE CONTRACTOR SHALL INSTALL NEAR STABILIZED CONSTRUCTION ENTRANCE TO WASH THE NEAREST APPROVED LANDFILL.
- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE PROJECT SPECIFICATIONS AS POSSIBLE OR AS INSTRUCTED BY THE PROJECT INSPECTOR.
- THE CONTRACTOR SHALL FURNISH THE EQUIPMENTS STATED AT THE CES PLAN APPROVED BY THE ENVIRONMENTAL QUALITY BOARD.
- THE CONTRACTOR SHALL INSPECT SEDIMENT BARRIERS AFTER EACH SANITARY REPAIRS SHALL BE DONE AS SOON AS POSSIBLE. SANITARY REPAIRS SHALL BE COMPLETED BEFORE THEY REACH HALF THE HEIGHT OF THE BARRIER.



EC	01
----	----

**EROSION CONTROL PLAN  
PHASE 1**

5	0	10	30
SCALE 1:500			

NO.	DATE	REVISIONS

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN  
PUERTO RICO

MUNICIPALITY OF BAYAMÓN  
CMA ARCHITECT & ENGINEERS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

07/27/23

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DATE	BY	DESIGN	WORK
07/27/23		CHECK	
		FINAL CHECK	
		FINAL PLANS	

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 CMA ARCHITECTS & ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

PUERTO RICO

DATE

REVISIONS

SCALE 1:500

EROSION CONTROL PLAN  
 PHASE II

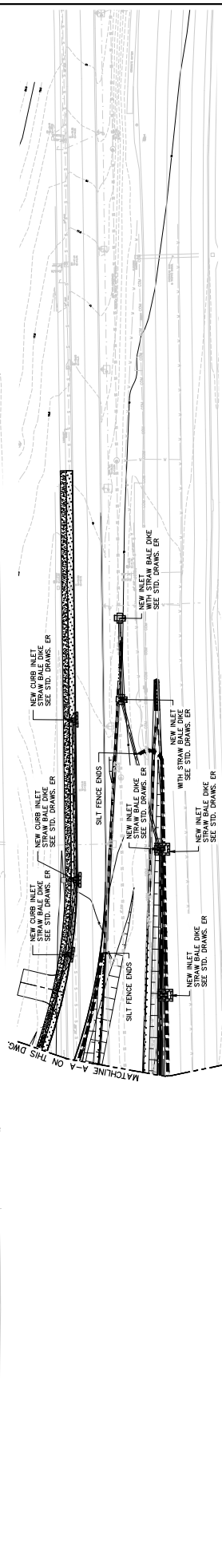
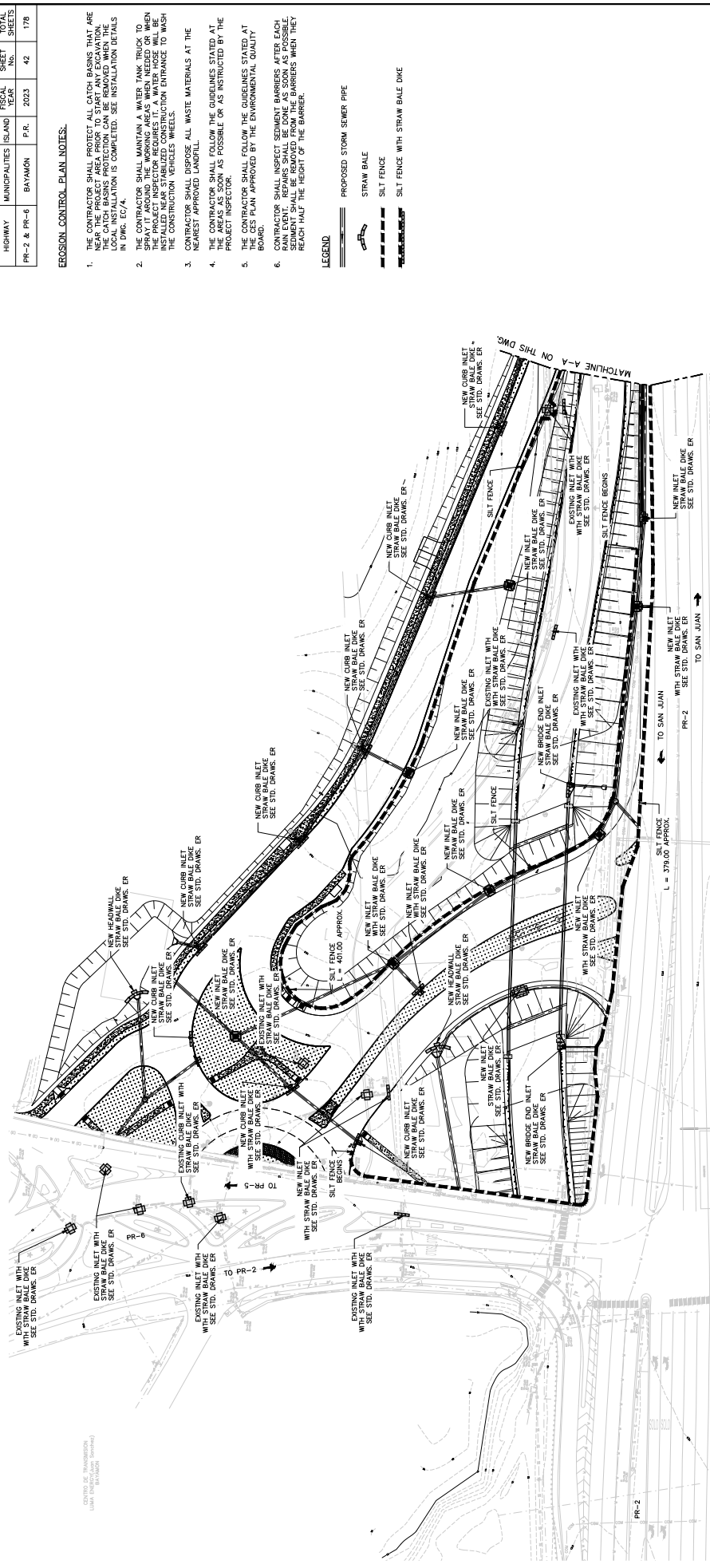
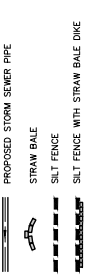
EC 02

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	42	178

EROSION CONTROL PLAN NOTES:

1. THE CONTRACTOR SHALL PROTECT ALL CATCH BASINS THAT ARE NEAR THE PROJECT AREA PRIOR TO STARTING ANY EXCAVATION. LOCAL INSTALLATION IS COMPLETED. SEE INSTALLATION DETAILS IN DWG. EC/4.
2. THE CONTRACTOR SHALL MAINTAIN A WATER TANK TRUCK TO SPRAY AT AROUND THE WORKING AREAS WHEN NEEDED OR WHEN INSTALLED NEAR STABILIZED CONSTRUCTION ENTRANCE TO WASH THE CONSTRUCTION VEHICLES WHEELS.
3. CONTRACTOR SHALL DISPOSE ALL WASTE MATERIALS AT THE NEAREST APPROVED LANDFILL.
4. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT PROJECT INSPECTOR, AS POSSIBLE OR AS INSTRUCTED BY THE PROJECT INSPECTOR.
5. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE CES PLAN APPROVED BY THE ENVIRONMENTAL QUALITY BOARD.
6. CONTRACTOR SHALL INSPECT SEDIMENT BARRIERS AFTER EACH WORKING PERIOD TO ENSURE THAT SEDIMENT BARRIERS WHEN THEY REACH HALF THE HEIGHT OF THE BARRIER.

LEGEND

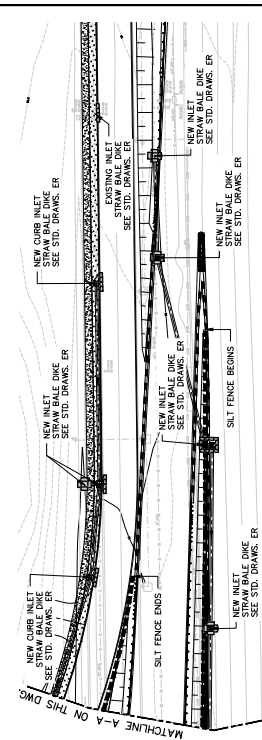
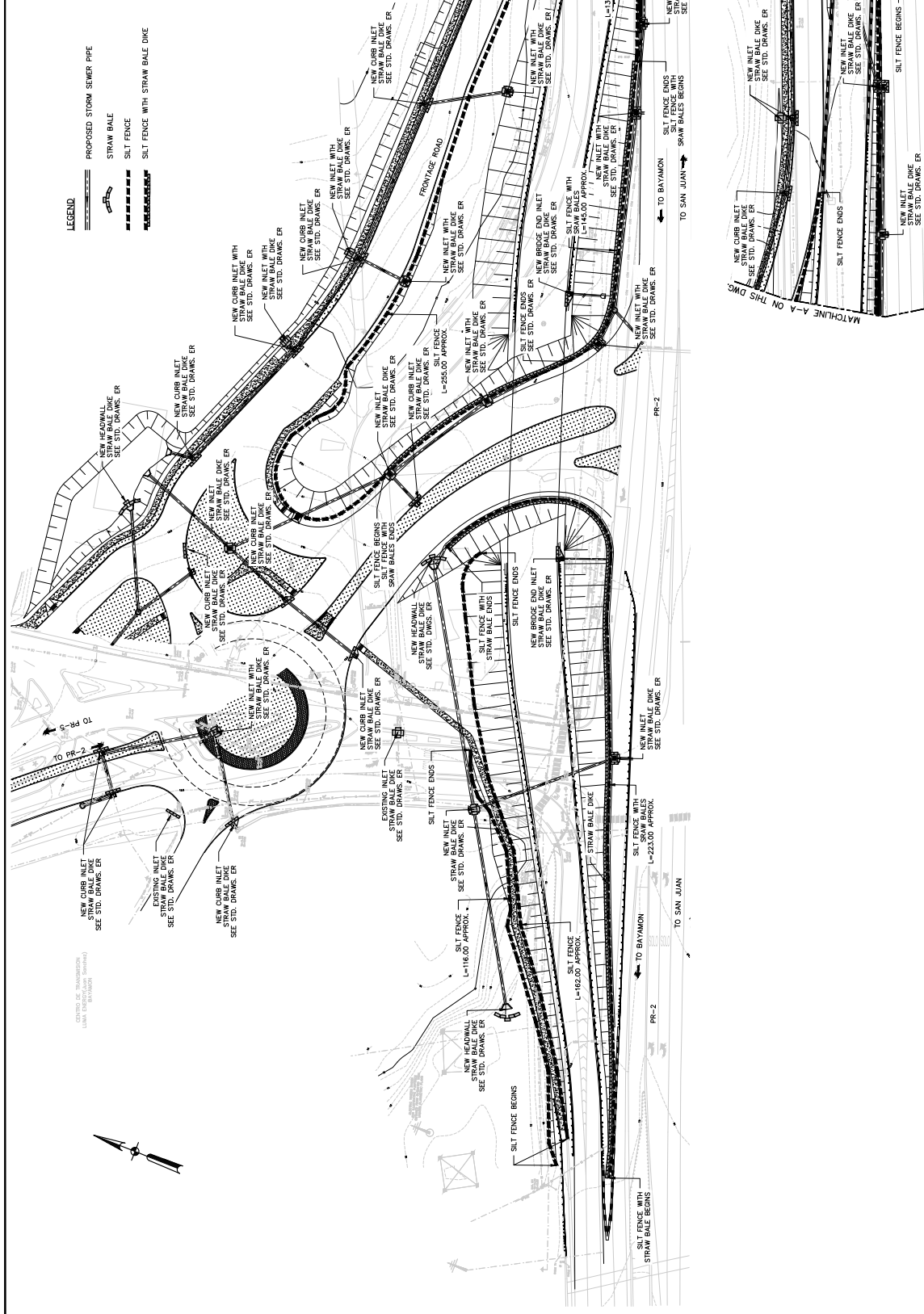


HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	43	178

**EROSION CONTROL PLAN NOTES:**

- THE CONTRACTOR SHALL PROTECT ALL CATCH BASINS THAT ARE NEAR THE PROJECT AREA PRIOR TO STARTING ANY EXCAVATION. LOCAL INSTALLATION IS COMPLETED. SEE INSTALLATION DETAILS IN DWG. EC/4.
- THE CONTRACTOR SHALL MAINTAIN A WATER TANK TRUCK TO SPRAY AT AROUND THE WORKING AREAS WHEN NEEDED OR WHEN INSTALLED NEAR STABILIZED CONSTRUCTION ENTRANCE TO WASH THE CONSTRUCTION VEHICLES WHEELS.
- CONTRACTOR SHALL DISPOSE ALL WASTE MATERIALS AT THE NEAREST APPROVED LANDFILL.
- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT PROJECT INSPECTOR, AS POSSIBLE OR AS INSTRUCTED BY THE PROJECT INSPECTOR.
- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE CES PLAN APPROVED BY THE ENVIRONMENTAL QUALITY BOARD.
- CONTRACTOR SHALL INSPECT SEDIMENT BARRIERS AFTER EACH WORKING DAY. ANY SEDIMENT THAT ACCUMULATES ON THE BARRIERS SHALL BE REMOVED FROM THE BARRIERS WHEN THEY REACH HALF THE HEIGHT OF THE BARRIER.

- LEGEND**
- PROPOSED STORM SEWER PIPE
  - STRAW BALE
  - SILT FENCE
  - SILT FENCE WITH STRAW BALE DIKE



DATE: 07/27/23	BY: [Signature]
DESIGN: [Signature]	CHECK: [Signature]
DRAWING: [Signature]	FINAL CHECK: [Signature]

EROSION CONTROL PLAN  
PHASE III

NO.	DATE	REVISIONS

SCALE: 1:500

5 0 10 30

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

**CMA** ARCHITECTS & ENGINEERS

185 CALLE DEL COMERCIO #200  
SAN JUAN, P.R. 00906  
TEL: (787) 762-1234  
FAX: (787) 762-1235  
WWW.CMA-PR.COM

PROJECT #442282

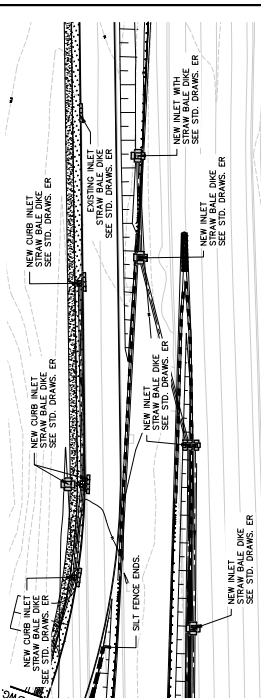
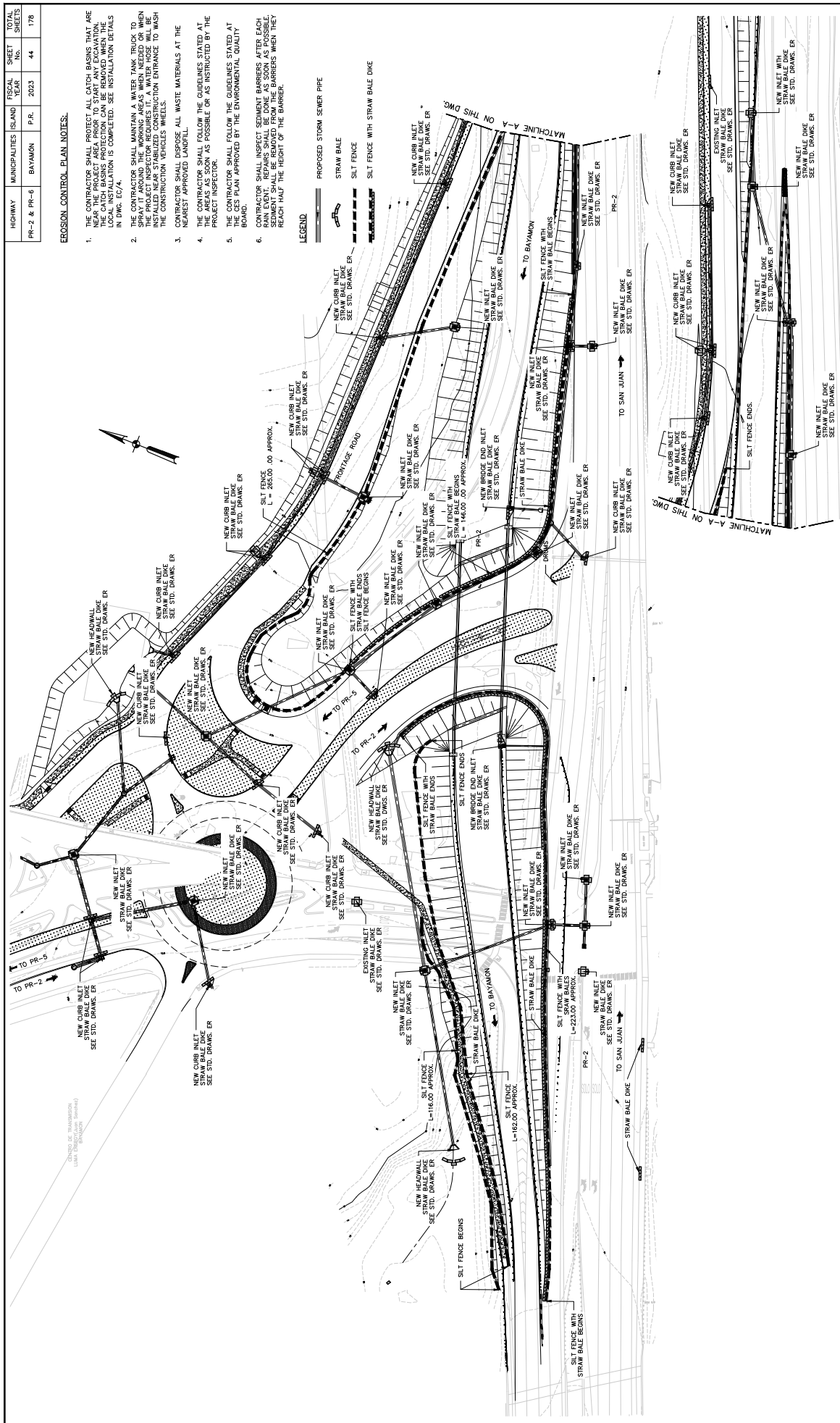


HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	44
				178

**EROSION CONTROL PLAN NOTES:**

1. THE CONTRACTOR SHALL PROTECT ALL CATCH BASINS THAT ARE NEAR THE PROJECT AREA PRIOR TO STARTING ANY EXCAVATION. LOCAL INSTALLATION IS COMPLETED. SEE INSTALLATION DETAILS IN DWG. EC/4.
2. THE CONTRACTOR SHALL MAINTAIN A WATER TANK TRUCK TO SPRAY AT AROUND THE WORKING AREAS WHEN NEEDED OR WHEN INSTALLED NEAR STABILIZED CONSTRUCTION ENTRANCE TO WASH THE CONSTRUCTION VEHICLES WHEELS.
3. CONTRACTOR SHALL DISPOSE ALL WASTE MATERIALS AT THE NEAREST APPROVED LANDFILL.
4. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE PROJECT INSPECTOR, AS POSSIBLE OR AS INSTRUCTED BY THE PROJECT INSPECTOR.
5. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE CES PLAN APPROVED BY THE ENVIRONMENTAL QUALITY BOARD.
6. CONTRACTOR SHALL INSPECT SEDIMENT BARRIERS AFTER EACH EXCAVATION. ANY SEDIMENT THAT IS OBSERVED MUST BE REMOVED FROM THE BARRIERS WHEN THEY REACH HALF THE HEIGHT OF THE BARRIER.

**LEGEND**



DATE	BY	DATE	BY

NO.	DATE	REVISIONS



**EROSION CONTROL PLAN  
 PHASE IV**

EC 04

MUNICIPALITY OF BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN

PR-2 AND PR-6  
 PUERTO RICO

CMA ARCHITECTS & ENGINEERS  
 #48 2208  
 185 CAYO CUBANO AVENUE SUITE 200  
 SAN JUAN, PUERTO RICO 00911  
 TEL: (787) 763-3333  
 FAX: (787) 763-3334  
 WWW.CMAARCHITECTS.COM

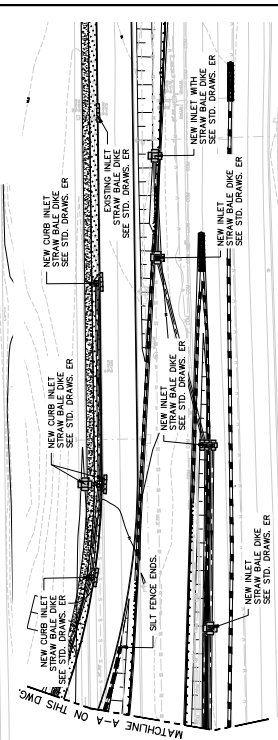
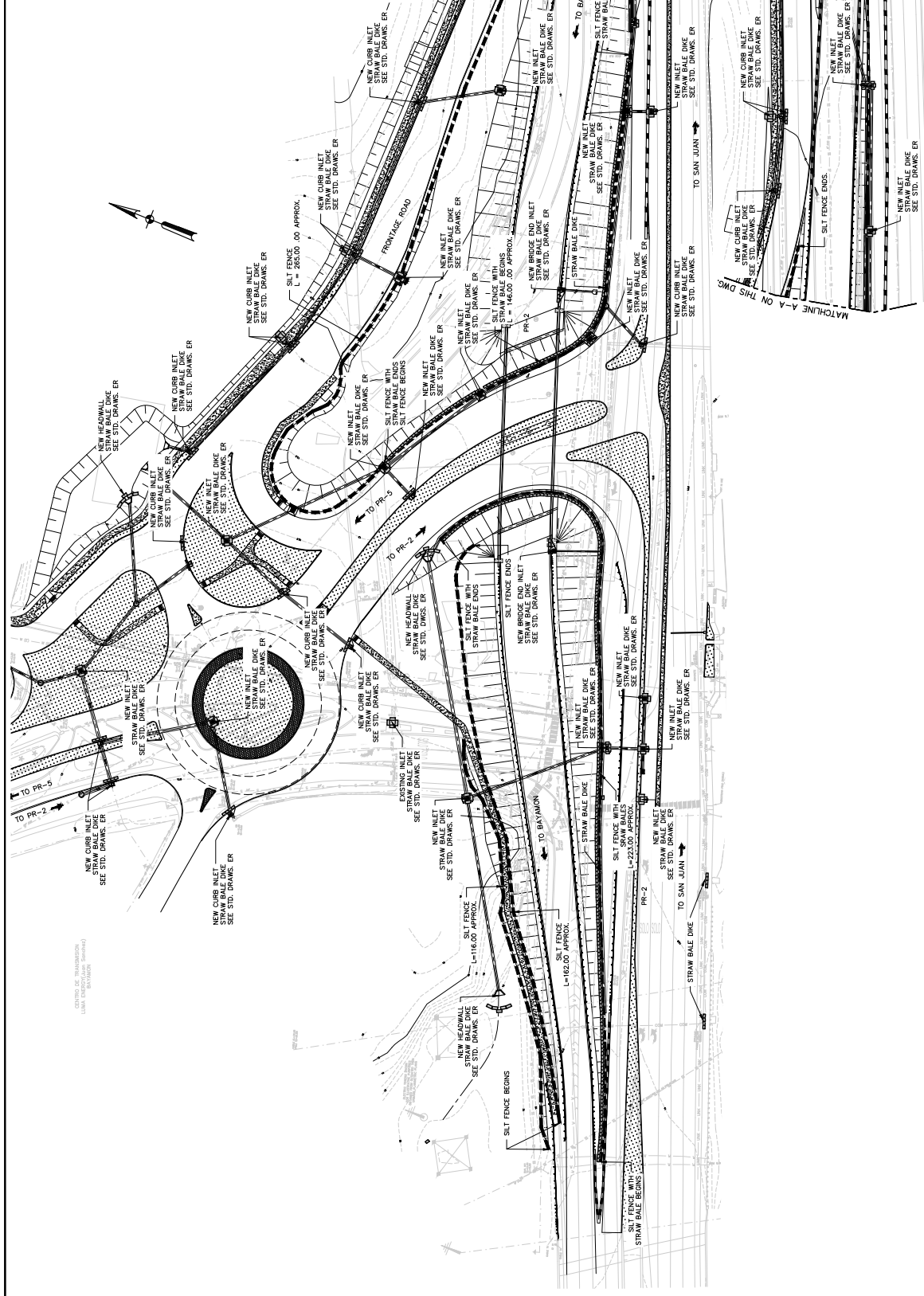
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 07/27/23

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	46	178

**EROSION CONTROL PLAN NOTES:**

- THE CONTRACTOR SHALL PROTECT ALL CATCH BASINS THAT ARE NEAR THE PROJECT AREA PRIOR TO STARTING ANY EXCAVATION. LOCAL INSTALLATION IS COMPLETED. SEE INSTALLATION DETAILS IN DWG. EC/4.
- THE CONTRACTOR SHALL MAINTAIN A WATER TANK TRUCK TO SPRAY AT AROUND THE WORKING AREAS WHEN NEEDED OR WHEN INSTALLED NEAR STABILIZED CONSTRUCTION ENTRANCE TO WASH THE CONSTRUCTION VEHICLES WHEELS.
- CONTRACTOR SHALL DISPOSE ALL WASTE MATERIALS AT THE NEAREST APPROVED LANDFILL.
- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE PROJECT INSPECTOR, AS POSSIBLE OR AS INSTRUCTED BY THE PROJECT INSPECTOR.
- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE CES PLAN APPROVED BY THE ENVIRONMENTAL QUALITY BOARD.
- CONTRACTOR SHALL INSPECT SEDIMENT BARRIERS AFTER EACH WORKING DAY. ANY SEDIMENT THAT ACCUMULATES ON THE SEDIMENT SHALL BE REMOVED FROM THE BARRIERS WHEN THEY REACH HALF THE HEIGHT OF THE BARRIER.

**LEGEND**



DATE	BY	DESIGN	REVISIONS
07/27/23			



DATE	REVISIONS

**PR-2 AND PR-6**  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN  
PUERTO RICO

#44 2202  
1000 GARDEN DRIVE, SUITE 200  
SAN JUAN, PUERTO RICO 00906  
TEL: (787) 763-1234  
WWW.CMAA-PR.COM

**CMAA**  
ARCHITECTS &  
ENGINEERS  
MUNICIPALITY OF BAYAMÓN

EROSION CONTROL PLAN  
PHASE V

EC 05

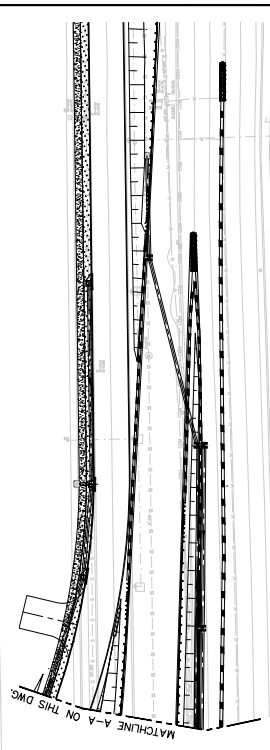
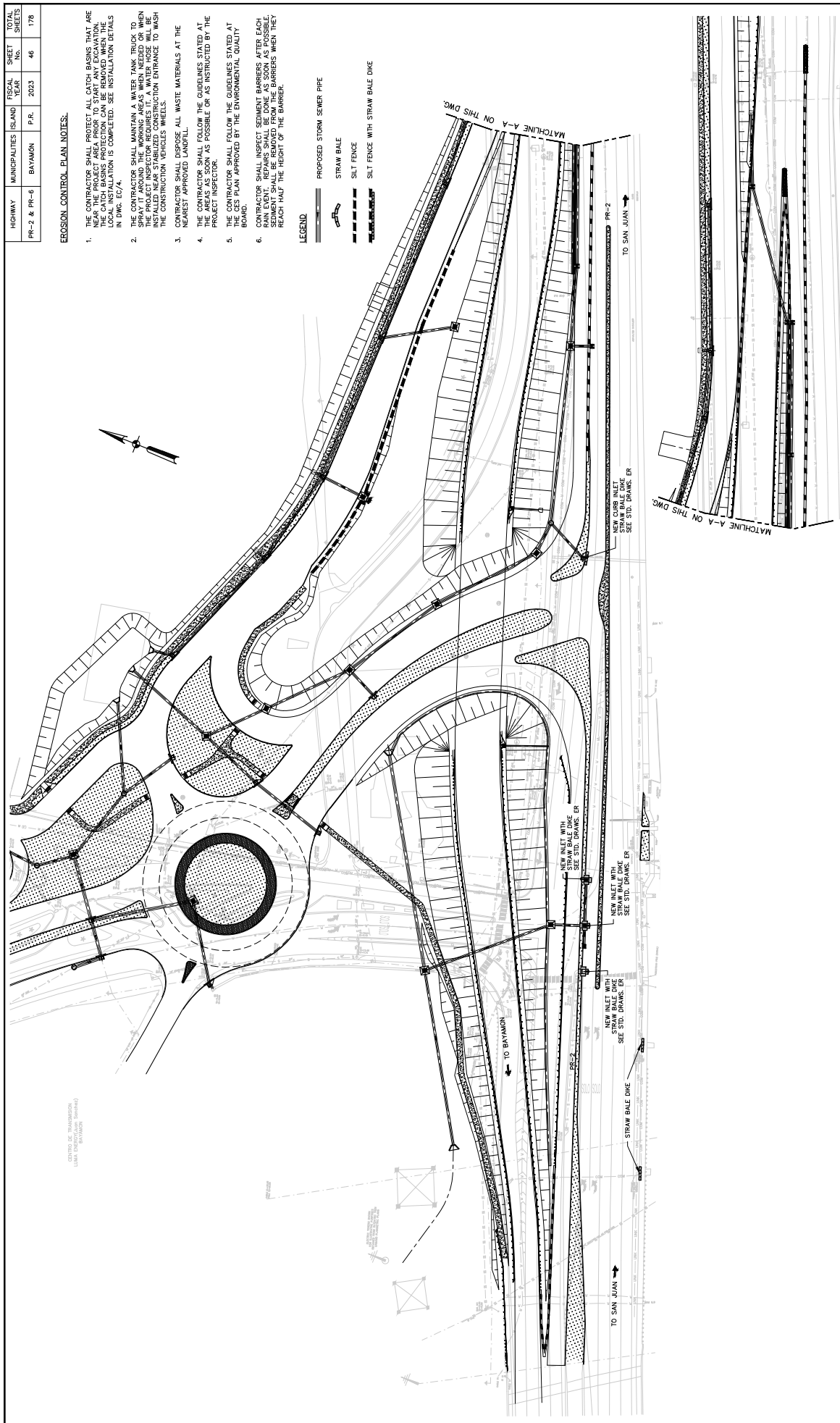
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	46	178

**EROSION CONTROL PLAN NOTES:**

1. THE CONTRACTOR SHALL PROTECT ALL CATCH BASINS THAT ARE NEAR THE PROJECT AREA PRIOR TO STARTING ANY EXCAVATION. LOCAL INSTALLATION IS COMPLETED. SEE INSTALLATION DETAILS IN DWG. EC/4.
2. THE CONTRACTOR SHALL MAINTAIN A WATER TANK TRUCK TO SPRAY AT AROUND THE WORKING AREAS WHEN NEEDED OR WHEN INSTALLED NEAR STABILIZED CONSTRUCTION ENTRANCE TO WASH THE CONSTRUCTION VEHICLES WHEELS.
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5. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES STATED AT THE CES PLAN APPROVED BY THE ENVIRONMENTAL QUALITY BOARD.
6. CONTRACTOR SHALL INSPECT SEDIMENT BARRIERS AFTER EACH WORKING DAY. ANY SEDIMENT THAT ACCUMULATES ON THE SEDIMENT SHALL BE REMOVED FROM THE BARRIERS WHEN THEY REACH HALF THE HEIGHT OF THE BARRIER.

**LEGEND**

	PROPOSED STORM SEWER PIPE
	STRAW BALE
	SILT FENCE
	SILT FENCE WITH STRAW BALE DIKE



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

REVISIONS	DATE

PROJECT	PR-2 AND PR-6
DESCRIPTION	INTERSECTIONS GEOMETRIC IMPROVEMENTS
CLIENT	MUNICIPALITY OF BAYAMÓN
DESIGNER	PUERTO RICO

SCALE	1:500
DATE	07/27/23

PROJECT NO.	2218
DATE	07/27/23
BY	JDV
CHECKED	JDV
DATE	07/27/23

PROJECT NO.	2218
DATE	07/27/23
BY	JDV
CHECKED	JDV
DATE	07/27/23

**CMA**  
 ARCHITECT &  
 ENGINEERS

DATE	BY	WORK
07/27/23		
CHECK	FINAL PLANS	
DESIGN		
PERMITS		
ISSUED FOR PERMITS		

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

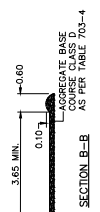
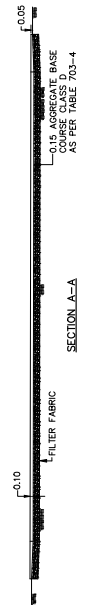
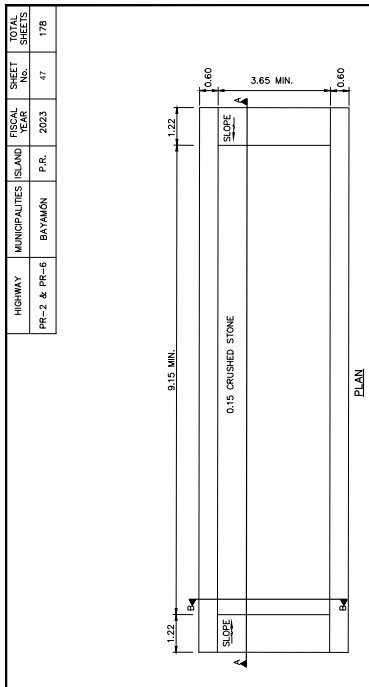
REVISIONS	DATE

NOT TO SCALE

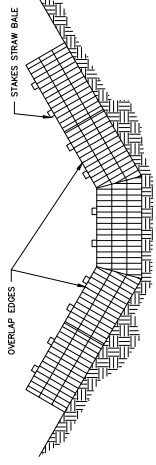
EROSION CONTROL DETAILS

EC 07

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	47	178

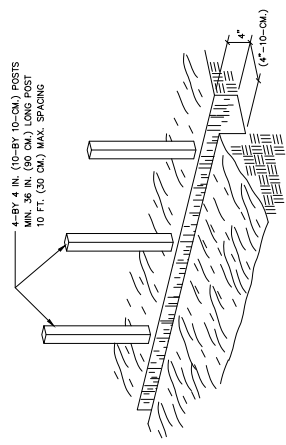


CONSTRUCTION EXIT WITH WHEEL WASH STATION  
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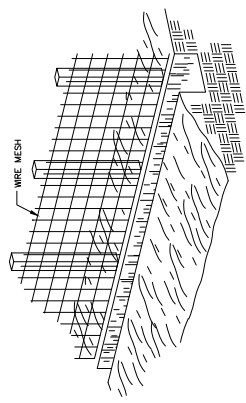


HAY BALE SEDIMENT BARRIER AT SWALES  
N/S

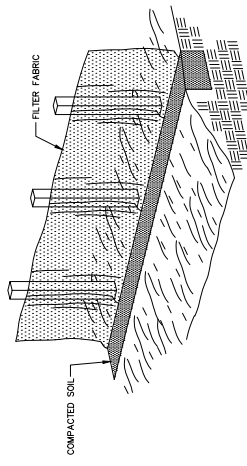
• STRAW BALE IN A DRAINAGE DITCH SEE STD DWG. ER



1. SET POSTS AND EXCAVATE A 4-BY 4 IN. (10-BY 10-CM) TRENCH UPSLOPE FROM AND ALONG THE LINE OF POSTS.

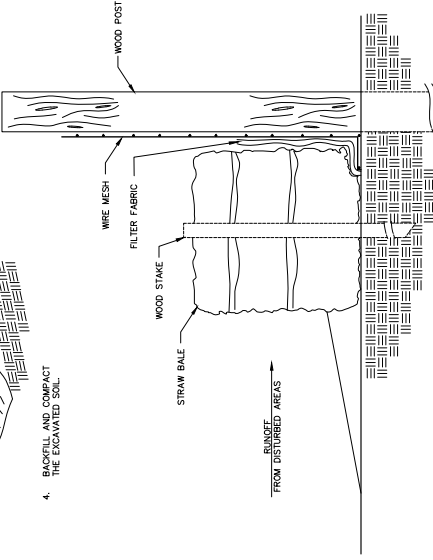


2. STAPLE WIRE FENCING TO THE POSTS.



3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.

INSTALLATION SEQUENCE



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

STRAW BALE WITH SILT FENCE DIKE

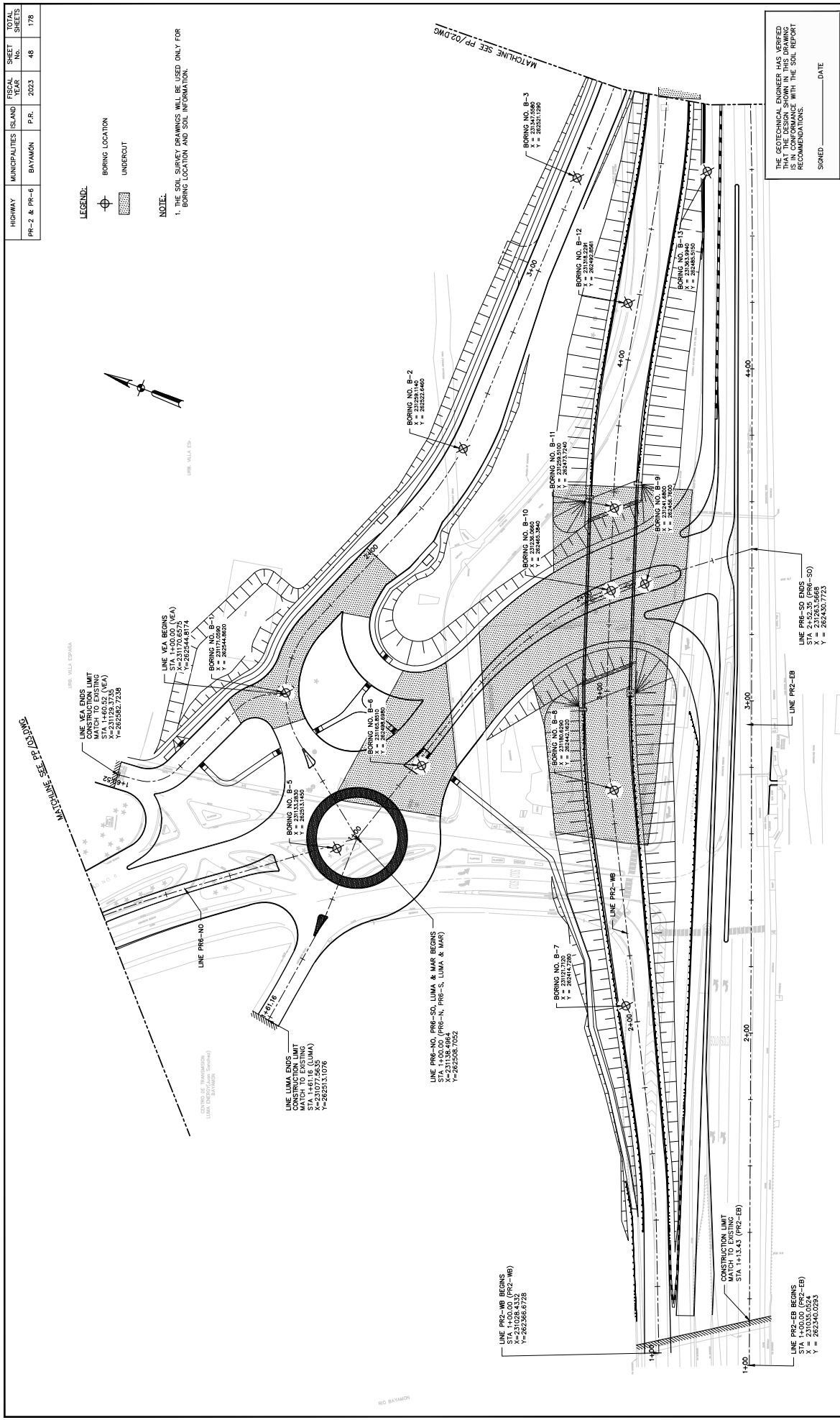
EXTENSION OF FABRIC AND WIRE INTO THE TRENCH

SILT FENCE CONSTRUCTION DETAIL  
NOT TO SCALE

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	48	178

**LEGEND.**  
 BORING LOCATION  
 UNDERCUT

**NOTE.**  
 1. THE SOIL SURVEY DRAWINGS WILL BE USED ONLY FOR BORING LOCATION AND SOIL INFORMATION.



THE GEOTECHNICAL ENGINEER HAS VERIFIED THAT THE DESIGN SHOWN IN THIS DRAWING IS COMPATIBLE WITH THE SOIL REPORT RECOMMENDATIONS.  
 SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

DATE	BY	CHECK	DESIGN	DRAWING	REVISIONS	DATE	REVISIONS	BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO	PR-2 AND PR-6 SOIL SURVEY AND BORING LOGS PLANS FROM STA 1+00.00 TO STA 4+80.00 (LINE PR2-WB)	SS SCALE 1:500 5 0 10 30	01

DATE	BY	CHECK	DESIGN	DRAWING	REVISIONS	DATE
07/27/23						

**CMA**  
 ARCHITECTS &  
 ENGINEERS

MUNICIPALITY OF BAYAMÓN

484 2282  
 885 Calle Comercio No. 2282  
 Bayamón, P.R. 00961  
 Phone: (787) 262-3566  
 Fax: (787) 262-3567

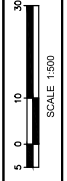
WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

NO.	DATE	REVISIONS



SS SOIL SURVEY AND BORING LOGS PLANS  
FROM STA 4+80.00 TO STA 7+07.70  
(LINE PR2-WB)

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

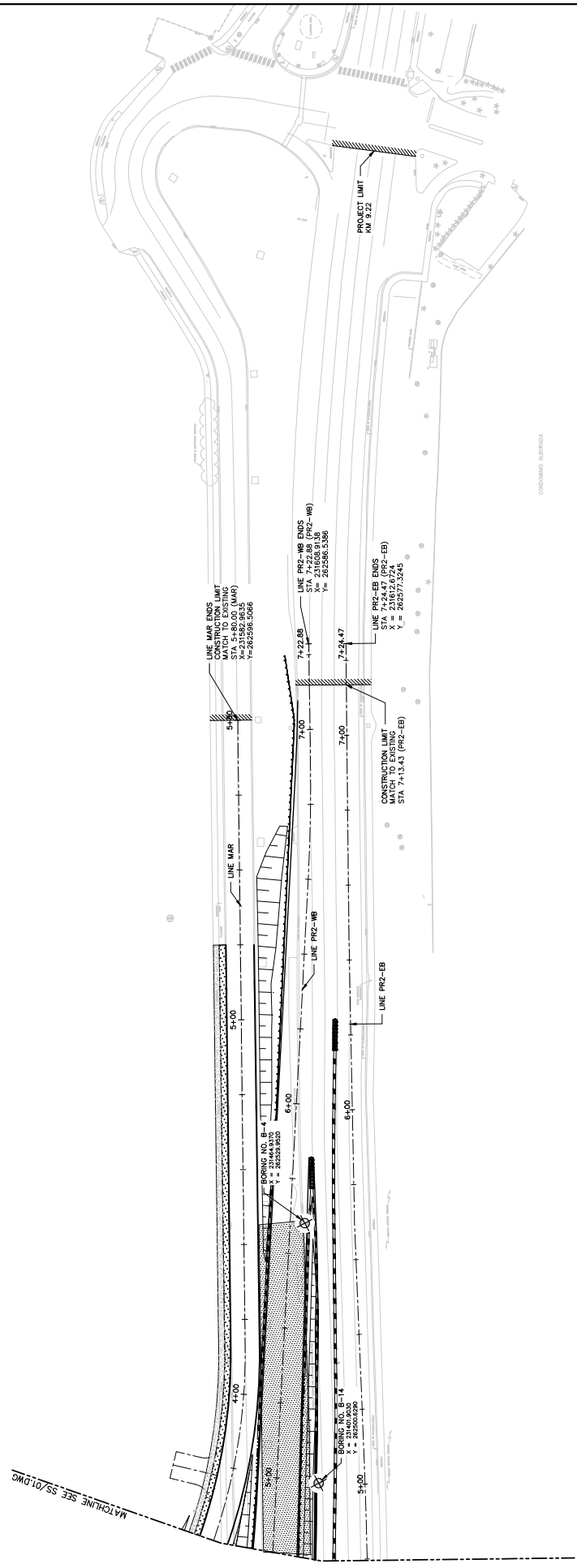
THE GEOTECHNICAL ENGINEER HAS VERIFIED THAT THE DESIGN SHOWN IN THIS DRAWING IS COMPATIBLE WITH THE SOIL REPORT RECOMMENDATIONS.

DATE: September 26, 2023 8:21 AM USER: Jose D. Vazquez FILE: C:\MWORKS\PROJECTS\2102\CHECKOUT\SS-01.DWG

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	49	178

**LEGEND.**  
 BORING LOCATION  
 UNDERCUT

**NOTE.**  
 1. THE SOIL SURVEY DRAWINGS WILL BE USED ONLY FOR BORING LOCATION AND SOIL INFORMATION.



VALLE DEL SOL, P.R. PERMIT

VALLE DEL SOL, P.R.

VALLE DEL SOL, P.R. PERMIT

CONDONO ALPINA

WORK	BY	DATE
DESIGN		
DRAWING		
REVISIONS		
CHECK		
FINAL CHECK		07/27/23

**CMA**  
ARCHITECT &  
ENGINEERS

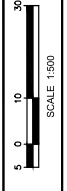
MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

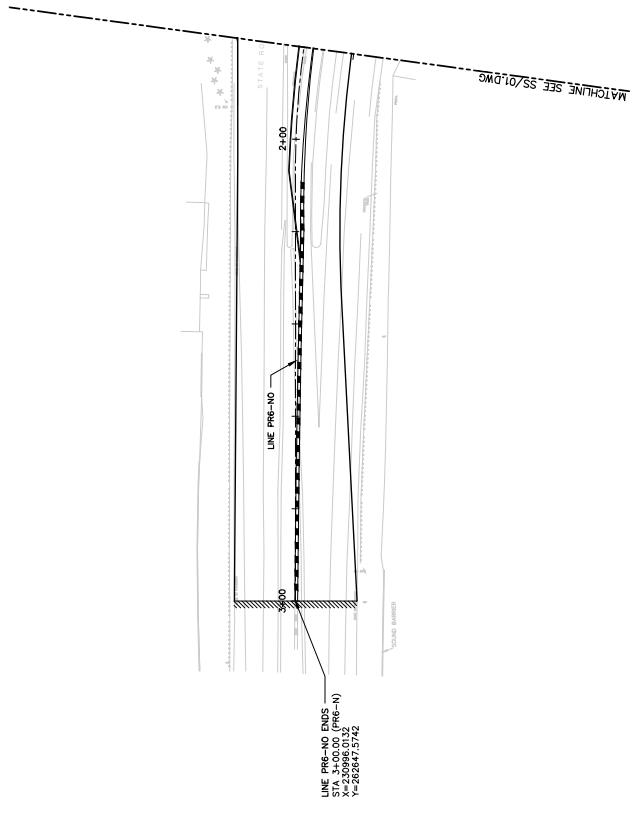
REVISIONS	DATE



SOIL SURVEY AND BORING LOGS PLANS  
FROM STA 2+20.00 TO STA 4+00.00  
(LINE PR6-N)

SS 03

THE GEOTECHNICAL ENGINEER HAS VERIFIED THAT THE DESIGN SHOWN IN THIS DRAWING IS IN ACCORDANCE WITH THE SOIL REPORT RECOMMENDATIONS.  
SIGNED \_\_\_\_\_ DATE \_\_\_\_\_



LEGEND:  
 BORING LOCATION  
 UNDERCUT

NOTE:  
1. THE SOIL SURVEY DRAWINGS WILL BE USED ONLY FOR BORING LOCATION AND SOIL INFORMATION.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	50	178

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

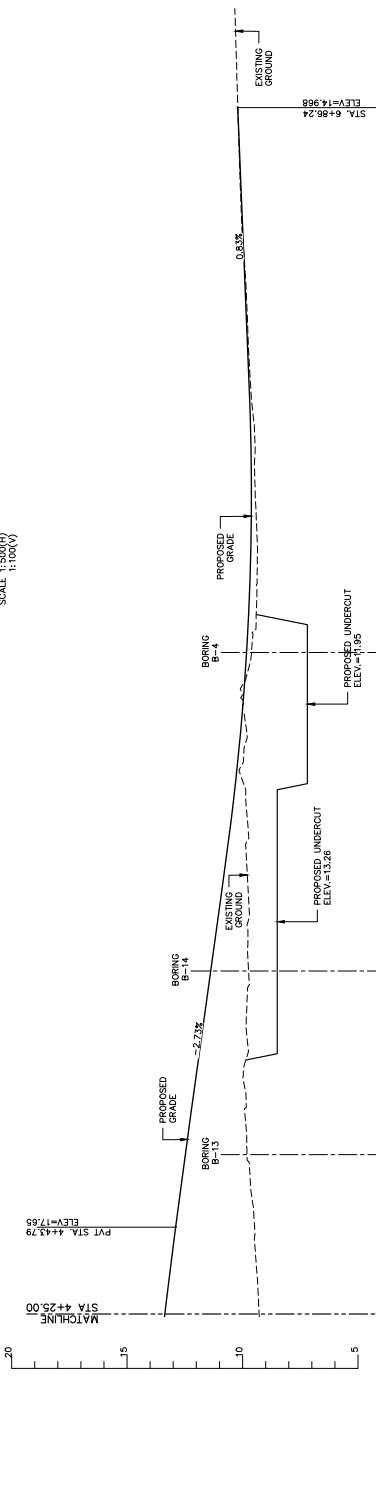
REVISIONS

NOT TO SCALE

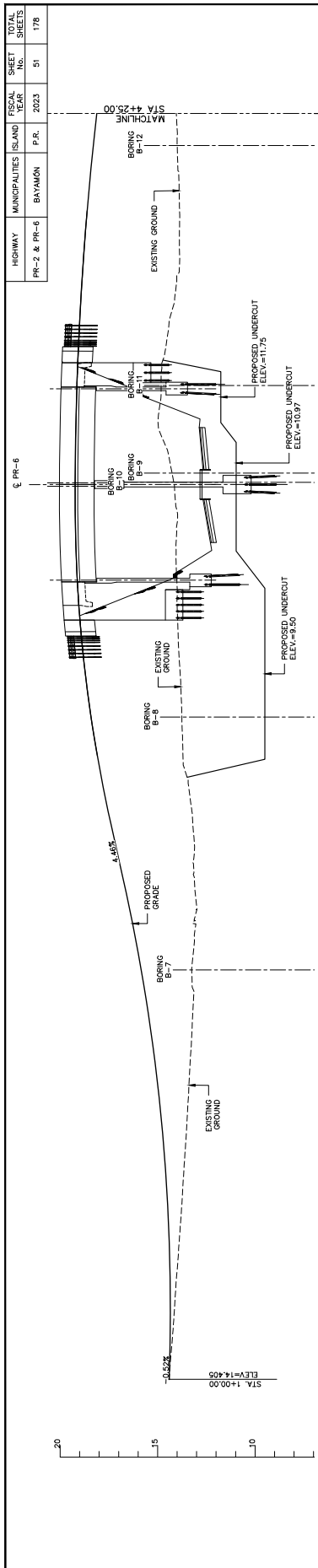
SOIL SURVEY AND BORING LOGS  
PROFILES LINE PR-2

SS 04

EXISTING ELEVATION	PROPOSED ELEVATION	STATION
15.08	15.04	7+07.70
15.04	14.97	7+00.00
14.97	14.92	6+88.24
14.92	14.92	6+80.00
14.78	14.75	6+60.00
14.54	14.56	6+40.00
14.30	14.43	6+20.00
14.18	14.27	6+00.00
14.14	14.46	5+80.00
14.82	14.69	5+60.00
14.72	15.08	5+40.00
14.55	15.57	5+20.00
14.50	16.11	5+00.00
14.61	16.66	4+80.00
14.56	17.20	4+60.00
14.23	17.75	4+40.00



EXISTING ELEVATION	PROPOSED ELEVATION	STATION
14.41	14.41	1+00.00
14.11	14.35	1+20.00
13.57	14.69	1+60.00
13.83	14.44	1+40.00
13.57	14.89	1+60.00
13.57	15.10	1+80.00
13.17	15.67	2+00.00
13.02	16.41	2+20.00
12.83	17.28	2+40.00
13.15	18.09	2+60.00
13.70	18.09	2+60.00
13.83	18.68	2+80.00
14.00	19.06	3+00.00
13.99	19.22	3+20.00
14.62	19.21	3+40.00
14.79	19.11	3+60.00
14.07	18.91	3+80.00
13.87	18.62	4+00.00
18.23		4+20.00
13.99		4+20.00



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	51	178



WORK	DATE
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	07/27/23

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ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON  
PUERTO RICO

NOT TO SCALE

BORING LOGS PLANS  
PROFILE LINE PR-6S0

SS  
05

FILE: C:\PM\WORKSPACE\2102\CHEKOUT\SS-05.DWG

DATE: September 26, 2023 8:28 AM USER: Jose O. Vazquez

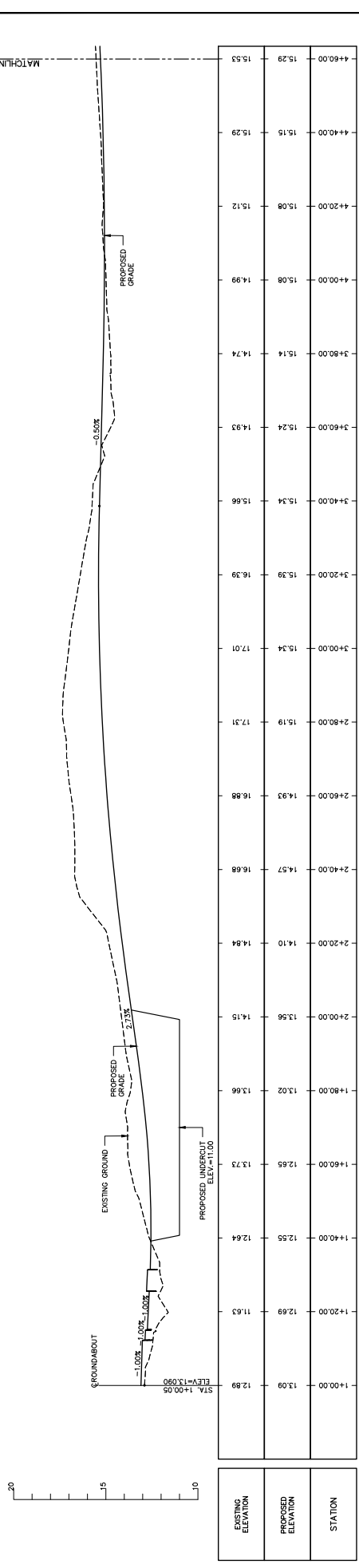
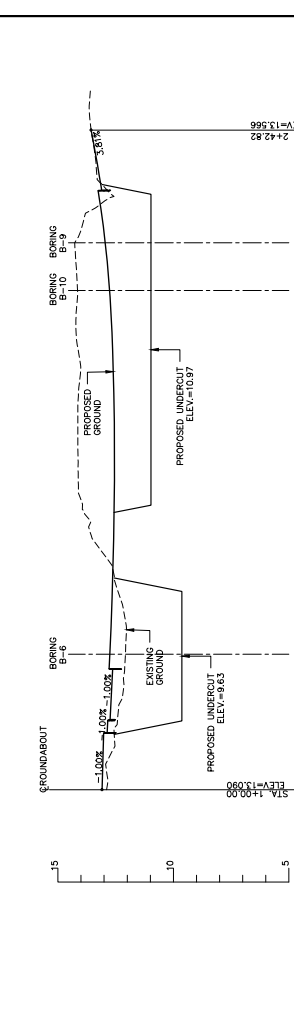
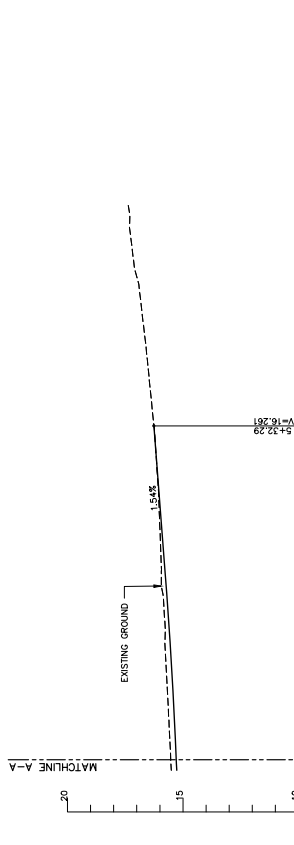
EXISTING ELEVATION	PROPOSED ELEVATION	STATION
12.89	12.82	1+00.00
12.21	12.49	1+20.00
12.20	12.38	1+40.00
13.87	12.17	1+60.00
14.14	12.08	1+80.00
14.22	12.04	2+00.00
14.10	12.66	2+20.00
13.47	13.43	2+40.00
13.59	13.59	2+42.82
13.59	13.59	2+51.32

EXISTING ELEVATION	PROPOSED ELEVATION	STATION
16.08	16.07	5+00.00
15.94	15.76	5+00.00
15.73	15.49	4+80.00
15.37	15.49	4+60.00
16.26	16.07	5+20.00
16.26	16.26	5+32.29
16.41	16.41	5+40.00
16.85	16.85	5+60.00
16.95	16.85	5+80.00
17.37	17.37	5+80.00

EXISTING ELEVATION	PROPOSED ELEVATION	STATION
12.89	12.82	1+00.00
12.21	12.49	1+20.00
12.20	12.38	1+40.00
13.87	12.17	1+60.00
14.14	12.08	1+80.00
14.22	12.04	2+00.00
14.10	12.66	2+20.00
13.47	13.43	2+40.00
13.59	13.59	2+42.82
13.59	13.59	2+51.32

LINE PR-6S0 PROFILE  
SCALE 1:500(H)  
1:100(V)

LINE MAR PROFILE  
SCALE 1:500(H)  
1:100(V)



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	52	178

MATCHLINE A-A



**CMA** ARCHITECTS & ENGINEERS  
 MUNICIPALITY OF BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS - PUERTO RICO  
 PR-2 AND PR-6  
 BAYAMON  
 FROM BORING NO. B-8 TO BORING NO. B-10  
 NOT TO SCALE  
 SS 07  
 REVISIONS: [Blank]  
 DATE: [Blank]

HIGHWAY: PR-2 & PR-6  
 MUNICIPALITIES: BAYAMON  
 ISLAND: P.R.  
 FISCAL YEAR: 2023  
 SHEET NOS.: 54  
 TOTAL SHEETS: 178

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10

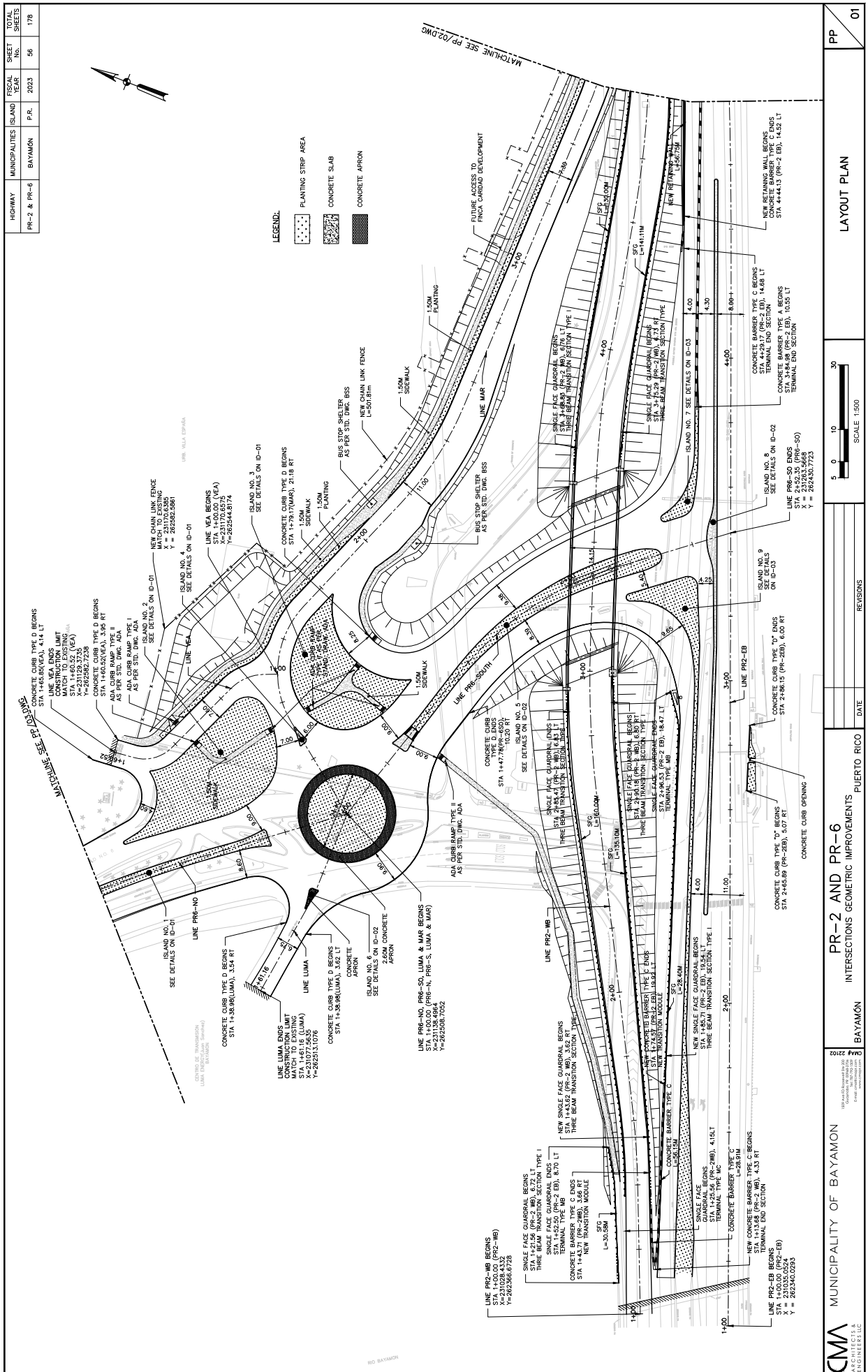
No.	Description of Material	Soils											
		Blow#1*	Blow#2*	Blow#3*	Blow#4*	Blow#5*	Blow#6*	Blow#7*	Blow#8*	Blow#9*	Blow#10*	Blow#11*	Blow#12*
1	00' - 03" - 06" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10
2	06' - 03" - 09" (3' 00")	10	10	10	10	10	10	10	10	10	10	10	10



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	56	178



- LEGEND:**
- FLANTING STRIP AREA
  - CONCRETE SLAB
  - CONCRETE APRON



DATE	BY	DESIGN	CHECK	FINAL CHECK
07/27/23				

REVISIONS

NO.	DATE	DESCRIPTION

**CMA**  
 ARCHITECTS & ENGINEERS

MUNICIPALITY OF BAYAMÓN

BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

**PR-2 AND PR-6**

LAYOUT PLAN

PP

01

DATE	BY	DESIGN	DRAWING	CHECK	FINAL PLANS	07/27/23
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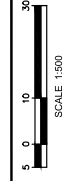
**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

444 2282  
1850 ROAD 2200, SUITE 2000  
SAN JUAN, PUERTO RICO 00906  
TEL: (787) 762-1000  
WWW.CMA-PR.COM

BAYAMON  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

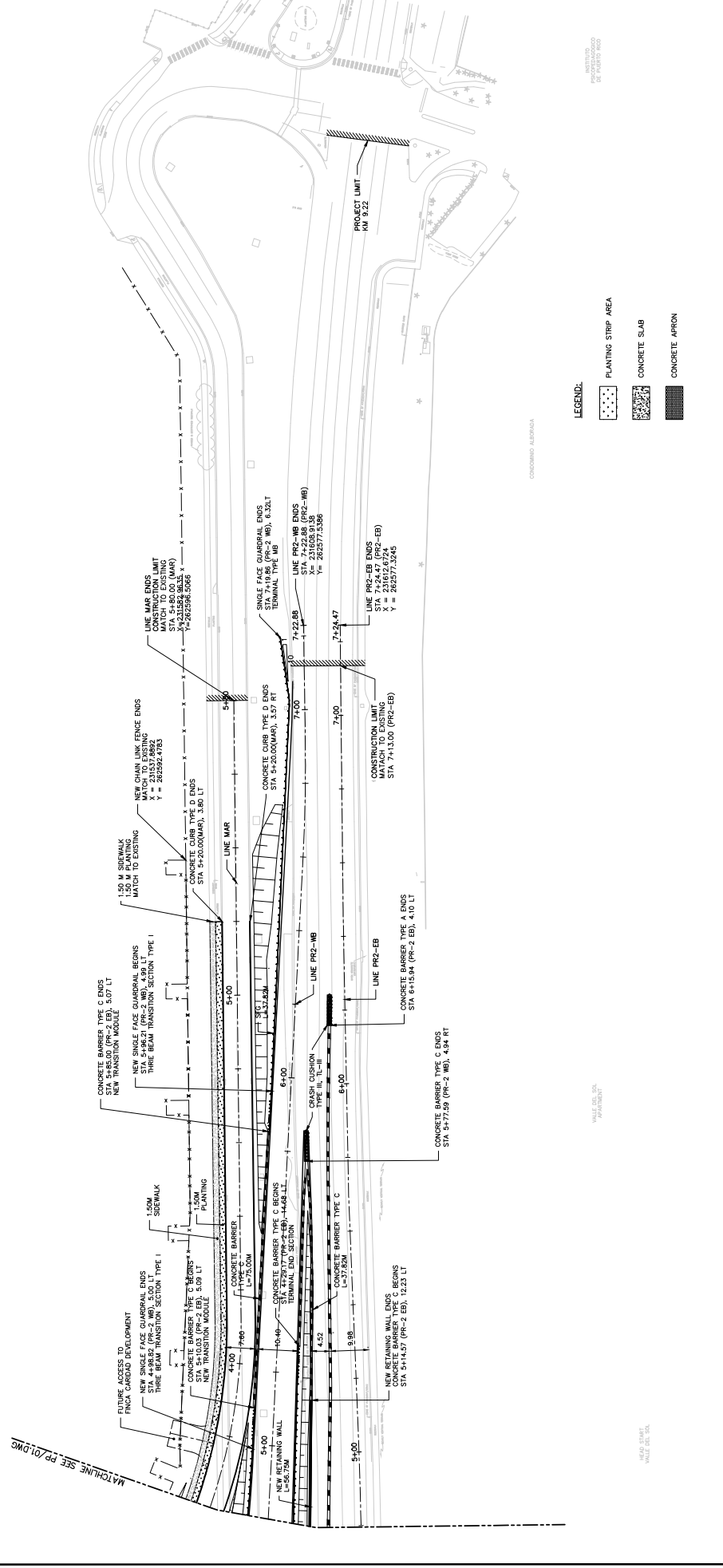
02/29/16	ISSUED FOR CONSTRUCTION	JAC
DATE	REVISIONS	



LAYOUT PLAN

PP 02

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	57	178



- LEGEND:**
- PLANTING STRIP AREA
  - CONCRETE SLAB
  - CONCRETE APRON

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

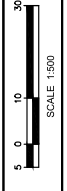
**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

REG. NO. 2218  
CMA ARCHITECT & ENGINEERS  
CMA ARCHITECT & ENGINEERS  
CMA ARCHITECT & ENGINEERS

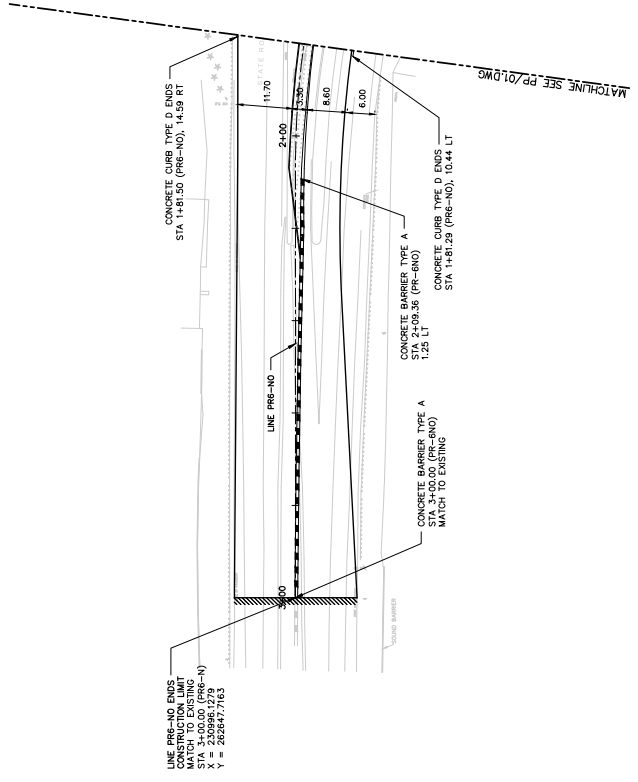
BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

NO.	DATE	REVISIONS



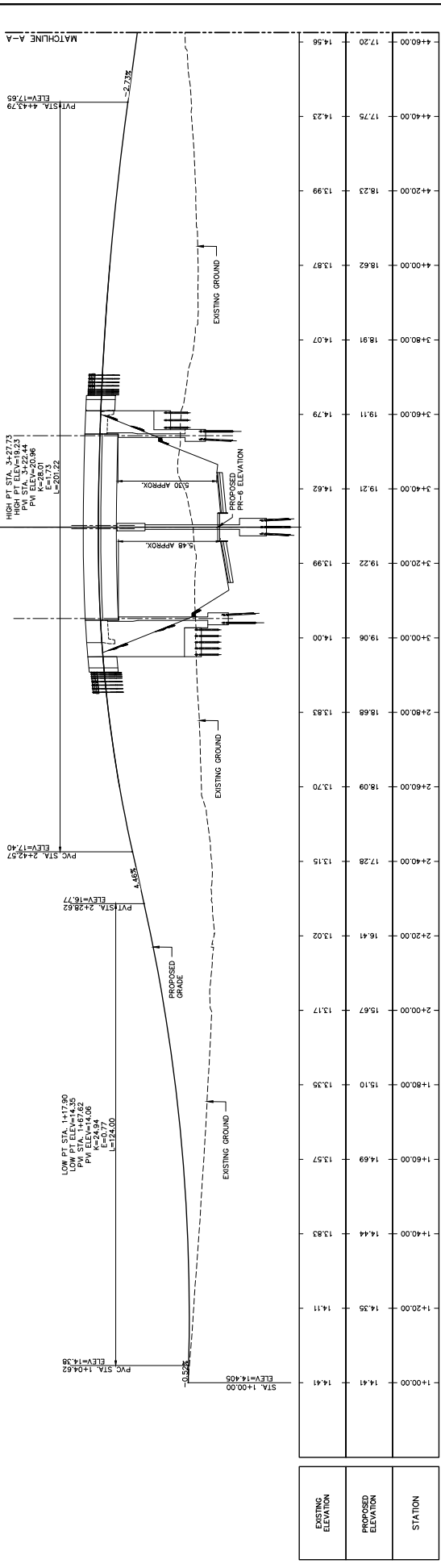
LAYOUT PLAN

PP 03

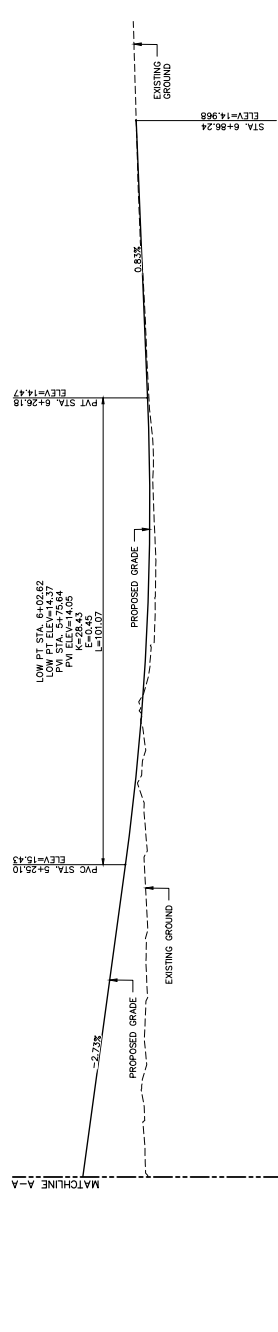


HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	58	178

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	59	178



LINE PR-2 WB PROFILE  
 SCALE: 1:100(V)



EXISTING ELEVATION	PROPOSED ELEVATION	STATION
14.56	17.20	4+60.00
14.61	16.66	4+80.00
14.50	16.11	5+00.00
14.55	15.57	5+20.00
14.72	14.82	5+40.00
14.82	14.69	5+60.00
14.14	14.46	5+80.00
14.18	14.27	6+00.00
14.30	14.43	6+20.00
14.54	14.58	6+40.00
14.78	14.75	6+60.00
14.92	14.92	6+80.00
14.97	14.97	6+86.24
15.04	15.04	7+00.00
15.08	15.08	7+07.20

LINE PR-2 WB PROFILE  
 SCALE: 1:500(V)

**CMA ARCHITECT & ENGINEERS**  
 MUNICIPALITY OF BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN

PR-2 AND PR-6  
 PUERTO RICO

SCALE AS SHOW

PROFILE  
 LINE PR-2 WB

PP 04

NO.	DATE	REVISIONS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	TRM/RMS	07/27/23



MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

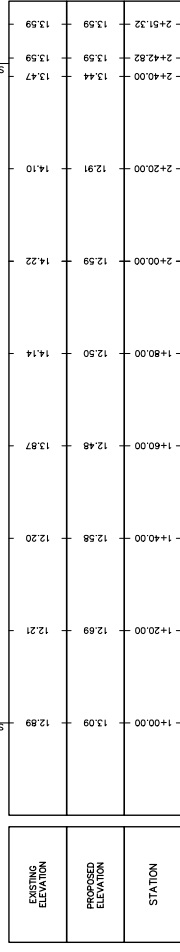
REVISIONS	DATE

SCALE AS SHOW

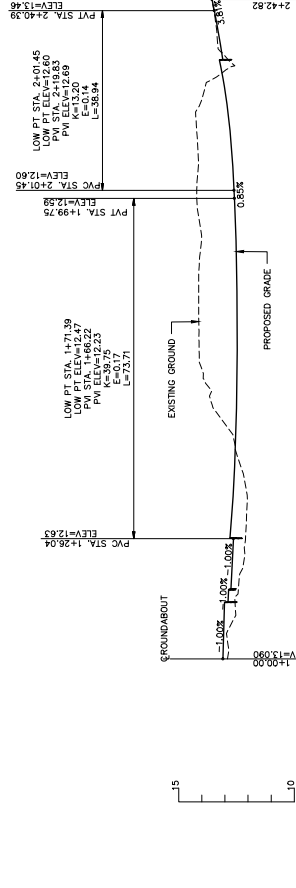
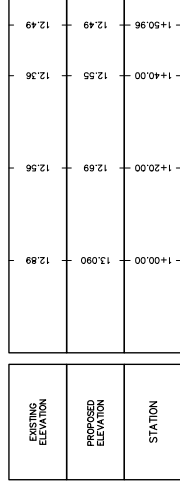
LINE PR-6, VEA & LUMA ACCESS

PP 05

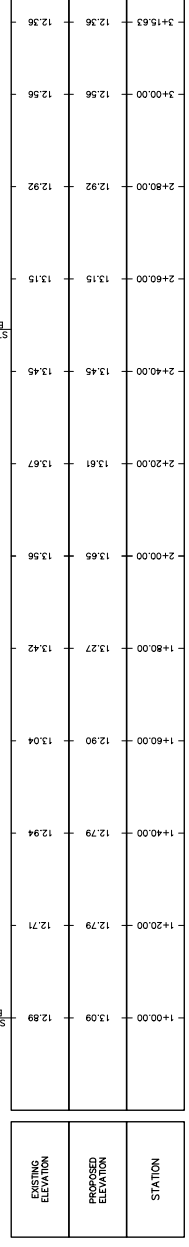
LINE PR-650 PROFILE  
SCALE 1:100(V)



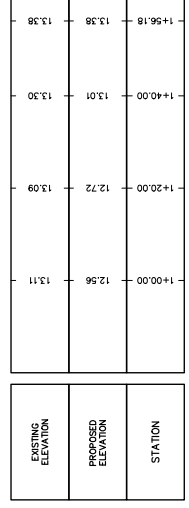
LINE LUMA ACCESS PROFILE  
SCALE 1:100(V)



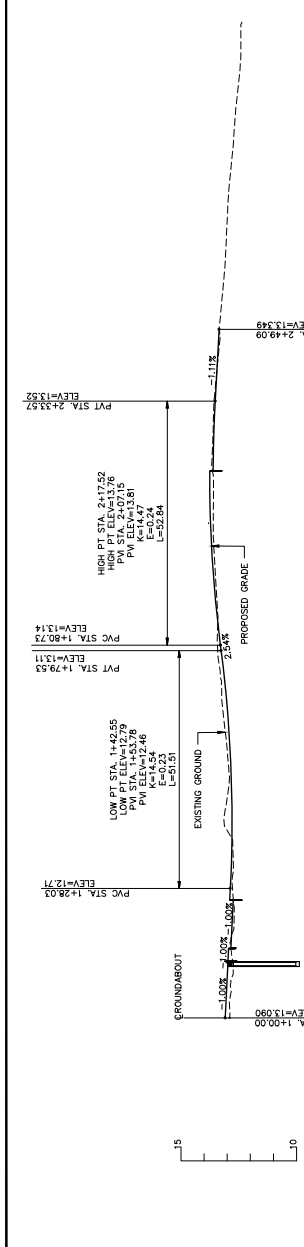
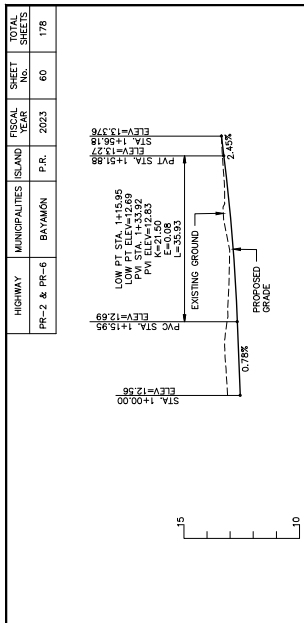
LINE PR-6NO PROFILE  
SCALE 1:100(V)



LINE VEA PROFILE  
SCALE 1:100(V)



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	60	178



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	61	178

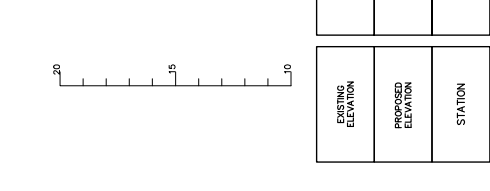
LOW PT. STA. 4+08.74 LOW PT. ELEV.=15.07 STATIONING PVI ELEV.=14.64 K=40.00 L=122.53	PVC STA. 4+28.74 ELEV.=15.14	PVI STA. 4+38.60 ELEV.=15.35	PROPOSED GRADE	MATCHLINE A-A
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HIGH PT. STA. 3+19.43 HIGH PT. ELEV.=15.39 STATIONING PVI ELEV.=14.69 K=33.35 L=123.69	PVC STA. 2+14.92 ELEV.=13.97	PVI STA. 1+83.53 ELEV.=13.11	PROPOSED GRADE	MATCHLINE A-A
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LOW PT. STA. 1+42.11 LOW PT. ELEV.=12.55 STATIONING PVI ELEV.=12.34 K=40.00 L=56.66	PVC STA. 1+26.87 ELEV.=12.63	PVI STA. 1+83.53 ELEV.=13.11	PROPOSED GRADE	MATCHLINE A-A
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STA. 1+00.05 ELEV.=13.09	STA. 1+00.00 ELEV.=12.89	STA. 1+20.00 ELEV.=12.69	STA. 1+40.00 ELEV.=12.55	STA. 1+60.00 ELEV.=12.65	STA. 1+80.00 ELEV.=13.02	STA. 2+00.00 ELEV.=13.56	STA. 2+20.00 ELEV.=14.10	STA. 2+40.00 ELEV.=14.57	STA. 2+60.00 ELEV.=14.93	STA. 2+80.00 ELEV.=15.19	STA. 3+00.00 ELEV.=15.34	STA. 3+20.00 ELEV.=15.39	STA. 3+40.00 ELEV.=15.34	STA. 3+60.00 ELEV.=15.24	STA. 3+80.00 ELEV.=14.74	STA. 4+00.00 ELEV.=15.08	STA. 4+20.00 ELEV.=15.12	STA. 4+40.00 ELEV.=15.15	STA. 4+60.00 ELEV.=15.29
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EXISTING ELEVATION	PROPOSED ELEVATION	STATION
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LINE MARG. PROFILE  
SCALE: 1:500(H)  
1:100(V)



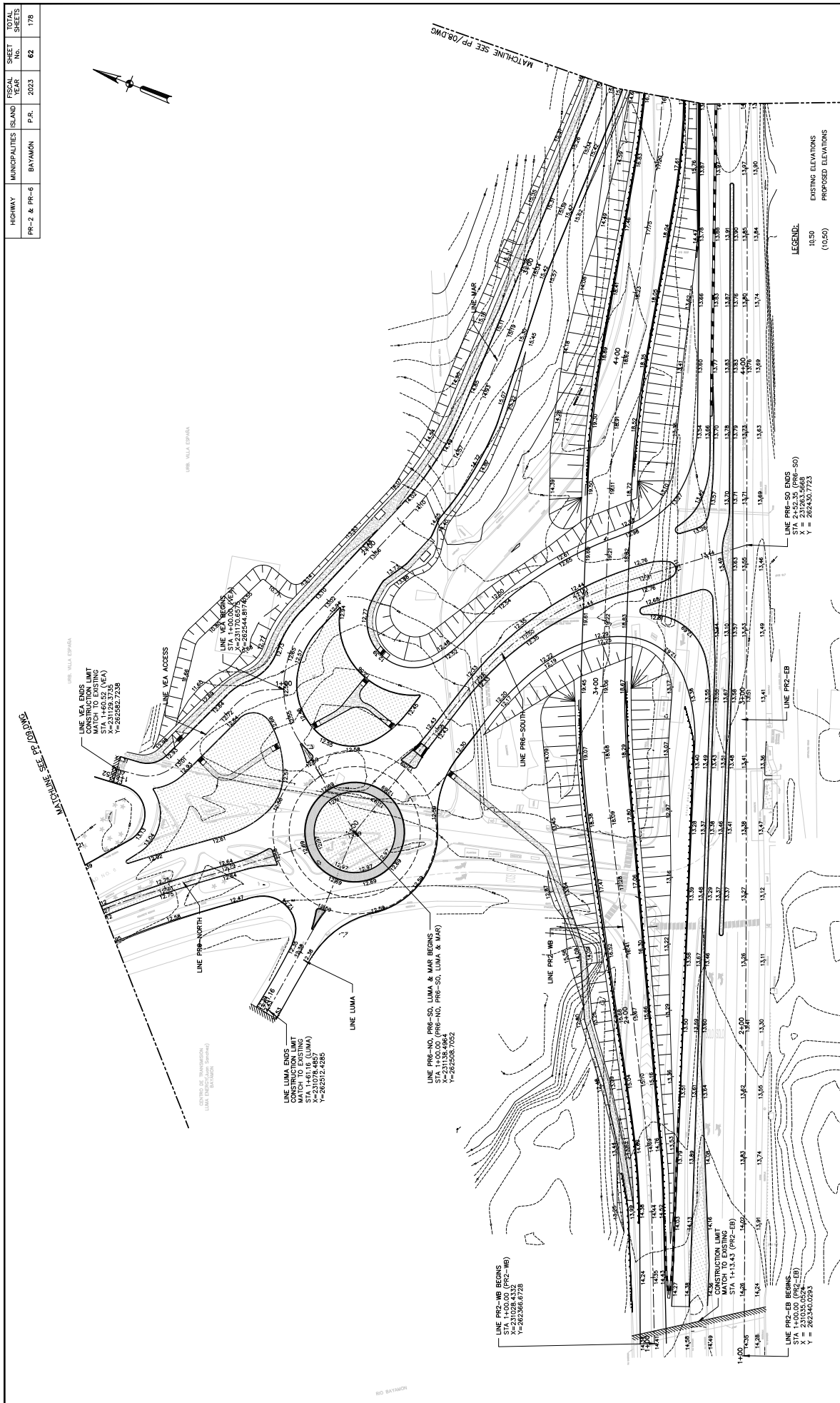
LINE MARG. PROFILE  
SCALE: 1:500(H)  
1:100(V)

EXISTING ELEVATION	PROPOSED ELEVATION	STATION
15.53	15.29	4+60.00
15.73	15.49	4+80.00
15.94	15.76	5+00.00
16.08	16.07	5+20.00
16.26	16.26	5+32.29
16.41	16.41	5+40.00
16.85	16.85	5+60.00
17.37	17.37	5+80.00

**CMA ARCHITECT & ENGINEERS**  
 MUNICIPALITY OF BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN  
 PUERTO RICO  
 SCALE AS SHOW  
 PROFILE LINE MARG  
 PP 06

WORK	DATE
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	07/27/23

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	62	178



DATE	BY	DESIGN	DATE	REVISIONS
		DRAWING		
FINAL CHECK	FINAL PLANS	07/27/23		

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ENGINEERS

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

SCALE 1:500

GRADING PLAN

PP 07

DATE 07/27/23  
BY  
DESIGN  
DRAWING  
FINAL CHECK  
FINAL PLANS

444 2202  
BAYAMÓN

LINE PR-2-WB BEGINS  
STA 1+00.00 (PR-2-WB)  
X = 262356.6728  
Y = 282356.6728

CONSTRUCTION LIMIT  
MATCH TO EXISTING  
STA 1+13.43 (PR-2-EB)

LINE PR-2-EB BEGINS  
STA 1+00.00 (PR-2-EB)  
X = 231953.5688  
Y = 282340.0285

LINE PR-2-SOUTH BEGINS  
STA 1+00.00 (PR-2-SOUTH)  
X = 231953.5688  
Y = 282340.0285

LINE PR-2-NORTH BEGINS  
STA 1+00.00 (PR-2-NORTH)  
X = 231953.5688  
Y = 282340.0285

LINE LUMA BEGINS  
CONSTRUCTION LIMIT  
MATCH TO EXISTING  
STA 1+00.00 (LUMA)  
X = 231978.4651  
Y = 282512.4285

LINE VEA BEGINS  
CONSTRUCTION LIMIT  
MATCH TO EXISTING  
STA 1+00.00 (VEA)  
X = 231953.5688  
Y = 282356.6728

LINE VEA BEGINS  
CONSTRUCTION LIMIT  
MATCH TO EXISTING  
STA 1+00.00 (VEA)  
X = 231953.5688  
Y = 282356.6728

LINE PR-2-WB BEGINS  
STA 1+00.00 (PR-2-WB)  
X = 262356.6728  
Y = 282356.6728

DATE: September 26, 2023 8:21 AM USER: Jose D. Vazquez  
FILE: C:\M WORKSPACE\CE2102\CHECKOUT\PP-07.DWG

DATE	BY	DESIGN	DRAWING	CHECK	FINAL PLANS	07/27/23
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ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

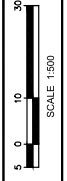
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DATE: 07/27/23  
DRAWN BY: [Name]  
CHECKED BY: [Name]

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

DATE

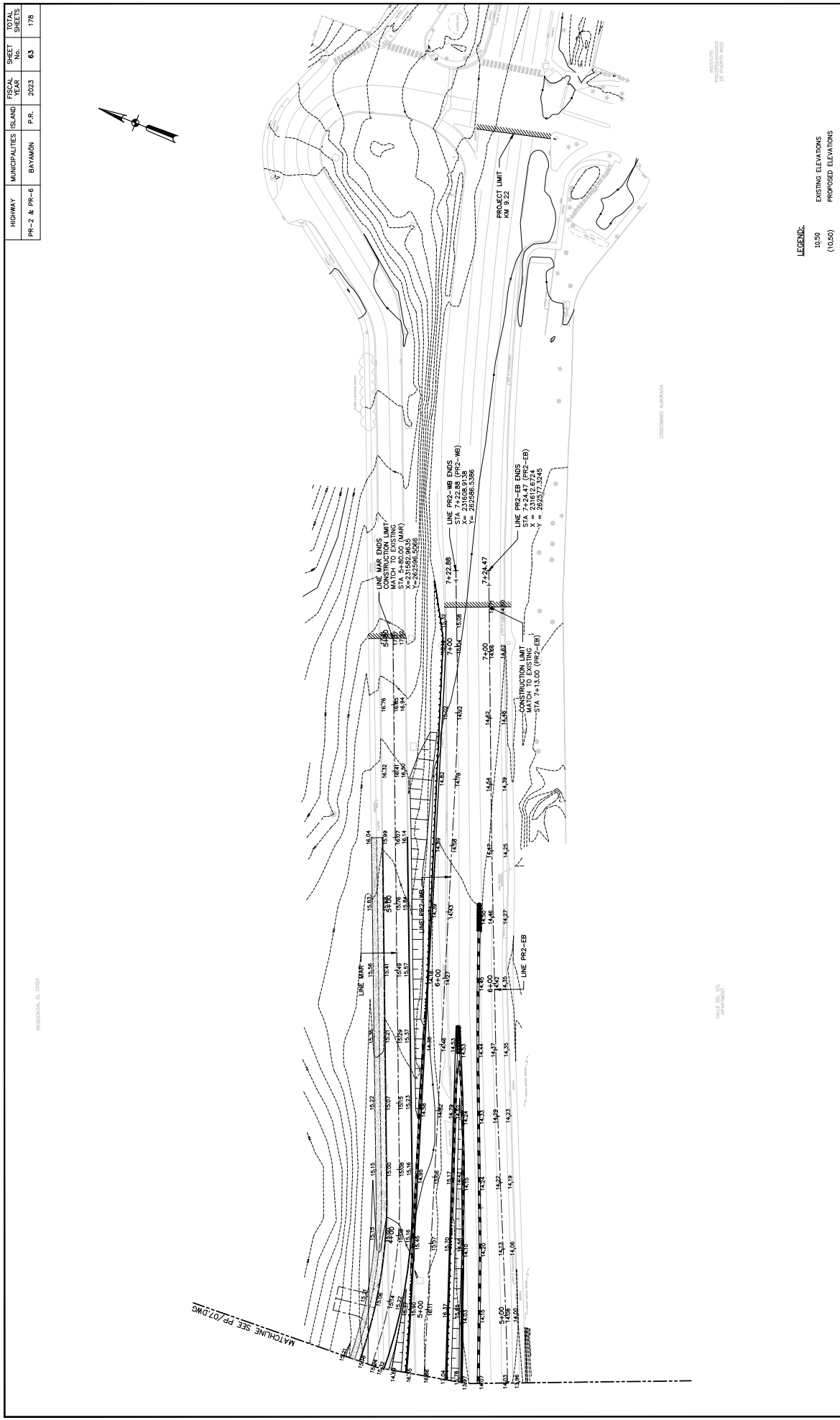
REVISIONS



GRADING PLAN

PP 08

LEGEND:  
10.00 EXISTING ELEVATIONS  
(10.50) PROPOSED ELEVATIONS



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	63	178

WORK	BY	DATE
DESIGN		
DRAWING		
REVISIONS		
CHECK		
FINAL CHECK		07/27/23

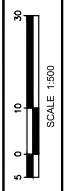
**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

CH# 2212  
ISSUED FOR REVIEW AND  
APPROVAL BY THE  
COMMISSION OF THE  
MUNICIPALITY OF BAYAMON

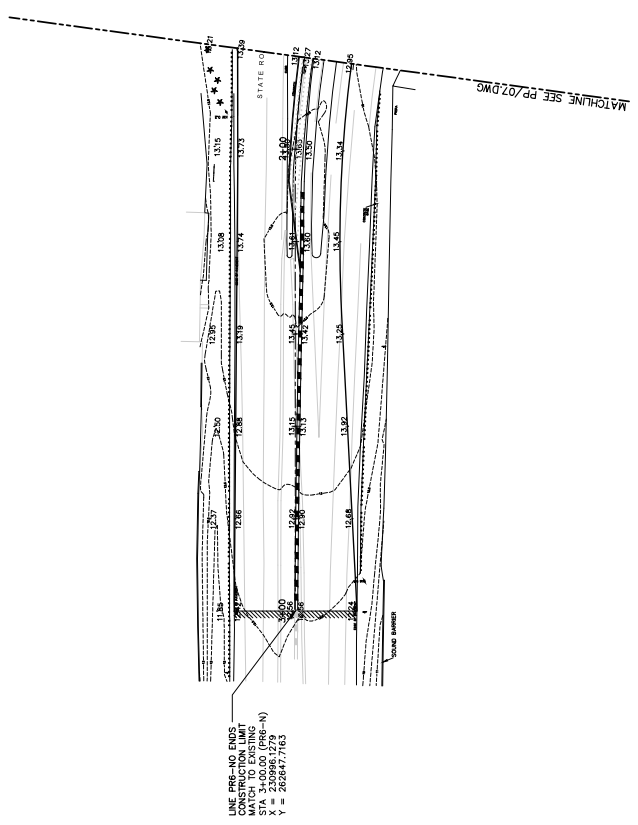
BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

REVISIONS	DATE



**PP 09**  
**GRADING PLAN**

**LEGEND:**  
10.00 EXISTING ELEVATIONS  
(10.50) PROPOSED ELEVATIONS



LINE PER-NO ENDS  
CONSTRUCTION LIMIT  
MATCH TO EXISTING  
PLAN (SEE SHEET N)  
X = 230986.5279  
Y = 282847.7163

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	64	178

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK
		FINAL PLANS

CMA ARCHITECTS & ENGINEERS  
 100 CALLE DEL PUERTO RICO, SUITE 200  
 SAN JUAN, PUERTO RICO 00906  
 (787) 763-3333  
 WWW.CMAARCHITECTS.COM

**PR-2 AND PR-6**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO  
 BAYAMÓN

NO.	DATE	REVISIONS

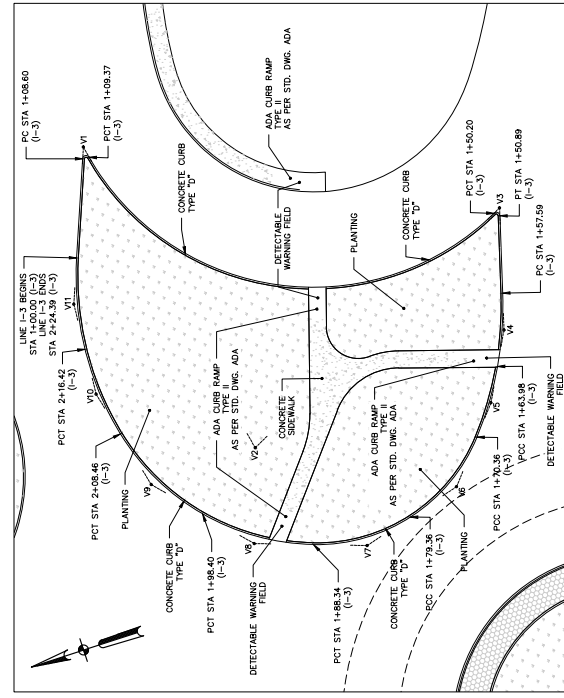
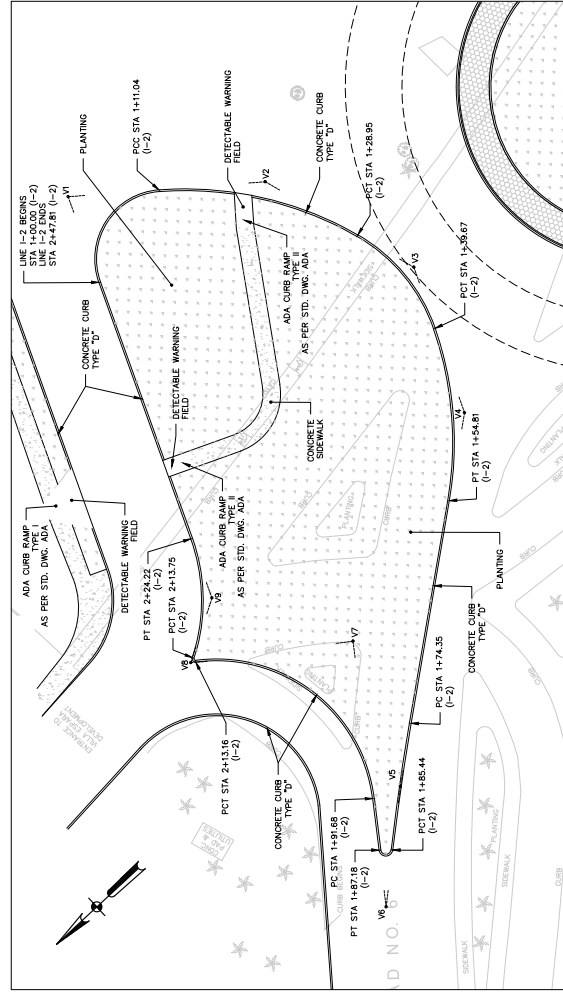
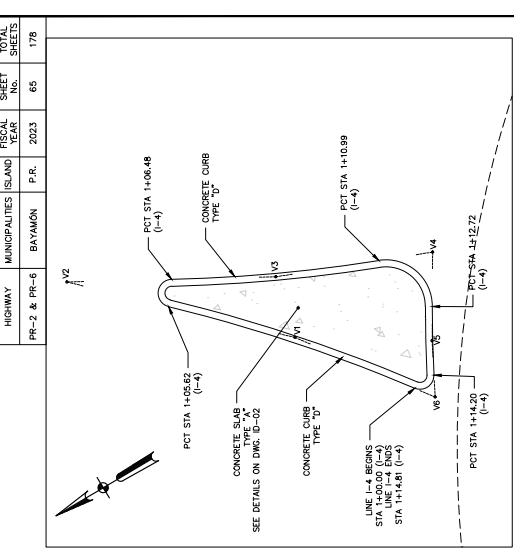
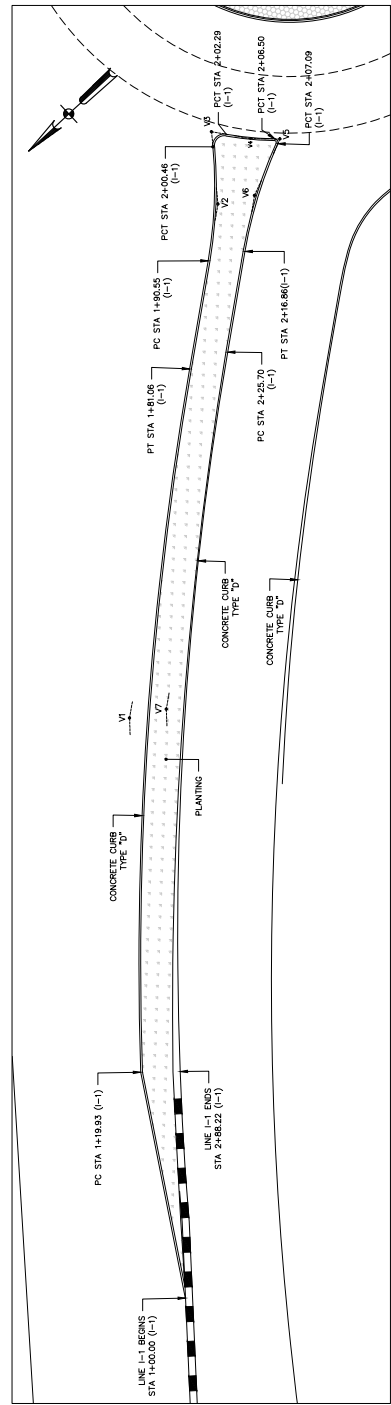
SCALE AS SHOW

INTERSECTION DETAILS

ID 01

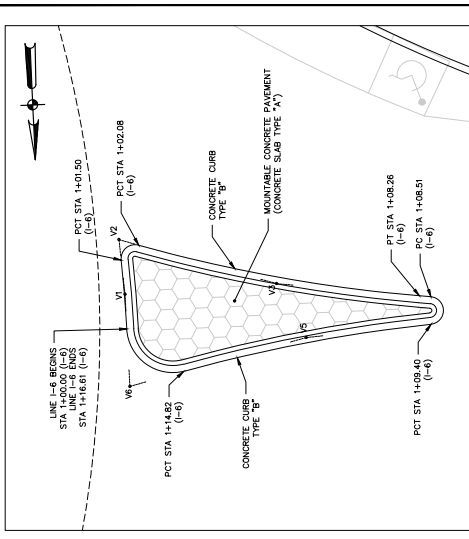
TOTAL SHEETS 65  
SHEET NO. 65  
FISCAL YEAR 2023  
P.R. BAYAMÓN  
HIGHWAY PR-2 & PR-6  
MUNICIPALITIES BAYAMÓN

DATE: September 26, 2023 8:25 AM USER: Jose O. Vazquez  
FILE: C:\PM\WORKSPACE\CE12102\CHECK\01-D-01.DWG

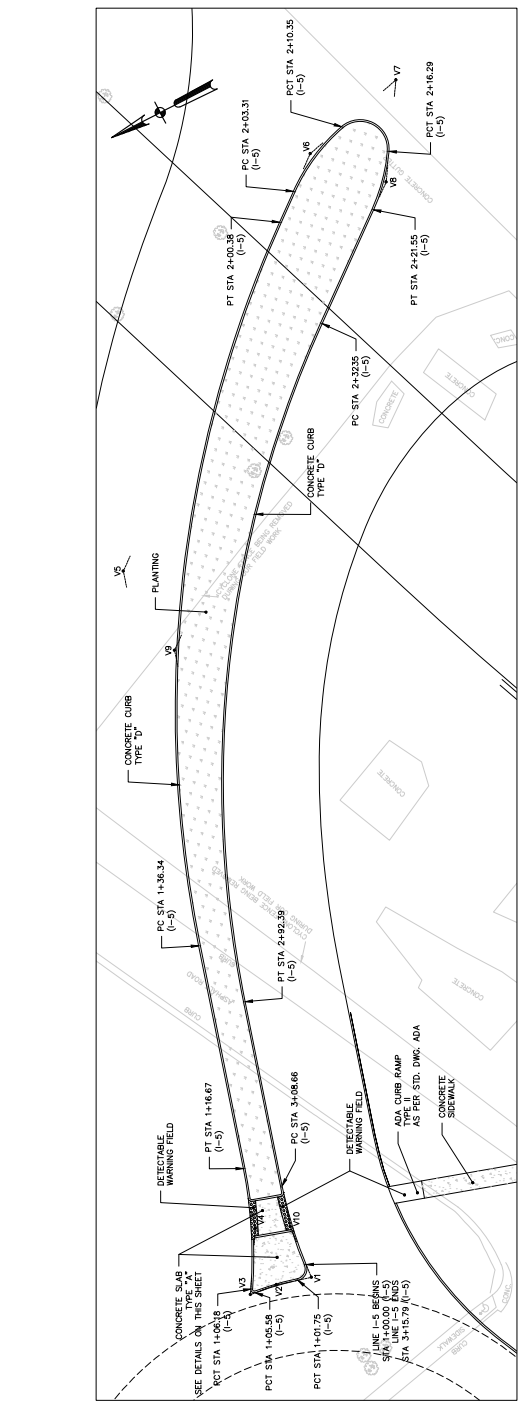


- NOTES:
- CONCRETE SLAB TYPE "A" SHALL BE PAID AS PER CONTRACT UNIT PRICE OF PORTLAND CEMENT CONCRETE SIDEWALK (SPEC. 609).
  - DETECTABLE WARNING FIELD AND REINFORCEMENT STEEL SHALL BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE WORK AND PAY ITEMS INCLUDED UNDER PORTLAND CEMENT CONCRETE SIDEWALK (SPEC. 609).
  - SEE GR/10 & GR/11 FOR CONCRETE ISLAND VERTEX DATA.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	66	178

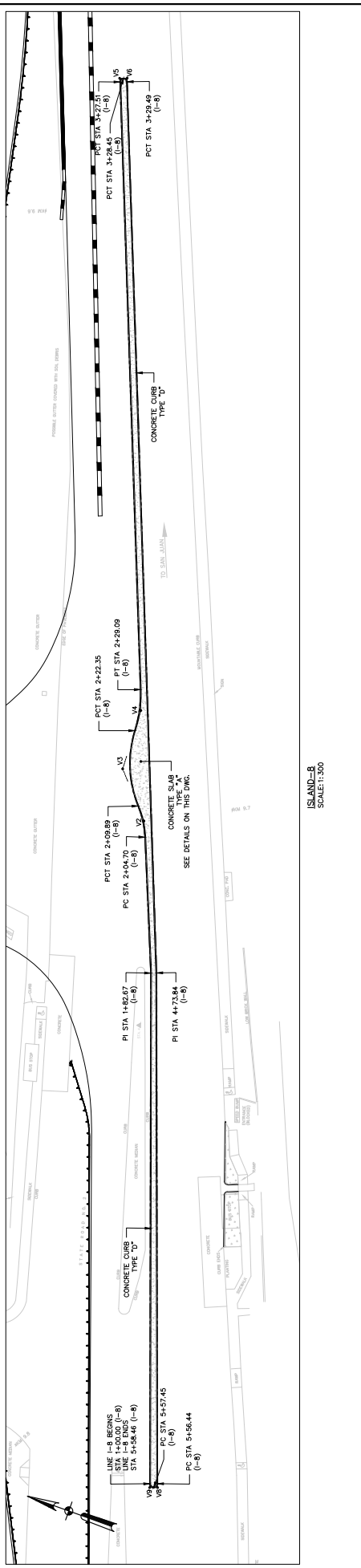


ISLAND-5  
SCALE:1:200



ISLAND-5  
SCALE:1:200

- NOTES:
- CONCRETE SLAB TYPE "A" SHALL BE PAID AS PER CONTRACT UNIT PRICE OF PORTLAND CEMENT CONCRETE SIDEWALK (SPEC. 609).
  - DETECTABLE WARNING FIELD AND REINFORCEMENT STEEL SHALL BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE CONCRETE SIDEWALK (SPEC. 609) UNDER PORTLAND CEMENT CONCRETE SIDEWALK (SPEC. 608).
  - SEE GR/10 & GR/11 FOR CONCRETE ISLAND VERTEX DATA.



ISLAND-8  
SCALE:1:300

DATE	BY	DESIGN	REVISIONS	SCALE AS SHOW	INTERSECTION DETAILS	ID
07/27/23						02

**CMA** MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

DATE

REVISIONS

ARCHITECT & ENGINEERS

150 CALLE OLIVERA #200  
SAN JUAN, PUERTO RICO 00906  
TEL: (787) 762-1000  
WWW.CMA-PR.COM

#A4 2282

DATE	BY	WORK
07/27/23		
CHECK	FINAL PLANS	
DESIGN		
DRAWING		
SCALE		

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MUNICIPALITY OF BAYAMÓN

BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

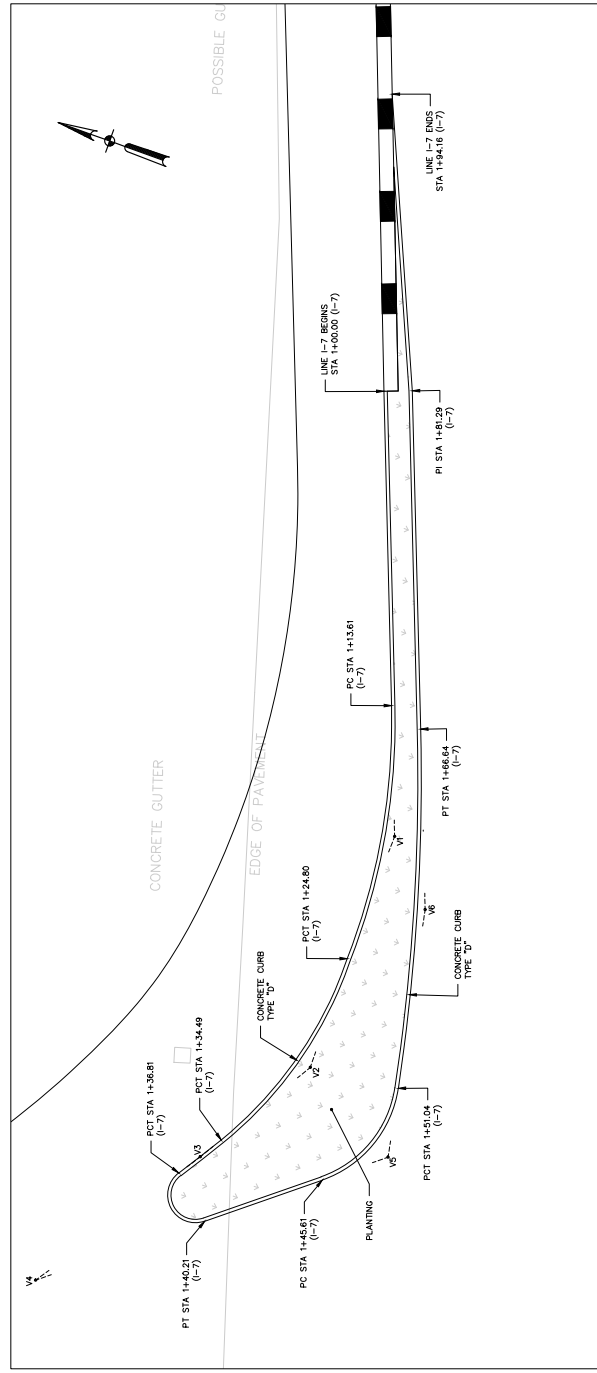
REVISIONS	DATE

SCALE AS SHOW

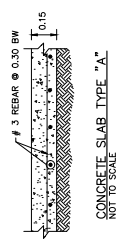
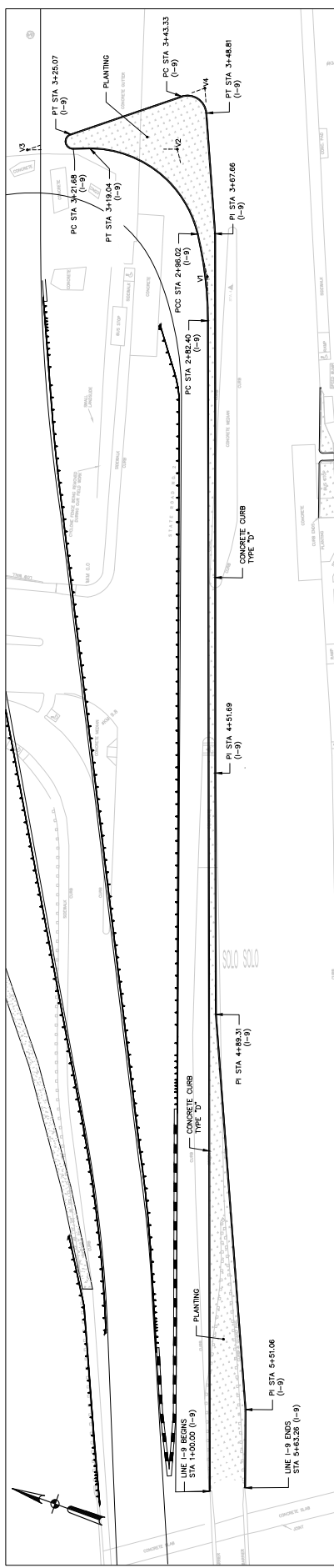
INTERSECTION DETAILS

ID 03

ISLAND-7  
SCALE:1:100



ISLAND-9  
SCALE:1:300

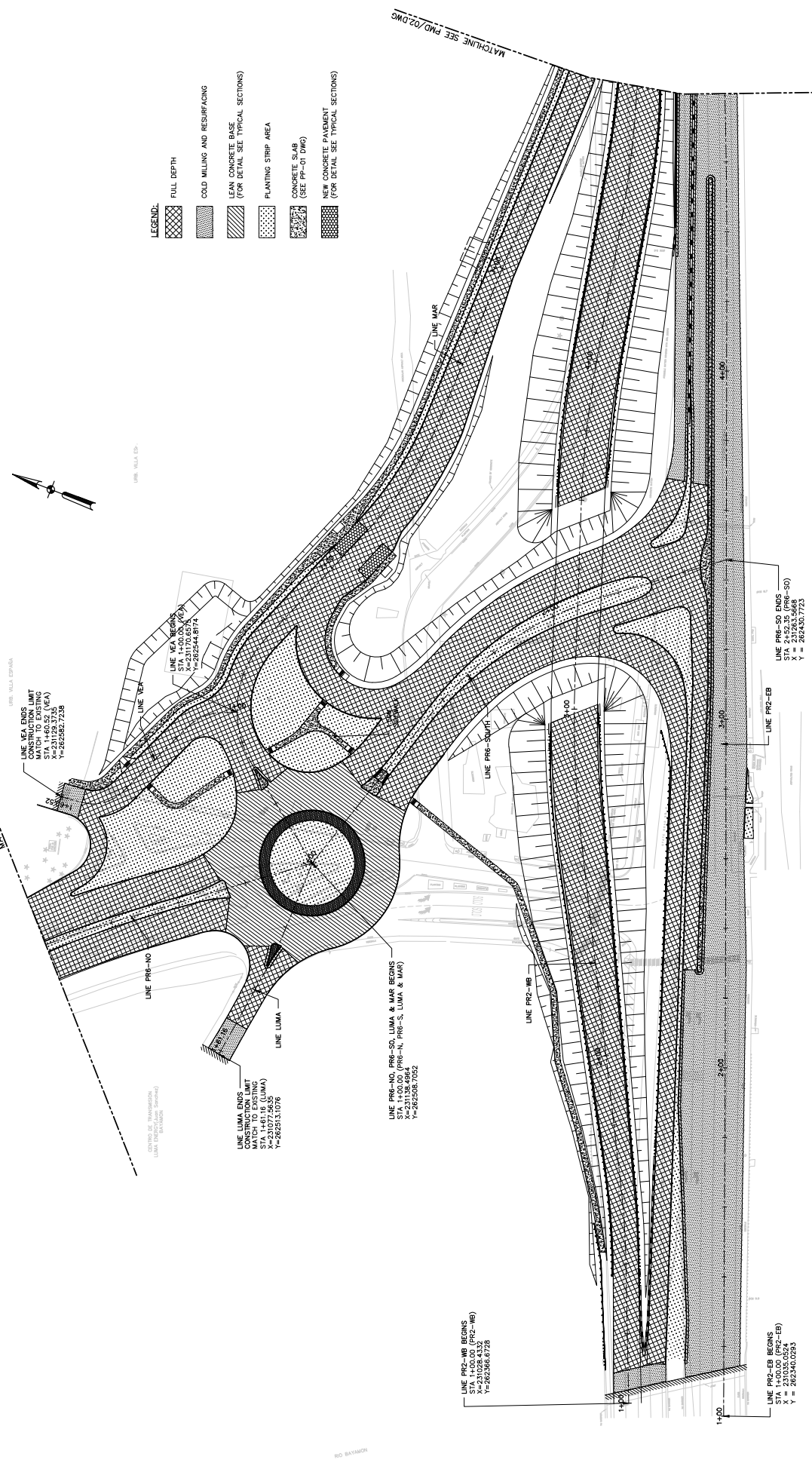


- NOTES:
- CONCRETE SLAB TYPE "A" SHALL BE PAID AS PER CONTRACT UNIT PRICE OF PORTLAND CEMENT CONCRETE SIDEWALK (SPEC. 609).
  - DETAILED WARNING FIELD AND REINFORCEMENT DETAILS SHALL BE FURNISHED BY THE CONTRACTOR UNDER THE CONCRETE SIDEWALK (SPEC. 609).
  - SEE GR/10 & GR/11 FOR CONCRETE ISLAND VERTEX DATA.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	67	178

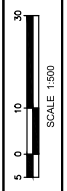


HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	68	178



- LEGEND:**
- FULL DEPTH
  - COLD MILLING AND RESURFACING
  - LEAN CONCRETE BASE (FOR DETAIL SEE TYPICAL SECTIONS)
  - PLANTING STRIP AREA
  - CONCRETE SLAB (SEE PP-01 DWG)
  - NEW CONCRETE PAVEMENT (FOR DETAIL SEE TYPICAL SECTIONS)

<b>CMA</b> ARCHITECT & ENGINEERS	<b>MUNICIPALITY OF BAYAMÓN</b>	<b>PR-2 AND PR-6</b> INTERSECTIONS GEOMETRIC IMPROVEMENTS	<b>PM2</b>
PROJECT NO. 2218 ISSUED FOR PERMIT REVIEW #2218 DATE: 07/27/23	BAYAMÓN	PUERTO RICO	01
DATE		DATE	REVISIONS
BY		DATE	
DESIGN		DATE	
DRAWING		DATE	
CHECK		DATE	
FINAL CHECK		DATE	



DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK FINAL PLANS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

**CMA**  
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ENGINEERS

MUNICIPALITY OF BAYAMÓN

**PR-2 AND PR-6**  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

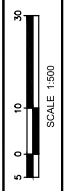
BAYAMÓN

PUERTO RICO

CH# 2218  
ISSUED FOR PERMIT  
DATE: 07/27/23  
DRAWN BY: J. VILLALBA  
CHECKED BY: J. VILLALBA

DATE

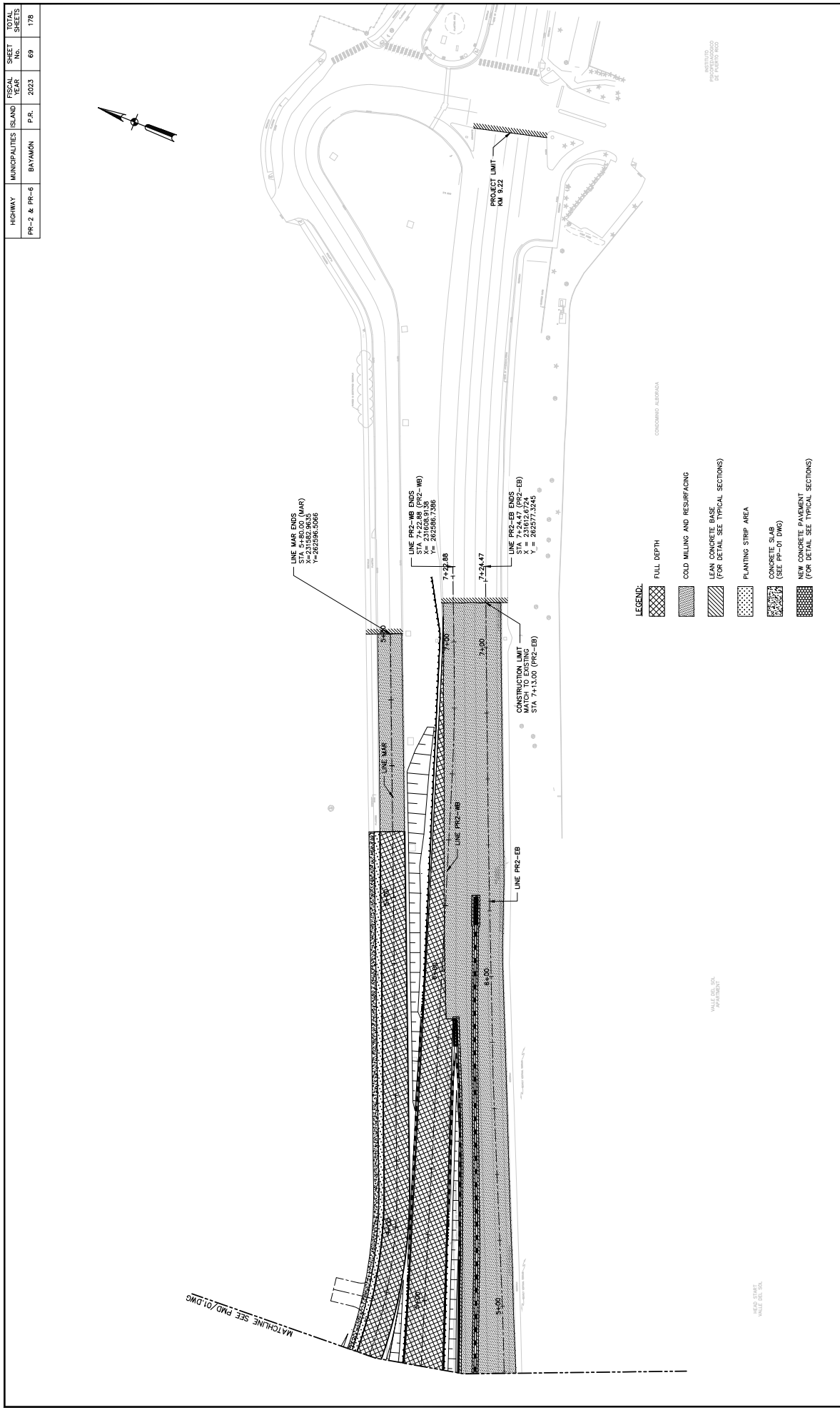
REVISIONS



PAVEMENT PLAN

PMD 02

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	69	178



- LEGEND:**
- FULL DEPTH
  - COLD MILLING AND RESURFACING
  - LEAN CONCRETE BASE (FOR DETAIL SEE TYPICAL SECTIONS)
  - PLANTING STRIP AREA
  - CONCRETE SLAB (SEE PP-01 DWG)
  - NEW CONCRETE PAVEMENT (FOR DETAIL SEE TYPICAL SECTIONS)

WALL (SEE 01-01 PERMIT)

WETLANDS (PER PERMIT 000)

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

**CMA**  
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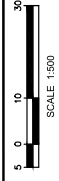
MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

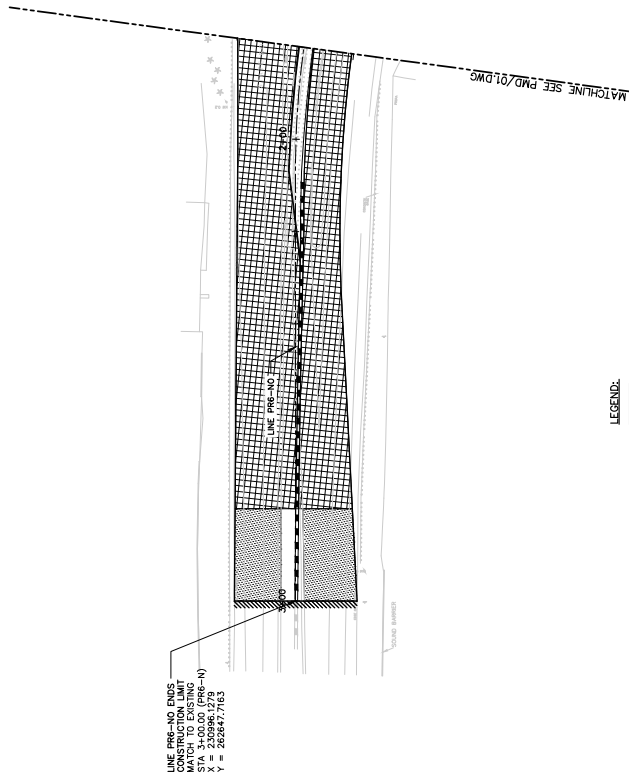
REVISIONS	DATE



PAVEMENT PLAN

PMD 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	70	178



LINE PR-2+NO RISE  
CONSTRUCTION LIMIT  
MATCH TO EXISTING  
LINE PR-6+NO  
X = 230598.12778  
Y = 262647.7163

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
07/27/23					

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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

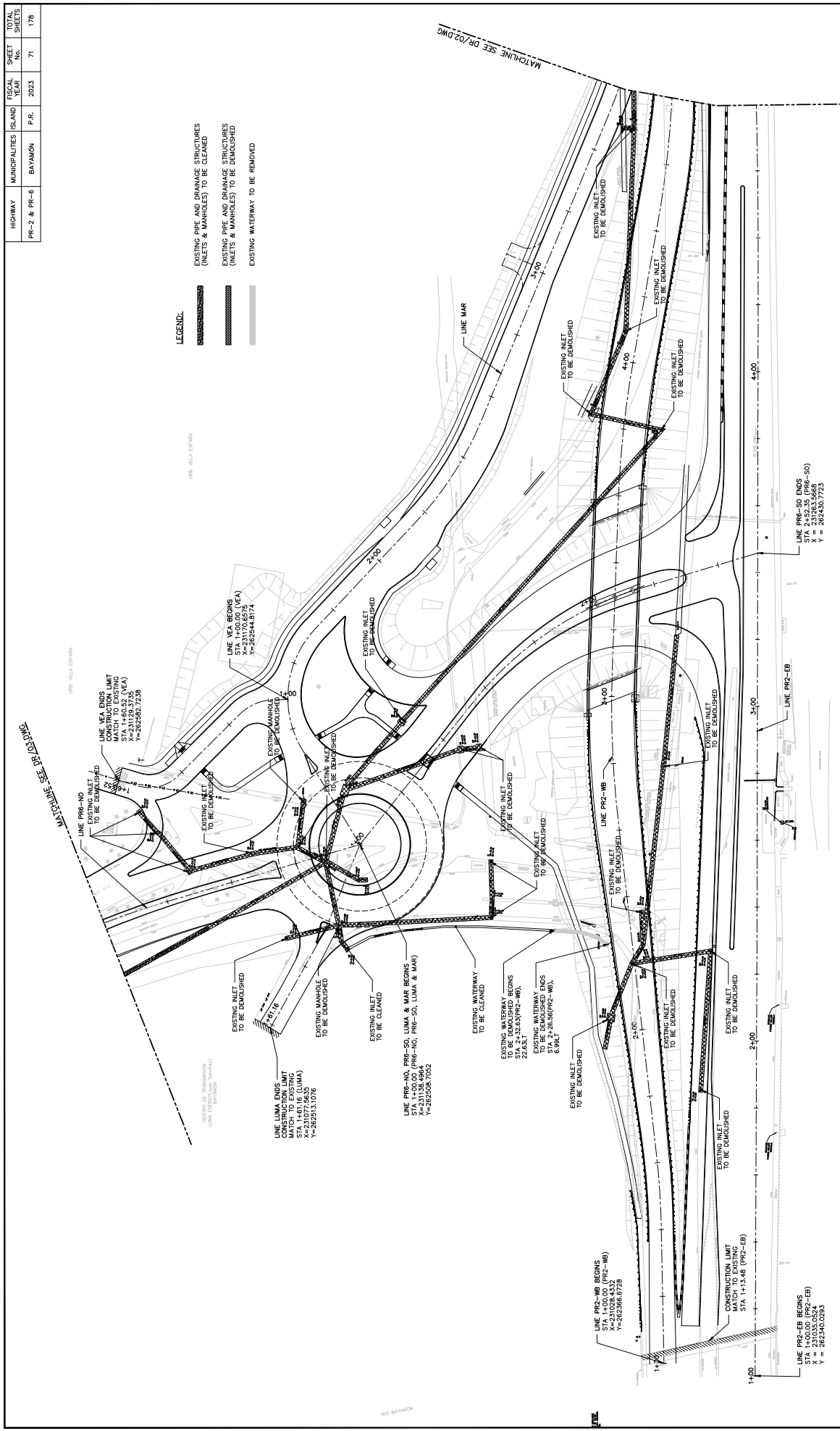
PUERTO RICO

NO.	DATE	REVISIONS

1:500

DRAINAGE DEMOLITION PLAN

DR 01



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	71	178

**LEGEND:**

- EXISTING PIPE AND DRAINAGE STRUCTURES (INLETS & MANHOLES) TO BE CLEANED
- EXISTING PIPE AND DRAINAGE STRUCTURES (INLETS & MANHOLES) TO BE DEMOLISHED
- EXISTING WATERWAY TO BE REMOVED

WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK	FINAL PLANS	07/27/23

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ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

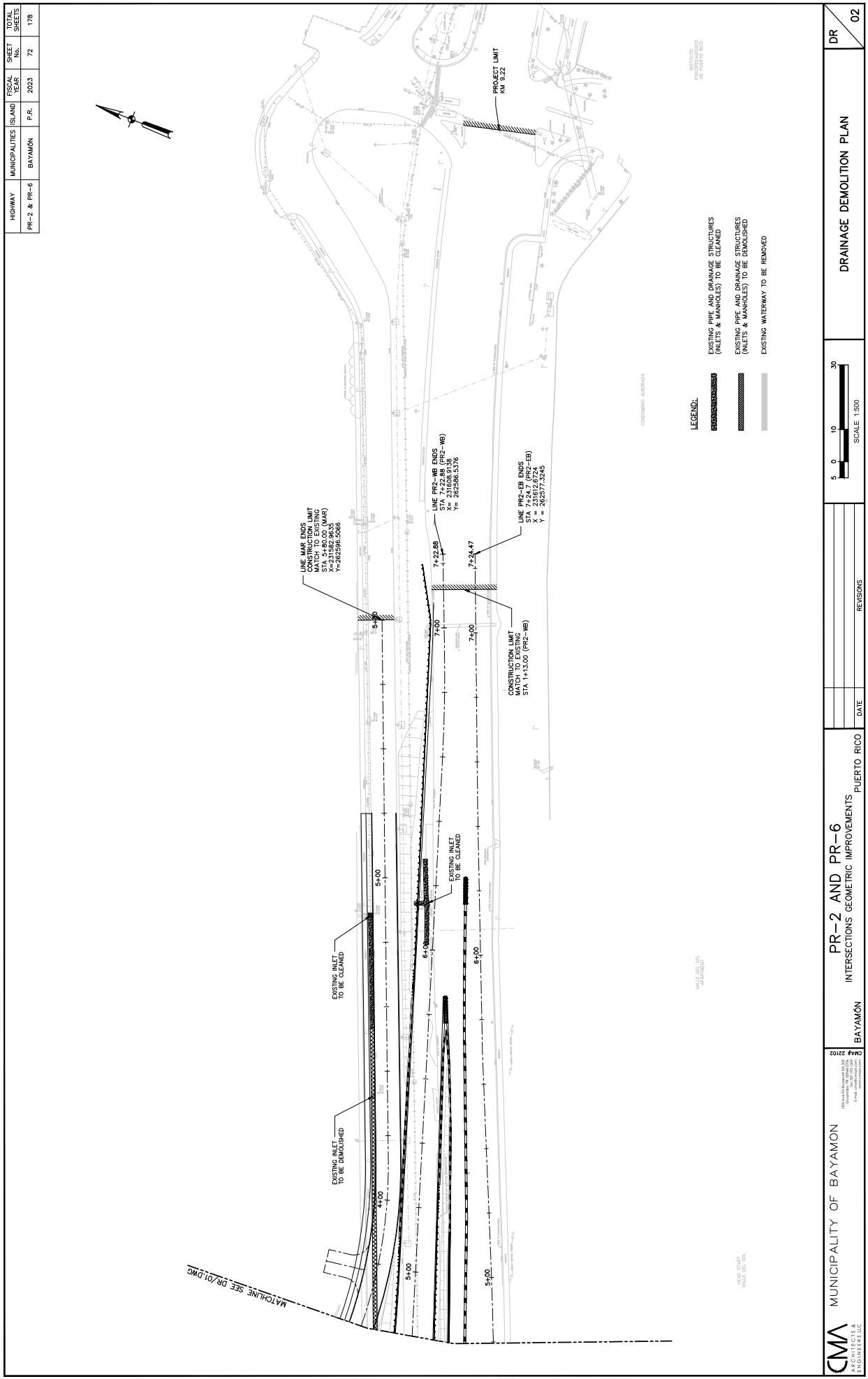
PUERTO RICO

NO.	DATE	REVISIONS

**DRAINAGE DEMOLITION PLAN**

DR 02

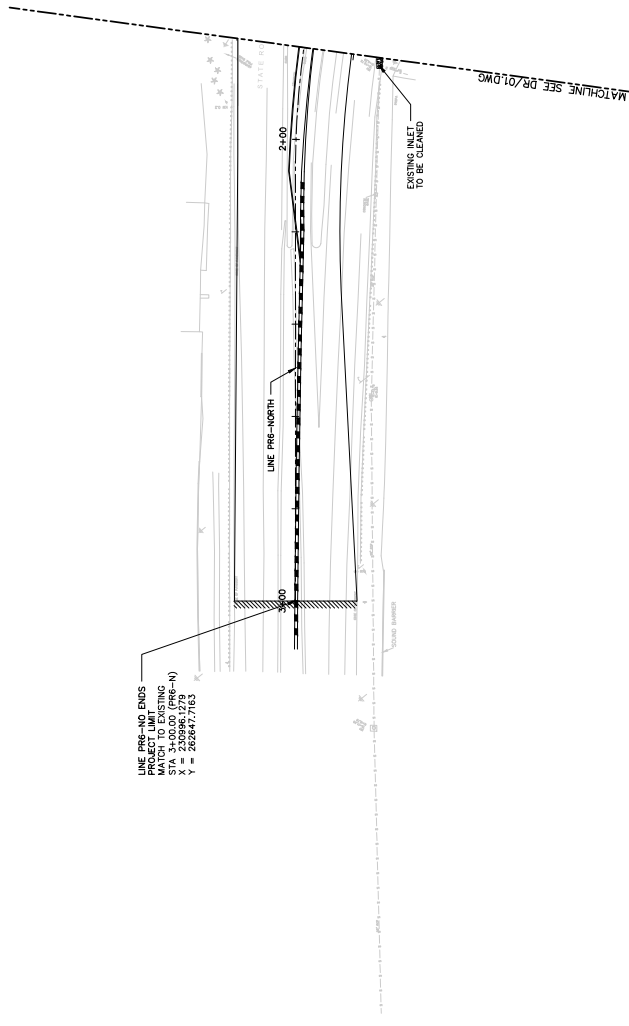
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	72	178



- LEGEND:**
- EXISTING PIPE AND DRAINAGE STRUCTURES (INLETS & MANHOLES) TO BE CLEANED
  - EXISTING PIPE AND DRAINAGE STRUCTURES (INLETS & MANHOLES) TO BE DEMOLISHED
  - EXISTING WATERWAY TO BE REMOVED



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	73	178

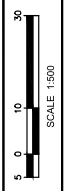


LINE PR-6-NORTH ENDS MATCH TO EXISTING MATCH LINE (PR-6-H) STA. 2+500.00 (PR-6-H) Y = 2628647.7163

- LEGEND:**
- EXISTING PIPE AND DRAINAGE STRUCTURES (INLETS & MANHOLES) TO BE CLEANED
  - EXISTING PIPE AND DRAINAGE STRUCTURES (INLETS & MANHOLES) TO BE DEMOLISHED
  - EXISTING WATERWAY TO BE REMOVED

DR 03

**DRAINAGE DEMOLITION PLAN**



NO.	REVISIONS	DATE

**BAYAMÓN**  
**PR-2 AND PR-6**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

CH# 2218  
REG. OFFICE OF THE BOARD OF PROFESSIONAL ENGINEERS  
 P.O. BOX 10000, SAN JUAN, P.R. 00901-0000  
 TEL: (787) 763-1234 FAX: (787) 763-1235  
 WWW.CMAA-PR.COM

**CMAA**  
 ARCHITECT &  
 ENGINEERS  
 MUNICIPALITY OF BAYAMÓN

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

DATE	BY	DESIGN	DR
		DRAINING	
		CHECK	
		FINAL CHECK	
07/27/23		FINAL PLANS	

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

1:500

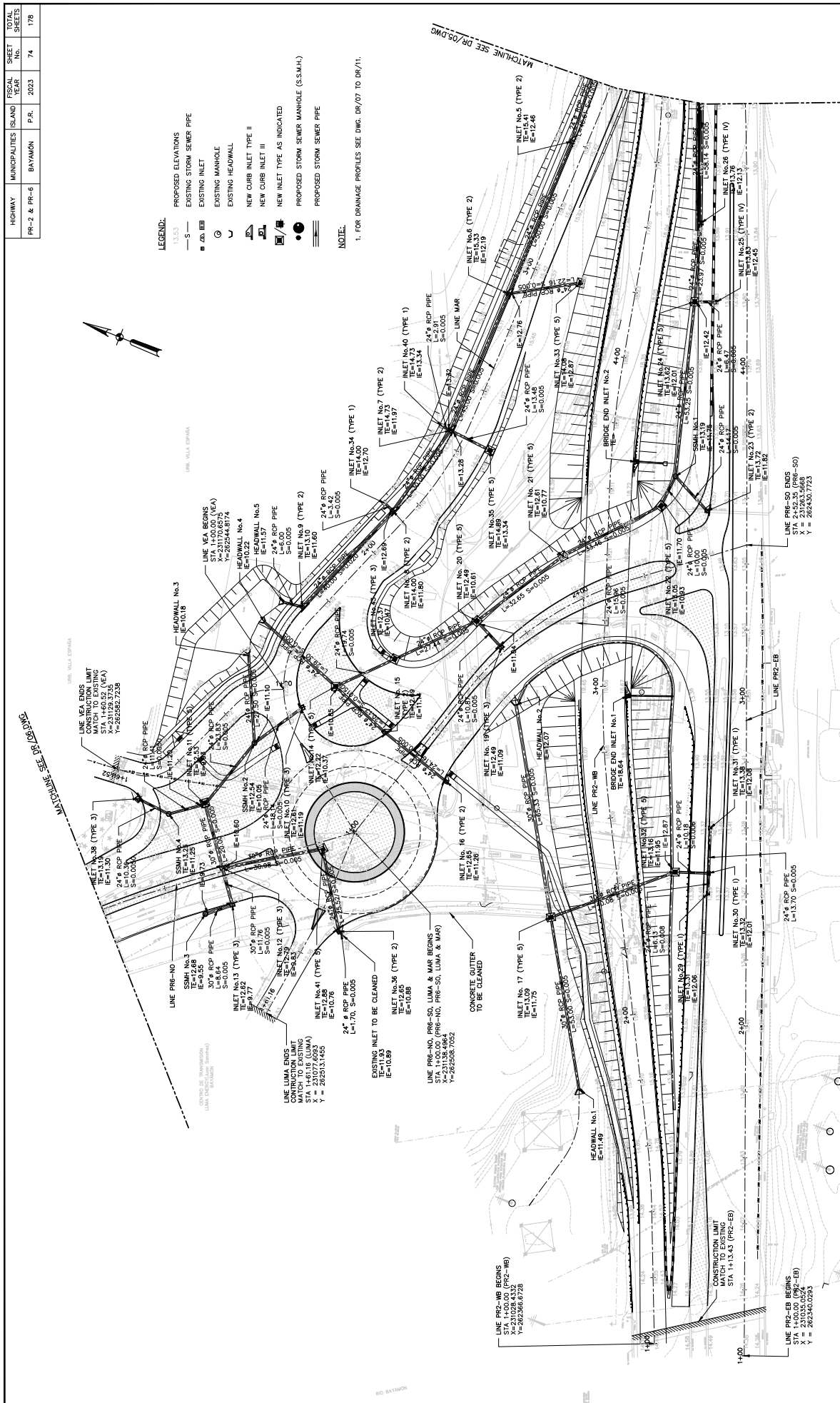
DR 04

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	74	178



- LEGEND.**
- 13.53 PROPOSED ELEVATIONS
  - S — EXISTING STORM SEWER PIPE
  - ▣ EXISTING INLET
  - EXISTING MANHOLE
  - NEW CURB INLET TYPE II
  - NEW CURB INLET TYPE III
  - NEW INLET TYPE AS INDICATED
  - PROPOSED STORM SEWER MANHOLE (G.S.M.H.)
  - — — PROPOSED STORM SEWER PIPE

**NOTE.**  
1. FOR DRAINAGE PROFILES SEE DWG. DR/07 TO DR/11.



DATE: September 26, 2023 8:26 AM USER: Jose O. Vazquez  
FILE: C:\MWORKS\PROJECT\CHECK\DR\PR-2.DWG

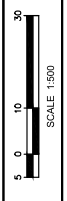
DATE	BY	WORK
07/27/23		
CHECK	FINAL PLANS	
DESIGN		
DRAWING		
REVISIONS		

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ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

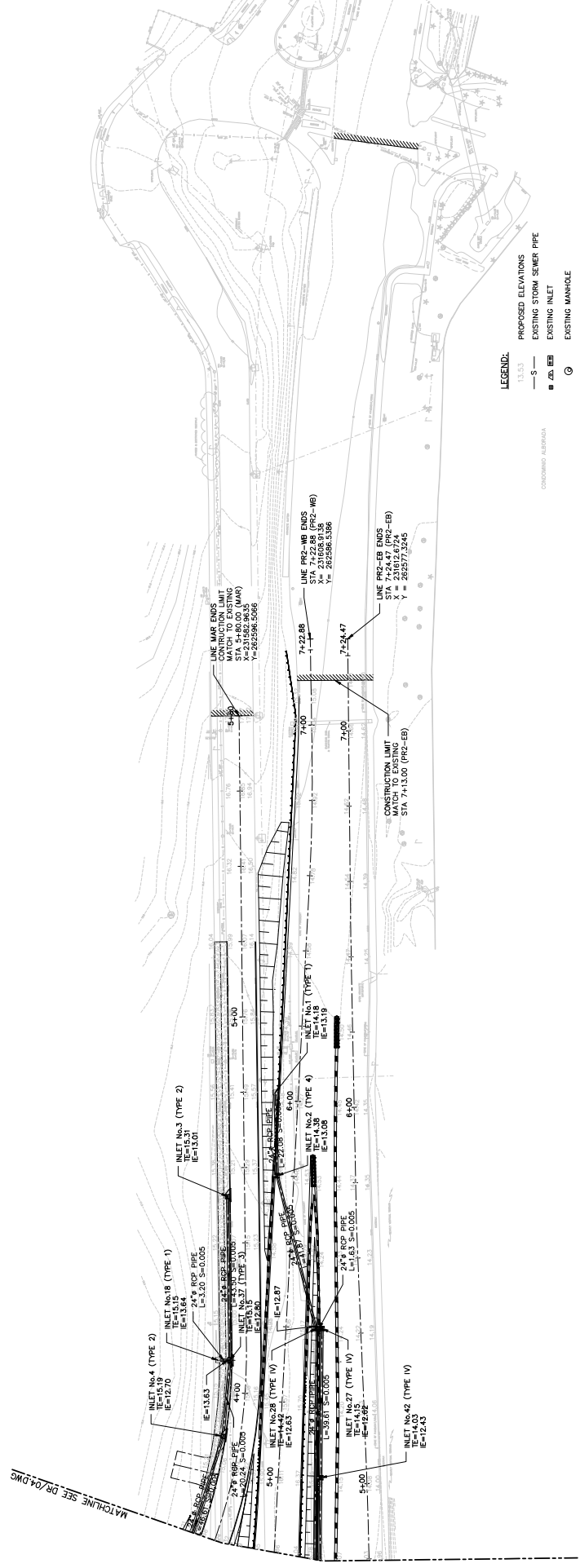
NO.	DATE	REVISIONS



**DRAINAGE PLAN**

DR 05

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	75	178

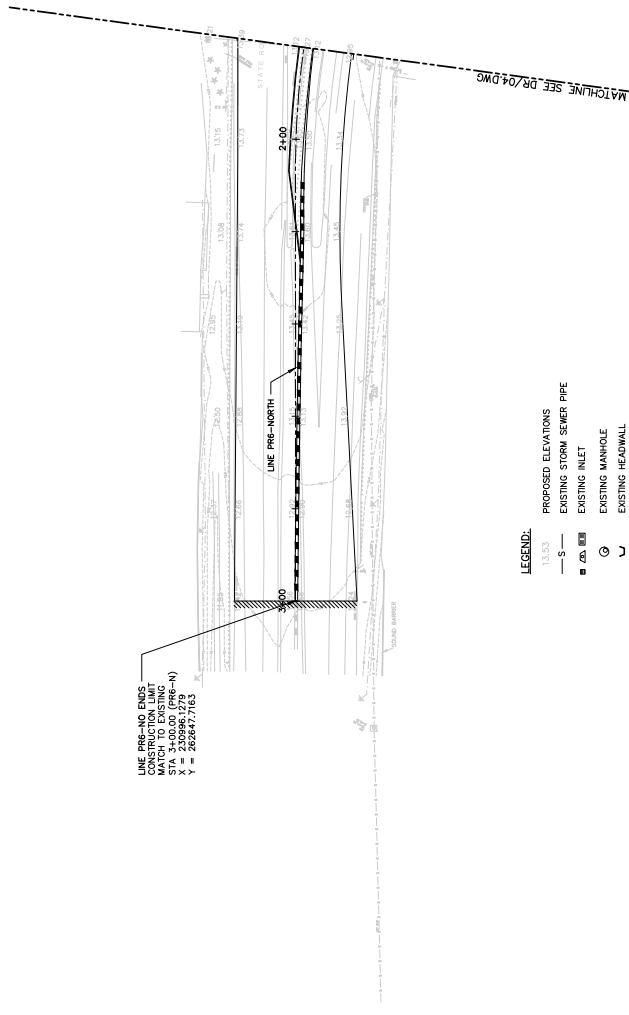


- LEGEND:**
- S — PROPOSED ELEVATIONS
  - S — EXISTING STORM SEWER PIPE
  - 24" RSP EXISTING MANHOLE
  - EXISTING MANHOLE
  - EXISTING HEADWALL
  - NEW CURB INLET TYPE II
  - NEW CURB INLET III
  - NEW INLET TYPE AS INDICATED
  - PROPOSED STORM SEWER MANHOLE (S.S.M.H.)
  - PROPOSED STORM SEWER PIPE

**NOTE:**  
1. FOR DRAINAGE PROFILES SEE DWG. DR/07 TO DR/11.



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	76	178



- LEGEND:**
- 13.83 PROPOSED ELEVATIONS
  - S — EXISTING STORM SEWER PIPE
  - ▣ EXISTING INLET
  - EXISTING MANHOLE
  - EXISTING HEADWALL
  - ▤ NEW CURB INLET TYPE II
  - ▥ NEW CURB INLET III
  - ▧ NEW INLET TYPE AS INDICATED
  - PROPOSED STORM SEWER MANHOLE (S.S.M.H.)
  - ▬ PROPOSED STORM SEWER PIPE

**NOTE:**  
 1. FOR DRAINAGE PROFILES SEE DWS. DR/07 TO DR/11.

DR 06

**DRAINAGE PLAN**



NO.	REVISIONS	DATE

BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

CH# 2218

MUNICIPALITY OF BAYAMÓN

**CMA** ARCHITECT & ENGINEERS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	FINAL PLANS	07/27/23
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**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISIONS	DATE

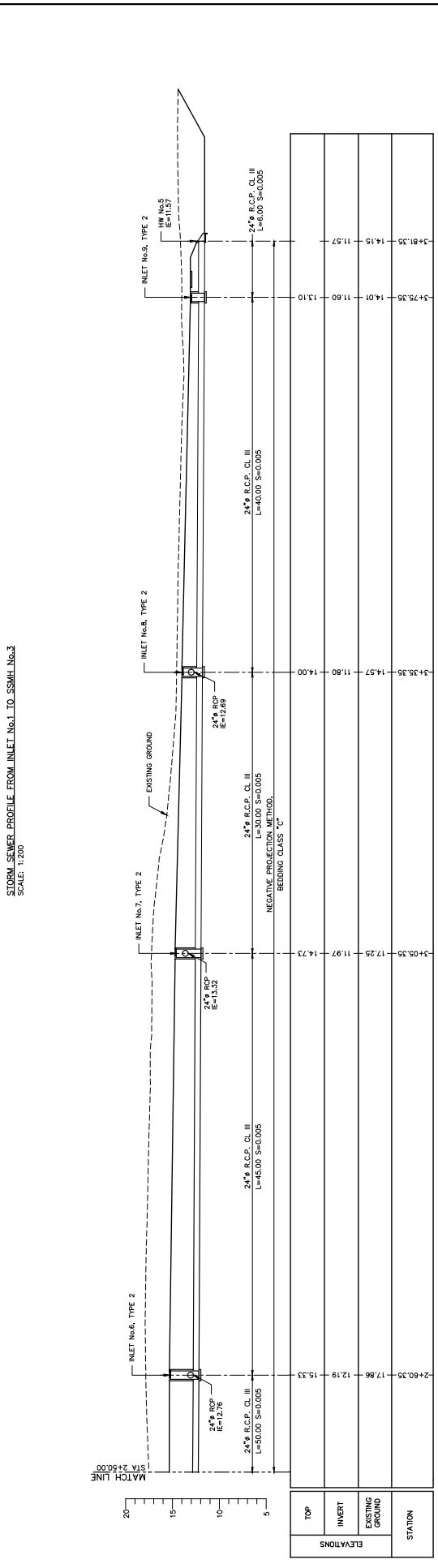
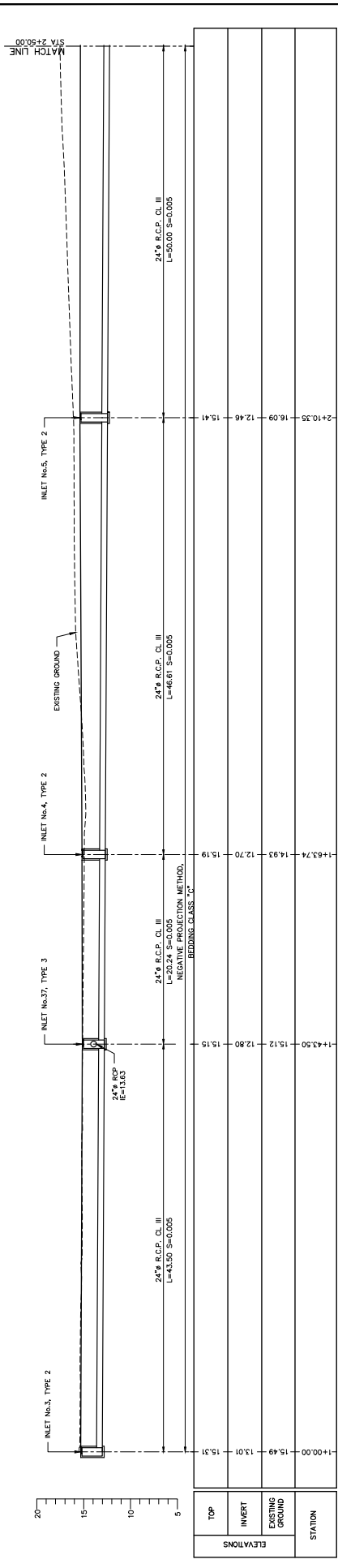
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DRAINAGE PROFILE

DR 07

FILE: C:\MWORKS\PROJECTS\2102\CHECKOUT\PR-07.DWG DATE: September 26, 2023 8:31 AM USER: Jose O. Vazquez

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	77	178



DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	FINAL PLANS	07/27/23
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MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

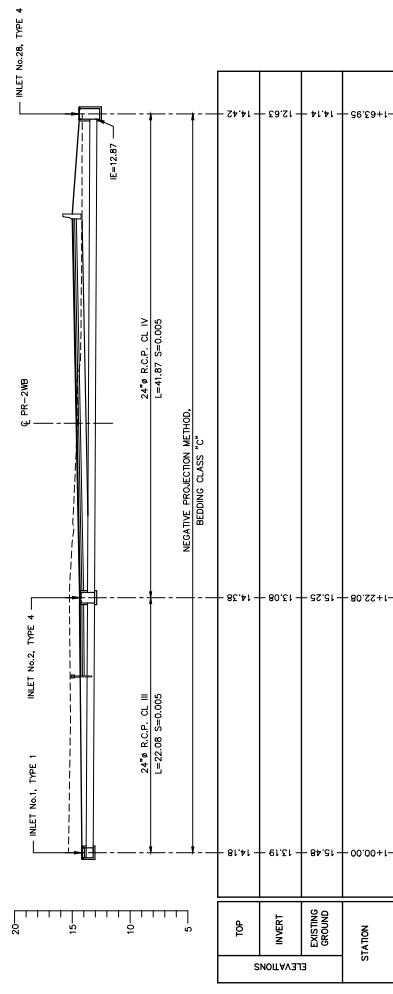
DATE	REVISIONS

SCALE AS SHOW

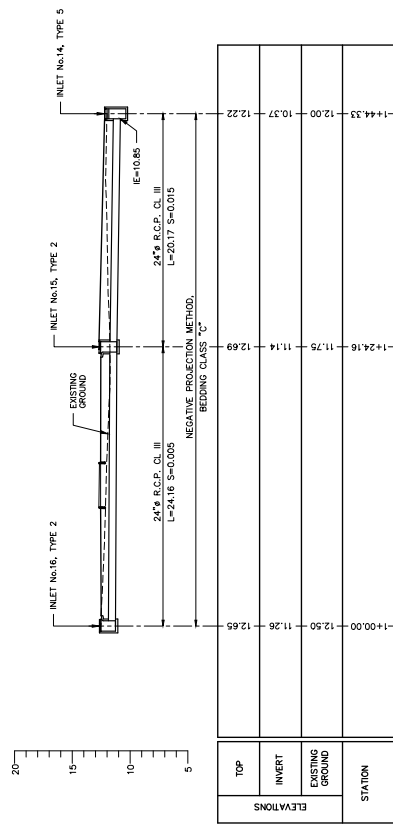
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DR 08

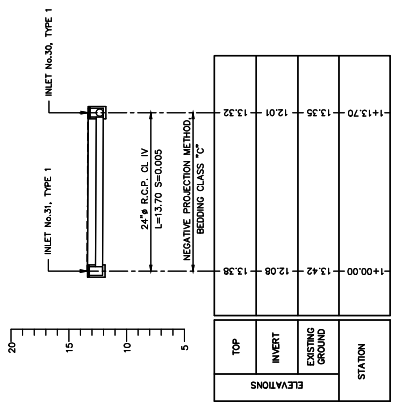
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PR-2 & PR-6	BAYAMON	P.R.	2023	78	178



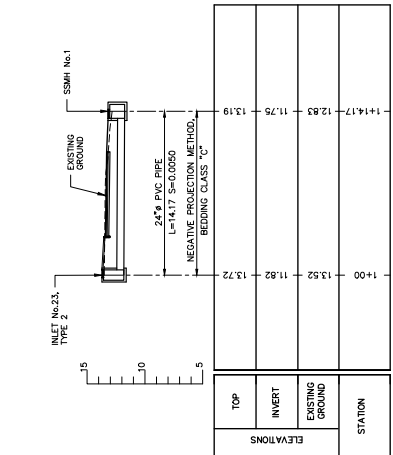
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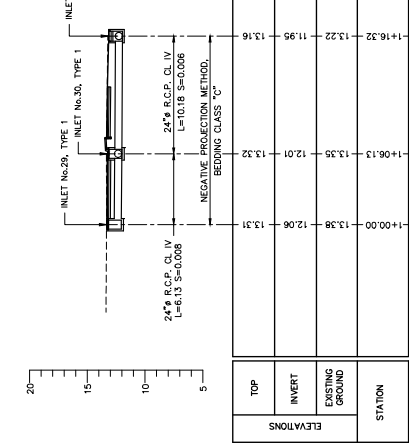
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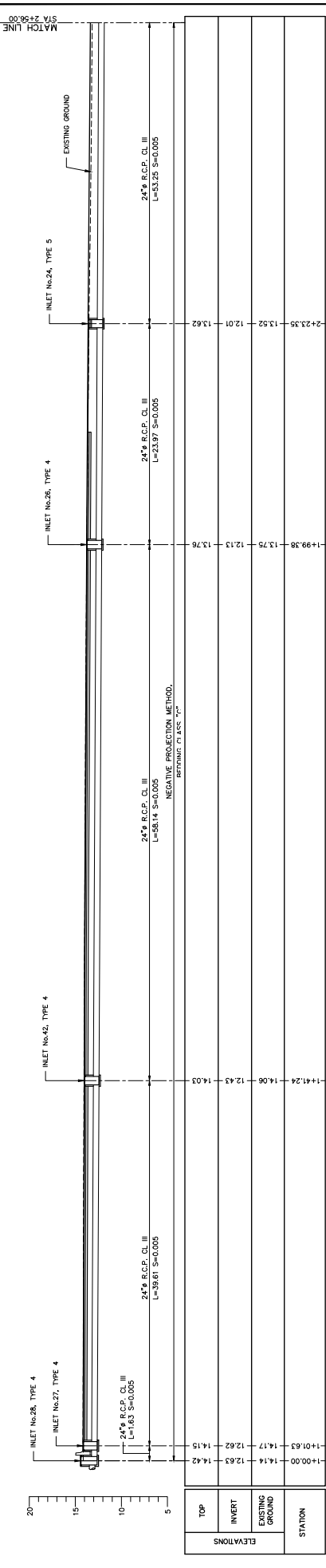
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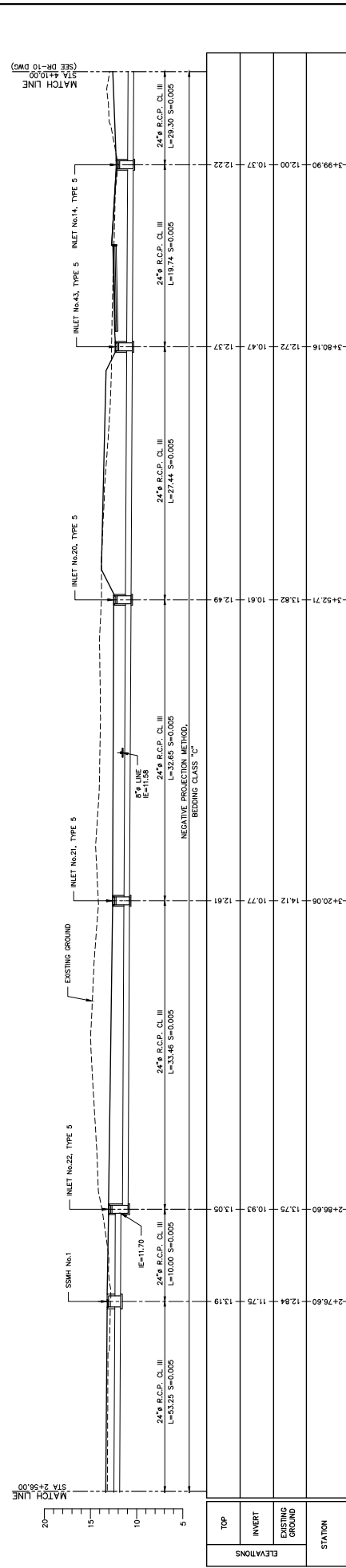
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SCALE: 1:200

DATE	07/27/23
BY	
WORK	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	
FINAL PLANS	

MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	2023	79	178
PR-2 & PR-6	BAYAMÓN	P.R.	79	178



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SCALE: 1:200

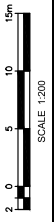


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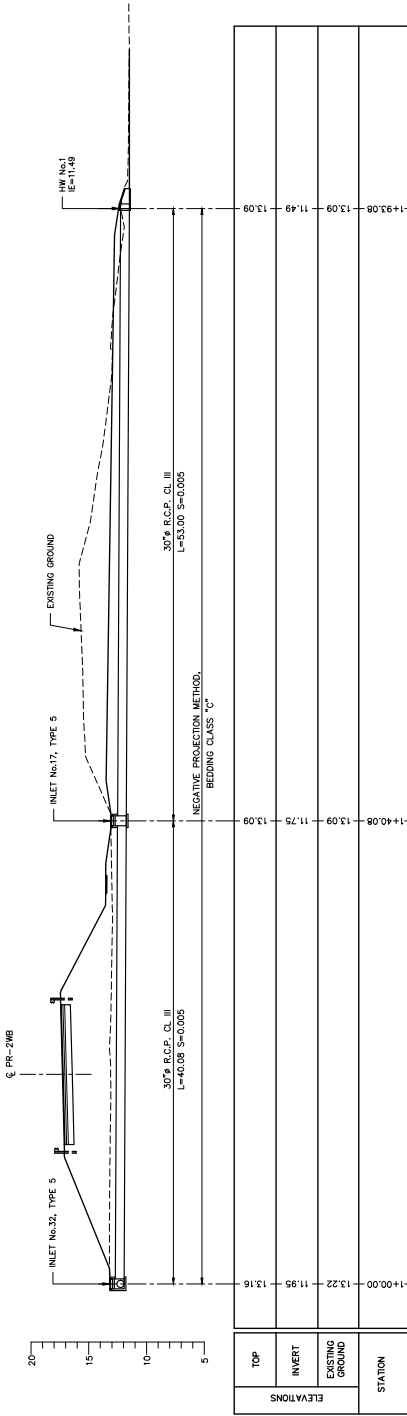
DATE	
BY	
WORK	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	
FINAL PLANS	

	MUNICIPALITY OF BAYAMÓN	PR-2 AND PR-6	SCALE AS SHOW	DR	09
	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	REVISIONS		
	BAYAMÓN				

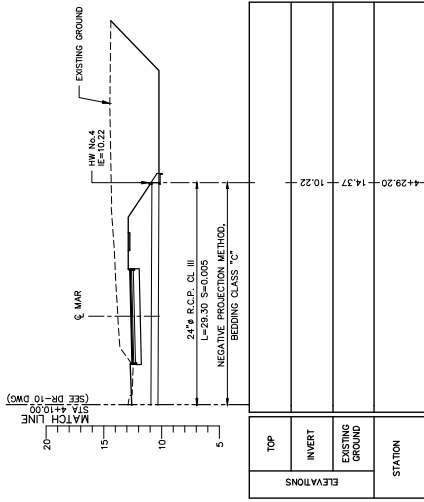
DATE	BY	DESIGN	DRAWING	CHECK	FINAL PLANS	07/27/23
WORK						



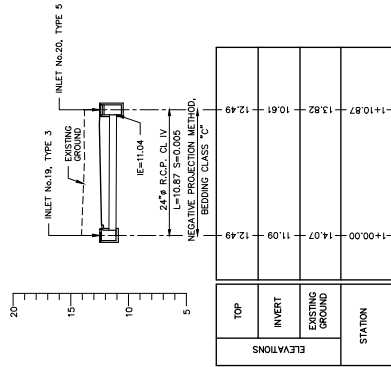
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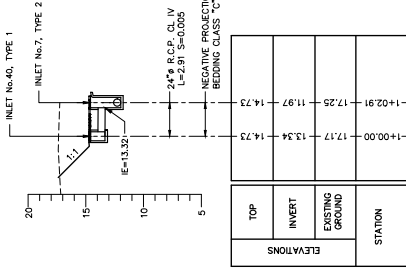
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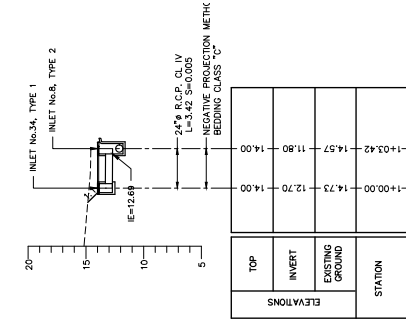
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STORM SEWER PROFILE FROM INLET No.40 TO INLET No.7  
SCALE: 1:200



STORM SEWER PROFILE FROM INLET No.34 TO INLET No.8  
SCALE: 1:200



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	80	178

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	FINAL PLANS	07/27/23
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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

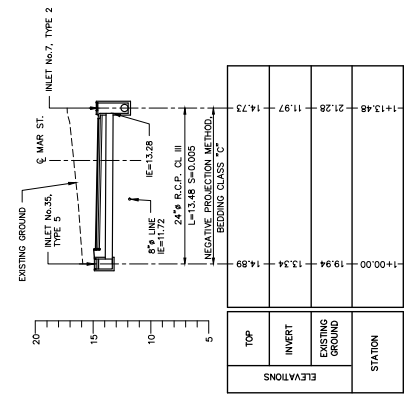
REVISIONS

SCALE AS SHOW

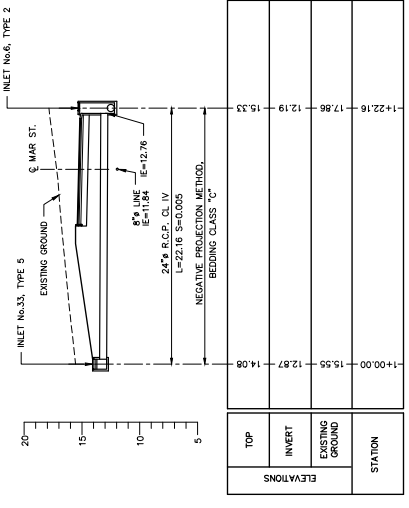
DRAINAGE PROFILE

DR 11

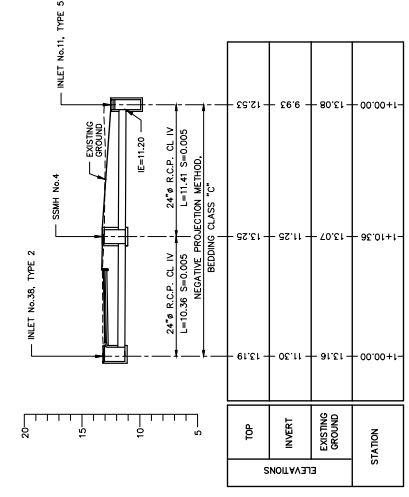
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	81	178



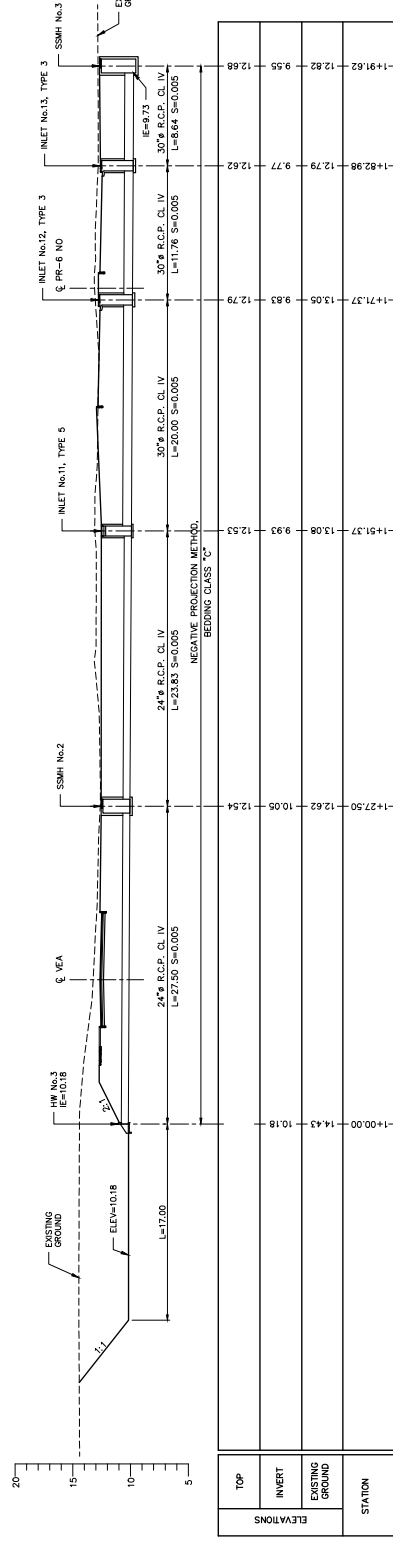
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SCALE: 1:200



STORM SEWER PROFILE FROM INLET NO.33 TO INLET NO.6  
SCALE: 1:200



STORM SEWER PROFILE FROM INLET NO.38 TO INLET NO.11  
SCALE: 1:200



STORM SEWER PROFILE FROM I.H.W. No.3 TO SSMH No.3  
SCALE: 1:200

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	FINAL PLANS	07/27/23
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**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

DATE

REVISIONS

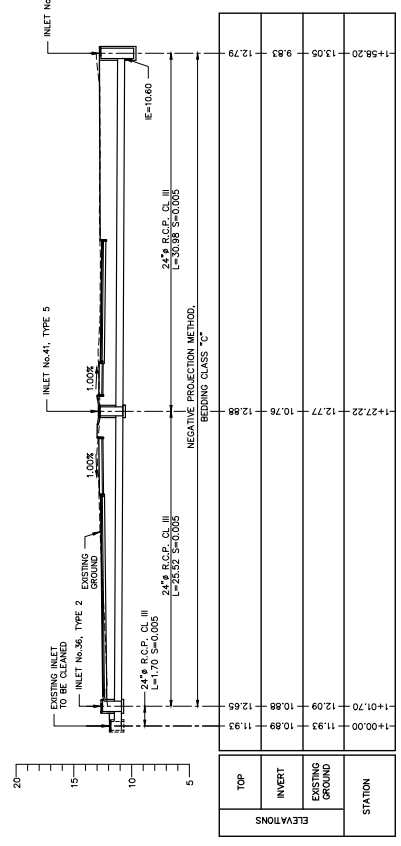
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DRAINAGE PROFILE

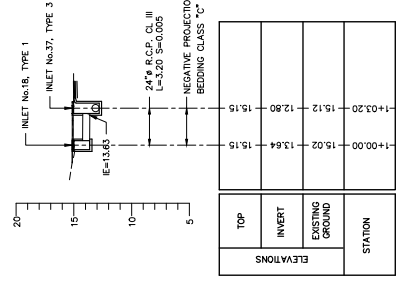
DR

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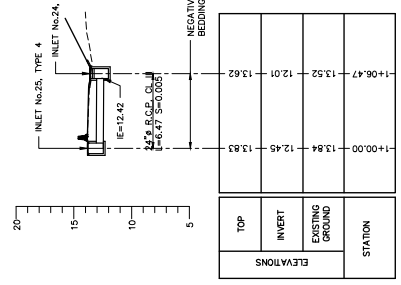
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	82	178



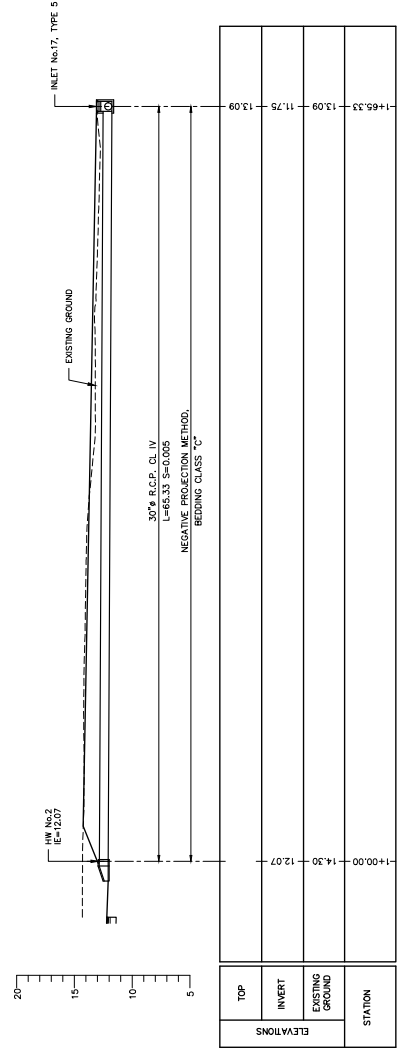
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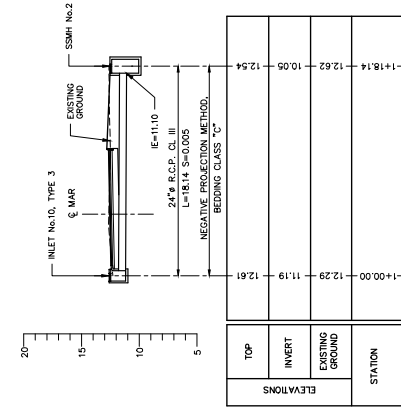
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STORM SEWER PROFILE FROM INLET No.25 TO INLET No.24  
SCALE: 1:200



STORM SEWER PROFILE FROM HW No.2 TO INLET No.17  
SCALE: 1:200



STORM SEWER PROFILE FROM INLET No.10 TO SSMH No.2  
SCALE: 1:200

**GENERAL NOTES:**

- ALL RELOCATION WORK IS INCLUDED IN THIS CONTRACT.
- THE LOCATION OF EXISTING WATER LINES IN THIS PLAN IS APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EXISTING WATER LINES BY CONTACTING THE NEAREST P.R.A.S.A. OFFICE TO VERIFY THE EXACT LOCATION PRIOR TO BEGINNING OF WORK AND BEFORE RELOCATION (IF NECESSARY) BEGINS.
- P.R.A.S.A. STANDARD SPECIFICATIONS WILL PREVAIL FOR FACILITIES RELOCATION IN THIS PROJECT.
- THE CONTRACTOR SHALL OBTAIN P.R.A.S.A.'S APPROVAL FOR ALL PROPOSED RELOCATIONS PRIOR TO BEGINNING OF WORK.
- PROPOSED WATER SERVICE LINES SHALL BE 1/2" Ø PVC DR-14 TO MEET ANNA C-900. DIAMETER AS INDICATED ON PLANS.
- ALL POTABLE WATER SERVICE CONNECTION SHALL BE 1/2" Ø AND BE INSTALLED WITH CLAMP AND CORROSION COOK FOR WELDED JOINTS. ALL CONNECTIONS SHALL BE PERFORMED WITH WELDED PIECES ARE NOT PERMITTED.
- ALL DUCTILE IRON PIPES AND FITTINGS DIMENSIONS SHALL BE AS SHOWN ON PLANS. DIAMETER AS INDICATED ON PLANS. (A.W.W.C. 151)
- THE EXISTING WATER METERS SHALL BE MAINTAINED IN SERVICE AT ALL TIMES. PROVISIONAL RELOCATION SHALL BE MADE FOR THE METER BUT NO RELOCATION SHALL BE MADE FOR THE METER UNLESS THE CONTRACTOR COVERS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR COVERED UNDER THE PAY ITEM FOR SERVICE CONNECTION.
- THE CONTRACTOR SHALL TAKE EXTREME CARE SO AS NOT TO DISRUPT THE WATER SERVICE DURING THE CONSTRUCTION OF THE PROJECT.
- WATER SERVICE SHALL BE MAINTAINED THROUGHOUT THE WATER SYSTEM FOR SPRINKLING OR CONTROLLING DUST DURING CONSTRUCTION.
- ALL POTABLE WATER PIPES SHALL BE INSTALLED AT A MINIMUM OF 18" FROM THE FINISH GRADE. ALL WATER PIPES SHALL BE INSTALLED AT A MINIMUM ELEVATION AND 1' AP FROM THE CURB.
- THE CONTRACTOR SHALL PERFORM AN HYDRAULIC PRESSURE TEST SYSTEM FOR ALL PIPES INSTALLED. PRESSURE TEST MUST BE PERFORMED AT A MINIMUM OF 1.5 TIMES THE OPERATING PRESSURE TO BE USED TO PERFORM THE TEST SHALL BE PROVIDED BY THE CONTRACTOR OR PLUMBER OF THE PROJECT. THE MANOMETER SCALE SHALL NOT EXCEED 200 PSI FOR PRESSURES OF 150 PSI.
- INTERCONNECTION TO EXISTING WATER SERVICE SHALL BE MADE IN ADVANCE BY THE CONTRACTOR OR THE HIGHWAY AUTHORITY AFTER WRITTEN AUTHORIZATION IS GRANTED.
- A DETECTABLE WARNING RIBBON SHALL BE PLACED OVER THE PVC PIPING AT ALL TIMES. THE RIBBON SHALL BE THE SAME COLOR AS THE LINE THE ONE MANUFACTURED BY REEF INDUSTRIES, INC. OR APPROVED EQUAL. THE RIBBON SHALL BE 1/2" WIDE AND 1/2" HIGH. THE RIBBON SHALL BE PLACED AT THE TOP OF THE FINISH GRADE.
- WHERE THERE IS NO OTHER INDICATIONS, VALVES SHALL BE PROTECTED AS SHOWN BY DETAIL 1 ON DWG. UTW-02.
- AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE SPECIFICATION 636, ALL PROPOSED FIRE HYDRANTS SHALL BE WITH AN HYDRANT LOCK ACCEPTED AND APPROVED BY PRASA (GUARDIAN HYDRANT LOCK OR APPROVED EQUAL).
- ALL EXISTING MANHOLES & REMAINING VALVES SHALL BE RE-SET TO FINAL GRADE ELEVATIONS, IF NECESSARY.
- THRUST BLOCKS SHALL BE PROVIDED TO ALL FITTINGS, ELBOWS, TEE, WYES, ETC.
- ALL METER BOXES SHALL BE CONSTRUCTED ON THE SIDEWALK OR PLANTING BED. THE METER BOX SHALL BE 18" HIGH FROM THE FINISH GRADE WITH ITS LONGITUDINAL AXIS PERPENDICULAR TO THE SIDEWALK AXIS. IN THE CASE OF A CURB, THE METER BOX SHALL BE 18" HIGH FROM THE FINISH GRADE. THE METER BOX SHALL BE CONSTRUCTED NEAR THE FRONT OF THE METER BOX SHALL BE INSTALLED AT A REASONABLE AND SAFE DISTANCE FROM ALL ELECTRICAL EQUIPMENT.
- THE RELOCATION OF EXISTING METER BOX SHALL BE PERFORMED BY P.R.A.S.A. PERSONNEL.
- THE PROJECT SHALL BE PAVED WHEN THE FINAL VALIDATION IS PERFORMED IN ORDER TO FINALLY ACCEPT THE PROJECT.
- ALL CONNECTIONS SHALL BE PERFORMED BY A MASTER PLUMBER OR UNDER HIS SUPERVISION. THE CONTRACTOR SHALL OBTAIN THE FINAL ENDORSEMENT OF THE CONNECTION PRIOR TO THE FINAL ENDORSEMENT OF THE PROJECT.
- AN EXPLORATORY EXCAVATION SHALL BE PERFORMED AS REQUESTED BY P.R.A.S.A. INSPECTOR TO VERIFY THE DEPTH AND PIPING MATERIALS. THE INSPECTION SHALL BE REQUESTED BEFORE THE ROADS ARE PAVED.
- ALL CONNECTION PIPES LIKE "TEE", VALVES, PLUGS, ETC. SHALL BE OF CAST IRON.
- WHEN THE HYDRAULIC CONSTRUCTION WORKS BEGINS.
- THE CONTRACTOR SHALL NOTIFY IN WRITER TO P.R.A.S.A. OFFICE PRIOR TO BEGINNING OF WORK.
- P.R.A.S.A. RESERVES THE RIGHT TO REQUIRE ANY RELEVANT CHANGES THAT ARE NOT INCLUDED IN THIS PROJECT DUE TO OMISSION OR INVOLUNTARY ERROR AND AT HIS JUDGMENT, IS NECESSARY FOR THE GOOD FUNCTIONING OF THE WATER SYSTEM.
- THE WATER SERVICE PIPE MUST BE INSTALLED ON THE OTHER SIDE OF THE ELECTRICAL, TELEPHONE OR CABLE PIPING.
- ANY CHANGE THAT IS NECESSARY TO WHAT IS INDICATED IN THIS PLAN OR IN THE SPECIFICATIONS SHALL BE APPROVED BY P.R.A.S.A. OFFICE FOR APPROVAL PRIOR TO THE CONSTRUCTION AND/OR DEVELOPMENT.

ITEM No.	DESCRIPTION	QUANTITY	UNITS	SPEC.
1	8" Ø PVC PIPE CLASS DR-14	227	LINM	636
2	8" Ø GATE VALVE	2	EACH	636
3	TRENCH EXCAVATION	228	CUM	205

**LEGEND:**

- NEW PIPE LINE TO BE INSTALLED
- EXISTING PIPE LINE TO REMAIN
- EXISTING PIPE LINE TO BE REMOVED
- EXIST. VALVE TO BE ABANDONED
- NEW WATER METER
- EXISTING FIRE HYDRANT

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	83	178

DATE	BY	DESIGN	REVISIONS
07/27/23		CHECK	
		FINAL CHECK	



MUNICIPALITY OF BAYAMÓN

BAYAMÓN

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

NOT TO SCALE

P.R.A.S.A. UTILITIES  
LEGEND AND NOTES

AAA-RM-20-11-0015	UTW
OGPe: 2020-307303-SRI-066724	

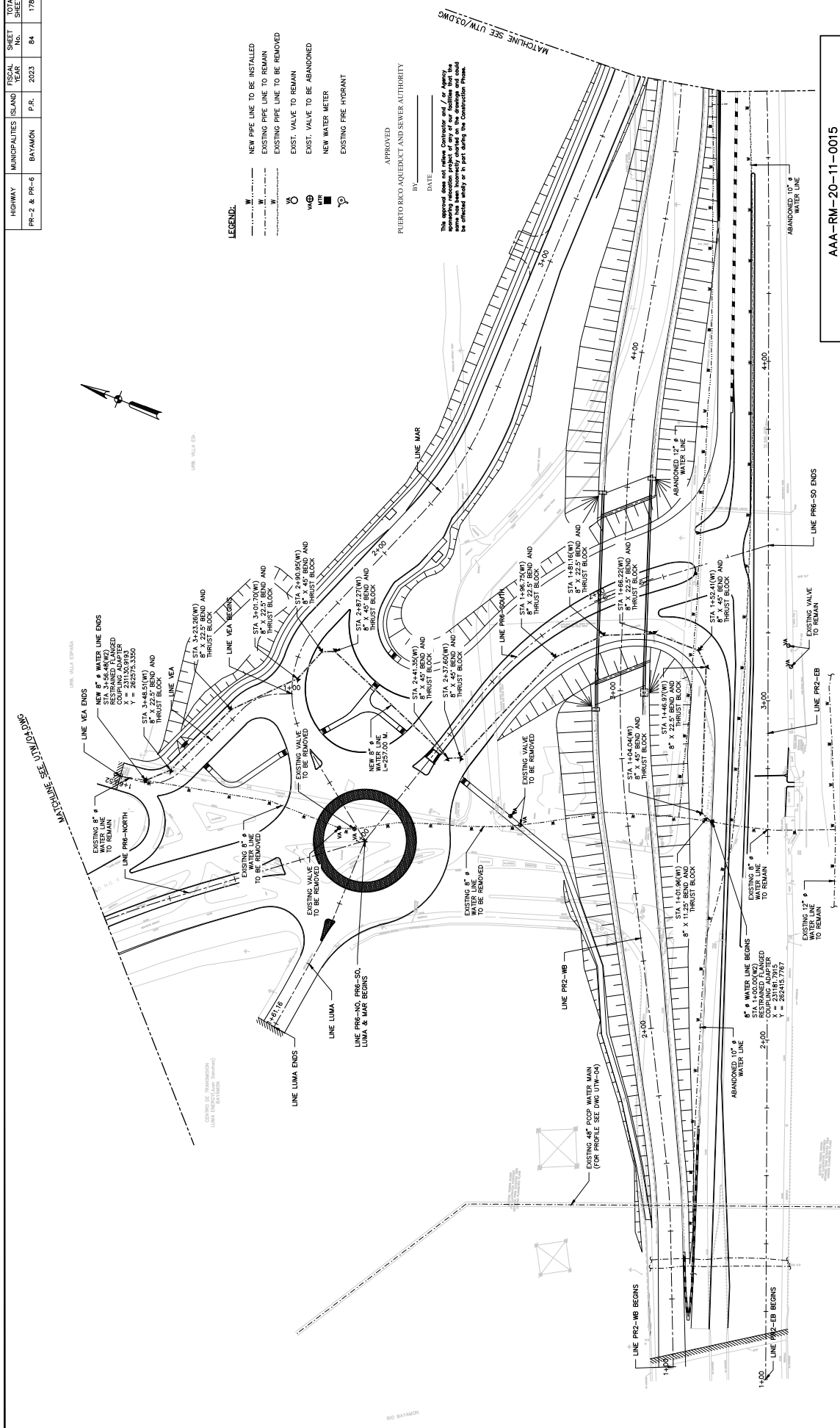
APPROVED  
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

DATE: \_\_\_\_\_

The approved date is the Contractor's and / or Agency's responsibility. The Contractor shall be responsible for the accuracy of the information provided and for the attached liability or in part during the Construction Phase.



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	84	178



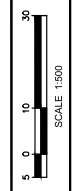
- LEGEND:**
- NEW PIPE LINE TO BE INSTALLED
  - EXISTING PIPE LINE TO REMAIN
  - EXISTING PIPE LINE TO BE REMOVED
  - EXIST. VALVE TO REMAIN
  - EXIST. VALVE TO BE ABANDONED
  - NEW WATER METER
  - EXISTING FIRE HYDRANT

APPROVED  
 PUERTO RICO ARCHITECT AND SEWER AUTHORITY  
 BY \_\_\_\_\_  
 DATE \_\_\_\_\_

This approval does not release Contractor and / or Agency, sponsoring reconstruction project of any of our facilities but the approval is subject to the terms and conditions of the contract which shall be attached solely or in part during the Construction Phase.

UTW 02

AAA-RM-20-11-0015  
 OGP: 2020-307303-SRI-066724  
 P.R.A.S.A. UTILITIES PLAN



NO.	DATE	REVISIONS

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

BAYAMÓN

MUNICIPALITY OF BAYAMÓN



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	07/27/23	

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

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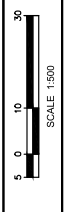
**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

REVISIONS	DATE

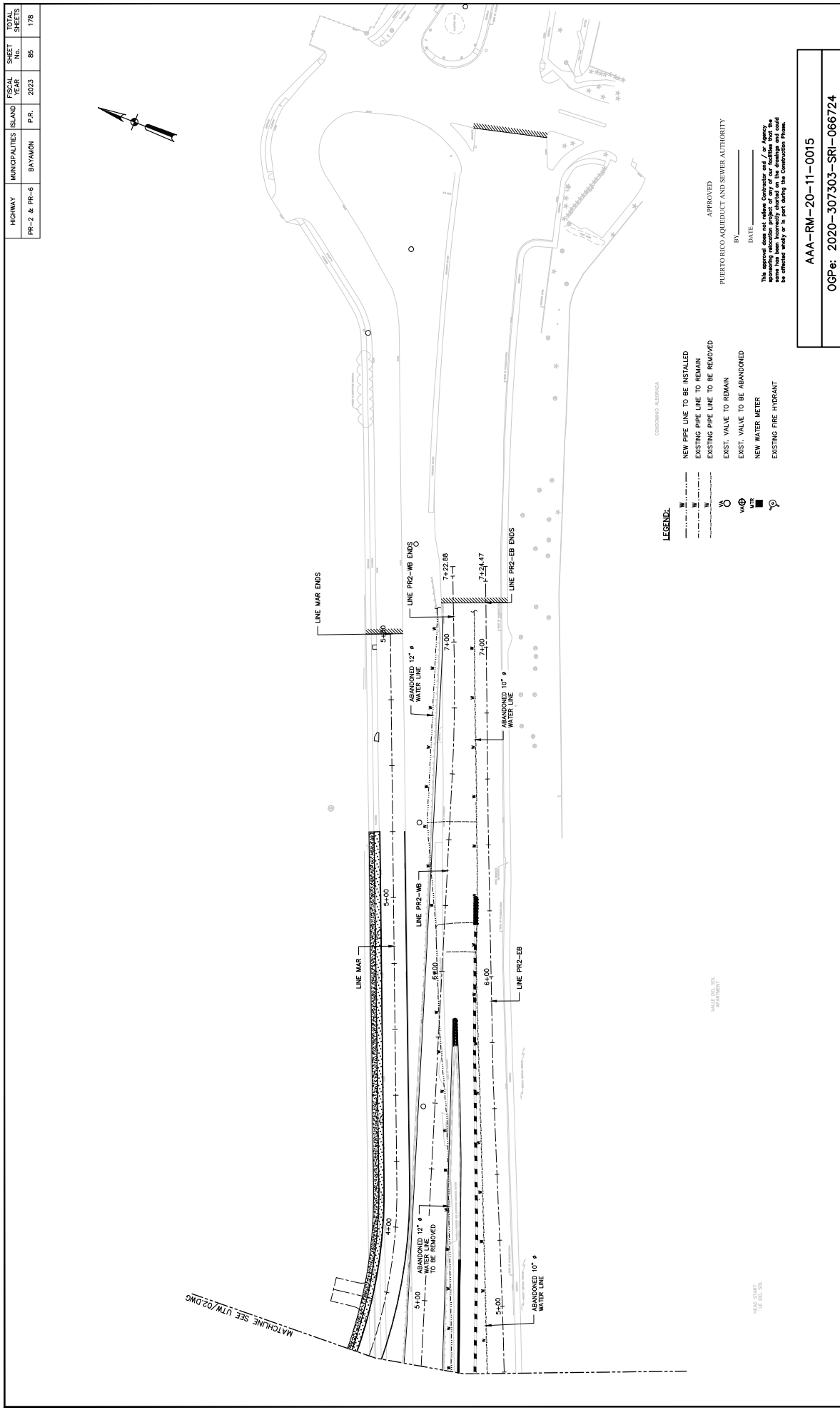
PUERTO RICO



AAA-RM-20-11-0015  
OCPe: 2020-307303-SRI-066724  
P.R.A.S.A. UTILITIES PLAN

UTW 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	86	178

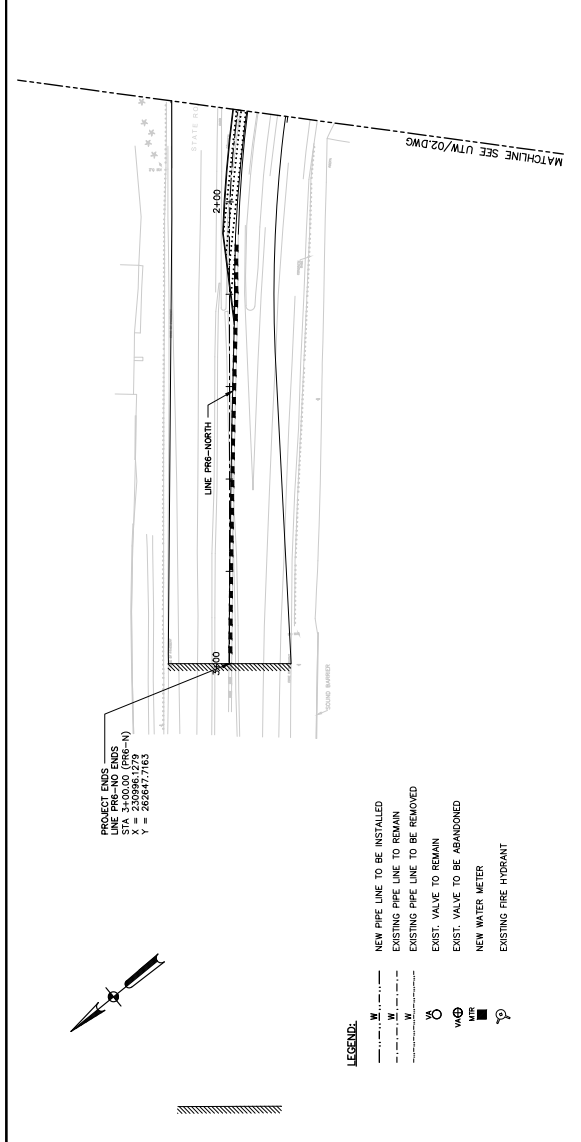
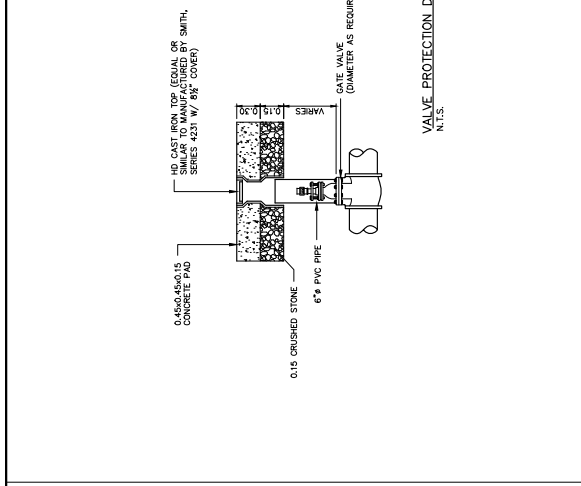


- LEGEND:**
- W NEW PIPE LINE TO BE INSTALLED
  - EXISTING PIPE LINE TO REMAIN
  - EXIST. VALVE TO BE REMOVED
  - EXIST. VALVE TO REMAIN
  - NEW WATER METER
  - EXISTING FIRE HYDRANT

APPROVED  
BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

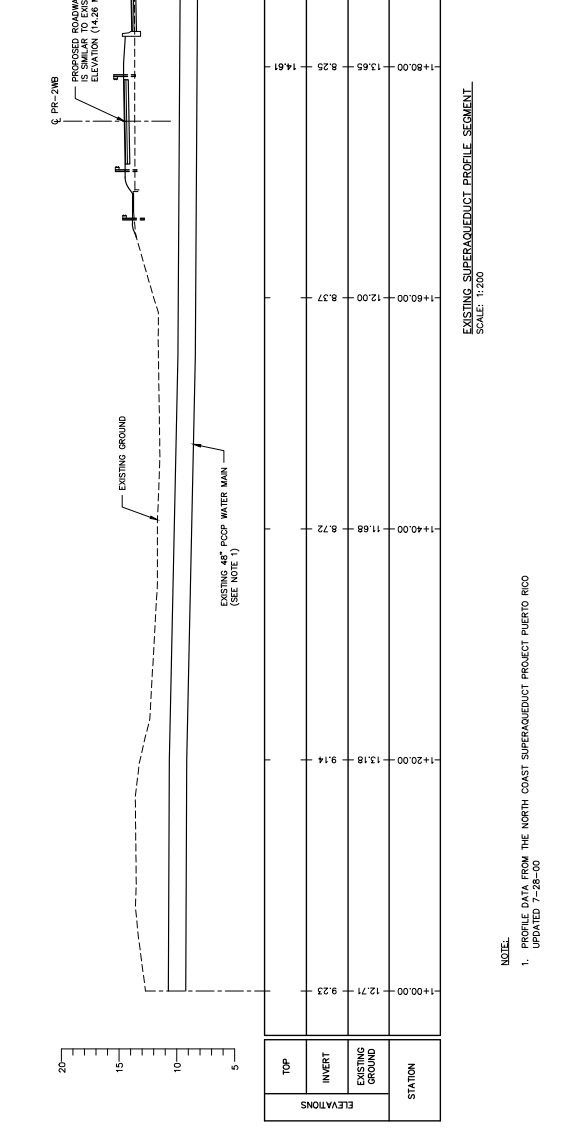
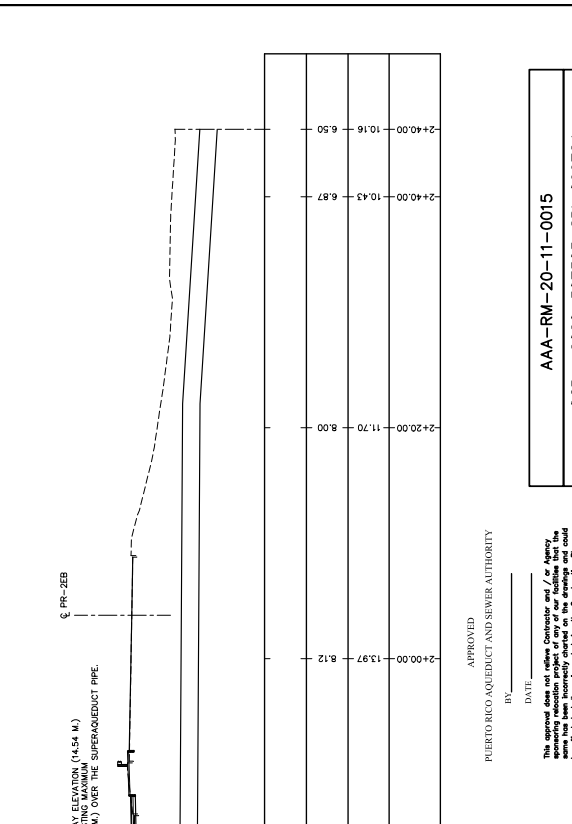
This approval does not relieve Contractor and / or Agency from any responsibility regarding the accuracy of the information shown on this plan. The Contractor shall be responsible for conducting a field verification of the information shown on this plan during the construction phase.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	86	178



STATION	TOP	INVERT	EXISTING GROUND
+1+00.00	12.71	9.23	13.18
+1+20.00	13.18	9.14	13.18
+1+40.00	11.68	8.72	11.68
+1+60.00	12.00	8.37	12.00
+1+80.00	13.65	8.25	13.65
+2+00.00	13.97	8.12	13.97
+2+20.00	11.70	8.00	11.70
+2+40.00	10.43	6.87	10.43
+2+60.00	10.16	6.50	10.16

NOTE:  
 1. PROFILE DATA FROM THE NORTH COAST SUPERAGEADUCT PROJECT PUERTO RICO  
 UPDATED 7-28-00



DATE	BY	WORK
07/27/23		FINAL CHECK
		DESIGN
		DRAWING
		CHECK
		FINAL PLANS

**CMA ARCHITECTS & ENGINEERS**  
 100 CALLE DEL COMERCIO #200  
 SAN JUAN, PUERTO RICO 00906  
 TEL: (787) 762-1234  
 FAX: (787) 762-1234

**MUNICIPALITY OF BAYAMÓN**

**PR-2 AND PR-6**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

**PUERTO RICO**

APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

AAA-RM-20-11-0015  
 OGP: 2020-307303-SRI-066724

P.R.A.S.A. UTILITIES PLAN

UTW 04

SCALE: 1:500

REVISIONS

DATE	BY
07/27/23	
DESIGN	
DRAWING	
CHECKED	
FINAL CHECK	FINAL PLANS



MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

NOT TO SCALE

REVISIONS

UTS  
01

AAA-RM-20-11-0015  
OGPe 2020-307303-SRI-066724

APPROVED  
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

This document does not reflect Construction and / or Agency  
accepting responsibility for any of our facilities that the  
contractor is to construct. The contractor shall be responsible  
for obtaining a copy of the final study of the construction phase.

**GENERAL NOTES:**

- ALL RELOCATION WORK IS INCLUDED IN THIS CONTRACT.
- THE LOCATION OF EXISTING SANITARY LINES IN THIS PLAN IS FOR INFORMATION ONLY. THE CONTRACTOR SHALL CONTACT THE NEAREST P.R.A.S.A. OFFICE TO VERIFY THE EXACT LOCATION BEFORE RELOCATION BEGINS.
- ALL STANDARD SPECIFICATIONS WILL PREVAIL FOR FACILITIES RELOCATION IN THIS PROJECT.
- THE CONTRACTOR SHALL OBTAIN P.R.A.S.A.'S APPROVAL FOR THE PROPOSED MATERIALS PRIOR TO THE PURCHASE.
- ALL SANITARY SEWER SERVICE CONNECTIONS SHALL BE 4" P.V.C. PIPE.
- THE EXISTING WATER METERS SHALL BE MAINTAINED IN SERVICE AT ALL TIMES. PROVISIONAL RELOCATION SHALL BE DONE FOR THIS ITEM BUT SHALL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR COVERED UNDER THIS ITEM.
- THE CONTRACTOR SHALL TAKE CAREFUL MEASURES TO DISRUPT THE WATER SERVICE DURING THE EARLY WORK.
- THE CONTRACTOR SHALL NOT TAKE WATER FROM P.R.A.S.A.'S WATER SYSTEM FOR SPRINKLING OR CONTROLLING DUST DURING CONSTRUCTION.
- A DETECTABLE TAPE (SIMILAR TO TERRA TAPE) 12" BELOW FINISHED GRADE SHALL BE INSTALLED FOR ALL SANITARY LINES. NO DIRECT PAYMENT SHALL BE DONE FOR THIS ITEM BUT SHALL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR COVERED UNDER THE 041 ITEM FOR P.V.C. PIPE.

ITEM NO.	DESCRIPTION	QUANTITY	UNITS	SPEC.
1	8" P.V.C PIPE CLASS SDR-35	455	LM	636
2	MANHOLE ADJUSTMENT	2	EA	634
3	MANHOLE	2	EA	634
4	TRENCH EXCAVATION (TYPE 1, 1.20)	1,066	CM	205

**LEGEND:**

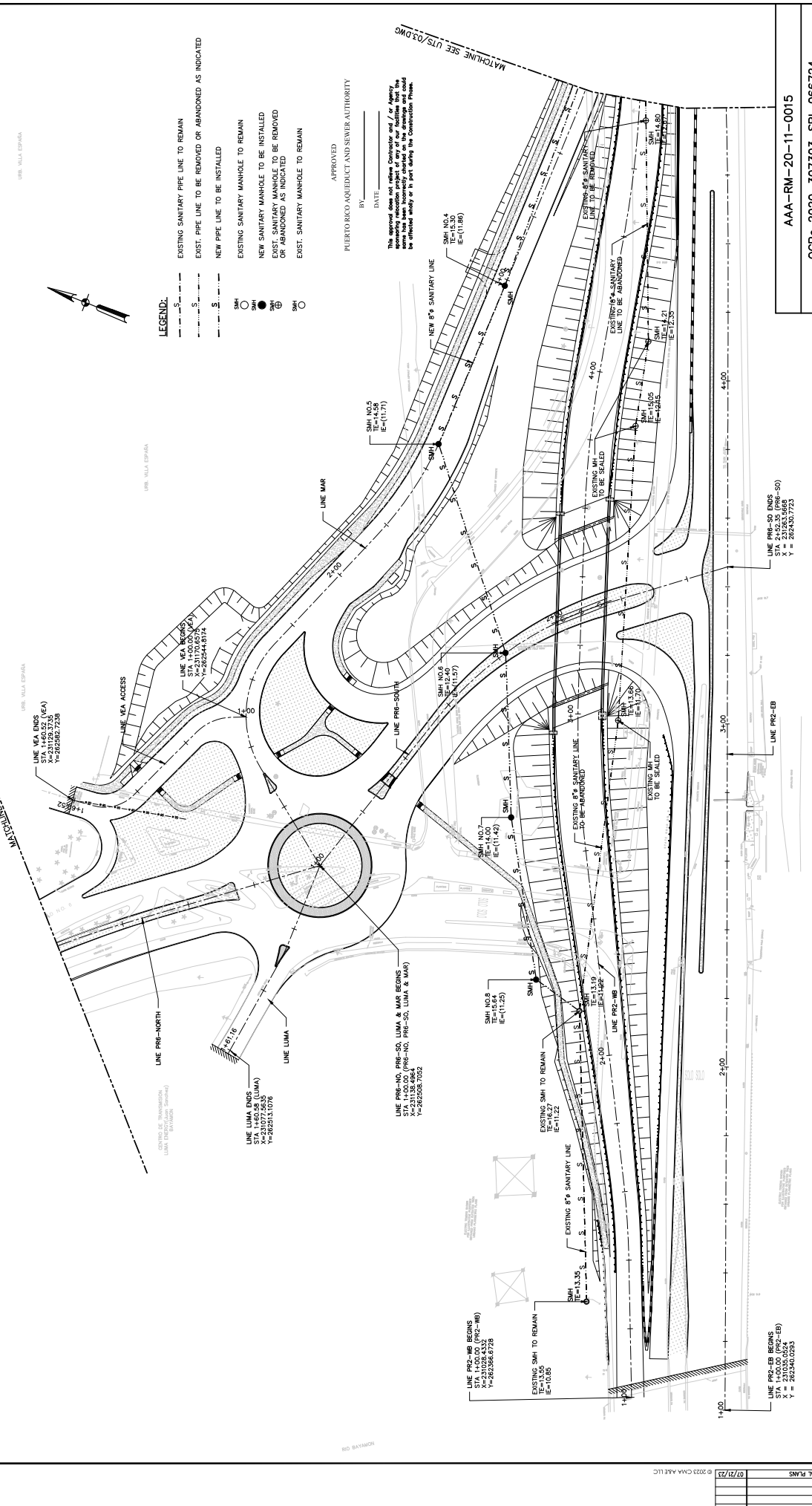
- S--- EXISTING SANITARY PIPE LINE TO REMAIN
- S--- EXIST. PIPE LINE TO BE REMOVED OR ABANDONED AS INDICATED
- S--- NEW PIPE LINE TO BE INSTALLED
- SMH EXISTING SANITARY MANHOLE TO REMAIN
- SMH NEW SANITARY MANHOLE TO BE INSTALLED
- SMH EXIST. SANITARY MANHOLE TO BE REMOVED OR ABANDONED AS INDICATED
- SMH EXIST. SANITARY MANHOLE TO REMAIN

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	87
				178

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	88	178

DATE: 07/27/23  
 BY: [Blank]  
 CHECK: [Blank]  
 DESIGNED: [Blank]  
 DRAWING: [Blank]  
 FINAL CHECK: [Blank]  
 TYPING: [Blank]  
 DATE: 07/27/23

WORK	DATE
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	



**CMA ARCHITECTS & ENGINEERS**  
 1850 CARRILLO DRIVE, SUITE 200, BAYAMÓN, P.R. 00961  
 TEL: (787) 262-4000 FAX: (787) 262-4001  
 WWW.CMA-ARCHITECTS.COM

**MUNICIPALITY OF BAYAMÓN**

**PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS**

**PUERTO RICO**

AAA-RM-20-11-0015  
 OGP e 2020-307303-SRI-066724

**P.R.A.S.A. SANITARY UTILITIES PLAN**

UTS 02

SCALE: 1:500

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 07/27/23 BY: [Blank] CHECK: [Blank] DESIGNED: [Blank] DRAWING: [Blank] FINAL CHECK: [Blank] TYPING: [Blank]

DATE	BY	WORK
07/27/23		FINAL CHECK
		FINAL PLANS
		CHECK
		DESIGN
		PLANNING
		PREPARED

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISIONS

NO.	DATE	DESCRIPTION

SCALE: 1:500

0 10 30

P.R.A.S.A. SANITARY UTILITIES PLAN

UTS 03

AAA-RM-20-11-0015  
OGPe 2020-307303-SRI-066724

APPROVED  
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
BY \_\_\_\_\_  
DATE \_\_\_\_\_

The approval does not relieve Contractor and / or Agency, from their responsibility to verify that the drawings and conditions shown hereon accurately reflect the actual conditions and to be effected early or in part during the construction phase.

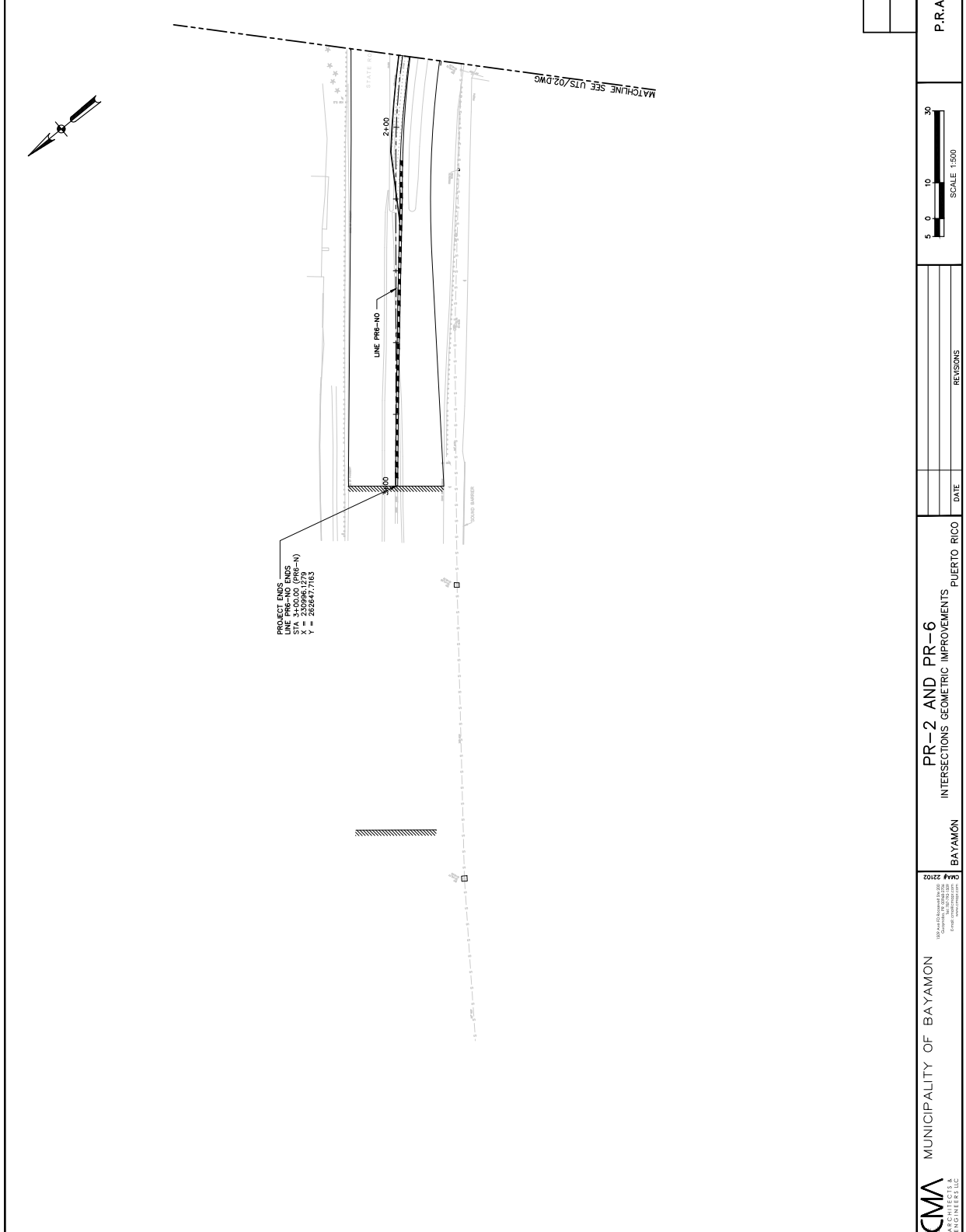
**LEGEND:**

- EXISTING SANITARY PIPE LINE TO REMAIN
- EXIST. PIPE LINE TO BE REMOVED OR ABANDONED AS INDICATED
- NEW PIPE LINE TO BE INSTALLED
- EXISTING SANITARY MANHOLE TO REMAIN
- NEW SANITARY MANHOLE TO BE INSTALLED
- EXIST. SANITARY MANHOLE TO BE REMOVED OR ABANDONED AS INDICATED
- EXIST. SANITARY MANHOLE TO REMAIN



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	89	178

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	90	178



APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
 BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

This approval does not release Contractor and / or Agency  
 accepting relocation project of any of our facilities that the  
 work is to be performed. The Contractor shall be responsible  
 for obtaining any and all permits during the Construction Phase.

AAA-RM-20-11-0015	OGPe 2020-307303-SRI-066724	UTS	04
P.R.A.S.A. SANITARY UTILITIES PLAN			

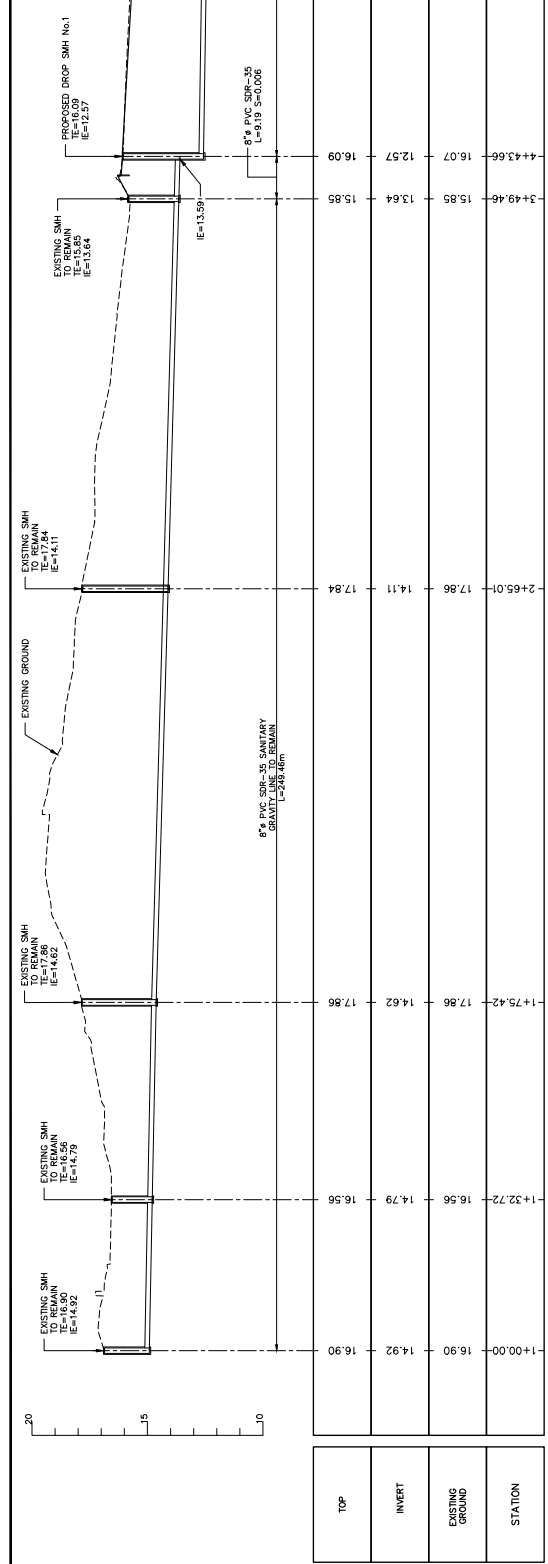
NO.	REVISIONS	DATE

MUNICIPALITY OF BAYAMON	PR-2 AND PR-6	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO
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CMA ARCHITECT & ENGINEERS	PROJECT NO. 2202
---------------------------	------------------

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

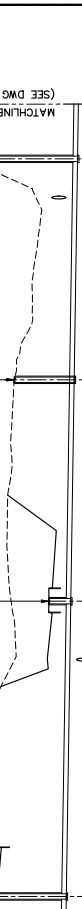
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	91	178



STATION	TOP	INVERT	EXISTING GROUND	PROPOSED 8" GRAVITY LINE PROFILE
1+00.00	16.90	14.92	16.90	16.90
1+32.72	16.56	14.79	16.56	16.56
1+75.42	17.86	14.62	17.86	17.86
2+05.01	17.86	14.11	17.84	17.84
2+49.46	15.85	13.64	15.85	15.85
3+00.00	16.07	12.57	16.07	16.07
3+43.66	15.22	12.31	15.22	15.22
4+00.00	15.12	12.31	15.12	15.12



STATION	TOP	INVERT	EXISTING GROUND	PROPOSED 8" GRAVITY LINE PROFILE
5+78.40	17.05	11.90	15.33	15.33
6+28.40	16.69	11.75	14.73	14.73
6+92.33	14.14	11.55	12.51	12.51
7+40.29	13.99	11.41	14.00	14.00
7+86.14	15.40	11.26	15.42	15.42



STATION	TOP	INVERT	EXISTING GROUND	PROPOSED 8" GRAVITY LINE PROFILE
8+00.00	14.00	11.50	12.51	12.51
8+40.00	14.00	11.50	14.00	14.00
8+80.00	14.00	11.50	14.00	14.00
9+20.00	14.00	11.50	14.00	14.00
10+00.00	14.00	11.50	14.00	14.00

APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
 BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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DATE	BY	REVISIONS
07/27/23		



MUNICIPALITY OF BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN

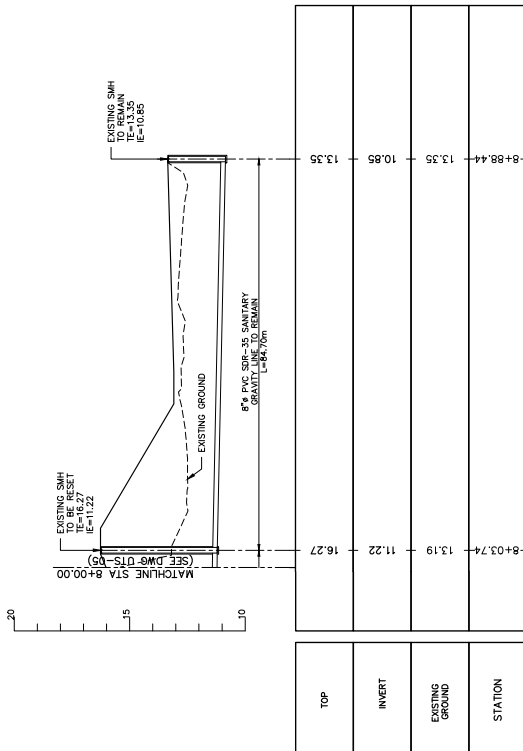
PR-2 AND PR-6  
 PUERTO RICO

SCALE AS SHOW

AAA-RM-20-11-0015  
 OGe 2020-307303-SRI-06674  
 P.R.A.S.A. SANITARY FORCE LINE  
 PROFILE LINE S1  
 UTS  
 05



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	92	178



PROPOSED 8" Ø GRAVITY LINE PROFILE  
SCALE: 1:500 (V)  
1:100 (H)

TOP	8+03.74	8+88.44
INVERT	11.22	10.85
EXISTING GROUND	13.19	13.35
STATION	16.27	13.35

APPROVED  
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

This approval does not relieve Contractor and / or Agency of their responsibility for the design and construction. It is the responsibility of the Contractor and Agency to ensure that the information obtained on the drawings and field be official study or to be part during the Construction Phase.

AAA-RM-20-11-0015
OGPe 2020-307303-SRI-066724
P.R.A.S.A. SANITARY FORCE LINE PROFILE LINE S1
UTS 06

SCALE AS SHOW

REVISIONS	DATE

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

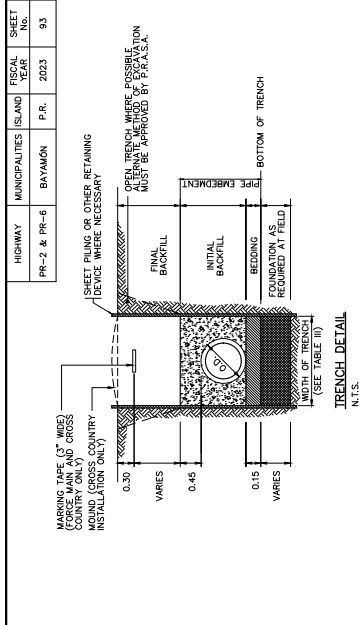
BAYAMÓN



MUNICIPALITY OF BAYAMON



DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK
		DESIGN
		DRAWING
		TRACER

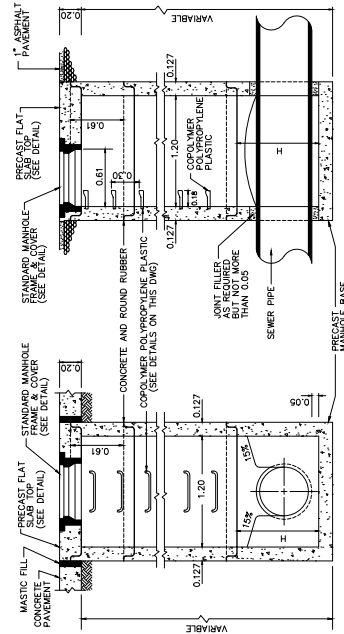
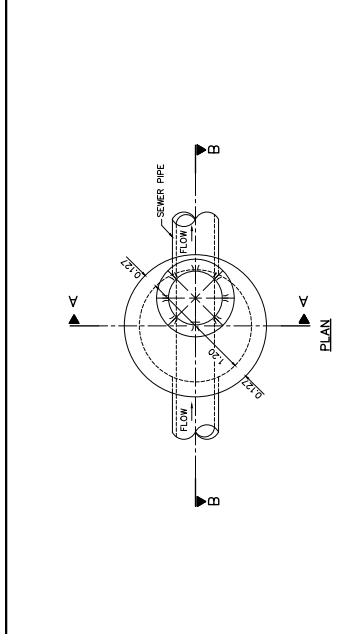


**TABLE III**  
**WIDTH OF TRENCH**

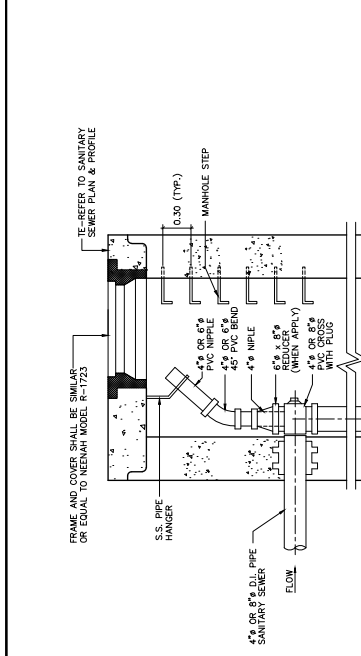
DIAMETER (INCHES)	* WIDTH OF TRENCH AT TOP OF PIPE (INCHES)
4" - 14"	O.D. + 24"
16" - 54"	O.D. + 36"

**NOTE:**  
 \* WHENEVER MOVABLE SHEET PILING OR OTHER TRENCH RETAINING DEVICE IS USED, THE CLEAR DISTANCE BETWEEN THE OUTSIDE FACE OF THE PIPE AND THE MOVABLE TRENCH SUPPORT SHALL BE LESS THAN 2.5 \* OUTSIDE PIPE DIAMETER.

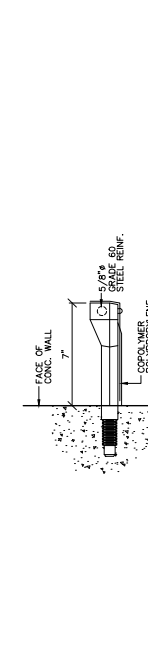
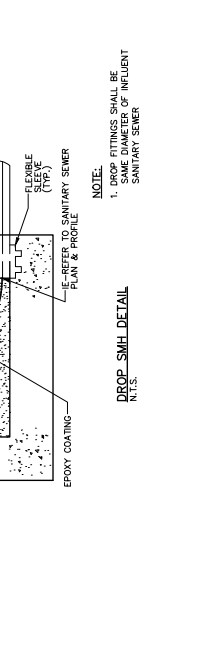
**NOTES:**  
**FOUNDATION AND BEDDING**  
 1) CRUSHED GRAVEL OR CRUSHED STONE IS USED IT SHALL BE AS PER ASTM C-33 GRADATION NO. 67.  
 2) FILL MATERIAL SHALL BE PLACED IN 0.15 LAYERS.  
 3) COMPACT TO 90% OF MAX. COMPACTION AS PER ASTM D-698 FOR COHESIVE SOILS OR DENSITY TO 100% AS PER ASTM D-2922 FOR GRANULAR SOILS. TESTS SHALL BE PERFORMED AT 50 MTS. INTERVALS.  
**INITIAL BACKFILL CROSS-SECTION:**  
 1) PREVIOUS EXCAVATED MATERIAL FREE FROM BOULDERS AND STONES LARGER THAN 2".  
 2) FILL MATERIAL SHALL BE PLACED IN 0.30 MT. LAYERS.  
 3) COMPACT TO 90% OF MAX. COMPACTION AS PER ASTM D-698 FOR COHESIVE SOILS OR DENSITY TO 100% AS PER ASTM D-2922 FOR GRANULAR SOILS. TESTS SHALL BE PERFORMED AT 50 MTS. INTERVALS.  
**FINAL BACKFILL CROSS-SECTION:**  
 1) PREVIOUS EXCAVATED MATERIAL.  
 2) FILL MATERIAL SHALL BE LOOSELY PLACED IN 0.09 MT. LAYERS.  
 3) COMPACT TO 90% OF MAX. COMPACTION AS PER ASTM D-698 FOR COHESIVE SOILS OR DENSITY TO 100% AS PER ASTM D-2922 FOR GRANULAR SOILS. TESTS SHALL BE PERFORMED AT 50 MTS. INTERVALS.  
 4) ACCEPTANCE OF THE PROJECT.



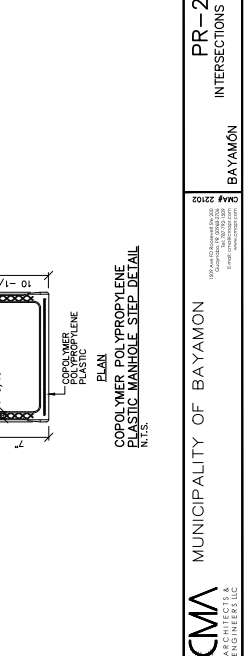
**FOR SEWER PIPE FROM 8" DIA. TO 15" DIA. (TYPE 1)**  
 SCALE: 1:25



**NOTE:**  
 1. DROP FITTINGS SHALL BE SAME DIAMETER OF INFLUENT SANITARY SEWER.



**COPOLYMER POLYPROPYLENE PLASTIC MANHOLE STEP DETAIL**  
 N.T.S.



DATE	07/27/23
DESIGN WORK	BY
DRAWINGS	BY
REVISIONS	BY
CHECK	BY
FINAL CHECK	BY

MUNICIPALITY OF BAYAMON

**PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS**

PURTO RICO

REVISIONS

DATE

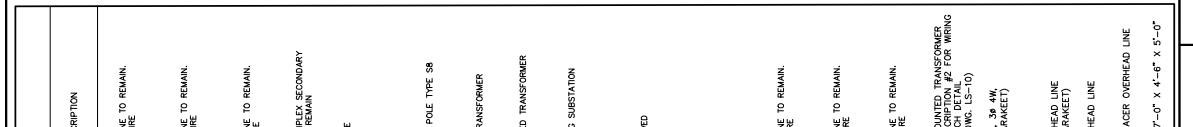
NOT TO SCALE

**LEGEND, LOCATION PLAN AND NOTES**

LUMA

UITE 01

PROJECT LAMBERT COORDINATES: IND 83 X = 228944.6913 Y = 262956.9483 SCALE: 1:20,000
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PR-2 & PR-6 BAYAMON

FISCAL YEAR 2023

SHEET NO. 94

TOTAL SHEETS 178

ISLAND P.R.

2023

LEGEND

SYMBOLS	DESCRIPTION
EXISTING OVERHEAD LINE TO REMAIN. 4.18KV, 3 PHASE, 4 WIRE	
EXISTING OVERHEAD LINE TO REMAIN. 13.2KV, 3 PHASE, 4 WIRE	
EXISTING OVERHEAD LINE TO REMAIN. 38KV, 3 PHASE, 4 WIRE	
EXISTING OVERHEAD LINE TO REMAIN. OVERHEAD FEEDER TO REMAIN	
CONCRETE UTILITY POLE	
WOODEN UTILITY POLE	
76FT HT. GALV. STEEL POLE TYPE SB	
NEW POLE MOUNTED TRANSFORMER	
EXISTING POLE MOUNTED TRANSFORMER	
PAID MOUNTED LIGHTING SUBSTATION	
UTILITY WIRE	
EXISTING TO BE REMOVED	
EXISTING TO REMAIN	
SPAN GUY WIRE	
EXISTING OVERHEAD LINE TO REMAIN. 115KV, 3 PHASE, 4 WIRE	
EXISTING OVERHEAD LINE TO REMAIN. 230KV, 3 PHASE, 4 WIRE	
EXISTING OVERHEAD LINE TO REMAIN. 7.62KV, 1 PHASE, 2 WIRE	
FOR LIGHTING PAID MOUNTED TRANSFORMER CONNECTION SEE DESCRIPTION #2 FOR WIRING (INTERM. STANDARD DWG. I5-10)	
200V OVERHEAD LINE, 3P 4W 50/50 MCM ASCR (PARAMOUNT)	
38KV 4W OVERHEAD GROUND WIRE	
13.2KV, 3P 4W OVERHEAD LINE 50/50 MCM ASCR (PARAMOUNT)	
13.2KV, 3P 4W OVERHEAD LINE #7/0 MCM (PSE&N)	
4.18KV, 3P 4W - SPACER OVERHEAD LINE 336 MCM ASCR	
NEW 15KV MANHOLE 7'-0" X 4'-6" X 5'-0" LUMA STD. UMD-508.	

**SPECIAL NOTES**

- THE PROJECT OWNER WILL CONTRIBUTE TO LUMA:  
 THE SUM OF ALL COSTS FOR IMPROVEMENTS TO THE EXISTING ELECTRICAL SYSTEM.  
 DESIGN AND CONSULTING FEES, DATED MARCH 30, 2023. THIS CONTRIBUTION IS DONE ACCORDING TO THE PROPOSED LOAD AS PER THE "REGLAMENTO PARA DETERMINAR Y CORRIGIR LAS APORTACIONES DE DESARROLLO URBANO".
- THE LUMA WILL NOT ENERGIZE THE PROJECT UNTIL JULY 10, 1995, AS AMENDED, AND WITH THE COMPLETION OF THE ELECTRICAL WORKS AND THE VERIFICATION OF PLANS OF PROTECTIVE DEVICES SHALL NOTIFY LUMA. THE OWNER SHALL NOTIFY LUMA THE DATE OF THE OVERSEAS PRIVATE INSPECTOR PRIOR TO THE BEGINNING OF THE PROJECT.
- THE EXECUTION OF THE ELECTRICAL WORKS, AS WELL AS THE BEST ELECTRICAL INDUSTRY AND CONSTRUCTION PRACTICES, SHALL BE IN ACCORDANCE WITH THE REGULATIONS ADOPTED BY LUMA AND THE REGULATIONS ADOPTED BY THE STATE OF PUERTO RICO (THE E.E., NFPA, NEMA AND ANSI).
- THE CONTRACTOR IS NOT AUTHORIZED TO MAKE VARIATIONS TO THIS DESIGN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE ACCURACY OF ALL DATA THAT MAY ARISE FROM THE INTERPRETATION OF THE EXISTING PLANS AND SPECIFICATIONS OR PREVIOUS WORKS, TECHNICAL SPECIFICATIONS OR CONDITIONS AND THOSE CONSIDERED FOR DESIGN PURPOSES.
- THE OWNER OR THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXISTING ELECTRICAL SYSTEM AND THESE WORKS BY SUBMITTING TO THE ENGINEERING DEPARTMENT OF THE CORRESPONDING REGION THE PROJECT DESIGN AND CONSTRUCTION DOCUMENT AT LEAST FIFTEEN DAYS PRIOR TO THE PROPOSED DATE.
- THE PRIVATE INSPECTOR AND THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXISTING ELECTRICAL SYSTEM AND THESE WORKS BY SUBMITTING TO THE ENGINEERING DEPARTMENT OF THE CORRESPONDING REGION THE PROJECT DESIGN AND CONSTRUCTION DOCUMENT AT LEAST FIFTEEN DAYS PRIOR TO THE PROPOSED DATE.
- ALL WORK EXISTING UTILITIES OF P.R.A.S.A., LUMA, OR ANY OTHER AGENCY SHALL BE PROTECTED BY THE CONTRACTOR. ANY DAMAGE TO THE EXISTING UNDERGROUND UTILITIES DURING CONSTRUCTION SHALL BE REPAIRABLE BY THE CONTRACTOR AT HIS OWN COST.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING UTILITIES AND INSURE THE CONTINUITY OF THE UTILITY SERVICE. ANY DAMAGE TO EXISTING UTILITIES, IDENTIFIED BY THE CONTRACTOR, SHALL BE REPAIRED AT HIS OWN COST.
- ALL MANHOLES (SANITARY/ELECTRICAL/TELEPHONE, ETC.) SHALL BE REPAIRED TO ORIGINAL GRADE ELEVATIONS.

**GENERAL NOTES**

- THESE DRAWINGS CORRESPOND WITH THE INSCRIPTION OFFICE (COPE).
- THE PROJECT OWNER IS RESPONSIBLE TO REQUEST ALL NECESSARY PERMITS AND LICENSES FROM THE APPLICABLE AGENCIES, PERMITS AND LICENSES RELATED TO THE PROPOSED TYPE OF PROJECT.
- THE SERVICES OF A DIAPA MEMBER AND LICENSED ELECTRICAL ENGINEER SHALL BE PROVIDED TO ASSIST IN THE CONSTRUCTION OF THE PROJECT AND THE VERIFICATION OF PLANS OF PROTECTIVE DEVICES SHALL NOTIFY LUMA. THE OWNER SHALL NOTIFY LUMA THE DATE OF THE OVERSEAS PRIVATE INSPECTOR PRIOR TO THE BEGINNING OF THE PROJECT.
- THE EXECUTION OF THE ELECTRICAL WORKS, AS WELL AS THE BEST ELECTRICAL INDUSTRY AND CONSTRUCTION PRACTICES, SHALL BE IN ACCORDANCE WITH THE REGULATIONS ADOPTED BY LUMA AND THE REGULATIONS ADOPTED BY THE STATE OF PUERTO RICO (THE E.E., NFPA, NEMA AND ANSI).
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- THE OWNER OR THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXISTING ELECTRICAL SYSTEM AND THESE WORKS BY SUBMITTING TO THE ENGINEERING DEPARTMENT OF THE CORRESPONDING REGION THE PROJECT DESIGN AND CONSTRUCTION DOCUMENT AT LEAST FIFTEEN DAYS PRIOR TO THE PROPOSED DATE.
- THE PRIVATE INSPECTOR AND THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXISTING ELECTRICAL SYSTEM AND THESE WORKS BY SUBMITTING TO THE ENGINEERING DEPARTMENT OF THE CORRESPONDING REGION THE PROJECT DESIGN AND CONSTRUCTION DOCUMENT AT LEAST FIFTEEN DAYS PRIOR TO THE PROPOSED DATE.
- ALL WORK EXISTING UTILITIES OF P.R.A.S.A., LUMA, OR ANY OTHER AGENCY SHALL BE PROTECTED BY THE CONTRACTOR. ANY DAMAGE TO THE EXISTING UNDERGROUND UTILITIES DURING CONSTRUCTION SHALL BE REPAIRABLE BY THE CONTRACTOR AT HIS OWN COST.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING UTILITIES AND INSURE THE CONTINUITY OF THE UTILITY SERVICE. ANY DAMAGE TO EXISTING UTILITIES, IDENTIFIED BY THE CONTRACTOR, SHALL BE REPAIRED AT HIS OWN COST.
- ALL MANHOLES (SANITARY/ELECTRICAL/TELEPHONE, ETC.) SHALL BE REPAIRED TO ORIGINAL GRADE ELEVATIONS.

**DESIGN CRITERIA**

- THE DESIGN CRITERIA FOR THE AERIAL ELECTRICAL SYSTEM SHALL BE AS PER LUMA DESIGNATION DESIGN CRITERIA DOCUMENT-DOC. No. 4300.0101-04

DESIGNERS CERTIFICATION: I certify that I am a licensed and registered engineer, surveyor, or architect (in compliance with Act 173 of 1988, its amendments and authorized by the Council of the Board of Professional Engineers, Architects, Surveyors and Technicians) in compliance with Act No. 133 of July 15, 1997, as amended known as the Electrical Engineering Law of 1997, and I am duly registered in the Professional Statute, rules and regulations approved by LUMA, Puerto Rico Board of Professional Engineers, Architects, Surveyors and Technicians, and I am duly registered in the Management Office with the current Professional Practice Manual.

DESIGNER'S SIGNATURE

OGPe: 2020-307303-SRI-066461

ENDORSEMENT

PROJECT NAME: DRG & PLS INTERSECTION GEOMETRIC IMPROVEMENT

PROJECT NUMBER: 23-7-088

LOAD (KVA): N/A

REVISION: N/A

ENDORSED BY

LUMA EMPLOYES THE DESIGN SHOWN IN THESE CONNECTIONS BASED ON THE CERTIFICATION PRESENTED BY THE DESIGNER IN COMPLIANCE WITH THE STATE REGULATIONS AND STANDARDS. LUMA DOES NOT ASSUME RESPONSIBILITY FOR THE DESIGN, DESIGN DEVELOPMENT, OR VERIFICATION OF THESE PROJECT PLANS. THE DESIGNER SHALL BE RESPONSIBLE FOR THE DESIGN, DESIGN DEVELOPMENT, AND VERIFICATION OF THESE PROJECT PLANS. THE DESIGNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, LICENSES, AND APPROVALS. THE DESIGNER SHALL BE RESPONSIBLE FOR THE DESIGN, DESIGN DEVELOPMENT, AND VERIFICATION OF THESE PROJECT PLANS.

DESIGNER'S SIGNATURE

DATE

PROJECT LAMBERT COORDINATES: IND 83

X = 228944.6913

Y = 262956.9483

SCALE: 1:20,000

LOCATION PLAN

LEGEND, LOCATION PLAN AND NOTES

LUMA

UITE 01

NOT TO SCALE

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PURTO RICO

REVISIONS

DATE

NOT TO SCALE

LEGEND, LOCATION PLAN AND NOTES

LUMA

UITE 01

NOT TO SCALE

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PURTO RICO

REVISIONS

DATE

NOT TO SCALE

LEGEND, LOCATION PLAN AND NOTES

LUMA

UITE 01

NOT TO SCALE

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PURTO RICO

REVISIONS

DATE

NOT TO SCALE

LEGEND, LOCATION PLAN AND NOTES

LUMA

UITE 01

CMA ARCHITECTS & ENGINEERS  
 2015 BAYVIEW DRIVE SUITE 200  
 BAYAMON, PUERTO RICO 00961  
 TEL: 787-941-7700 FAX: 787-941-7701  
 WWW.CMA-ARCHITECTS.COM

100% PROFESSIONAL LIABILITY INSURANCE

DATE: 07/27/23  
 BY: [Signature]  
 CHECK: [Signature]  
 FINAL CHECK: [Signature]  
 T.M.L. MANS

PR-2 AND PR-6  
 BAYAMÓN

ISLAND: BAYAMÓN  
 FISCAL YEAR: 2023  
 SHEET No: 95  
 TOTAL SHEETS: 178

# LUMA POLE SCHEDULE

POLE No.	POLE MATERIAL	LUMA STANDARD											REMARKS				
		38KV 0-2'	38KV 0-10'	38KV 0-10'	38KV 0-10'	38KV 0-10'	38KV 0-10'	38KV 0-10'	38KV 0-10'	38KV 0-10'	38KV 0-10'	38KV 0-10'					
1 707-SB		●															NOTES 1.5
2 707-SB					●												NOTES 1.3, 1.4, 6.7
3 707-SB					●												NOTES 1.5
4 707-SB					●												NOTES 1.5
5 707-SB					●												NOTES 1.5
6 707-SB					●												NOTES 1.5
6A 150'-HIE CONC.					●												NOTES 1.5
7 707-SB					●												NOTES 1.5
7A 150'-HIE CONC.					●												NOTES 1.5
8 150'-HIE CONC.					●												NOTES 1.5
8A 150'-HIE CONC.					●												NOTES 1.5
9 707-SB					●												NOTES 1.5
10 707-SB					●												NOTES 1.5
11 707-SB					●												NOTES 1.5
12 707-SB					●												NOTES 1.5
13 707-SB					●												NOTES 1.5
14 707-SB					●												NOTES 1.5
15 707-SB					●												NOTES 1.5
E1 EXIST. CONC.					●												NOTES 1.2, 3.5, 5.7
E2 EXIST. CONC.					●												NOTES 3.6, 7
E3 EXIST. CONC.					●												NOTES 1.3, 4.6, 7
E4 EXIST. CONC.					●												NOTES 3.6, 7
E5 EXIST. CONC.					●												NOTES 3.6, 7
E6 EXIST. CONC.					●												NOTES 3.6, 7
E7 EXIST. CONC.					●												NOTES 3.6, 7
E8 EXIST. CONC.					●												NOTES 3.6, 7

## LUMA OVERHEAD ELECTRICAL DISTRIBUTION STANDARDS

STANDARD No.	DOCUMENT No.	TITLE
CP-01	4301.025	THREE PHASES PRIMARY CONSTRUCTION 0°-5° ANGLE TANGENT
CP-02	4301.027	THREE PHASES PRIMARY CONSTRUCTION 6°-20° ANGLE TANGENT
CP-03-XARM	4301.030	THREE PHASES PRIMARY CONSTRUCTION CROSS ARM 21°-60° ANGLE
CP-03-VERT	4301.031	THREE PHASES PRIMARY CONSTRUCTION VERTICAL 21°-60° ANGLE
CP-06-XARM	4301.040	THREE PHASES PRIMARY CONSTRUCTION CROSS ARM DOUBLE DEAD END
CP-07	4301.126	THREE PHASES PRIMARY CONSTRUCTION TANGENT TAP-OFF
E1-2-3	4301.083	1/2" SINGLE ØVY
F1-3	4301.087	EXPANSION ANCHOR
S-1	4301.043	SPACER CONSTRUCTION SINGLE CIRCUIT 0°-5° ANGLE
S-3	4301.045	SPACER CONSTRUCTION 6°-60° ANGLE TANGENT
S-5	4301.046	SPACER CONSTRUCTION SINGLE DEAD END
S-6	4301.047	SPACER CONSTRUCTION DOUBLE DEAD END
ABS-XARM	4301.048	THREE PHASES CROSS ARM AIR BREAK SWITCH
T-1	4301.050	SINGLE TRANSFORMER PHASE TO NEUTRAL MAX VOLTAGE: 13.2 KV
ABS-3-XARM	4301.048	THREE PHASE CROSS ARM AIR BREAK SWITCH

## LUMA OVERHEAD ELECTRICAL SUBTRANSMISSION SYSTEM STANDARDS

STANDARD No.	DOCUMENT No.	TITLE
UTS-007	4301.032	38KV 7058 STD SUSPENSION-SC-VERTICAL ØSST 0°-10°
UTS-008	4301.033	38KV 7058 STD SUSPENSION-SC-DELTA 0°-2°
UTS-009	4301.034	38KV 7058 STD DEAGNED-SC-VERTICAL DEADEND ASSY 0°-10°
UTS-010	4301.035	38KV 7058 STD DEAGNED-SC-VERTICAL DEADEND ASSY 10°-60°
UTS-011	4301.036	38KV 7058 STD DEAGNED-SC-VERTICAL DEADEND ASSY 60°-90°

## LUMA UNDERGROUND DISTRIBUTION STANDARDS

STANDARD No.	DOCUMENT No.	TITLE
URD-2	4325.012	SINGLE PHASE UNDERGROUND CABLE CONNECTION TO OVERHEAD SYSTEM 100A, 13.2 KV
URD-4	4325.016	PRIMARY AND SECONDARY DISTRIBUTION VOLTAGE RISER MAX. VOLTAGE: 13.2 KV

## LUMA ONE LINE DIAGRAM LEGEND



## REMARK NOTES

- THE CONTRACTOR SHALL FURNISH THE POLE, CABLE AND/OR ALL HARDWARE.
- THE CONTRACTOR SHALL BUILD THE CONCRETE BASE FOR THE POLE PLACEMENT.
- THE CONTRACTOR SHALL COORDINATE ANY "VIA LIBRE" IN THE PROJECT WITH THE LUMA DISTRICT ENGINEER AND INSPECTOR.
- THE INSTALLATION OF POLE AND/OR HARDWARE BY THE CONTRACTOR SHALL BE INSTALLED BY CONTRACTOR. E1-2-3 (ØVY) BE INSTALLED BY CONTRACTOR.
- INSTALLATION BY CONTRACTOR.
- CONNECTION BY LUMA.
- THE CONTRACTOR SHALL COORDINATE ANY "VIA LIBRE" IN THE PROJECT WITH THE LUMA DISTRICT ENGINEER AND INSPECTOR.
- THE INSTALLATION OF POLE AND/OR HARDWARE BY THE CONTRACTOR SHALL BE INSTALLED BY CONTRACTOR. E1-2-3 (ØVY) BE INSTALLED BY CONTRACTOR.
- INSTALLATION BY CONTRACTOR.
- CONNECTION BY LUMA.
- THE CONTRACTOR SHALL FURNISH THE POLE, CABLE AND/OR ALL HARDWARE.
- THE CONTRACTOR SHALL BUILD THE CONCRETE BASE FOR THE POLE PLACEMENT.
- THE CONTRACTOR SHALL COORDINATE ANY "VIA LIBRE" IN THE PROJECT WITH THE LUMA DISTRICT ENGINEER AND INSPECTOR.
- THE INSTALLATION OF POLE AND/OR HARDWARE BY THE CONTRACTOR SHALL BE INSTALLED BY CONTRACTOR. E1-2-3 (ØVY) BE INSTALLED BY CONTRACTOR.
- INSTALLATION BY CONTRACTOR.
- CONNECTION BY LUMA.

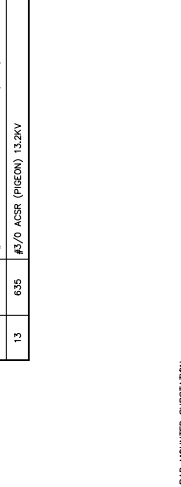
## QUANTITY SUMMARY

QTY	DESCRIPTION	UNIT	TOTAL
635	CONDUCTOR #2 CU, 15KV TRAPEZOID 100K	LWM	60
635	INSULATION LEVEL TYPE MV-30	LWM	60
635	CONDUCTOR #2 CU GROUND RHM-2 XLPE-USE	EA	1
635	DISTRIBUTION MANHOLE 7'-0", 4'-6", 5'-0" LUMA STD. URD-308	LWM	120
635	4" PVC SCH-40 CONDUIT	LWM	20
635	RIGID GALVANIZED CONDUIT (37.5 KVA)	EA	4
635	50' HI LUMA CONCRETE POLE	EA	14
635	70' 58 LUMA GALVANIZED STEEL POLE	EA	2064
635	336 MCN ACSR SPACER	EA	2064
635	566.5 MCN ACSR (PARAKEET)(3.2KV)	EA	1948
635	3#B AWC OVERHEAD GROUND WIRE (Ø8KV)	EA	516
635	#2/0 ACSR (PIECEN) 13.2KV	LWM	280

**OGPe: 2020-307303-SRI-066461**

DESIGNER'S CERTIFICATION: I certify that I am a licensed and registered engineer, surveyor, or architect in the State of Puerto Rico and have prepared the design shown on this project for final owner to submit these construction plans to LUMA Energy and the Puerto Rico Electric Power Authority (PREPA) for review and approval in accordance with the Puerto Rico Electric Power Authority (PREPA) and the Puerto Rico Planning Board and Public Management Office and the PREPA Professional Practice Manual.

DESIGNER'S SIGNATURE



7.62KV ONE LINE DIAGRAM (TYP. FOR PAD TRANSFORMERS)

**DESIGNER'S CERTIFICATION**

**LUMA** PROJECT NO. 22-2580  
 PROJECT NAME: B2-L06-B INTERSECTION GEOMETRIC IMPROVEMENTS  
 DATE: 07/27/23  
 REVISED: \_\_\_\_\_

**ENDORSEMENT**

Project No. 22-2580  
 User: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Date: \_\_\_\_\_

1. LUMA certifies the design shown in these construction plans was prepared by a duly licensed and registered engineer, surveyor, or architect in the State of Puerto Rico and has been reviewed by the designer in compliance with the Professional Practice Manual of the Puerto Rico Electric Power Authority (PREPA) and the Puerto Rico Planning Board and Public Management Office and the PREPA Professional Practice Manual.

1. LUMA certifies the design shown in these construction plans was prepared by a duly licensed and registered engineer, surveyor, or architect in the State of Puerto Rico and has been reviewed by the designer in compliance with the Professional Practice Manual of the Puerto Rico Electric Power Authority (PREPA) and the Puerto Rico Planning Board and Public Management Office and the PREPA Professional Practice Manual.

2. LUMA does not assume responsibility for the design shown in these construction plans. LUMA's responsibility is limited to the review of the design and the issuance of the certification. The designer shall be responsible for the design and the construction of the project. The designer shall be responsible for the design and the construction of the project.

3. The design shown in these construction plans was prepared by a duly licensed and registered engineer, surveyor, or architect in the State of Puerto Rico and has been reviewed by the designer in compliance with the Professional Practice Manual of the Puerto Rico Electric Power Authority (PREPA) and the Puerto Rico Planning Board and Public Management Office and the PREPA Professional Practice Manual.

UTILITY LUMA  
 POLE SCHEDULE, ONE LINE DIAGRAMS AND QUANTITY SUMMARY

NOT TO SCALE

DATE

REVISIONS

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

BAYAMÓN

MUNICIPALITY OF BAYAMÓN

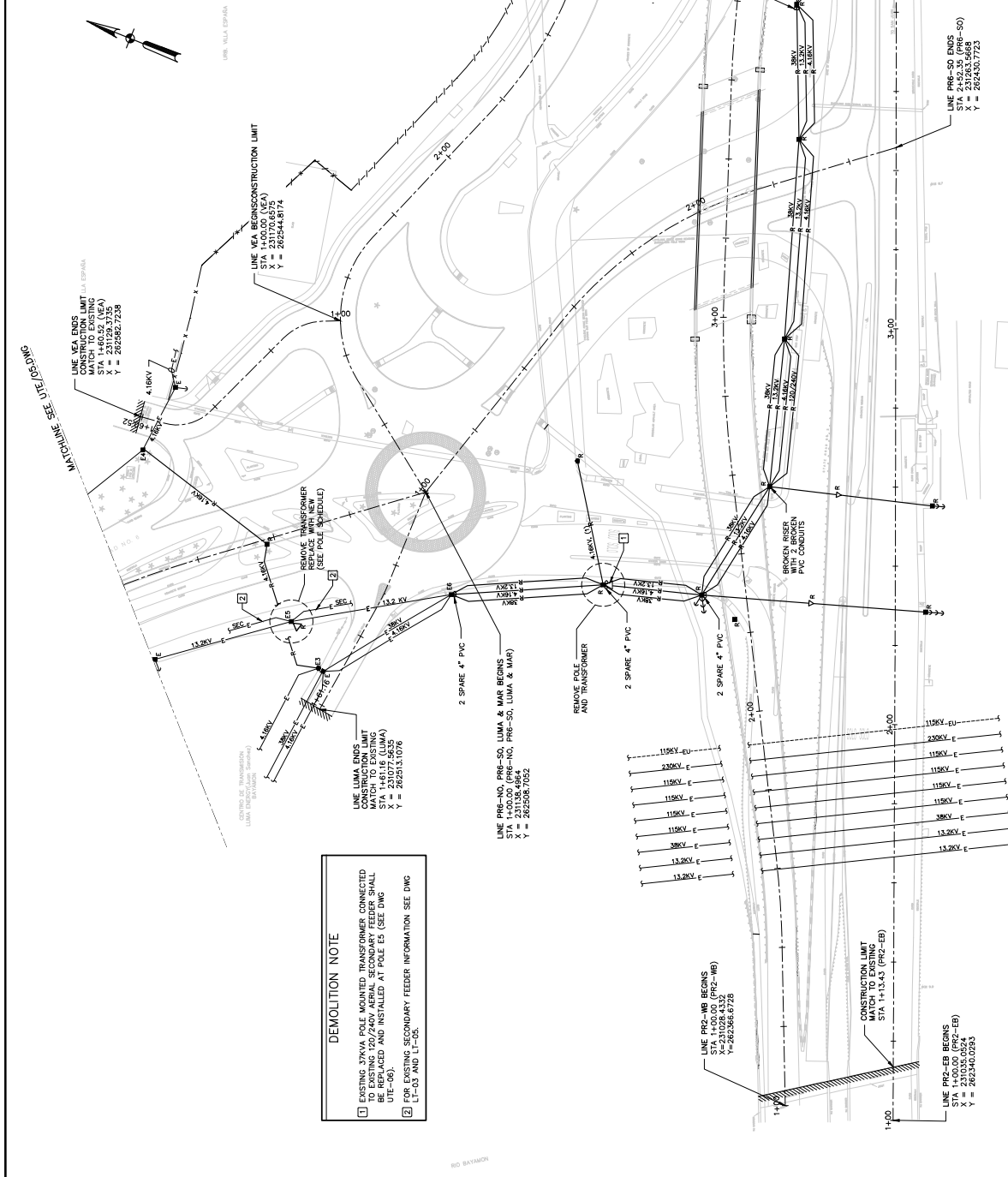
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	96	178

OGPe: 2020-307303-SRI-066461

**DESIGNER'S CERTIFICATION**  
 I, the undersigned, am a duly licensed and registered engineer, surveyor, or architect in the State of Puerto Rico. I am the author of the design shown on this drawing. I certify that the design shown on this drawing was prepared by me or under my direct supervision and that I am a duly licensed and registered professional in the State of Puerto Rico. I am not providing any services to the project owner under any other contract or agreement. I am not providing any services to the project owner under any other contract or agreement. I am not providing any services to the project owner under any other contract or agreement.

**ENDORSEMENT**  
**LUMA**  
 PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Name: \_\_\_\_\_  
 Project Number: 2023-080  
 Load (kVA): \_\_\_\_\_  
 Revision: \_\_\_\_\_  
 ENDORSED BY: \_\_\_\_\_

- LUMA ensures the electric design shown in these construction plans complies with the applicable codes and regulations, including but not limited to the National Electrical Code (NEC), the National Fire Protection Association (NFPA) 70, and the Puerto Rico Electric Power Authority (PREPA) regulations. LUMA is not responsible for the design of the equipment or the installation of the equipment. The contractor is responsible for the design of the equipment and the installation of the equipment.
- LUMA is not responsible for the design of the equipment or the installation of the equipment. The contractor is responsible for the design of the equipment and the installation of the equipment.
- This endorsement is given for the purpose of certifying that the design shown on these construction plans complies with the applicable codes and regulations. LUMA is not responsible for the design of the equipment or the installation of the equipment. The contractor is responsible for the design of the equipment and the installation of the equipment.



**DEMOLITION NOTE**

- EXISTING 37KVA POLE MOUNTED TRANSFORMER CONNECTED TO EXISTING 120/240V AERIAL SECONDARY FEEDER SHALL BE DEMOLISHED AND REINSTALLED AT POLE E0 (SEE DWG UTE-06).
- FOR EXISTING SECONDARY FEEDER INFORMATION SEE DWG UTE-03 AND UTE-05.

DATE	07/27/23
BY	_____
DESIGN	_____
DRAWING	_____
CHECK	_____
FINAL CHECK	_____
DATE	07/27/23

DATE	_____
BY	_____
DESIGN	_____
DRAWING	_____
CHECK	_____
FINAL CHECK	_____
DATE	_____

DATE	_____
BY	_____
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DATE	_____
BY	_____
DESIGN	_____
DRAWING	_____
CHECK	_____
FINAL CHECK	_____
DATE	_____

**MUNICIPALITY OF BAYAMÓN**  
**PR-2 AND PR-6**  
**INTERSECTIONS GEOMETRIC IMPROVEMENTS**  
**EXISTING ELECTRICAL UTILITIES PLAN**

SCALE: 1:500  
 0 10 30  
 LINE PR-2 ENDS (MATCH TO EXISTING)  
 STA 1400.00 (VEA)  
 X = 231035.0524  
 Y = 262340.0295

LINE PR-6 ENDS (MATCH TO EXISTING)  
 STA 1400.00 (VEA)  
 X = 231035.0524  
 Y = 262340.0295

LINE PR-2 ENDS (MATCH TO EXISTING)  
 STA 1400.00 (VEA)  
 X = 231035.0524  
 Y = 262340.0295

LINE PR-6 ENDS (MATCH TO EXISTING)  
 STA 1400.00 (VEA)  
 X = 231035.0524  
 Y = 262340.0295

LINE PR-2 ENDS (MATCH TO EXISTING)  
 STA 1400.00 (VEA)  
 X = 231035.0524  
 Y = 262340.0295

LINE PR-6 ENDS (MATCH TO EXISTING)  
 STA 1400.00 (VEA)  
 X = 231035.0524  
 Y = 262340.0295

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK FINAL PLANS
		CHECK
		DESIGN
		DRAWING
		PREPARED

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

NO.	DATE	REVISIONS

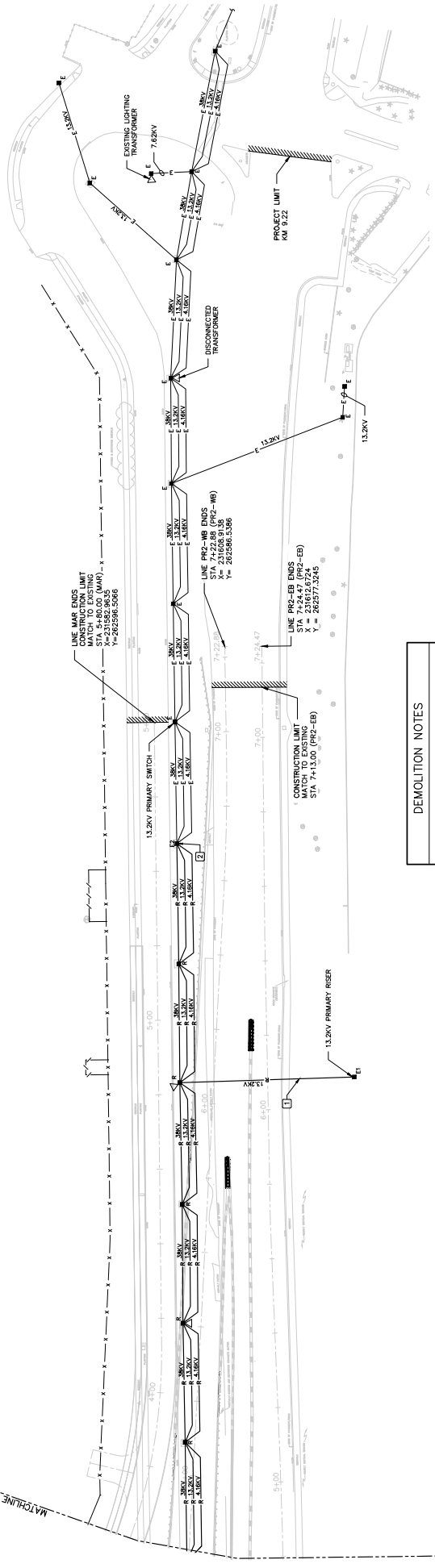
SCALE 1:500  
5 0 10 30

**LUMA**  
EXISTING ELECTRICAL UTILITIES PLAN  
UTE 04

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	97	178



MATCHLINE SEE UTE/03.DWG



**DEMOLITION NOTES**

- 1. REMOVE LUMA POWER CABLE SHALL BE REPLACED AND RECONNECTED TO EXISTING LUMA P&L
- 2. ON POLE NO. E2 REPLACE 13.2KV AND 4.18KV CABLES WITH 13.2KV AND 4.18KV CABLES. NEW DRAWING MESS IS INDICATED IN POLE SCHEDULE AND DRAWING UTE-07 REMOVE AIR SWITCH

**DESIGNER'S CERTIFICATION**  
I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, Surveyors and Engineers as supervisor and administrator of the Transmission and Distribution System in compliance with Act No. 53 of July 15, 1997, as amended known as the Electric Service Law, and that I am duly registered with the Board of Professional Engineers, Architects, Surveyors and Engineers, Standards, Rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Board of Management. Other title: the CHARTERED PROFESSIONAL PRACTICE MANUAL.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**  
LUMA  
PROJECT NAME: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: 23-7-580  
LOAD (MVA): N/A  
REVISION: N/A  
ENDORSED BY:

LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Electric Service Law, Act No. 53 of July 15, 1997, as amended, and the responsibility assumed with the certification of these project plans. The endorsement release neither the builder nor the contractor from their obligations under the Puerto Rico Building Code, the Puerto Rico National Electrical Safety Code, contributions, standards, norms, and regulations approved by the Board of Management, LUMA, and state laws ruling by the time construction begins. During this year, with prior notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified expiration work, the endorsement will be valid until the completion of the work. The contractor is not to coordinate an appointment of to complete the Assignment. Transfer of the endorsement to another contractor is not permitted. The contractor must comply with all the provisions of the Electric Service Law, Act No. 53 of July 15, 1997, as amended, and the Puerto Rico Electric Power Authority (25RC of 2007).

WORK	DATE
BY	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	07/27/23

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

#2212  
100 CALLE DEL OCEANO #2212  
CALLE DEL OCEANO, BAYAMON, P.R. 00961  
TEL: (787) 252-1234  
WWW.CMA-PR.COM

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

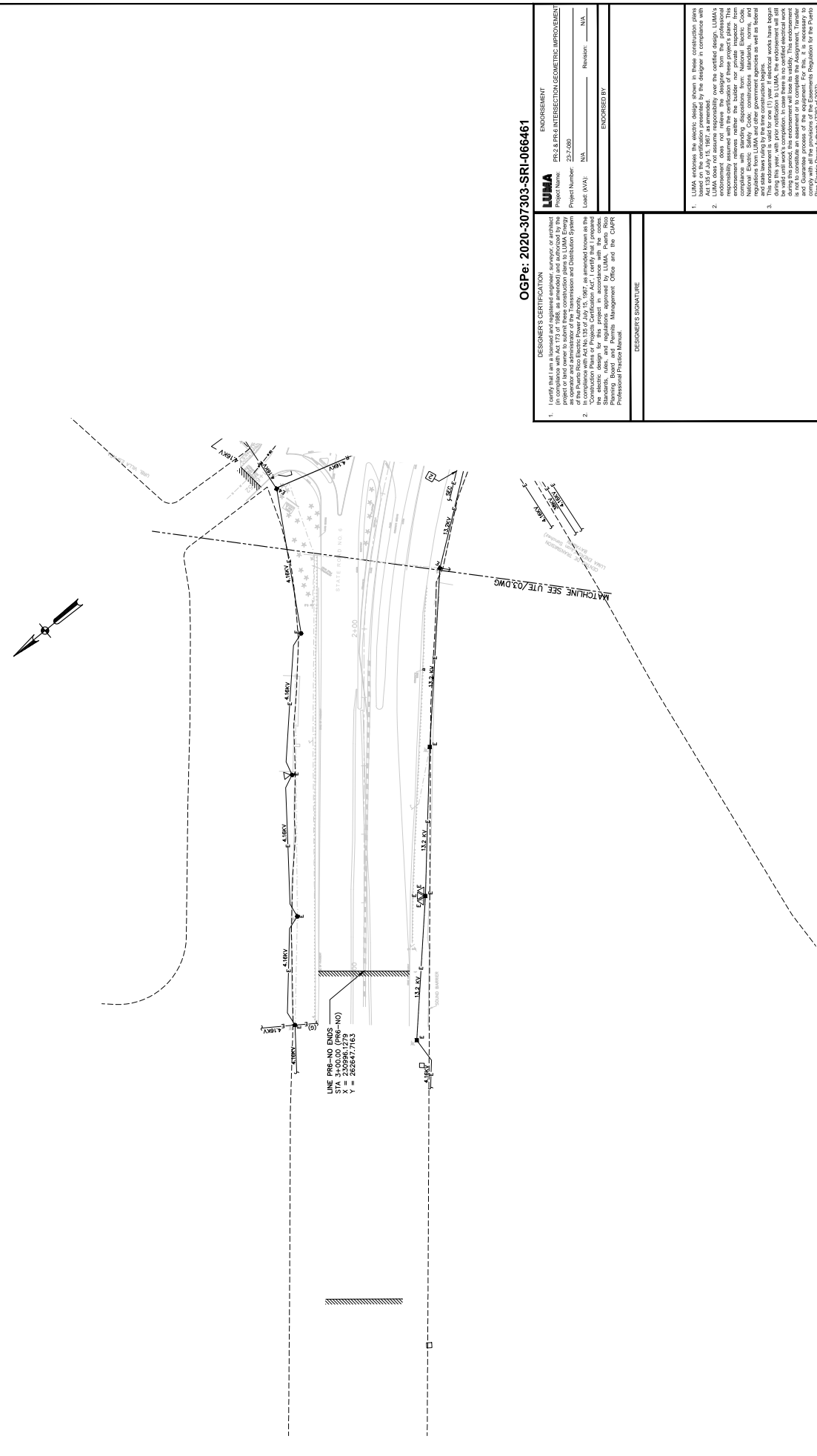
DATE

REVISIONS



UTL	05
EXISTING ELECTRICAL UTILITIES PLAN	
LUMA	
BAYAMON P.R.	
FISCAL YEAR 2023	
TOTAL SHEETS 98	
SHEET NO. 178	

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	98
				178



**DESIGNER'S CERTIFICATION**

1. I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 173 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, and Surveyors, as the supervisor and administrator of the Transmission and Distribution System in compliance with Act No. 133 of July 15, 1987, as amended known as the Electric Service Law, and that I am duly registered with the Board of Professional Engineers, Architects, and Surveyors. I have read and approved the design, specifications, standards, codes, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Board of Professional Engineers, Architects, and Surveyors. I have also read and approved the Professional Practice Manual.

DESIGNER'S SIGNATURE

**ENDORSEMENT**

**LUMA**  
PROJECT NAME: PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: 23-7-580  
LOAD (MVA): N/A  
REVISION: N/A

ENDORSED BY:

- LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the Electric Service Law.
- LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the verification of the design and the responsibility assumed with the certification of these project plans. The endorser releases neither the designer nor the project sponsor from their respective responsibilities.
- LUMA does not assume responsibility for the design of the National Electrical Safety Code, contributions, standards, norms, and regulations approved by the Board of Professional Engineers, Architects, and Surveyors.
- During this year, with prior notification to LUMA, the endorser will still be available to provide technical assistance and support to the project.
- The endorser will not be held responsible for any errors or omissions that may occur in the field or in the office of the endorser.

It is not to constitute an endorsement or to complete the Assignment. Transfer of the design to another company without the prior written consent of the endorser is prohibited. This company will file all the provisions of the Enforcement Regulation for the Puerto Rico Electric Power Authority (2007).

DATE	07/27/23
CHECK	
DESIGN	
BY	
DATE	

FINAL CHECK	
DATE	

DATE	
REVISIONS	

DATE	
REVISIONS	

DATE	
REVISIONS	

DATE	
REVISIONS	

DATE	
REVISIONS	

DATE	
REVISIONS	

DATE	
REVISIONS	

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN  
 MUNICIPALITY OF BAYAMÓN  
 ELECTRICAL UTILITIES PLAN  
 UTE 06

OGP #: 2020-307303-SRI-066461

**DESIGNER'S CERTIFICATION**  
 I, the undersigned, certify that I am a duly licensed Professional Engineer in the State of Puerto Rico, and that I am the author of the design of the project shown on these drawings. I am not aware of any other person who has prepared or caused to be prepared any part of the project shown on these drawings. I am not aware of any other person who has prepared or caused to be prepared any part of the project shown on these drawings. I am not aware of any other person who has prepared or caused to be prepared any part of the project shown on these drawings.

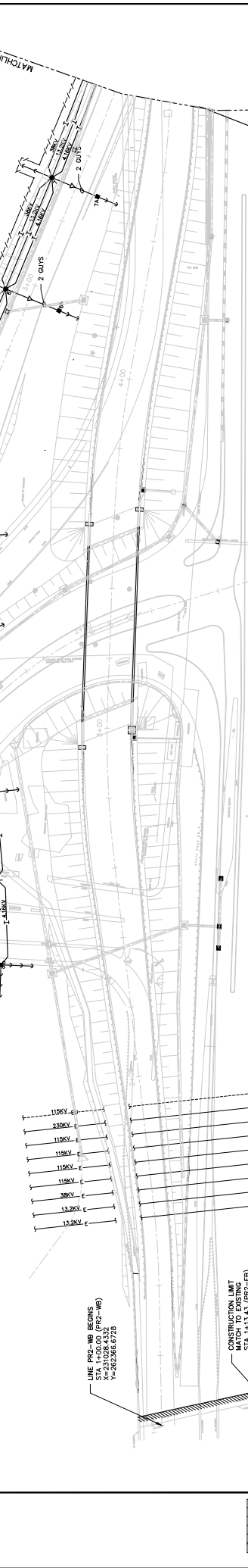
**DESIGNER'S SIGNATURE**

**ENDORSEMENT**  
**LUMA**  
 Project Number: 23-1000  
 Date: N/A  
 Revision: N/A  
 Endorsed By:

1. I have the honor to certify that the design of the project shown on these drawings is in accordance with the provisions of the laws, regulations, codes, standards, and specifications approved by the Puerto Rico Planning Board and the Puerto Rico Professional Engineers Board.

2. I have the honor to certify that the design of the project shown on these drawings is in accordance with the provisions of the laws, regulations, codes, standards, and specifications approved by the Puerto Rico Planning Board and the Puerto Rico Professional Engineers Board.

3. This endorsement is valid for one (1) year, if electrical work has begun during this period, this endorsement will lose its validity. This endorsement and Guarantee proceeds of the equipment. For this, it is necessary to have the approval of the equipment. For this, it is necessary to have the approval of the equipment. For this, it is necessary to have the approval of the equipment.



**NOTE**

1. REMOVE NEW 30KV, 10KV & MOUNTED TRANSFORMER AERIAL SECONDARY FEEDER FOR EXISTING 120/240V AND L1-00. AERIAL FEEDER LAYOUT SEE DWG. L1-00

2. REMOVE NEW 30KV, 10KV & MOUNTED TRANSFORMER AERIAL SECONDARY FEEDER FOR EXISTING 120/240V AND L1-00. AERIAL FEEDER LAYOUT SEE DWG. L1-00

**LINE VEA ENDS CONSTRUCTION LIMIT**  
 STA 1460.00 (VEA)  
 X = 26254.8774  
 Y = 26254.8774

**LINE LUMA ENDS CONSTRUCTION LIMIT**  
 STA 1481.16 (LUMA)  
 X = 26257.3032  
 Y = 26257.3032

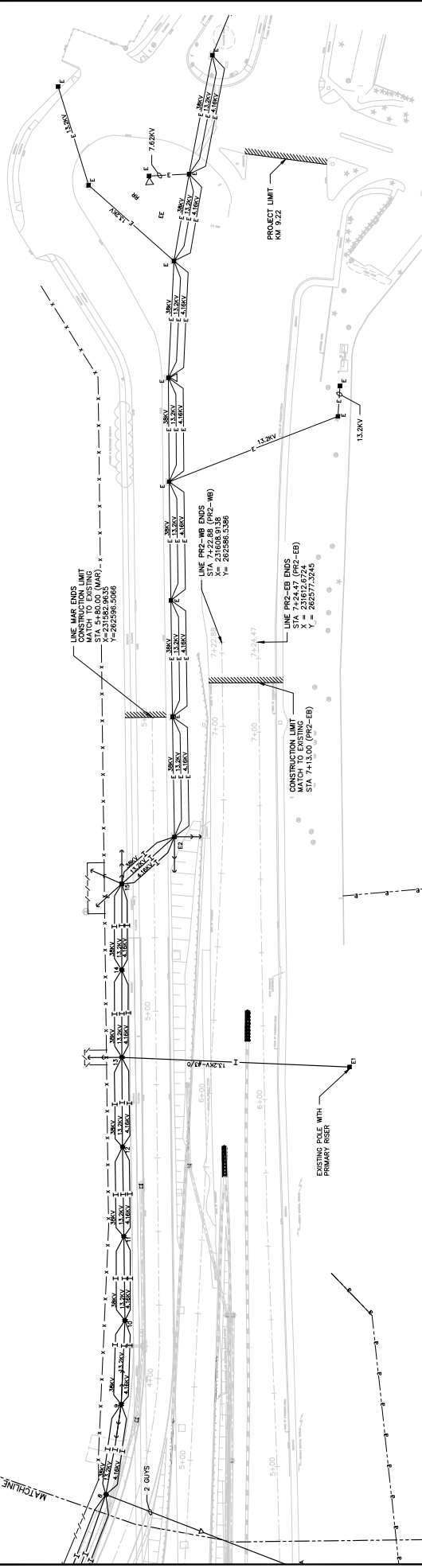
**LINE PR-2/6 ENDS CONSTRUCTION LIMIT**  
 STA 1400.00 (PR-2/6)  
 X = 26250.0524  
 Y = 26250.0524

**LINE PR-2/6 ENDS CONSTRUCTION LIMIT**  
 STA 1413.43 (PR-2/6)  
 X = 26250.0524  
 Y = 26250.0524

DATE: September 26, 2023 8:19 AM USER: Jose D. Vazquez  
 FILE: C:\PM\WORKSPACE\CHECKOUT\UTE\_06.DWG



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	100
				178



**DESIGNER'S CERTIFICATION**

I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, and Surveyors, as supervisor and administrator of the Transmission and Distribution System, in compliance with Act No. 153 of July 15, 1987, as amended known as the Electric Service Law, and that I am duly registered with the Board of Electric Design for this project in accordance with the provisions of the Electric Service Law, and that I am duly registered with the Board of Standards, Codes, and Regulations approved by LUMA, Puerto Rico Electric Power Authority, and that I am duly registered with the Board of Professional Practice Manual.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**  
**LUMA**  
 PR-2 AND PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Name: PR-2 AND PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Number: 23-7-580  
 Location: N/A  
 Revision: N/A  
 ENCOURSED BY:

- LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Electric Service Law, and that the designer is duly registered with the Board of Electric Design for this project in accordance with the provisions of the Electric Service Law, and that the designer is duly registered with the Board of Standards, Codes, and Regulations approved by LUMA, Puerto Rico Electric Power Authority, and that the designer is duly registered with the Board of Professional Practice Manual.
- LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design project files. The responsibility assumed with the certification of these project files. The certification does not constitute an endorsement or approval by LUMA, Puerto Rico Electric Power Authority, or any other entity. LUMA, Puerto Rico Electric Power Authority, and its subsidiaries, including LUMA, Puerto Rico Electric Power Authority, and its subsidiaries, shall not be held liable for any errors, omissions, or delays in the design, construction, or operation of the project, and shall not be held liable for any damages, including but not limited to, personal injury, property damage, or economic loss, arising out of the design, construction, or operation of the project.
- During this year, with prior notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified expiration work, the endorsement will be valid until the completion of the project. The endorsement is not to constitute an endorsement or approval of the design, construction, or operation of the project, and shall not be held liable for any damages, including but not limited to, personal injury, property damage, or economic loss, arising out of the design, construction, or operation of the project.



NO.	REVISIONS	DATE

**MUNICIPALITY OF BAYAMÓN**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

**PR-2 AND PR-6**

**ELECTRICAL UTILITIES PLAN**

**LUMA**

**UTE**

**07**

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		
DATE		07/27/23

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

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MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

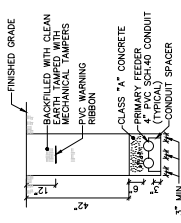
PUERTO RICO

DATE	REVISIONS

SCALE AS SHOWN

SECTIONS AND DETAILS

UTE 08



TYPICAL TRENCH DETAIL  
(PREPA STD. URD-6)  
SCALE: NTS



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	101	178

**DESIGNER'S CERTIFICATION**

I, certify that I am a licensed and registered engineer, surveyor, or architect (in compliance with Act 173 of 1988, as amended) and authorized by the Board of Professional Engineers, Architects, and Surveyors to act as an operator and administrator of the Transmission and Distribution System for the project described herein.

I, certify that I am a duly licensed and registered Professional Engineer in the State of Puerto Rico, in accordance with the provisions of Act No. 128 of July 15, 1997, as amended known as the Professional Regulation Act, and that I am duly registered with the Board of Professional Engineers, Architects, and Surveyors.

The electric design for this project is in accordance with the codes, standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority, Management, Office and the CIPRI Professional Practice Manual.

**DESIGNER'S SIGNATURE**

---

**ENDORSEMENT**

**LUMA**  
DESIGN INTERSECTION GEOMETRIC IMPROVEMENT

Project Name: \_\_\_\_\_  
Project Number: 232-680  
Date: \_\_\_\_\_  
Location: BAYAMON, P.R.  
Revision: \_\_\_\_\_

**ENDORSED BY**

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1. LUMA endorses the electric design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of Act 173 of 1988, as amended.

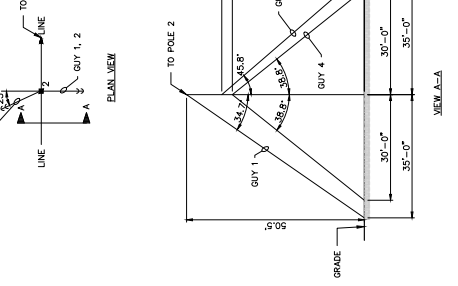
2. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the verification of the design and the responsibility associated with the certification of these project plans. The endorsement herein neither the builder nor private engineer or contractor is responsible for the design. The design is the responsibility of the National Electric Safety Code, construction standards, norms, and regulations approved by the Puerto Rico Electric Power Authority and state laws being by the time construction begins.

3. The design shown in these construction plans is valid as long as it is used in accordance with the provisions of Act 173 of 1988, as amended, and state laws being by the time construction begins. The endorsement will not be valid until work is completed. In state terms it is certified electrical work in compliance with the provisions of Act 173 of 1988, as amended, and state laws being by the time construction begins. The endorsement is not to constitute an assessment or to complete the Assignment. It shall be the responsibility of the designer to ensure that the design complies with all the provisions of the Elements Regulation for the Puerto Rico Electric Power Authority (2020-0629).

OGPe: 2020-307303-SRI-066461



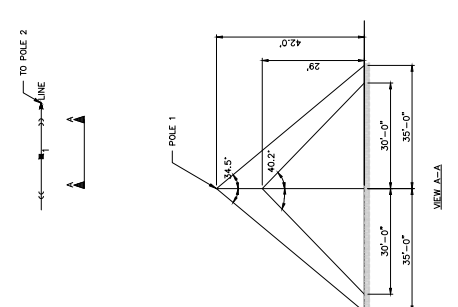
60-90 DEG STD. PLAN VIEW	DOUBLE DEAD END STD. PLAN VIEW	0-5' STAIRS PLAN VIEW	HIGHWAY PR-2 & PR-6	MUNICIPALITIES BAYAMÓN	ISLAND P.R.	FISCAL YEAR 2023	SHEET NO. 103	TOTAL SHEETS 178
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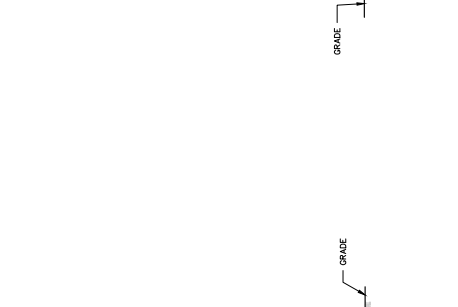
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SCALE: 1:200  
UTE-10



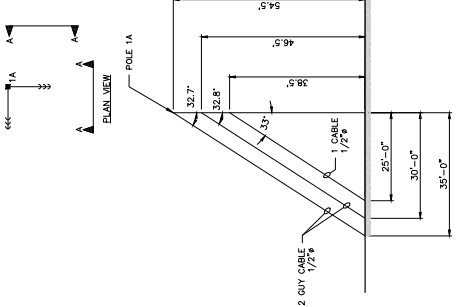
**POLE No. 1 GUY MOUNTING DETAIL / 2**  
SCALE: 1:200  
UTE-10



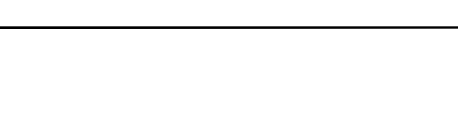
**POLE No. 2 GUY MOUNTING DETAIL / 3**  
SCALE: 1:200  
UTE-10



**POLE No. 3 GUY MOUNTING DETAIL / 6**  
SCALE: 1:200  
UTE-10



**POLE No. 6, 7, 8, 9 GUY MOUNTING DETAIL / 4**  
SCALE: 1:200  
UTE-10

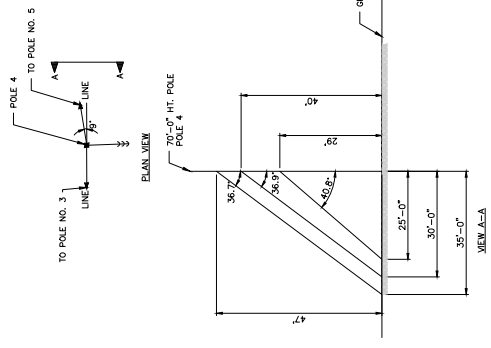


**POLE No. 8 GUY MOUNTING DETAIL / 5**  
SCALE: 1:200  
UTE-10

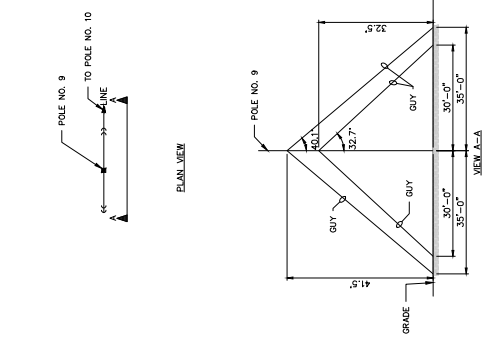
<p><b>DESIGNER'S CERTIFICATION</b></p> <p>I certify that I am a licensed and registered engineer, surveyor, or architect (in compliance with Act 175 of 1988, as amended) and authorized by the State Board of Professional Engineers, Architects and Surveyors as supervisor and administrator of the Transmission and Distribution System. I am duly registered with the Board of Professional Engineers, Architects and Surveyors in compliance with Act No. 153 of July 15, 1997, as amended known as the Electrical Engineering Law. I have not been suspended or disciplined from the electronic design for this project. I am licensed in accordance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority. I am duly registered with the Puerto Rico Board of Professional Engineers, Architects and Surveyors and I am duly registered with the Professional Practice Manual.</p> <p>DESIGNER'S SIGNATURE</p>		<p><b>ENFORCEMENT</b></p> <p><b>LUMA</b></p> <p>PROJECT NAME: PR-2 &amp; PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS</p> <p>PROJECT NUMBER: 23-2580</p> <p>LOAD (MVA): N/A</p> <p>REVISION: N/A</p> <p>ENFORCED BY:</p>	
<p>1. LUMA certifies the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of Act 175 of 1988, as amended.</p> <p>2. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design. LUMA's responsibility is not to be construed as a warranty or guarantee of any kind. LUMA's responsibility is limited to the certification of the design. LUMA's responsibility is not to be construed as a warranty or guarantee of any kind.</p> <p>3. LUMA certifies the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of Act 175 of 1988, as amended.</p> <p>4. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design. LUMA's responsibility is not to be construed as a warranty or guarantee of any kind.</p> <p>5. LUMA certifies the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of Act 175 of 1988, as amended.</p> <p>6. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design. LUMA's responsibility is not to be construed as a warranty or guarantee of any kind.</p> <p>7. LUMA certifies the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of Act 175 of 1988, as amended.</p> <p>8. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design. LUMA's responsibility is not to be construed as a warranty or guarantee of any kind.</p>		<p><b>OGPE: 2020-307303-SRI-066461</b></p>	

<p><b>MUNICIPALITY OF BAYAMÓN</b></p> <p>INTERSECTIONS GEOMETRIC IMPROVEMENTS</p> <p>PR-2 AND PR-6</p>		<p><b>PUEERTO RICO</b></p>		<p>DATE</p>
<p>1:200</p>		<p>1:200</p>		<p>REVISIONS</p>
<p>POLE MOUNTING DETAILS SHEET 1</p>		<p>POLE GUY MOUNTING DETAILS SHEET 1</p>		<p>UTE</p>
<p>10</p>		<p>10</p>		<p>178</p>

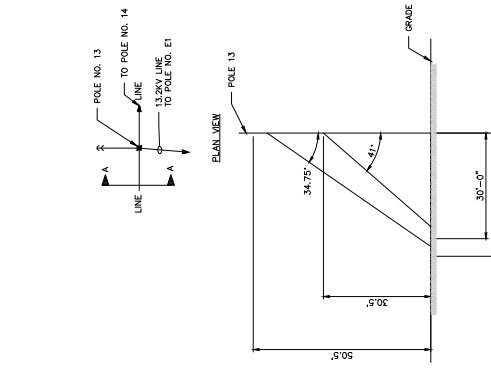
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	104
				178



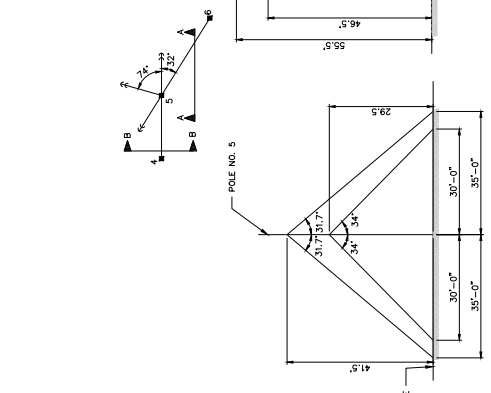
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SCALE: 1:200



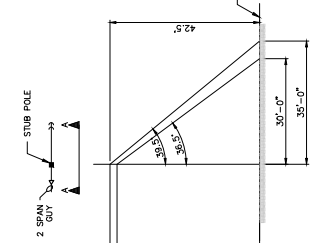
POLE No. 9 GUY MOUNTING DETAIL 2  
SCALE: 1:200



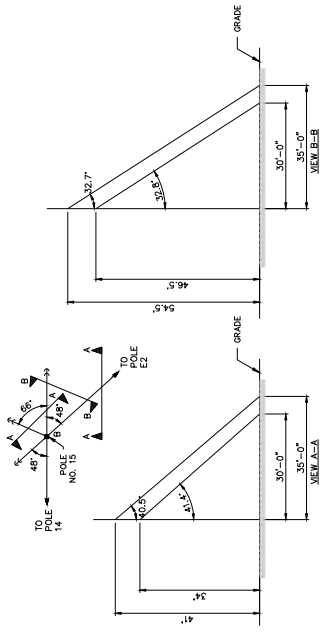
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SCALE: 1:200



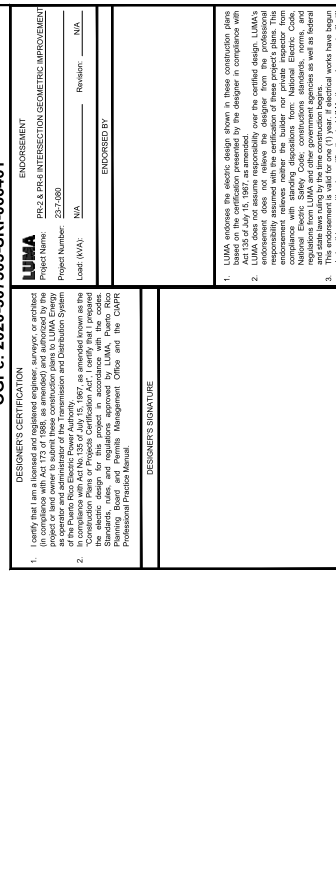
POLE No. 5 GUY MOUNTING DETAIL 4  
SCALE: 1:200



POLE No. 15 GUY MOUNTING DETAIL 6  
SCALE: 1:200



POLE No. 14 GUY MOUNTING DETAIL 5  
SCALE: 1:200



POLE No. 5 GUY MOUNTING DETAIL 4  
SCALE: 1:200

**DESIGNER'S CERTIFICATION**  
I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, and Surveyors, as the superior and administrator of the Transmission and Distribution System. In compliance with Act No. 53 of July 15, 1997, as amended known as the Professional Regulation Act, I hereby certify that the design, drawings, and specifications for this project are in accordance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Board of Professional Engineers, Architects, and Surveyors. I am duly registered as a Professional Engineer under No. 12000.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**  
LUMA  
PROJECT NAME: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: 23-7-580  
LOAD (KVA): N/A  
REVISION: N/A  
ENDORSED BY:

1. LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Board of Professional Engineers, Architects, and Surveyors. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design. The designer is responsible for the design and the construction of the project. The designer is responsible for the design and the construction of the project. The designer is responsible for the design and the construction of the project.

DATE	07/27/23
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	

STUB POLE GUY 5  
SCALE: 1:200

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

MUNICIPALITY OF BAYAMÓN

4#4 @ 20" O.C.  
#4 @ 20" O.C.  
#4 @ 20" O.C.  
#4 @ 20" O.C.

DATE

DATE

DATE

DATE

POLE GUY MOUNTING DETAILS  
SHEET 2

1:200

REVISIONS

DATE

PUERTO RICO

INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

MUNICIPALITY OF BAYAMÓN

4#4 @ 20" O.C.  
#4 @ 20" O.C.  
#4 @ 20" O.C.  
#4 @ 20" O.C.

DATE

UTE

11

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

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**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMÓN

BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

NOT TO SCALE

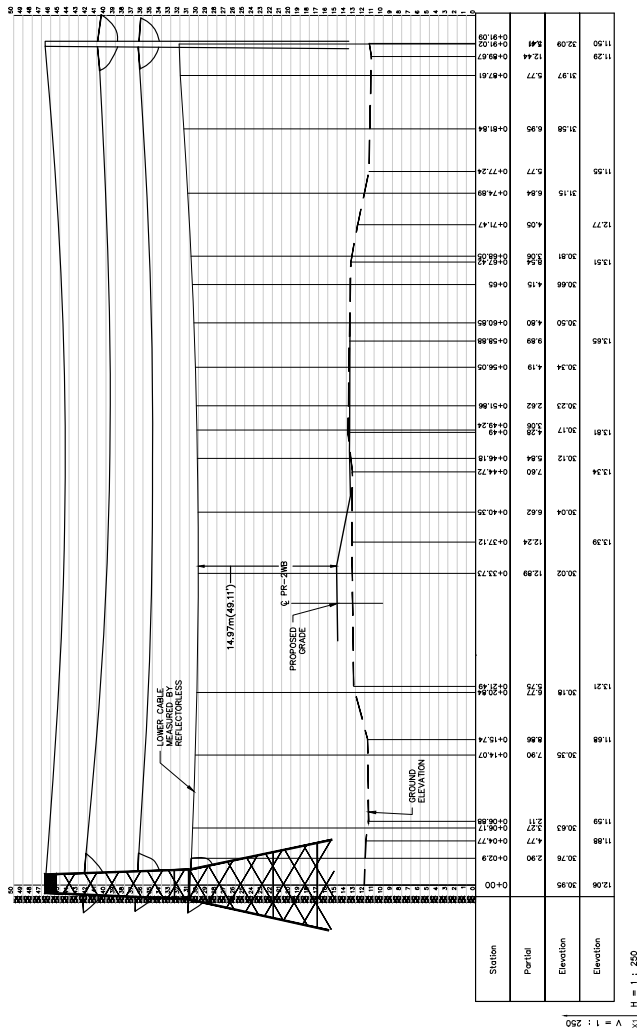
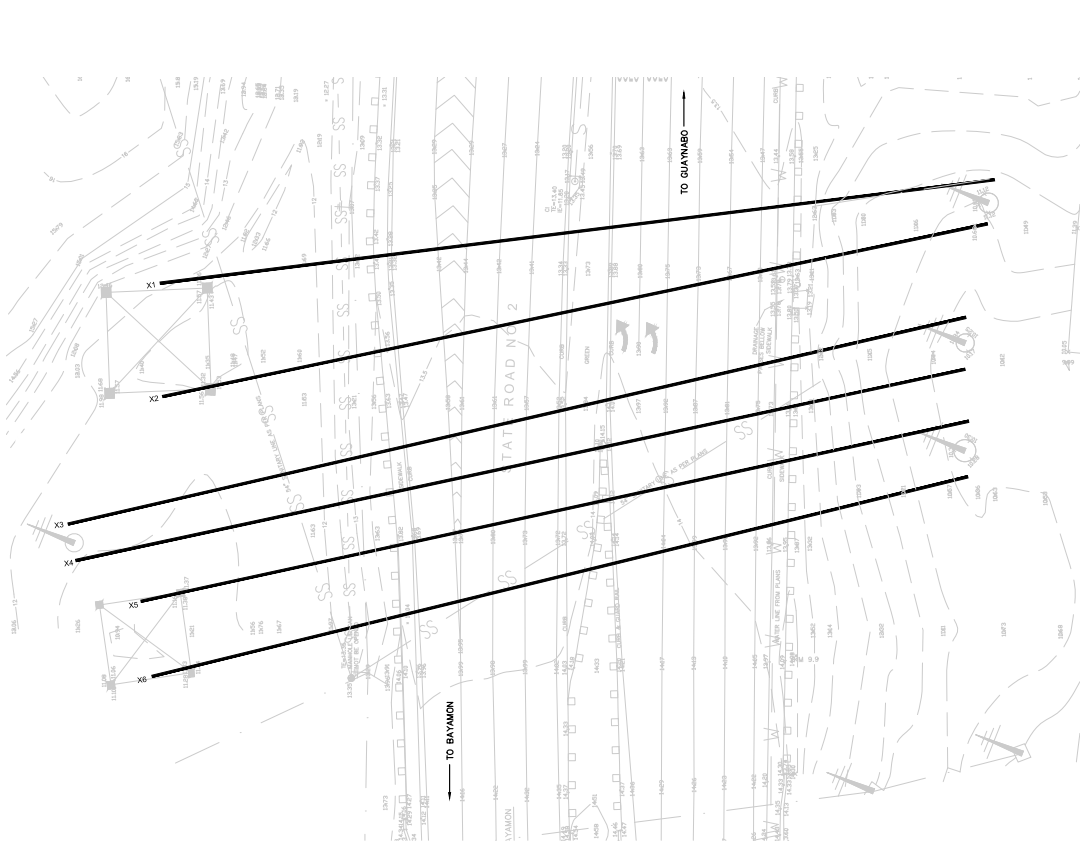
EXISTING PRIMARY TRANSMISSION LINES  
PLAN & PROFILE

UTE

12

DATE: September 26, 2023 8:18 AM USER: Jose O. Vazquez  
FILE: C:\PM\WORKSPACE\21202\CHEKOUT\UTE-12.WG

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	105	178



Station	Partial	Elevation	Elevation
12.06	0+00.0	0+02.0	0+02.0
11.88	0+02.0	0+04.7	0+04.7
11.59	0+04.7	0+07.2	0+07.2
11.68	0+07.2	0+10.0	0+10.0
13.21	0+10.0	0+15.7	0+15.7
13.21	0+15.7	0+20.0	0+20.0
13.39	0+20.0	0+23.7	0+23.7
13.24	0+23.7	0+27.0	0+27.0
13.81	0+27.0	0+31.2	0+31.2
13.81	0+31.2	0+35.0	0+35.0
13.65	0+35.0	0+38.0	0+38.0
13.65	0+38.0	0+41.0	0+41.0
13.51	0+41.0	0+44.0	0+44.0
12.77	0+44.0	0+47.0	0+47.0
12.77	0+47.0	0+50.0	0+50.0
13.51	0+50.0	0+53.0	0+53.0
13.51	0+53.0	0+56.0	0+56.0
13.51	0+56.0	0+59.0	0+59.0
13.65	0+59.0	0+62.0	0+62.0
13.65	0+62.0	0+65.0	0+65.0
13.81	0+65.0	0+68.0	0+68.0
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13.81	0+80.0	0+83.0	0+83.0
13.81	0+83.0	0+86.0	0+86.0
13.81	0+86.0	0+89.0	0+89.0
13.81	0+89.0	0+92.0	0+92.0
13.81	0+92.0	0+95.0	0+95.0
13.81	0+95.0	0+98.0	0+98.0
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13.81	0+131.0	0+134.0	0+134.0
13.81	0+134.0	0+137.0	0+137.0
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13.81	0+158.0	0+161.0	0+161.0
13.81	0+161.0	0+164.0	0+164.0
13.81	0+164.0	0+167.0	0+167.0
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13.81	0+170.0	0+173.0	0+173.0
13.81	0+173.0	0+176.0	0+176.0
13.81	0+176.0	0+179.0	0+179.0
13.81	0+179.0	0+182.0	0+182.0
13.81	0+182.0	0+185.0	0+185.0
13.81	0+185.0	0+188.0	0+188.0
13.81	0+188.0	0+191.0	0+191.0
13.81	0+191.0	0+194.0	0+194.0
13.81	0+194.0	0+197.0	0+197.0
13.81	0+197.0	0+200.0	0+200.0

V = 1 : 250  
H = 1 : 250

PR-2 & PR-6	BAYAMÓN	P.R.	2023	105	178
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DATE	BY	DESIGN	DRAWING	CHECK	FINAL PLANS
07/27/23					

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MUNICIPALITY OF BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

PUERTO RICO

REVISIONS

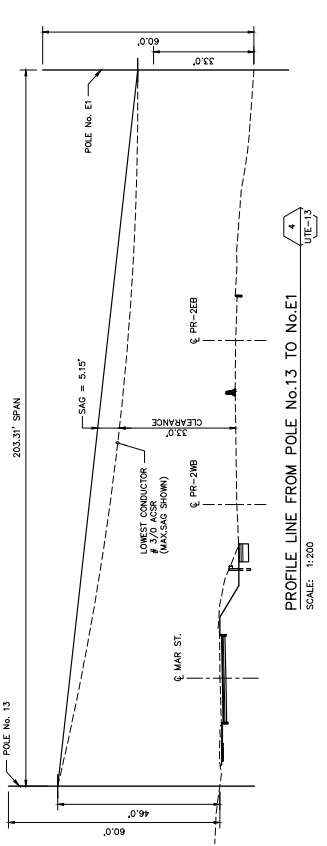
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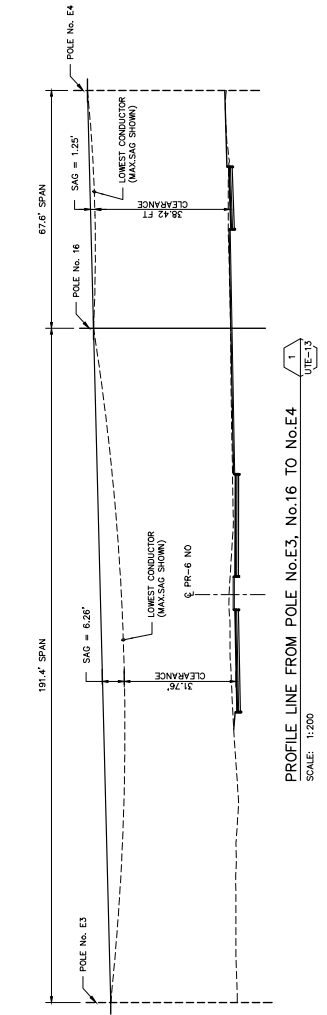
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PROFILE LINE SECTIONS

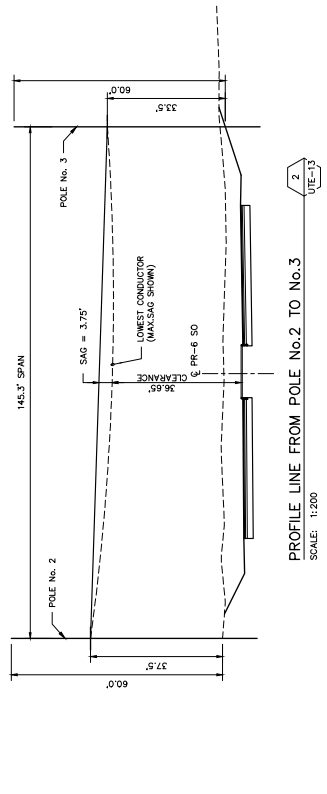
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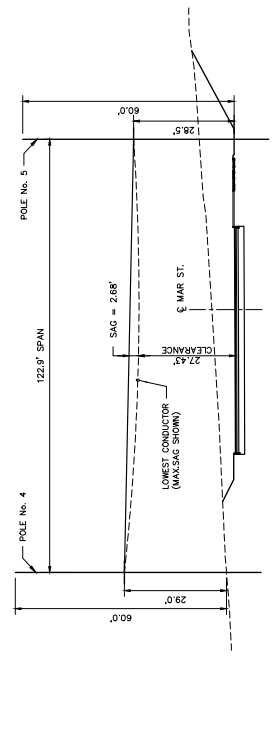
PROFILE LINE FROM POLE No.13 TO No.E1  
SCALE: 1:200



PROFILE LINE FROM POLE No.E3, No.16 TO No.E4  
SCALE: 1:200



PROFILE LINE FROM POLE No.2 TO No.3  
SCALE: 1:200



PROFILE LINE FROM POLE No.4 TO No.5  
SCALE: 1:200

DESIGNER'S CERTIFICATION  
**LUMA**  
I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, its amendments and authorized by the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico as supervisor and administrator of the Transmission and Distribution System in compliance with Act No. 153 of July 15, 1987, as amended known as the Electric Service Law, and that I am duly registered with the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico. I have read and approved the design, specifications, standards, notes, and regulations approved by LUMA, Puerto Rico Electric Power Authority, Management Office and the CHART Professional Practice Manual.

DESIGNER'S SIGNATURE

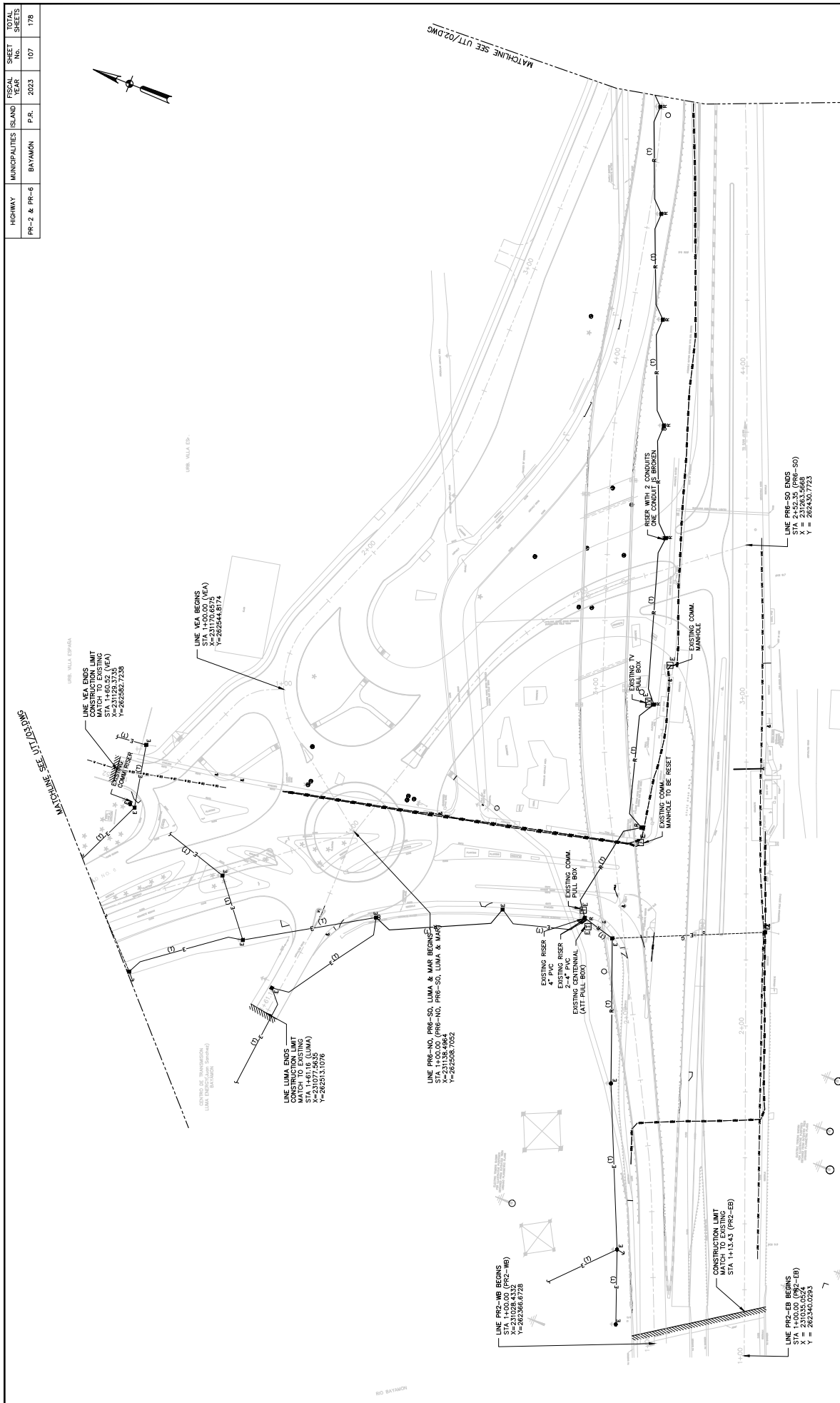
ENDORSEMENT  
**LUMA**  
PROJECT NAME: PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: 23-7-580  
LOAD (KVA): N/A  
REVISION: N/A

ENDORSED BY

- LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Electric Service Law, Act No. 153 of July 15, 1987, as amended, and the regulations issued thereunder.
- LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design and the responsibility assumed with the certification of these project plans. The endorser releases neither the designer nor the project sponsor from their respective responsibilities under the Electric Service Law, Act No. 153 of July 15, 1987, as amended, known as the Electric Service Law, and the regulations issued thereunder.
- During this year, with prior notification to LUMA, the endorser and the designer shall be available to provide technical assistance as well as the technical support necessary to complete the project.
- During the year, with prior notification to LUMA, the endorser and the designer shall be available to provide technical assistance as well as the technical support necessary to complete the project.

DATE: September 26, 2023 16:40 USER: Jose L. Vazquez  
FILE: C:\WORKSPACE\2102\CHECKOUT\UTE-13.WOC

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	107	178



**CMA ARCHITECTS & ENGINEERS**  
 448 2282  
 1000 Old Bay Road, Suite 200  
 Bayamón, PR 00961  
 Phone: (787) 263-2282  
 Email: info@cmaae.com

**MUNICIPALITY OF BAYAMÓN**

**PR-2 AND PR-6**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE: \_\_\_\_\_

REVISIONS

SCALE: 1:500

5 0 10 30

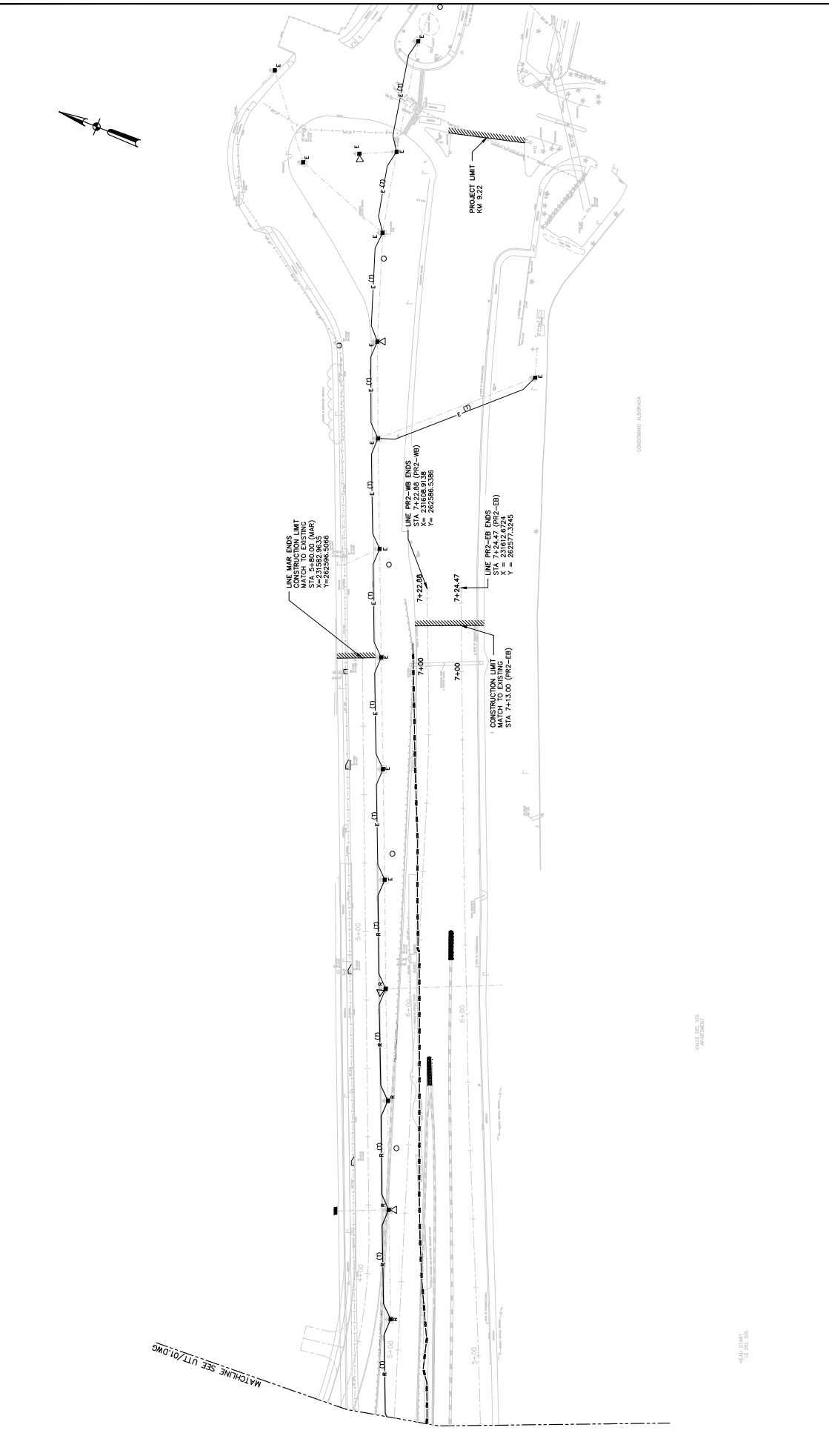
UTT 01

EXISTING UTILITY COMMUNICATION PLAN

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK FINAL PLANS
		CHECK
		DESIGN
		DRAWING
		ISSUED FOR PERMIT



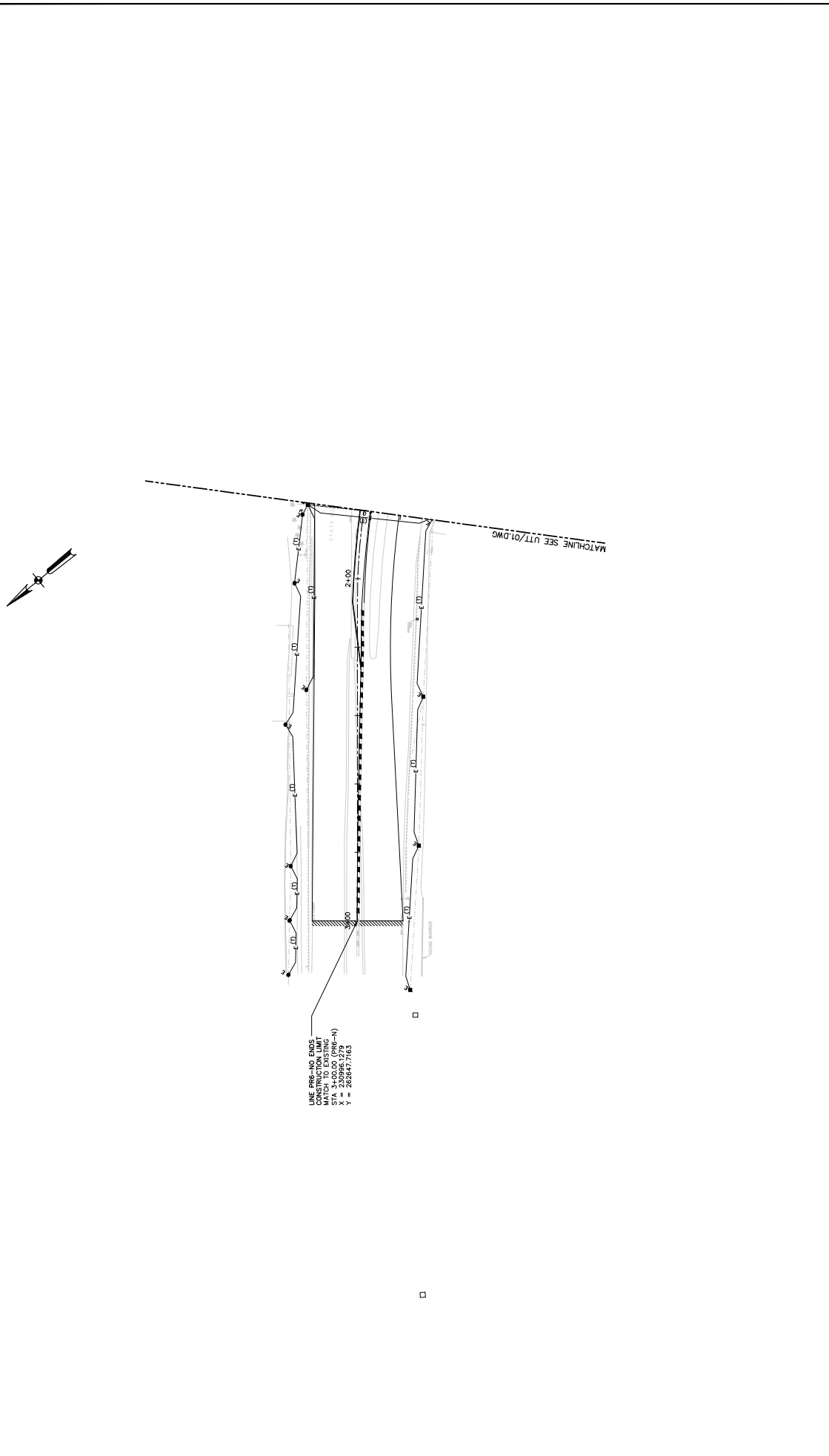
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	108	178



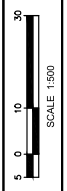
		MUNICIPALITY OF BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO		BAYAMÓN		DATE REVISIONS		EXISTING UTILITY COMMUNICATION PLAN		UTT 02	
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FINAL CHECK		07/27/23

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	109	178



<b>CMA</b> ARCHITECT & ENGINEERS	MUNICIPALITY OF BAYAMÓN	BAYAMÓN	PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO
#2218				
REVISIONS DATE DATE				
EXISTING UTILITY COMMUNICATION PLAN				UTT
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MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

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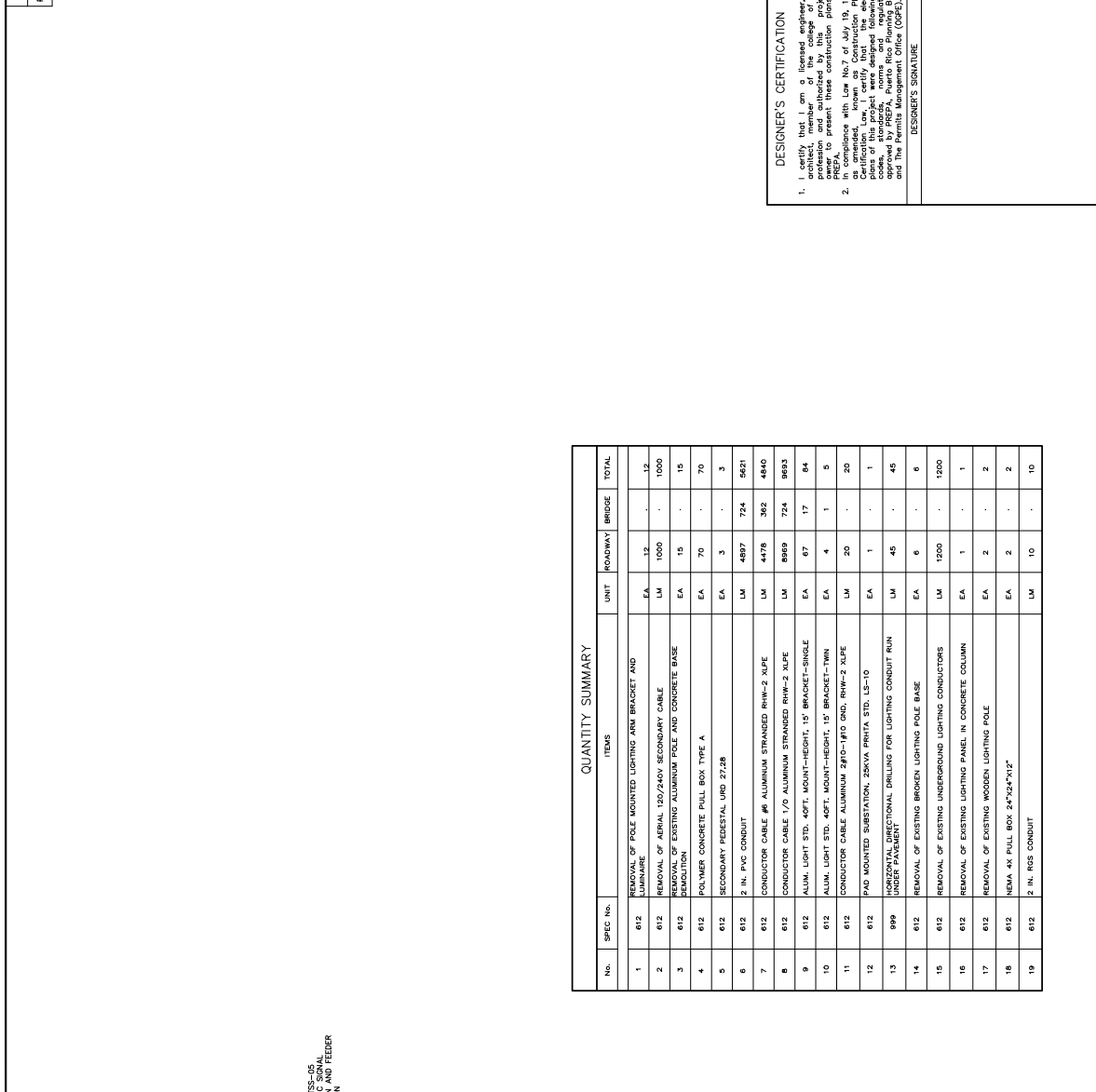
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ONE LINE DIAGRAMS, LOAD CALCULATIONS AND QUANTITY SUMMARY

LT 02

DATE: September 26, 2023 8:17 AM USER: Jose C. Vazquez FILE: C:\WORKSPACE\2102\CHECK\LT-02.DWG

HIGHWAY	PR-2 & PR-6
MUNICIPALITIES	BAYAMON
ISLAND	P.R.
FISCAL YEAR	2023
SHEET NOS.	111
TOTAL SHEETS	178



### LOAD CALCULATION

CIRCUIT NO.	1	2	3	4
SUBSTATION	30	16	28	18
SS-1				
25 KVA	2.85	0.8	2.43	1.19
BREAKER	30	30	30	30
CAPACITY				

### QUANTITY SUMMARY

No.	SPEC No.	ITEMS	UNIT	ROADWAY	BRIDGE	TOTAL
1	612	REMOVAL OF POLE MOUNTED LIGHTING ARM BRACKET AND LUMINAIRE	EA	12		12
2	612	REMOVAL OF AERIAL 150/240V SECONDARY CABLE	LM	1000		1000
3	612	REMOVAL OF EXISTING ALUMINUM POLE AND CONCRETE BASE	EA	15		15
4	612	POLYMER CONCRETE PULL BOX TYPE A	EA	70		70
5	612	SECONDARY PEDESTAL URD 27.28	EA	3		3
6	612	2 IN. PVC CONDUIT	LM	4837		4837
7	612	CONDUCTOR CABLE #6 ALUMINUM STRANDED RHW-2 XLPE	LM	4478	362	4840
8	612	CONDUCTOR CABLE 1/0 ALUMINUM STRANDED RHW-2 XLPE	LM	8969	724	9693
9	612	ALUM. LIGHT STD. 40FT. MOUNT-HEIGHT, 15" BRACKET-SINGLE	EA	67	17	84
10	612	ALUM. LIGHT STD. 40FT. MOUNT-HEIGHT, 15" BRACKET-TWIN	EA	4	1	5
11	612	CONDUCTOR CABLE ALUMINUM 2#10-1#10 GND. RHW-2 XLPE	LM	20		20
12	612	PAD MOUNTED SUBSTATION, 25KVA PHVA STD. LS-10	EA	1		1
13	999	HORIZONTAL DIRECTIONAL DRILLING FOR LIGHTING CONDUIT RUN UNDER PAVEMENT	LM	45		45
14	612	REMOVAL OF EXISTING BROKEN LIGHTING POLE BASE	EA	6		6
15	612	REMOVAL OF EXISTING UNDERGROUND LIGHTING CONDUCTORS	LM	1200		1200
16	612	REMOVAL OF EXISTING LIGHTING PANEL IN CONCRETE COLUMN	EA	1		1
17	612	REMOVAL OF EXISTING WOODEN LIGHTING POLE	EA	2		2
18	612	NEMA 4X PULL BOX 24"x24"x12"	EA	2		2
19	612	2 IN. RGS CONDUIT	LM	10		10

### DESIGNER'S CERTIFICATION

I, certify that I am a licensed engineer or architect, member of the college of professional engineers or architects, and have the power to present these construction plans to PREPA.

PREPA, as amended, requires that the designer, known as Construction Plan's designer, shall be responsible for the design of this project. The designer is not approved by PREPA. Puerto Rico Building and The Permits Management Office (GPE).

DESIGNER'S SIGNATURE

### ENDORSEMENT

PROJECT NAME: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PROJECT NUMBER: 23-001 LOAD KVA: N/A

ENDORSED BY:

REVISION	DATE
1	
2	
3	
4	

DRAFTSMAN

LICENSE NO.

1. PREPA endorses the electric design shown in these construction plans based on the certification, presented by the designer, and the information contained therein. PREPA does not assume any responsibility for the design. PREPA's endorsement does not relieve the designer from the professional responsibility assumed with the design. PREPA's endorsement is not an endorsement. PREPA does not guarantee, warrant or endorse any construction plan or design. PREPA's endorsement is not a warranty. PREPA, and other government agencies, as well as federal and state laws ruling by the time construction begins, are not responsible for any delays or other problems that may arise during the construction process. In case there is no certified electrical work during that period, this endorsement will lose its validity.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	112	178

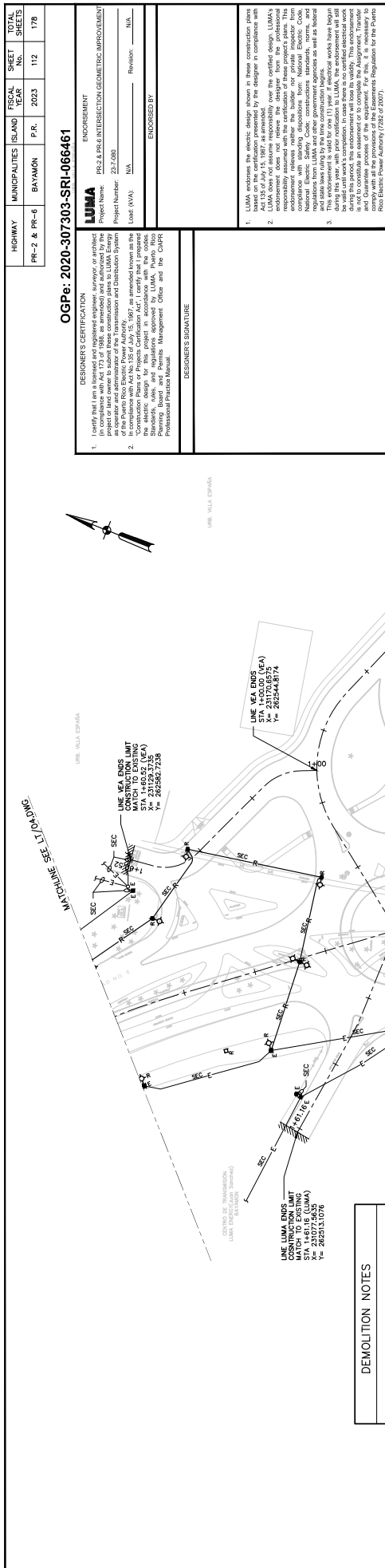
OGPe: 2020-307303-SRI-066461

**DESIGNER'S CERTIFICATION**

I, the undersigned, being a duly licensed and registered engineer, surveyor, or architect, do hereby certify that I am the author of the design shown on these plans, and that I am a duly licensed and registered professional in the State of Puerto Rico. I am not aware of any falsification of data or information furnished to me in connection with the preparation of these plans, and I am not aware of any fraud or other illegal or unethical practice in connection with the preparation of these plans. I am not aware of any violation of the provisions of the Professional Practice Manual of the Board of Professional Engineers, Architects, Surveyors and Planning Board and of the Board of Professional Engineers, Architects, Surveyors and Planning Board.

**DESIGNER'S SIGNATURE**

**LUMA**  
 Project Name: PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Number: 23-098  
 Location: BAYAMÓN, P.R.  
 Date: 07/27/23  
 Scale: 1:500  
 Revision: N/A  
 Endorsed by: \_\_\_\_\_



- DEMOLITION NOTES**
- EXISTING UNDERGROUND LIGHTING LAYOUT IS PRESERVED. CONDUITS, MANHOLES, AND FIELD VERTY EXISTING LIGHTING SHALL BE REMOVED.
  - EXISTING 120/240V OVERHEAD LINE SHOWN IS THE EXISTING OVERHEAD LINE TO BE REMOVED. THE CONTRACTOR SHALL VERIFY AND THE CONDUIT IS TO BE ABANDONED.
  - EXISTING 120/240V OVERHEAD LINE SHOWN IS THE EXISTING OVERHEAD LINE TO BE REMOVED. THE CONTRACTOR SHALL VERIFY AND THE CONDUIT IS TO BE ABANDONED.

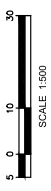
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CONSTRUCTION LIMIT  
 MATCH TO EXISTING  
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**EXISTING LIGHTING PLAN**

LT 03

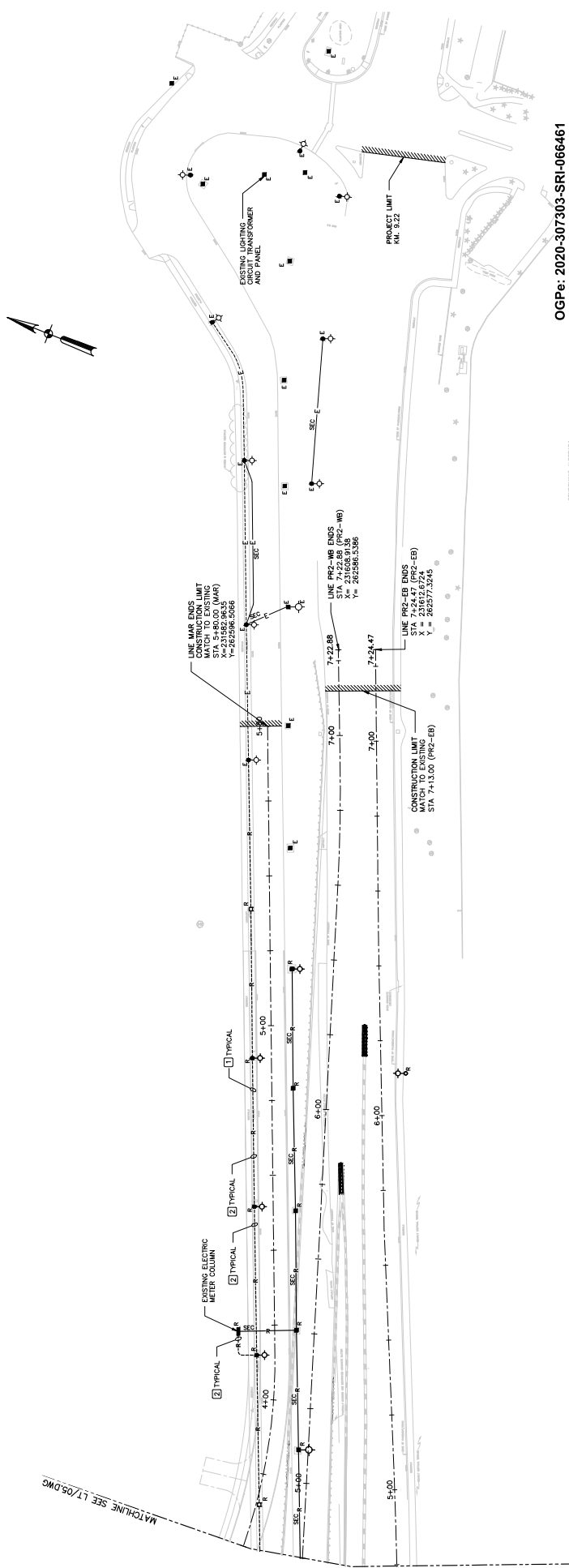
NO.	DATE	REVISIONS

MUNICIPALITY OF BAYAMÓN  
 BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

CMA ARCHITECTS & ENGINEERS  
 1000 CARRILLO ROAD, SUITE 200  
 SAN JUAN, PUERTO RICO 00906  
 TEL: (787) 733-1100  
 FAX: (787) 733-1101  
 WWW.CMA-ARCHITECTS.COM

DATE	BY	DESCRIPTION
07/27/23		

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	113
				178



**DESIGNER'S CERTIFICATION**

1. I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico as supervisor and administrator of the Transmission and Distribution System. In compliance with Act No. 135 of July 15, 1987, as amended known as the Electric Code, I certify that this project is in accordance with the provisions of the Electric Code for this project as stated above and that I am a duly licensed and registered Professional Engineer, Surveyor, or Architect in compliance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority (PREPA), and the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico.

DESIGNER'S SIGNATURE

**ENDORSEMENT**

**LUMA**  
PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT

Project Name: PR-2 & PR-6  
Project Number: 23-7-080  
Load (kVA): N/A  
Revision: N/A

ENDORSED BY:

1. LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Electric Code and the standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority (PREPA), and the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico. LUMA does not assume responsibility over the certified design. LUMA's endorsement is not a guarantee of the quality of the design or the responsibility assumed with the certification of these project plans. The design is the responsibility of the designer. LUMA's endorsement is not a guarantee of the quality of the design or the responsibility assumed with the certification of these project plans. The design is the responsibility of the designer. LUMA's endorsement is not a guarantee of the quality of the design or the responsibility assumed with the certification of these project plans. The design is the responsibility of the designer.

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1. I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico as supervisor and administrator of the Transmission and Distribution System. In compliance with Act No. 135 of July 15, 1987, as amended known as the Electric Code, I certify that this project is in accordance with the provisions of the Electric Code for this project as stated above and that I am a duly licensed and registered Professional Engineer, Surveyor, or Architect in compliance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority (PREPA), and the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico.

DESIGNER'S SIGNATURE

**ENDORSEMENT**

**LUMA**  
PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT

Project Name: PR-2 & PR-6  
Project Number: 23-7-080  
Load (kVA): N/A  
Revision: N/A

ENDORSED BY:

1. LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Electric Code and the standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority (PREPA), and the Board of Professional Engineers, Architects, and Surveyors of Puerto Rico. LUMA does not assume responsibility over the certified design. LUMA's endorsement is not a guarantee of the quality of the design or the responsibility assumed with the certification of these project plans. The design is the responsibility of the designer. LUMA's endorsement is not a guarantee of the quality of the design or the responsibility assumed with the certification of these project plans. The design is the responsibility of the designer. LUMA's endorsement is not a guarantee of the quality of the design or the responsibility assumed with the certification of these project plans. The design is the responsibility of the designer.

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REVISIONS

NO.	DATE	DESCRIPTION

**CMA**  
ARCHITECTS & ENGINEERS

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

07/27/23

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FINAL CHECK	07/27/23



MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN PUERTO RICO

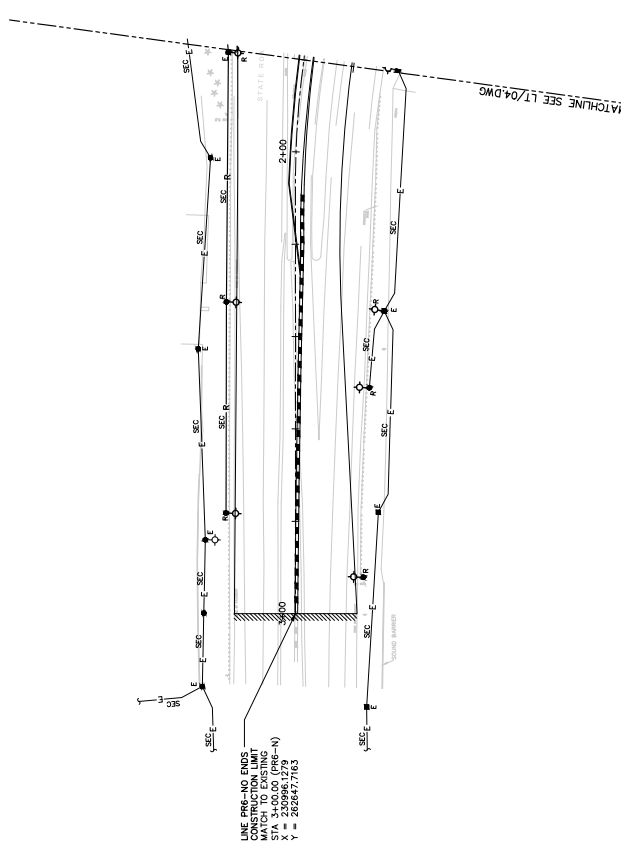
REVISIÓN

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EXISTING LIGHTING PLAN

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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	114
				178

**DESIGNER'S CERTIFICATION**

1. I certify that I am a licensed and registered engineer, surveyor, or architect (in compliance with Act 173 of 1988, its amendments and authorized by the Board of Professional Engineers, Architects, and Surveyors) and authorized by the Board of Professional Engineers, Architects, and Surveyors to practice as an engineer or administrator of the Transmission and Distribution System in compliance with Act No. 133 of July 15, 1997, as amended known as the Electric Service Law, and its amendments, and to provide professional services in the electric domain for this project in accordance with the provisions of the Electric Service Law, its amendments, and its regulations, and the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Board of Management, Office and the OAHPS Professional Practice Manual.

**DESIGNER'S SIGNATURE**

---

**ENDORSEMENT**

**LUMA**  
 PROJECT NAME: PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PROJECT NUMBER: 23-7-580  
 LOAD (MVA): N/A  
 REVISION: N/A

**ENDORSED BY**

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1. LUMA endorses the electric design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Electric Service Law, its amendments, and its regulations. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the verification of the design and the responsibility assumed with the certification of these project plans. The endorser releases neither the designer nor anyone associated with the design from their liability under the provisions of the Electric Service Law, its amendments, and its regulations, and the National Electrical Safety Code, contributions, standards, norms, and regulations approved by the Board of Management, Office and the OAHPS and state laws ruling by the time construction begins.

2. During this year, with prior notification to LUMA, the endorser will still be valid until work is completed. In case there is no specified practical work to be completed, the endorser will be valid until the end of the calendar year. It is not to constitute an assignment or to complete the Assignment. Transfer of the Assignment to another company or to another company with all the provisions of the Assignment Regulation for the Puerto Rico Electric Power Authority (2007).

DATE	BY	WORK
07/27/23		
DESIGN		
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FINAL CHECK		

MUNICIPALITY OF BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PR-2 AND PR-6

OGPe: 2020-307303-SRI-066461

DESIGNER'S CERTIFICATION  
 I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, as amended and authorized by the Board of Professional Engineers, Architects and Surveyors, and I am the author, creator, designer, or preparer of the design shown on this drawing. I am not providing any services under the provisions of Act 175 of 1988, as amended, which require the services of a professional engineer, architect, or surveyor. I am not providing any services under the provisions of Act 175 of 1988, as amended, which require the services of a professional engineer, architect, or surveyor. I am not providing any services under the provisions of Act 175 of 1988, as amended, which require the services of a professional engineer, architect, or surveyor.

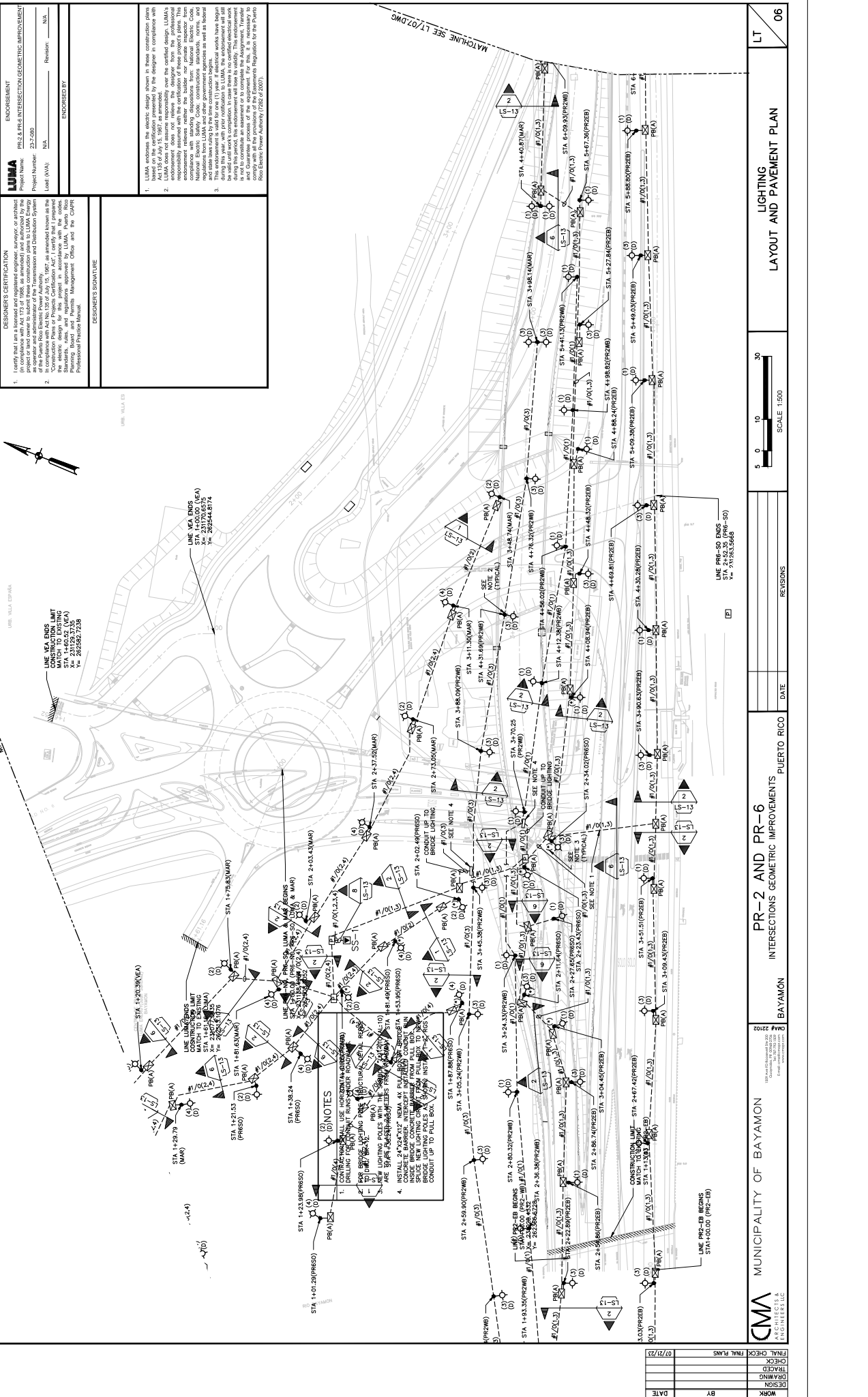
ENDORSEMENT  
 LUMA  
 Project Name: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 Project Number: 237-090  
 Load (kVA): N/A  
 Revision: N/A  
 ENCLOSED BY:  
 DESIGNER'S SIGNATURE:

1. LUMA certifies that the design shown in these construction plans is based on the verification presented by the designer in compliance with the provisions of Act 175 of 1988, as amended, and that LUMA does not assume responsibility for the design. LUMA's responsibility is limited to the verification of the design. LUMA's responsibility is limited to the verification of the design. LUMA's responsibility is limited to the verification of the design.

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REVISIONS  
 DATE  
 DESCRIPTION

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMON

MUNICIPALITY OF BAYAMON

ARCHITECT & ENGINEERS

06

LT

LAYOUT AND PAVEMENT PLAN

06



DATE	07/27/23
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	
TITLE PLANS	

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

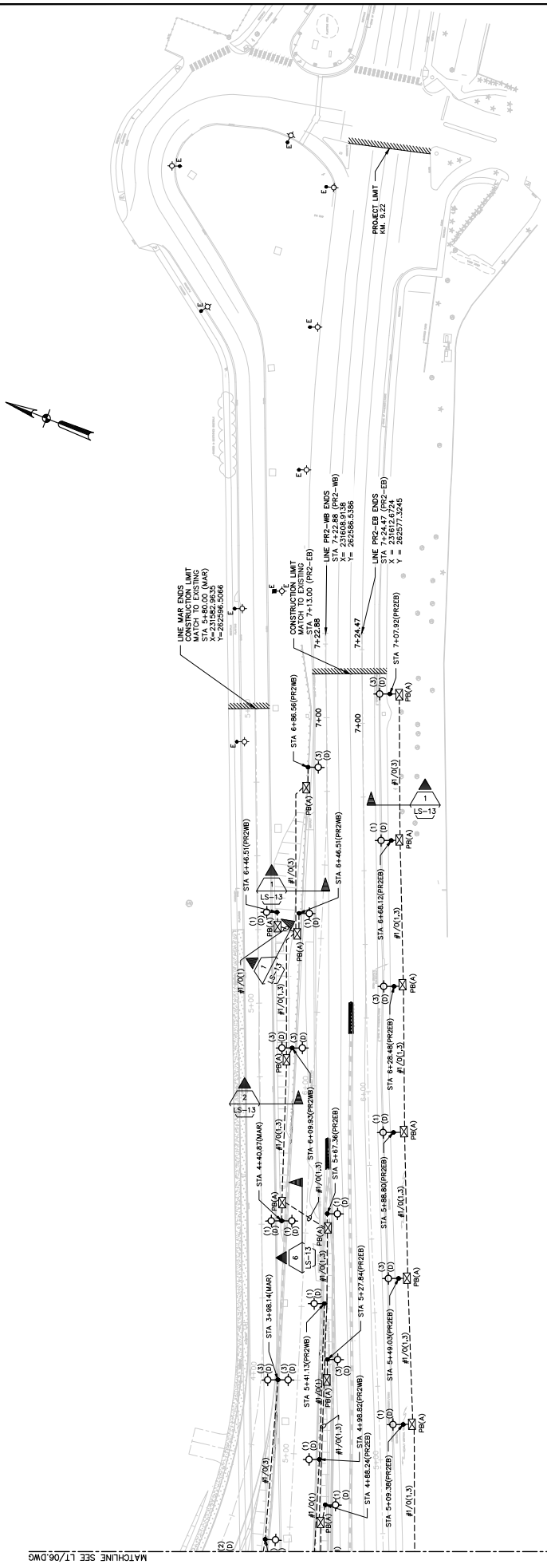
BAYAMON PUERTO RICO

REVISED	DATE

SCALE 1:500

LT 07

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	116	178



CONDORIO ALPINA

**OGPe: 2020-307303-SRI-066461**

**DESIGNERS CERTIFICATION**  
I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, its amendments and authorized by the Board of Engineers, Architects, Surveyors and Craftsman to practice as an engineer and administrator of the Transmission and Distribution System.

**LUMA**  
PROJECT NAME: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: 23-580  
LOAD (KVA): N/A  
REVISION: N/A  
ENCORSED BY: \_\_\_\_\_

**DESIGNER'S SIGNATURE**

- LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of Act 175 of 1988, its amendments and authorized by the Board of Engineers, Architects, Surveyors and Craftsman to practice as an engineer and administrator of the Transmission and Distribution System. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the design. The responsibility assumed with the certification of these project plans. This endorsement release neither the designer nor the project sponsor from their respective responsibilities under the Professional Regulation Act of 1988, its amendments, National Electric Safety Code, contributions, standards, norms, and regulations. LUMA's endorsement is not a guarantee of the safety and state being during the time construction begins.
- During this year, with prior notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified-essential work to be completed, the endorsement will remain valid until the work is not to constitute an agreement or to complete the Assignment. Transfer of the endorsement to another company or to a different company will not be allowed without the prior written consent of the company with all the provisions of the Elements Regulation for the Puerto Rico Electric Power Authority (PREPA of 2007).

WORK	
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DATE	
DESIGN	
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CHECK	
FINAL CHECK	
TITLE PLANS	

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

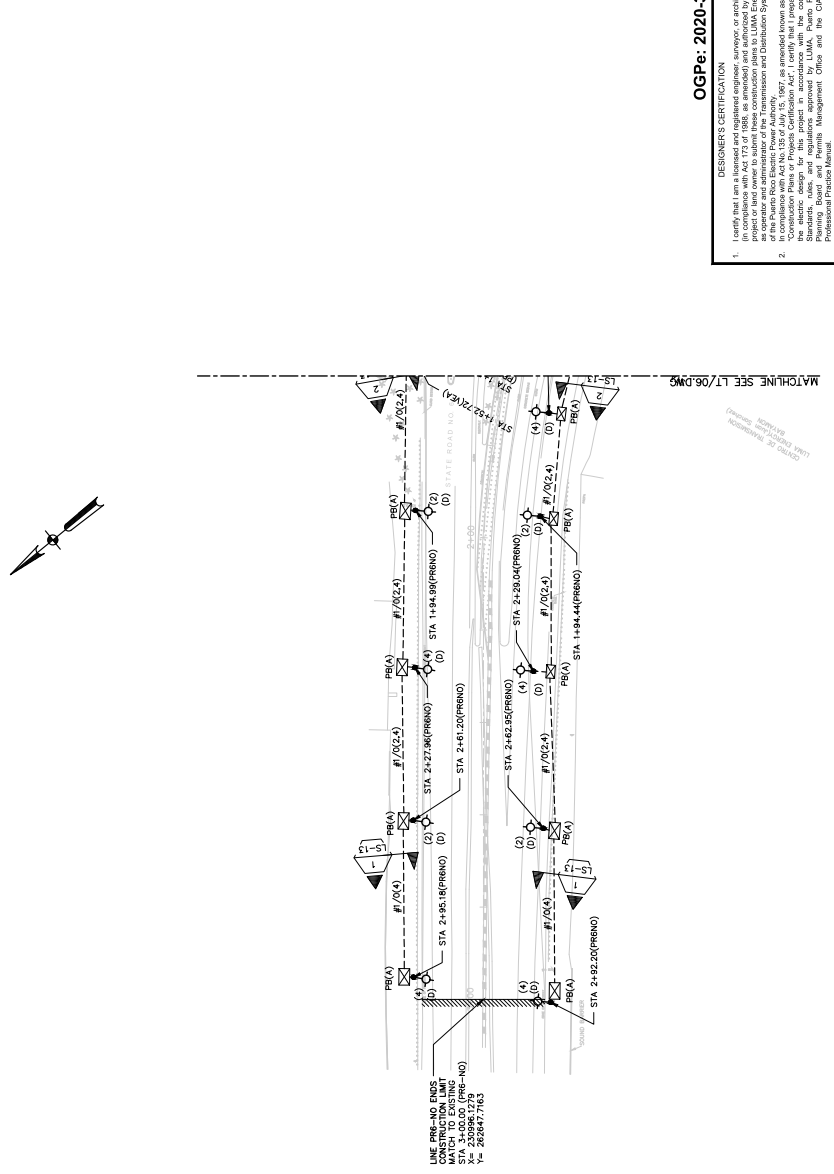
REVISIONS	DATE

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LIGHTING  
LAYOUT AND PAVEMENT PLAN

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08

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	117
				178



**DESIGNER'S CERTIFICATION**

1. I certify that I am a licensed and registered engineer, surveyor, or architect (in compliance with Act 173 of 1988, as amended) and authorized by the Board of Professional Engineers, Architects, and Surveyors, or the Board of Professional Engineers, Architects, and Surveyors, to practice in the State of Puerto Rico. I am duly registered in the State of Puerto Rico in compliance with Act No. 135 of July 15, 1997, as amended known as the Professional Regulation Act, and I am duly registered in the State of Puerto Rico in compliance with Act No. 135 of July 15, 1997, as amended known as the Professional Regulation Act, and I am duly registered in the State of Puerto Rico in compliance with Act No. 135 of July 15, 1997, as amended known as the Professional Regulation Act.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**

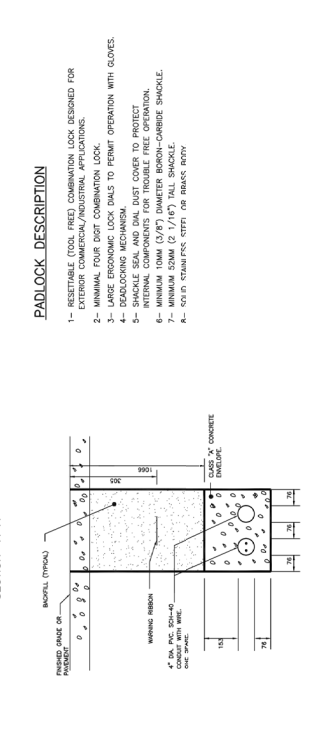
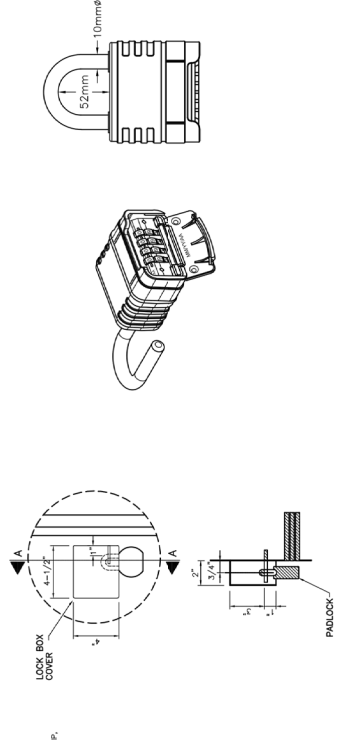
**LUMA**  
PROJECT NAME: PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: 23-7-580  
LOAD (KVA): N/A  
REVISION: N/A

**ENDORSED BY**

1. LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the Professional Regulation Act, and LUMA does not assume responsibility for the design. LUMA's endorsement is limited to the design shown in these construction plans and is not a warranty of any kind. LUMA's endorsement is not a guarantee of any kind. LUMA's endorsement is not a guarantee of any kind. LUMA's endorsement is not a guarantee of any kind.

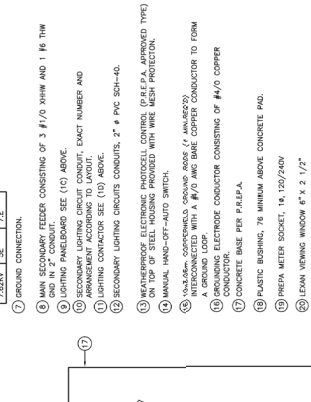
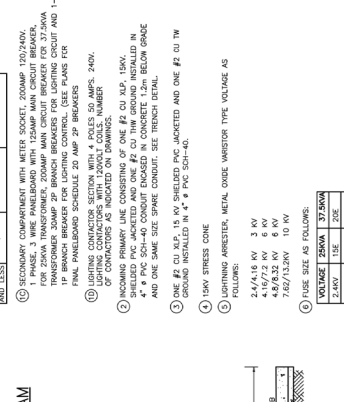
**NOTES FOR PAD MOUNTED SUBSTATION & LIGHTING CONTROL CABINET**

1- ALL DIMENSIONS SHOWN ARE MINIMUM UNLESS OTHERWISE NOTED.  
 2- PERIMETER FENCE AND A CONCRETE SLAB SHALL BE INSTALLED AROUND THE TRANSCLASURE (SEE PERIMETER FENCE DETAIL).  
 3- FOR EACH HOOK OR PADLOCK HOOK ON THE TRANSCLASURE DOORS THE CONTRACTOR SHALL PROVIDE A LOCKING MECHANISM TO BE DETERMINED BY MANUFACTURER TO CONFORM TO ALL PREPFA, INC. ASLS & NEMA STANDARDS.  
 4- THE LOCKING MECHANISM SHALL BE THE PROPERTY OF THE CONTRACTOR.  
 5- THE TRANSCLASURE SHALL HAVE FACTORY INSTALLED "LOCK" BODY COVERS FOR ALL ITS PADLOCKS HOOK OR HOOKS.  
 6- THE SUBSTATION SHALL COMPLY WITH PERFA TRANSCLASURE SPECIFICATIONS.  
 7- THE PAD MOUNTED SUBSTATION PAY ITEM SHALL INCLUDE AS A SUBSIDIARY OBLIGATION, ALL THE WORKS, MATERIALS, AND EQUIPMENTS INDICATED IN THE INTERIM STANDARD DRAWINGS LS-10, LS-10A, AND LS-10B.



**DESCRIPTION**

1- STAINLESS STEEL PAD MOUNTED SUBSTATION ENCLOSURE LEAD FRONT TYPE  
 2- PERIMETER FENCE WITH 1.2M HIGH VOLTAGE COMPARTMENT  
 3- TRANSFORMER NON-PCB OIL FILLED 250VA OR 375VA  
 4- 250VA OR 375VA TRANSFORMER WITH 1.2M HIGH VOLTAGE COMPARTMENT  
 5- 3 WIRE SECONDARY WITH #1 - 2 1/2" MIPSP.  
 6- 13.200VA  
 7- 150/240V  
 8- 4.300VA  
 9- 150/240V  
 10- 2  
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**INTERIM STANDARD DRAWING LS-10**  
 EFFECTIVE DATE: NOVEMBER 2016

**LIGHTING PLANS**  
 PAD MOUNTED SUBSTATION "DETAILS"

SCALE: NOT TO SCALE

DATE: \_\_\_\_\_

REVISIONS:

**DESIGNER'S CERTIFICATION**

1. I certify that I am a licensed and registered engineer, surveyor or architect (in compliance with Act 173 of 1988, as amended) and authorized by the Board of Professional Engineers, Architects, Surveyors and Contractors to seal and administer the Transmission and Distribution System (in compliance with Act 158 of 1997, as amended) and the Electrical Code (in compliance with Act 158 of 1997, as amended) known as the Professional Practice Act. I certify that I proposed the design shown in these construction plans in accordance with the Standards, rules and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Professional Practice Manual.

**DESIGNER'S SIGNATURE**

\_\_\_\_\_  
 ENDORESEMENT

**LUMA**  
 Project Name: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 Project Number: N/A  
 Lead (LVA): N/A  
 Revision: \_\_\_\_\_  
 ENDORESE BY

LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the Professional Practice Act. LUMA does not assume responsibility for the design or construction of the project. The responsibility for the design and construction of the project rests with the designer. LUMA reserves the right to request the designer to revise the design or construction of the project if it is found that the design or construction does not comply with the Standards, rules and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Professional Practice Manual.

**INTERIM STANDARD DRAWING LS-10**  
 EFFECTIVE DATE: NOVEMBER 2016

**LIGHTING PLANS**  
 PAD MOUNTED SUBSTATION "DETAILS"

SCALE: NOT TO SCALE

DATE: \_\_\_\_\_

REVISIONS:

**DESIGNER'S CERTIFICATION**

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**DESIGNER'S SIGNATURE**

\_\_\_\_\_  
 ENDORESEMENT

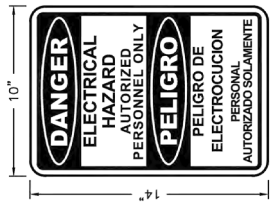
**LUMA**  
 Project Name: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 Project Number: N/A  
 Lead (LVA): N/A  
 Revision: \_\_\_\_\_  
 ENDORESE BY

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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	119	178

### CONCRETE SLAB DESCRIPTION

1. THE CONCRETE SLAB SHALL EXTEND SIX INCHES BEYOND THE PERIMETER FENCE BASE.
2. THE CONCRETE SLAB SHALL HAVE A DEPTH OF SIX INCHES.
3. REINFORCING BARS SHALL BE #4 (1/2") WITH No. 3 SPACING AT 18" O.C. EACH WAY OR WITH A W/F (6"X6"-A2-A3-A4-A5-A6).
4. THE CONCRETE USED FOR THE SLAB AND FOR THE FENCE POLES BASE FOOTING SHALL BE CLASS "A" (3,000 PSI).
5. THE SURFACE SHALL BE FINISHED TO A SMOOTH, TROWLED, THE EDGES SHALL BE ROUNDED, PERPENDICULAR GROOVES SHALL BE ESTABLISHED EVERY FOUR FEET, AND THE FINAL SURFACE SHALL BE ALIGNED WITH THE PERIMETER TERMINAL AND GATE POSTS THE SLAB SHALL HAVE A 6 INCH DIAMETER OPENING THROUGH THE SLAB TO FACILITATE THE INSTALLATION OF THE FENCES GROUNDING RODS. (SEE GROUNDING DETAILS)



### ELECTRICAL HAZARD SIGN DESCRIPTION

- 1- RIGID TREATED POLYESTER (CHIP AND GRACK RESISTANT) PLASTIC.
- 2- BORDERS ARE PRINTED WITH UV INK.
- 3- APPROVED FOR OUTDOOR INSTALLATION.
- (RESISTANT TO MILD CHEMICALS AND FADING)

### ELECTRICAL HAZARD SIGN INSTALLATION

- 1- ONE SIGN SHALL BE INSTALLED ON EACH SIDE OF THE PERIMETER FENCE (MID SECTION AND 4 FEET ELEVATED. SECURE BY EACH CORNER TO THE GATE (MID SECTION AND 4 FEET ELEVATED. SECURE BY EACH CORNER TO THE GATE)

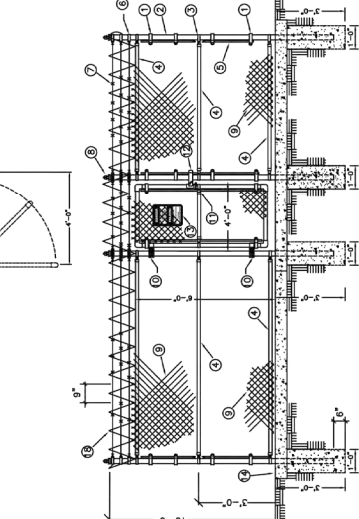
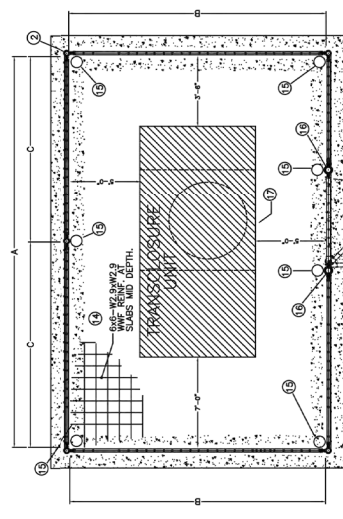


No.	DESCRIPTION
1	TENSION BAND WITH 5/16" FENCE BOLT (H.D.G.)
2	TERMINAL POST (H.D.G. 2 1/2" SCH-40; 10 FT. LONG)
3	BRACE BAND WITH RAIL END CAP (H.D.G.)
4	ELECTRICAL HAZARD SIGN (SEE DESCRIPTION)
5	TENSION BAR (H.D.G. 2" SCH-40)
6	BRACE BAND WITH 5/16 FENCE BOLT (H.D.G.)
7	THREE STRANDS OF H.D.G. BARBIRE (12.5 GAUGE, 4 POINTS)
8	TERMINAL POST CAP (H.D.G.)
9	(NOT D.P. GALVANIZED) 2x4x8 CHANNEL FENCE FABRIC (NOTE: THE FABRIC SHALL BE TIED DOWN AND SECURE EVERY 9 INCHES TO THE TOP SUPPORT RAIL AND TOP BARBIRE. (AT THE GATE OPENING, THE BARBIRE SHALL BE SECURE TO PROPOSED STEEL TIES SHALL BE 9 GAUGE/GALVANIZED)

DESCRIPTION	DESCRIPTION
A	SHALL EQUAL THE TRANSLOSURE LENGTH PLUS 10"-8"
B	SHALL EQUAL THE TRANSLOSURE WIDTH PLUS 10"-0"
C	SHALL EQUAL THE DISTANCE "A" DIVIDE BY TWO (C=A/2)

THE GATE OPENING SHALL BE LOCATED ON THE SAME SIDE WHERE THE TRANSLOSURE UNIT HAS ITS TRANSFORMER COMPARTMENT OPENING AND THEY SHALL BE TIED WITH EACH OTHER

THE PERIMETER FENCE GATE SHALL BE FURNISHED WITH A PADLOCK ACCORDING TO THE PADLOCK DESCRIPTION DETAIL



### PERIMETER FENCE BASIC COMPONENTS

(H.D.G. = HOT D.P. GALVANIZED STEEL)

No.	DESCRIPTION
10	GATE POST HINGE (MALLEABLE BUT HINGE, H.D.G.)
11	END RAIL CLAMP WITH SUPPORTING RAIL (H.D.G., 2" SCH-40)
12	INDUSTRIAL STRONG ARM GATE LATCH (H.D.G.)
13	ELECTRICAL HAZARD SIGN (SEE DESCRIPTION)
14	TERMINAL POST CAP (H.D.G.)
15	6 INCH DIA. OPENING FOR GROUND ROD INSTALLATION
16	GATE POST (H.D.G. 3 INCH DIA. SCH-40)
17	TRANSFORMER COMPARTMENT OPENING (ALIGNED WITH GATE OPENING)
18	RAZOR WIRE (H.D.G., 2" HIGH DIA., 0FT-60) AND SECURE EVERY 9 INCHES TO THE TOP SUPPORT RAIL AND TOP BARBIRE. (AT THE GATE OPENING, THE BARBIRE SHALL BE SECURE TO THE TOP AND BOTTOM BARBIRE TO PERMIT A FREE OPENING)

PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY  
DESIGN AREA  
UTILITIES AND ILLUMINATION OFFICE

CMA ARCHITECTS & ENGINEERS  
BAYAMÓN  
PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

REVISIONS

DATE	REVISIONS

SCALE  
NOT TO SCALE

PAD MOUNTED SUBSTATION LIGHTING PLANS  
"DETAILS"  
INTERIM STANDARD DRAWING LS-10A  
EFFECTIVE DATE: NOVEMBER 2016

PERIMETER FENCE & ELECTRICAL HAZARD SIGN  
NOT TO SCALE

LT 10

DATE	BY	CHECK	DATE
07/27/23			

FINAL CHECK  
DESIGN  
DRAWING  
CHECK  
DATE

**LUMA**  
PROJECT NAME: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: N/A  
LOAD (KVA): N/A  
REVISION: N/A  
ENDORSED BY: \_\_\_\_\_

**DESIGNER'S CERTIFICATION**  
I, the undersigned, certify that I am a duly registered professional engineer in the State of Puerto Rico (in compliance with Act 173 of 1988, as amended) and authorized by the Board of Professional Engineers of the State of Puerto Rico to practice the profession of engineering and administration of the Transmission and Distribution System in accordance with the provisions of the Public Law 100-657, as amended, and in compliance with the Law 15 of July 15, 1997, as amended known as the "Transmission and Distribution System Act".  
I hereby certify that I have prepared this design in accordance with the Standards, rules and regulations approved by LUMA, Puerto Rico Standards, Rules and Regulations Management Office and the CEMR Professional Practice Manual.

DESIGNER'S SIGNATURE: \_\_\_\_\_

LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Public Law 100-657, as amended, and in compliance with the Law 15 of July 15, 1997, as amended known as the "Transmission and Distribution System Act". LUMA does not assume responsibility for the certified design. LUMA's endorsement releases neither the designer nor LUMA from the responsibility assumed with the certification of these project plans. The National Electric Safety Code, contributions, standards, norms, and regulations approved by the Puerto Rico Standards, Rules and Regulations Management Office as well as the local and state laws ruling by the time construction begins, shall be followed during the work's completion. In case there is no specified electrical work in the design, the designer is responsible for completing the design in order to coordinate an agreement or to complete the Assignment. Transfer of responsibility shall be made in writing by the designer and the company with all the provisions of the Establishment Regulation for the Puerto Rico Electric Power Authority (GREC of 2007).

ENDORSEMENT  
PROJECT NAME: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PROJECT NUMBER: N/A  
LOAD (KVA): N/A  
REVISION: N/A  
ENDORSED BY: \_\_\_\_\_

LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Public Law 100-657, as amended, and in compliance with the Law 15 of July 15, 1997, as amended known as the "Transmission and Distribution System Act". LUMA does not assume responsibility for the certified design. LUMA's endorsement releases neither the designer nor LUMA from the responsibility assumed with the certification of these project plans. The National Electric Safety Code, contributions, standards, norms, and regulations approved by the Puerto Rico Standards, Rules and Regulations Management Office as well as the local and state laws ruling by the time construction begins, shall be followed during the work's completion. In case there is no specified electrical work in the design, the designer is responsible for completing the design in order to coordinate an agreement or to complete the Assignment. Transfer of responsibility shall be made in writing by the designer and the company with all the provisions of the Establishment Regulation for the Puerto Rico Electric Power Authority (GREC of 2007).

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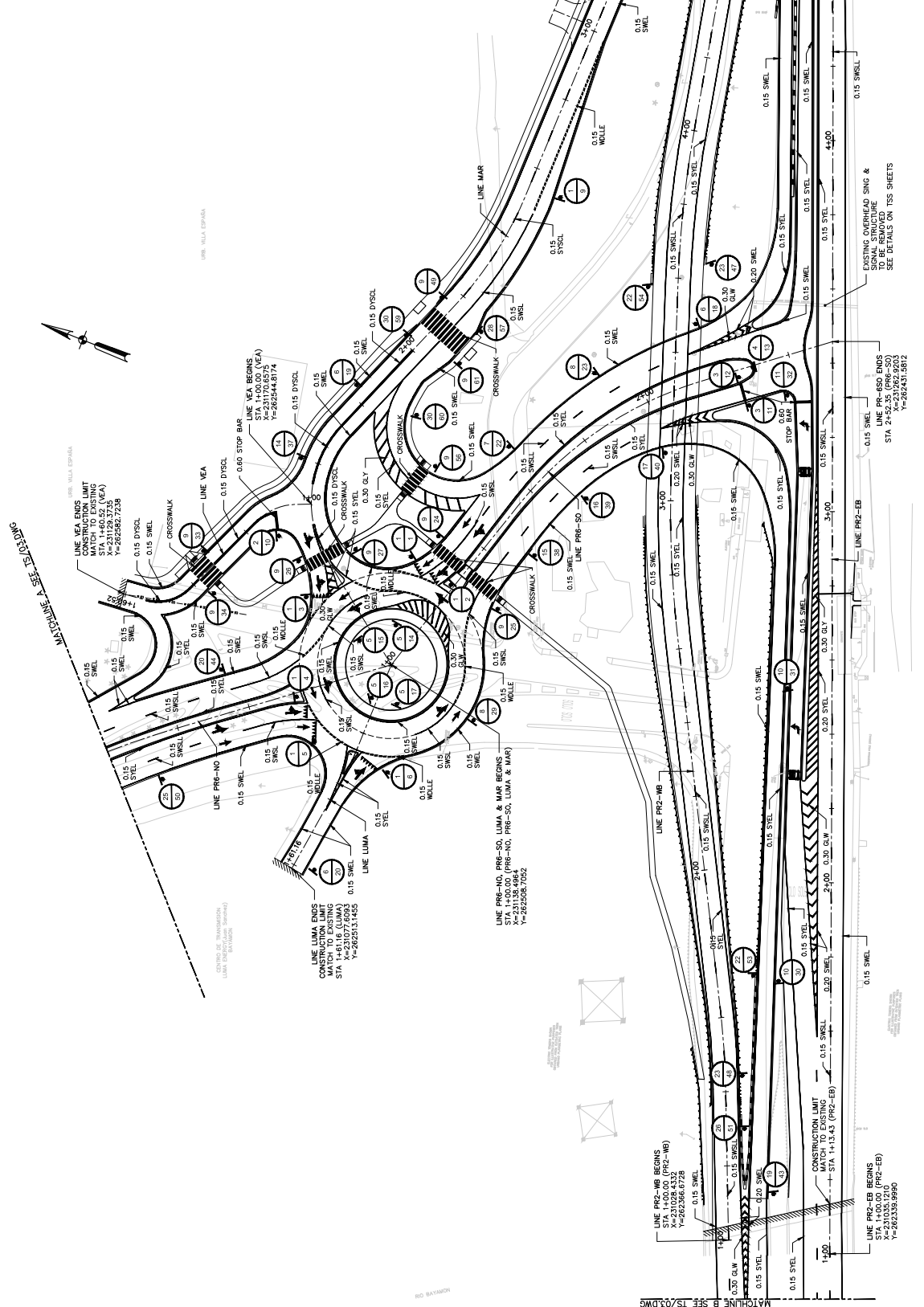
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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	121	178

**LEGEND:**

- SWEL SINGLE WHITE SOLID LINE
  - SWTL SINGLE WHITE TURNING LANE LINE
  - SWEL SINGLE WHITE EDGE LINE
  - SNLW SINGLE WHITE SHIP LANE LINE
  - DYSL DOUBLE YELLOW SOLID CENTER LINE
  - DYSL DOUBLE YELLOW SHIP LANE LINE
  - SYSL SINGLE SOLID YELLOW CENTER LINE
  - SYSL SINGLE SOLID YELLOW SHIP CENTER LINE
  - SYEL SINGLE YELLOW SOLID EDGE LINE
  - SYEL SINGLE YELLOW SHIP EDGE LINE
  - GL(Y) GORE LINE (WHITE OR YELLOW)
  - WEL WHITE DOTTED ENTRANCE LINE
  - WEL WHITE DOTTED LANE LINE EXTENSION
  - WML WHITE MOUNTED (SINGLE POST MOUNTING)
  - WML GROUND MOUNTED (TWO POST MOUNTING)
- SYMBOLS**
- ⊙ SIGN IDENTIFICATION
  - X=CODE NUMBER
  - Y=LOCATION NUMBER
- EXISTING SIGN TO BE REMOVED**
- ⊙
  - ⊙
- EXISTING SIGN TO REMAIN**
- ⊙
  - ⊙



DATE	BY	REVISIONS
07/27/23		

DATE	DATE	REVISIONS

SCALE 1:500

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TRAFFIC SIGNING AND PAVEMENT MARKING

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN PUERTO RICO

MUNICIPALITY OF BAYAMÓN

**CMA ARCHITECTS & ENGINEERS**

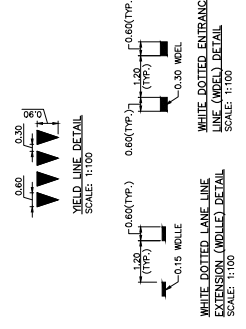
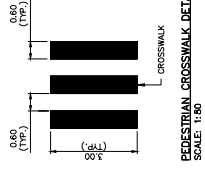
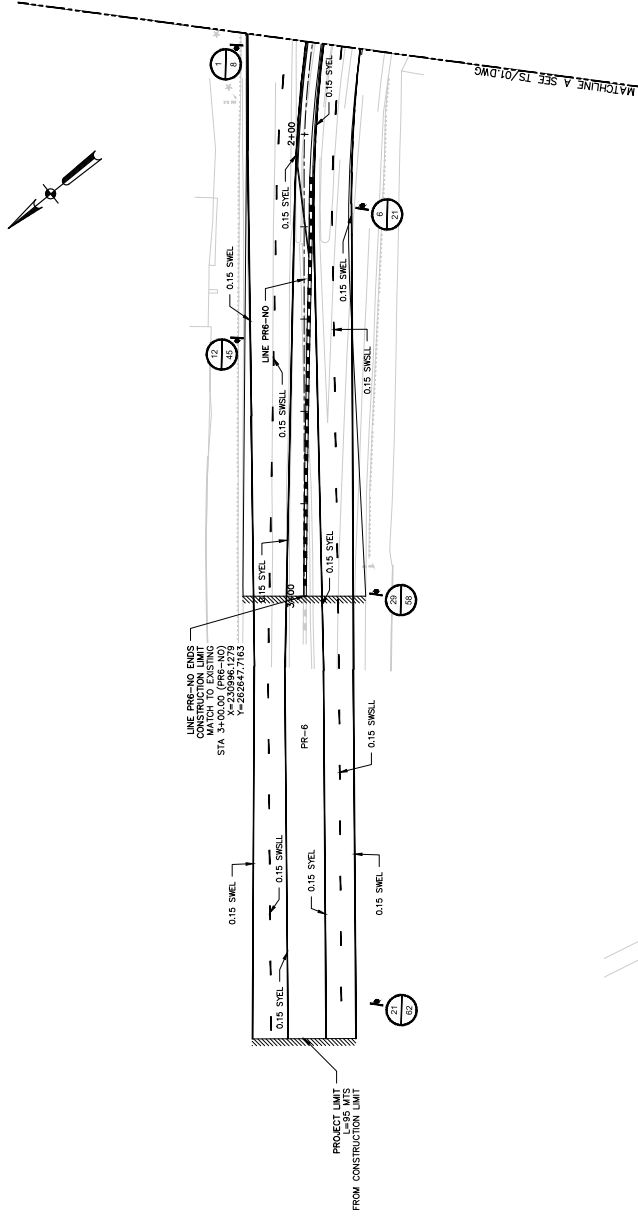
1850 ROAD 100, SUITE 100, BAYAMÓN, P.R. 00961  
 TEL: (787) 262-5100 FAX: (787) 262-5101  
 WWW.CMAARCHITECTS.COM



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	123	178

**LEGEND:**

- SWEL SINGLE WHITE SOLID LINE
  - SWTL SINGLE WHITE TURNING LANE LINE
  - SWEL SINGLE WHITE EDGE LINE
  - SWLL SINGLE WHITE SHIP LANE LINE
  - SYSL DOUBLE YELLOW SOLID CENTER LINE
  - DYSL DOUBLE YELLOW SHIP LANE LINE
  - SYSL SINGLE SOLID YELLOW CENTER LINE
  - SYSL SINGLE YELLOW SHIP CENTER LINE
  - SYSL SINGLE YELLOW EDGE LINE
  - SYSL SINGLE YELLOW SOLID LINE
  - GL(W/Y) GORE LINE (WHITE OR YELLOW)
  - CMY CURB MARKING YELLOW
  - WDEL WHITE DOTTED ENTRANCE LINE
  - WDEL WHITE DOTTED LANE LINE EXTENSION
  - WDEL WHITE DOTTED ENTRANCE LINE EXTENSION
  - WDEL GROUND MOUNTED (SINGLE POST MOUNTING)
  - WDEL GROUND MOUNTED (TWO POST MOUNTING)
- SYMBOLS**
- (X) SIGN IDENTIFICATION
  - (X) X-CODE NUMBER
  - (Y) Y-LOCATION NUMBER
- (X) EXISTING SIGN TO BE REMOVED
- (X) EXISTING SIGN TO REMAIN



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**TRAFFIC SIGNING AND PAVEMENT MARKING**



NO.	DATE	REVISIONS

MUNICIPALITY OF BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN PUERTO RICO

#2218  
 1000 Calle Comercio, Bayamón, P.R. 00961  
 Phone: (787) 262-1234  
 Email: info@cma-architects.com

CMA ARCHITECTS & ENGINEERS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23



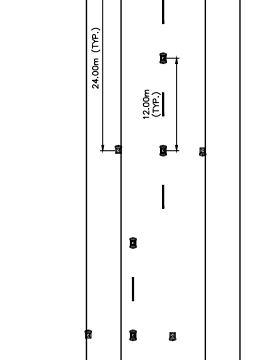
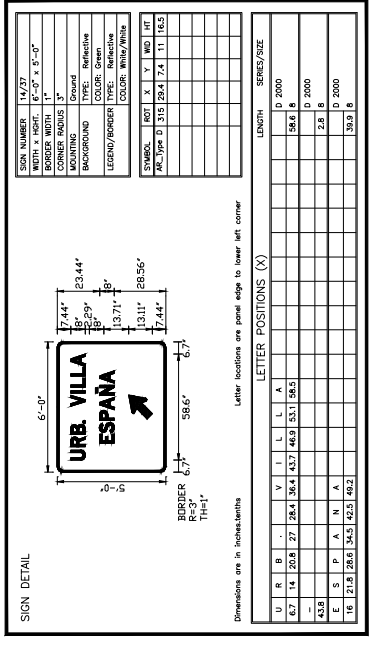
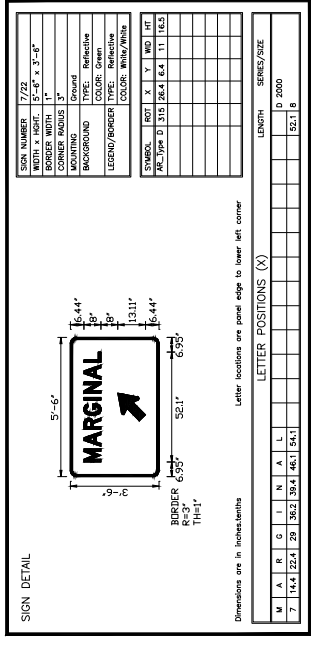
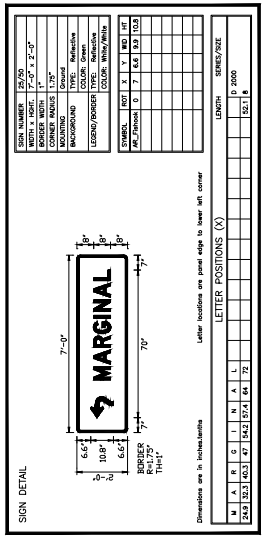
**SIGN DATA TABLE**

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	124	178

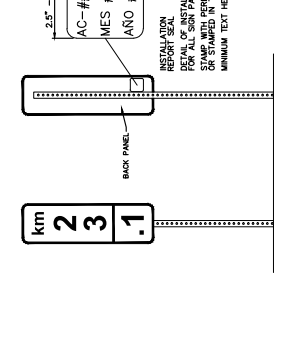
CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF SIGN PANEL	OVERHEAD STRUCTURE TYPE	REFERENCE MANUAL	TOTAL ITEM
1	1, 2, 3, 4, 5, 6, 7, 8, 9	R1-2		36" X 36" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	9
2	10	R1-1		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
3	11, 12	R10-6		24" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	2
4	13	R4-7		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
5	14, 15, 16, 17	R6-46		48" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	4
6	18, 19, 20, 21	W2-6 W13-1		30" X 30" 18" X 18"	N/A	SEE D.T.P.W. MANUAL 2020	4
7	22	D1-1		68" X 42"	N/A	SEE GUIDE SIGN DETAIL	1
8	23, 25, 29	W1-2 W16-9P		24" X 24" 30" X 12"	N/A	SEE D.T.P.W. MANUAL 2020	3
9	24, 25, 26, 27, 33, 34, 56, 61	W1-2 W16-7H(4)		24" X 24" 24" X 12"	N/A	SEE D.T.P.W. MANUAL 2020	6
10	30, 31	R3-5(1)		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
11	32	R3-1		30" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
12	35, 42, 45	R2-1		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
13	36	M3-1 M3-4 M1-6b M1-6b M6-2(1) M6-3		36" X 18" 36" X 18" 36" X 36" 36" X 36" 21" X 15" 21" X 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
14	37	D1-1		72" X 60"	N/A	SEE GUIDE SIGN DETAIL	1
15	38	M2-1 M1-6b		21" X 15" 36" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
16	39	D1-2		90" X 42"	N/A	SEE GUIDE SIGN DETAIL	1
17	40	M3-2 M3-4 M1-6b M1-6b M6-1(1) M6-2(1)		36" X 18" 36" X 18" 36" X 36" 36" X 36" 21" X 15" 21" X 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
18	41	M3-2 M1-6b		36" X 18" 36" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
19	43	M3-4 M1-6b		36" X 18" 36" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
20	44	M3-1 M1-6b		36" X 18" 36" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
21	62	R2-66		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
22	46, 53, 54	OM-3(1)		12" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	3
23	47, 48	OM-3(1)		12" X 36"	N/A	SEE D.T.P.W. MANUAL 2020	2
25	50	D1-1		84" X 24"	N/A	SEE GUIDE SIGN DETAIL	1
26	51	W4-13(1)		48" X 48"	N/A	SEE D.T.P.W. MANUAL 2020	1
27	52	*		64" X 126"	N/A	SEE GUIDE SIGN DETAILS	1
28	57	R1-17(2) (PR)		12" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
29	58	R2-1		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
30	59, 60	R1-6A		24" X 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
31	63	W12-3P		84" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	1
32	64	W12-3P		84" X 24"	N/A	SEE D.T.P.W. MANUAL 2020	1
33	65, 66, 67, 68	*		30" X 30"	OVERHEAD TYPE III-C (SEE DETAILS ON SHEET TS-42)	SEE GUIDE SIGN DETAILS	4
34	69, 70, 71, 72	*		30" X 30"	OVERHEAD TYPE III-C (SEE DETAILS ON SHEET TS-02)	SEE GUIDE SIGN DETAILS	4

 CMA ARCHITECTS & ENGINEERS	MUNICIPALITY OF BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	DATE	REVISIONS
	BAYAMÓN	PUERTO RICO		
	PR-2 AND PR-6			
			<b>NOT TO SCALE</b>	
			<b>SIGN DATA TABLE</b>	
			<b>TS</b>	
			<b>04</b>	

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	125	178



DETAIL FOR REFLECTIVE RAISED PAVEMENT MARKERS



NOTE:  
 1. ALL NEW SIGNS SHALL BE COMPLIANCE WITH THE SIGN LABEL ACCORDING TO STD. DMC. 51.

DETAIL FOR KILOMETER SIGN REPORT SEAL LOCATION

CMA ARCHITECTS & ENGINEERS		BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS		PR-2 AND PR-6		KILOMETER REPORT SEAL LOCATION DETAILS		TS 05	
MUNICIPALITY OF BAYAMÓN		BAYAMÓN		INTERSECTIONS GEOMETRIC IMPROVEMENTS		KILOMETER REPORT SEAL LOCATION DETAILS		TS 05	
DATE: 07/27/23		BY: [Signature]		DATE: [Blank]		DATE: [Blank]		DATE: [Blank]	
DESIGN		CHECK		FINAL CHECK		FINAL CHECK		FINAL CHECK	

TRAFFIC LEGEND	
SYMBOL	DESCRIPTION
	TRAFFIC SIGNAL HEAD WITH TUNNEL VISOR AND BACKPLATE TYPE 3-S-V
	TRAFFIC SIGNAL HEAD WITH TUNNEL VISOR AND BACKPLATE TYPE 3-L-V
	EXISTING SIGNAL HEAD WITH TUNNEL VISOR AND BACKPLATE TYPE 3-L-V
	EXISTING SIGNAL HEAD WITH TUNNEL VISOR AND BACKPLATE TYPE 3-S-V
	1' CONTINUOUS MOVEMENT TRAFFIC HEAD
	VARIABLE TRAFFIC SIGN FOR REVERSIBLE LANE
	TRAFFIC SIGN FOR REVERSIBLE LANE. SEE NOT DWG TRAFFIC SIGN DETAILS FOR MORE INFORMATION
	CONCRETE PULL BOX 30" X 30"
	EXISTING CONCRETE PULL BOX
	LOCAL TRAFFIC SIGNAL CONTROLLER TS-2 TYPE 2. SEE TSS-13, TSS-14, TSS-15
	1 FACE PEDESTRIAN SIGNAL HEAD POST MOUNTED WITH PUSH BUTTON
	2 FACE PEDESTRIAN SIGNAL HEAD POST MOUNTED WITH PUSH BUTTON
	PEDESTRIAN PUSH BUTTON POST MOUNTED
	RADIO ANTENNA FOR TRAFFIC SIGNAL SYSTEMS INTERCONNECTION
	STOP BAR LOCATION
	1 FACE PEDESTRIAN SIGNAL HEAD BRACKET MOUNTED WITH PUSH BUTTON
	TRAFFIC SIGNAL ONE CORD ARM AND POLE
	EXISTING TRAFFIC SIGNAL ARM AND POLE
	PVC CONDUIT TO BE INSTALLED
	EXISTING OVERHEAD SECONDARY LINE 120/240V. TRIPLEX CABLE
	EXISTING OVERHEAD LINE 768KV, 14, 2W TO REMAIN
	UNDERGROUND PREPA SECONDARY SERVICE FEEDER 3/2 ALU. RHW-2 ALU/E USE 600V IN 2" PVC C. TO BE INSTALLED. -2"C. SPARE
	UNDERGROUND SECONDARY FEEDER 3/2 ALU. RHW-2 ALU/E-USE 1/4" ALU. GROUND-2" SPARE
	EXISTING 3/200V. USE 600V IN 2" PVC C. FEEDER TO BE REMOVED.
	DISTANCE IN METER FROM STOP LINE DETECTOR.
	25 DOPPLER RADAR DETECTOR
	VIDEO DETECTOR CAMERA
	VIRTUAL SENSOR ZONE
	SECONDARY METER COLUMN. SEE DETAILS ON DWG. TSS-30
	OVERHANG TRAFFIC SIGNAL LIGHTS
	OVERHANG TRAFFIC SIGNAL LIGHT CONTROLLER
	OVERHANG TRAFFIC SIGNAL LIGHTS

- NOTES:**
- ACCESSIBLE PEDESTRIAN SIGNAL PUSH BUTTON SHALL BE PROVIDED. SEE ARTICLE 654-1.36 ACCESSIBLE PEDESTRIAN SIGNAL PUSH BUTTON SPECIFICATION FOR REASON TO STANDARD SPECIFICATION 654 TRAFFIC SIGNAL SYSTEM.
  - THE LED TRAFFIC SIGNALS 3-S-V AND 3-L-V SHALL INCLUDE:
    - FURNISHING AND INSTALLATION OF A STRIP OF FLUORESCENT YELLOW RETRO REFLECTIVE TAPE ON THE NEW TRAFFIC HEADS.
    - THE FLUORESCENT YELLOW RETRO REFLECTIVE TAPE SHALL BE CONSIDERED AS A SUBSIDIARY OBLIGATION UNDER TRAFFIC SIGNAL HEAD PART ITEM.
  - ALL LENSES SHALL BE 12 INCHES OUTSIDE DIAMETER.

### SIGNAL DISPLAY

DISPLAY	REMARKS
	STANDARD TRAFFIC SIGNAL HEAD LED TYPE 3-S-V WITH TUNNEL VISORS AND REFLECTIVE FLUORESCENT TAPE, 2" WIDE STRIP MAST ARM MOUNTED.
	STANDARD TRAFFIC SIGNAL HEAD LED TYPE 3-L-V WITH TUNNEL VISORS AND REFLECTIVE FLUORESCENT TAPE, 2" WIDE STRIP MAST ARM MOUNTED.
	18"x16" PEDESTRIAN SIGNAL HEADS LED COUNTDOWN PEDESTRIAN SIGNAL THIS SIGNALS TO BE USED WITH MANUAL RESISTANT LEGAN FRONT GRID
	ACCESSIBLE PEDESTRIAN SIGNAL PUSH BUTTON STATION DETECTOR ASSEMBLY
	STANDARD TRAFFIC SIGNAL HEAD LED TYPE 3-S-V WITH TUNNEL VISORS AND REFLECTIVE FLUORESCENT TAPE, 2" WIDE STRIP MAST ARM MOUNTED.
	CONTINUOUS MOVEMENT SIGNAL HEAD TYPE WITH TUNNEL VISOR PLUS BACK PLATE WITH STRIP MAST ARM MOUNTED.

### IMPORTANT NOTES

- THE TRAFFIC SIGNAL SYSTEM SHALL COMPLY WITH SPECIFICATION 654 AND SPECIAL PROVISION 654 PHITA.
- THE CONTRACTOR SHALL SUBMIT TO THE PHITA TRAFFIC ENGINEERING OFFICE FOR REVIEW AND APPROVAL BY PHITA PRIOR TO ORDERING THE EQUIPMENT FOR REVISION AND PROVISION BY PHITA PRIOR TO ORDERING THE EQUIPMENT.
- EXISTING TRAFFIC SIGNAL HEADS AND HEADS SHALL REMAIN UNTIL AFTER TRAFFIC HEADS AND TRAFFIC CONTROLLER ARE INSTALLED AND READY TO REMOVE.
- THE CONTRACTOR SHALL RETURN TO DOT REGIONAL OFFICE THE REMOVED TRAFFIC CONTROLLER, TRAFFIC SIGNAL HEADS, TRAFFIC SIGNAL ARM & PALES, PEDESTRIAN SIGNAL HEADS & PUSH BUTTONS.
- THE CONTRACTOR SHALL PROVIDE THE NEW TRAFFIC PROGRAMMING FOR THE NEW TRAFFIC CONTROLLER.
- THE TRAFFIC CONTROLLER ASSEMBLY ITEM SHALL INCLUDE AN ANTI-THEFT SYSTEM TO PROTECT THE CABINET.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	126	178

### OGPe: 2020-307303-SRI-066461

**DESIGNER'S CERTIFICATION**  
 I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 173 of 1988, its amendments and authorized by the Board of Professional Engineers, Architects, Surveyors and Contractors as executor and administrator of the Transmission and Distribution System in compliance with Act No. 153 of July 15, 1997, as amended known as the Electric Service Law. I have prepared this project in accordance with the Standards, codes and regulations approved by LUMA, Puerto Rico Electric Power Authority (PREPA) and the Department of Energy and Natural Resources. I am duly registered with the Department of Professional Regulation. My registration number is: \_\_\_\_\_  
**DESIGNER'S SIGNATURE**

**ENDORSEMENT**  
**LUMA**  
 PREPA'S PRE-INTERSECTION GEOMETRIC IMPROVEMENT PROJECT NUMBER: 23-7589  
 Project Number: 23-7589  
 Revision: N/A  
 Load (kVA): N/A  
 ENCORSED BY

1. LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the standards, codes and regulations approved by LUMA, PREPA and the Department of Energy and Natural Resources. LUMA does not assume responsibility over the certified design. LUMA's endorsement releases neither the builder nor the general contractor from their responsibility assumed with the certification of these project plans. The National Electric Safety Code, contributions, standards, norms, and regulations approved by the Department of Energy and Natural Resources shall apply to the project from the start of construction until the final work is completed. In case there is no specified electrical work in the project, the contractor shall be responsible for the design and it is not to constitute an assumption of the Assignment. Transfer of responsibility will be made in writing and in accordance with the terms and conditions of the contract, which will be the provisions of the Assignment Regulation for the Puerto Rico Electric Power Authority (PREPA of 2007).

NOT TO SCALE	LEGEND AND SIGNAL DISPLAY	TSS
CMA		01

REVISIONS	DATE	BY
	05/29/23	X

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK FINAL PLANS

DATE	BY
07/27/23	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	
FINAL PLANS	

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

185 CALLE OSCAR GARCIA TORO  
CALLE 185 TORO #200  
BAYAMON, P.R. 00961

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE: 05/22/23 X  
CMT

REVISIONS

NOT TO SCALE

QUANTITY OF SUMMARY TABLE

TSS 02

QUANTITY SUMMARY

ITEM NUMBER	DESCRIPTION	UNITS	PR-2 & PR-6 REQUIREMENT	TOTAL
1	654 STANDARD LED TRAFFIC SIGNAL HEAD, 12" TYPE 3-S-V MAST ARM MOUNTED	EACH	4	4
2	654 STANDARD LED TRAFFIC SIGNAL HEAD, 12" TYPE 3-L-V MAST ARM MOUNTED	EACH	6	6
3	654 STANDARD LED TRAFFIC SIGNAL HEAD 12" CONTINUOUS MOVEMENT, TYPE MAST ARM MOUNTED	EACH	2	2
4	654 MAINTENANCE AND REMOVAL OF EXISTING TRAFFIC SIGNAL SYSTEM	L.S.	1	1
5	654 VIDEO DETECTION CAMERA	EACH	2	2
6	654 VIDEO DETECTION CAMERA CONTROLLER ASSEMBLY NEMA INTERFACE (TS-2, TYPE 3-S-V AND TYPE 3-L-V)	EACH	1	1
7	654 CONCRETE PULL BOX (30" X 30")	EACH	7	7
8	654 ELECTRICAL CONDUCTOR NO. 14 RHW-2 XLPE AWG. 96 ALU. FOR TRAFFIC SIGNAL HEAD	L.M.	705	705
9	654 ELECTRICAL CONDUCTOR NO. 14 RHW-2 XLPE AWG. 30 ALU. FOR CONTINUOUS MOVEMENT TRAFFIC SIGNAL HEAD	L.M.	105	105
10	654 VIDEO IMAGE PROCESSOR	EACH	2	2
11	654 9-PORT ETHERNET SWITCH DEVICES	EACH	1	1
12	654 VIDEO SYSTEM COMMUNICATION MODULE	EACH	1	1
13	654 COAXIAL AND POWER CABLE	L.M.	126	126
14	654 VIDEO IMAGE DETECTION SYSTEMS PROGRAMMING DEVICES AND SOFTWARE	L.S.	1	1
15	654 INVERTER/CHARGER/CONTROLLER	EACH	1	1
16	654 BATTERY	EACH	6	6
17	654 TRANSFER RELAY	EACH	1	1
18	654 MANUAL BYPASS SWITCH	EACH	1	1
19	654 TSRSB CABINET	EACH	1	1
20	654 TRAFFIC COUNTS, ADJUSTMENT AND FINE TUNING	L.S.	1	1
21	654 PVC CONDUIT 4" DIAMETER	L.M.	441	441
22	654 ELECTRICAL CONDUCTOR NO. 14 RHW-2 XLPE AWG. 40 ALU. FOR REVERSIBLE TRAFFIC SIGN	L.M.	40	40
23	654 ELECTRICAL CONDUCTOR NO. 2 RHW-2 XLPE-USE 600V ALU. 90 DEGREE CELSIUS FOR TSS POWER SOURCE	L.M.	20	20
24	654 ELECTRICAL CONDUCTOR NO. 6 RHW-2 XLPE-USE 600V ALU. 90 DEGREE CELSIUS FOR TSS SIGNALS	L.M.	10	10
25	654 PVC CONDUIT 2" DIAMETER (AS PER TRAFFIC POWER TRENCH DETAIL)	L.M.	20	20
26	635 TSS METERING POWER SOURCE	L.M.	320	320
27	635 SECONDARY SERVICE FEDESTAL LUMA URD 26, 26	EACH	1	1
28	635 PVC CONDUIT 2" DIAMETER (AS PER 120/240V TRENCH DETAIL)	L.M.	230	230
29	654 SURGE SUPPRESSOR	EACH	2	2
30	654 TRAFFIC SIGNAL SUPPORT SINGLE MAST ARM TYPE 30 FT (GALVANIZED STEEL)	EACH	1	1
31	654 TRAFFIC SIGNAL SUPPORT SINGLE MAST ARM TYPE 35 FT (GALVANIZED STEEL)	EACH	1	1
32	654 TRAFFIC SIGNAL SUPPORT SINGLE MAST ARM TYPE 40 FT (GALVANIZED STEEL)	EACH	1	1
33	654 LUMA METER SOCKET WITH BREAKER IN CONCRETE COLUMN (SEE STANDARD DETAIL)	EACH	1	1
34	635 LUMA STD. URD-4	EACH	1	1
35	635 LUMA STD. E-1-2-3	EACH	2	2
36	635 LUMA STD. F-1-3	EACH	2	2
37	635 LUMA STD. E-2-1	EACH	1	1
38	654 2" RIG CONDUIT (TRAFFIC SIGNAL HEAD CONDUCTOR RISER)	L.M.	20	20
39	654 TRAFFIC SELF SUPPORT CONCRETE POLE FOR SPAN WIRE 55-H6	EACH	3	3
40	989 HORIZONTAL DIRECTIONAL DRILLING FOR TRAFFIC SIGNAL RUN UNDER PAVEMENT	L.M.	35	35
41	654 4" RIG CONDUIT (TRAFFIC SIGNAL HEAD BRIDGE CONDUCTOR)	L.M.	10	10
42	654 1" RIG CONDUIT (TRAFFIC SIGNAL HEAD BRIDGE CONDUCTOR)	L.M.	20	20
42	654 NEMA 4X PULL BOX 24"X24"X2"	EACH	1	1

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	127	178

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	128	178

URB. VILLA ESPAÑA  
**OGPe: 2020-307303-SRI-066461**

**DESIGNER'S CERTIFICATION**  
**LUMA**  
 ENDORSEMENT  
 PROJECT NAME: PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 PROJECT NUMBER: 2023-090  
 LOAD (KVA): N/A  
 REVISOR: N/A  
 ENDORSED BY: \_\_\_\_\_

1. I certify that I am a duly qualified engineer or architect (in compliance with Art. 172 of 1986, as amended) and authorized by the Puerto Rico Electric Power Authority (PREPA) to execute the design and construction of the transmission and distribution system of the Puerto Rico Electric Power Authority (PREPA), as amended known as the "Construction Phase of Project Certification Act," I certify that I prepare Standards, Plans and Specifications approved by LUMA, Puerto Rico Planning Board and Puerto Rico Management Office and the CUPR (Puerto Rico Civil Engineering Council).

2. LUMA certifies the design, details, drawings, calculations, etc., based on the specifications presented by the designer in compliance with Art. 172 of July 15, 1987, as amended, over the certified design. LUMA's endorsement does not relieve the designer from the professional responsibility and the contractor from the construction quality control. The contractor shall be responsible for the construction of the project in accordance with the National Electric Safety Code, construction standards, codes and regulations from LUMA and other government agencies as well as federal and state laws and regulations.

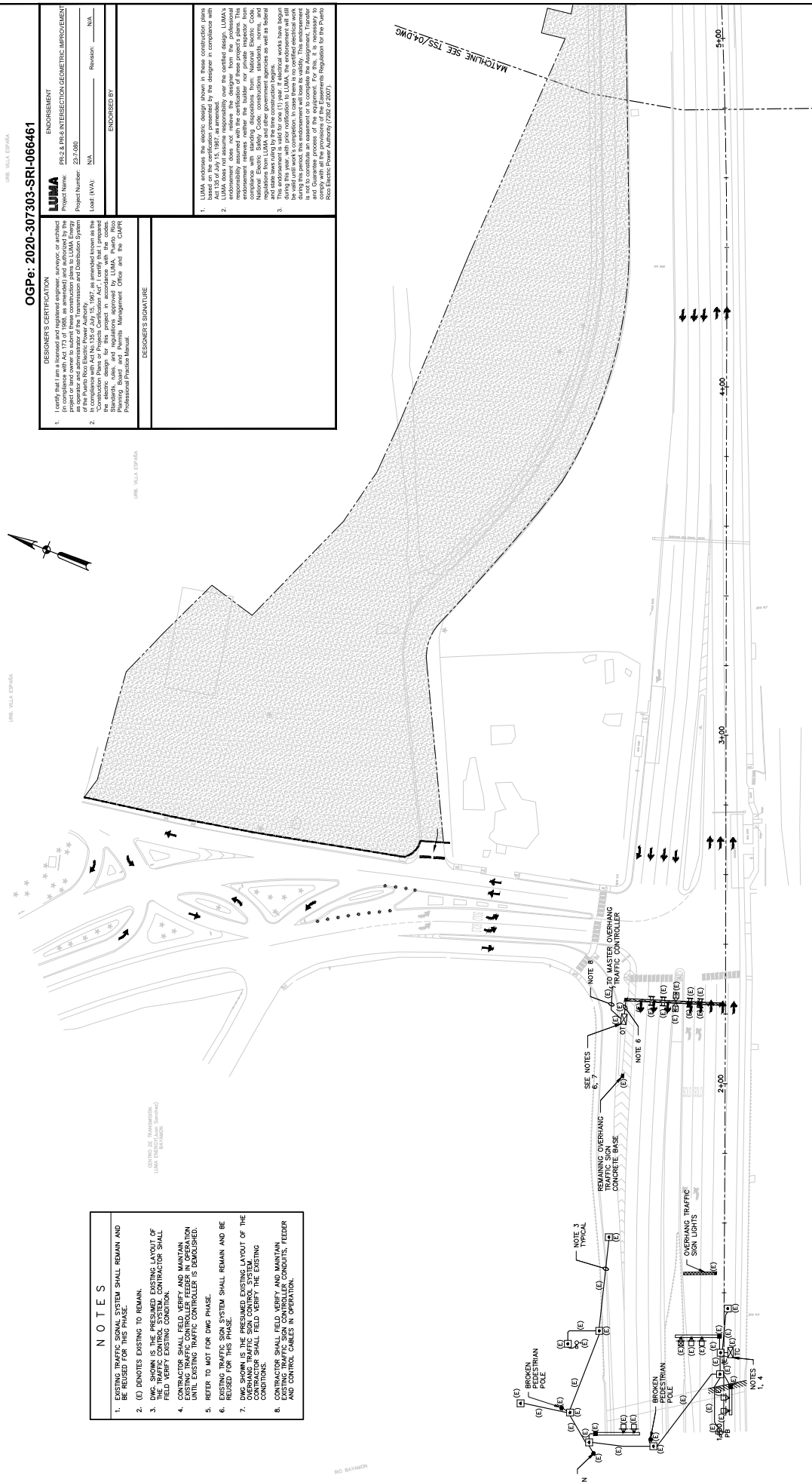
3. This endorsement is valid for one (1) year, if electrical works have begun within the period of one (1) year from the date of issuance of this endorsement. If the contractor does not complete the work within the period of one (1) year, it is necessary to extend the endorsement to complete the work. This extension shall be subject to the approval of the Puerto Rico Electric Power Authority (PREPA) (2007).

- NOTES**
- EXISTING TRAFFIC SIGNAL SYSTEM SHALL REMAIN AND BE REUSED FOR THIS PHASE.
  - (E) DENOTES EXISTING TO REMAIN.
  - DWG SHOWN IS THE PRESUMED EXISTING LAYOUT OF THE TRAFFIC CONTROL SYSTEM. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITION.
  - CONTRACTOR SHALL FIELD VERIFY AND MAINTAIN EXISTING TRAFFIC SIGNAL SYSTEM AND REUSE IT UNTIL EXISTING TRAFFIC CONTROLLER IS DEMOLISHED.
  - REFER TO NOT FOR DWG PHASE.
  - EXISTING TRAFFIC SIGNAL SYSTEM SHALL REMAIN AND BE REUSED FOR THIS PHASE.
  - DWG SHOWN IS THE PRESUMED EXISTING LAYOUT OF THE TRAFFIC CONTROL SYSTEM. CONTRACTOR SHALL FIELD VERIFY THE EXISTING CONDITION.
  - CONTRACTOR SHALL FIELD VERIFY AND MAINTAIN EXISTING TRAFFIC SIGNAL SYSTEM AND REUSE IT UNTIL EXISTING TRAFFIC CONTROLLER IS DEMOLISHED AND CONTROL CABLES IN OPERATION.



URB. VILLA ESPAÑA

CENTRO DE TRANSMISION  
 LUMA (Estrategia Sumaria)



DATE	BY	DATE	BY	DATE	BY
07/27/23					
FINAL CHECK	FINAL PLANS				
CHECK					
DESIGNING					
DESIGN					
WORK					

**CMA**  
 ARCHITECTS &  
 ENGINEERS

MUNICIPALITY OF BAYAMÓN

BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

EXISTING TRAFFIC SIGNAL SYSTEM PHASE I

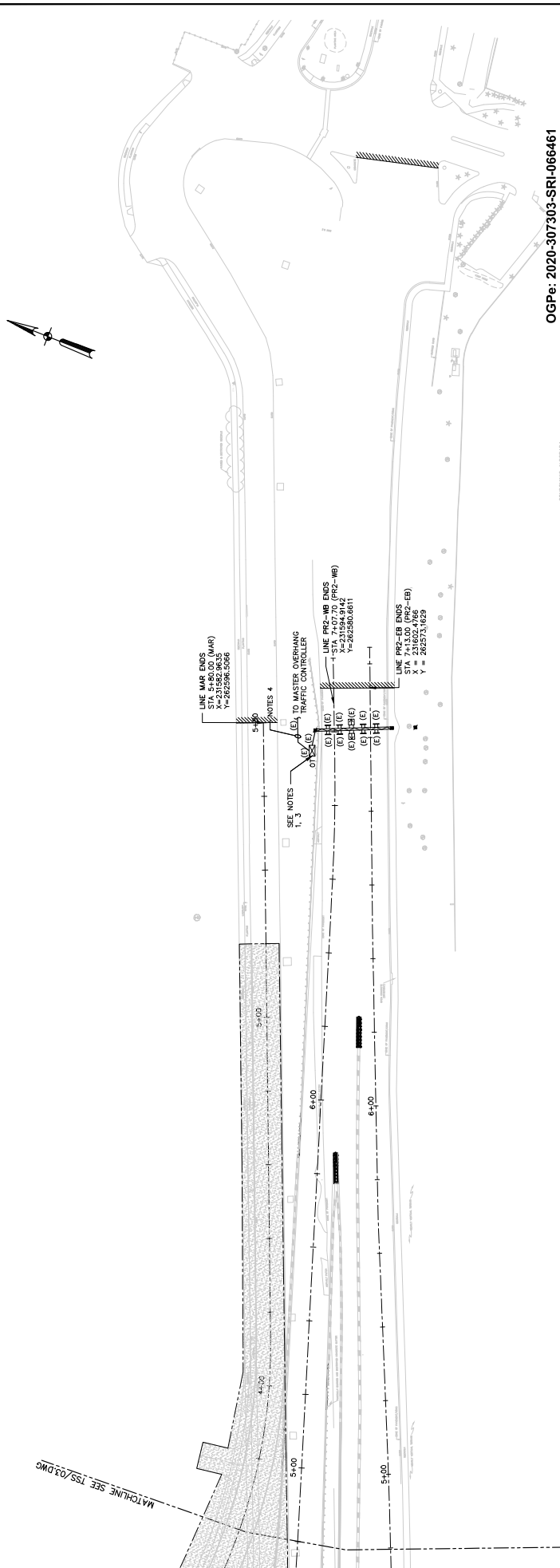
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REVISIONS

DATE

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	129	178



DESIGNER'S CERTIFICATION  
 I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, its amendments and authorized by the Board of Engineers, Architects, Surveyors and Craftsman to practice as an engineer and administrator of the Transmission and Distribution System in compliance with Act No. 135 of July 15, 1997, as amended known as the Electric Service Law. I hereby certify that the design shown on this drawing complies with the Standards, codes, and regulations approved by LUMA, Puerto Rico Electric Power Authority, Management, Office and the CHART Professional Practice Manual.

DESIGNER'S SIGNATURE

ENDORSEMENT  
**LUMA**  
 P.R. & P.R.C. INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Name: OGPe: 2020-307303-SRI-066461  
 Project Number: 23-7-580  
 Load (kVA): N/A  
 Revision: N/A  
 ENDORSED BY:

DESIGNER'S SIGNATURE

DESIGNER'S SIGNATURE

DESIGNER'S SIGNATURE

DESIGNER'S SIGNATURE

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- NOTES**
- EXISTING TRAFFIC SIGNAL SYSTEM SHALL REMAIN AND BE REUSED FOR THIS PHASE.
  - (E) DENOTES EXISTING TO REMAIN.
  - DWG. SHOWN IS THE PRESUMED EXISTING LAYOUT OF THE TRAFFIC CONTROL SYSTEM. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITION.
  - EXISTING TRAFFIC SIGNAL SYSTEM SHALL REMAIN. EXISTING TRAFFIC SIGNAL CONTROLLER, CONDUITS, FEEDER AND CONTROL CABLES IN OPERATION.
  - REFER TO NOT FOR DWG PHASE.

DATE	BY	WORK
07/27/23		FINAL CHECK
		DESIGN
		DRAWING
		CHECK
		FINAL PLANS

REVISIONS	DATE

5	0	10	30
SCALE: 1:500			

EXISTING TRAFFIC SIGNAL SYSTEM PHASE 1

TSS 04

MUNICIPALITY OF BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

PUERTO RICO

BAYAMÓN

02023 CMAA AEI LC

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	130	178

URB. VILLA ESPAÑA

OGPe: 2020-307303-SRI-066461

**DESIGNER'S CERTIFICATION**

I, the undersigned, certify that the design of this project was prepared by me or under my direct supervision and control, and that I am a duly licensed professional engineer in compliance with Act 173 of 1987, as amended and authorized by the Board of Professional Engineers of the Commonwealth of Puerto Rico. I am duly licensed as a Professional Engineer in the Commonwealth of Puerto Rico, License No. 227-5393.

I, the undersigned, certify that the design of this project was prepared by me or under my direct supervision and control, and that I am a duly licensed professional engineer in compliance with Act 173 of 1987, as amended and authorized by the Board of Professional Engineers of the Commonwealth of Puerto Rico. I am duly licensed as a Professional Engineer in the Commonwealth of Puerto Rico, License No. 227-5393.

**ENDORSEMENT**

**LUMA**

Project Name: PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT

Project Number: 227-5393

Load: (N/A)

Revision: N/A

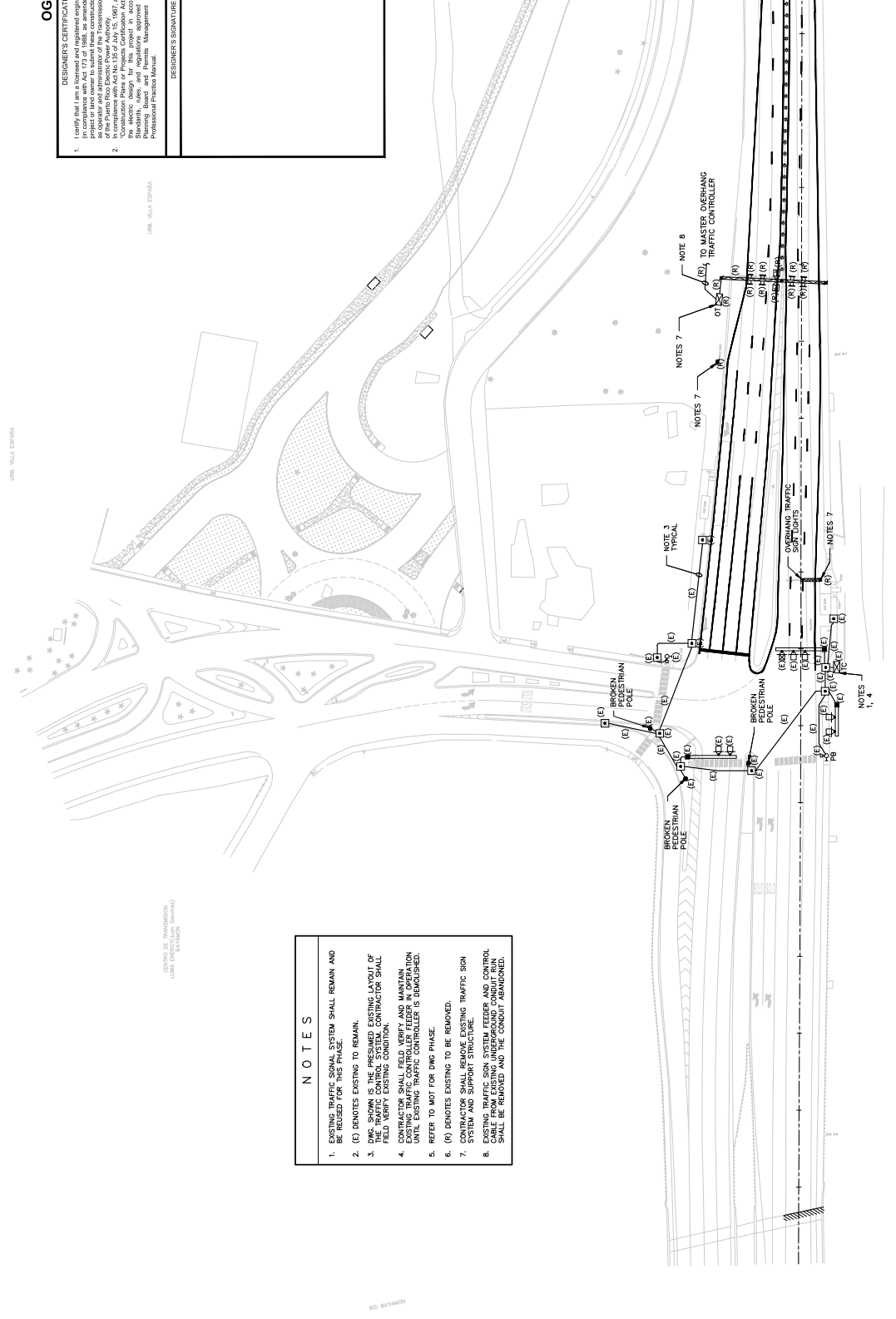
ENDORSED BY:

DESIGNER'S SIGNATURE

LUMA certifies that the design of this project was prepared by me or under my direct supervision and control, and that I am a duly licensed professional engineer in compliance with Act 173 of 1987, as amended and authorized by the Board of Professional Engineers of the Commonwealth of Puerto Rico. I am duly licensed as a Professional Engineer in the Commonwealth of Puerto Rico, License No. 227-5393.

LUMA certifies that the design of this project was prepared by me or under my direct supervision and control, and that I am a duly licensed professional engineer in compliance with Act 173 of 1987, as amended and authorized by the Board of Professional Engineers of the Commonwealth of Puerto Rico. I am duly licensed as a Professional Engineer in the Commonwealth of Puerto Rico, License No. 227-5393.

LUMA certifies that the design of this project was prepared by me or under my direct supervision and control, and that I am a duly licensed professional engineer in compliance with Act 173 of 1987, as amended and authorized by the Board of Professional Engineers of the Commonwealth of Puerto Rico. I am duly licensed as a Professional Engineer in the Commonwealth of Puerto Rico, License No. 227-5393.



- NOTES**
- EXISTING TRAFFIC SIGNAL SYSTEM SHALL REMAIN AND BE REUSED FOR THIS PROJECT.
  - (E) DENOTES EXISTING TO REMAIN.
  - THE TRAFFIC CONTROL SYSTEM CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITION.
  - CONTRACTOR SHALL FIELD VERIFY AND MAINTAIN EXISTING TRAFFIC SIGNAL SYSTEM AND SUPPORT STRUCTURE UNTIL EXISTING TRAFFIC CONTROLLER IS DEMOLISHED.
  - REFER TO NOT FOR DWG PHASE.
  - (R) DENOTES EXISTING TO BE REMOVED.
  - CONTRACTOR SHALL REUSE EXISTING TRAFFIC SIGNAL SYSTEM AND SUPPORT STRUCTURE.
  - EXISTING TRAFFIC SIGNAL FEEDER AND CONTROL CABLE FROM EXISTING UNDERGROUND CONDUIT RUN SHALL BE REPAIRED AND THE CONDUIT ABANDONED.

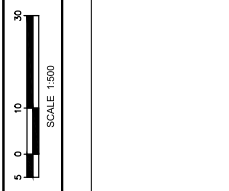
URB. VILLA ESPAÑA

OGPe: 2020-307303-SRI-066461

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

EXISTING TRAFFIC SIGNAL SYSTEM PHASE II

TSS 05



REVISIONS

NO.	DATE	DESCRIPTION

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

CMA ARCHITECT & ENGINEERS

22023 CMA CAE LLC

07/27/23

DATE

BY

DESIGN

DRAWING

CHECK

FINAL CHECK

DATE

BY

DESIGN

DRAWING

CHECK

FINAL CHECK

DATE

BY

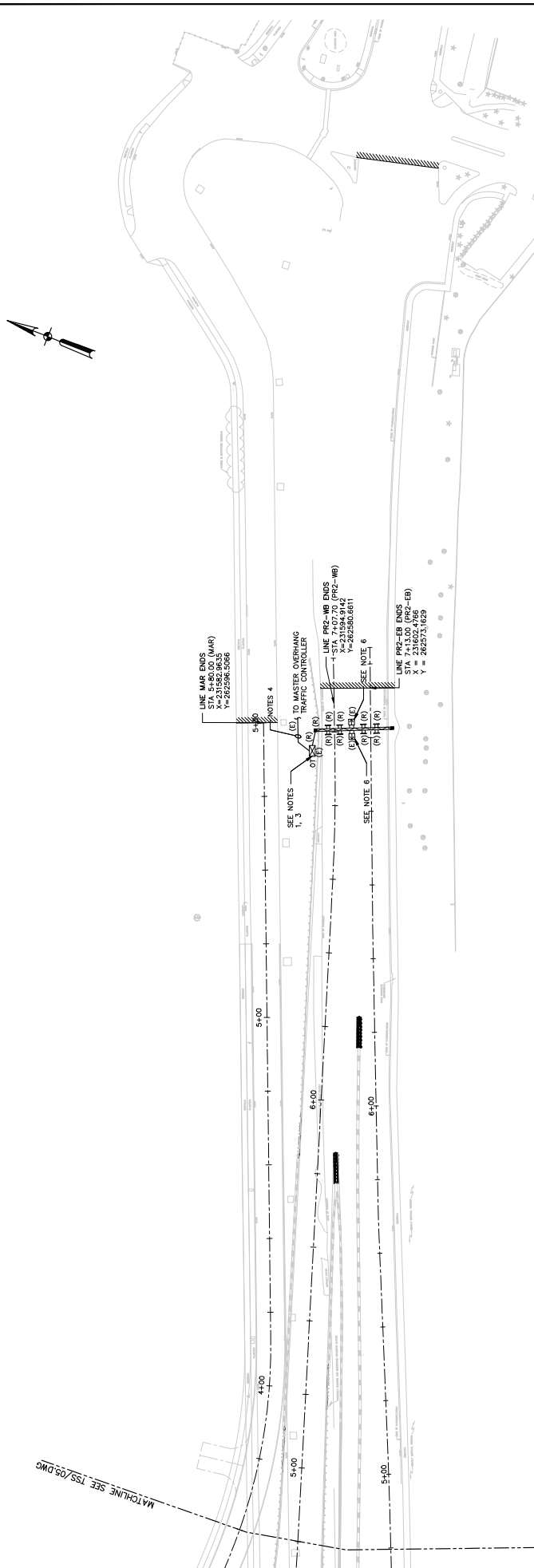
DESIGN

DRAWING

CHECK

FINAL CHECK

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	131	178



- NOTES**
- CONTRACTOR SHALL REMOVE EXISTING TRAFFIC SIGNAL SUPPORT STRUCTURE AND TRAFFIC SIGNAL SHALL BE REUSED. THE CONTRACTOR SHALL REPAINT AND STRAIGHTEN THE EXISTING CONTROLLER CABINET.
  - (E) DENOTES EXISTING TO REMAIN.
  - (R) DENOTES EXISTING TO BE REMOVED.
  - EXISTING TRAFFIC SIGNAL FEEDER AND CONTROL CABINET SHALL BE REUSED. EXISTING TRAFFIC SIGNAL SHALL REMAIN TO BE REUSED FOR THE REPLACEMENT SIGN SYSTEM AND SUPPORT STRUCTURE.
  - REFER TO MOT FOR LMS PHASE.
  - EXISTING VARIABLE TRAFFIC SIGNAL FOR REVERSIBLE SIGNAL SUPPORT STRUCTURE.

**DESIGNER'S CERTIFICATION**

I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, its amendments and authorized by the Board of Professional Engineers, Architects, Surveyors and Contractors as supervisor and administrator of the Transmission and Distribution System in compliance with Act No. 133 of July 15, 1997, as amended known as the Electric Code for the project in accordance with the provisions, standards, rules, and regulations approved by LUMA, Puerto Rico Professional Practice Manual.

DESIGNER'S SIGNATURE

**ENDORSEMENT**

**LUMA**  
PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT

Project Name: 23-7-580  
Load (kVA): N/A  
Revision: N/A

ENDORSED BY

- LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the provisions of the Electric Code for the project in accordance with the provisions, standards, rules, and regulations approved by LUMA, Puerto Rico Professional Practice Manual.
- LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the project plans. The responsibility for the design and construction of the project rests with the contractor. LUMA does not assume responsibility for the design and construction of the project. LUMA's responsibility is limited to the certification of the project plans. The responsibility for the design and construction of the project rests with the contractor.
- During this year, with prior notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified expiration work is not to be used to complete the Assignment. Transfer of endorsement to another company will all the provisions of the Endorsement Regulation for the Puerto Rico Electric Power Authority (2007).

TSS 06

FINAL TRAFFIC SIGNAL SYSTEM PHASE II

SCALE 1:500

REVISIONS

DATE

PUERTO RICO

INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

4#4 2218

MUNICIPALITY OF BAYAMÓN

CMA ARCHITECTS & ENGINEERS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23
TOTAL PAGES		

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON  
#402282

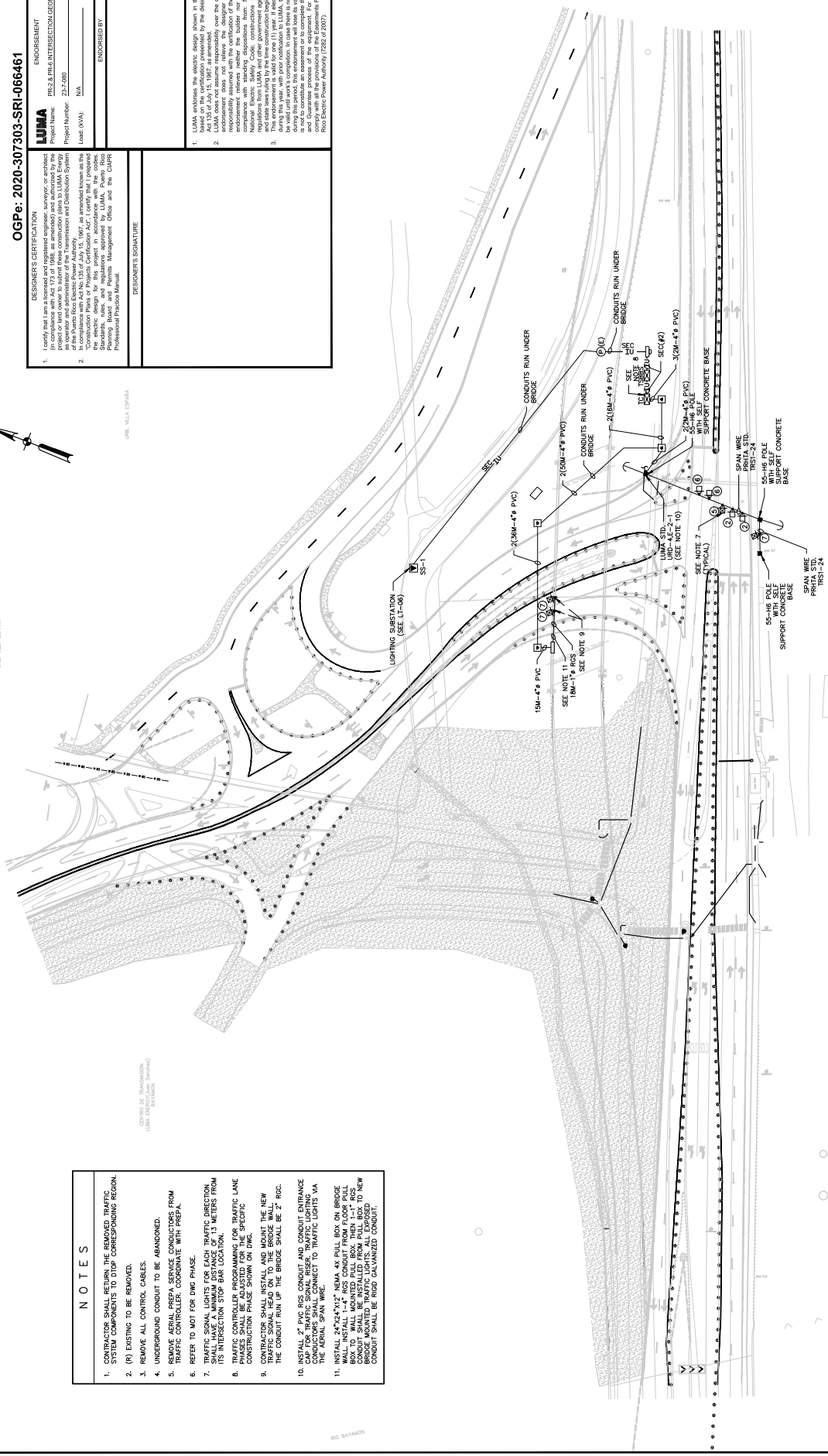
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

REVISIONS  
DATE

SCALE 1:500  
5 0 10 30

TEMPORARY TRAFFIC SIGNAL  
PHASE III

TSS 07



- NOTES**
- CONTRACTOR SHALL RETURN THE REMOVED TRAFFIC SIGNAL COMPONENTS TO DTOP CORRESPONDING REGION.
  - (R) EXISTING TO BE REMOVED.
  - REMOVE ALL CONTROL CABLES.
  - UNDERGROUND CONDUIT TO BE ABANDONED.
  - EXISTING TRAFFIC SIGNAL CABLES TO BE REMOVED FROM TRAFFIC CONTROLLER COORDINATE WITH PREPA.
  - REFER TO NOT FOR ONE PHASE.
  - TRAFFIC SIGNAL LIGHTS FOR EACH TRAFFIC DIRECTION SHALL HAVE A MINIMUM DISTANCE OF 13 METERS FROM ITS INTERSECTION STOP BAR LOCATION.
  - TRAFFIC CONTROLLER PROGRAMMING FOR TRAFFIC LANE TO BE DETERMINED BY DTOP AND PREPA.
  - CONSTRUCTION PHASE SHOWN ON DWG.
  - CONTRACTOR SHALL INSTALL AND MOUNT THE NEW TRAFFIC SIGNAL LIGHTS AND CONDUITS IN ACCORDANCE WITH THE CONDUIT RUN UP THE BRIDGE SHALL BE 2" RIGID.
  - INSTALL 2" PVC RIGID CONDUIT AND CONDUIT ENTRANCE UNITS TO BE INSTALLED ON THE BRIDGE IN ACCORDANCE WITH THE AERIAL SPAN WIRE.
  - INSTALL 24"x24"x12" NEMA 4X PULL BOX ON BRIDGE OVER EACH TRAFFIC DIRECTION. THE PULL BOX SHALL BE MOUNTED TO WALL MOUNTED PULL BOX THEN 1.5" RIGID CONDUIT SHALL BE INSTALLED FROM PULL BOX TO NEW TRAFFIC SIGNAL LIGHTS. THE CONDUIT SHALL BE RIGID GALVANIZED CONDUIT.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	132
				178

OGPe: 2020-307303-SRI-066461

**DESIGNER'S CERTIFICATION**  
I certify that I am the author of the design or architect (in compliance with Art 173 of 1986, as amended) and authorized by the Municipality of Bayamón to prepare the design and submit the same as engineer and administrator of the Transportation and Distribution System (SISTEMA DE TRANSMISION Y DISTRIBUCION DE BAYAMÓN) of the Puerto Rico Electric Power Authority (PREPA), as amended known as the "Concessionaire" of the project. I certify that I prepare the design in accordance with the applicable laws, regulations, standards, codes, and specifications approved by LUMA, Puerto Rico Electric Power Authority, Management Office and the CIPRE Professional Practice Manual.

**DESIGNER'S SIGNATURE**  
MR. NELA ESPINA

**ENDORSEMENT**  
**LUMA**  
Project Name: PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
Project Number: 237-690  
Load (kVA): N/A  
Revision: N/A  
ENDORSED BY:

1. LUMA certifies the quality of the design in these specifications that based on the certification presented by the designer in compliance with Art 173 of 1986, as amended, and authorized by the Municipality of Bayamón to prepare the design and submit the same as engineer and administrator of the Transportation and Distribution System (SISTEMA DE TRANSMISION Y DISTRIBUCION DE BAYAMÓN) of the Puerto Rico Electric Power Authority (PREPA), as amended known as the "Concessionaire" of the project. I certify that I prepare the design in accordance with the applicable laws, regulations, standards, codes, and specifications approved by LUMA, Puerto Rico Electric Power Authority, Management Office and the CIPRE Professional Practice Manual.

2. This endorsement is valid for one (1) year. If electrical works have begun before the completion of the project, this endorsement shall remain valid until work is completed. In case there is no certified electrical work and the electrical process of the equipment for this, it is necessary to request a new endorsement from LUMA. (Regulation of the Puerto Rico Electric Power Authority (PREPA) of 2007).



WORK	DATE	BY
DESIGN		
DRAWING		
CHECK	07/27/23	
FINAL CHECK		
FINAL PLANS		

**CMA**  
ARCHITECTS &  
ENGINEERS

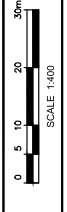
MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

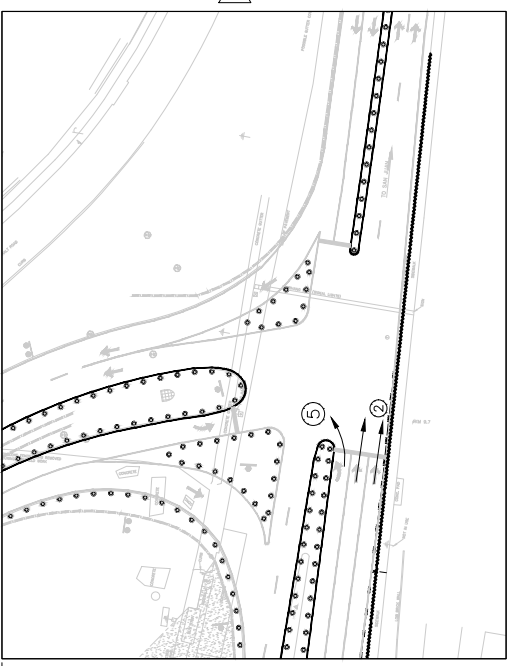
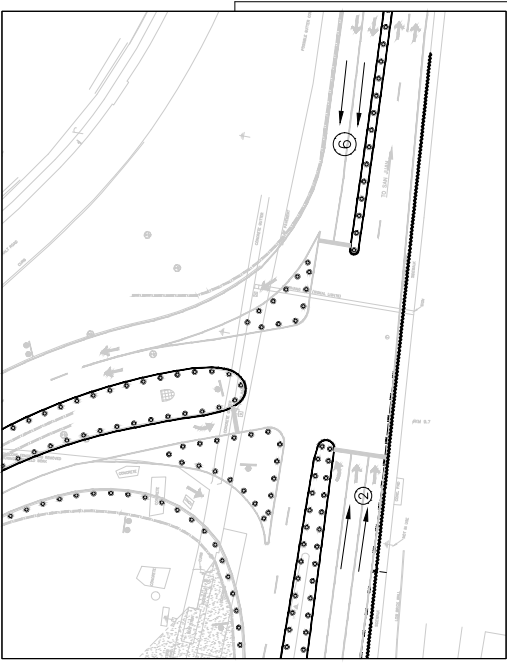
PUERTO RICO

REVISIONS	DATE



TEMPORARY TRAFFIC SIGNAL SEQUENCE OPERATION  
PHASE III

TSS 09



TRAFFIC SIGNAL SEQUENCE OPERATION

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	134	178

PLAN I  
MONDAY TO SUNDAY

PHASE	DETECTOR NUMBER	SIGNAL NUMBER	TIME (seconds)						FLASHING OPERATION
			INITIAL EXTENSION	YELLOW	ALL-RED	MINIMUM	MAXIMUM	GRACE NO-CRUISE	
1	2-5	2-6	18	3	3	2	19	21	Y
2	2-6	5	6	3	3	2	21	9	R
3	7	7	6	3	3	2	21	9	R
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
OVERLAP-A									
OVERLAP-B									
OVERLAP-C									
OVERLAP-D									
PEDESTRIAN-2									
PEDESTRIAN-4									
PEDESTRIAN-6									
PEDESTRIAN-8									

\* - NOT RECOMMENDED TO BE INSTALLED AND RESERVED FOR FUTURE USE.  
\*\* - APPLIES ONLY TO NON-RETURNED PHASES.

PHASE	CHANNEL
1	1
2	2
3	3
4	4 NOT USED
5	5 NOT USED
6	6 NOT USED
7	7 NOT USED
8	8 NOT USED
P2	9 NOT USED
P4	10 NOT USED
P8	11 NOT USED
P8	12 NOT USED
OVERLAP	13 NOT USED
OVERLAP	14 NOT USED
OVERLAP	15 NOT USED
OVERLAP	16 NOT USED

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

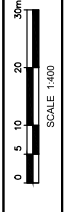
**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

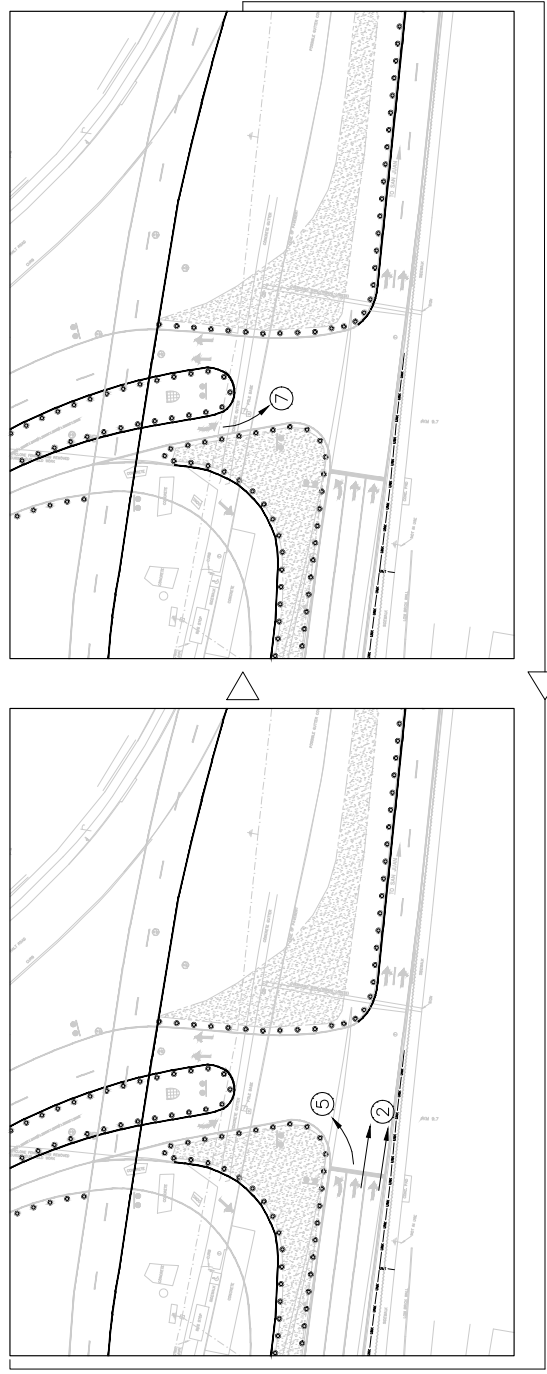
BAYAMON  
PUERTO RICO

REVISIONS	DATE



TEMPORARY TRAFFIC SIGNAL SEQUENCE OPERATION  
PHASE IV

TSS 10



TRAFFIC SIGNAL SEQUENCE OPERATION

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	135	178

PLAN I  
MONDAY TO SUNDAY

PHASE	DETECTOR NUMBER	SIGNAL NUMBER	TIME (seconds)						FLASHING OPERATION
			INITIAL EXTENSION	YELLOW	ALL-RED	MINIMUM	MAXIMUM	GRACE	
1	2-5	7	18	3	3	2	21	21	Y
2	7	7	6	3	3	2	21	9	R
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
OVERLAP-A X									
OVERLAP-B X									
OVERLAP-C X									
OVERLAP-D X									
PEDESTRIAN-2									
PEDESTRIAN-4									
PEDESTRIAN-6									
PEDESTRIAN-8									

NOT RECOMMENDED TO BE INSTALLED AND RESERVED FOR FUTURE USE.  
\*\* - APPLIES ONLY TO NON-RETURNED PHASES.

PHASE	CHANNEL
1	1
2	2
3	3 NOT USED
4	4 NOT USED
5	5 NOT USED
6	6 NOT USED
7	7 NOT USED
8	8 NOT USED
P2	9 NOT USED
P4	10 NOT USED
P6	11 NOT USED
P8	12 NOT USED
OVERLAP	13 NOT USED
OVERLAP	14 NOT USED
OVERLAP	15 NOT USED
OVERLAP	16 NOT USED

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	136	178

URB. NLLA ESPAÑA  
**OGPe: 2020-307303-SRI-066461**

**DESIGNER'S CERTIFICATION**

I, the undersigned, certify that the engineering and design of the project of land owner to install three construction plants to LUMA Energy (in compliance with Act 179 of 1982, as amended and authorized by the Decree of the Board of Directors of the Electric Power Authority of the Puerto Rico Electric Power Authority, Inc.) was completed on the 'Construction Phase of Project Completion Act'. I certify that I prepared the design in accordance with the standards, codes and regulations of the Planning Board and Permit Management Office and the CHPR Professional Practice Permit.

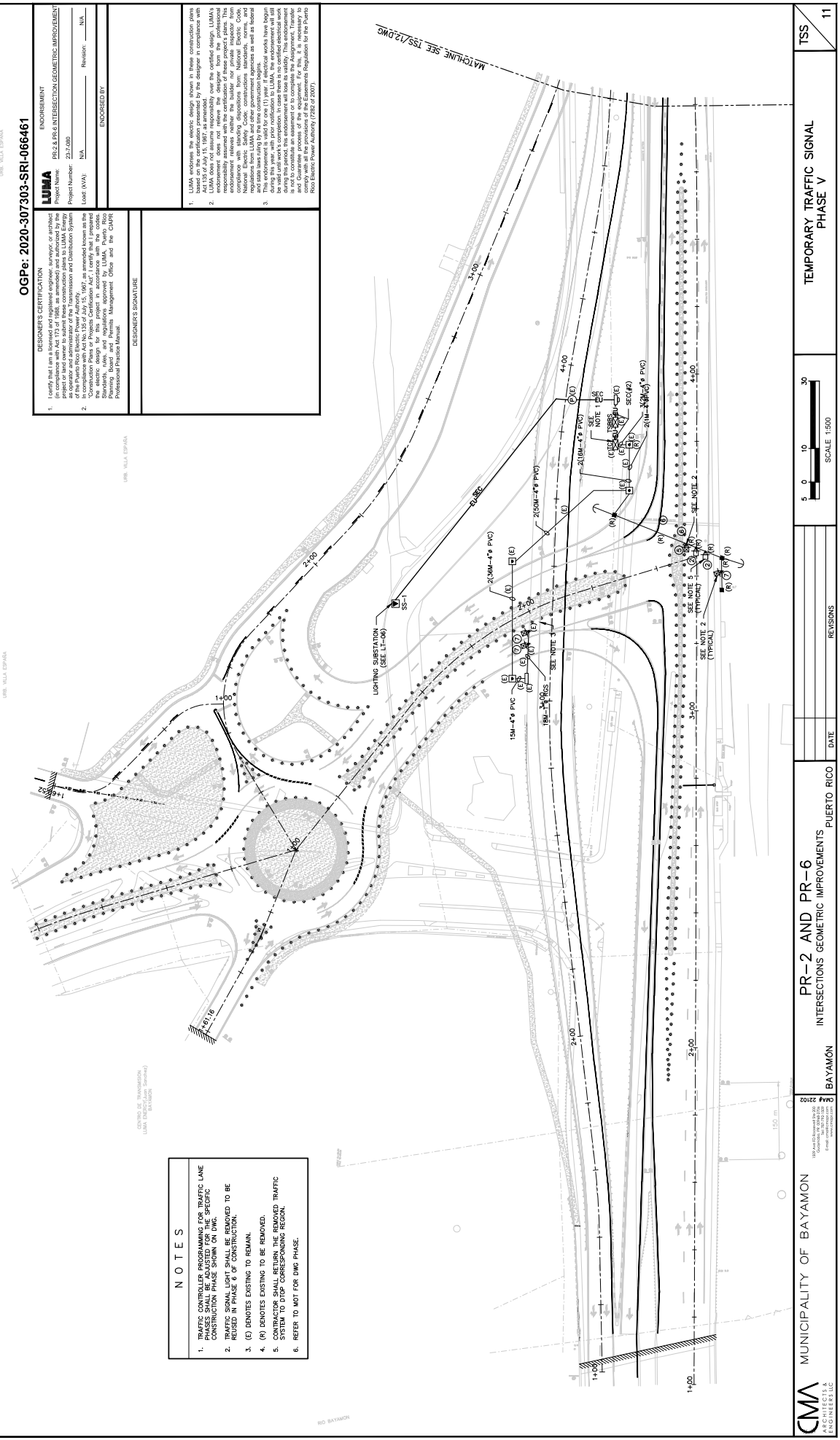
ENDORSED BY: \_\_\_\_\_

DESIGNER'S SIGNATURE: \_\_\_\_\_

URB. NLLA ESPAÑA

**LUMA**  
**ENDORSEMENT**  
 PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Name:  
 Project Number: 237-680  
 Load (KV): N/A  
 Revision: N/A

- NOTES**
- TRAFFIC CONTROL PROGRAMMING FOR TRAFFIC LANE PHASES SHALL BE ADJUSTED FOR THE SPECIFIC CONSTRUCTION PHASE SHOWN ON DWG.
  - TRAFFIC SIGNAL LIGHT SHALL BE REMOVED TO BE REINSTALLED AFTER CONSTRUCTION.
  - (E) DENOTES EXISTING TO REMAIN.
  - (R) DENOTES EXISTING TO BE REMOVED.
  - CONTRACTOR SHALL RETURN THE REMOVED TRAFFIC SYSTEM TO STOP CORRESPONDING REGION.
  - REFER TO MOT FOR DWG PHASE.



WORK	BY	DATE	REVISIONS	DATE

SCALE 1:500

5 0 10 30

TEMPORARY TRAFFIC SIGNAL  
 PHASE V


**CMA**  
 ARCHITECT &  
 ENGINEERS

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

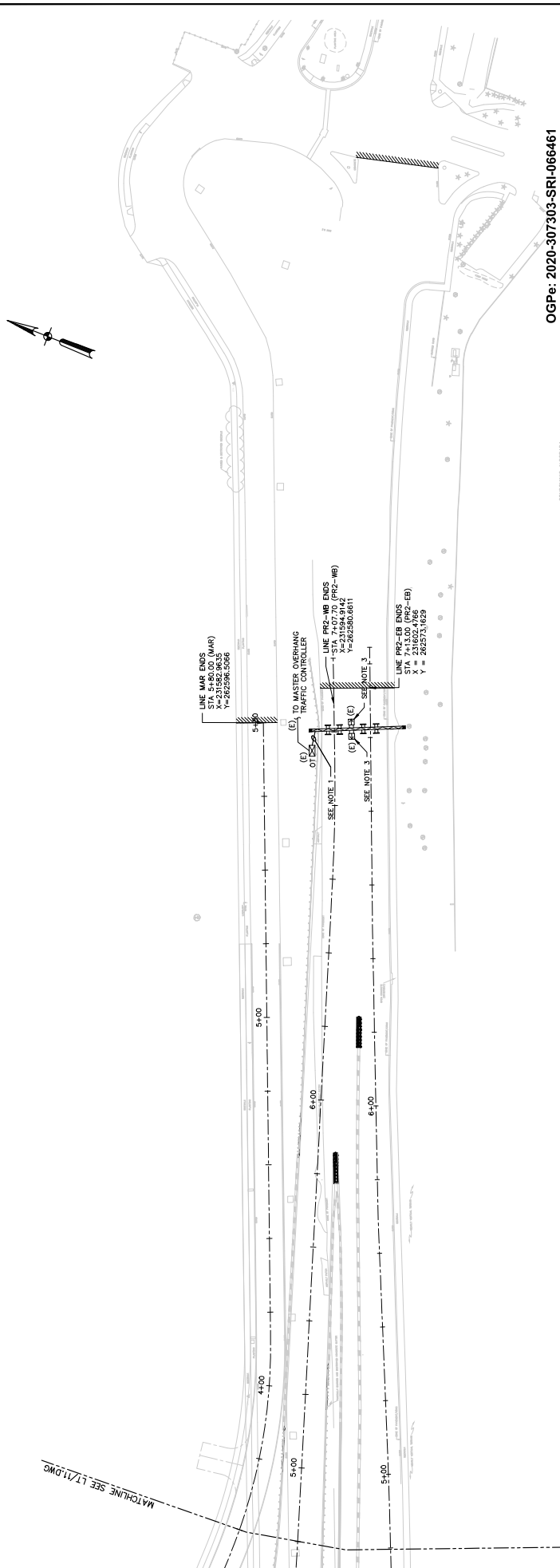
BAYAMÓN

PUERTO RICO

#48 2282

FINAL CHECK	07/27/23
DESIGN	
DRAWINGS	
CHECKS	
PLANS	

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	137	178



**NOTES**

- CONTRACTOR SHALL INSTALL NEW "X" INTERSECTIONS, PAVEMENT, CURBS AND GUTTERS AND CONNECT TO EACH REUSED REVERSIBLE LINE TRAFFIC SING.
- (E) DENOTES EXISTING TO REMAIN.
- INSTALL EXISTING VARIABLE TRAFFIC SIGN ONTO NEW SIGNING STRUCTURE. FOR MORE INFORMATION SEE DWG 22-024.
- REFER TO NOT FOR DWG PHASE.

**DESIGNER'S CERTIFICATION**

I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 173 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, and Surveyors, as the supervisor and administrator of the Transmission and Distribution System in compliance with Act No. 133 of July 15, 1997, as amended known as the Electric Service Law, and that I have prepared and approved the project in accordance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Department of Management. Other than the CHARTERED PROFESSIONAL PRACTICE MANUAL.

DESIGNER'S SIGNATURE

**ENDORSEMENT**

**LUMA**  
 PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Name: 23-7-080  
 Load (MVA): N/A  
 Revision: N/A

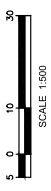
ENDORSED BY:

- LUMA endorses the electric design shown in these construction plans based on the certification presented by the designer in compliance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority.
- LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the project plans. The responsibility assumed with the certification of these project plans: The design is based on the information provided by the client. LUMA does not endorse neither the builder nor general contractor. LUMA does not assume responsibility for the construction of the project. LUMA does not assume responsibility for the construction of the project. LUMA does not assume responsibility for the construction of the project. LUMA does not assume responsibility for the construction of the project.
- During this year, with prior notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified expiration work, the endorsement will be valid until the completion of the project. LUMA does not assume responsibility for the construction of the project. LUMA does not assume responsibility for the construction of the project. LUMA does not assume responsibility for the construction of the project. LUMA does not assume responsibility for the construction of the project.

DATE: September 26, 2023 8:29 AM USER: Jose O. Vazquez  
 FILE: C:\PM\WORKSPACE\CHECKOUT\TSS-12000

**FINAL TRAFFIC SIGNAL SYSTEM PHASE V**

TSS 12



NO.	REVISIONS	DATE

**MUNICIPALITY OF BAYAMÓN**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

CH# 2218  
 BAYAMÓN

**CMA ARCHITECTS & ENGINEERS**  
 100 CALLE DE LAS AMERICAS, SUITE 200  
 SAN JUAN, PUERTO RICO 00906  
 TEL: (787) 763-1234  
 FAX: (787) 763-1235  
 WWW.CMA-ARCHITECTS.COM

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

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 ARCHITECT &  
 ENGINEERS

MUNICIPALITY OF BAYAMON

**PR-2 AND PR-6**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN  
 PUERTO RICO

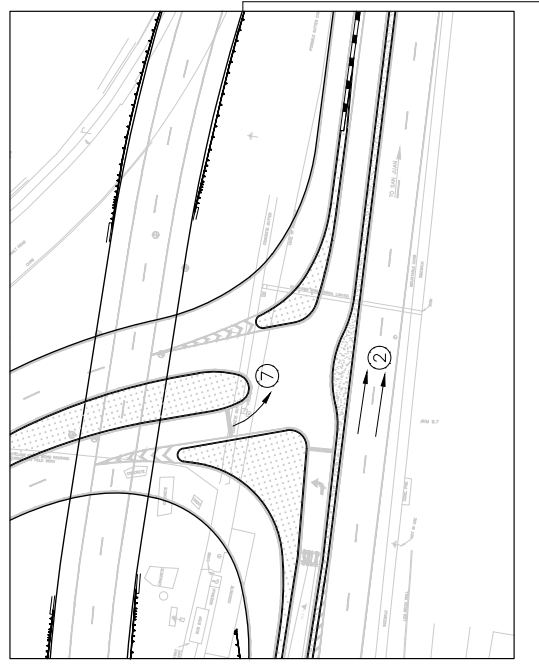
MAP # 2202  
 CMA# 2202

NO.	DATE	REVISIONS



TRAFFIC SIGNAL SEQUENCE OPERATION  
 PHASE VI

TSS 14



TRAFFIC SIGNAL SEQUENCE OPERATION

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	139	176

PLAN I  
 MONDAY TO SUNDAY

PHASE	DETECTOR NUMBER	SIGNAL NUMBER	TIME (seconds)									FLASHING NO-CROSS	FLASHING OPERATION	
			INITIAL EXTENSION	YELLOW	ALL-RED	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			GRACE
1	2-5	5	6	3	3	2	21	9						Y
2	2-7	7	6	3	3	2	21	9						Y
OVERLAP-A X														
OVERLAP-B X														
OVERLAP-C X														
OVERLAP-D X														
PEDESTRIAN-2														
PEDESTRIAN-4														
PEDESTRIAN-6														
PEDESTRIAN-8														

NOT RECOMMENDED TO BE INSTALLED AND RESERVED FOR FUTURE USE.  
 \*\* - APPLIES ONLY TO NON-RETURNED PHASES.

PHASE	CHANNEL
1	1
2	2
3	3 NOT USED
4	4 NOT USED
5	5 NOT USED
6	6 NOT USED
7	7 NOT USED
8	8 NOT USED
P2	9 NOT USED
P4	10 NOT USED
P6	11 NOT USED
P8	12 NOT USED
OVERLAP	13 NOT USED
OVERLAP	14 NOT USED
OVERLAP	15 NOT USED
OVERLAP	16 NOT USED



INTERSECTION DIAGRAM, PROGRAMING DATA AND EQUIPMENTS INFORMATION LABELS

**INTERSECTION DIAGRAM (AS BUILT PLAN)**

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

THE ARTERIAL

THE CROSS STREET

EXAMPLE INTERSECTION AS BUILT PLAN

PHASE SEQUENCE (DRAW DIAGRAM AS USED)

EXAMPLE: 8 PHASES DUAL AND QUAD PHASING

**CABINET BRAND LOGO**

PROJECT #	LOCATION	DATE

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

**MAIN PROGRAM CHART**

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

**CABINET BRAND LOGO**

PROJECT #	LOCATION	DATE

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DATE \_\_\_\_\_

**FLASHING OPERATION - SIGNAL INDICATIONS DURING FLASHING MODE**

MAJOR APPROACHES (IN CONFORMANCE WITH THE MUTCD 2009) (USUALLY PHASES 1, 5, 2, AND 6, UNLESS OTHERWISE SPECIFIED ON PLANS)

REMAINING APPROACHES (IN CONFORMANCE WITH THE MUTCD 2009) (USUALLY PHASES 3, 4, 7, AND 8, UNLESS OTHERWISE SPECIFIED ON PLANS)

CONTINUOUS MOVEMENT

NOTE: OVERLAPS IN THE MAJOR APPROACH SHALL FLASH AS DESCRIBE ABOVE FOR A MAJOR APPROACH FLASHING OPERATION

NOTE: OVERLAPS IN THE REMAINING APPROACHES SHALL FLASH AS DESCRIBE ABOVE FOR A REMAINING APPROACHES FLASHING OPERATION

**CABLES AND TERMINALS DETAIL**

ELECTRICAL CONDUCTORS FOR SIGNALS AND PEDESTRIAN DETECTORS

ETHERNET CABLES

COAXIAL CABLES

NOTE: SPARE CABLE SHALL BE COLORED WITH WHITE ELECTRICAL TAPE USING DIFFERENT COLOR FOR EACH PHASE.

**LOAD SWITCHES AND TRANSFER RELAY SUPPORT**

FLASH FOR LOAD SWITCH

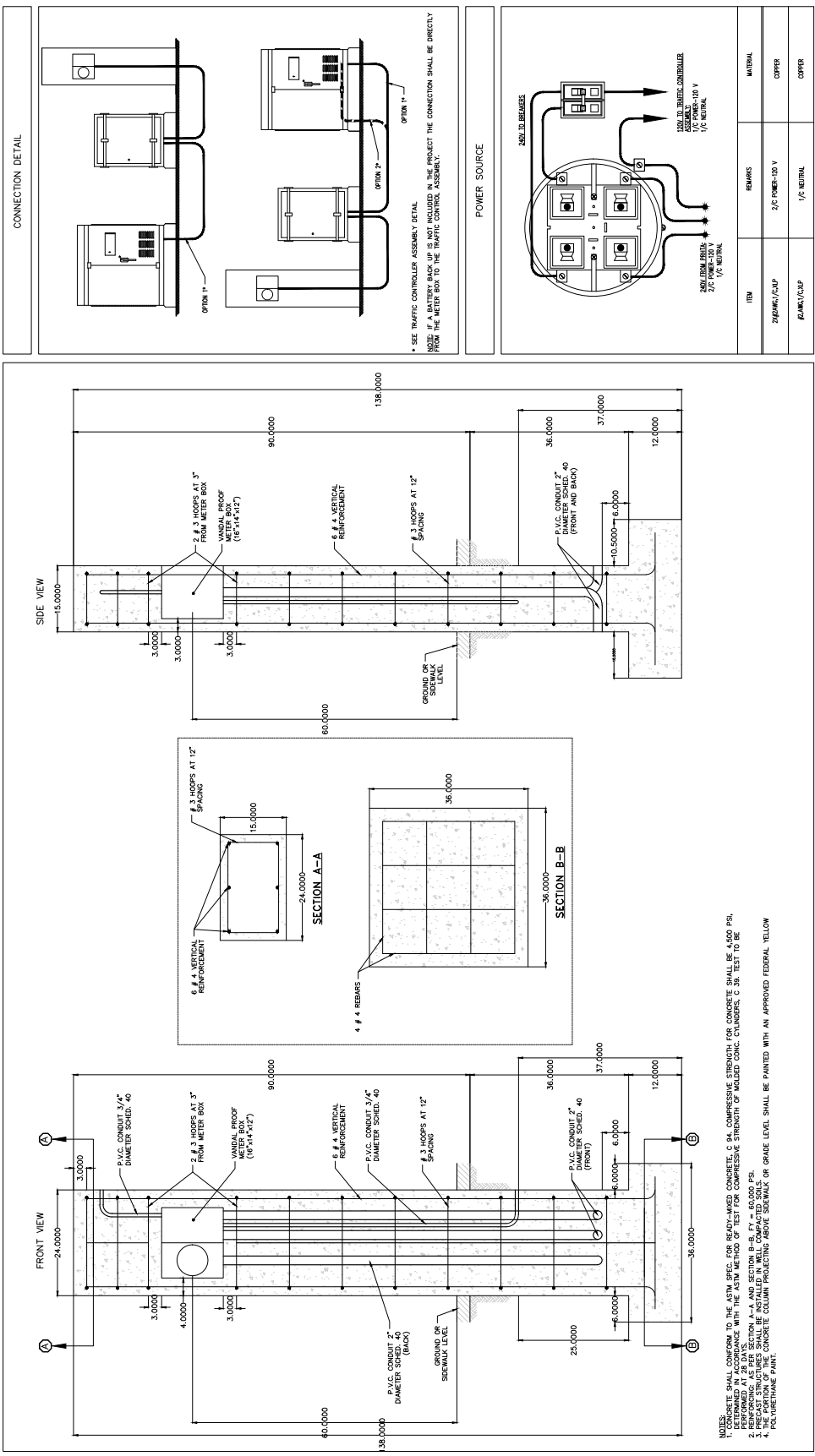
FLASH FOR TRANSFER RELAY

NOTES:

- SIXTEEN LOAD SWITCHES SHALL BE SUPPLIED WITH EVERY CABINET.
- ONE LOAD SWITCH PER LOAD SWITCH TERMINAL SHALL BE SUPPLIED WITH EVERY CABINET.
- SIXTEEN JUMPERS PER LOAD SWITCH TERMINAL SHALL BE SUPPLIED WITH EVERY CABINET.
- ONE TRANSFER RELAY SHALL BE INSTALLED IN EVERY UNUSED LOAD SWITCH TERMINAL.
- EIGHT TRANSFER RELAYS SHALL BE SUPPLIED WITH EVERY CABINET.
- ONE TRANSFER RELAY SHALL BE INSTALLED IN EVERY USED TRANSFER RELAY TERMINAL.
- SIXTEEN JUMPERS PER TRANSFER RELAY TERMINAL SHALL BE SUPPLIED WITH EVERY CABINET.
- TWO JUMPERS SHALL BE INSTALLED IN EVERY UNUSED TRANSFER RELAY TERMINAL.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	141	178

### CONCRETE COLUMN DETAIL



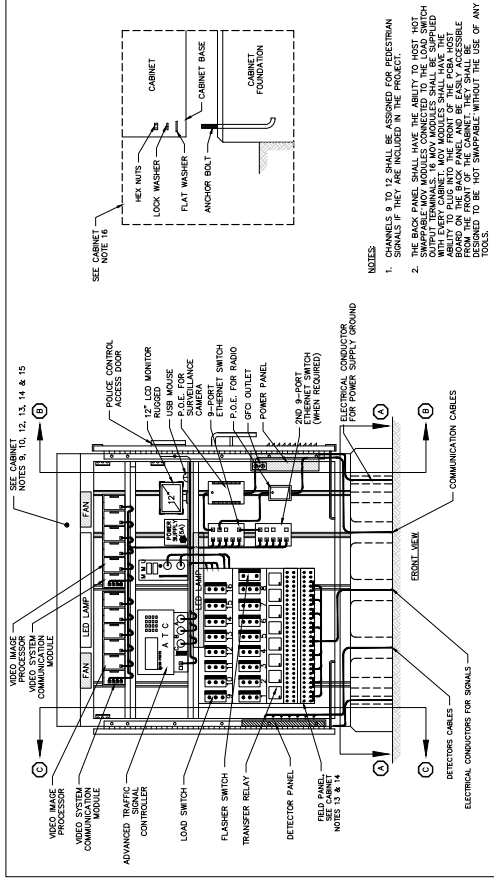
- NOTES:**
1. REBAR SHALL CONFORM TO THE A706 SPEC. THE REINFORCED CONCRETE IS 28 COMPRESSIVE STRENGTH. THE CONCRETE SHALL BE 4,500 PSI, DETERMINED IN ACCORDANCE WITH THE ASTM METHOD OF TEST FOR COMPRESSIVE STRENGTH OF MOLDED CONCRETE CYLINDERS, C 39. TEST TO BE PERFORMED AT 28 DAYS.
  2. REBAR SHALL BE INSTALLED IN ACCORDANCE WITH THE ASTM METHOD OF TEST FOR COMPRESSIVE STRENGTH OF MOLDED CONCRETE CYLINDERS, C 39. TEST TO BE PERFORMED AT 28 DAYS.
  3. PRECAST STRUCTURES SHALL BE INSTALLED IN WELL COMPACTED SAND.
  4. POLYURETHANE PAINT.

ITEM	REMARKS	MATERIAL
Z/RAMES/CAP	2 1/2" POWER-100 V	COPPER
Z/RAMES/CAP	1 1/2" NEUTRAL	COPPER

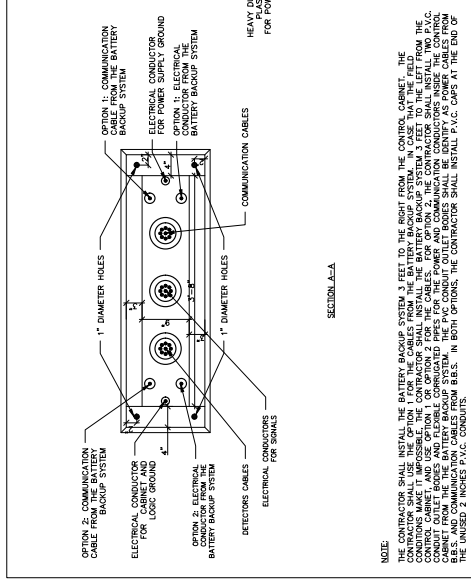
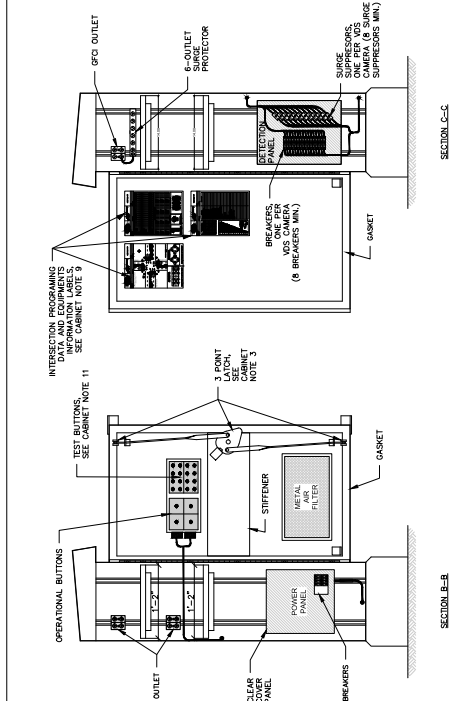
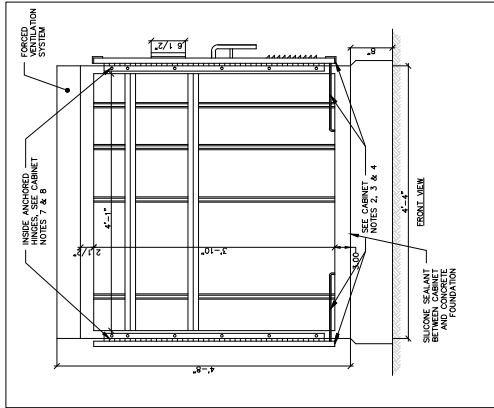
<b>MUNICIPALITY OF BAYAMÓN</b> INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	<b>TSS</b> CONCRETE COLUMN FOR METER BOX DETAIL
<b>PR-2 AND PR-6</b> INTERSECTIONS GEOMETRIC IMPROVEMENTS	BAYAMÓN	16
MUNICIPALITY OF BAYAMÓN ARCHITECTS & ENGINEERS	PUERTO RICO	NOT TO SCALE
DATE: 07/27/23 CHECK: [ ] DRAWING: [ ] DESIGN: [ ] WORK: [ ]	REVISIONS	CONCRETE COLUMN FOR METER BOX DETAIL

ROAD SHEETS	TOTAL SHEETS	178
ISLAND	FISCAL YEAR	2023
MUNICIPALITIES	P.R.	BAYAMÓN
PR-2 & PR-6	SHEET NO.	142

16 CHANNELS CABINET DETAIL



CABINET DIMENSIONS



CABINET NOTES

- THE CABINET SHALL BE CONSTRUCTED FROM TYPE 5052-H32 ALUMINUM WITH A MINIMUM THICKNESS OF 1/16 INCHES.
- ALL HINGES SHALL BE 1 1/2 INCHES PAPER. EACH WITH A BASSIN LOCKING. AUTOMATICALLY LATCHING DOOR STOP. THE DOOR STOP SHALL HOLD THE DOOR SECURELY AT THE 90 AND 180 DEGREE POSITIONS.
- THE MAIN CABINET DOOR SHALL USE 2-POINT LOCKING SYSTEMS, AND STANDARD KEYS.
- RAILS FOR THE ADJUSTABLE SHIELDS SHALL BE THE KEYSHOLE TYPE WITH THE KEYSHOLE ON 15" CENTERS. THE USE OF UNSTRAIT TYPICAL RAILS WILL NOT BE ACCEPTABLE.
- THE POLICE DOOR SHALL USE A STANDARD KEYED TUMBLER SUB-TREASURY LOCK WITH 2 KEYS.
- ALL WELDS SHALL BE CONTINUOUS.
- ALL HINGES MATERIAL SHALL BE .060" STAINLESS STEEL.
- ALL HINGES SHALL BE A ONE PIECE CONTINUOUS PIANO HINGE WITH A NON-REMOVABLE ATTACHED IN SUCH A MANNER THAT NO NUTS OR BOLTS ARE EXPOSED. FINISHES SHALL BE ATTACHED IN SUCH A MANNER THAT NO NUTS OR BOLTS ARE EXPOSED.
- ALL SIZE PANELS SHALL BE COVERED WITH PVC LABELS, WRITE ON BLACK, FOR EASY READING, DAY OR NIGHT. ALSO, THESE LABELS SHALL BE PROVIDED WITH THE KEYS.
- DOOR OPEN MICROSWITCH FOR CABINET DOOR, REPORTING TO THE MONITORING CENTER ARE REQUIRED.
- VEHICLE AND DETECTOR TEST PUSH BUTTONS ARE REQUIRED.
- LED INTERIOR LAMPS WITH MANUAL SWITCH ARE REQUIRED.
- METAL DOOR VARIATORS (ADOV) SHALL BE INSTALLED ON ALL FIELD TERMINALS TO PREVENT CONTACT FLASH IN THE EVENT OF BURNED OUT LAMPS, YELLOW, AND MALUS.
- 1500 OHM 5 WATT RESISTORS SHALL BE INSTALLED ON ALL GREENS, YELLOWS, AND MALUS.
- THE TRAFFIC CONTROLLER ASSEMBLY SHALL COMPLY WITH THE LATEST NEMA STANDARDS 723 OF THE HIGHWAY AND TRANSPORTATION AUTHORITY.
- ANCHOR BOLTS SHALL BE HOT BRANT AND SHALL MEET THE REQUIREMENTS OF ASTM A-475 OR 90 OR F1554 30. NUTS SHALL MEET THE REQUIREMENTS OF ASTM A-563 GRADE A.
- THE INTERIOR OF THE CABINET SHALL HAVE A WHITE PAINTE FINISH WITH A MINIMUM .2 MIL THICKNESS POWDER COATING PROCESS.

DATE	BY	DESIGN	WORK
07/27/23			
FINAL CHECK	CMAA	FINAL PLANS	
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DESIGNED	CE		
DRAWN	CE		

BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

MUNICIPALITY OF BAYAMÓN

CMAA ARCHITECT & ENGINEERS

TSS 17

CABINET DETAILS

REVISIONS

DATE

PUERTO RICO

BAYAMÓN

#442 2202

INTERSECTIONS GEOMETRIC IMPROVEMENTS

MUNICIPALITY OF BAYAMÓN

CMAA ARCHITECT & ENGINEERS

DATE	BY	REVISIONS
07/27/23		

DESIGN	
PERMITS	
CHECK	
FINAL CHECK	

PROJECT NO.	PR-2 AND PR-6
PROJECT NAME	INTERSECTIONS GEOMETRIC IMPROVEMENTS
CITY	PUERTO RICO
DATE	
REVISIONS	

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

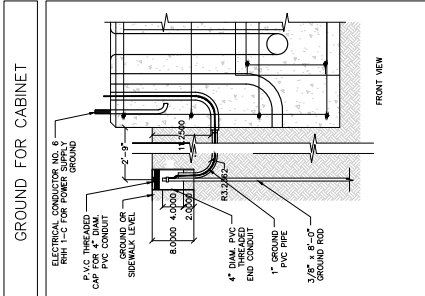
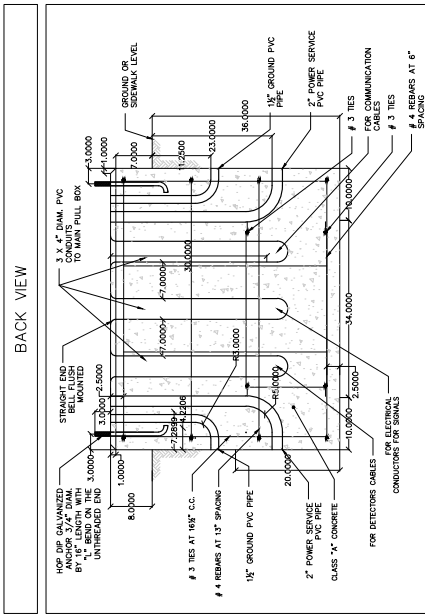
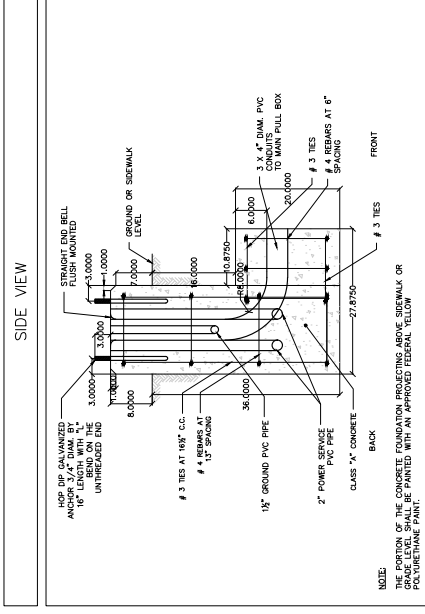
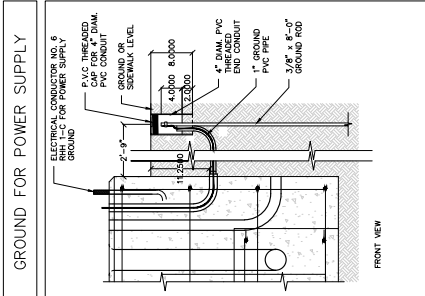
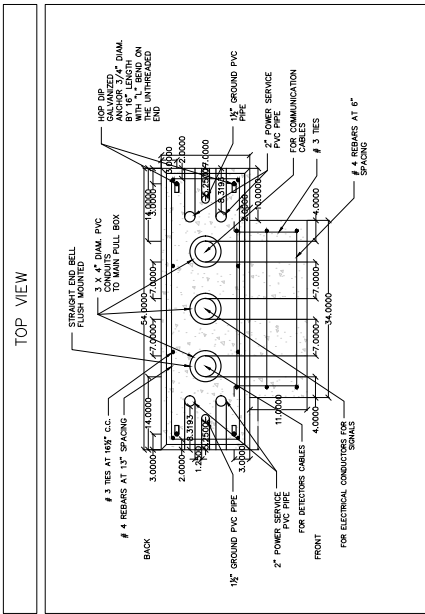
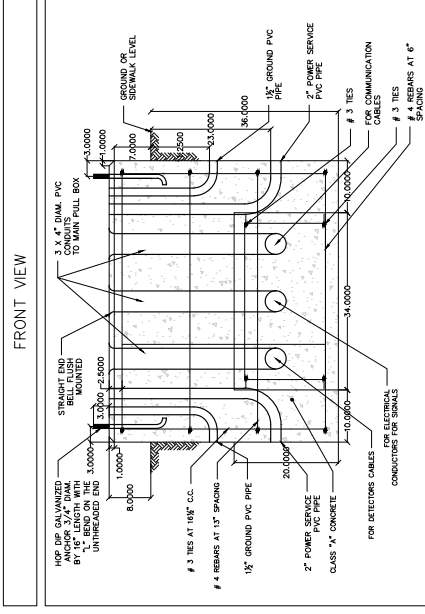
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NOT TO SCALE

TRAFFIC CONTROLLER ASSEMBLY DETAIL

TSS  
18

HIGHWAY	PR-2 & PR-6
MUNICIPALITIES	BAYAMON
ISLAND	P.R.
FISCAL YEAR	2023
SHEET NO.	143
TOTAL SHEETS	178



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

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MUNICIPALITY OF BAYAMON

100 Calle de los Rios, Suite 200  
Bayamón, PR 00961  
Phone: (787) 262-2222  
Fax: (787) 262-2222

BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISIONS

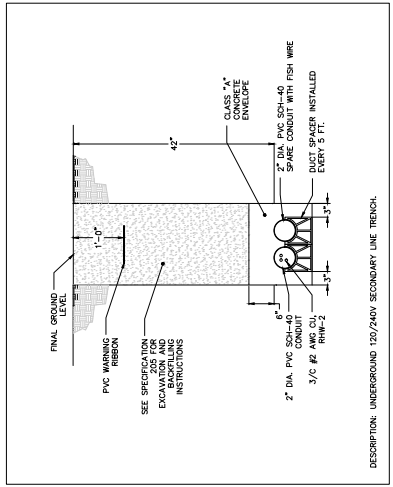
NO.	DATE	DESCRIPTION

TRENCH DETAILS

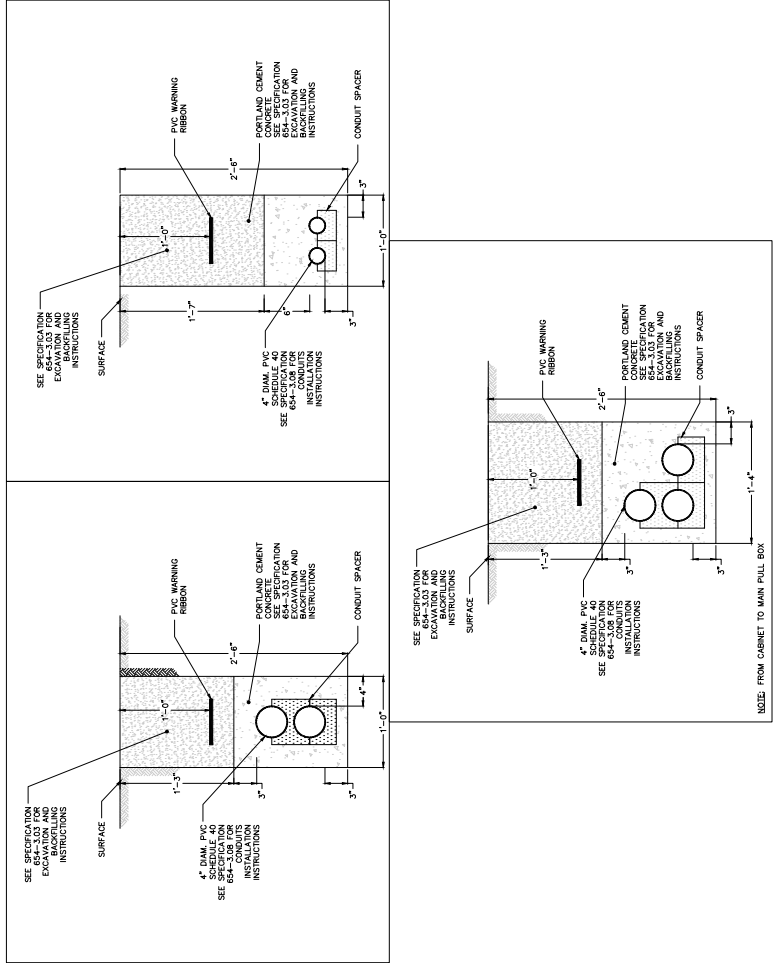
TSS 19

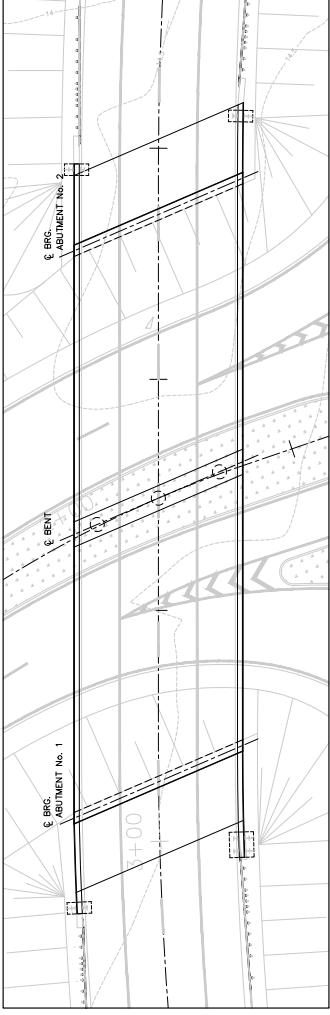
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	144	178

TRENCH DETAIL SPEC. 635



TRENCH DETAIL SPEC. 654





SITE PLAN  
SCALE: 1:200

**GENERAL NOTES:**

- 1. FHWA - HIGHWAY DESIGN MANUAL, 1978 EDITION
- 2. ASPH'T (9TH EDITION) DESIGN SPECIFICATIONS, 2020
- 3. FHWA - STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE REVISIONS & SPECIAL PROVISIONS, EDITION
- 4. FHWA - DESIGN DIRECTIVE & STANDARD DRAWINGS.
- 5. GEOTECHNICALS & GEOTECHNICAL ENGINEERS, LLC
- INTERSECTION GEOMETRIC IMPROVEMENTS, MUNICIPALITY OF BAYAMÓN, PUERTO RICO DE 2025-110 - SEPTEMBER 29, 2023

**MISCELLANEOUS:**

- 1. NOT SUCH DAMPERS BE SHOWN ON THE ABUTMENTS ABOVE THE DECK.
- 2. NO BACKFILL WILL BE PLACED AGAINST THE ABUTMENTS ABOVE THE DECK.
- 3. NO CONSTRUCTION JOINTS WILL BE PERMITTED EXCEPT THOSE SHOWN ON PLANS OR NOTED IN THE FOUNDATION EXAMINATION SHALL BE SUPERVISED BY PHRITA SOIL ENGINEERING OFFICE.
- 4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND QUANTITIES OF STEEL, REINFORCING DETAILS AND DIMENSIONS TO VERIFIED AGAINST ACTUAL CONCRETE DIMENSIONS & GEOMETRY PRIOR TO ORDERING ANY MATERIAL.
- 5. THE CONTRACTOR SHALL ASSURE THAT ANY CONSTRUCTION LOADING AND MEMBERS.
- 7. THE USE OF METAL STAY-IN-PLACE (SIP) FORMS IS NOT ALLOWED.
- 8. DRIVEN AND NOTED USING THE PILE DRIVING ANALYZER (PDA) BE
- 9. RECOMMEND PERFORMING RESTRIKE TESTS USING THE PDA TO EVALUATE DYNAMIC PILE LOAD TESTS.
- 10. DYNAMIC PILE LOAD TEST MUST BE PERFORMED USING THE PDA AS PER ASTM D 4945, AND STANDARD STATIC AXIAL COMPRESSIVE LOAD TEST AS DETERMINED BY MEASURING THE DYNAMIC RESPONSE OF THE PILE IN THE PILE SETUP HAS TAKEN PLACE (BEGINNING OF RESTRIKE - BAR) USING END OF DRIVING THE PILE AND JET PILE LOAD TEST. AFTER THE DURING RESTRIKE TESTING TO ALLOW THE DISSIPATION OF EXCESS FORCE TO DEVELOP ITS MAXIMUM CAPACITY.
- 12. BEFORE THE START OF FOUNDATION WORK, THE CONTRACTOR SHALL CONDUCT A VISUAL INSPECTION OF THE PILE HEADS CONCERNING TYPE AND CAPACITY OF THE PILE HAMMER AND PILE DRIVING EQUIPMENT TO BE USED TO ASSURE THAT THE EQUIPMENT AND EQUATION ANALYSIS SHALL BE PERFORMED USING THE PROPOSED HAMMER AND DRIVING CURVES. THE CONTRACTOR SHALL VERIFY THAT THE WITH A MINIMUM RATED ENERGY OF 70 k-FT FOR THE DRIVING OF THE PILE.
- 13. THE GEOTECHNICAL ENGINEER SHALL PROVIDE A PILE DRIVING CRITERIA FOR EACH STRUCTURE BASED ON THE RESULTS OF THE WAVE EQUATION DRIVING CRITERIA SHALL INCLUDE AT LEAST THE REQUIRED MINIMUM PILE MINIMUM RAM STROKE HEIGHT, AND MINIMUM RECORDED BELOW COUNT. QUALIFIED PILE DRIVING INSPECTOR SHALL BE PRESENT DURING DRIVING TO VERIFY THE DRIVING CRITERIA ARE BEING FOLLOWED ACCORDING TO THE DRIVING CRITERIA ESTABLISHED BY THE GEOTECHNICAL ENGINEER.
- 14. RESTRIKE TEST IS REQUIRED BY GEOTECHNICAL ENGINEER.
- 15. SHALL BE IN ACCORDANCE WITH ASTM D3689.
- 16. AUTHORITY SOIL OFFICE TO INSPECT EXCAVATIONS PRIOR TO FOUR CONCRETE FOUNDATIONS. SUBMIT TO HIGHWAY AND TRANSPORTATION AUTHORITY SOIL OFFICE THE INFORMATION OF HAMMER RECOMMENDED AND WAVE EQUATION ANALYSIS. THESE ARE GIVEN FOR BIDDING PURPOSES ONLY AND IT MAY VARY IN ACCORDANCE WITH LOAD TEST RESULTS.

**DECK SLAB NOTES:**

- 1. FOR BRIDGE DECKS OF TWO OR MORE SPANS, THE DECK SURFACES SHALL BE SCAFFOLD USING THE DIAMOND GRINDING METHOD FOR ALL SPANS. THE CONTRACTOR SHALL PROVIDE A FINISH SLAB THICKNESS OF 0.025 TO 0.025 METERS DEPENDING ON THE CONSTRUCTION PROCEDURE. THE FINAL THICKNESS OF BRIDGE DECK SHALL MEET THE REQUIREMENTS OF SPECIAL PROVISION 686- BRIDGE DECK SMOOTHNESS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND QUANTITIES OF CONCRETE REINFORCING MATERIALS TO VERIFIED AGAINST ACTUAL DIMENSIONS AND QUANTITIES.
- 2. PRIOR TO BEGINNING OF ANY CONCRETE PLACEMENT, A BRIDGE DECK SHALL BE INSPECTED BY THE CONTRACTOR AND REPRESENTATIVES OF THE GEOTECHNICAL ENGINEER AND PILE DRIVING ANALYZER (PDA) SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO CONCRETE PLACEMENT. SUBMIT A PRELIMINARY CONCRETE PLACEMENT PLAN TO BE DISCUSSED WITH THE GEOTECHNICAL ENGINEER AND PILE DRIVING ANALYZER (PDA) OF CONCRETE OPERATIONS TO VERIFY ALL THE PARTS INVOLVED ARE PROPERLY PREPARED TO CONDUCT THE CONCRETING OPERATION. THE CONTRACTOR SHALL PROVIDE A PRELIMINARY CONCRETE PLACEMENT PLAN TO THE INSPECTOR TO THE MEETING SHALL BE MANDATORY AFTER THE CONCRETE PRE-PLACEMENT MEETING. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND QUANTITIES OF CONCRETE REINFORCING MATERIALS TO BE VERIFIED AND RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
- 3. SHALL BE AS FOLLOWS:
  - 0.008 M
  - 0.008 M
  - 0.008 M
  - 0.008 M
- 4. THE CONSTRUCTION TOLERANCES FOR THE SLAB REINFORCEMENT COVER SHALL BE AS FOLLOWS:
  - 0.008 M
  - 0.008 M
  - 0.008 M

**DRAWINGS LIST:**

- BR-01 GENERAL NOTES AND QUANTITY SUMMARY
- BR-02 PLAN AND ELEVATION
- BR-03 FRAMING PLAN
- BR-04 TYPICAL CROSS SECTIONS & BARRELS DETAILS
- BR-05 PRETENSIONED PRECAST CONCRETE BOX GIRDER BR-148
- BR-06 BENT PLAN, ELEVATION, SECTIONS & DETAILS
- BR-07 ABUTMENT No. 1 PLAN, ELEVATION, SECTIONS & DETAILS
- BR-08 ABUTMENT No. 2 PLAN, ELEVATION, SECTIONS & DETAILS
- BR-09 WINGWALLS No. 1 & No. 2 ELEVATION, SECTIONS & DETAILS
- BR-10 WINGWALLS No. 3 & No. 4 ELEVATION, SECTIONS & DETAILS
- BR-11 MISCELLANEOUS DETAILS
- BR-12 LIGHTING POST DETAILS
- BR-13 REINFORCEMENT SCHEDULE (1)
- BR-14 REINFORCEMENT SCHEDULE (2)

**ABBREVIATIONS:**

- ABUT. ABUTMENT
- AV. AVENUE
- BENT BENT
- BRIDGE BRIDGE
- CONC. CONCRETE
- C. TO C. CENTER TO CENTER
- DAMP. DAMPENING
- DRAWING DRAWING
- E.F. EACH FACE
- E.G. EQUAL SPACE
- E.M. EACH WAY
- EXP. EXPANSION
- F.F. FACE
- F.P. FACE
- H.R. HORIZONTAL
- H.L. HORIZONTAL
- INT. INTERIOR
- INT. METER INTERNAL METER
- INT. METER INTERNAL METER
- L.P. LUMP SUM
- L.S. LUMP SUM
- M.A. MAXIMUM
- N.F. NEAR FACE
- P.C. PROFILE GRADE
- P.G. PROFILE GRADE LINE
- S.M. SQUARE METER
- S.M. SQUARE METER
- S.D. STANDARD
- T. & B. TOP & BOTTOM
- T.P. TYPICAL SECTION
- UNC. UNCLASSIFIED
- VERT. VERTICAL

**CONCRETE COVER:**

- 1. ABUTMENT & WINGWALLS TOP & SIDES: 0.045 m. BOTTOM: 0.025 m.
- 2. DECK SLAB: TOP AND SIDES: 0.045 m. BOTTOM: 0.025 m.
- 3. FOOTINGS: TOP AND SIDES: 0.045 m.
- 4. PRESTRESSED BEAMS: TOP, BOTTOM AND SIDES: 0.04 m.

**CONCRETE COVER:**

- 1. CLASS V (PRESTRESSED BEAMS) - FC = 6,000 PSI LEVEL 2
- CLASS V (GENERAL USE) - FC = 5,000 PSI LEVEL 2
- CLASS V (GENERAL USE) - FC = 5,000 PSI LEVEL 1 FOR BARRELS
- CLASS V (BRIDGE DECK) - FC = 5,000 PSI LEVEL 2
- CLASS V (BRIDGE DECK) - FC = 5,000 PSI LEVEL 1
- BY CYLINDER TEST AT THE AGE OF 28 DAYS.
- MAX. WATER / CEMENT RATIO: 0.50
- 2. EXPOSURE CONDITION: CONSTANT
- 3. STEEL: STRUCTURAL STEEL A570 (ASTM A570) GRADE 60, FY = 60 KSI
- PRESTRESSING STEEL AASHTO M270 (ASTM A709) GRADE 50, FY = 50 KSI
- PRESTRESSING STEEL (LOW RELAXATION) F5 = 270 KSI (E = 28,000 KSI)

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	145	178

**QUANTITY SUMMARY**

SPEC. #	ITEM	(APPROXIMATE)	
		UNITS	QUANTITY
206	UNC EXCAVATION FOR STRUCTURE	CU.M	1320
207	FOUNDATION FILL	CU.M	76
SP909	PREFABRICATED DRAINAGE COMPOSITE	SQ.M	169
934	CLASS V (GENERAL USE) 2 CONCRETE	CU.M	392
934	CLASS V (BRIDGE DECK) 2 CONCRETE	CU.M	231
934	CLASS V (GENERAL USE) 2 MASS CONCRETE	CU.M	104
934	CLASS V (BARRELS) 1 CONCRETE	CU.M	57
939	CONCRETE BRIDGE JOINT BRODGE TYPE A	LN.M	20
602	REINFORCING STEEL	POUNDS	154243
615	STEEL HP LEB HP 14X73 GRADE 50	L.M	1893
615	STEEL TEST HP LEB HP 14X73 GRADE 50	L.M	109
630	PIS AASHTO TYPE BI-48 MEMBERS L=25.00 M.	EACH	24
660	NAME PLATE	EACH	2

SCALE AS SHOW

GENERAL NOTES AND QUANTITY SUMMARY

BR 01

DATE	BY	REVISIONS
07/27/23		

DESIGN	DRAWING	CHECK	FINAL

INTERSECTIONS GEOMETRIC IMPROVEMENTS - PUERTO RICO

PR-2 AND PR-6

BAYAMÓN

MUNICIPALITY OF BAYAMÓN

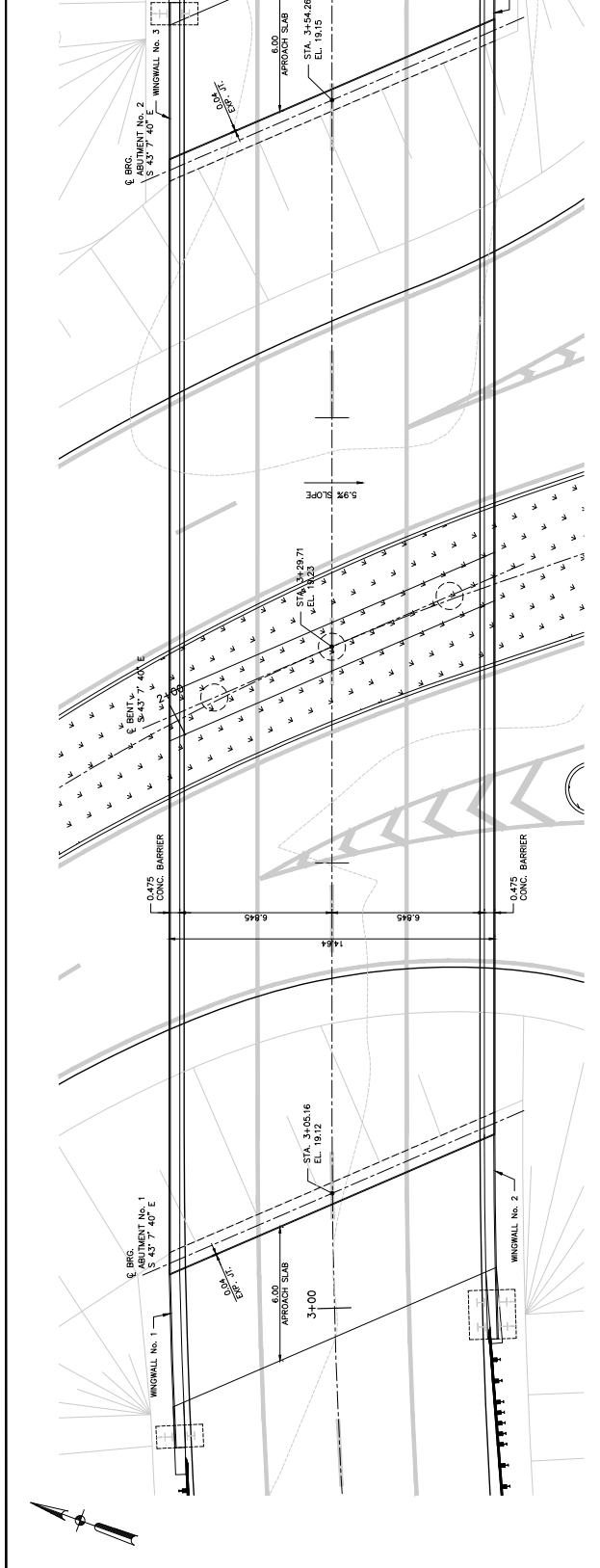
ARCHITECT & ENGINEERS

2022 #40

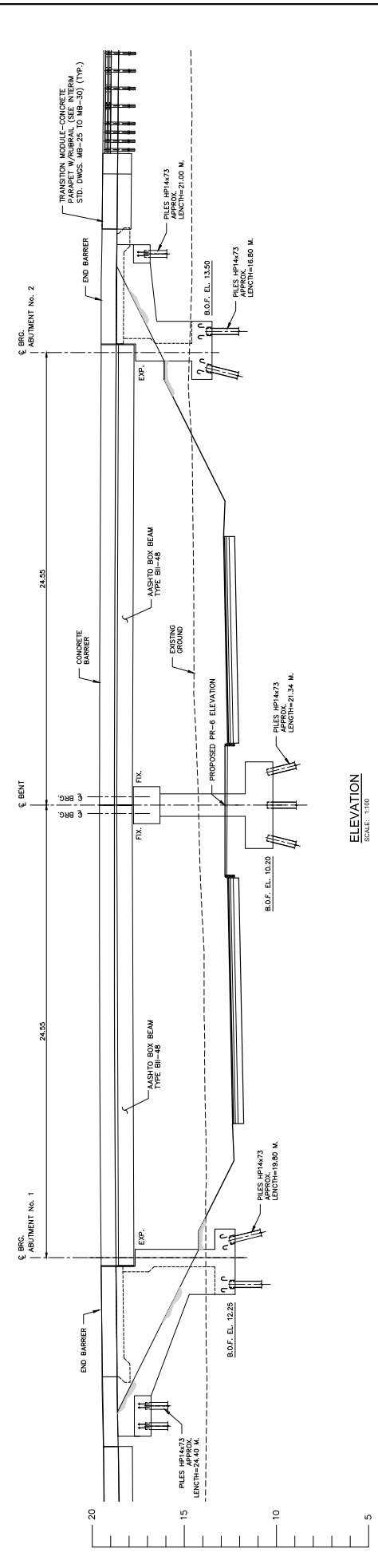
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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	146	178



PLAN  
SCALE: 1:100



ELEVATION  
SCALE: 1:100

	MUNICIPALITY OF BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	DATE	REVISIONS		
	BAYAMÓN						
MUNICIPALITY OF BAYAMÓN		INTERSECTIONS GEOMETRIC IMPROVEMENTS		PUERTO RICO		BR 02	
PLAN AND ELEVATION		BAYAMÓN		PUERTO RICO		2,000,000.00 5.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00	
SCALE: 1:100		SCALE: 1:100		SCALE: 1:100		SCALE: 1:100	

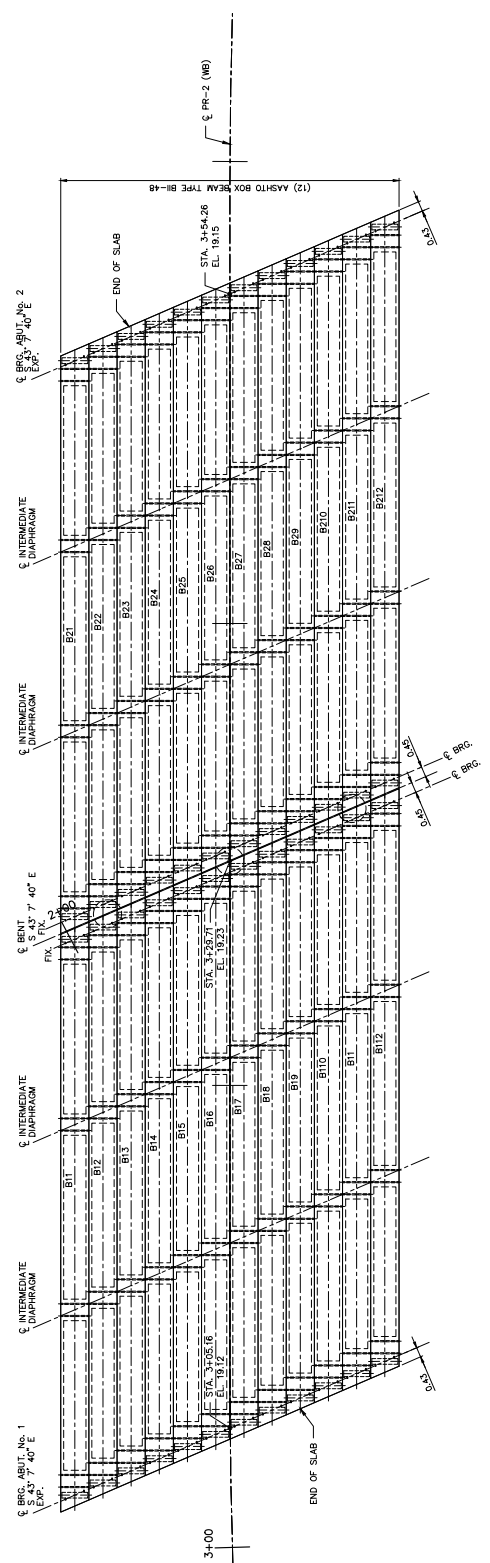
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07/27/23					

DATE	BY	DESIGN	DRAWINGS	CHECK	FINAL CHECK	DATE
						07/27/23

WORK	BR	SCALE AS SHOW	FRAMING PLAN
MUNICIPALITY OF BAYAMON	BAYAMON	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PR-2 AND PR-6
			PUERTO RICO
			REVISED
			DATE
			REVISIONS

ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
BAYAMON	2023	147	178

PR-2 & PR-6 BAYAMON



FRAMING PLAN  
SCALE: 1/100

BEAM	DECK ELEVATIONS SPAN No. 1										
	0.0*	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
B11	18.49	18.52	18.54	18.56	18.56	18.60	18.61	18.62	18.62	18.63	18.63
B12	18.42	18.45	18.48	18.50	18.51	18.53	18.54	18.55	18.55	18.56	18.56
B13	18.36	18.39	18.41	18.43	18.45	18.46	18.47	18.48	18.48	18.48	18.48
B14	18.29	18.32	18.34	18.36	18.38	18.39	18.40	18.41	18.41	18.41	18.41
B15	18.23	18.25	18.27	18.29	18.31	18.32	18.33	18.34	18.34	18.34	18.34
B16	18.16	18.18	18.21	18.22	18.24	18.25	18.25	18.26	18.27	18.27	18.27
B17	18.09	18.12	18.14	18.16	18.17	18.18	18.19	18.19	18.20	18.20	18.20
B18	18.03	18.05	18.07	18.09	18.10	18.11	18.12	18.12	18.12	18.12	18.12
B19	18.96	18.98	19.00	19.02	19.03	19.04	19.05	19.05	19.05	19.05	19.05
B20	18.89	18.92	18.93	18.95	18.96	18.97	18.98	18.98	18.98	18.98	18.98
B21	18.83	18.85	18.87	18.88	18.89	18.90	18.91	18.91	18.91	18.91	18.91
B22	18.76	18.78	18.80	18.81	18.82	18.83	18.84	18.84	18.84	18.84	18.84

BEAM	DECK ELEVATIONS SPAN No. 2										
	0.0*	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
B21	18.63	18.63	18.63	18.62	18.62	18.61	18.61	18.60	18.59	18.58	18.56
B22	18.56	18.56	18.55	18.55	18.55	18.54	18.53	18.52	18.51	18.50	18.49
B23	18.48	18.48	18.48	18.48	18.47	18.47	18.46	18.45	18.44	18.43	18.41
B24	18.41	18.41	18.41	18.40	18.40	18.39	18.38	18.37	18.36	18.35	18.34
B25	18.34	18.34	18.34	18.33	18.33	18.32	18.31	18.30	18.29	18.28	18.26
B26	18.27	18.27	18.26	18.26	18.25	18.25	18.24	18.23	18.21	18.20	18.19
B27	18.20	18.19	18.19	18.19	18.18	18.17	18.16	18.15	18.14	18.13	18.11
B28	18.12	18.12	18.12	18.11	18.11	18.10	18.09	18.08	18.07	18.05	18.04
B29	18.05	18.05	18.04	18.04	18.03	18.02	18.01	18.00	18.99	18.98	18.96
B210	18.98	18.98	18.97	18.97	18.96	18.95	18.94	18.93	18.92	18.90	18.89
B211	18.91	18.90	18.90	18.89	18.89	18.89	18.87	18.85	18.84	18.83	18.81
B212	18.83	18.83	18.83	18.82	18.81	18.80	18.79	18.78	18.77	18.75	18.74

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 DATE: September 26, 2023 8:21 AM USER: Jose O. Vazquez



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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON PUERTO RICO

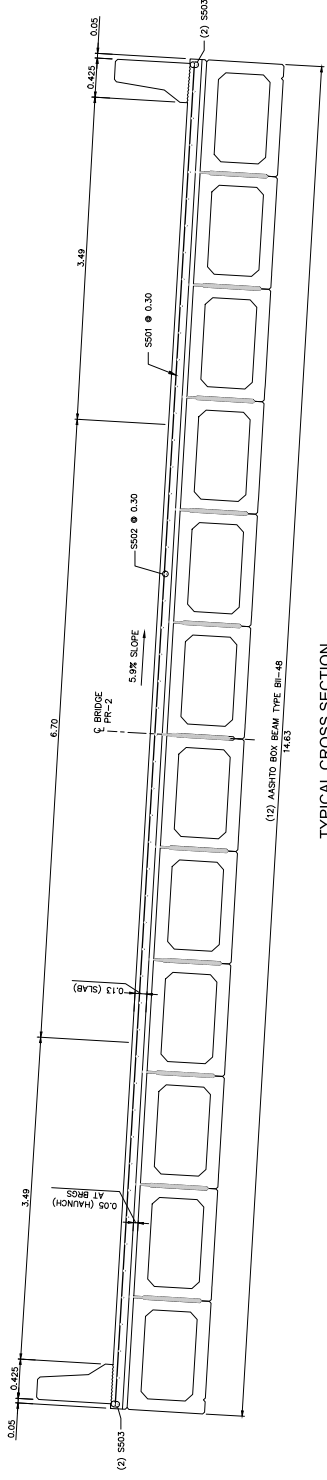
REVISIONS

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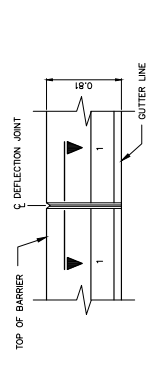
TYPICAL CROSS SECTION AND BARRIER DETAILS

BR 04

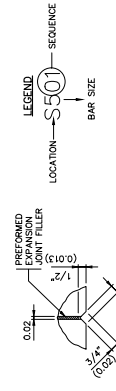
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	148	178



**CONCRETE BARRIER DETAIL**  
SCALE: 1:20



**DEFLECTION JOINT THRU PARAPET CONCRETE BARRIER**  
SCALE: NONE

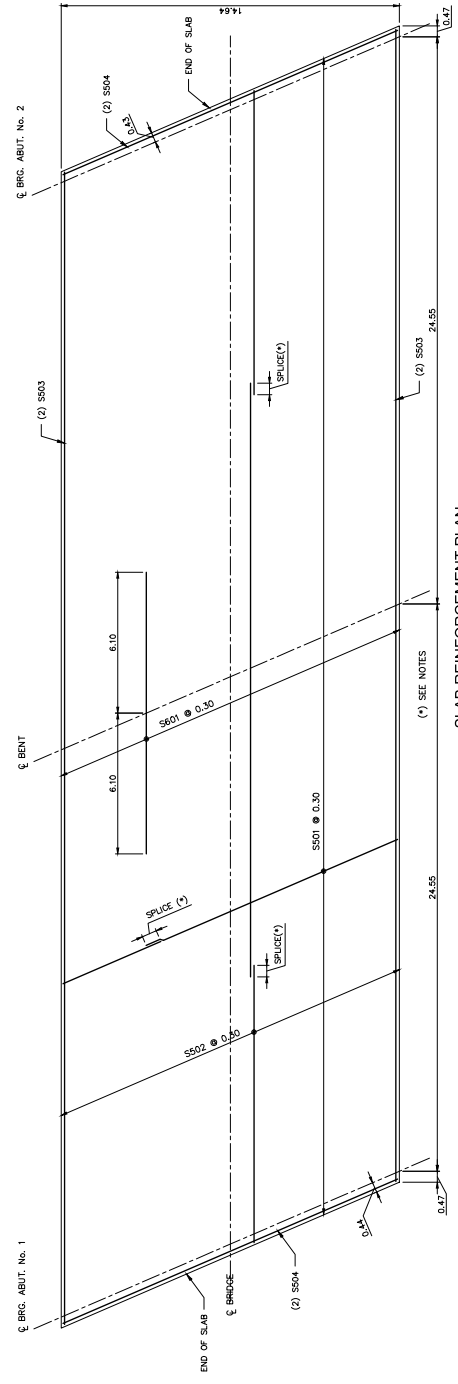


**SECTION 1-1**  
SCALE: NONE

- NOTES:**
1. SPLICE OF TRANSVERSE BOTTOM BARS SHALL BE ON TOP OF BEAMS.
  2. SPLICE OF TRANSVERSE SHALL BE STAGGERED SYMMETRICALLY ABOUT CL.
  3. SEE ELECTRICAL DRAWING FOR ELECTRICAL POST LOCATION.
  4. ALL DIMENSIONS ARE UNLESS OTHERWISE NOTED.
  5. ALL ELEVATIONS SHALL BE VERIFIED BY CONTRACTOR BEFORE SLAB CONSTRUCTION.

LAP SPLICE LENGTH

#4	0.50
#5	0.65



**SLAB REINFORCEMENT PLAN**  
SCALE: 1:100

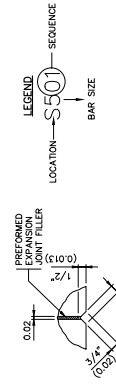
(\* SEE NOTES

LAP SPLICE LENGTH

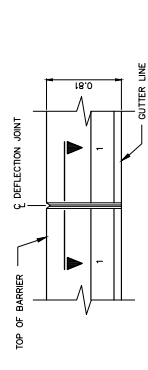
#4	0.50
#5	0.65

- NOTES:**
1. SPLICE OF TRANSVERSE BOTTOM BARS SHALL BE ON TOP OF BEAMS.
  2. SPLICE OF TRANSVERSE SHALL BE STAGGERED SYMMETRICALLY ABOUT CL.
  3. SEE ELECTRICAL DRAWING FOR ELECTRICAL POST LOCATION.
  4. ALL DIMENSIONS ARE UNLESS OTHERWISE NOTED.
  5. ALL ELEVATIONS SHALL BE VERIFIED BY CONTRACTOR BEFORE SLAB CONSTRUCTION.

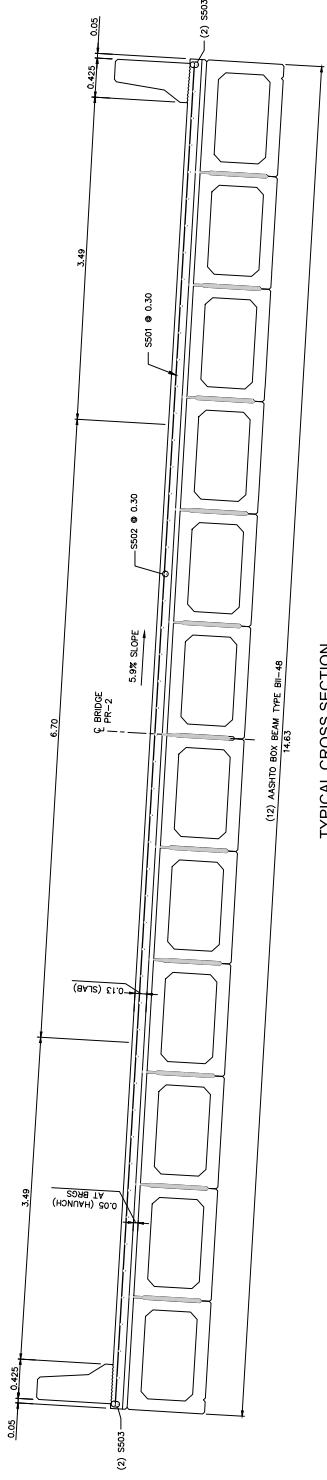
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**DEFLECTION JOINT THRU PARAPET CONCRETE BARRIER**  
SCALE: NONE



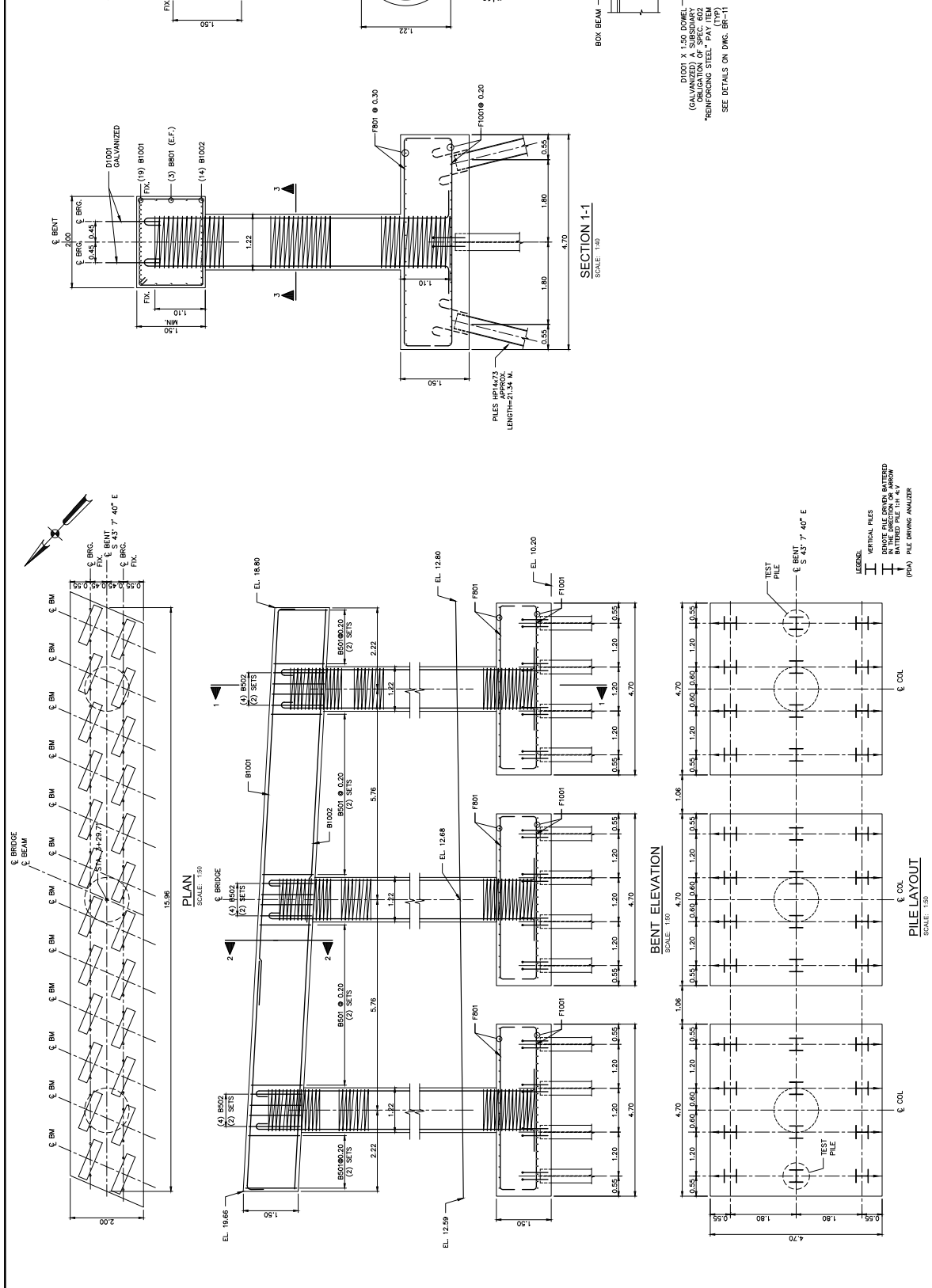
**CONCRETE BARRIER DETAIL**  
SCALE: 1:20



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	148	178



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	178	178



BR	06
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BENT PLAN, ELEVATION SECTIONS & DETAILS

SCALE AS SHOW

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PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN

PUERTO RICO

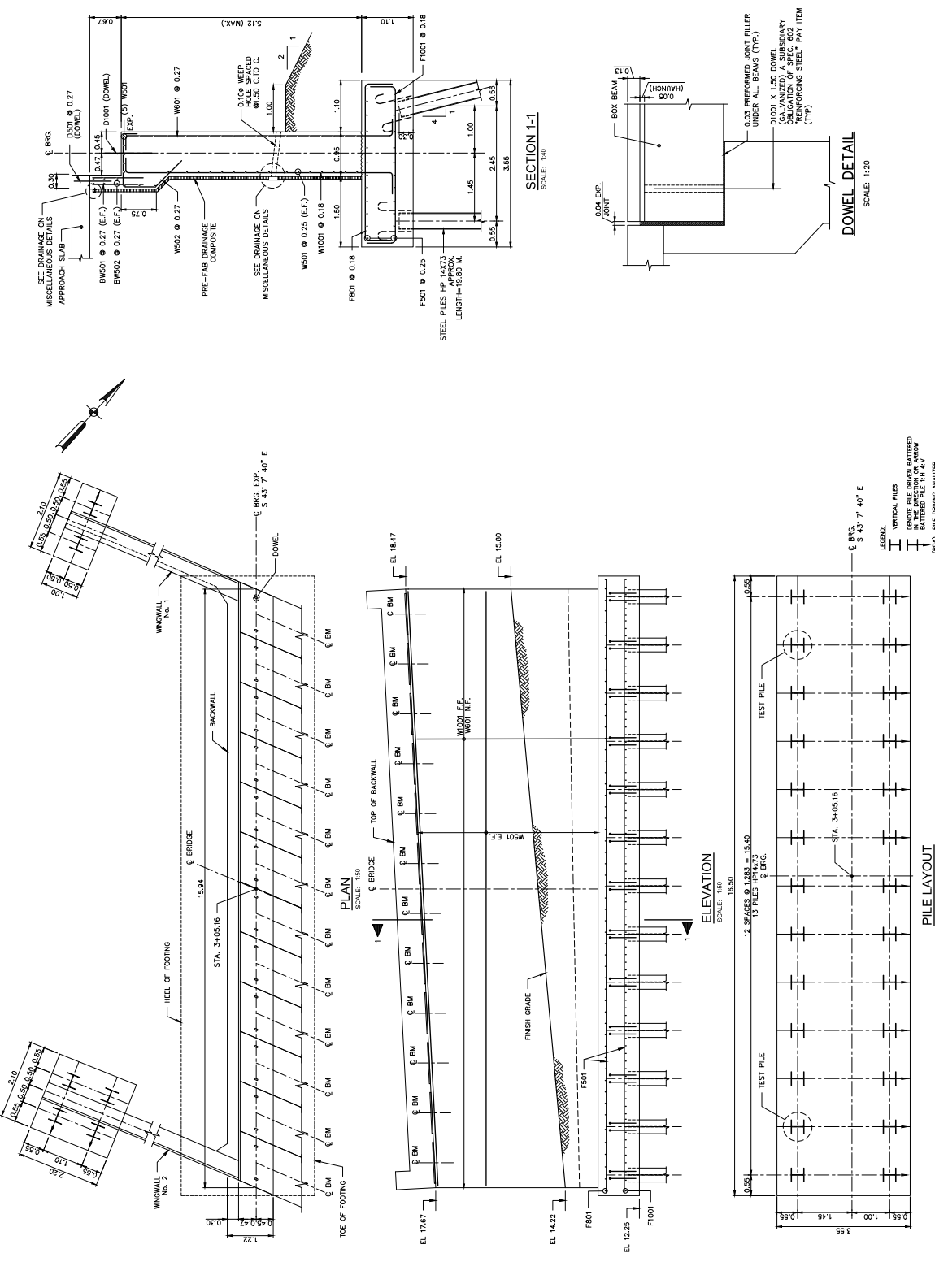
**CMA**  
 ARCHITECT &  
 ENGINEERS

100 Calle de la Universidad #200  
 San Juan, P.R. 00906-3308  
 Tel: (787) 265-1100  
 Fax: (787) 265-1101

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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	151	178



SEE DRAINAGE ON APPROACH SLAB MISCELLANEOUS DETAILS

PRE-FAB DRAINAGE COMPOSITE

SEE DRAINAGE ON MISCELLANEOUS DETAILS

STEEL PILES HP 14X73 APPROX. LENGTH=19.50 M.

LEGEND:  
VERTICAL PILES  
DRIVE PILE DRIVEN MATERIALS  
DRIVE PILE DRIVEN PILES  
(PDA) PILE DRIVING ANALYZER

LEGEND:  
TEST PILE  
FINISH GRADE

WORK	DATE	BY	07/27/23
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FINAL CHECK			

MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

SCALE AS SHOW

ABUTMENT NO. 1 PLAN, ELEVATION SECTIONS & DETAILS

BR

07

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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

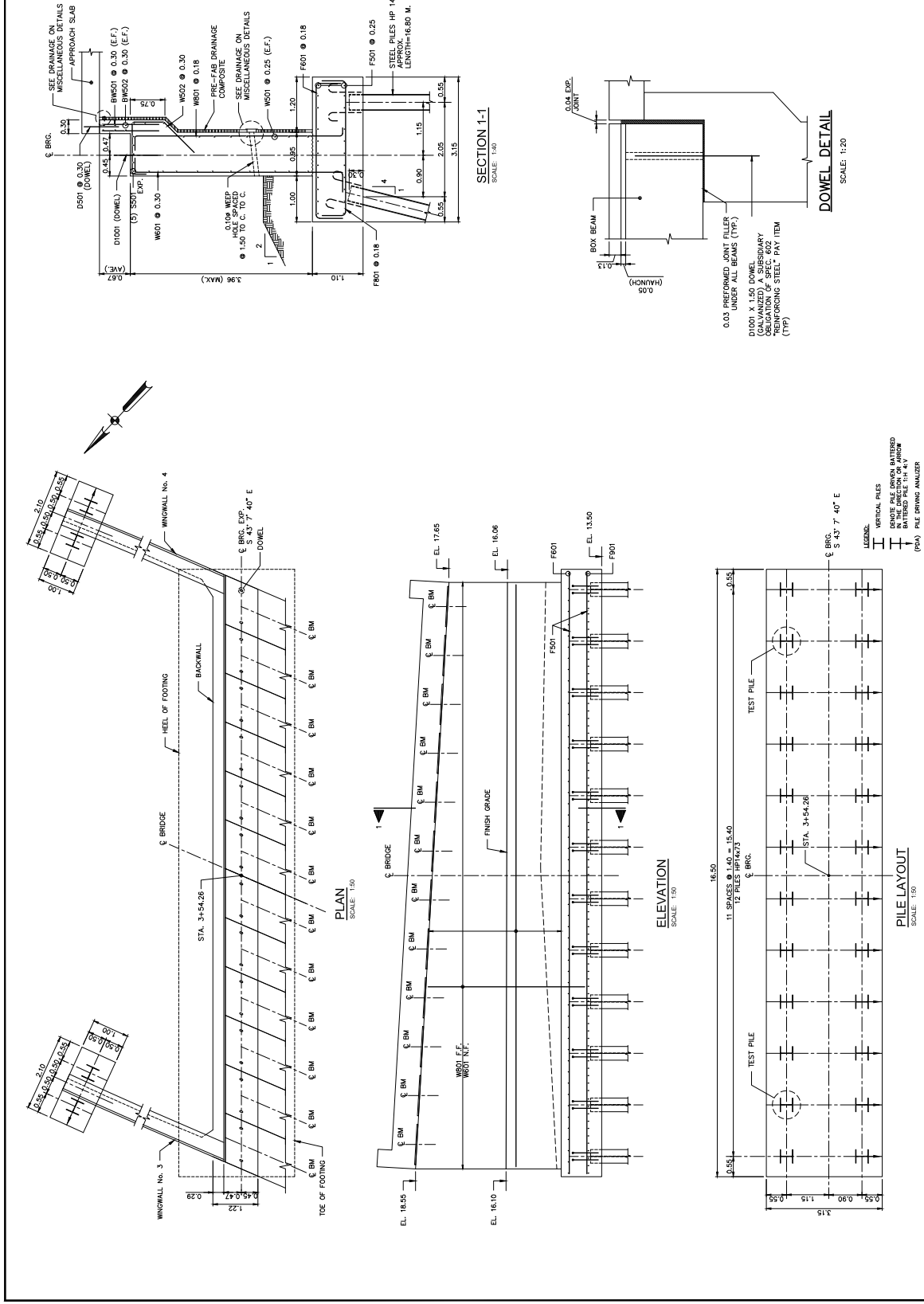
PUERTO RICO

SCALE AS SHOW

ABUTMENT NO. 2 PLAN, ELEVATION  
 SECTIONS & DETAILS

BR 08

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	152	178



DATE: September 26, 2023 8:27 AM USER: Jose O. Vazquez  
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DATE	BY	WORK
07/27/23		
CHECK	FINAL CHECK	FINAL PLANS
DESIGN		
DRAWING		
REVISIONS		

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ENGINEERS

MUNICIPALITY OF BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISIONS

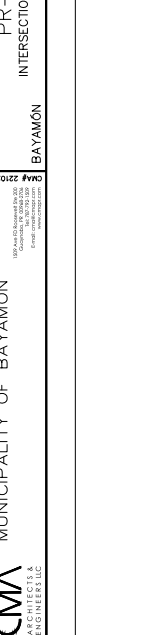
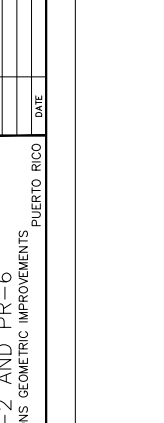
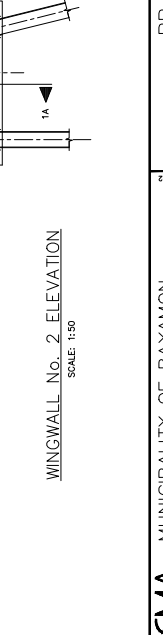
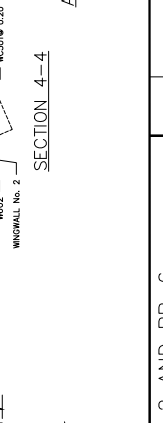
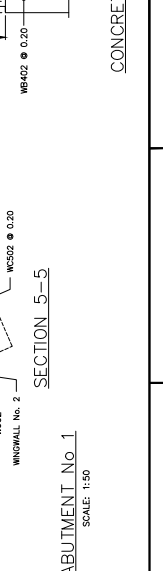
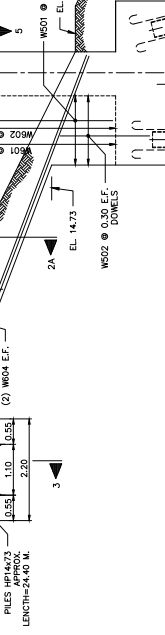
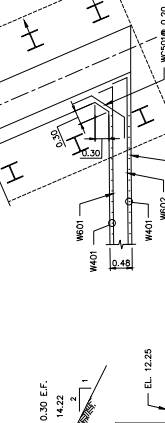
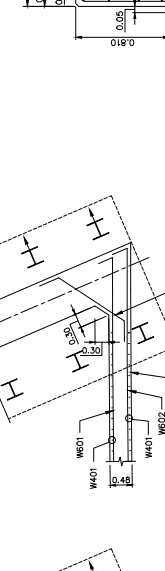
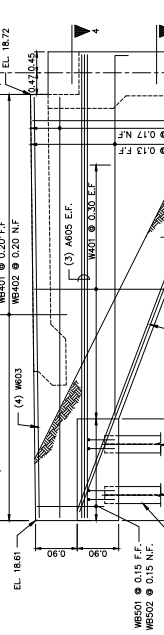
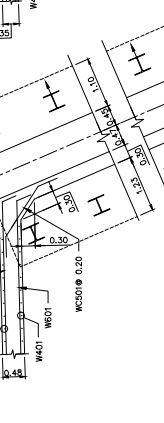
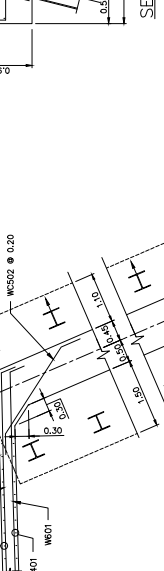
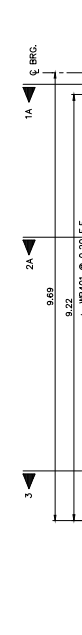
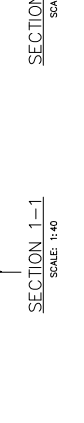
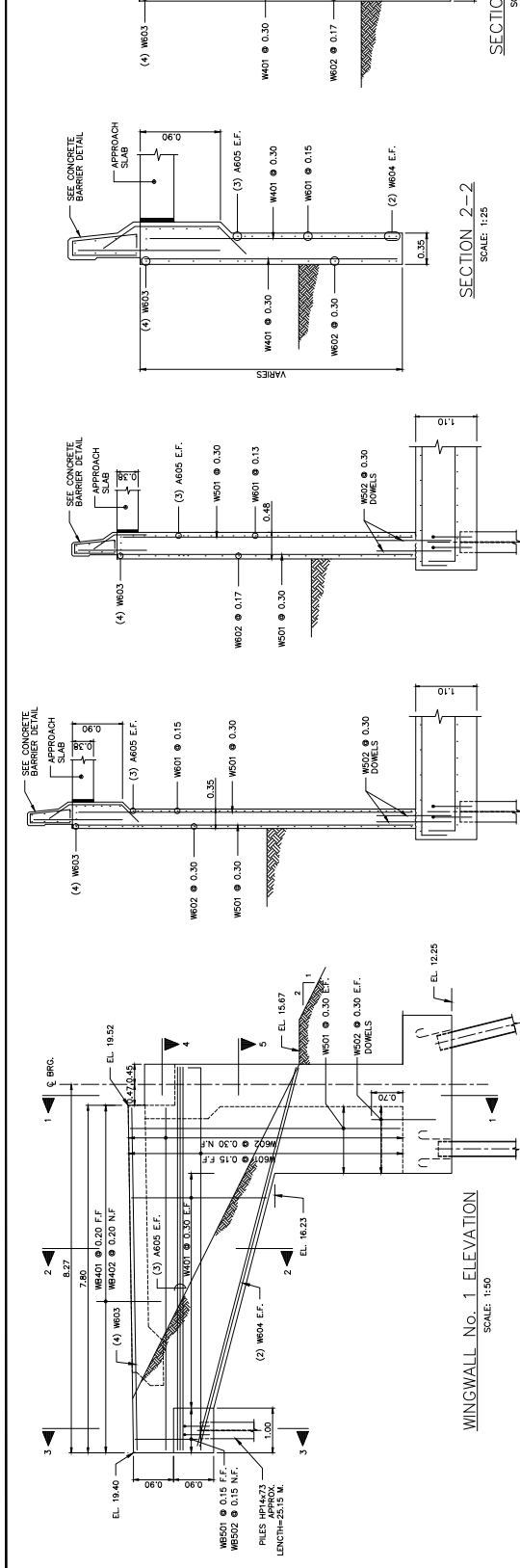
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WINGWALLS NO. 1 & NO. 2 ELEVATION  
SECTIONS & DETAILS

BR

09

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	153
				178



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DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	FINAL PLANS	07/27/23
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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

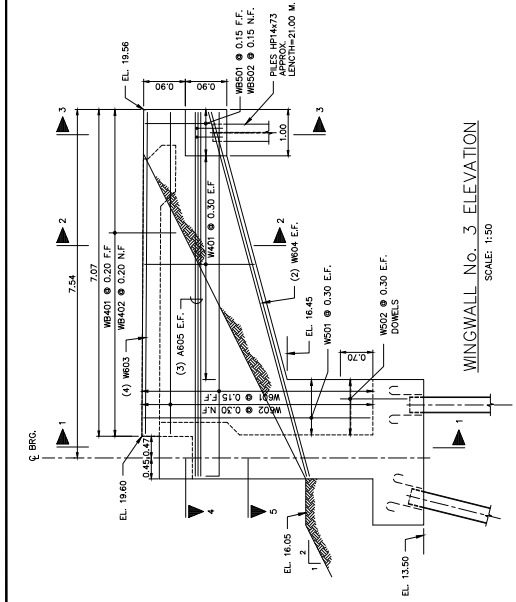
DATE	REVISIONS

SCALE AS SHOWN

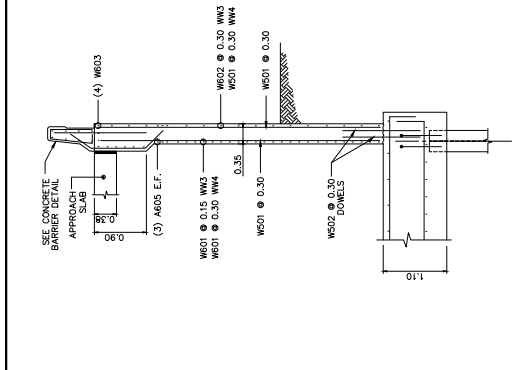
WINGWALLS NO. 3 & NO. 4 ELEVATION  
SECTIONS & DETAILS

BR 10

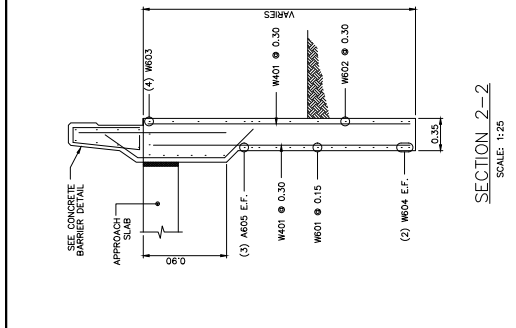
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	154	178



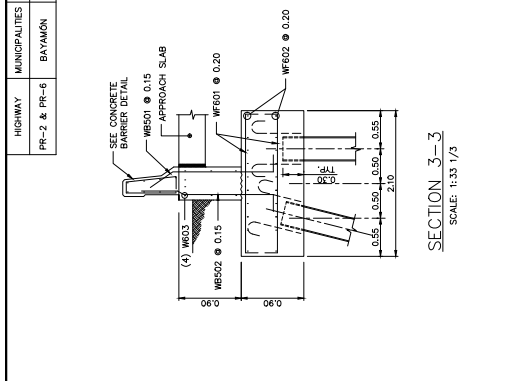
WINGWALL NO. 3 ELEVATION  
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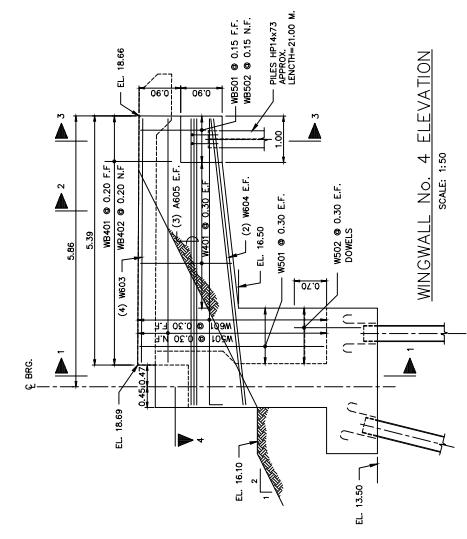
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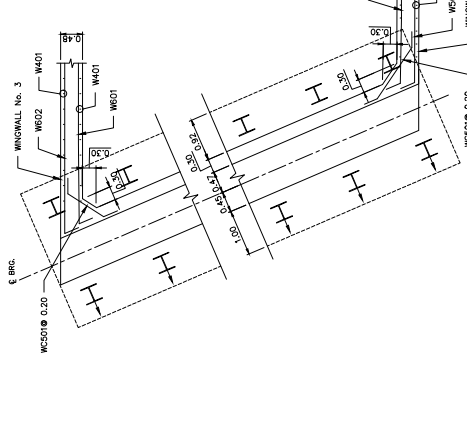
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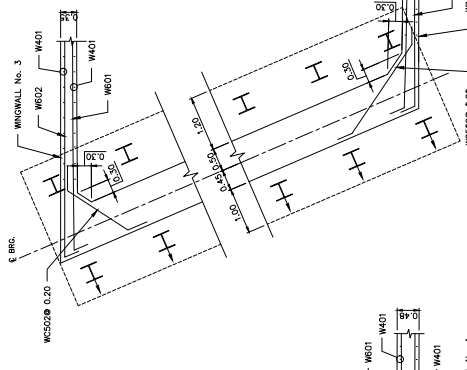
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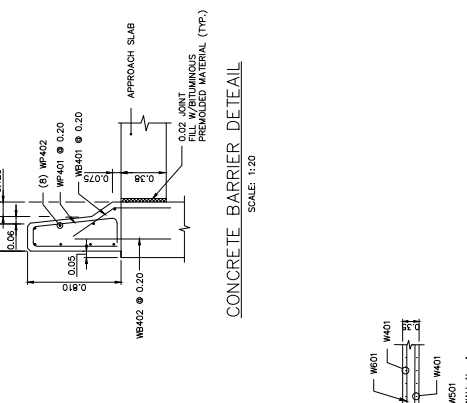
WINGWALL NO. 4 ELEVATION  
SCALE: 1:50



SECTION 4-4  
SCALE: 1:40



SECTION 5-5  
SCALE: 1:50



CONCRETE BARRIER DETAIL  
SCALE: 1:20

DATE: September 26, 2023 8:14 AM USER: Jose O. Vazquez FILE: C:\WORK\SPICE\2102\CHECK\PR-2\BR-10.DWG

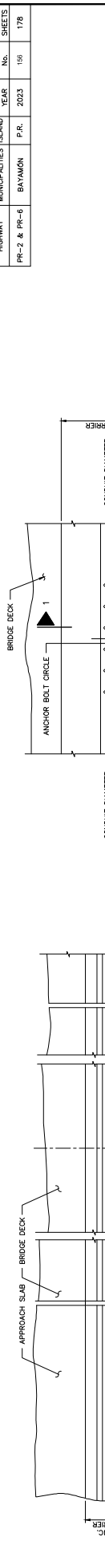




DATE	BY	DESCRIPTION	REVISIONS
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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	156	178

DATE	USER	FILE
07/27/23	JOSE D. VIZQUEZ	C:\WORKSPACE\21202\CHECK\PR-12.DWG



**PLAN**  
SCALE: 1:10



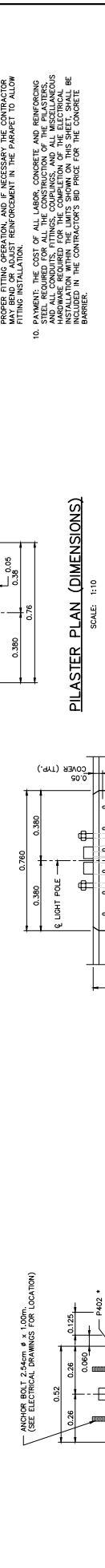
**ELEVATION**  
SCALE: 1:10



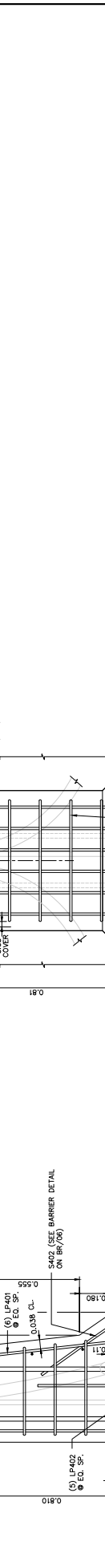
**SECTION 1-1**  
SCALE: 1:10



**SECTION 2-2**  
SCALE: 1:10



**PILASTER PLAN (REBARS)**  
SCALE: 1:10



**PILASTER PLAN (DIMENSIONS)**  
SCALE: 1:10

- NOTES:**
- THE ANCHOR BOLTS AND REINFORCING STEEL REQUIRED FOR THE CONSTRUCTION OF THE PILASTERS SHALL BE DESIGNED AND SPECIFIED IN ACCORDANCE WITH THE REQUIREMENTS AS SHOWN ON THIS SHEET.
  - TOP OF PILASTER SHALL BE FINISHED TO A TRULY LEVEL AREA.
  - LIGHT POLE PLASTER AND ADJACENT CONCRETE BARRIER AND SUPERSTRUCTURE AREA SHOWN ON THIS SHEET, ARE DESIGNED TO BE CONSTRUCTED IN ACCORDANCE WITH THE LIGHT POLE SPECIFICATIONS AND SHALL BE FINISHED AS FOLLOWS:  
 LONGITUDINAL MOMENT = 39 K-FIT  
 LONGITUDINAL SHEAR = 1 K-FIT  
 TRANSVERSE SHEAR = 0.20 K-FIT  
 AXIAL = 0.41 K-FIT  
 ALL REINFORCING BARS SHALL BE PLASTERED TO THE SURFACE OF THOSE SHOWING ABOVE THE CONTRACTOR SHALL REDESIGN THE PILASTER AND SUBMIT HIS DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. THE DESIGN SHALL BE REVIEWED AND APPROVED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF PUERTO RICO AND QUALIFIED TO PERFORM THE WORK.
  - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSFER THE LOADS TO THE PILASTER AND THAT FIT THE REINFORCING CAGE CALCULATIONS AND THE REINFORCING CAGE SHALL BE DESIGNED TO FIT WITHIN THE COMMONWEALTH OF PUERTO RICO. THE CONTRACTOR SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL SHOWING THAT THESE REQUIREMENTS HAVE BEEN MET PRIOR TO CONSTRUCTION.
  - ENDS OF CONDUITS SHALL BE KEPT SEALED/CAPPED UNTIL WIRING IS COMPLETED.
  - THE COST OF ANCHOR BOLTS SHALL BE INCLUDED IN THE BID PRICE FOR LIGHT POLES.
  - ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, AS A MINIMUM, AN EXPANSION/DEFLECTION FITTING SHALL BE PROVIDED AT EACH JOINT AND THE JOINT SHALL BE PROTECTED BY A CAST-IN PLACE SUPPORT, AND IF THE LONGITUDINAL JOINT MOVEMENT EXCEEDS THE SUPPORT, AN EXPANSION/DEFLECTION FITTING SHALL BE PROVIDED IN SERIES WITH EXPANSION/DEFLECTION FITTING.
  - AN ANNULAR OPEN SPACE BETWEEN THE CONCRETE AND THE EXPANSION/DEFLECTION FITTING SHALL BE PROVIDED TO ASSURE PROPER FITTING OPERATION, AND IF NECESSARY THE CONTRACTOR SHALL PROVIDE THE NECESSARY FITTING REINFORCEMENT IN THE FITTING TO ALLOW FITTING INSTALLATION.
  - PAYMENT FOR ALL LABOR, CONCRETE AND REINFORCING STEEL REQUIRED FOR ALL THE CONSTRUCTION OF THE PILASTERS, INCLUDING THE CONSTRUCTION OF THE CONCRETE BARRIER AND THE HARDWARE REQUIRED FOR THE COMPLETION OF THE ELECTRICAL INSTALLATION WITHIN THE LIMITS SHOWN ON THIS SHEET, SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE FOR THE CONCRETE BARRIER.

**NOTES:**  
REINFORCING BARS CAN BE ADJUSTED TO CLEAR THE CONDUIT.

WHEN LIGHTING INSTALLATION IS NOT INCLUDED IN CONTRACT, CONDUIT IS TO BE STUBBED OUT AND CAPPED AS NOTED.

THE RECY SLAB AREA (SYMMETRICAL ABOUT PILASTERS) SHALL BE STRENGTHENED WITH THE ADDITION OF (6) #5 BARS PER PILE. THE BARS SHALL BE LOCATED AS SHOWN AND SPACED AT APPROXIMATELY 0.10 m C. TO C.

REINFORCEMENT SCHEDULE

SLAB												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
S 601	0.30	6	1	12.20	0.51				12.20	49	2949	
S 501	0.30	5	3	14.54	0.58				14.54	167	8649	include (1) splice in weight
S 502	0.30	5	3	49.94	0.58				49.94	49	8771	include (4) splice in weight
S 503	A.S.	5	3	49.94	0.58				49.94	4	716	include (4) splice in weight
S 504	A.S.	5	3	14.54	0.58				14.54	4	208	include (1) splice in weight
<b>TOTAL 48344</b>												

ABUTMENT No. 1												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
W 1001	0.18	10	5	5.59	0.51				6.10	89	7436	
W 601	0.27	6	5	5.59	0.30				5.88	80	1745	
F 801	0.18	8	4	3.45	0.41				4.26	92	2439	
F 1001	0.18	10	4	3.45	0.51				4.47	92	5629	
W 501	0.25	5	3	15.84	0.58				15.84	40	2250	include (1) splice in weight
F 501	0.25	5	3	16.40	0.58				16.40	30	1745	include (1) splice in weight
BW 501	0.27	5	1	1.27					1.27	120	522	
BW 502	0.30	5	3	15.84	0.58				15.84	6	338	include (1) splice in weight
W 502	0.27	5	13	0.30	1.12	0.65			2.67	60	548	
D 501	0.27	5	1	0.60					0.60	58	116	
D 1001	A.S.	10	1	1.50					1.50	24	484	
<b>TOTAL 24283</b>												

ABUTMENT No. 2												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
W 801	0.18	8	5	4.39	0.41				4.80	89	3743	
W 501	0.27	5	5	4.39	0.25				4.64	80	955	
F 601	0.27	6	4	3.05	0.30				3.05	92	1120	
F 801	0.18	8	4	3.05	0.41				3.86	92	3116	
W 502	0.25	5	3	15.84	0.58				15.84	30	1688	include (1) splice in weight
F 501	0.25	5	3	16.40	0.58				16.40	28	1513	include (1) splice in weight
BW 501	0.27	5	1	1.27					1.27	120	522	
BW 502	0.30	5	3	15.84	0.58				15.84	6	338	include (1) splice in weight
W 503	0.27	5	13	0.30	1.15	0.65			1.45	60	298	
D 501	0.27	5	1	0.60					0.60	80	124	
D 1001	A.S.	10	1	1.50					1.50	24	484	
<b>TOTAL 13911</b>												

Beam No. 1												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
B 1001	A.S.	10	2	15.82	1.38	0.51			16.84	19	4741	include (1) splice in weight
B 1002	A.S.	10	2	15.82	1.38				15.82	14	3269	include (1) splice in weight
B 801	A.S.	8	2	15.82	1.15				15.82	6	893	include (1) splice in weight
B 501	0.15	5	8	1.27	1.38	0.08			5.42	166	3082	
B 502	0.30	5	4	1.36	1.30				3.66	26	326	
C 1001	A.S.	10	16	7.55	0.54	0.50	0.10		8.59	180	2182	
C 601	0.10	6	11	1.12	0.08				3.67	675	12214	
F 1001	0.20	10	4	4.55	0.54				5.33	144	11106	
F 801	0.30	8	4	4.55	0.43				5.41	96	4557	
D 1001	A.S.	10	1	1.50					1.50	48	987	
<b>TOTAL 62387</b>												

REINFORCEMENT SCHEDULE

WINGWALL No. 1												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
W 601	0.15	6	5	4.53	0.30				4.83	22	525	
W 602	0.30	6	5	4.53	0.30				4.83	11	263	
W 603	A.S.	6	5	7.70	0.30				8.00	4	158	
W 604	A.S.	6	1	8.97					8.97	4	178	
WC 501	0.30	5	8	1.40	0.30	0.30			2.00	11	76	
WC 502	0.30	5	8	2.24	0.30	0.30			2.94	11	111	
W 605	A.S.	6	5	8.60	0.30				8.90	6	264	
W 401	0.30	4	1	3.05					3.05	36	241	
W 501	0.30	5	1	6.62					6.62	12	273	
W 502	0.30	5	1	1.00					1.00	12	42	
WB 401	0.20	4	8	0.45	0.45				0.90	35	70	
WB 402	0.20	4	1	0.90					0.90	35	70	
WB 501	0.15	5	19	0.50	1.45	0.25			2.20	7	53	
WB 502	0.15	5	5	1.37	0.25				1.62	7	39	
WB 401	0.20	4	10	0.76	0.14	0.76			1.88	39	161	
WP 402	A.S.	4	1	7.70					7.70	8	136	
WF 601	0.20	6	4	2.10	0.30				2.71	12	161	
WF 602	0.20	6	4	0.90	0.30				1.51	24	179	
<b>TOTAL = 3000</b>												

WINGWALL No. 2												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
W 601	0.15	6	5	5.73	0.30				6.04	27	804	
W 602	0.30	6	5	5.73	0.30				6.04	14	417	
W 603	A.S.	6	5	9.12	0.30				9.42	4	186	
W 604	A.S.	6	1	10.55					10.55	4	209	
WC 501	0.30	5	8	1.03	0.30	0.30			1.63	14	79	
WC 502	0.30	5	8	1.77	0.30	0.30			2.37	14	114	
W 605	A.S.	6	5	10.92	0.30				10.32	6	306	
W 401	0.30	4	1	2.94					2.94	38	245	
W 501	0.30	5	1	5.82					5.82	12	240	
W 502	0.30	5	1	1.00					1.00	12	42	
WB 401	0.20	4	8	0.45	0.45				0.90	36	72	
WB 501	0.15	5	19	0.50	1.45	0.25			2.20	15	114	
WB 502	0.15	5	5	1.37	0.25				1.62	15	84	
WP 401	0.18	4	10	0.76	0.14	0.76	0.22		1.88	51	211	
WP 402	A.S.	4	1	9.12					9.12	8	160	
WF 601	0.20	6	4	2.10	0.30				2.71	24	321	
WF 602	0.20	6	4	2.10	0.30				2.71	24	321	
<b>TOTAL = 3997</b>												

# REINFORCEMENT SCHEDULE

WINGWALL No. 3												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
WI 601	0.15	6	5	4.69	0.30				5.00	22	543	
WI 602	0.30	6	5	4.69	0.30				5.00	11	272	
WI 603	A.S.	6	5	7.44	0.30				7.74	4	153	
WI 604	A.S.	6	1	8.68					8.68	4	172	
WC 501	0.30	5	8	1.00	0.30	0.30			1.60	11	61	
WC 502	0.30	5	8	1.62	0.30	0.30			2.22	11	84	
WI 605	A.S.	6	5	8.34	0.30				8.64	6	256	
WI 401	0.30	4	1	2.69					2.69	36	213	
WI 501	0.30	5	1	5.45					5.45	10	187	
WI 502	0.30	5	1	1.00					0.90	12	42	
WI 402	0.20	4	8	0.45	0.45				0.90	33	66	
WI 403	0.20	4	1	0.90					0.90	33	66	
WI 503	0.15	5	19	0.50	1.45	0.25			2.20	7	53	
WI 504	0.15	5	5	1.37	0.25				1.62	7	39	
WI 404	0.18	4	10	0.76	0.14	0.76	0.22		1.88	42	174	
WI 606	A.S.	4	1	7.44					7.44	8	131	
WI 607	0.20	6	4	2.10	0.30				2.71	12	161	
WI 608	0.20	6	4	0.90	0.30				1.51	24	179	
TOTAL =											2852	

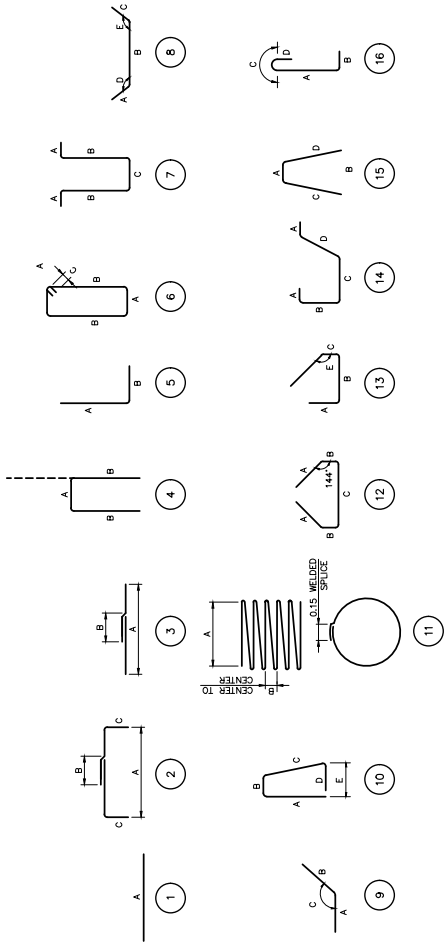
WINGWALL No. 4												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
WI 601	0.15	6	5	3.60	0.30				3.91	15	290	
WI 602	0.30	6	5	3.60	0.30				3.91	8	155	
WI 603	A.S.	6	5	5.29	0.30				5.59	4	111	
WI 604	A.S.	6	1	6.33					6.33	4	125	
WC 501	0.30	5	8	1.45	0.30	0.30			2.05	8	57	
WC 502	0.30	5	8	2.42	0.30	0.30			3.02	8	83	
WI 605	A.S.	6	5	6.19	0.30				6.49	6	193	
WI 401	0.30	4	1	2.33					2.33	22	113	
WI 501	0.30	5	1	4.54					4.54	10	156	
WI 502	0.30	5	1	1.00					1.00	12	42	
WI 402	0.20	4	8	0.45	0.45				0.90	22	44	
WI 403	0.20	4	1	0.90					0.90	22	44	
WI 503	0.15	5	19	0.50	1.45	0.25			2.20	7	53	
WI 504	0.15	5	5	1.37	0.25				1.62	7	39	
WI 404	0.18	4	10	0.76	0.14	0.76	0.22		1.88	30	124	
WI 606	A.S.	4	1	5.29					5.29	8	93	
WI 607	0.20	6	4	2.10	0.30				2.71	12	161	
WI 608	0.20	6	4	0.90	0.30				1.51	24	179	
TOTAL =											2062	

APPROACH SIAB												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
AS 801	0.15	8	1	5.80					5.80	182	8416	
AS 801	0.30	6	3	13.54	0.84				13.54	84	5950	Include (1) splice in weight
AS 802	0.30	6	1	5.80					5.80	92	2878	
AS 801	0.30	5	14	0.30	0.48	0.35	0.65	0.30	2.06	92	650	
TOTAL =											18700	

# REINFORCEMENT SCHEDULE

BARRIERS												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
P 401	0.20	4	10	0.76	0.14	0.76	0.22		1.88	500	2051	
P 402	A.S.	4	1	4.79					4.79	160	1680	
TOTAL =											3741	

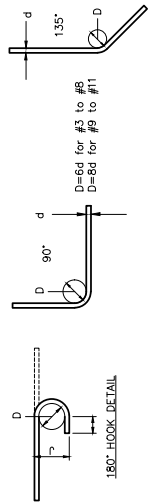
ABUTMENT No. 1												
MARK	SPACING	SIZE	TYPE	A	B	C	D	E	LENGTH	No.	LBS	REMARKS
LP 501	A.S.	5	1	3.40					3.40	66	769	
LP 401	A.S.	4	16	0.42	0.91	0.52	0.91	0.10	2.96	18	117	
LP 402	A.S.	4	6	0.46	0.66	0.11			2.46	18	88	
TOTAL =											984	



**LEGEND:**  
 \* AVERAGE LENGTH  
 L.W. INCLUDED IN WEIGHT

**NOTES:**

- ALL DIMENSIONS ARE OUT TO OUT OF BARS
- 4" DIMENSIONS ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY
- TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
- STANDARD HOOKS AND RADIUS IN EXCESS OF SAME
- TENSILE REINFORCEMENT SHALL NOT BE SPLICED AT POINT OF MAXIMUM MOMENT
- ALL BARS SHALL BE OF THE DEFORMED TYPE CONFORMING TO A.A.S.H.T.O. MAT (ASTM A 615) (LATEST REVISION) UNLESS OTHERWISE SPECIFIED.
- REINFORCEMENT SCHEDULES ARE GIVEN ONLY FOR ESTIMATING QUANTITIES OF STEEL. BENDING DETAILS SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL ESTABLISH PRESENTING REQUIREMENTS TO SATISFACTORILY COMPLETE THE WORK
- FIELD WELDING OF REINFORCING STEEL SHALL BE PERFORMED BY WELDERS SPECIFICALLY TRAINED FOR THIS PURPOSE
- BEFORE WELDING THE CARBON EQUIVALENT (CE) OF STEEL SHALL BE DETERMINED. REINFORCING STEEL WHOSE "CE" CANNOT BE DETERMINED OR WHOSE "CE" EXCEEDS 0.73% SHALL BE WELDED IN ACCORDANCE WITH A WELDING PROCEDURE ESTABLISHED BY A CERTIFIED TESTING LABORATORY FOR THE MATERIAL BEING WELDED. PROCEDURE SHALL BE BASED ON THE WELDING PROCEDURE QUALIFICATION AND SHALL ESTABLISH PRESENTING REQUIREMENTS TO SATISFACTORILY COMPLETE THE WORK



**BAR BEND DETAILS**

N.T.S.

DATE	BY
07/27/23	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	
DATE	

<b>CMA</b> ARCHITECT & ENGINEERS 185 CALLE DEL MAR AVENUE SUITE 100, SAN JUAN, P.R. 00906 TEL: (787) 763-1234 FAX: (787) 763-1235 WWW.CMA-PR.COM	MUNICIPALITY OF BAYAMON	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	REVISIONS	SCALE AS SHOW	REINFORCEMENT SCHEDULE (1)	BR 14
	PR-2 AND PR-6	BAYAMON	BAYAMON	DATE	DATE	DATE	DATE

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

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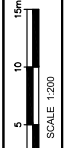
MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

DATE	REVISIONS

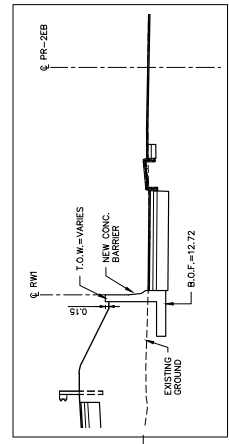
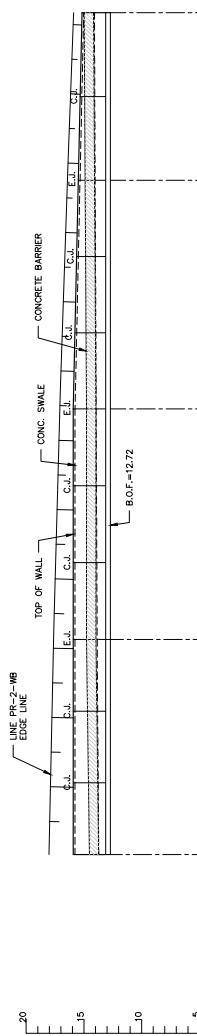


RETAINING WALL NO.1  
PLAN & PROFILE

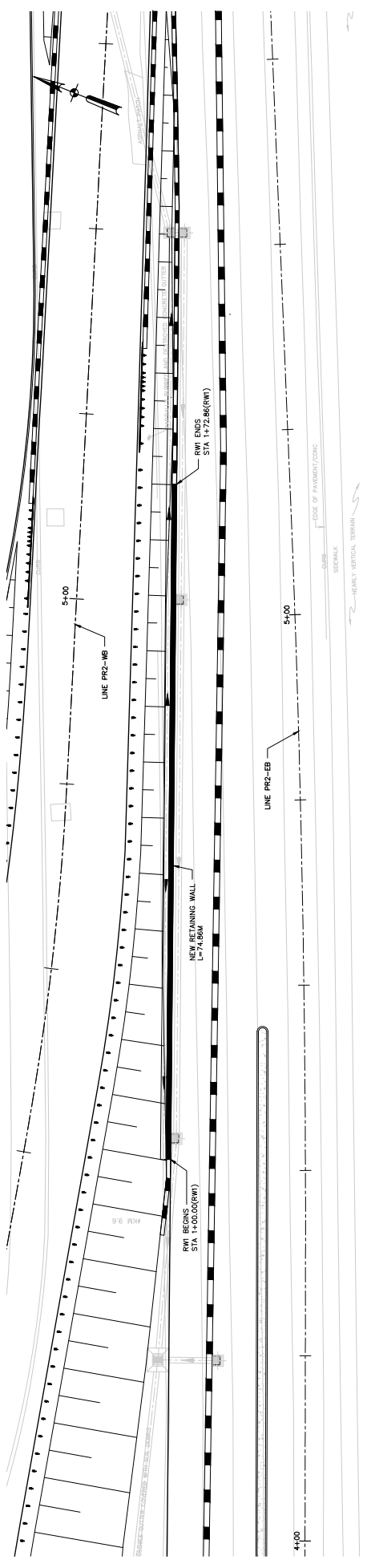
RW 01

RWL PROFILE  
SCALE 1:2000(H)  
1:2000(V)

EXISTING ELEVATION	13.72	15.92	15.92	13.77	13.82	13.85	13.89	13.92	13.95	13.97	14.00	14.03	14.06	14.09
TOP OF WALL	13.72	15.92	15.92	13.77	13.82	13.85	13.89	13.92	13.95	13.97	14.00	14.03	14.06	14.09
STATION	1+00.00	1+06.20	1+12.41	1+18.61	1+25.26	1+31.91	1+38.48	1+45.16	1+51.75	1+58.35	1+65.01	1+72.86	1+80.72	1+88.58
RETAINING WALL	1	2	3	4	5	6	7	8	9	10	11	12	13	14



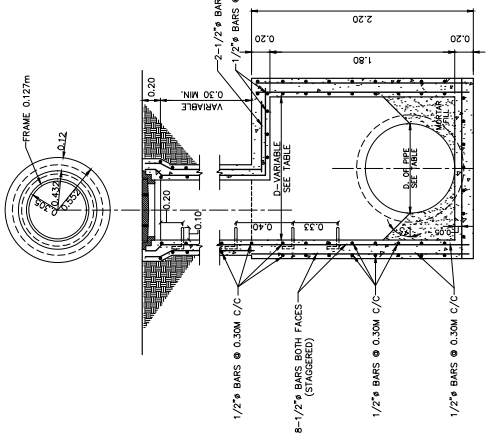
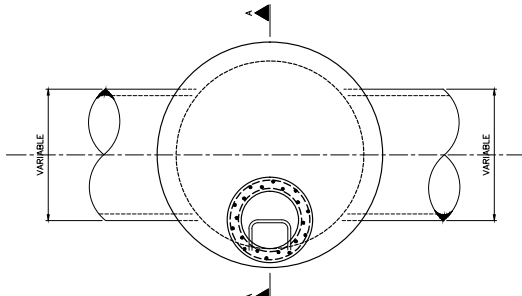
RETAINING WALL No.1  
SCALE 1:200



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	159	178

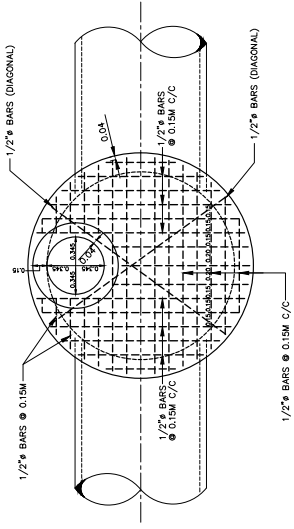


HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	181	178

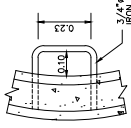


PLAN SHOWING REINFORCEMENT  
N.T.S.

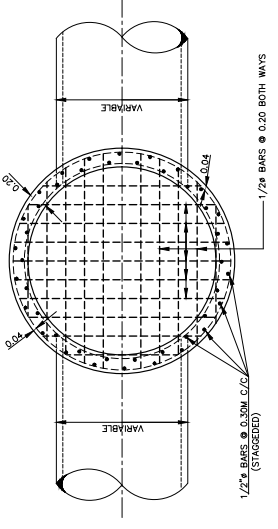
SECTION A-A  
N.T.S.



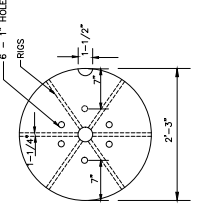
REINFORCEMENT FOR TOP SLAB  
N.T.S.



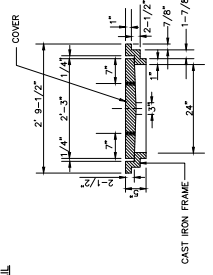
STEP DETAIL  
N.T.S.



REINFORCEMENT FOR BOTTOM SLAB  
N.T.S.



PLAN OF MANHOLE COVER  
N.T.S.



SECTION OF MANHOLE COVER  
& FRAME  
N.T.S.

TYPE	MANHOLE DIAM. M	MAX. PIPE INCHES
1	1.20	30"
2	1.50	36"
3	1.75	42"
4	2.00	48"
5	2.20	54"
6	2.45	60"
7	2.70	66"
8	2.95	72"
9	3.30	84"

NOTE:  
 MANHOLE TYPE INDICATED IN PLANS INDICATES MANHOLE DIAMETER TO BE USED FOR THE COVER. SEE TABLE FOR CORRESPONDING PIPE DIAMETER.

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
07/27/23					

	MUNICIPALITY OF BAYAMÓN	PR-2 AND PR-6	SM
	BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	01
	PUERTO RICO	MANHOLE TYPE "A"	
	DATE	MODEL NO. 4F	
	REVISIONS	SCALE AS SHOWN	

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	FINAL PLANS	07/27/23

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MUNICIPALITY OF BAYAMON

#44 2212  
100 CALLE DE LOS RIOS #200  
 SAN JUAN, PUERTO RICO 00906  
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BAYAMON

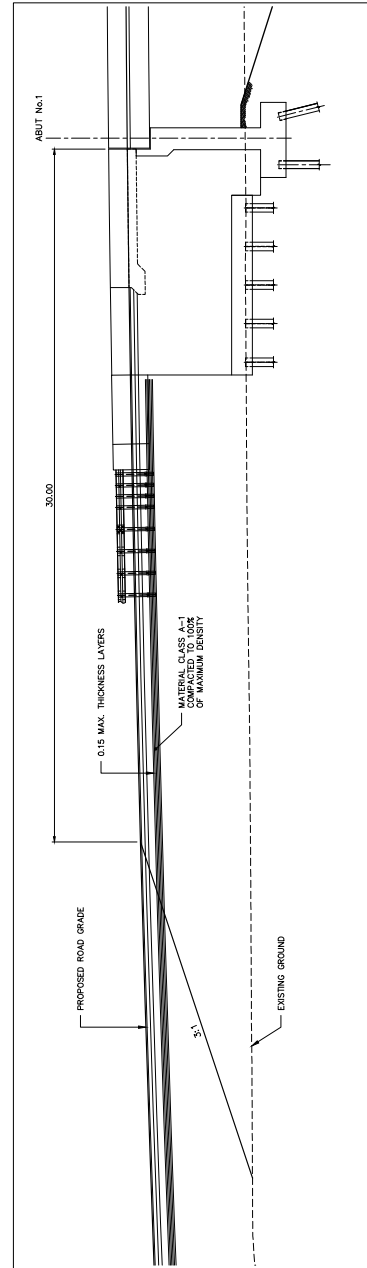
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

REVISIONS	DATE

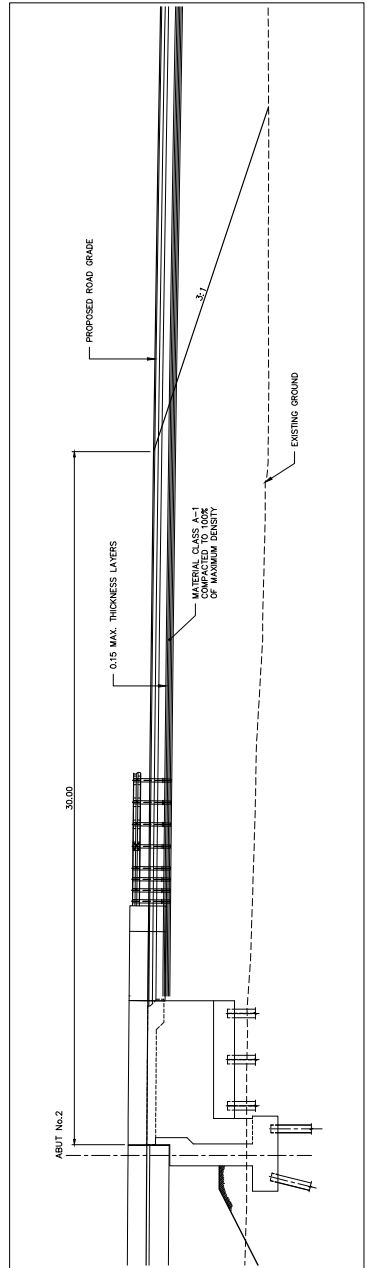
SCALE AS SHOW

APPROACH EMBANKMENT DETAILS

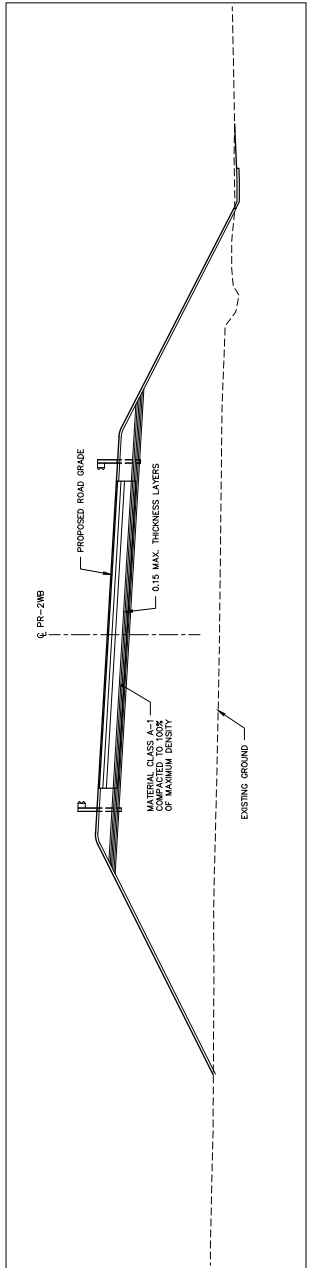
SM 02



ABUT. No.1 APPROACH EMBANKMENT DETAIL  
 SCALE:1:100



ABUT. No.2 APPROACH EMBANKMENT DETAIL  
 SCALE:1:100



EMBANKMENT SECTION  
 SCALE:1:100

- NOTES:
- 1- BRIDGE APPROACH EMBANKMENTS CONSTRUCTION PROCEDURE SHALL BE DONE AS INDICATED ON THIS DRAWING AND ACCORDING TO SPEC. 211, EXCEPT ITEM No. 211-2.01 AND 203-3.04. IT IS INDICATED THAT THE EMBANKMENT SHALL BE CONSTRUCTED WITH A MINIMUM OF 15% EXCESSIVE SOIL MATERIAL MEETING THE REQUIREMENTS OF AN A-1 SOIL AS PER ASTM M 145. THE MAXIMUM DIMENSION OF ANY STONE OR ROCK FRAGMENT IN THE SOIL SHALL NOT EXCEED 10 CENTIMETERS.
  - 2- EMBANKMENT IN DEPTH SHALL BE COMPACTED TO LOCK THE MAXIMUM DRAINAGE CAPACITY. MEASUREMENT IN DEPTH SHALL BE DETERMINED BY A.S.H.T.O. T 190, METHOD D. BEFORE THE NEXT LAYERS IS PLACED. THE EMBANKMENT SHALL BE CONSTRUCTED IN LAYERS NOT EXCEEDING 150 MM. CONTINUOUS LEVELING AND MANIPULATING TO COMPACTING AS THE COMPLETING OF EACH LAYER PROGRESSES. CONTINUOUS LEVELING AND MANIPULATING SHALL BE PERFORMED TO ASSURE UNIFORM DENSITY. WATER SHALL ADDED OR REMOVED, IF NECESSARY.
  - 3- THE BRIDGE APPROACH EMBANKMENT IS TO BE COMPLETED TO THE LIMITS SHOWN IN THE FIGURES ON THIS SHEET.
  - 4- TOP SOIL SHALL BE STRIPPED TO THE LIMITS SHOWN, USUALLY A MINIMAL EXCAVATION SHALL BE REQUIRED TO EXPOSE THE EXISTING SUBGRADE. THE EXCAVATED SURFACE SHALL BE ROLLED TO COMPACT THE TOTAL AREA PRIOR TO THE PLACEMENT OF THE EMBANKMENT.
  - 5- THE APPROACH EMBANKMENT ITEM SHALL INCLUDE THE EXCAVATION OF THE TOPSOIL AND THE CONSTRUCTION OF THE EMBANKMENT WITH MATERIAL CLASS A-1.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	162	178





WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK	FINAL PLANS	07/27/23

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MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

PR-2 AND PR-6

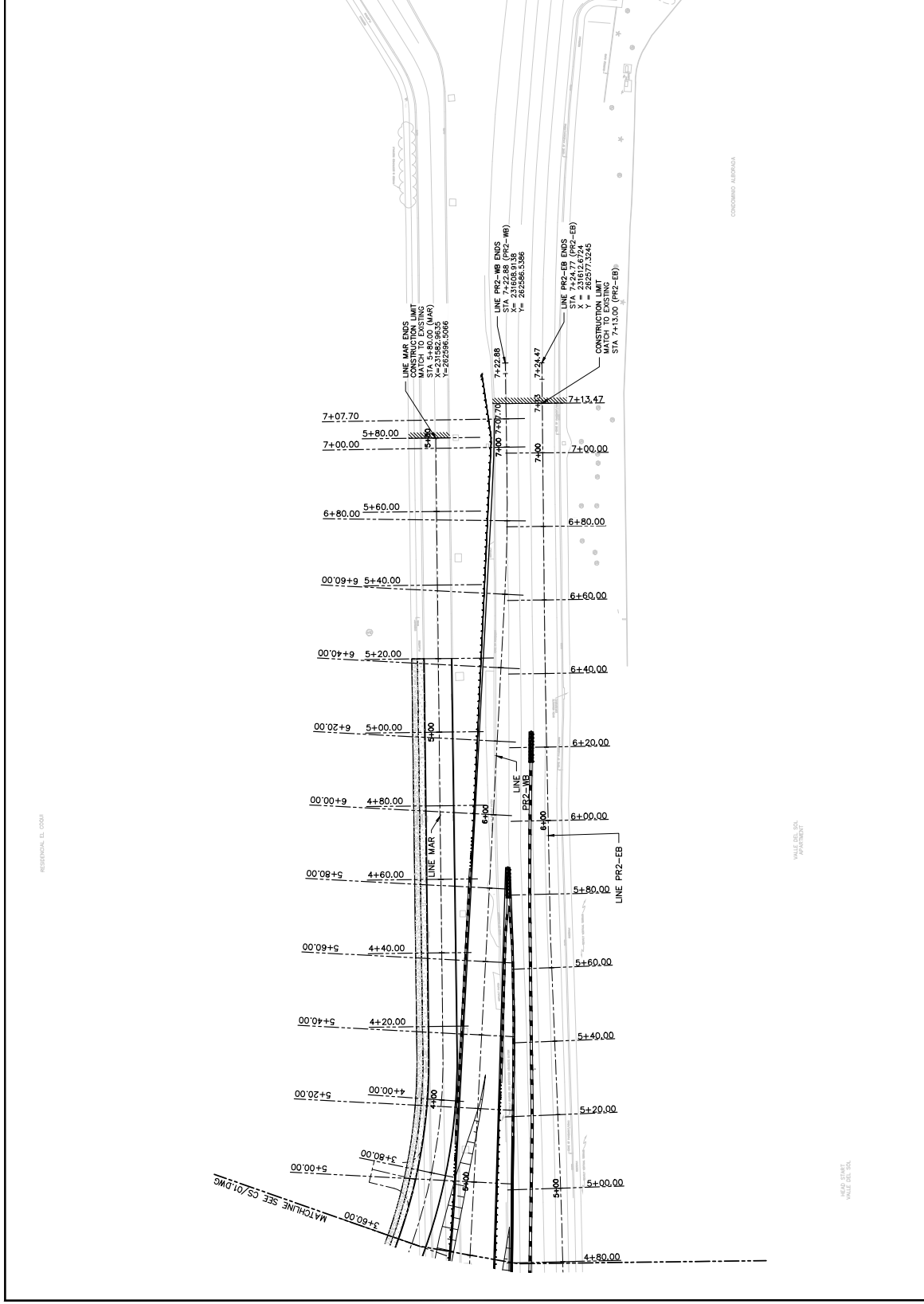
NO.	DATE	REVISIONS



CROSS SECTIONS KEY PLAN

CS 02

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	164	178



WORK	BY	DATE
DESIGN		
DRAWING		
REVISIONS		
CHECK		
FINAL CHECK		07/27/23

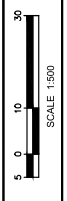
**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

CH# 2212  
1000 P.O. BOX 2212  
BAYAMON, P.R. 00961  
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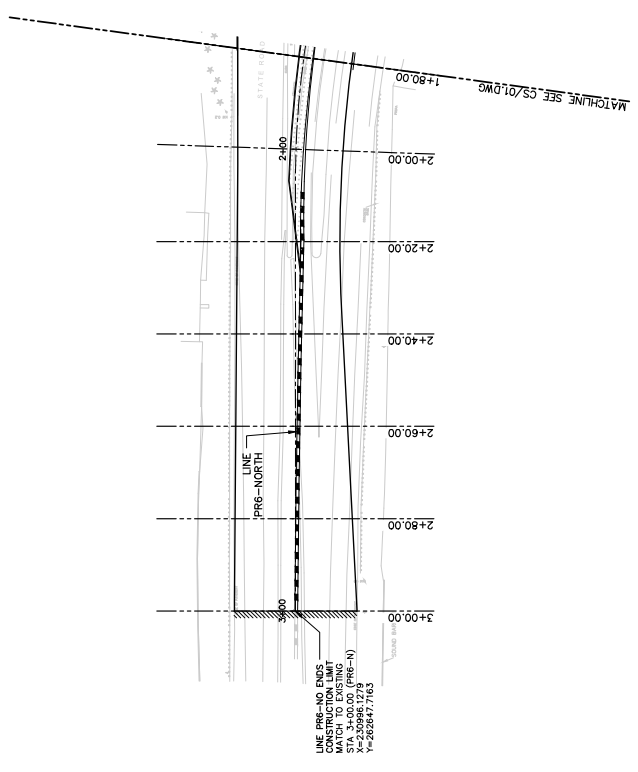
BAYAMÓN  
PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

NO.	DATE	REVISIONS



CROSS SECTIONS KEY PLAN

CS 03



LINE PR6-NORTH ENDS  
MATCH TO EXISTING  
STA. 3+00.00 (PR6-N)  
X=282647.7163

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	165	178

DATE	BY	REVISIONS
07/27/23		

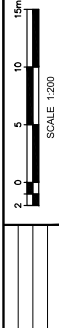
CMA ARCHITECTS & ENGINEERS

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PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

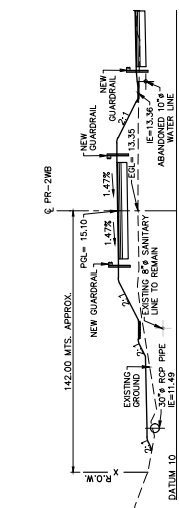
DATE	REVISIONS



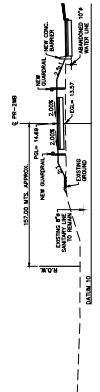
CROSS SECTIONS LINE PR-2WB

CS 04

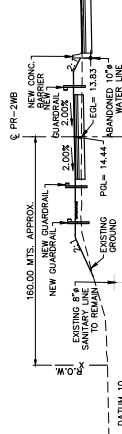
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	166	178



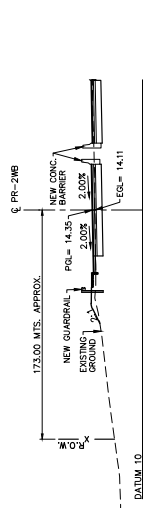
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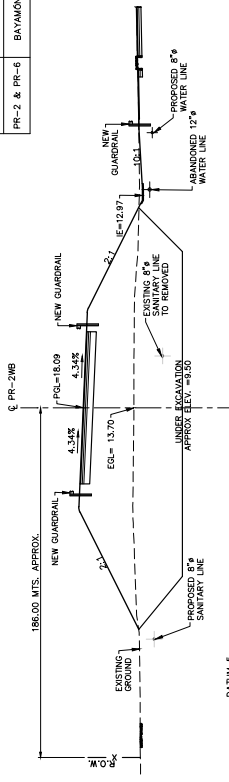
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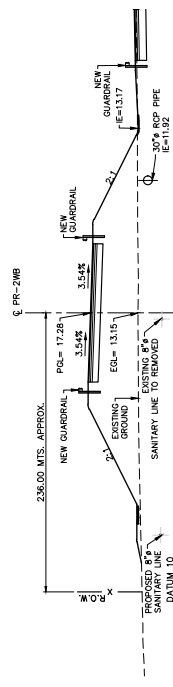
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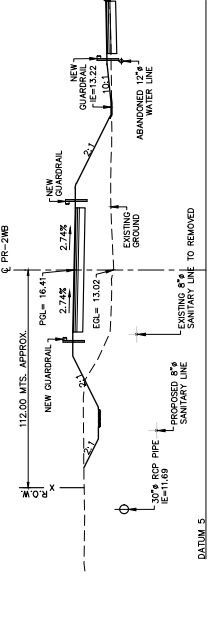
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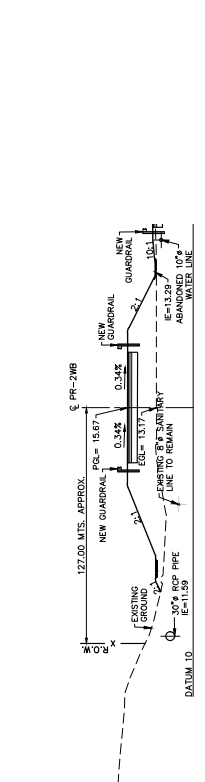
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STA 2+40.00  
 CUT AREA = 0.27 SQ.MTS.  
 FILL AREA = 89.46 SQ.MTS.



STA 2+20.00  
 CUT AREA = 7.92 SQ.MTS.  
 FILL AREA = 562.0 SQ.MTS.



STA 2+00.00  
 CUT AREA = 0.00 SQ.MTS.  
 FILL AREA = 457.2 SQ.MTS.

DATE	BY	DESIGN	WORK
07/27/23			
		CHECK	
		FINAL CHECK	
		FINAL PLANS	

**CMA**  
ARCHITECTS &  
ENGINEERS

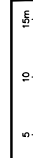
MUNICIPALITY OF BAYAMON

BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

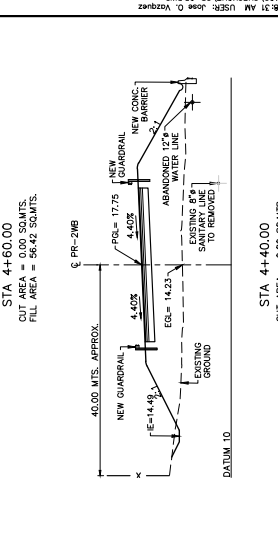
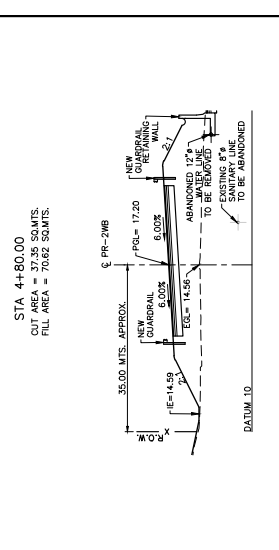
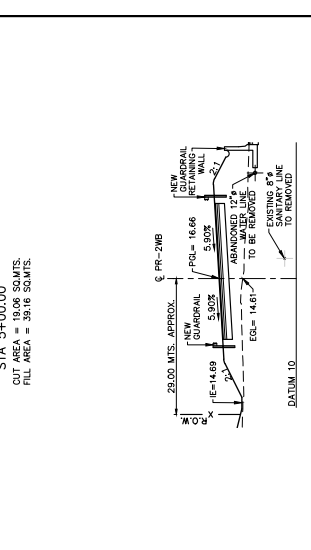
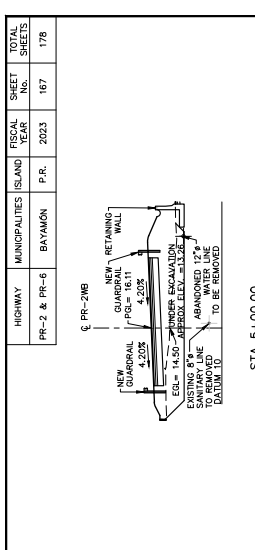
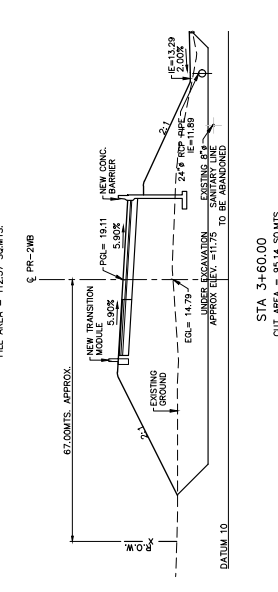
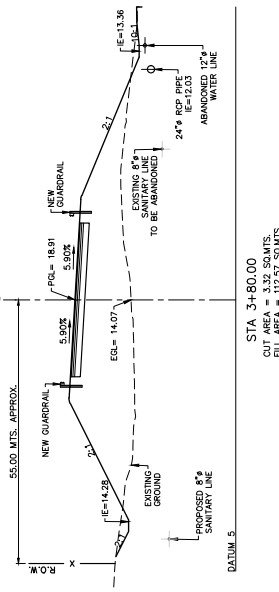
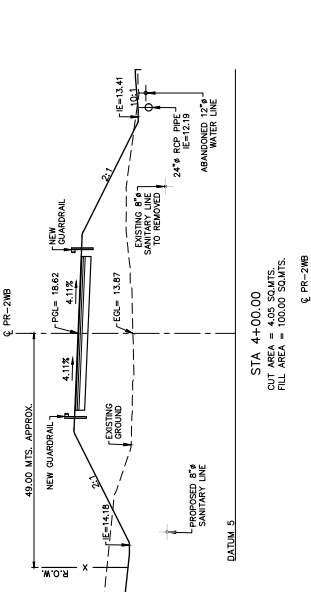
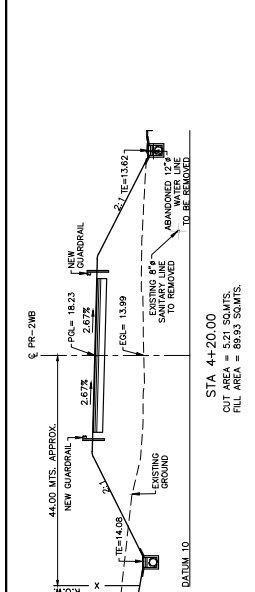
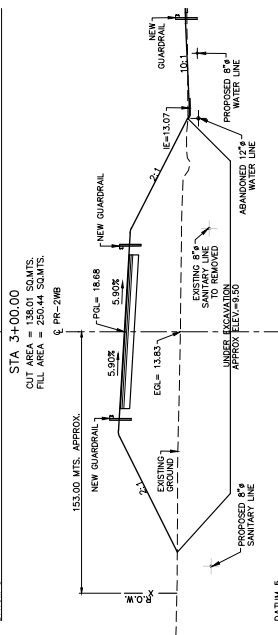
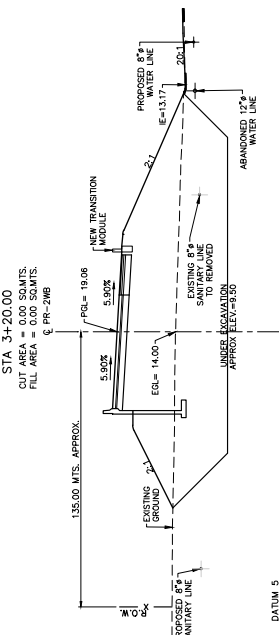
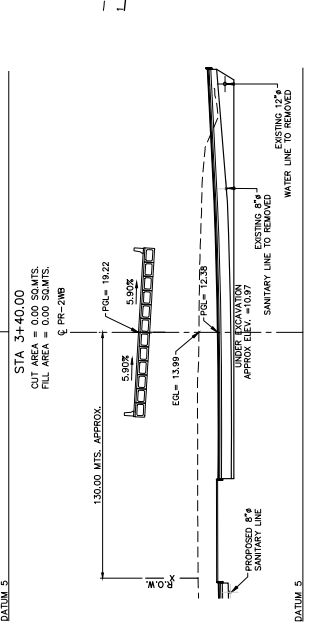
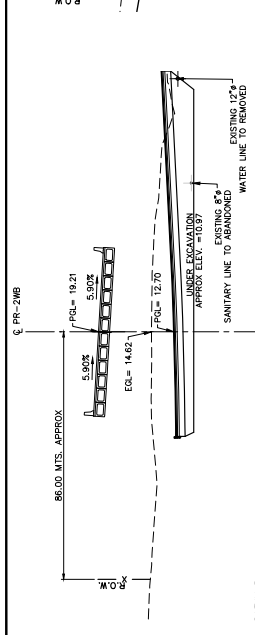
PUERTO RICO

REVISONS



CROSS SECTIONS  
LINE PR-2WB & PR-2EB

CS 05



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	167	178

DATE	BY	DESCRIPTION
07/27/23		FINAL CHECK
		FINAL PLANS

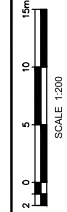
**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON  
PUERTO RICO

REVISIONS



CROSS SECTIONS  
LINE PR-2WB & PR-2EB

CS 06

DATE	BY	DESCRIPTION
		DESIGN
		DRAWING
		CHECK
		FINAL PLANS

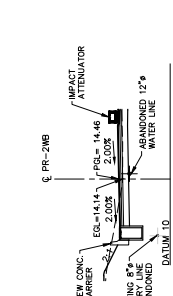
DATE	BY	DESCRIPTION
		DESIGN
		DRAWING
		CHECK
		FINAL PLANS

DATE	BY	DESCRIPTION
		DESIGN
		DRAWING
		CHECK
		FINAL PLANS

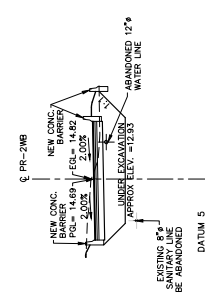
DATE	BY	DESCRIPTION
		DESIGN
		DRAWING
		CHECK
		FINAL PLANS

DATE	BY	DESCRIPTION
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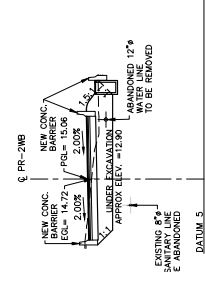
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	168	178



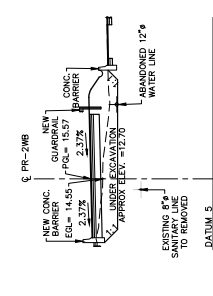
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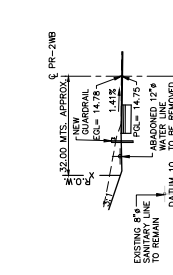
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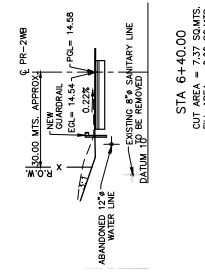
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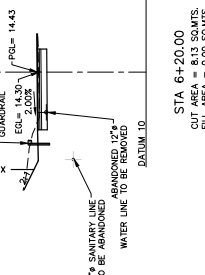
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FILL AREA = 23.45 SQ.MTS.



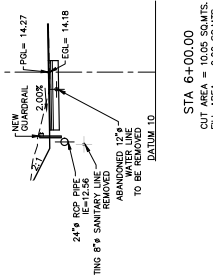
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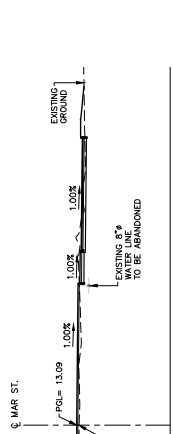
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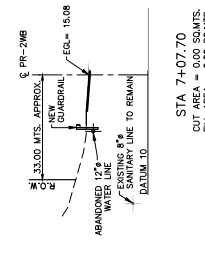
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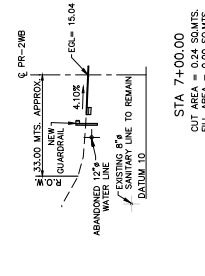
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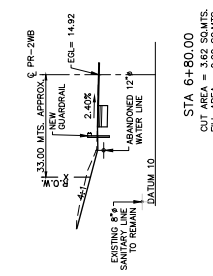
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STA 7+07.70  
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FILL AREA = 0.00 SQ.MTS.



STA 7+00.00  
CUT AREA = 0.24 SQ.MTS.  
FILL AREA = 0.00 SQ.MTS.



STA 6+80.00  
CUT AREA = 3.62 SQ.MTS.  
FILL AREA = 0.00 SQ.MTS.

DATE	BY	CHK	APP
07/27/23			
DESIGN			
DRAWING			
CHECK			
FINAL CHECK			

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

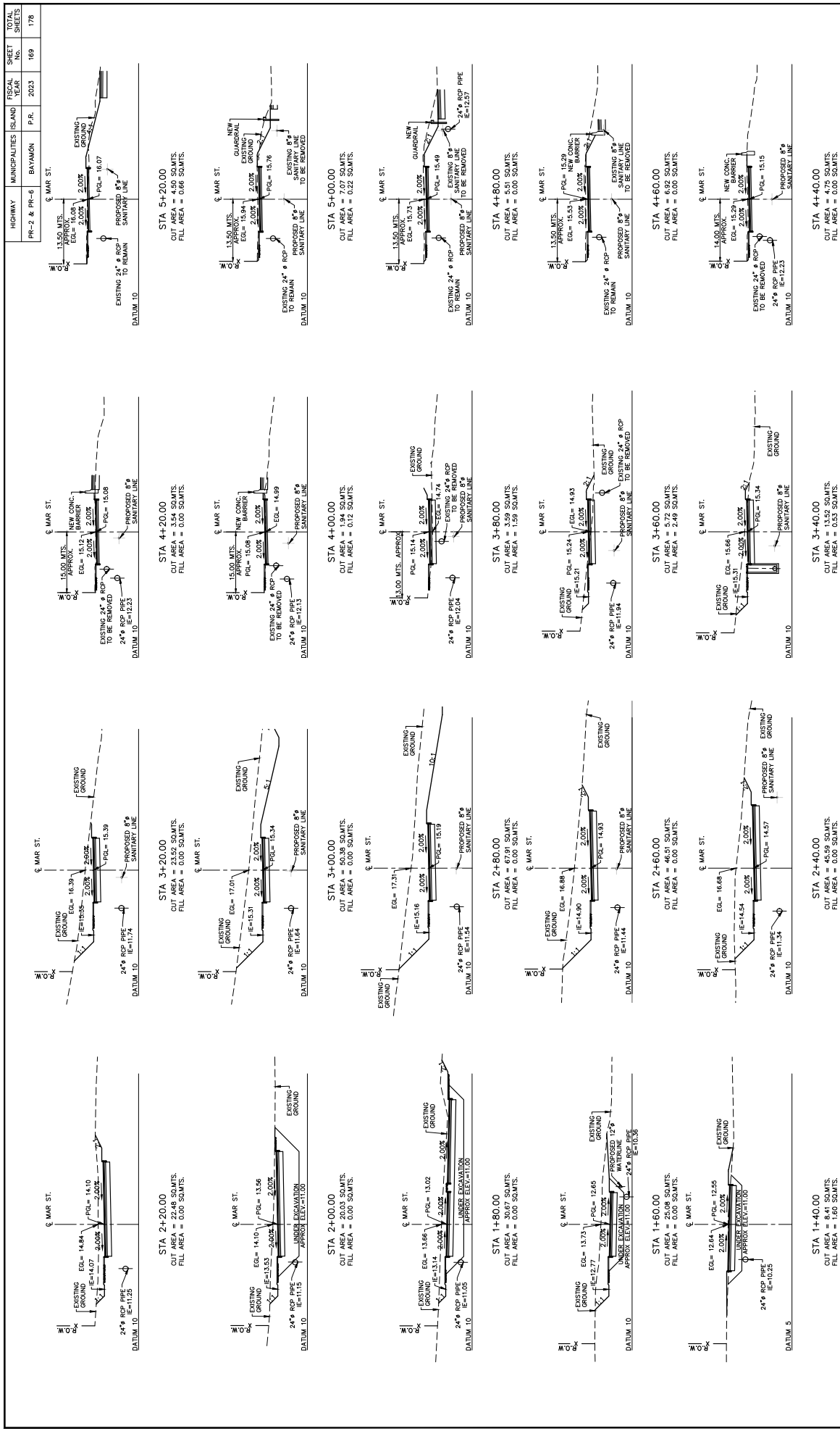
DATE

REVISIONS



CROSS SECTIONS  
LINE MARGINAL ST.

CS 07



DATE	BY	WORK
07/27/23		
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

**CMA**  
ARCHITECTS &  
ENGINEERS

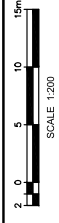
MUNICIPALITY OF BAYAMON

BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

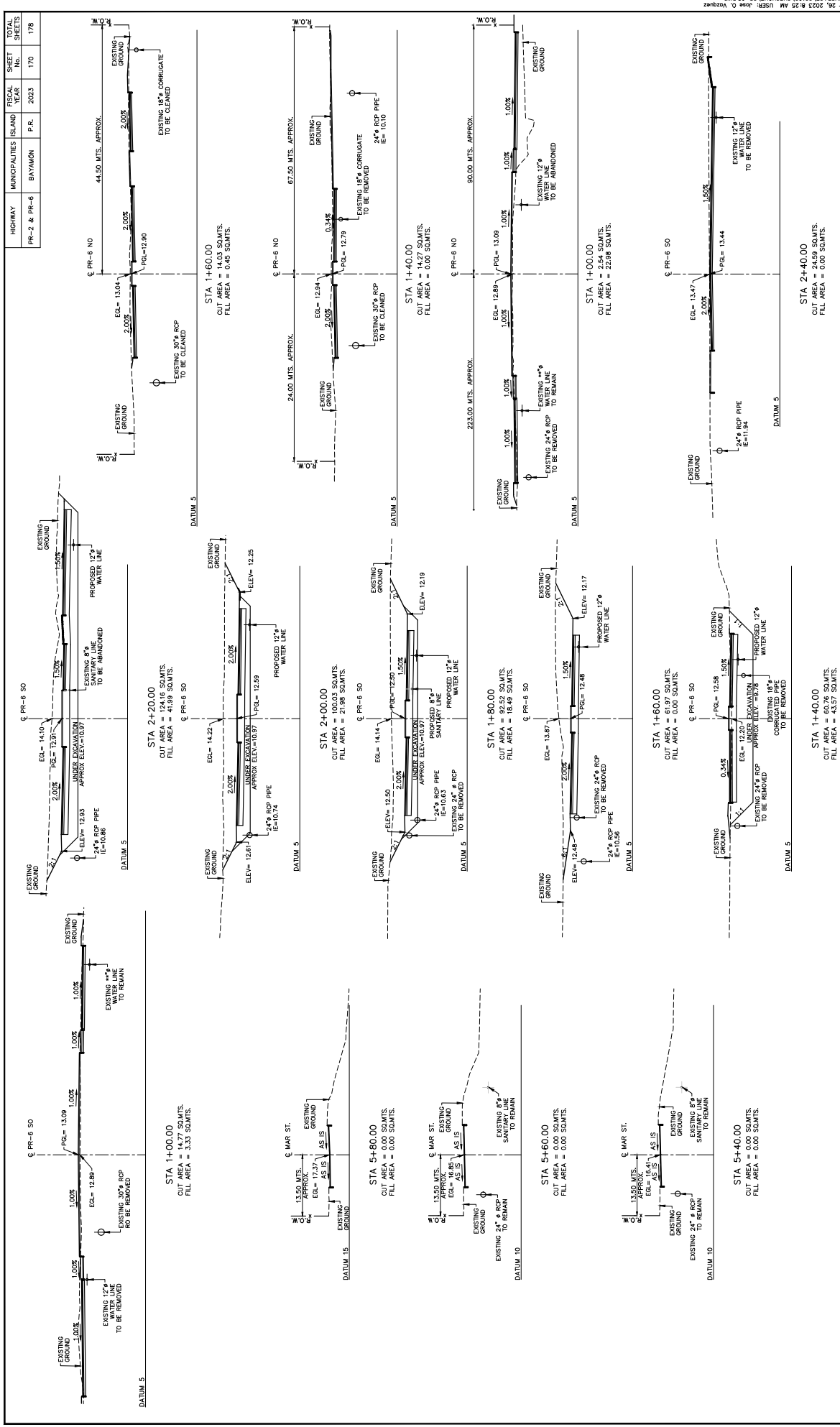
PUERTO RICO

REVISIONS	DATE



LINE MARGINAL ST. & PR-6 NORTH & SOUTH

CS 08



ROADWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	170	178

DATE: 07/27/23 10:22 AM USER: JOSE O. VIZQUEZ

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	DATE
						07/27/23

**CMA**  
ARCHITECTS &  
ENGINEERS

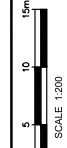
MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

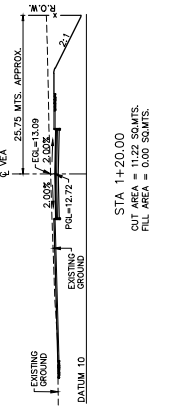
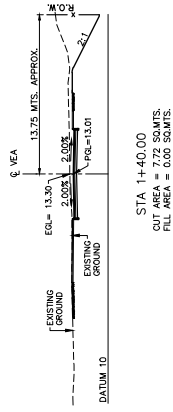
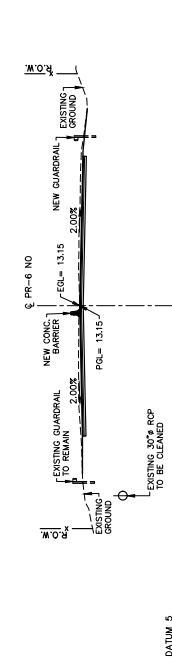
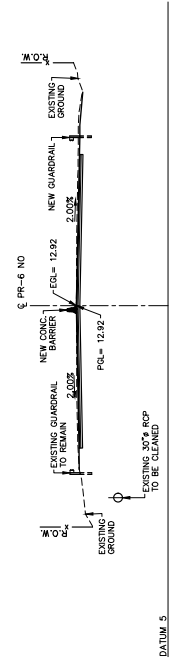
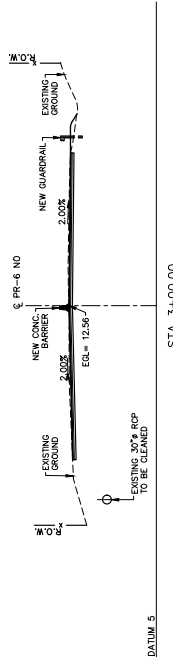
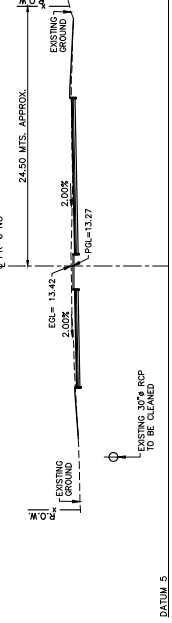
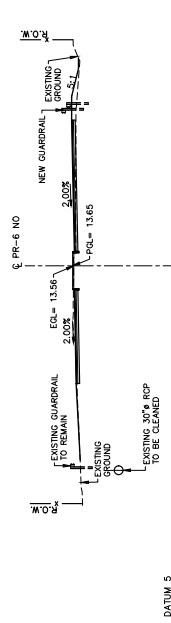
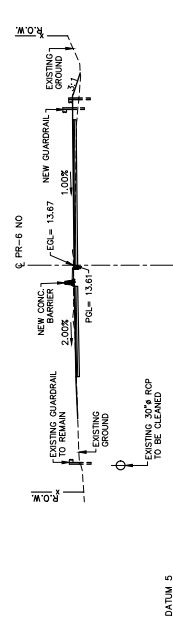
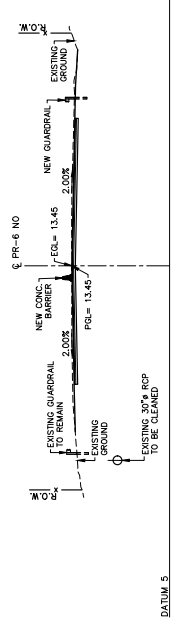
NO.	DATE	REVISIONS



LINE PR-6 NORTH & VILLA ESPANA

CS 09

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	171	178





DATE	BY	WORK
07/27/23		
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

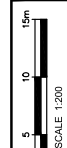
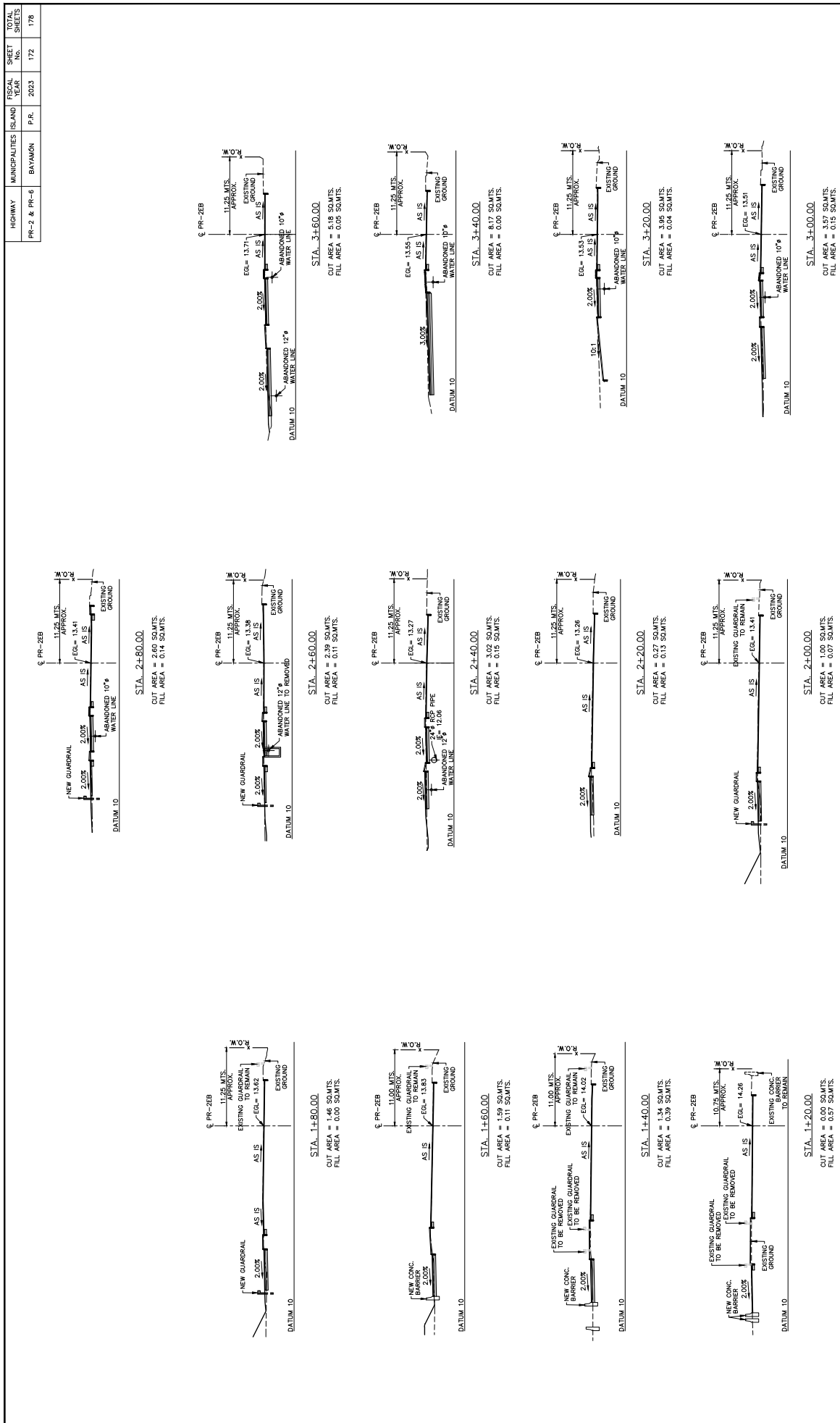
PUERTO RICO

REVISIONS

NO.	DATE	REVISIONS

CROSS SECTIONS  
LINE PR-2 EAST

CS 10



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	172	178

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
07/27/23					

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

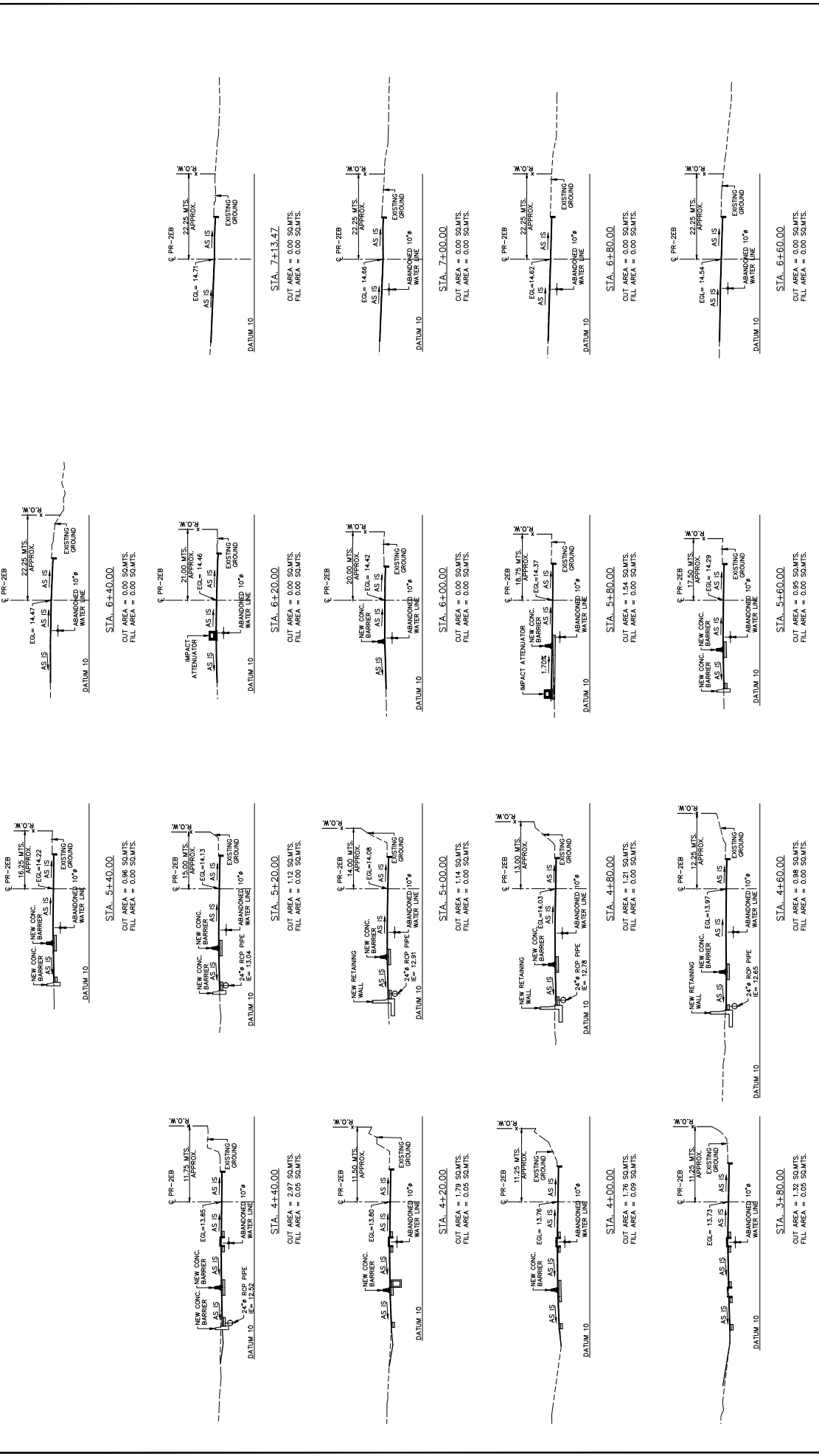
REVISIONS	DATE

1:200

CROSS SECTIONS  
LINE PR-2 EAST

CS  
11

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	173	178



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	174	178

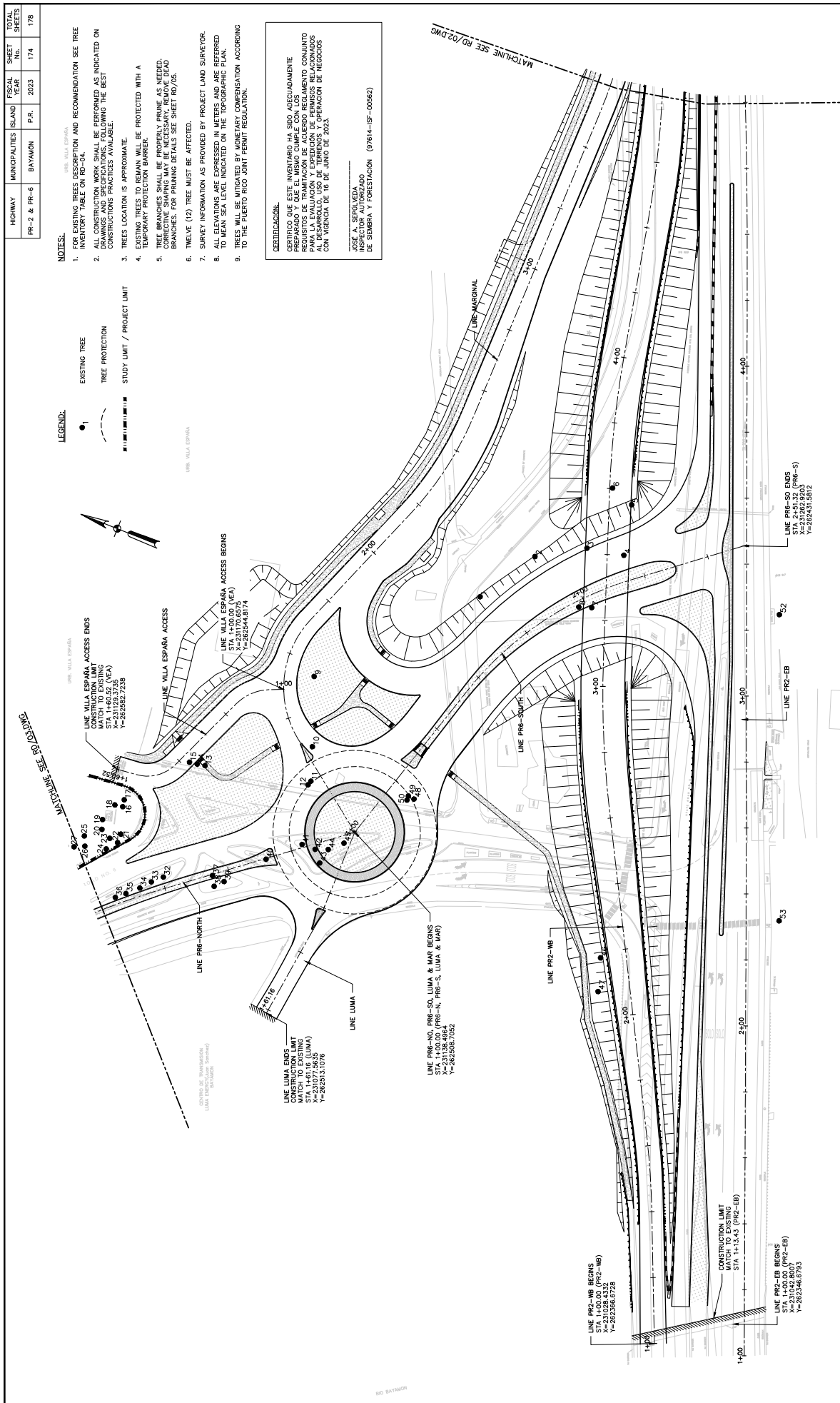
**NOTES:**

- FOR EXISTING TREES DESCRIPTION AND RECOMMENDATION SEE TREE INVENTORY TABLE ON RD-04.
- ALL CONSTRUCTION WORK SHALL BE PERFORMED AS INDICATED ON THIS PLAN AND SHALL FOLLOW THE BEST PRACTICES REGARDING THE BEST CONSTRUCTION PRACTICES AVAILABLE.
- TREES LOCATION IS APPROXIMATE.
- EXISTING PROTECTED TREES SHALL BE PROTECTED WITH A 10' TREE PROTECTION ZONE.
- TREE BRANCHES SHALL BE PROPERLY PRUNED AS NEEDED. CORRECTIVE SHAPING MAY BE NECESSARY. REMOVE DEAD BRANCHES. FOR PRUNING DETAILS SEE SHEET RD/05.
- TWELVE (12) TREE MUST BE AFFECTED.
- SURVEY INFORMATION AS PROVIDED BY PROJECT LAND SURVEYOR.
- ALL ELEVATIONS ARE EXPRESSED IN METERS AND ARE REFERRED TO MEAN SEA LEVEL INDICATED ON THE TOPOGRAPHIC PLAN.
- TREES WILL BE MITIGATED BY MONETARY COMPENSATION ACCORDING TO THE PUERTO RICO JOINT PERMIT REGULATION.

**LEGEND:**

- EXISTING TREE
- TREE PROTECTION
- STUDY LIMIT / PROJECT LIMIT

**CERTIFICACION:**  
 CERTIFICADO QUE ESTE INVENTARIO HA SIDO ADECUADAMENTE REALIZADO DE ACUERDO CON LOS REQUISITOS DE TRAMITACION Y EFEDICION DE PERMISOS RELACIONADOS PARA LA EVALUACION Y EFEDICION DE PERMISOS RELACIONADOS CON LA EJECUCION DE OBRAS DE MEJORAMIENTO DE LA OPERACION DE HECHO CON VIGENCIA DE 18 DE JUNIO DE 2023.  
 INGENIERO EN CIENCIAS FORESTALES  
 INSPECTOR AUTORIZADO  
 DE SIEMBRA Y FORESTACION (97614-ISF-00462)



DATE	07/27/23	BY	
DESIGN			
PERMITS			
CHECK			
FINAL CHECK			

**CMA**  
 ARCHITECT &  
 ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

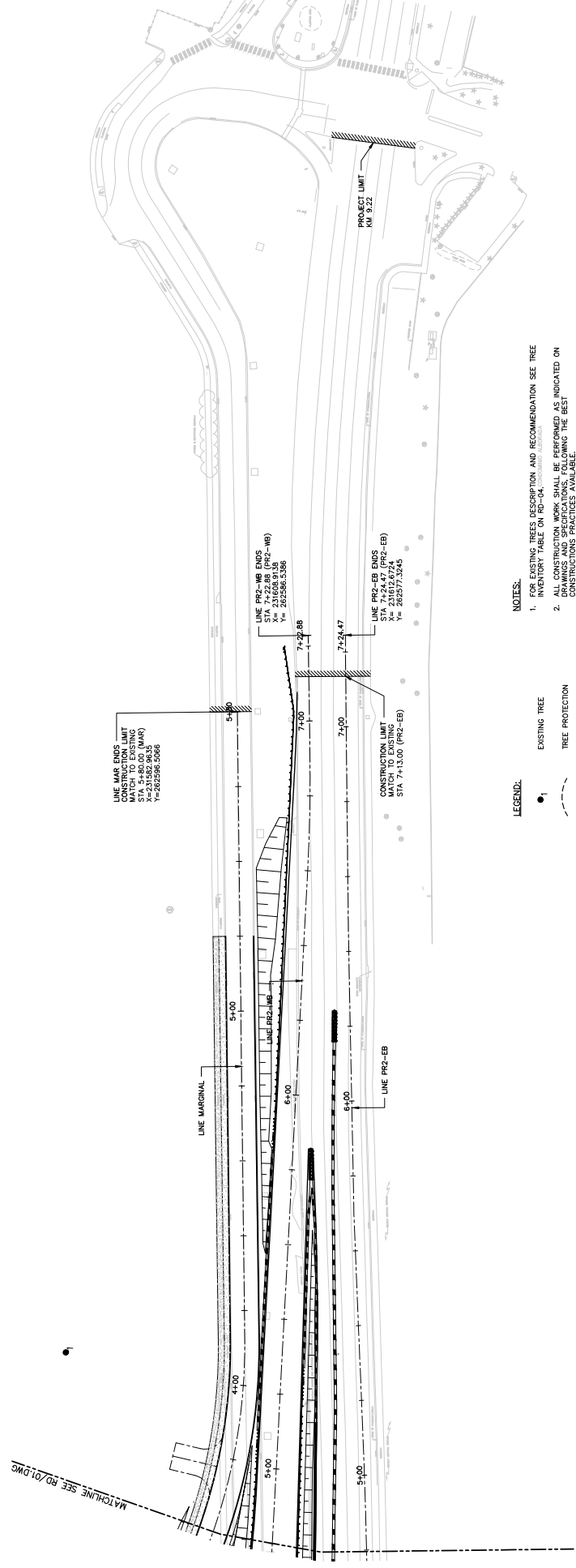
SCALE 1:500

RD 01

**TREE INVENTORY PLAN**

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	175	178

RESERVA DE DERECHOS



LINE MARGINAL ENDS  
CONSTRUCTION LIMIT  
MATCHLINE SEE RD 01/DWC  
STA 5+00.00 (PR2-WB)  
X=231582.9853  
Y=262596.5066  
T=262596.5066

LINE PR2-WB ENDS  
CONSTRUCTION LIMIT  
MATCHLINE SEE RD 01/DWC  
STA 7+22.88 (PR2-WB)  
X=231608.9108  
Y=262691.1028

LINE PR2-EB ENDS  
CONSTRUCTION LIMIT  
MATCHLINE SEE RD 01/DWC  
STA 7+24.47 (PR2-EB)  
X=232377.3245  
Y=262691.1028

CONSTRUCTION LIMIT  
MATCHLINE SEE RD 01/DWC  
STA 7+13.00 (PR2-EB)

- NOTES:**
- FOR EXISTING TREES RESECTION AND RECOMMENDATION SEE TREE INVENTORY TABLE ON RD-04.
  - ALL CONSTRUCTION WORK SHALL BE PERFORMED AS INDICATED ON DRAWINGS AND SPECIFICATIONS, FOLLOWING THE BEST CONSTRUCTION PRACTICES AVAILABLE.
  - TREES LOCATION IS APPROXIMATE.
  - EXISTING TREES TO REMAIN WILL BE PROTECTED WITH A TEMPORARY PROTECTION BARRIER.
  - TREE BRANCHES SHALL BE PROPERLY PRUNED AS NEEDED. BRANCHES SHALL BE REMOVED FROM ALL DEAD BRANCHES. FOR PRUNING DETAILS SEE SHEET RD/05.
  - TWELVE (12) TREE MUST BE AFFECTED.
  - SURVEY INFORMATION AS PROVIDED BY PROJECT LAND SURVEYOR.
  - ALL ELEVATIONS ARE EXPRESSED IN METERS AND ARE REFERRED TO MEAN SEA LEVEL INDICATED ON THE TOPOGRAPHIC PLAN.
  - TREES WILL BE MITIGATED BY MONETARY COMPENSATION ACCORDING TO THE PUERTO RICO JOINT PERMIT REGULATION.

- LEGEND:**
- EXISTING TREE
  - TREE PROTECTION
  - STUDY LIMIT / PROJECT LIMIT

**CERTIFICACIÓN**

CERTIFICADO QUE ESTE INVENTARIO HA SIDO ADECUADAMENTE CERRADO Y QUE SE HA CUMPLIDO CON LOS REQUISITOS PARA LA EVALUACIÓN Y EXPEDICIÓN DE PERMISOS RELACIONADOS CON LA VELOCIDAD DE LOS VEHÍCULOS EN LA INTERSECCIÓN DE CALLES CON VIGENCIA DE 16 DE JUNIO DE 2023.

ING. L. SERRANO  
INSPECTOR AUTORIZADO  
DE SEMBRA Y FORESTACIÓN (97914-ISF-00562)

DATE	BY	WORK
07/27/23		
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

**CMA ARCHITECT & ENGINEERS**

MUNICIPALITY OF BAYAMÓN

BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

PR-2 AND PR-6

TREE INVENTORY PLAN

RD 02

SCALE 1:500

5 0 10 30

REVISIONS

DATE



ROADWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	177	178

**TREE CONDITION RATINGS:**

- 1- VERY POOR
- 2- POOR
- 3- FAIR
- 4- GOOD
- 5- EXCELLENT

**DATA:**

- 53 TOTAL
- 34 TO BE CUT
- 19 TO REMAIN

**TREES TO BE AFFECTED:**

- 34 TREE

**REQUIRED MITIGATION:**

- TREES BY PERIMETER: PERIMETER = 0 FT. ONE TREE EVERY 20 FT. = 0 FT. = 20 = 0 TREES
- TREES BY PARKING SPACES: PARKING SPACES = 0 1 TREE PER 4 SPACES = 0 - 4 = 0 TREES
- TREES
- 29 TREES < 24" = 7 X 2 = 14 TREES (ONER AND PRHTA AGREEMENT 2023-000079)
- 7 TREES > 25" = 7 X 2 = 14 TREES (ONER AND PRHTA AGREEMENT 2023-000079)
- TOTAL = 68 TREES

**COMPENSATORY MITIGATION:**

- 68 TREES X \$65.00 = \$ 4,420.00

**NOTES:**

1. FOR EXISTING TREES RESECTION AND RECOMMENDATION SEE TREE INVENTORY TABLE ON RD-04.
2. ALL CONSTRUCTION WORK SHALL BE PERFORMED AS INDICATED ON DRAWINGS AND SPECIFICATIONS, FOLLOWING THE BEST CONSTRUCTION PRACTICES AVAILABLE.
3. TREES LOCATION IS APPROXIMATE.
4. EXISTING TREES TO REMAIN WILL BE PROTECTED WITH A TEMPORARY PROTECTION BARRIER.
5. TREE BRANCHES SHALL BE PROPERLY PRUNED AS NEEDED. BRANCHES SHALL BE PROPERLY PRUNED TO MAINTAIN LEAD BRANCHES. FOR PRUNING DETAILS SEE SHEET RD/05.
6. TWELVE (12) TREE MUST BE AFFECTED.
7. SURVEY INFORMATION AS PROVIDED BY PROJECT LAND SURVEYOR. ALL ELEVATIONS ARE EXPRESSED IN METERS AND ARE REFERRED TO MEAN SEA LEVEL INDICATED ON THE TOPOGRAPHIC PLAN.
8. TREES WILL BE MITIGATED BY MONETARY COMPENSATION ACCORDING TO THE PUERTO RICO JOINT PERMIT REGULATION.

**CERTIFICACIÓN:**

CERTIFICADO QUE ESTE INVENTARIO HA SIDO ADECUADAMENTE REALIZADO DE ACUERDO A LOS REQUISITOS DE TRATAMIENTO Y EXPEDICIÓN DE PERMISOS RELACIONADOS PARA LA EVALUACIÓN Y EXPEDICIÓN DE PERMISOS RELACIONADOS CON LA VELOCIDAD DE LOS VEHÍCULOS EN EL CRUCE DE CALZADA CON LA VIALIDAD DE LA ZONA DE PROTECCIÓN DE VELOCIDAD DE VELOCIDAD DE 16 DE JUNIO DE 2023.

ING. J. SERRANO  
INSPECTOR AUTORIZADO  
DE SEMBRA Y FORESTACIÓN (97914-15F-00562)

**TREE INVENTORY TABLE AREA 1**

ID	SCIENTIFIC NAME	COMMON NAME	DBH (in)	APPROX. HEIGHT (ft)	CONDITION	RECOMMENDATION (BASED ON PROJECT ALTERNATIVE)	ACTION OR RECOMMENDATION
1	Cocos nucifera	Coconut Palm	13	5	2	TO BE CUT	TO BE CUT
2	Casuarina equisetifolia	Australian Pine	26	40	2	TO BE CUT	TO BE CUT
3	Leguminosia apiculata	Reino de las Flores	30	40	2	TO BE CUT	TO BE CUT
4	Mangifera indica	Mango	11	30	2	TO BE CUT	TO BE CUT
5	Spatheodes campanulata	Tulipán Africano	34	50	2	TO BE CUT	TO BE CUT
6	Mangifera indica	Mango	28	40	2	TO BE CUT	TO BE CUT
7	Leguminosia apiculata	Reino de las Flores	16	40	2	TO BE CUT	TO BE CUT
8	Leguminosia apiculata	Reino de las Flores	15	40	2	TO BE CUT	TO BE CUT
9	Conocarpus palm	Conocarpus Palm	15	40	2	TO BE CUT	TO BE CUT
10	Erythrina glauca	Buhojo	24	40	2	TO BE CUT	TO BE CUT
11	Albizia procera	Albido	28	45	2	TO BE CUT	TO BE CUT
12	Terminalia catappa	Almendrao	9	40	2	TO BE CUT	TO BE CUT
13	Styegus romanoffiana	Palma Reina	8	25	2	TO BE CUT	TO BE CUT
14	Styegus romanoffiana	Palma Reina	8	25	2	TO BE CUT	TO BE CUT
15	Styegus romanoffiana	Palma Reina	8	25	2	TO BE CUT	TO BE CUT
16	Dyopsis decaryi	Triunfo Palm	13	4	3	TO REMAIN	TO REMAIN
17	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
18	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
19	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
20	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
21	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
22	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
23	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
24	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
25	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
26	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
27	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
28	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
29	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
30	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
31	Styegus romanoffiana	Palma Reina	10	20	3	TO REMAIN	TO REMAIN
32	Wagajeta bifurcata	Foxtail Palm	6	20	2	TO BE CUT	TO BE CUT
33	Wagajeta bifurcata	Foxtail Palm	10	20	2	TO BE CUT	TO BE CUT
34	Wagajeta bifurcata	Foxtail Palm	8	20	2	TO BE CUT	TO BE CUT
35	Wagajeta bifurcata	Foxtail Palm	8	20	2	TO BE CUT	TO BE CUT
36	Wagajeta bifurcata	Foxtail Palm	8	20	2	TO BE CUT	TO BE CUT
37	Wagajeta bifurcata	Foxtail Palm	8	20	2	TO BE CUT	TO BE CUT
38	Wagajeta bifurcata	Foxtail Palm	8	15	2	TO BE CUT	TO BE CUT
39	Wagajeta bifurcata	Foxtail Palm	8	15	2	TO BE CUT	TO BE CUT
40	Phoenix roebelenii	Palma Reina	4	4	2	TO BE CUT	TO BE CUT
41	Wagajeta bifurcata	Foxtail Palm	8	15	2	TO BE CUT	TO BE CUT
42	Wagajeta bifurcata	Foxtail Palm	8	15	2	TO BE CUT	TO BE CUT
43	Wagajeta bifurcata	Foxtail Palm	8	15	2	TO BE CUT	TO BE CUT
44	Wagajeta bifurcata	Foxtail Palm	8	15	2	TO BE CUT	TO BE CUT
45	Wagajeta bifurcata	Foxtail Palm	8	15	2	TO BE CUT	TO BE CUT
46	Roystonia borinquena	Royal Palm	13	40	2	TO BE CUT	TO BE CUT
47	Albizia procera	Albido	28	45	2	TO BE CUT	TO BE CUT
48	Terminalia catappa	Almendrao	6	30	2	TO BE CUT	TO BE CUT
49	Terminalia catappa	Almendrao	6	30	2	TO BE CUT	TO BE CUT
50	Entrecardium	Almendrao	36	50	2	TO BE CUT	TO BE CUT
51	Entrecardium	Almendrao	36	50	2	TO BE CUT	TO BE CUT
52	Roystonia borinquena	Royal Palm	13	40	2	TO BE CUT	TO BE CUT
53	Roystonia borinquena	Royal Palm	13	40	2	TO BE CUT	TO BE CUT

DATE	BY	DESIGN	REVISIONS
07/27/23			

**CMA ARCHITECTS & ENGINEERS**

MUNICIPALITY OF BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

PUERTO RICO

BAYAMÓN

NOT TO SCALE

REFORESTATION DETAILS

RD 04

RD	05
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DATE	BY	REVISIONS
07/27/23		

DESIGN	WORK
DRAWINGS	
CHECK	
FINAL CHECK	

DATE: 08/10/2023 08:43 AM USER: Jose C. Vazquez  
 FILE: 19217 - RD-05.rvt  
 SHEET: 178 OF 178

HIGHWAY	PR-2 & PR-6
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MUNICIPALITIES	BAYAMÓN
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ISLAND	P.R.
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FISCAL YEAR	2023
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SHEET NO.	178
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TOTAL SHEETS	178
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RD	05
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REFORESTATION DETAILS

NOT TO SCALE

DATE: 08/10/2023 08:43 AM USER: Jose C. Vazquez  
 FILE: 19217 - RD-05.rvt  
 SHEET: 178 OF 178

CECERTIFICACIÓN  
 CERTIFICADO QUE ESTE INVENTARIO HA SIDO ADECUADAMENTE  
 PARA LA EVALUACIÓN Y EXPEDICIÓN DE PERMISOS RELACIONADOS  
 CON LA VIACIÓN DE 16 DE JUNIO DE 2023.

DOCE A. SOTOVALLE  
 INSPECTOR AUTORIZADO  
 DE SEMBRAS Y FORESTACIÓN (97914-15F-00562)

### I GENERAL NOTES:

- (IF PLANTING NEW TREES WILL BE PREFERRED)
- UNLESS NOTED OTHERWISE, NEW TREES PLANTED IN ROWS SHALL BE SPACED AT 12 FEET ON CENTER. NEW TREES PLANTED IN CLUSTERS WILL BE SPACED AS SHOWN.
- NEW TREES TO BE PLANTED SHALL BE INDICATED BY THE SITE PLAN CONDITIONS.
- FINAL LOCATION SHALL BE DETERMINED ON SITE BY CONTRACTOR PRIOR TO DIGGING OF PLANTING HOLE. ON DESIGNATED REFORESTATION AREAS
- CONTRACTOR SHALL ASSURE THAT NO DAMAGE IS MADE TO EXISTING UTILITY LINES WHILE EXCAVATING FOR PLANTING MATERIAL.
- PLUNG SOIL AND TRASH SHALL NOT BE DEPOSITED AROUND EXISTING AND NEW PLANTED TREES.
- TREES SHALL NOT BE PLANTED IN COMPACTED SOIL AREA WITHIN OF PLANTING HOLE SHALL BE 3 TIMES ROOT BALL DIAMETER IN HEAVY COMPACTED SOIL.
- PLANTING SHALL BE DONE PRIOR TO INSPECTION OF PLANT MATERIAL.
- TO AVOID ROOT PRUNING ON TREES PLANTED, ROOT CONTROL BARRIERS CAN BE USED.
- IF A ROOT CONTROL SYSTEM WILL BE USED THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER FOR THE SPECIFICATIONS OF THE SYSTEM TO BE USED.
- RESTORE ALL DISTURBED SURFACES FOLLOWING COMPLETION OF CONSTRUCTION.
- UPON COMPLETION OF THE REFORESTATION PLAN THE OWNER SHALL BE RESPONSIBLE FOR MAINTAINING A 100% SURVIVAL RATE OF THE TREES PLANTED BY THE END OF A ONE YEAR PERIOD.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING MONITORING, MAINTENANCE AND CORRECTIVE MEASURES SUCH AS WATERING, FERTILIZING, REPLANTING AND/OR REGARDING THE FORE STATION AT THE END OF A ONE YEAR PERIOD.
- MAINTENANCE SHALL CONSIST OF PRUNING, WATERING, CULTIVATING, MULCHING, APPLYING SUCH SPRAYS OR OTHER MATERIALS AS ARE NECESSARY TO KEEP PLANTINGS FREE OF INSECTS AND DISEASES AND IN VIGOROUS CONDITION.
- PLANTING AREAS AND PLANTS SHALL BE PROTECTED AT ALL TIMES AGAINST TRESPASSING AND DAMAGE FROM VEHICLES, MACHINERY, EQUIPMENT, OR ANY OTHER TYPE OF A PLANT BECOMES DAMAGED OR INJURED, IT SHALL BE TREATED OR REPLACED AS DIRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- PALM HEIGHT REFER TO PALM TRUNK HEIGHT.
- THE AUTHORIZED INSPECTOR FOR PLANTING AND FORESTATION, HIRED BY THE OWNER SHALL INSPECT THE PLANTING PLAN AT 50% PROJECT AND THE FINAL CERTIFICATION WHEN THE WORKS END.

### II TRANSPORTATION & STORAGE OF PLANT MATERIAL NOTES:

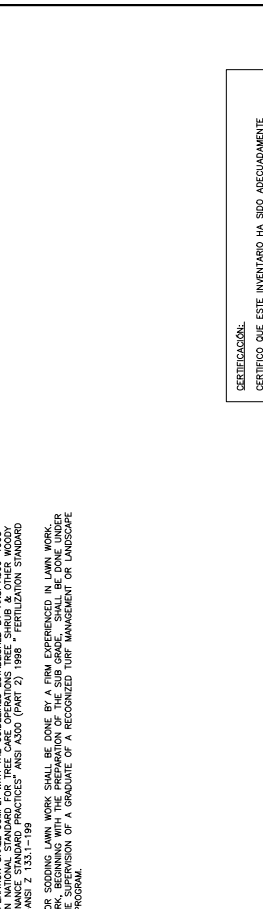
- PLANT MATERIAL IS TO BE PROTECTED OVER PLANT MATERIAL HELD STORAGE PLANT MATERIAL HELD IN STORAGE WILL BE REJECTED IF EXCESSIVE GROWTH OR DIE BACK OF BRANCHES HAS OCCURRED IN STORAGE.
- BRANCHES SHALL BE TIED WITH ROPE OR TWINE ONLY, IN SUCH A MANNER THAT NO DAMAGE WILL OCCUR TO THE BARK AND BRANCHES.
- SHALL EXERCISE CARE TO PREVENT WATERING AND SOAKING OF THE TREES BY WIND BURN SHOULD THE ROOTS BE BURED OUT.
- IF BRANCHES ARE TO BE STORED IN A AREA OF BARK TORN, THE OWNER'S REPRESENTATIVE MAY REJECT THE INJURED TREES AND ORDER THEM REPLACED AT NO ADDITIONAL COST TO THE OWNER. EACH LOG OR WARE STOCK FROM THE LOGGING OPERATION SHALL BE COVERED WITH WET SOIL, SAND/SLUT, WOOD CHIPS, MOSS, PEAT, STRAW, HWY. OR OTHER AVAILABLE MATERIALS FOR DAMAGING LOGS AND SHALL BE COVERED IN A MANNER THAT PREVENTS THE LOGS FROM BEING PROTECTED IN THE ABOVE MANNER MAY BE REJECTED.
- PLANTS MUST BE PROTECTED AT ALL TIMES FROM SUN OR DRYING WINDS. THOSE THAT CANNOT BE PLANTED IMMEDIATELY ON DELIVERY WITH WET WOOD CHIPS OR OTHER ACCEPTABLE MATERIAL, AND KEPT WELL WATERED. PLANTS SHALL NOT REMAIN UNPLANTED ANY LONGER THAN 14 DAYS. PLANTS SHALL BE KEPT WELL WATERED. WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES. PLANTS SHALL BE LIFTED AND HANDLED WITH SUITABLE SUPPORT OF THE SOIL BALL TO AVOID DAMAGING IT.

### III PROPOSED TREES PLANTING NOTES:

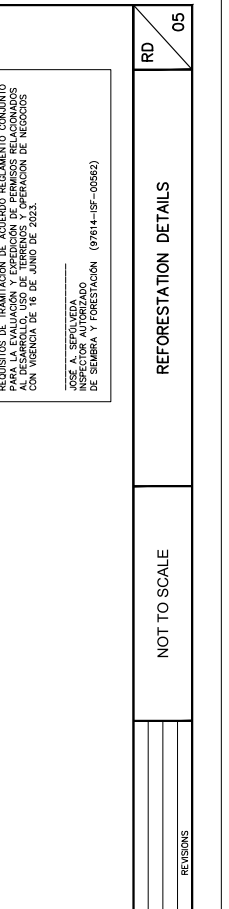
- THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING AS SHOWN.
- ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY ANSI Z66.1 PLANTING STANDARDS FOR "BARRIER STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
- UNLESS SPECIFICALLY NOTED, ALL PLANTS SHALL BE OF SPECIMEN QUALITY, EXCEPTIONALLY HEAVY, SYMMETRICAL, SO TRAINED OR FAVORED IN DEVELOPMENT AND APPEARANCE AS TO BE HEAVY, SYMMETRICAL, WELL-BRANCHED AND DENSELY FOLIATED WHEN THEY SHALL BE SOUND, HEALTHY VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF, FREE OF DISEASE AND INSECTS, EGGS, OR LARVAE AND SHALL HAVE HEALTHY, WELL-DEVELOPED ROOT SYSTEMS. THE TREE SHALL BE PLANTED WITH A MINIMUM PHYSICAL DAMAGE ON OTHER CONDITIONS THAT WOULD PREVENT VIGOROUS GROWTH.
- ALL PLANTING ACTIVITIES SHALL BE DONE UNDER THE FULL TIME SUPERVISION OF A CERTIFIED ARBORIST, AUTHORIZED INSPECTOR FOR PLANTING AND FORESTATION OR LICENSED LANDSCAPE ARCHITECT, ACCORDING TO PLANNING BOARD JOINT REGULATION NO. 5081 EFFECTIVE JUNE 7, 2019, PLANTING GRADE PRIOR TO DIGGING.
- NO SUBSTITUTION OF PLANT SPECIES WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL TO THE OWNER.
- ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES WILL BE A PLANT WITH EQUIVALENT OVERALL ADAPTABILITY TO THE SITE CONDITIONS.
- ALL PROPOSED NEW TREES SHALL BE STAKED OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS OF THE STAKES AS ORDERED BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DELIVERY OF TREE PITS AND THE DELIVERY OF MATERIALS FOR PLANTING. THE CONTRACTOR SHALL AVOID DAMAGE TO ALL UTILITIES DURING CONSTRUCTION.
- NO TREES SHALL BE PLANTED ABOVE UNDERGROUND UTILITIES (UTILITY WIRES).
- NO TREE SHALL BE PLANTED ABOVE UNDERGROUND WATER PIPES. THE MINIMUM DISTANCE SHALL BE PLANTED IF 15 FEET FROM ELECTRICAL LEADOUT.
- CONTRACTOR SHALL STAKE OR GUY TREES INSURING THAT THE TRUNK IS NOT DAMAGED AND THAT THE STAKING SYSTEM SHALL ADEQUATELY SUPPORT THE TREE IN ADVERSE WITH CONDITIONS. STAKING AND GUYING SHALL BE COMPLETED IMMEDIATELY AFTER PLANTING. TREES UP TO 27' (6cm) CALIBER ARE TO BE STAKED WITH TWO STAKES AND SEPARATE FLEXIBLE TIES AS SHOWN ON DRAWING. TREES OVER 27' SHALL BE STAKED WITH TWO STAKES AND SEPARATE FLEXIBLE TIES AS SHOWN ON DRAWING TO BE DRIVEN AT APPROXIMATELY A 45-DEGREE ANGLE TO GROUND PLANE AND DISTRIBUTED AT 120-DEGREE INTERVALS AROUND THE TRUNK. ANCHORS SHALL BE DRIVEN TO MINIMUM VERTICAL DEPTH AS FOLLOWS:

TREE CALIBER	ANCHOR SIZE	MINIMUM DEPTH
(in)	(cm)	(in)
2-5	5-13	4
6	10	20
8	15	3.5
10	18	4.0
12	20	4.0

- TREE CARE OPERATION SHALL COMPLY WITH THE GUIDELINES ESTABLISHED BY ANSI Z600-1995 "PLANT MAINTENANCE STANDARDS PRACTICES" ANSI ADOPTED (PART 2) 1998 "FERTILIZATION STANDARD PRACTICES" ANSI ADOPTED (PART 2) 1998.
- ALL TREES AND BRANCHES TO BE PLANTED SHALL BE DONE BY A FORM SUPERVISOR IN LAWN WORK. THE FULL-TIME SUPERVISION OF A GRADUATE OF A RECOGNIZED TURF MANAGEMENT OR LANDSCAPE OPERATIONS PROGRAM.



LARGE TREE PLANTING METHOD  
 SCALE: NOT TO SCALE



SMALL TREE PLANTING METHOD  
 SCALE: NOT TO SCALE

CMA  
 ARCHITECT &  
 ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

DATE

NOT TO SCALE

REVISIONS

RD  
 05

DATE	BY	DESIGN	WORK
07/27/23			
CHECK			
FINAL CHECK			

**CMA**  
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ENGINEERS

MUNICIPALITY OF BAYAMON

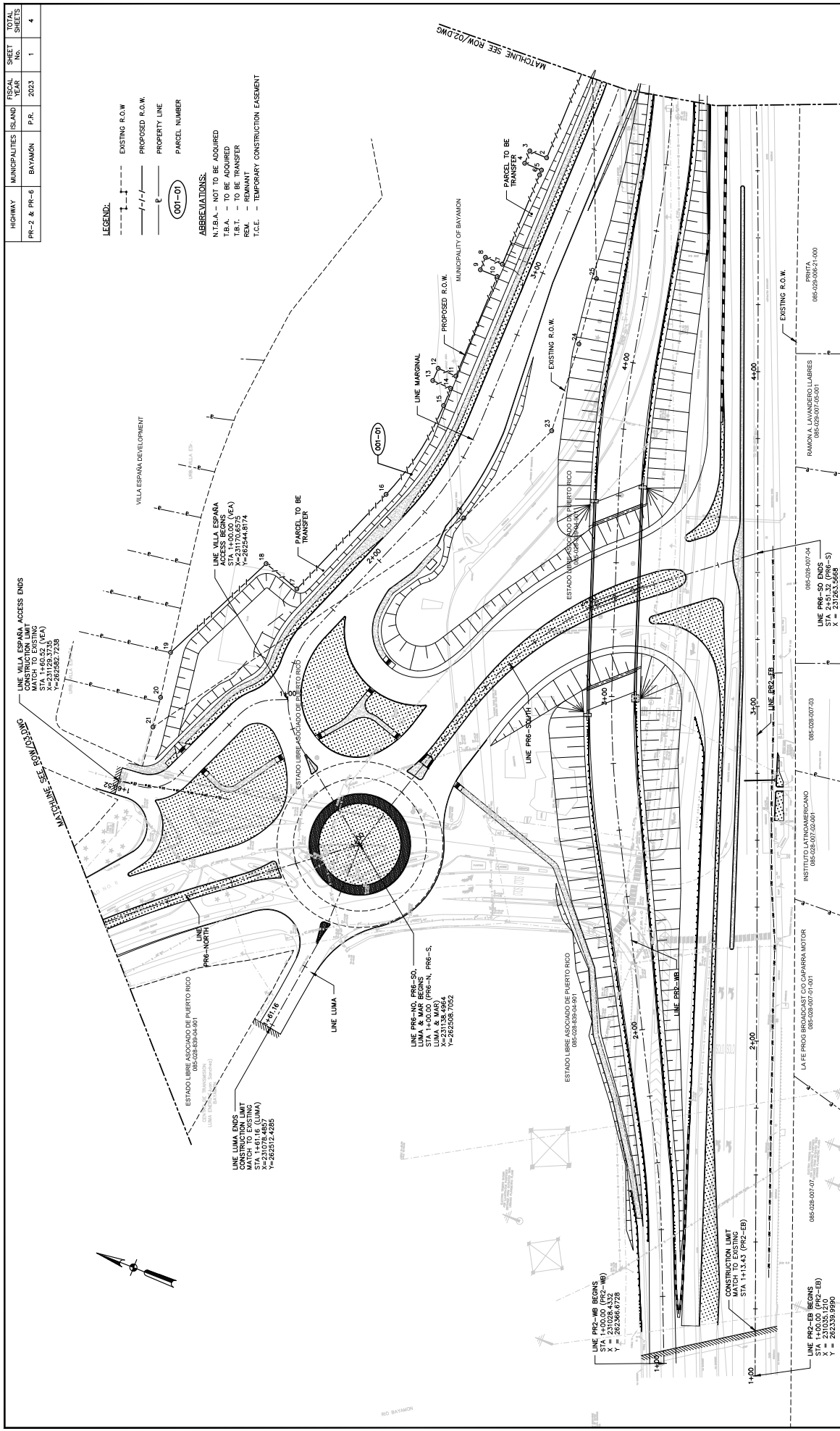
PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

REVISIONS

SCALE: 1:500

RIGHT OF WAY PLAN

ROW 01



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	1	4

- LEGEND:**
- EXISTING R.O.W.
  - - - PROPOSED R.O.W.
  - - - PROPERTY LINE
  - (00-01) PARCEL NUMBER
- ABBREVIATIONS:**
- N.T.B.A. - NOT TO BE ACQUIRED
  - T.B.A. - TO BE ACQUIRED
  - T.B.T. - TO BE TRANSFER
  - REM. - REMAINT
  - T.C.E. - TEMPORARY CONSTRUCTION EASEMENT



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		07/27/23

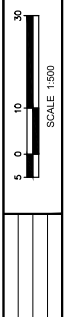
**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

#4# 2202  
1000 P.O. BOX 2202  
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Tel: (787) 255-1200  
Fax: (787) 255-1201  
www.cma-engineers.com

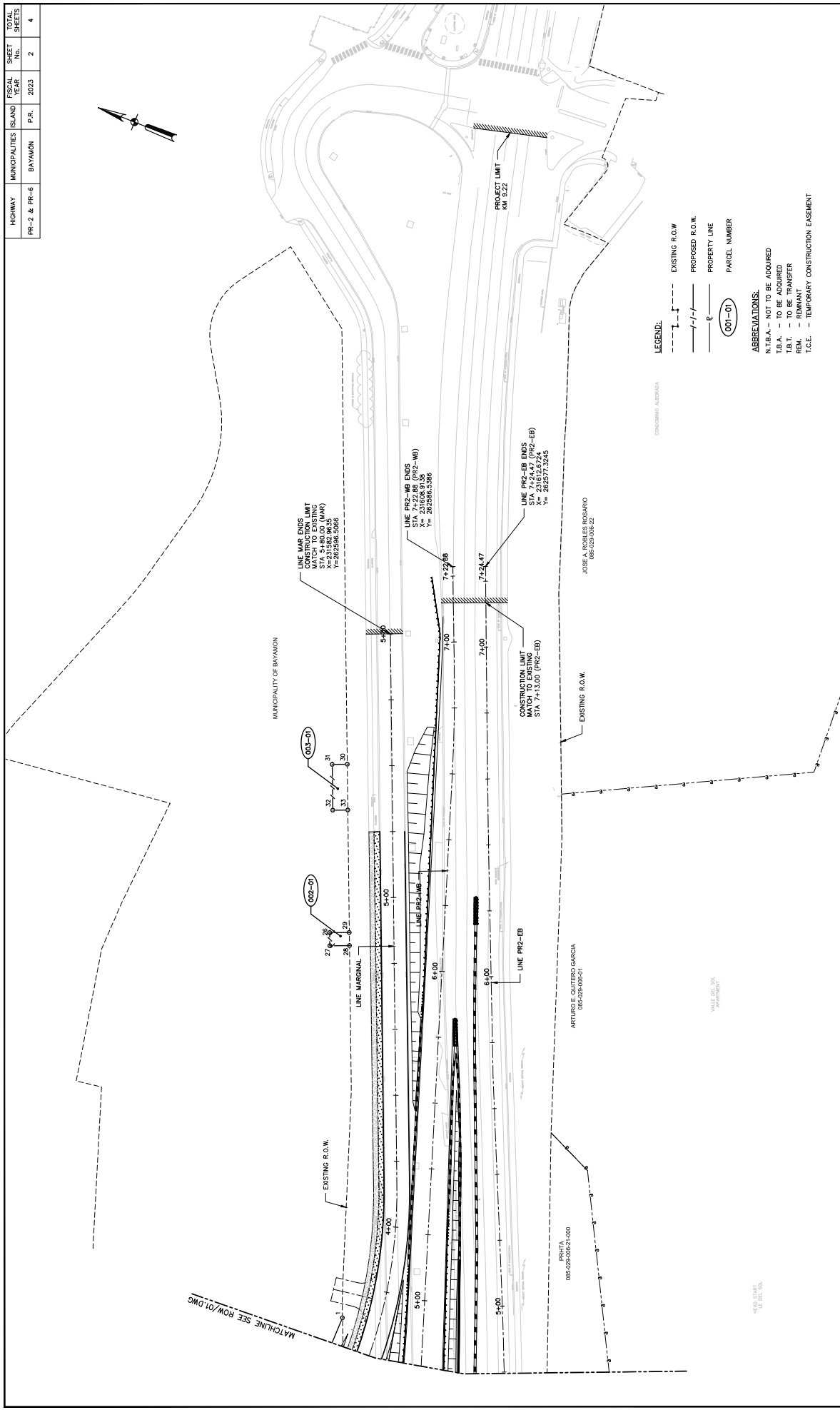
BAYAMON  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

REVISIONS	DATE



RIGHT OF WAY PLAN

ROW	02
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**LEGEND:**  
 --- EXISTING R.O.W.  
 - - - PROPOSED R.O.W.  
 - - - PROPERTY LINE  
 (001-01) PARCEL NUMBER

**ABBREVIATIONS:**  
 N.T.B.A. - NOT TO BE ACQUIRED  
 T.B.A. - TO BE ACQUIRED  
 T.B.T. - TO BE TRANSFER  
 REM. - REMAINING  
 T.C.E. - TEMPORARY CONSTRUCTION EASEMENT

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	2	4

WORK	DATE	BY
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	07/27/23	

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PROJ # 2212  
1000 CARRILLO DE OLMEDA AVENUE  
SAN JUAN, PUERTO RICO 00906  
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WWW.CMA-PR.COM

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

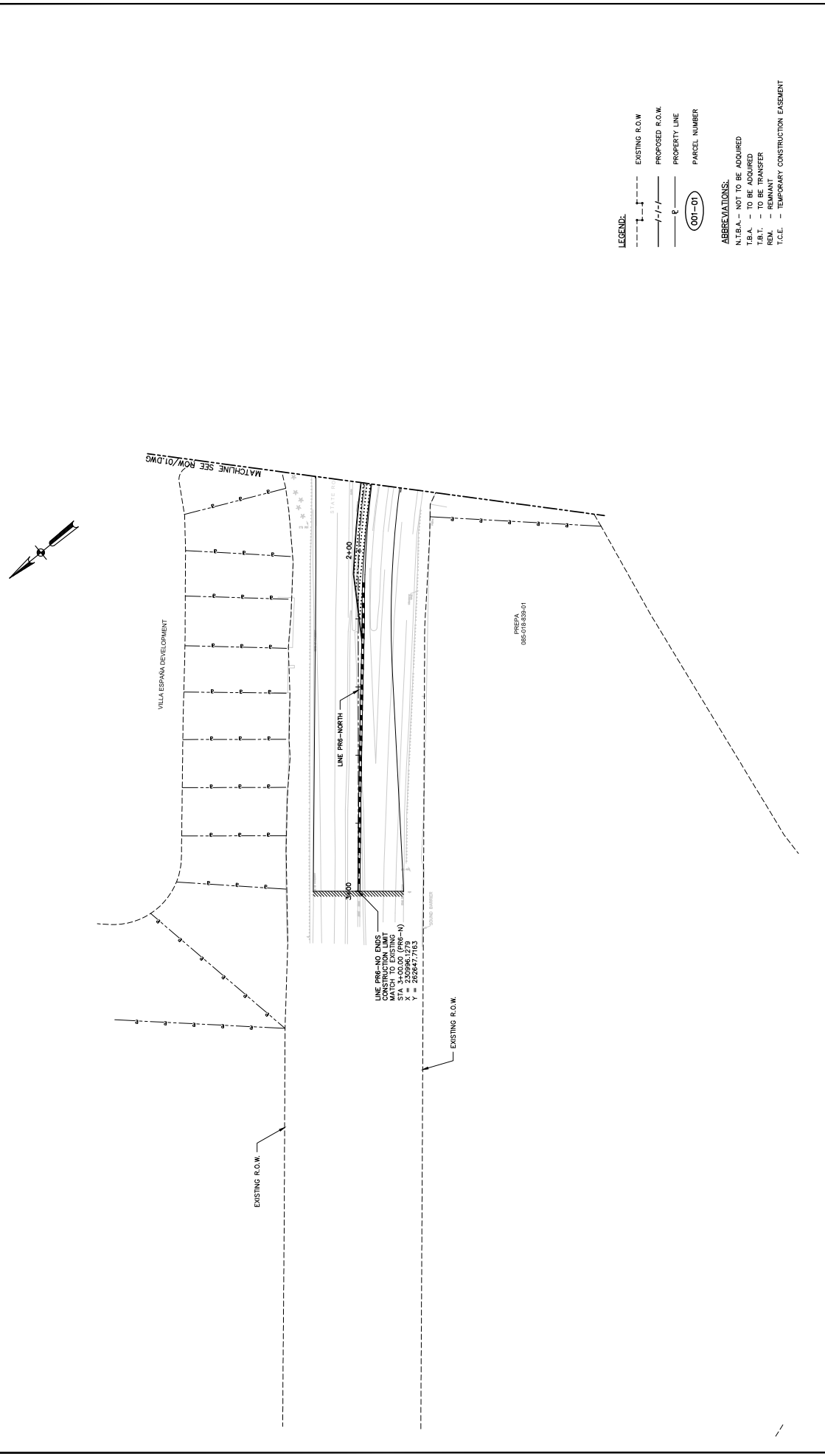
REVISIONS	DATE



RIGHT OF WAY PLAN

ROW 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	3	4



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	4

**PARCEL No. 001-01 (T.B.T.)**  
OWNER: MUNICIPALITY OF BAYAMÓN

POINT	LINE	(1) NORTH	(2) EAST	DISTANCE	BEARINGS	DESCRIPTION
1	---	262532.7687	231364.9482	---	---	---
1-2	262533.2327	231349.6767	35.27	N 89°14'47" W	-	-
2	---	262533.2327	231349.6767	---	---	---
3	4	262538.217	231348.7075	4.00	S 89°40'36" W	-
4	5	262533.8653	231348.6769	5.44	S 00°19'22" W	-
5	4-5	262533.8653	231348.6769	5.44	S 00°19'22" W	-
6	5	262533.8653	231348.6769	5.44	S 00°19'22" W	-
7	6	262539.1817	231311.8530	4.00	N 89°40'36" W	-
8	7-8	262539.1817	231311.8530	4.00	N 89°40'36" W	-
9	8	262539.1817	231311.8530	4.00	N 89°40'36" W	-
10	9	262539.1817	231311.8530	4.00	N 89°40'36" W	-
11	10-11	262534.1650	231279.3377	32.19	N 89°14'47" W	-
12	11-12	262539.9314	231279.3163	5.77	N 01°46'33" E	-
13	12-13	262534.2146	231279.3377	5.84	S 01°46'33" E	-
14	13-14	262534.2146	231279.3377	5.84	S 01°46'33" E	-
15	14-15	262534.2878	231269.4725	5.37	N 89°14'47" W	FC. --
Center	262522.1246	231270.6885	---	---	---	Center: coord
CURVE DATA	ANGLE	RADIUS	TANGENT	EXTENSIA	ARC LENGTH	
	20° 41' 47"	87.87	16.05	1.45	31.74	
16	15-16	262540.2658	231258.4925	31.97	N 28°53'52" W	PT. --
17	16-17	262540.2658	231258.4925	31.97	N 28°53'52" W	PT. --
18	17-18	262565.9317	231205.9214	11.91	N 17°34'35" E	-
19	18-19	262582.9851	231170.6385	39.02	N 64°43'32" W	-
20	19-20	262579.1809	231148.0940	9.13	S 82°40'13" W	-
21	20-21	262579.1809	231148.0940	9.13	S 82°40'13" W	-
22	21-22	262516.1868	231240.3649	11.32	S 59°44'49" E	-
23	22-23	262516.1868	231240.3649	11.32	S 59°44'49" E	-
24	23-24	262503.9790	231301.6277	27.15	N 85°33'17" E	-
25	24-25	262505.9678	231321.6855	60.20	N 87°11'59" E	-
26	25-26	262532.8287	231324.9882	68.71	N 76°26'29" E	-
27	26-27	262579.8465	231491.9910	4.00	S 67°48'00" W	-
28	27-28	262572.8074	231490.9399	5.97	S 22°10'10" E	-
29	28-29	262574.2450	231494.2339	4.00	N 67°26'24" E	-
30	29-30	262574.2450	231494.2339	4.00	N 67°26'24" E	-
31	30-31	262538.1263	231529.6119	4.55	N 22°33'36" W	-
32	31-32	262592.8049	231556.8030	13.97	S 67°26'24" W	-
33	32-33	262592.8049	231556.8030	13.97	S 67°26'24" W	-
34	33-34	262593.9290	231584.2933	13.97	N 67°26'24" E	-
35	34-35	262593.9290	231584.2933	13.97	N 67°26'24" E	-
AREA = 63.1770 sq mt. = 0.0161 ccha.						

\* (TO BE TRANSFER BY THE OWNER, MUNICIPALITY OF BAYAMÓN, TO DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS)

**PARCEL No. 002-01 (T.B.T.)**  
OWNER: MUNICIPALITY OF BAYAMÓN

POINT	LINE	(1) NORTH	(2) EAST	DISTANCE	BEARINGS	DESCRIPTION
26	---	262579.8465	231491.9910	---	---	---
27	26-27	262579.8465	231491.9910	4.00	S 67°48'00" W	-
28	27-28	262572.8074	231490.9399	5.97	S 22°10'10" E	-
29	28-29	262574.2450	231494.2339	4.00	N 67°26'24" E	-
30	29-30	262574.2450	231494.2339	4.00	N 67°26'24" E	-
31	30-31	262538.1263	231529.6119	4.55	N 22°33'36" W	-
AREA = 23.8301 sq mt. = 0.0061 ccha.						

\* (TO BE TRANSFER BY THE OWNER, MUNICIPALITY OF BAYAMÓN, TO DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS)

**PARCEL No. 003-01 (T.B.T.)**  
OWNER: MUNICIPALITY OF BAYAMÓN

POINT	LINE	(1) NORTH	(2) EAST	DISTANCE	BEARINGS	DESCRIPTION
30	---	262579.8465	231491.9910	---	---	---
31	30-31	262538.1263	231529.6119	4.55	N 22°33'36" W	-
32	31-32	262592.8049	231556.8030	13.97	S 67°26'24" W	-
33	32-33	262592.8049	231556.8030	13.97	S 67°26'24" W	-
34	33-34	262593.9290	231584.2933	13.97	N 67°26'24" E	-
35	34-35	262593.9290	231584.2933	13.97	N 67°26'24" E	-
AREA = 63.1770 sq mt. = 0.0161 ccha.						

\* (TO BE TRANSFER BY THE OWNER, MUNICIPALITY OF BAYAMÓN, TO DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS)

DATE	BY	DESIGN	DRAWING	CHECK	FINAL PLANS
07/27/23					

**CMA ARCHITECT & ENGINEERS**

MUNICIPALITY OF BAYAMÓN

**PR-2 AND PR-6**  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

DESIGN WORK

DATE

BY

CHECK

FINAL CHECK

DATE

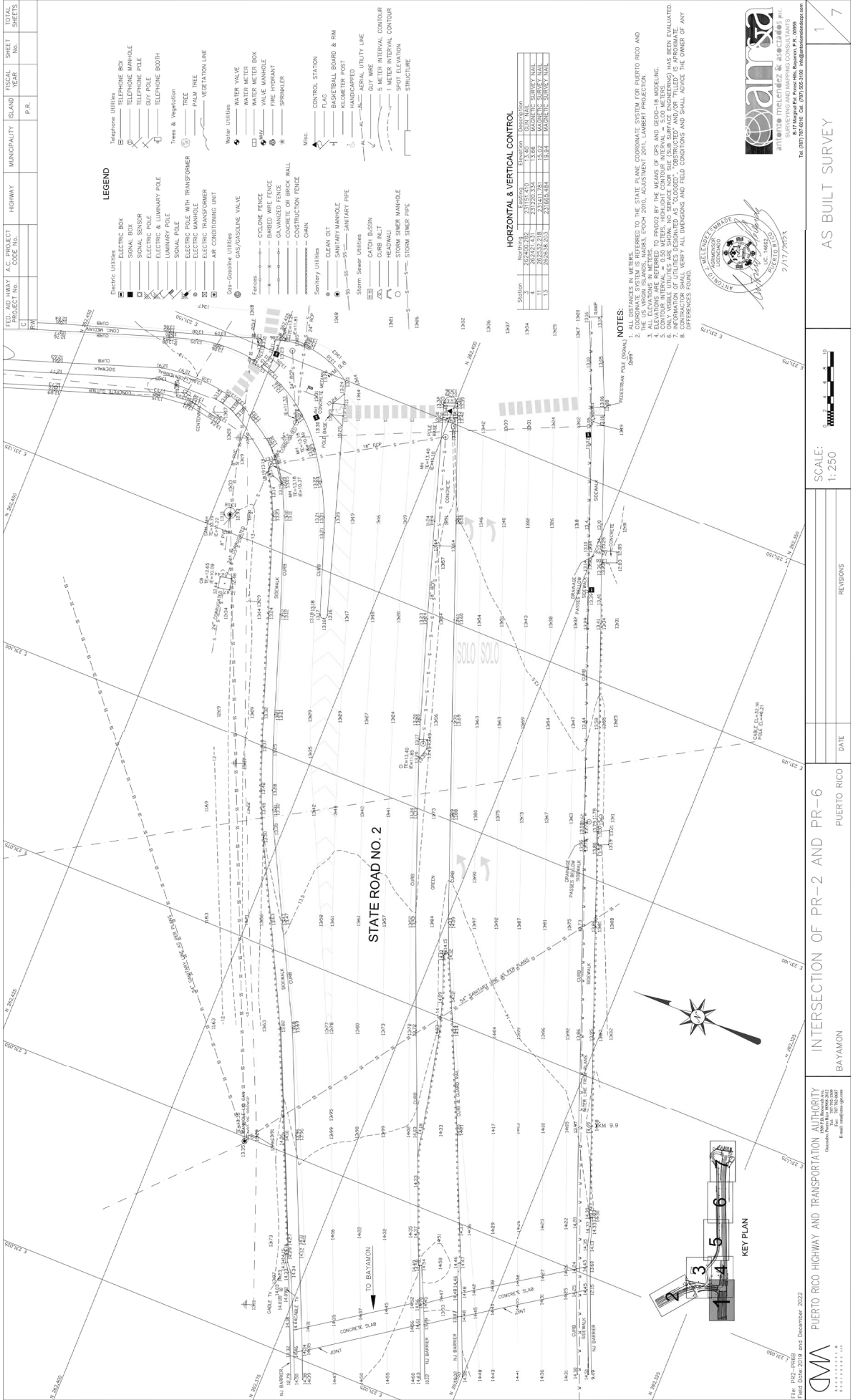
DATE

REVISIONS

NOT TO SCALE

LAND ACQUISITION TABLES

ROW	04
-----	----



**LEGEND**

- Telephone Utilities**
- TELEPHONE BOX
  - TELEPHONE MANHOLE
  - TELEPHONE POLE
  - TELEPHONE GUY POLE
  - TELEPHONE BODDY
- Trees & Vegetation**
- TREE
  - PALM TREE
  - VEGETATION LINE
- Water Utilities**
- WATER VALVE
  - WATER METER BOX
  - VALVE MANHOLE
  - FIRE HYDRANT
  - SPRINKLER
- Misc.**
- CONTROL STATION
  - BASKETBALL BOARD & RM
  - KILOMETER POST
  - HANDICAPPED
  - AERIAL UTILITY LINE
  - 1 METER INTERVAL CONTOUR
  - SPOT ELEVATION
  - STRUCTURE
- Electric Utilities**
- ELECTRIC BOX
  - SIGNAL SENSOR
  - ELECTRIC & LUMINARY POLE
  - LUMINARY POLE
  - SIGNAL POLE WITH TRANSFORMER
  - ELECTRIC MANHOLE
  - ELECTRIC TRANSFORMER
  - AIR CONDITIONING UNIT
- Gas-Composite Utilities**
- GAS/GASOLINE VALVE
- Fences**
- CYCLOPE FENCE
  - BARED WIRE FENCE
  - CONCRETE OR BRICK WALL
  - CONSTRUCTION FENCE
  - CHAIN
- Sanitary Utilities**
- CLEAN OIT
  - SANITARY MANHOLE
  - SANITARY JUNCTION PIPE
- Storm Sewer Utilities**
- CHUB WALT
  - HEADWALL
  - STORM SWIR MANHOLE
  - STORM SWIR PIPE

**HORIZONTAL & VERTICAL CONTROL**

Station	Horizontal Control	Vertical Control
1297	202420.282	23151.410
1300	202420.282	23151.410
1303	202420.282	23151.410
1306	202420.282	23151.410
1309	202420.282	23151.410
1312	202420.282	23151.410
1315	202420.282	23151.410
1318	202420.282	23151.410
1321	202420.282	23151.410
1324	202420.282	23151.410
1327	202420.282	23151.410
1330	202420.282	23151.410
1333	202420.282	23151.410
1336	202420.282	23151.410
1339	202420.282	23151.410
1342	202420.282	23151.410
1345	202420.282	23151.410
1348	202420.282	23151.410
1351	202420.282	23151.410
1354	202420.282	23151.410
1357	202420.282	23151.410
1360	202420.282	23151.410
1363	202420.282	23151.410
1366	202420.282	23151.410
1369	202420.282	23151.410
1372	202420.282	23151.410
1375	202420.282	23151.410
1378	202420.282	23151.410
1381	202420.282	23151.410
1384	202420.282	23151.410
1387	202420.282	23151.410
1390	202420.282	23151.410
1393	202420.282	23151.410
1396	202420.282	23151.410
1399	202420.282	23151.410
1402	202420.282	23151.410
1405	202420.282	23151.410
1408	202420.282	23151.410
1411	202420.282	23151.410
1414	202420.282	23151.410
1417	202420.282	23151.410
1420	202420.282	23151.410
1423	202420.282	23151.410
1426	202420.282	23151.410
1429	202420.282	23151.410
1432	202420.282	23151.410
1435	202420.282	23151.410
1438	202420.282	23151.410
1441	202420.282	23151.410
1444	202420.282	23151.410
1447	202420.282	23151.410
1450	202420.282	23151.410
1453	202420.282	23151.410
1456	202420.282	23151.410
1459	202420.282	23151.410
1462	202420.282	23151.410
1465	202420.282	23151.410
1468	202420.282	23151.410
1471	202420.282	23151.410
1474	202420.282	23151.410
1477	202420.282	23151.410
1480	202420.282	23151.410
1483	202420.282	23151.410
1486	202420.282	23151.410
1489	202420.282	23151.410
1492	202420.282	23151.410
1495	202420.282	23151.410
1498	202420.282	23151.410

- NOTES:**
- ALL DISTANCES IN METERS.
  - COORDINATE SYSTEM IS REFERRED TO THE STATE PLANE COORDINATE SYSTEM FOR PUERTO RICO AND ALL ELEVATIONS IN METERS TO REDUCED BY THE MEANS OF GPS AND GEO-10 MARKING.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.
  - CONTOUR INTERVAL = 0.50 METERS; HORIZONTAL CONTOUR INTERVAL = 5.00 METERS.



FILE: 192-1902-19  
 FIELD DATE: 2019 and December 2022  
**CMAA** PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY  
 (CORPORATION) 4000 BAYAMON AVENUE, SUITE 200, BAYAMON, PUERTO RICO 00961  
 BAYAMON

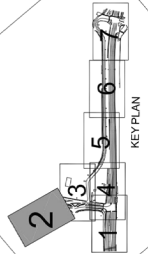
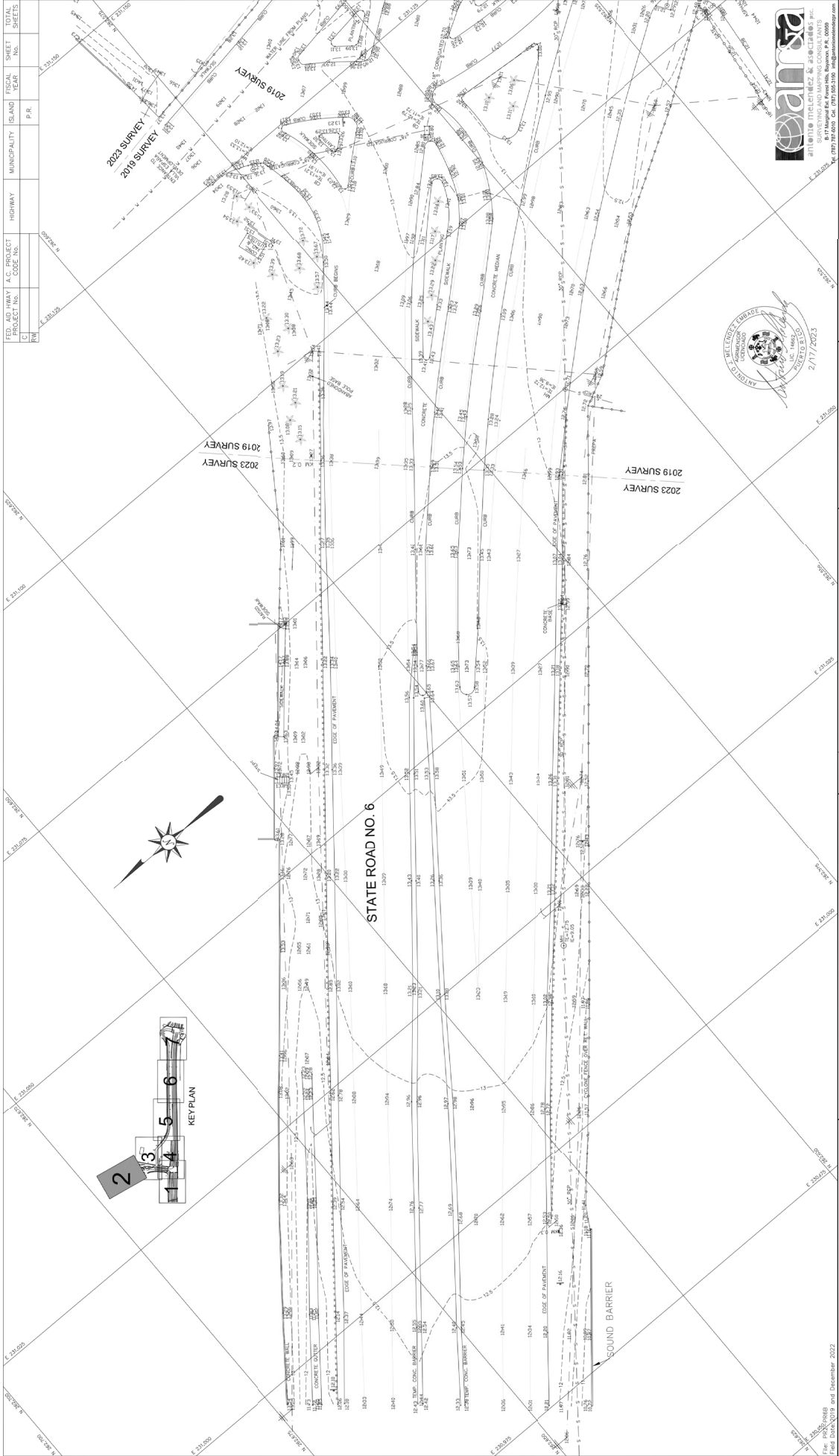
INTERSECTION OF PR-2 AND PR-6  
 PUERTO RICO

AS BUILT SURVEY

SCALE: 1:250

REVISIONS: \_\_\_\_\_ DATE: \_\_\_\_\_

SHEET NO. 1 OF 7



FED. AID HWAY C PROJECT NO.	A.C. PROJECT CODE NO.	HIGHWAY	MUNICIPALITY	ISLAND	FISCAL YEAR	TOTAL SHEET NO.	TOTAL SHEETS
PM				P.R.			



File: 1000000010  
 Issue Date: 2019 and December 2022

**CMA**  
 PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY  
 (Division: Highway and Transportation)

INTERSECTION OF PR-2 AND PR-6  
 BAYAMON

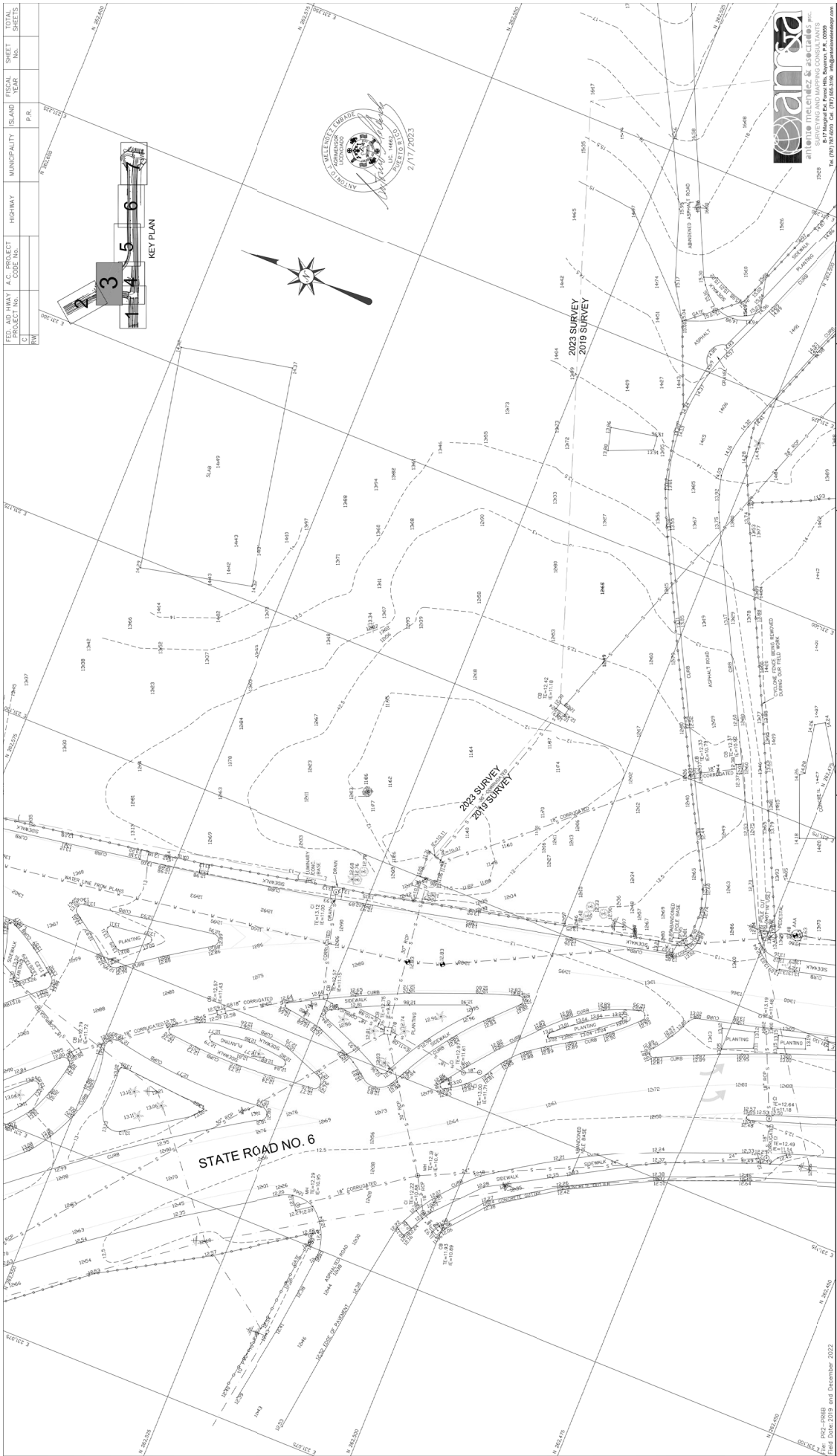
PUERTO RICO

DATE: \_\_\_\_\_  
 REVISIONS: \_\_\_\_\_

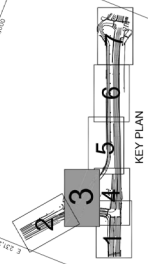
SCALE: 1:250

AS BUILT SURVEY

2 / 7



FED. AID HWAY PROJECT NO.	A.C. PROJECT CODE NO.	HIGHWAY	MUNICIPALITY	ISLAND	FISCAL YEAR	TOTAL SHEETS
				P.R.		



PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY  
 (Division of Highway and Transportation)

INTERSECTION OF PR-2 AND PR-6  
 BAYAMON

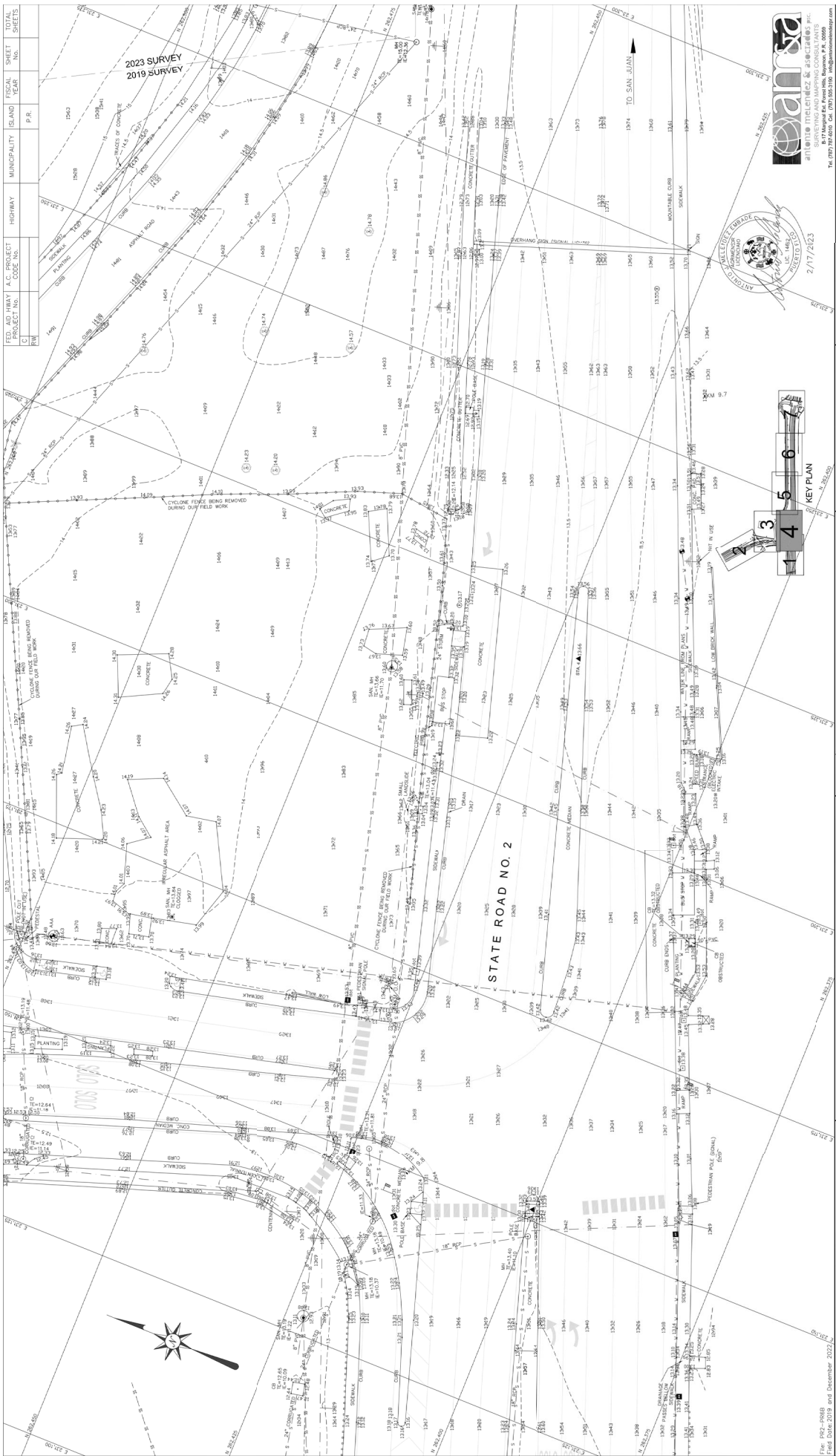
AS BUILT SURVEY

SCALE: 1:250

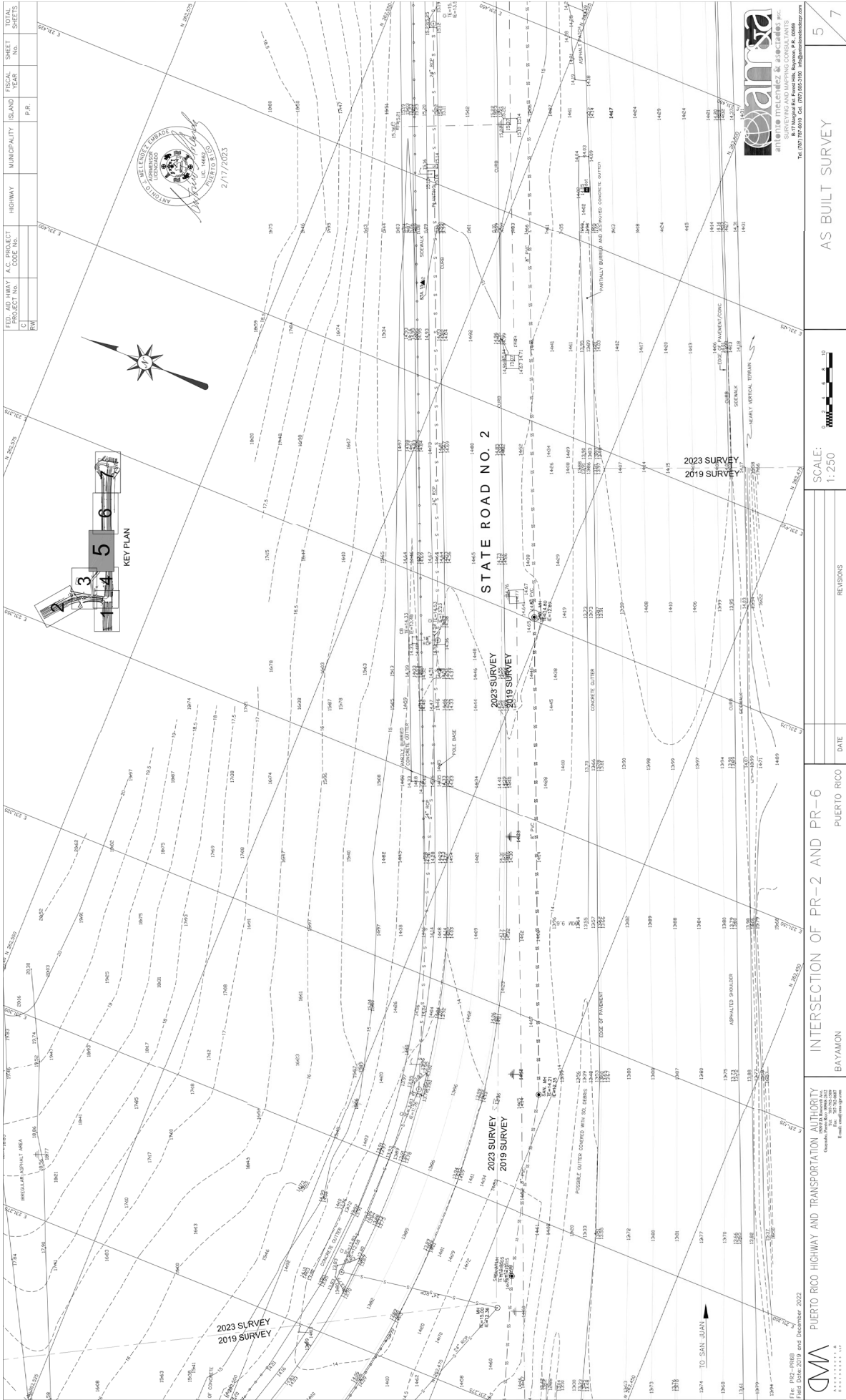
DATE: \_\_\_\_\_ REVISIONS: \_\_\_\_\_

3 7





File: 192-0660 Field Date: 2019 and December 2022 2023 SURVEY 2019 SURVEY	FEDERAL AID HIGHWAY PROJECT CODE NO. 1496 A.C. PROJECT CODE NO. 1496 ISLAND P.R. 1963	MUNICIPALITY BAYAMON	FISCAL YEAR 2023	SHEET NO. 4	TOTAL SHEETS 7
PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY (U.S. DEPARTMENT OF TRANSPORTATION) BAYAMON					
ANTELOPE INTELLIGENCE & SURVEILLANCE CONSULTANTS SURVEYING AND MAPPING CONSULTANTS 2/17/2023					
SCALE: 1:250 REVISIONS: _____ DATE: _____					



FEDERAL HIGHWAY PROJECT NO. \_\_\_\_\_  
 STATE PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. \_\_\_\_\_  
 MUNICIPALITY \_\_\_\_\_  
 ISLAND \_\_\_\_\_  
 P.R. \_\_\_\_\_  
 TOTAL SHEETS \_\_\_\_\_  
 SHEET NO. 5

AS BUILT SURVEY  
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 METERS

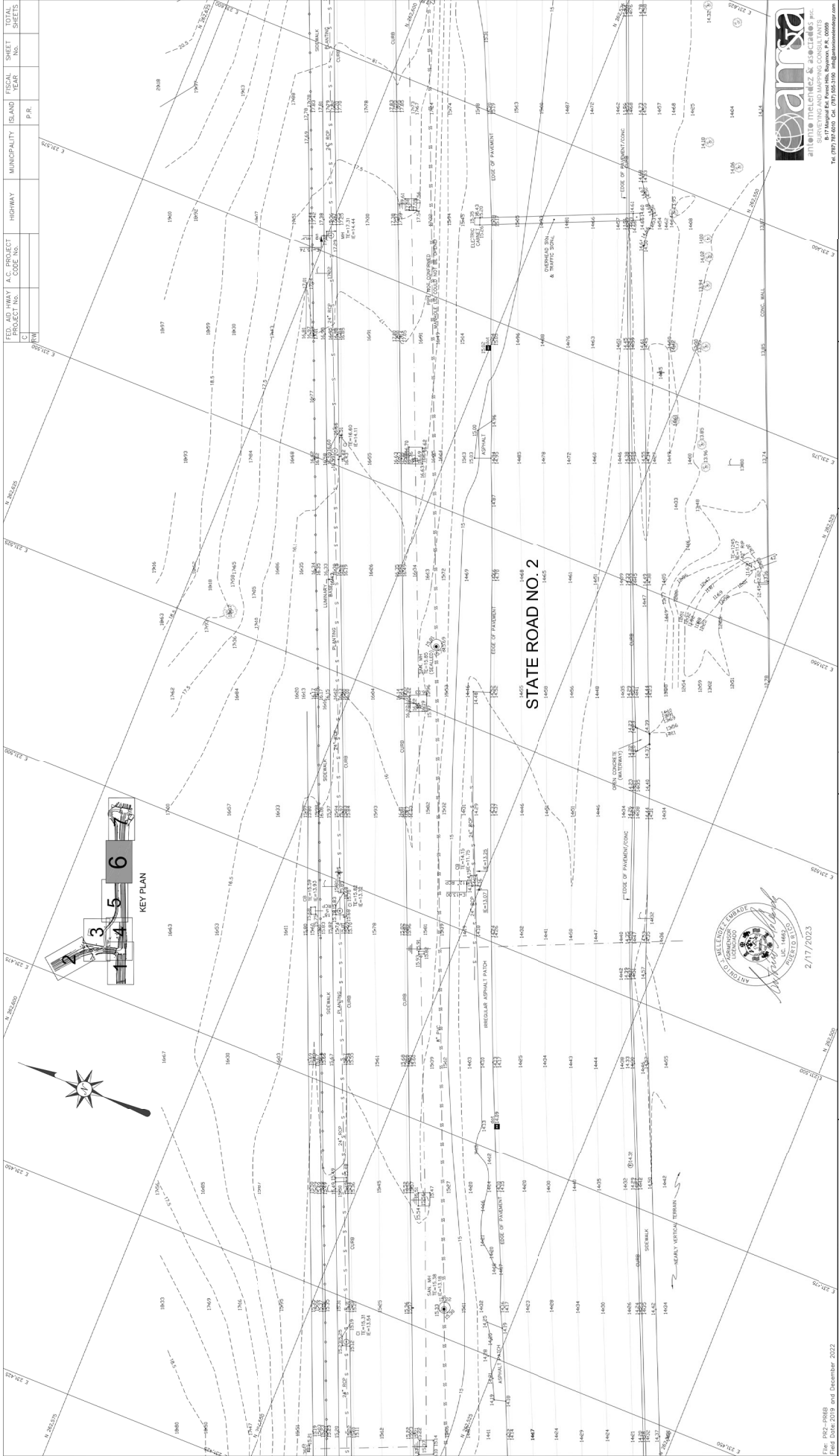
PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY  
 (Division of Highway and Bridge Maintenance)  
 File: PR2-PR66  
 Field Date: 2019 and December 2022

NO.	DATE	REVISIONS

INTERSECTION OF PR-2 AND PR-6  
 BAYAMON

CIMA SURVEYING & MAPPING CONSULTANTS  
 INC.  
 12850 RIVER ROAD, SUITE 302  
 BAYAMON, P.R. 00961  
 Tel: (787) 822-0200 Fax: (787) 822-0207  
 www.cimasurveying.com





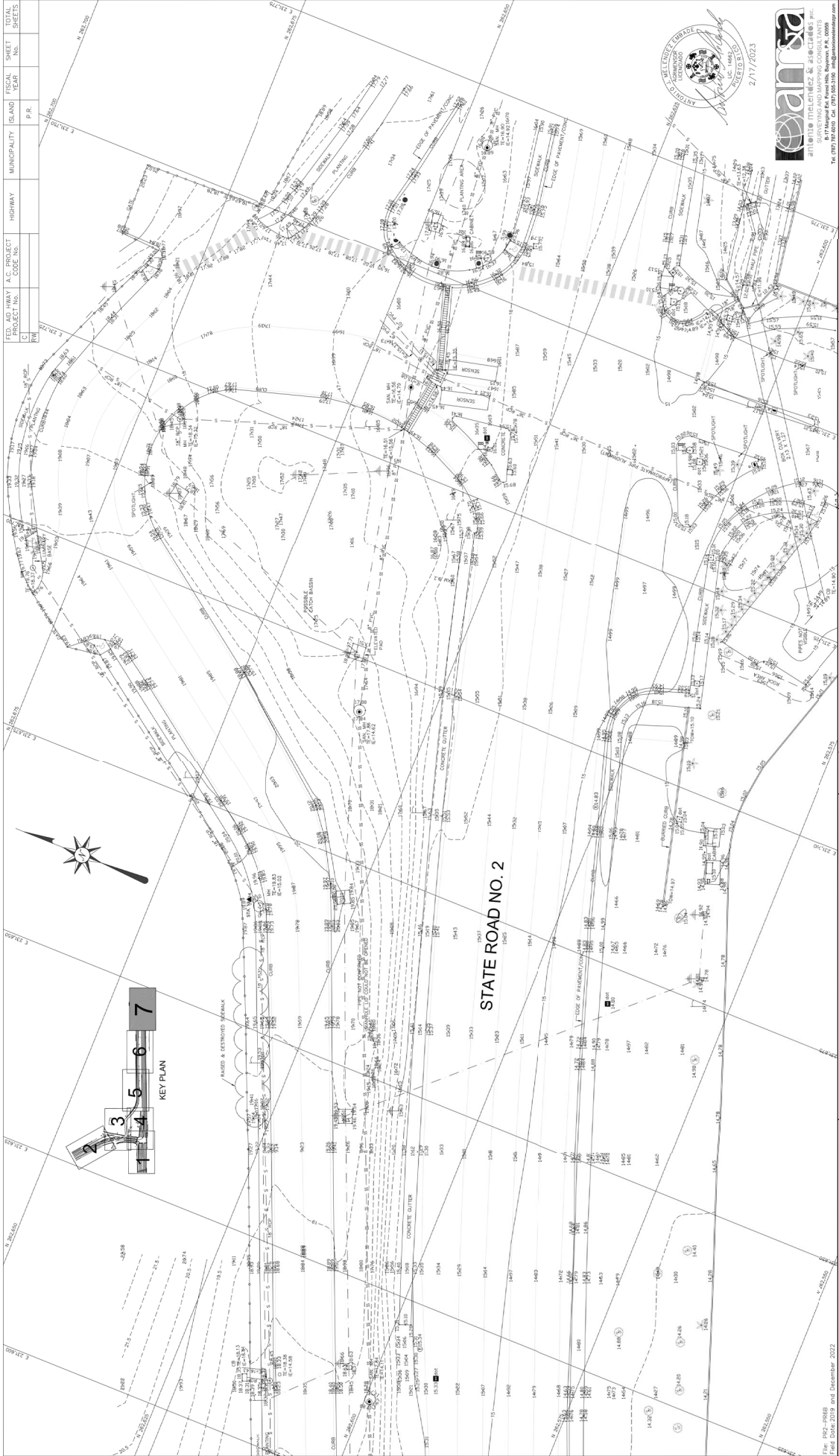
**STATE ROAD NO. 2**



File: 1922-0060 Field Date: 2019 and December 2022	<b>CMAA</b> PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY <small>(Division of Highway and Transportation)</small> P.O. Box 10000, San Juan, PR 00910-0000 Phone: (787) 724-2000 Fax: (787) 724-2009	INTERSECTION OF PR-2 AND PR-6 BAYAMON		SCALE: 1:250		AS BUILT SURVEY	6 7
		DATE	REVISIONS				



FED. AID HWY PROJECT NO.	A.C. PROJECT CODE NO.	HIGHWAY	MUNICIPALITY	ISLAND	FISCAL YEAR	TOTAL SHEET NO.



FED. AID HWAY PROJECT NO.	A.C. PROJECT CODE NO.	HIGHWAY	MUNICIPALITY	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2	1000	PR-2	BAYAMON	PR	2022	7

**STATE ROAD NO. 2**

INTERSECTION OF PR-2 AND PR-6  
BAYAMON

SCALE: 1:250

AS BUILT SURVEY

DATE

REVISIONS

PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY  
BAYAMON

CMAA

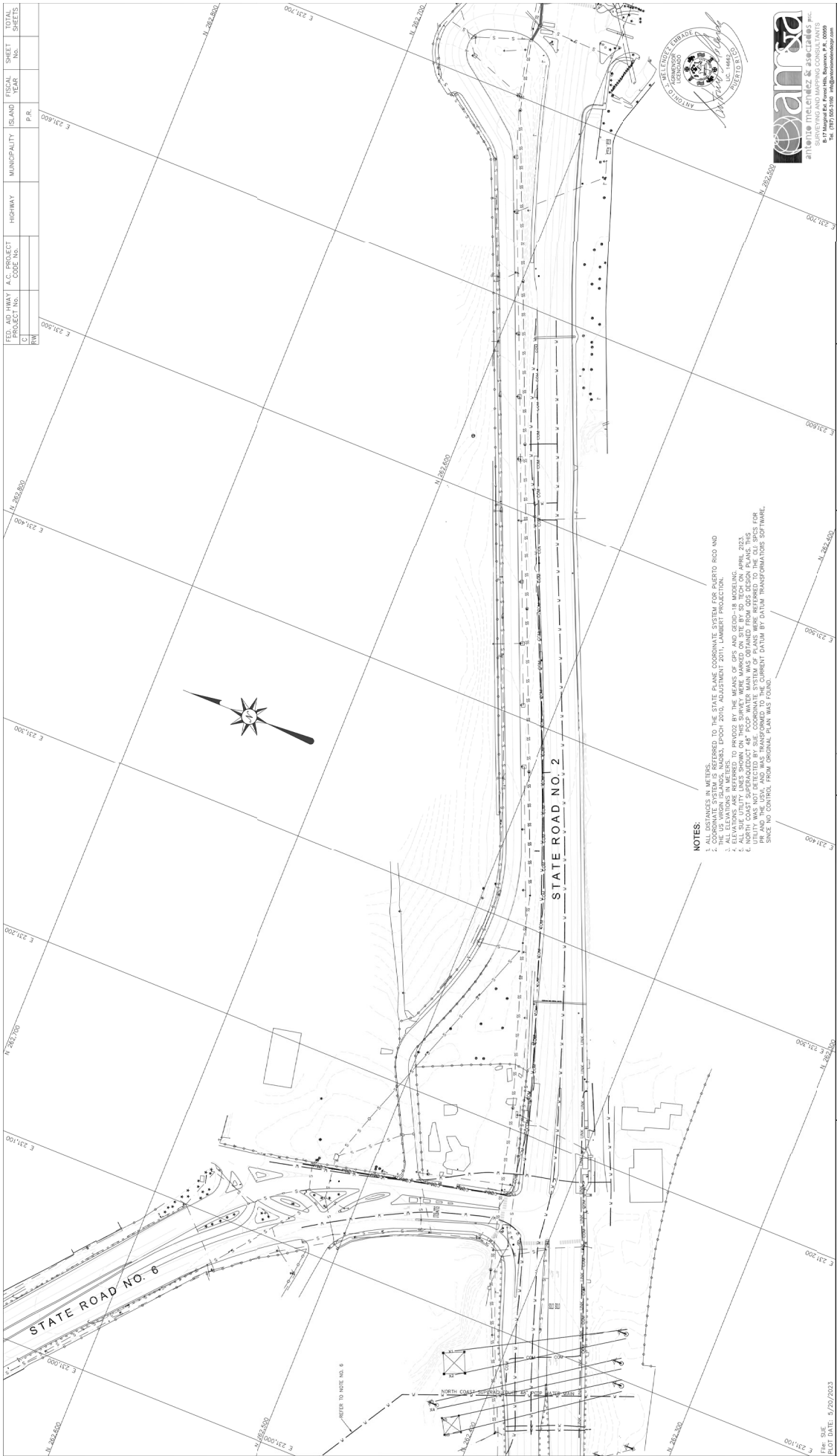
File: 192-PR60  
Field Date: 2019 and December 2022

CMAA CONSULTING GROUP INC.  
 10000 N. 15th Ave., Suite 100  
 Miami, FL 33176-2000  
 Phone: 305.444.1000  
 Fax: 305.444.1001  
 Email: info@cmaa.com

ANA CONSULTING INC.  
 SURVEYING AND MAPPING CONSULTANTS  
 10000 N. 15th Ave., Suite 100  
 Miami, FL 33176-2000  
 Phone: 305.444.1000  
 Fax: 305.444.1001  
 Email: info@ana.com

WILFREDO E. RODRÍGUEZ  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 10000  
 EXPIRES 12/31/2023

7	7
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**NOTES:**

1. ALL DIMENSIONS ARE IN METERS.
2. COORDINATE SYSTEM IS REFERRED TO THE STATE PLANE COORDINATE SYSTEM FOR PUERTO RICO AND THE US VIRGIN ISLANDS, NAD83, EPOCH 2010, ADJUSTMENT 2011, LAMBERT PROJECTION.
3. ELEVATIONS ARE REFERRED TO PRINCE OF GEORGE AND GEORGE-TOWN MODELING DATUM, 2003.
4. NORTH COAST SUPERSECT 48' PCP WATER MAIN WAS OBTAINED FROM GDS DESIGN PLANS, THIS DRAWING WAS TRANSMANAGED TO THE CURRENT DATUM.
5. THE NORTH COAST SUPERSECT 48' PCP WATER MAIN WAS OBTAINED FROM GDS DESIGN PLANS, THIS DRAWING WAS TRANSMANAGED TO THE CURRENT DATUM.
6. SINCE NO CONTROL FROM ORIGINAL PLAN WAS FOUND.



**melendez**  
**MELLENDEZ & ASSOCIATES, INC.**  
 SURVEYING AND MAPPING CONSULTANTS  
 10000 Highway 100, Suite 100  
 Bayamon, Puerto Rico 00961  
 Tel: (787) 505-1510 info@melendez.com

PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY <small>(Division of Bayamon and San Juan)</small> Bayamon, P.R. 00961		INTERSECTION OF PR-2 AND PR-6 BAYAMON		PUERTO RICO		DATE		REVISIONS		SCALE: 1:1,000		SUE UTILITY SURVEY		1 / 1	
--	--	--	--	-------------	--	------	--	-----------	--	----------------	--	--------------------	--	-------	--

**Attachment 2: Distance to Airports Map**



## Distance to Airports Map

PR-CRP-001109 - Geometric Improvements to PR-2 & PR-6 Intersection

**Coord (lat/log):** 18.396966°, -66.138431°

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Source: Federal Aviation Administration (FAA), 2023, National Transportation Atlas Database, accessed May 17, 2023, at URL

<https://www.bts.gov/ntad>

Project site includes a 15,000-foot buffer

Prepared by ICF

**Attachment 3: Coastal Barrier Resources Map**

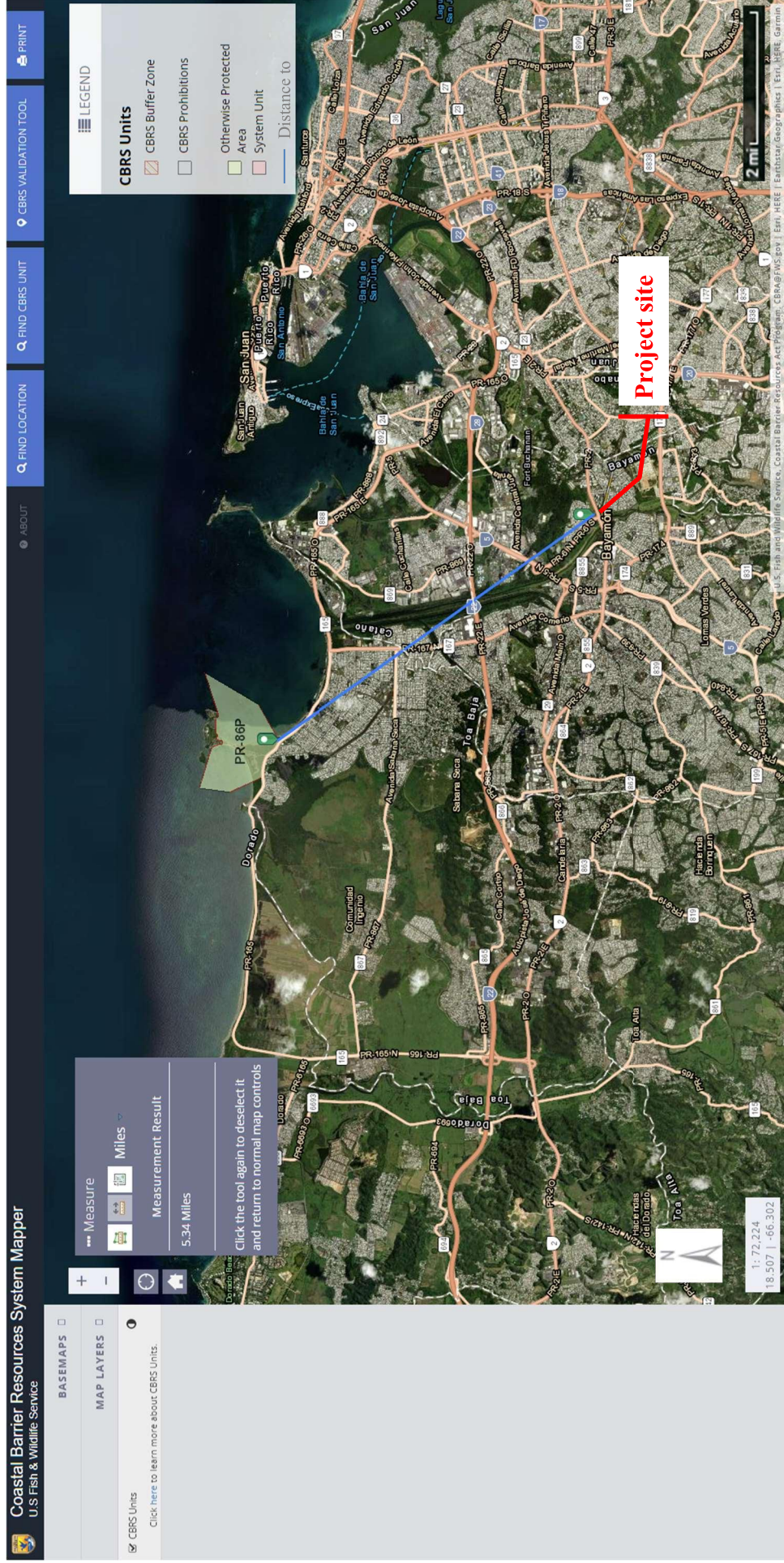


# Coastal Barrier Resources Map

PR-CRP-001109 - Geometric Improvements to PR-2 & PR-6 Intersection

Coord (lat/log): 18.396966°, -66.138431°

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Source: US Fish and Wildlife Service (USFWS), 2023, US Coastal Barrier Resources System Mapper (Version 2), at URL <https://fwprimary.wim.usgs.gov/CBRSMapper-v2/>

Prepared by ICF

**Attachment 4: Flood Maps**

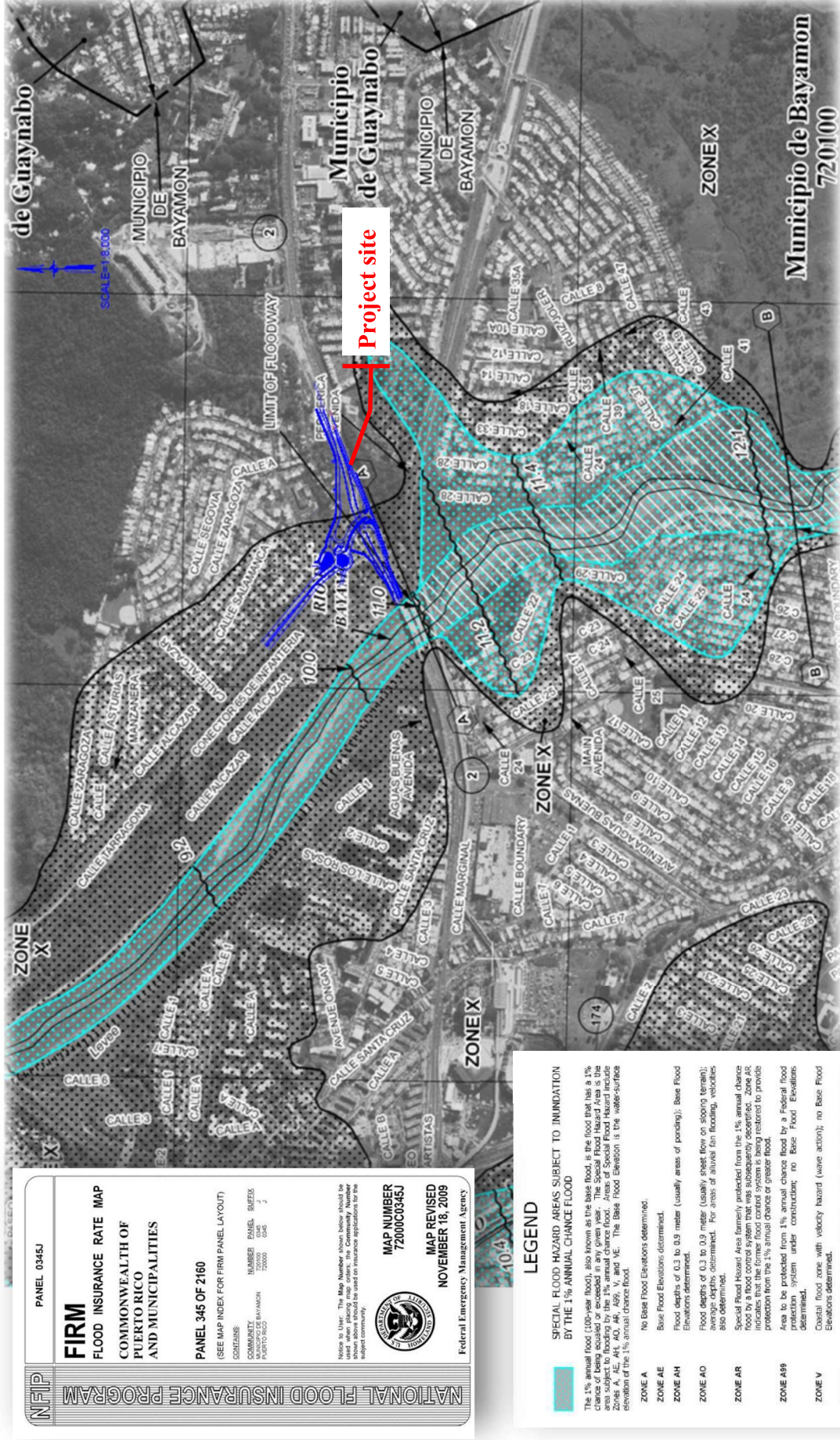


### 4.a. Flood Insurance Rate Map

PR-CRP-0011109 - Geometric Improvements to PR-2 & PR-6 Intersection

**Coord (lat/long):** 18.396966°, -66.138431°

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



**NFIP** PANEL 0345J  
**FIRM**  
 FLOOD INSURANCE RATE MAP  
 COMMONWEALTH OF  
 PUERTO RICO  
 AND MUNICIPALITIES

PANEL 345 OF 2160  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY: MUNICIPIO DE BAYAMON  
 NUMBER: 72000  
 PANEL: 0345  
 SUFFIX: 1

Map Number: 72000C0345J  
 Map Revised: NOVEMBER 18, 2009  
 Federal Emergency Management Agency

Note to User: The Map Number above herein should be used when placing map orders. The Community Number above herein should be used when requesting information for the subject community.

**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**

**ZONE A**  
 The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include areas of 1% annual chance flood and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE AE**  
 No Base Flood Elevations determined.

**ZONE AH**  
 Base Flood Elevations determined.

**ZONE AO**  
 Flood depths of 0.3 to 0.9 meter (usually areas of ponding); Base Flood Elevations determined.

**ZONE AR**  
 Flood depths of 0.3 to 0.9 meter (usually sheet flow on sloping terrain); average depths determined. For areas of altuvél from flooding, velocities also determined.

**ZONE A99**  
 Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decommissioned. Zone AR indicates that the former flood control system is being retained to provide protection from the 1% annual chance flood of a greater flood.

**ZONE V**  
 Area to be protected from 1% annual chance flood by a Federal flood insurance rate reduction system under construction; no Base Flood Elevations determined.

**ZONE VE**  
 Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**  
 The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstructions to ensure that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**  
 Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 0.3 meter or with drainage areas less than 2.6 square kilometers; and areas protected by levees from 1% annual chance flood.

Image provided by **CIMA ARCHITECTS & ENGINEERS LLC**  
 Layout prepared by ICF



#### 4.b. Advisory Base Flood Elevation Map

PR-CRP-0011109 - Geometric Improvements to PR-2 & PR-6 Intersection

**Coord (lat/log):** 18.396966°, -66.138431°

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Image provided by **CMA ARCHITECTS & ENGINEERS LLC**  
 Layout prepared by ICF  
 Data source: <https://gis-r2-fema.hub.arcgis.com/pages/puertorico>

**Attachment 5: EPA Green Book and Nonattainment/Maintenance Map**

## Puerto Rico Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants

Data is current as of July 31, 2023

Listed by County, NAAQS, Area. The 8-hour Ozone (1997) standard was revoked on April 6, 2015 and the 1-hour Ozone (1979) standard was revoked on June 15, 2005.

\* The 1997 Primary Annual PM-2.5 NAAQS (level of 15 µg/m<sup>3</sup>) is revoked in attainment and maintenance areas for that NAAQS. For additional information see the PM-2.5 NAAQS SIP Requirements Final Rule, effective October 24, 2016. (81 FR 58009)

Change the State:

Important Notes

County	NAAQS	Area Name	Nonattainment in Year	Redesignation to Maintenance	Classification	Whole or Part County	Population (2010)	State/County FIPS Codes
<p style="text-align: right;">Download National Dataset: dbf   xls   Data dictionary (PDF)</p>								
<b>PUERTO RICO</b>								
Arecibo Municipio	Lead (2008)	Arecibo, PR	11121314151617181920212223	//		Part	32,185	72/013
Bayamon Municipio	Sulfur Dioxide (2010)	San Juan, PR	181920212223	//		Part	22,921	72/021
Catano Municipio	Sulfur Dioxide (2010)	San Juan, PR	181920212223	//		Whole	28,140	72/033
Guaynabo Municipio	PM-10 (1987)	Mun. of Guaynabo, PR	929394959697989900010203040506070809	02/11/2010	Moderate	Part	90,470	72/061
Guaynabo Municipio	Sulfur Dioxide (2010)	San Juan, PR	181920212223	//		Part	23,802	72/061
Salinas Municipio	Sulfur Dioxide (2010)	Guayama-Salinas, PR	181920212223	//		Part	23,401	72/123
San Juan Municipio	Sulfur Dioxide (2010)	San Juan, PR	181920212223	//		Part	147,963	72/127
Toa Baja Municipio	Sulfur Dioxide (2010)	San Juan, PR	181920212223	//		Part	52,441	72/137

Important Notes

Source: Environmental Protection Agency (EPA) 2023, Puerto Rico Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, accessed August 8, 2023 at URL [https://www3.epa.gov/airquality/greenbook/anayo\\_pr.html](https://www3.epa.gov/airquality/greenbook/anayo_pr.html)



# Nonattainment Area Map

PR-CRP-001109 - Geometric Improvements to PR-2 & PR-6 Intersection

Coord (lat/log): 18.396966°, -66.138431°

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Version 2023.04.001

Home | Mobile | Help

18°23'50.9\"N 66°08'15.7\"W

Basemap Imagery Draw Erase Save Session Tools More Data

**Select Map Contents**

- EPA Facilities
- Water Monitoring Stations
- Boundaries
- Non-attainment Areas
  - Ozone 8-hr (1997 standard)
  - Ozone 8-hr (2008 standard)
  - Ozone 8-hr (2015 Standard)
  - Lead (2008 standard)
  - SO2 1-hr (2010 standard)
  - Nonattainment
- Maintenance
  - PM2.5 24hr (2006 standard)
  - PM2.5 Annual (1997 standard)
  - PM2.5 Annual (2012 standard)
  - PM10 (1987 standard)
  - CO (1971 Standard)
  - Ozone 1-hr (1979 standard-revoked)
  - NO2 (1971 Standard)
- EJScreen Indexes (2021)
- Water
- Transportation
- Places
- Critical Habitat
- NWI Wetlands
- FEMA Flood
- Land Cover

Source: EPA Office of Air and Radiation (OAR) - Office of Air Quality Planning and Standards (OAQPS), Nonattainment Areas (MapServer) accessed May 17, 2023, at URL [https://gispub.epa.gov/atqis/rest/services/OAR\\_OAQPS/NonattainmentAreas/MapServer](https://gispub.epa.gov/atqis/rest/services/OAR_OAQPS/NonattainmentAreas/MapServer)

Prepared by ICF

**Attachment 6: Coastal Zone Boundary Map**

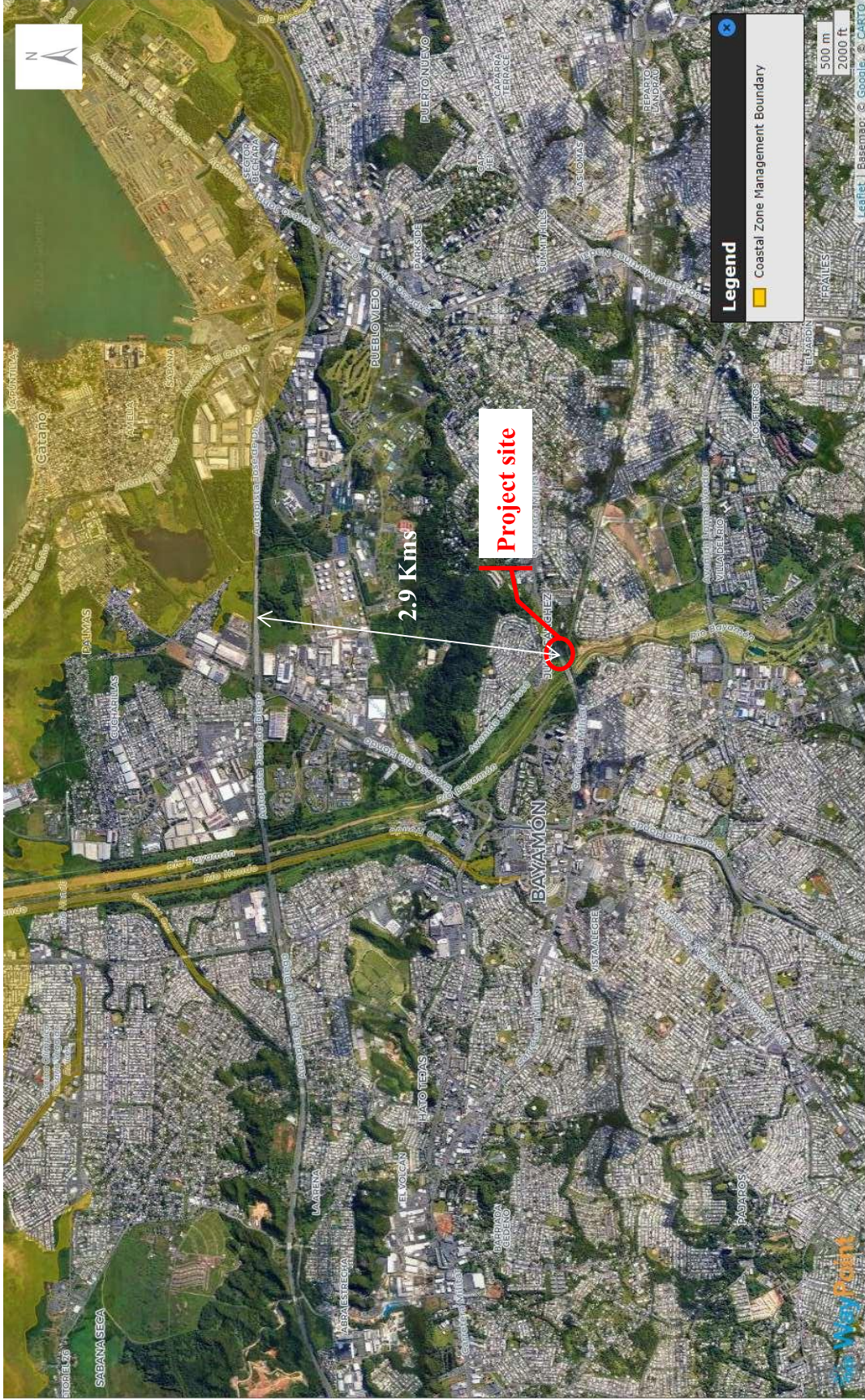


## Coastal Zone Boundary Map

PR-CRP-001109 - Geometric Improvements to PR-2 & PR-6 Intersection

**Coord (lat/long):** 18.396966°, -66.138431°

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Source: US National Oceanic and Atmospheric Administration (NOAA), 2018, US Coastal Zone Management Act boundary (Ver. 20180830), accessed September 13, 2019 at URL <https://koordinates.com/layer/20522-us-coastal-zone-management-act-boundary/>

Prepared by  ICF

**Attachment 7: Contamination and Toxic Substances Map –  
Supporting information**

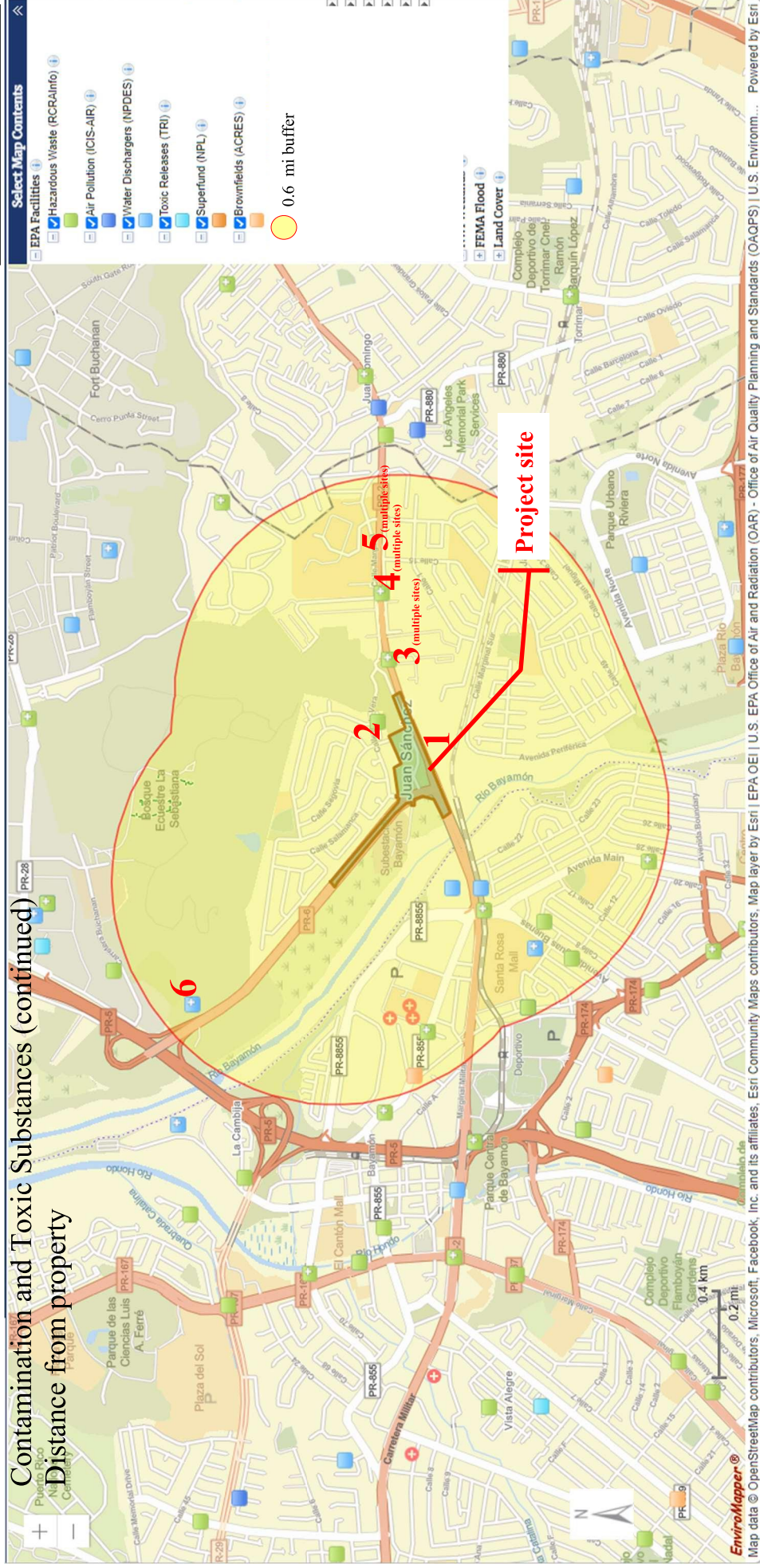


# Contamination and Toxic Substances Map

PR-CRP-001109 - Geometric Improvements to PR-2 & PR-6 Intersection


Coord (lat/log): 18.396966°, -66.138431°

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Source: EPA Envirofacts, 2023, accessed May 17, 2023, at URL <https://nepassisttool.epa.gov/nepassist/nepamap.aspx>

Project buffer = 0.6 mi

Prepared by  icf

ID	EPA FACILITY	DISTANCE FROM SITE	DIRECTION FROM SITE	DESCRIPTION/COMMENTS
1	Hazardous Waste (RCRAInfo)	100 ft	South	<p>Shell Co Pr Ltd - Artemio Ss 804509  PR-2 KM 9.6  Handler ID: PRR000003848  CARR PR 2 KM 9.6, BAYAMON, PR 00619  Latitude: 18.397502  Latitude: -66.136512  Hazardous Waste Generator:  Owner Name: THE SHELL CO PR LTD</p> <p>Information from the NEPAAssist website identifies the above-mentioned site to the south of the roads PR-2 and PR-6 intersection as a Hazardous Waste generator. Review of available maps do not illustrate a facility at the site, nor was a facility visible during site inspection. Based on the name, this may well have been a fuel service station. The DNRA was contacted (visit to offices) to request information on the site due to the possible presence of underground storage tank (UST). The DRNA personnel indicated that based on the SS ID, there are no files available for the site. The EPA was also contacted but referred the case to DNER. The facility was searched for in DRNA's records for Active and Inactive Leaking Underground Storage Tanks (LUST) lists but was not identified in either list with this address or complete ID number. Thus, no readily available information exists on the past activities at the site, or even if this is the correct location of said activities. However, the area will not be perturbed by the project, the hydraulic gradient is towards the West (to the river), and the excavations for the project will occur some 110 feet to the north of where the property is suspected to be located. Therefore, there is a low probability that any remnants of past uses will be affected by the development of the project or its intended/proposed use.</p>
2	Hazardous Waste (RCRAInfo)	297 ft	West	<p>Hd Supply Facilities Maintenance Ltd #2625  CALLE C LOT 3 CORUJO INDUSTRIAL PARK  GUAYNABO, PR 00965  Handler ID: PRR000026344  Latitude: 18.399284  Latitude: -66.13559  Hazardous Waste Generator:  Owner Name: WPR HATO TEJAS LP S.E  Industries: Warehousing and Storage</p> <p>The information on the EPA's website is contradictory. The coordinates are in Bayamon area currently residential in use, but the address indicates it's in Guaynabo. The Regulatory information indicates "Inactive Other (PRR000026344)", but it also seems to indicate there were e-waste manifests for 2020 and 2021. Futher investigation shows the Corujo Industrial Park, where the address for this site indicates, is located further West in the municipality of Bayamon.</p>

Information provided via the web (<http://www.hdsupply.com/>) indicates that HD Supply is an industrial distributor in North America. The company provides a broad range of products and value-added services to approximately 500,000 professional customers in maintenance, repair and operations, infrastructure and power and specialty construction sectors. However, there were no locations in Puerto Rico found on the company's website. It appears the site has an incorrect location and name in EPA's database. Search in current maps and the site visit confirms this site is not at the said location.

3	Hazardous Waste (RCRAInfo)	560 ft	East	AUTO NUEVO INC Handler ID: PRN008006256 RD 2 BAYAMON, PR 99999 County Name: BAYAMON Latitude: 18.398382 Latitude: -66.132799 Hazardous Waste Generator: Very Small Quantity Generator Owner Name: NON REGULATED
3		676 ft	East	SOLAR ENERGY RESOURCES Handler ID: PRD987379294 ROAD NO 2 BAYAMON, PR 00619 County Name: BAYAMON Latitude: 18.39892 Latitude: -66.13292 Hazardous Waste Generator: Owner Name: NON NOTIFIER
3		560 ft	East	Technical Transmission Handler ID: PRR000020339 CARR #2 KM 19.6 BO CANDELARIA BAYAMON, PR 00956 County Name: BAYAMON Latitude: 18.398382 Latitude: -66.132799 Hazardous Waste Generator: Very Small Quantity Generator Owner Name: ANTONIO RIVERA
3		560 ft	East	WESTERN AUTO Handler ID: PRR000002014 CARR 2 - BAYAMON OESTE SC BAYAMON, PR 00956 County Name: BAYAMON Latitude: 18.398382 Latitude: -66.132799 Hazardous Waste Generator: Very Small Quantity Generator Owner Name: WESTERN AUTO
3		560 ft	East	WESTERN AUTO #8148 Handler ID: PRO007001571 RD #2 CORNER 179 LOCAL #8 BAYAMON, PR 00959 County Name: BAYAMON Latitude: 18.398842 Latitude: -66.13296

				Hazardous Waste Generator: Very Small Quantity Generator Owner Name: NON REGULATED
4	Hazardous Waste (RCRAInfo)	1,468 ft		Schnitzer Puerto Rico Dba Ponce Resources RD PR 2 KM 7.7 HATO TEJAS WARD BAYAMON, PR 00960 Handler ID: PRR000022640 RD PR 2 KM 7.7 HATO TEJAS WARD BAYAMON, PR 00960 County Name: BAYAMON Latitude: 18.399163 Latitude: -66.130842 Hazardous Waste Generator: Very Small Quantity Generator Owner Name: AUTONOMOUS MUNICIPALITY OF BAYAMON
4	Hazardous Waste (RCRAInfo)	1,468 ft	East	PAN AM SHOE CO 3 Handler ID: PRD987381274 161 COMERCIO ST PR RD 2 KM 8.9 HATILLO, PR 00659; SCHNITZER PUERTO RICO DBA PONCE RESOURCES Handler ID: PRR000022640 RD PR 2 KM 7.7 HATO TEJAS WARD BAYAMON, PR 00960; SHELL CO PR LTD SS 0710 SANTA ANA Handler ID: PRR000005868 RD PR 2 KM 8.9 JUAN DOMINGO BAYAMON, PR 00619
4	Hazardous Waste (RCRAInfo)	1,468 ft	East	SHELL CO PR LTD SS 0710 SANTA ANA Handler ID: PRR000005868 RD PR 2 KM 8.9 JUAN DOMINGO BAYAMON, PR 00619 County Name: BAYAMON Latitude: 18.399126 Latitude: -66.130169 Hazardous Waste Generator: Owner Name: THE SHELL CO PR LTD
5	Hazardous Waste (RCRAInfo)	2,502 ft	East	Auto Progreso Dealer PR RD 2 KM 8.7 BAYAMON, PR 00960 County Name: BAYAMON Latitude: 18.399138 Latitude: -66.128276 Hazardous Waste Generator: Owner Name: RAFAFEL GARCIA  Echo Report indicates site is inactive.

5	Hazardous Waste (RCRAInfo)	2,502 ft	East	<p>Popular Leasing - Caparra Site  PR-2 KM 8.6  GUAYNABO, PR 00970  POPULAR LEASING - CAPARRA SITE  Handler ID: PRR000006841  County Name: GUAYNABO  Latitude: 18.399112  Latitude: -66.12733  Hazardous Waste Generator:  Owner Name: POPULAR LEASING</p>
6	Water Dischargers (NPDES)	3,625 ft	North	<p>Echo Report indicates site is inactive.  Industrial Investment, Llc  BUCHANAN ROAD, LUCCHETTI INDUSTRIAL PARK  JUAN SN, PR 00961</p> <p>Site is too far to pose any type of concern for the project.</p>



## Contamination and Toxic Substances (continued)

UST in the vicinity of the proposed project

Source: PR Planning Board MIPR <https://gis.jp.pr.gov/mipr/>



### Site 1 UST

Gulf #139 / 860344

Identified in DRNA's ACTIVE SITE LUST LIST 2020 (page 5)

111	86-0334	Gulf #139	Bayamón	Carr 2 km 8.3	Caribbean Petroleum Corp.	Product in well	15-Jan-01
-----	---------	-----------	---------	---------------	---------------------------	-----------------	-----------

Located at 1,127 feet East of the project limit.

Carr. Pr-2, Km. 8.3, Juan Sánchez, Juan Sánchez, Bayamón

3 x 10,000 gals c/u

- The facility's UST file was revised at DNER office on October 16, 2023. The information in the file indicates that in 2011, fuel product was found in a monitoring well of the station. Subsequently, the Environmental Quality Board (EQB) requested a Corrective Action Plan via letter dated July 3, 2013. No Plan was available in the file. No additional information was available for review since 2013 to the present day. DNER staff informed that there is currently no technician assigned to the site.

### Site 2 UST

Escuela Sordo Ciegos/980150

Not listed in Active or Inactive LUST list.

Located at estimated 2,698 ft from project limit. Due to distance it is unlikely that it may impact the development of the project.

## Contamination and Toxic Substances (continued)

Environmental incidents in the vicinity of the proposed project

Source: PR Planning Board MIPR <https://gis.jp.pr.gov/mipr/>

Site ID: 2008-69-0015

Coordenadas: 18.39802, -66.13976



The PRDOH program staff reached out to the current operator of the facility and the following information was provided by Luisette X. Rios-Castaner, Environmental Director at LUMA:

We were checking and we have no documentation since the incident occurred more than 20 years ago. But we know that the incident was due to the fact that some transformers in Bayamón BTC were tripped, and all the oil was thrown away. At that time, state response agencies and contractors mobilized and managed to stop the oil before it reached the body of water adjacent to the facility.

It should be noted that the incident occurred in an area that slopes towards the river, not towards the project area.



## Contamination and Toxic Substances (continued)

### Past uses of the area

According to information gathered by Archeologist Marisol Rodriguez Miranda, the area of the proposed project was formally developed around the 1930's (Figure 11 of EDF report included in Attachment 10). The 1940's Census Map provides a glimpse of the initial alignment of road PR-2, which was some meters to the north of the road known today. The road alignment attracted residential development as can be visualized in the topographic map from 1953 (Figure 14 EDF report included in Attachment 10). The Villa Espana residential development, located to the North of the proposed project area, is visible in the 1963 Topographic map (Figure 15 of the EDF report included in Attachment 10). According to this map, the area was named La Caridad.

Photographic evidence from Google Earth shows that the entire project area was heavily developed for residential and possibly commercial purposes in the 1990's (see Google Earth Pro 1993 image below).



In the early 2000s the area continued to be occupied, but by 2010 most of the development activities were no longer present.



## Ground water movement information in Bayamon area

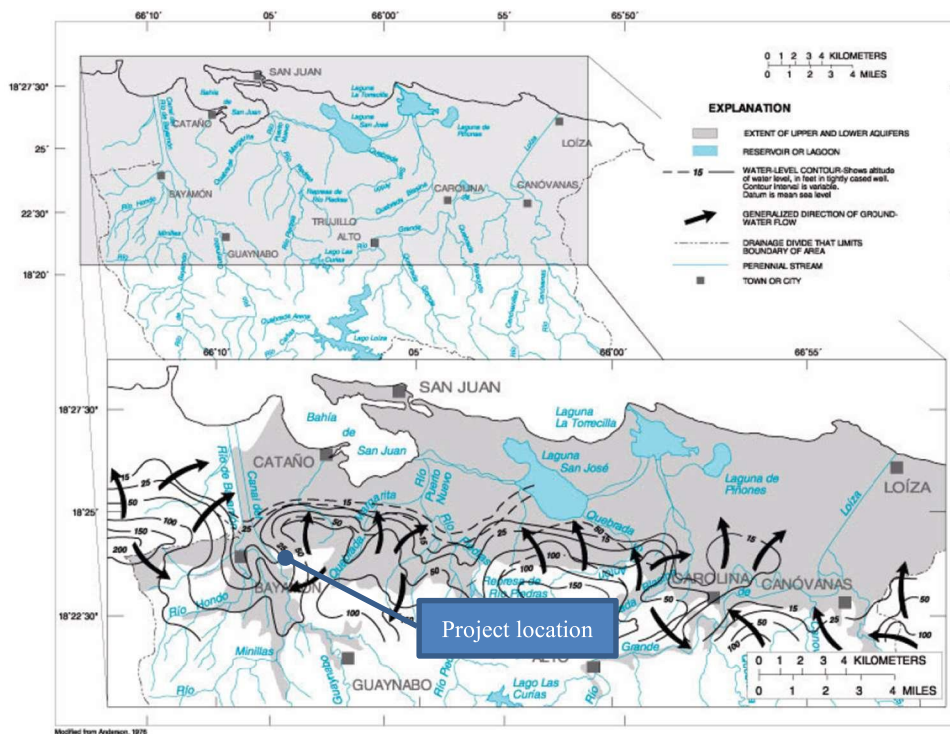


Figure 2.1.4.E-1 Altitude of water-level surface and direction of ground-water flow during 1971 in the Bayamón-Loiza region, Puerto Rico.

### 2.1.4.E Ground-Water Levels and Movement

Regional ground-water flow in the upper and lower aquifers within the Bayamón-Loiza region is northward from surficial exposures of the formations of Tertiary age, where the recharge occurs, to eventually discharge into swamps and lagoons along the coast (fig. 2.1.4.E-1). Ground water also moves locally towards the main stream systems of the Rio Bayamón, Rio Piedras, and Rio Grande de Loiza.

Higher ground-water levels are observed during the rainy season, which occurs from August through November and from April to May, than during the dry season. The difference between the highest and the lowest water-level altitude during 1987 in one observation well near Cataño and another near San Juan was about 4 and 9 feet, respectively.

Recharge to the water-bearing formations in the area is primarily from rainfall, but also from infiltration of streamflow. In the highly urbanized San Juan metropolitan area another possible source of recharge to the aquifer is leakage from water and sewer lines (Anderson, 1976, p.15). According to Anderson (1976, p. 27), the Rio Bayamón recharges the alluvium and the Tertiary age aquifers when ground-water levels are low, generally from January to April. During the rest of the year the aquifer either is in balance with the stream or contributes water to it.

Source:

Veve TD, Taggart BE, eds. Atlas of ground-water resources in Puerto Rico and the U.S. Virgin Islands / by Thalia D. Veva and Bruce E. Taggart (editors); prepared in cooperation with the U.S. Environmental Protection Agency. Published online 1996.

[https://www.recursosaguapuertorico.com/GW\\_Atlas\\_of\\_PR\\_USGS.pdf](https://www.recursosaguapuertorico.com/GW_Atlas_of_PR_USGS.pdf)

**Attachment 8: US Fish and Wildlife Service Blanket Clearance Letter  
documentation and Critical Habitat Map**



### Self-Certification

<http://www.fws.gov/caribbean/ES/Index.html>

#### Endangered Species Act Certification

The U.S. Fish and Wildlife Service, Caribbean Ecological Services Field Office developed a Blanket Clearance Letter in compliance with Endangered Species Act of 1973, as amended, and the Fish and Wildlife Coordination Act for federally funded projects.

The Service determined that projects in compliance with the following criteria are not likely to adversely affect federally-listed species.

Puerto Rico Department of Housing (PRDOH) certifies that the following project Geometric Improvements to PR-2 & PR-6 Intersection (PR-CRP-001109) consisting of the construction of a roundabout and other geometric improvements and located at the intersection of roads PR-2 and PR-6, complies with:

Check	Project Criteria
<input type="checkbox"/>	1. Street resurfacing.
<input type="checkbox"/>	2. Construction of gutters and sidewalks along existing roads.
<input type="checkbox"/>	3. Reconstruction or emergency repairs of existing buildings, facilities and homes.
<input type="checkbox"/>	4. Rehabilitation of existing occupied single-family homes, and buildings; provided that equipment storage or staging areas are not located on vacant property harboring a wetland and/or forested vegetation and that the lighting associated to the new facilities is not visible directly or indirectly from a beach.
<input type="checkbox"/>	5. Demolition of dilapidated single-family homes or buildings; provided that the demolition debris is disposed in certified receiving facilities; equipment storage or staging areas are not located on vacant property harboring a wetland and/or forested vegetation.
<input type="checkbox"/>	6. Rebuilding of demolished single-family homes or buildings, provided that the new construction is within the existing footprint of the previous

	structure and/or within pre- existing grassed or paved areas, and that the lighting associated to the new facilities are not visible directly or indirectly from a beach.
<input checked="" type="checkbox"/>	7. Activities within existing Right of Ways (ROWs) of roads, bridges and highways, when limited to actions that do not involve cutting native vegetation or mayor earth moving; and are not located within, or adjacent to, drainages, wetlands, or aquatic systems. These activities include the installation of potable water and sanitary pipelines.
<input type="checkbox"/>	8. Improvements to existing recreational facilities, including the installation of roofs to existing basketball courts, provided that the lighting associated to the facilities are not visible directly or indirectly from the beach.
<input type="checkbox"/>	9. Construction of electric underground systems in existing towns and communities, provided that the property is not a wetland area and the lighting associated to the facilities are not visible directly or indirectly from the beach.
<input type="checkbox"/>	10. Construction of facilities on vacant properties covered with grasses in urban areas, provided that the lighting associated to the facilities are not visible directly or indirectly from the beach.
<input type="checkbox"/>	11. Construction of houses, buildings or acquiring lands in urban areas covered by grass for relocation of low-income families and/or facilities that have been affected by weather conditions.

---

Ángel G. López-Guzmán  
Deputy Director  
Permits and Environmental Compliance Division

---

Date

Office of Disaster Recovery  
**Address:** P.O. Box 21365 San Juan, PR 00928  
**Telephone and Ext:** 787-274-2527 ext. 4320  
**Email:** [environmentcdbg@vivienda.pr.gov](mailto:environmentcdbg@vivienda.pr.gov)



June 17, 2023

Mr. Edwin Muñiz  
Field Supervisor  
U.S. Fish & Wildlife Service  
Boquerón Field Office  
PO Box 491  
Boquerón, PR 00622



Based on the information provided, we determined the project proposed qualifies for the blanket clearance letter. Nevertheless, if the project is modified this office should be contacted concerning the need for the initiation of consultation under section 7 of Endangered Species Act of 1973.

Reviewer **DAMARIS ROMAN RUIZ** Digitally signed by DAMARIS ROMAN RUIZ  
Date: 2023.07.20 11:30:51 -04'00'

**EDWIN MUNIZ** Digitally signed by EDWIN MUNIZ  
Date: 2023.07.20 12:27:19 -04'00'  
Caribbean ES Field Supervisor

**RE: Self-Certification under Blanket Clearance Letter for federally sponsored projects, Housing and Urban Development, for Geometric Improvements to PR-2 & PR-6 Intersection, PR-CRP-001109, Lat/Long: 18.399545, -66.1377941**

Dear Mr. Muniz:

We submit for your review the enclosed Self-Certification to fulfill requirements related with the Blanket Clearance Letter dated January 14, 2013. This information is submitted to comply with Section 7 of the Endangered Species Act (ESA). The project is a CDBG-DR funded project; allocated by HUD to Puerto Rico Department of Housing (PRDOH) as the grantee of the funds and the municipality of Bayamón as the subrecipient of the funds.

The Municipality of Bayamón is proposing the construction of geometrical improvement to is proposing new geometric improvements at the intersection of State Road PR-2 km. 9.8 and the PR-6 km. 0.0. to replace the traffic light system for a roundabout design and elevated bridge to reduce the traffic congestion during peak hours on the highly frequented intersection. The project will also include PR-2 lanes realignment, a reversible lane to San Juan, utilities work (PRASA, PREPA, communications, etc.) and maintenance of traffic (MOT) plans to minimize congestion levels during construction. The project will not include any demolition or special requirements. The Municipality will continue maintaining the transit routes improved with this project. The project activity is limited to a previously developed urban property and thus the proposed action has no effect on any natural habitats or federally protected species. Please refer to enclosed maps and project description for details.

Should you require any additional information, please contact me at [erodriguez@bayamonpr.org](mailto:erodriguez@bayamonpr.org) or at the following phone number (787) 780-4469.

Cordially,

Elyam Rodríguez  
Sub-director, Office of design and Construction  
Municipality of Bayamon

## Self-Certification Endangered Species Act Certification

The U.S. Fish and Wildlife Service, Caribbean Ecological Services Field Office developed a Blanket Clearance Letter in compliance with Endangered Species Act of 1973, as amended, and the Fish and Wildlife Coordination Act for federally funded projects.

The Service determined that projects in compliance with the following criteria are not likely to adversely affect federally listed species. The Municipality of Bayamón, Puerto Rico, certifies that the following project, Geometric Improvements to PR-839 and Pedro Marcano and Delicias Streets, funded HUD and located at Lat/Long: 18.396047/-66.162133 complies with:

Check	Project Criteria
	1. Street resurfacing.
	2. Construction of gutters and sidewalks along exiting roads.
	3. Reconstruction or emergency repairs of existing buildings, facilities and homes
	4. Rehabilitation of existing occupied single-family homes, and buildings; provided that equipment storage or staging areas are not located on vacant property harboring a wetland and/or forested vegetation and that the lighting associated to the new facilities is not visible directly or indirectly from a beach.
	5. Demolition of dilapidated single-family homes or buildings; provided that the demolition debris is disposed in certified receiving facilities; equipment storage or staging areas are not located on vacant property harboring a wetland and/or forested vegetation
	6. Rebuilding of demolished single-family homes or buildings, provided that the new construction is within the existing footprint of the previous structure and/or within pre-existing grassed or paved areas, and that the lighting associated to the new facilities are not visible directly or indirectly from a beach
X	7. Activities within existing Right of Ways (ROWs) of roads, bridges and highways when limited to actions that do not involve cutting native vegetation or mayor earth moving; and are not located within, or adjacent to, drainages, wetlands, or aquatic systems. These activities include the installation of potable water and sanitary pipelines.
	8. Improvements to existing recreational facilities, including the installation of roofs to existing basketball courts, provided that the lighting associated to the facilities are not visible directly or indirectly from the beach.
	9. Construction of electric underground systems in existing towns and communities, provided that the property is not a wetland area and the lighting associated to the facilities are not visible directly or indirectly from the beach.
	10. Construction of facilities on vacant properties covered with grasses in urban areas, provided that the lighting associated to the facilities are not visible directly or indirectly from the beach.
	11. Construction of houses, buildings or acquiring lands in urban areas covered by grass for relocation of low-income families and/or facilities that have been affected by weather conditions.



Signature of the Mayor/Project Director/POC  
City Hall Road 2, Bayamón, PR 00960  
[erodriguez@bayamonpr.org](mailto:erodriguez@bayamonpr.org) (787) 780-4469

06/17/2023

Date





**PUERTO RICO DEPARTMENT OF HOUSING  
CDBG-DR PROGRAM  
CITY REVITALIZATION PROGRAM**

**PROJECT DEVELOPMENT DOCUMENTATION PROCESS - WORKPLAN**

**SECTION 9.2 – Project Description**

**Subrecipient Name:** Municipality of Bayamón  
**Project Name:** Geometrical Improvements to PR-2 & PR-6 Intersection  
**Project ID Number:** PR-CRP-001109  
**Location:** Intersection of State Road PR-2 km. 9.8 and the PR-6 km. 0.0

**Project Description:** Provide information to understand requirements and identify necessary studies and design of the Project. Provide a list of information considering a general description of the project.

The Autonomous Municipality of Bayamon (AMB) proposes the geometric improvements on the intersection of State Road PR-2 km. 9.8 and the PR-6 km. 0.0 to replace the traffic light system for a roundabout design and elevated bridge to reduce the traffic congestion during peak hours.

This intersection serves as a key community corridor connecting East and West Bayamon commercial and residential areas. The transit during Irma and Maria hurricanes was vastly affected by the lack of power, and the proposed project will minimize such problem by redirecting traffic movements out from the main traffic light system in the jurisdiction. The proposed geometrical improvements in the intersection will provide all necessary movements (including a new flyover bridge) to attend PR-6, Villa España community, PREPA facilities, La Caridad frontage road and PR-2. The project will also include PR-2 lanes realignment, a reversible lane to San Juan, utilities work (PRASA, PREPA, communications, etc.) and maintenance of traffic (MOT) plans to minimize congestion levels during construction.

The redesign of this intersection will respond to the growing needs of this economic area, serving residential and commercial, medical and student needs. At the same time, community resilience will increase during emergency events. The geometric improvements will also increase the fluidity of traffic movement, which has historically demonstrated the potential to improve the area's economic activity.

The following Table No. 1 summaries the proposed project activities.

<b>TABLE NO. 1 PROJECT ACTIVITIES SUMMARY</b>			
<b>1</b>	<b>ROAD AND STREET PAVEMENT REMOVAL</b>		
	<b>A. PAVEMENT REMOVAL</b>	<b>VOLUME (CU. MTS.)</b>	<b>DEPTH (MTS.)</b>
	COLD MILLING	265	0.05
	FULL DEPTH REMOVAL	TBD	TBD

[MUNICIPALITY LOGO HERE]

	<b>B. NEW PAVEMENT</b>	<b>VOLUME (CU. MTS.)</b>	<b>DEPTH (MTS.)</b>
	BITUMINOUS PAVEMENT	1500	Varies
		<b>AREA (SQ. MTS.)</b>	<b>DEPTH (MTS.)</b>
	LEAN CONCRETE	TBD	TBD

<b>TABLE NO. 1 PROJECT ACITIVITES SUMMARY</b>			
<b>2</b>	<b>SIDEWALK &amp; CURBS</b>	<b>AREA (SQ. MTS.)</b>	<b>DEPTH (MTS.)</b>
	RECONSTRUCTION	0	0
	NEW SIDEWALK	1329	0.10

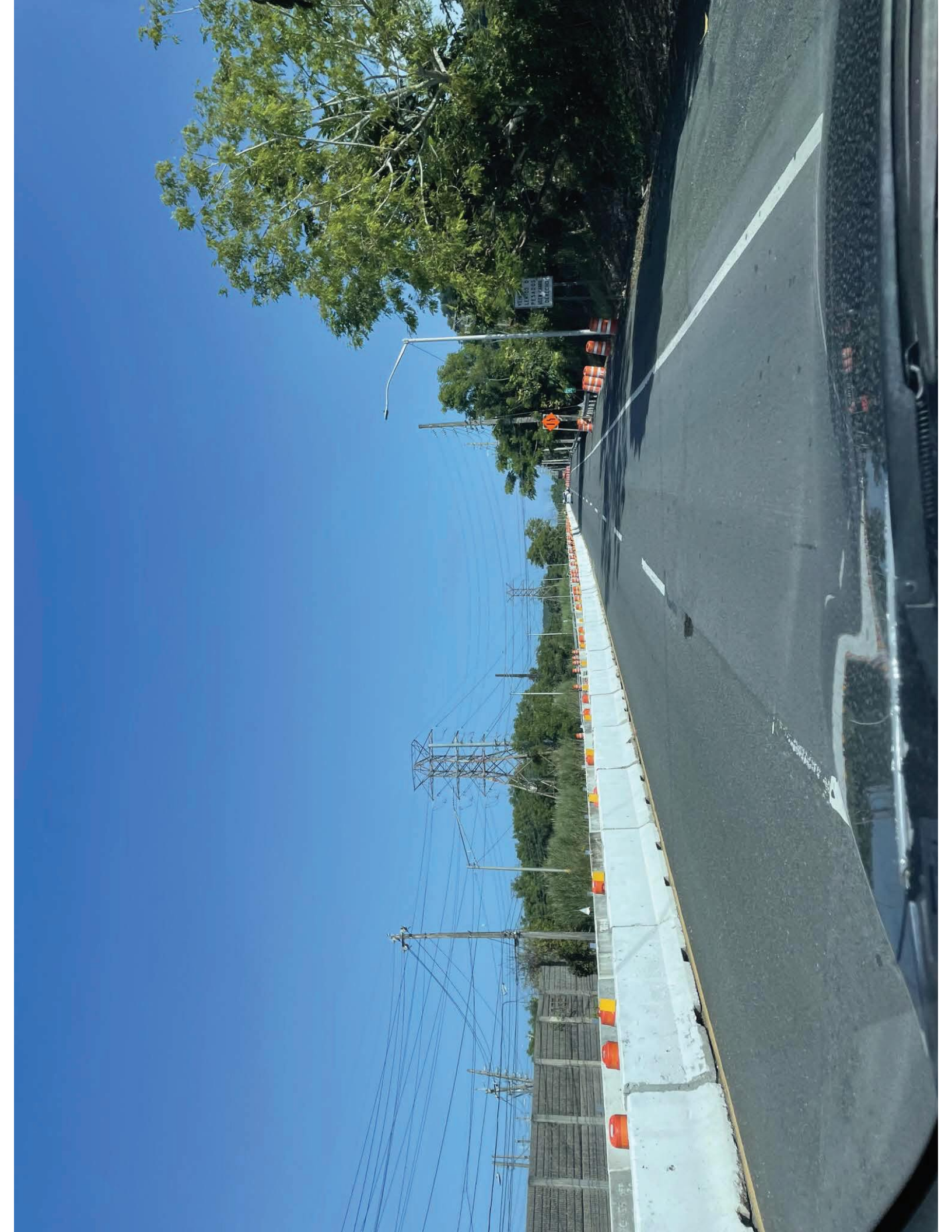
<b>TABLE NO. 1 PROJECT ACITIVITES SUMMARY</b>			
<b>3</b>	<b>EXCAVATIONS FOR INFRASTRUCTURE</b>	<b>VOLUME (CU. MTS.)</b>	<b>DEPTH (MTS.)</b>
	TOTAL UNCLASSIFIED EXCAVATION	21508	Varies
	REMOVAL OF SIDEWALKS, CURBS, WALL & FENCES	TBD	TBD
	CHAINLINK FENCE BASE	TBD	TBD
	RETAINING WALL	TBD	TBD
	TRENCH EXCAVATION (FIRE HYDRANTS AND DRAINAGE PIPES)	TBD	Varies

The project will service residential and commercial areas benefitting east and west of the Bayamon River, especially residents and the low and moderate-income community, improving mobility, access, and safety, while supporting commercial investments with more fluid movement of the community. There are also 3 train stations that will benefit from this project: Jardines, Bayamón and Deportivo. The roundabout will also serve as an evacuation route in the event of a natural disaster, providing access routes to primary expressways and clearance routes in the event of tsunamis.

The proposed projects requires an Environmental Assessment per 24 CFR 58.36, and must also comply with §58.5 and §58.6.



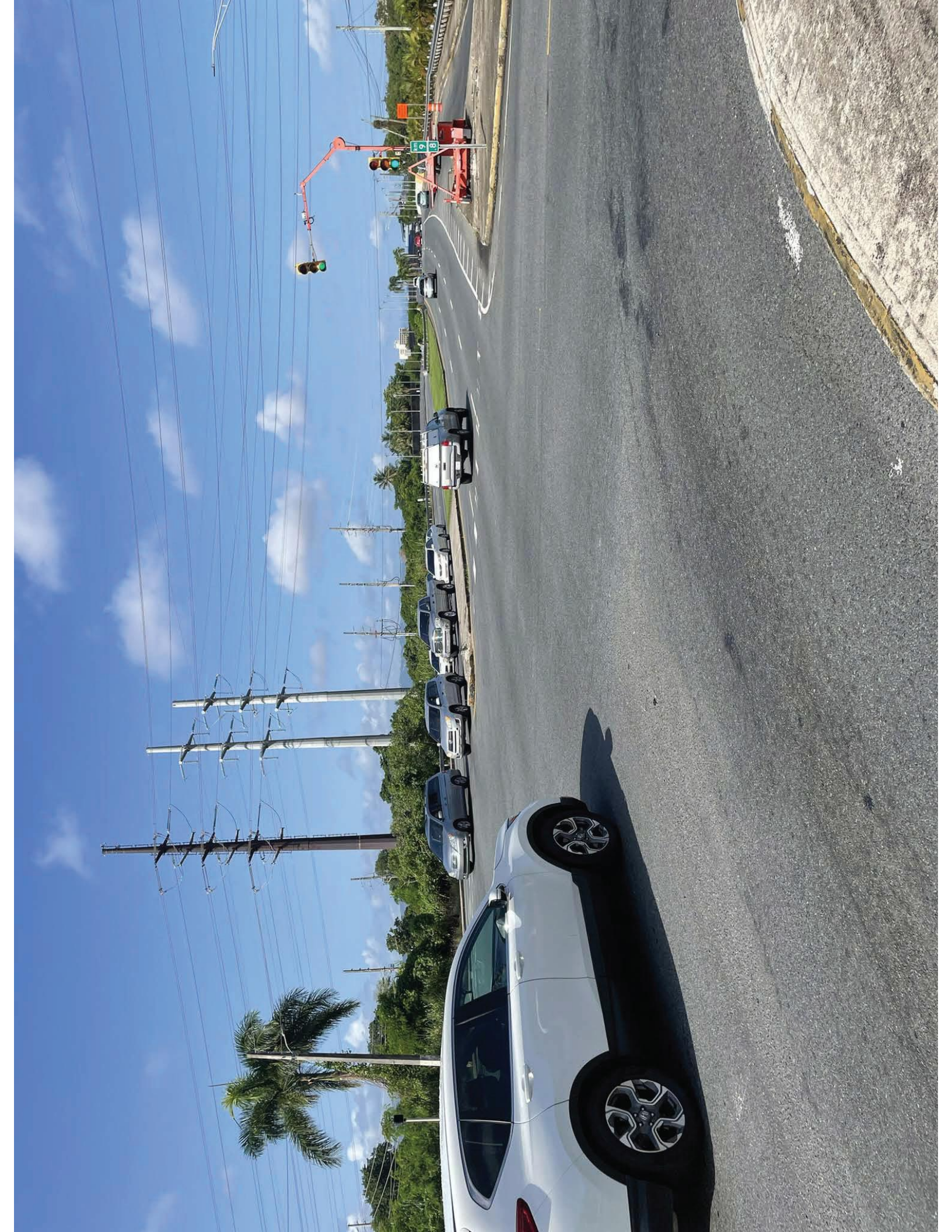
# Photographs of Existing Conditions























2

VILLA ESPAÑA  
↑

BAYAMÓN CENTRO  
↑

SAN MIGUEL PLAZA HOTEL  
↑

PASEO DEL RIO  
↑

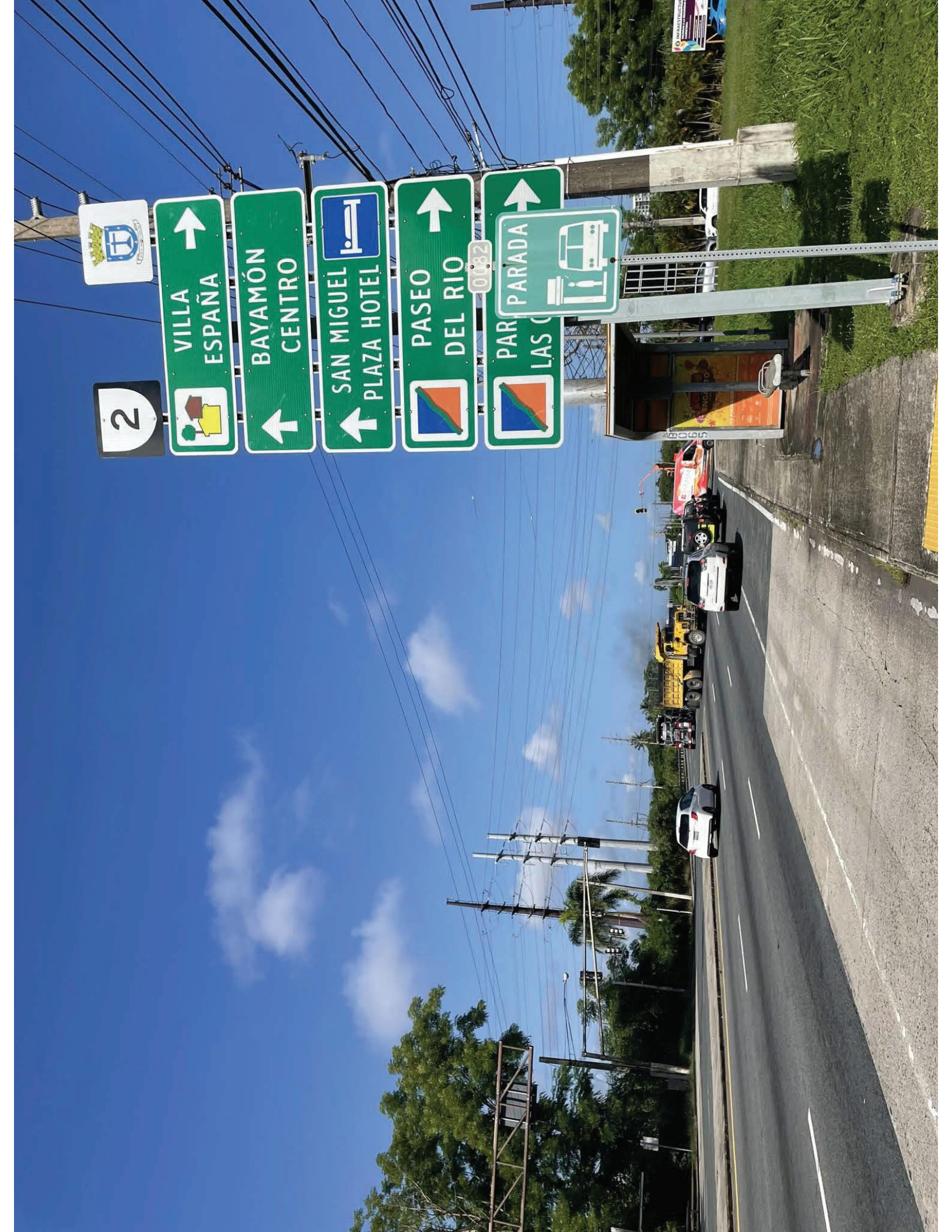
PARADA LAS C...  
↑



0082



INFORMACIÓN





 **Gobierno de Puerto Rico**  
**Autoridad de Carreteras y Transportación**

**MEJORAS A LA SEGURIDAD CARRETERA**  
**PR-6; KM. 0.0 AL 2.0;**  
**BAYAMÓN, PUERTO RICO**

**TRABAJOS FINANCIADOS POR:**

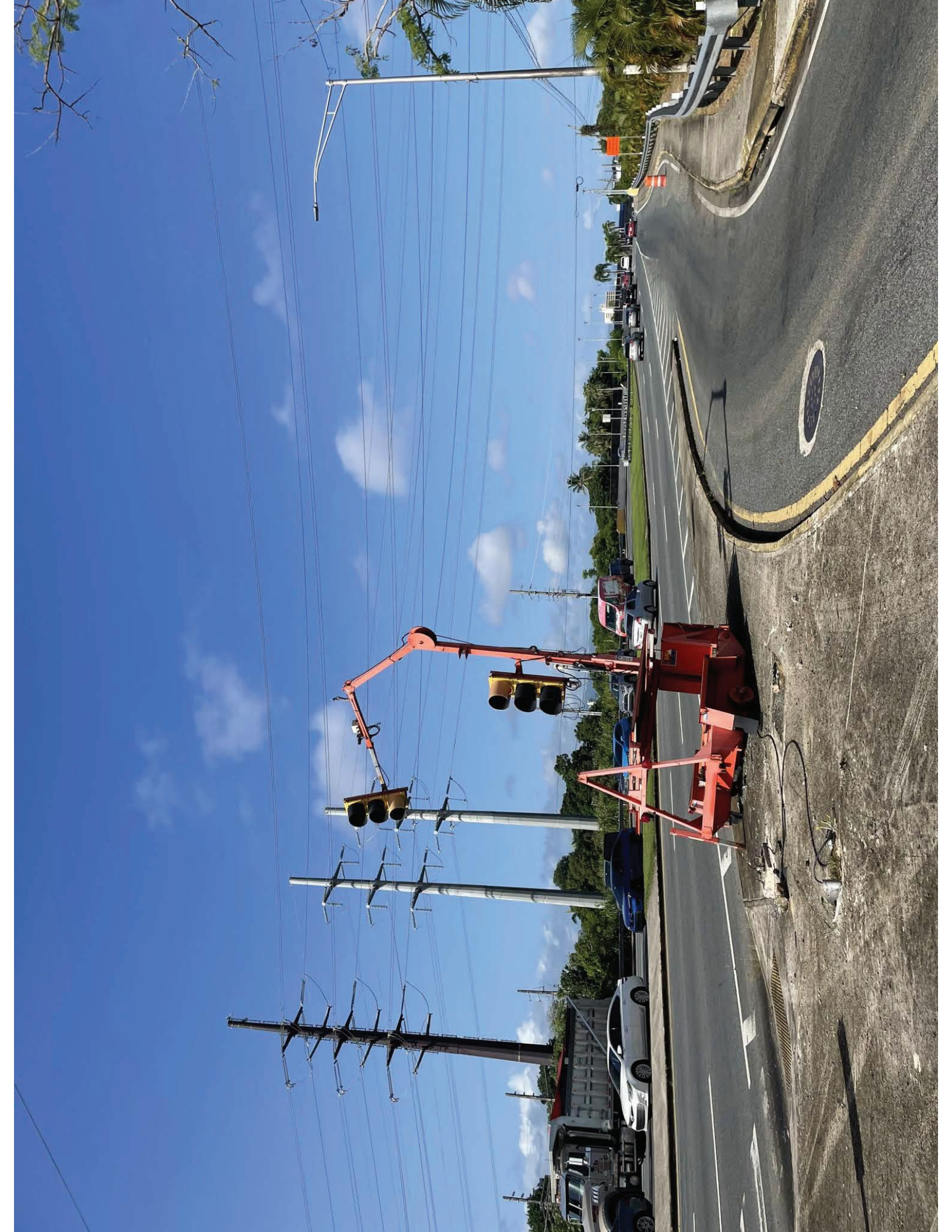
	FEDERAL	COSTO TOTAL
ESTATAL	\$5,259,138.00	\$5,267,418.00
	\$8,280.00	

**PERMISO ÚNICO INCIDENTAL**  
**2022-443909-PUI-005916**

km  
**6**  
**.1**











# INFRAESTRUCTURA

## MEJORAS A LA SEGURIDAD DE CARRETERA

PR-6 KMS. 0.0 AL 2.0 BAYAMÓN

INVERSIÓN: \$5,267,418.00

EMPLEOS CREADOS : 125

CONTRATO NÚM: 2022-000271

PEDRO R. PIERLUISI  
GOBERNADOR DE PUERTO RICO



Existing ROW



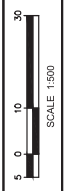
WORK	DATE	BY
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	06/22/23	

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

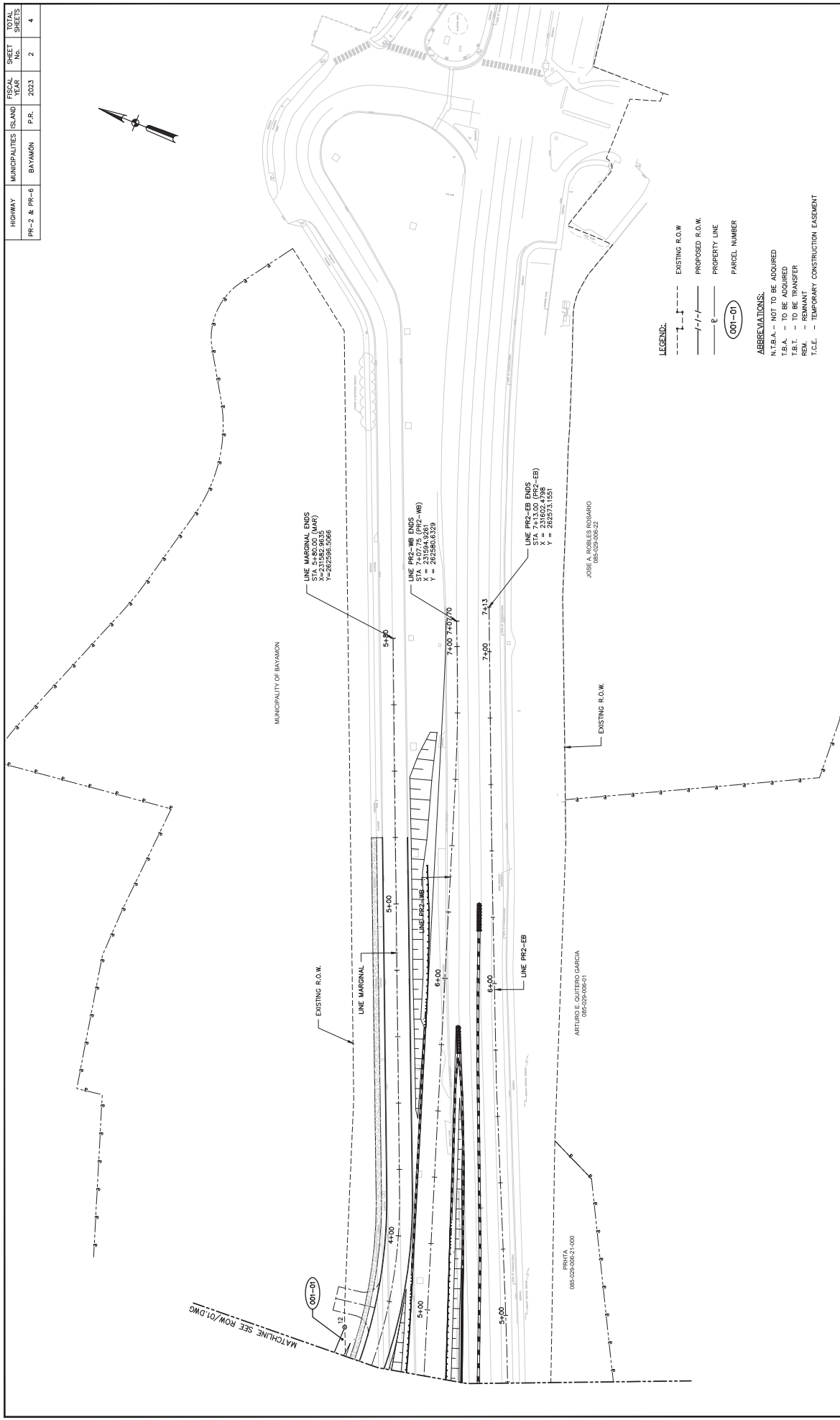
BAYAMON  
PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

NO.	DATE	REVISIONS



RIGHT OF WAY PLAN

ROW 02



- LEGEND:**
- EXISTING R.O.W.
  - - - - - PROPOSED R.O.W.
  - PROPERTY LINE
  - ⊕ PARCEL NUMBER
- ABBREVIATIONS:**
- N.T.B.A. - NOT TO BE ACQUIRED
  - T.B.A. - TO BE ACQUIRED
  - T.B.T. - TO BE TRANSFER
  - REM. - REMAIN
  - TEMP. - TEMPORARY CONSTRUCTION EASEMENT

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	2	4



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		06/23/23

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

100 Calle De Los Arboles #200  
Bayamón, P.R. 00961  
Phone: (787) 262-1234  
Fax: (787) 262-1235  
www.cma-engineers.com

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

NOT TO SCALE

LAND ACQUISITION TABLES

ROW  
04

**PARCEL No. 001-01 (T.B.T.)**  
OWNER: MUNICIPALITY OF BAYAMON

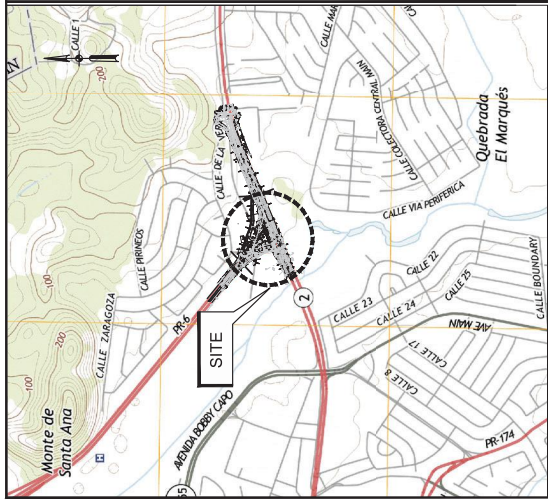
POINT	LINE	(Y) NORTH	(X) EAST	DISTANCE	BEARINGS	DESCRIPTION
7	---	262574.4272	231159.4406	36.77	S 62°52'52" E	Center road
8	8-9	262501.4688	231274.3813	37.05	S 66°53'52" E	---
9	9-10	262503.5750	231301.6277	27.15	N 85°53'17" E	---
10	10-11	262503.5750	231301.6277	27.15	N 85°53'17" E	---
11	11-12	262553.7687	231384.8482	63.71	N 87°32'25" E	---
12	12-13	262553.7687	231384.8482	63.71	N 87°32'25" E	---
13	13-14	262553.7687	231384.8482	63.71	N 87°32'25" E	---
14	14-15	262553.7687	231384.8482	63.71	N 87°32'25" E	---
15	15-16	262553.7687	231384.8482	63.71	N 87°32'25" E	---
Center		262822.1546	231270.6285	---	---	Center road
<b>CURVE DATA</b>						
		ANGLE	RADIUS	TANGENT	EXTERNAL	ARC LENGTH
		204°14'7"	87.87	16.05	1.45	31.74
16	15-16	262546.3668	231238.4935	31.57	N 78°53'53" W	PT.-
7	16-7	262574.4272	231159.4406	84.94	N 85°52'59" W	---
AREA = 4173.6628 sq mt. = 0 = 1.0619 cdos.						

\*(TO BE TRANSFER BY THE OWNER, MUNICIPALITY OF BAYAMON, TO DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS)

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	4	4

# Design Plans





LOCATION PLAN  
SCALE: 1" = 200.00'

# PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	00	82

## INDEX OF DRAWINGS:

SHEET NO.	DESCRIPTION	DWG. NO.	SHEET NO.	DESCRIPTION	DWG. NO.	SHEET NO.	DESCRIPTION	DWG. NO.
00	TITLE SHEET, LOCATION PLAN AND INDEX	GR-01	33	DRAINAGE PLAN	DR-01	66	PLAN AND ELEVATION	BR-02
01	TYPICAL SECTIONS	GR-02	34	GRADING PLAN	DR-02	67	TYPICAL CROSS SECTION AND BARRIER DETAILS	BR-04
02	TYPICAL SECTIONS	GR-03	35	GRADING PLAN	DR-03	68	GROSS SECTIONS KEY PLAN	CS-01
03	TYPICAL SECTIONS	GR-04	36	GRADING PLAN	DR-04	69	GROSS SECTIONS KEY PLAN	CS-02
04	TYPICAL SECTIONS	GR-05	37	GRADING PLAN	DR-05	70	GROSS SECTIONS LINE PR-2&B & PR-2&B	CS-03
05	TYPICAL SECTIONS	GR-06	38	GRADING PLAN	DR-06	71	GROSS SECTIONS LINE PR-2&B & PR-2&B	CS-04
06	LAYOUT CONTROL PLAN	GR-07	39	P.R.A.S.A. UTILITIES LEGEND AND NOTES	UTW-01	72	GROSS SECTIONS LINE PR-2&B & PR-2&B	CS-05
07	VERTEX DATA TABLES	GR-08	40	P.R.A.S.A. UTILITIES PLAN	UTW-02	73	GROSS SECTIONS LINE PR-2&B & MARGINAL ST.	CS-06
08	MAINTENANCE OF TRAFFIC, CONSTRUCTION SCHEDULE AND GENERAL NOTES	GR-09	41	P.R.A.S.A. UTILITIES PLAN	UTW-03	74	GROSS SECTIONS LINE PR-2&B, PR-2&B & MARGINAL ST.	CS-07
09	MAINTENANCE OF TRAFFIC PHASE I	MOT-01	42	P.R.A.S.A. UTILITIES PLAN	UTW-04	75	GROSS SECTIONS LINE PR-6 SOUTH & NORTH	CS-08
10	MAINTENANCE OF TRAFFIC PHASE II	MOT-02	43	P.R.A.S.A. UTILITIES PLAN	UTS-01	76	GROSS SECTIONS LINE PR-6 NORTH & VILLA ESPAÑA	CS-09
11	MAINTENANCE OF TRAFFIC PHASE III	MOT-03	44	P.R.A.S.A. SANITARY UTILITIES PLAN	UTS-02	77	TREE INVENTORY PLAN	RD-01
12	MAINTENANCE OF TRAFFIC PHASE IV	MOT-04	45	P.R.A.S.A. SANITARY UTILITIES PLAN	UTS-03	78	TREE INVENTORY PLAN	RD-02
13	MAINTENANCE OF TRAFFIC PHASE V	MOT-05	46	P.R.A.S.A. SANITARY UTILITIES PLAN	UTS-04	79	TREE INVENTORY PLAN	RD-03
14	MAINTENANCE OF TRAFFIC PHASE VI	MOT-06	47	LUMA LEGEND, LOCATION PLAN AND NOTES	UTE-01	80	TREE INVENTORY PLAN	RD-04
15	MAINTENANCE OF TRAFFIC PHASE VII	MOT-07	48	LUMA EXISTING ELECTRICAL UTILITIES PLAN	UTE-02	81	REFORESTATION DETAILS	RD-05
16	MAINTENANCE OF TRAFFIC PHASE VIII	MOT-08	49	LUMA EXISTING ELECTRICAL UTILITIES PLAN	UTE-03	82	REFORESTATION DETAILS	
17	MAINTENANCE OF TRAFFIC PHASE IX	MOT-09	50	LUMA EXISTING ELECTRICAL UTILITIES PLAN	UTE-04			
18	MAINTENANCE OF TRAFFIC PHASE X	MOT-10	51	EXISTING UTILITY COMMUNICATION PLAN	UTT-01			
19	MAINTENANCE OF TRAFFIC PHASE XI	MOT-11	52	EXISTING UTILITY COMMUNICATION PLAN	UTT-02			
20	MAINTENANCE OF TRAFFIC PHASE XII	MOT-12	53	EXISTING UTILITY COMMUNICATION PLAN	UTT-03			
21	MAINTENANCE OF TRAFFIC PHASE XIII	MOT-13	54	LEGEND, LOCATION PLAN AND NOTES	LT-01			
22	MAINTENANCE OF TRAFFIC PHASE XIV	MOT-14	55	EXISTING LIGHTING PLAN	LT-02			
23	MAINTENANCE OF TRAFFIC PHASE XV	MOT-15	56	EXISTING LIGHTING PLAN	LT-03			
24	MAINTENANCE OF TRAFFIC PHASE XVI	MOT-16	57	EXISTING LIGHTING PLAN	LT-04			
25	MAINTENANCE OF TRAFFIC PHASE XVII	MOT-17	58	EXISTING LIGHTING PLAN	LT-05			
26	MAINTENANCE OF TRAFFIC PHASE XVIII	MOT-18	59	LIGHTING PLAN	LT-06			
27	LAYOUT PLAN	PP-01	60	LIGHTING PLAN	LT-07			
28	LAYOUT PLAN	PP-02	61	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-01			
29	LAYOUT PLAN	PP-03	62	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-02			
30	PROFILES LINE PR-2, VEA & LUMA ACCESS	PP-04	63	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-03			
31	PROFILES LINE PR-6, VEA & LUMA ACCESS	PP-05	64	SIGN DESIGN	TS-04			
32	PROFILE LINE MARG	PP-06	65	SIGN DESIGN AND KILOMETER REPORT SEAL LOCATION DETAIL	TS-05			

		MUNICIPALITY OF BAYAMON		PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS		PUERTO RICO		SCALE: AS SHOWN		TITLE SHEET, LOCATION PLAN AND INDEX		GR 01	
100 Calle de la Reina #200 Calle 17, Bayamón, P.R. 00981 Tel: (787) 263-1234 Fax: (787) 263-1235 www.cmaarchitect.com		BAYAMON		INTERSECTIONS GEOMETRIC IMPROVEMENTS		PUERTO RICO		DATE		REVISIONS		01	
FINAL CHECK CHECKED DESIGNED DRAWING DESIGN	DATE BY												

LEGEND.

FEATURE	PROPOSED	EXISTING	SYMBOL	REMARKS
CENTER LINE			IDENTIFY	IDENTIFY
SURVEY MONUMENT			IDENTIFY	IDENTIFY
SPOT ELEVATION			IDENTIFY	IDENTIFY
BENCH MARK			IDENTIFY	IDENTIFY
HORIZONTAL P.I.			TRUE	IDENTIFY
NORTH ARROW			MAGNETIC	IDENTIFY
CONTOUR LINES			IDENTIFY ROAD	IDENTIFY
PAVEMENT			IDENTIFY	IDENTIFY
SIDEWALK			IDENTIFY TYPE	IDENTIFY
GUARD RAIL			IDENTIFY TYPE	IDENTIFY
BARRIER			IDENTIFY TYPE	IDENTIFY
BARRIAGE			IDENTIFY TYPE	IDENTIFY
RETAINING WALL			IDENTIFY TYPE	IDENTIFY
CONC. PARAPETS			IDENTIFY TYPE	IDENTIFY
BARBED WIRE FENCE			IDENTIFY TYPE	IDENTIFY
CHAIN LINK FENCE			IDENTIFY TYPE	IDENTIFY
PROPERTY LINE (G)			IDENTIFY IF C.O.A.	IDENTIFY
ACCESS CONTROL			IDENTIFY LIMITS	IDENTIFY
TOP OF CUT			IDENTIFY SIZE	IDENTIFY
TOE OF SLOPE			IDENTIFY TYPE	IDENTIFY
PIPES			AS PER TYPE	IDENTIFY
HEADWALLS			IDENTIFY	IDENTIFY
MANHOLE			AS PER TYPE	IDENTIFY
INLETS			IDENTIFY	IDENTIFY
WATER COURSE			IDENTIFY	IDENTIFY
DITCH			IDENTIFY	IDENTIFY
PAVED DITCH			IDENTIFY	IDENTIFY
LAKE OR POND			IDENTIFY IF REQ.	IDENTIFY
SWAMP			IDENTIFY IF REQ.	IDENTIFY
WOODS			IDENTIFY IF REQ.	IDENTIFY
TREES			IDENTIFY IF REQ.	IDENTIFY
EDGE OF WOODS			IDENTIFY IF REQ.	IDENTIFY
HEDGE			IDENTIFY	IDENTIFY
RIP RAP			IDENTIFY	IDENTIFY
RIP RAP PAVING			IDENTIFY	IDENTIFY
ROCK			IDENTIFY	IDENTIFY
BUILDING			IDENTIFY TYPE, ETC.	IDENTIFY
FOUNDATION			IDENTIFY	IDENTIFY
BLDG TO DEMOLISH			IDENTIFY	IDENTIFY
SIGNS, GROUND, MTD			IDENTIFY	IDENTIFY
PROP. SIGN IDENT.			UPPER - CODE	IDENTIFY
TRAFIC DETECTOR			LOWER - LOCATION	IDENTIFY
PALM TREES			IDENTIFY	IDENTIFY
MATCH TO EXISTING			IDENTIFY	IDENTIFY
LUMINARY			IDENTIFY	IDENTIFY
ELECTRICAL OR LIGHTING POLE AND GUY WIRE			IDENTIFY	IDENTIFY
DIRT ROAD			IDENTIFY	IDENTIFY
CHAIN LINK FENCE			IDENTIFY	IDENTIFY

ABBREVIATIONS.

ABUTMENT	ABUT.
AGGREGATE	AGR.
ALUMINUM	AL.
ASBESTOS	ASB.
BAL. VALVE	B.V.
BANK	BK.
BASED WIRE FENCE	B.W.F.
BENCH MARK	B.M.
BIRMINGHAM CONCRETE	B.C.
BUILDINGS COATED CORRUGATED METAL PIPE	B.C.C.
BULB	B.
BULB VALVE	B.V.
BUILDING	BLDG.
BUILDING COATED CORRUGATED METAL PIPE	B.C.C.
CAST IRON	C.I.
CATCH BASIN	C.B.
CHAIN LINK FENCE	C.L.F.
CENTER TO CENTER	C. TO C.
COATED	CO.
CONCRETE	CONC.
CONCRETE OF ACCESS	CONC. OF ACC.
COORDINATES	COORD.
CORRUGATED METAL PIPE	C.M.P.
CURB METER	C.M.
CURVE TO SPIRAL	C. TO S.
D.I.A.	DIA.
DRAINAGE	DRN.
DRIVEWAY	DRV.
END TO END	E. TO E.
ENGINEER	ENGR.
EXCAVATION	EXC.
EXISTING	EXS.
EXPANSION	EXP.
EXTERNAL DISTANCE	E. DIST.
EXTREME HIGH WATER	E.H.W.
FEDERAL AID	F.A.
FEDERAL AID SECONDARY	F.A.S.
FILL	F.
FILL LINE FORWARD	F.L.F.
GALVANIZED IRON	G.I.
GAS VALVE	G.V.
GRAVEL	GRV.
HEADWALL	HW.
HORIZONTAL	H.
HORIZONTAL LEVEL	H.L.
HYDRANT	HYD.
INVERT ELEVATION	I. E.
JUNCTION BOX	J.B.
LENGTH OF CURVE	L. OF C.
MAIN PIPE	M.P.
MANHOLE	M.H.
MAXIMUM	MAX.
MEAN HIGH WATER	M.H.W.
MINIMUM	MIN.
MONUMENT	MON.
ON CENTERS	O.C.
OUTSIDE DIAMETER	O.D.
PAVEMENT	PMT.
POINT OF COMPOUND CURVATURE	P.C.C.
POINT OF INTERSECTION	P.O.I.
POINT OF TANGENCY	P.O.T.
PORTLAND CEMENT CONCRETE	P.C.C.
POWER POLE	P.P.
PROPERTY LINE	P.L.
PROPOSED GRADE	P.G.
RAILROAD	R.R.
RAILROAD CONCRETE PIPE	R.R.C.P.
RETAINING WALL	RET.
RIGHT OF WAY	R.O.W.
ROADWAY	RDW.
SANITARY SEWER	S.S.
SEWALK	S.W.
SPIRAL TO CURVE	S. TO C.
SQUARE METER	S.M.
STATION	STA.
STRUCTURE	STR.
SURVEY LINE	S.L.
TANGENT DISTANCE OF CURVE	T. DIST.
TELEPHONE	T.E.L.
TELEPHONE POLE	T.P.
TOP OF GRADE	T.O.G.
TOP OF CURVE	T.O.C.
VERTICAL CURVE	V.C.
VERTICAL	V.
WATER MAIN	W.M.
WATER METER	W.M.T.
WATER VALVE	W.V.
WIRE MESH FENCE	W.M.F.
WIDENING	W.D.
WIDENING BOX	W.D.B.

GENERAL NOTES.

- 1 - METRIC SYSTEM HAS BEEN USED THROUGHOUT THE PROJECT UNLESS OTHERWISE SPECIFIED.
- 2 - ALL ELEVATIONS ARE REFERRED TO MEAN SEA LEVEL AND GIVEN IN METERS.
- 3 - THE HORIZONTAL CONTROL ARE REFERRED TO THE STATE PLANE COORDINATE SYSTEM FOR PUERTO RICO AND THE US VIRGIN ISLANDS, NAD83, EPOCH 2010, ADJUSTMENT 2011, LAMBERT PROJECTION.
- 4 - NORTH ARROW INDICATION POINTS TO TRUE NORTH.
- 5 - NEW CONSTRUCTION SHALL MEET HORIZONTAL AND VERTICAL ALIGNMENTS OF EXISTING FACILITIES.
- 6 - ATTENTION IS CALLED TO ALL BIDDERS THAT THERE ARE UTILITIES INSTALLED IN THE CONSTRUCTION AREA OF THIS PROJECT, WHICH ARE THE PROPERTY OF THE FOLLOWING ENTITIES: BAYAMÓN, LUJAN, SAN JUAN, THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY AND CABLE TV.
- 7 - FOR STANDARD MODEL DRAWINGS, REFER TO THE STANDARD DRAWINGS BOOK ADOPTED BY THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY.
- 8 - EXISTING PAVEMENT AREAS THAT COULD BE AFFECTED DURING THE CONSTRUCTION SHALL BE REPAIRED. THIS WORK SHALL BE A SUBSIDIARY OBLIGATION UNDER SPEC. 401 AND ITS PAY ITEMS.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	01	82

GENERAL NOTES AND LEGEND	GR
	02

SCALE:	NTS

REVISIONS	DATE

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

BAYAMÓN

PUERTO RICO

100 South Highway 90W, Suite 2208 Bayamón, Puerto Rico 00961-3222

CMA ARCHITECT & ENGINEERS

MUNICIPALITY OF BAYAMÓN

WORK	BY	DATE
DESIGN		
DRAWINGS		
CHECK		
FINAL CHECK		03/09/23

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON  
BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

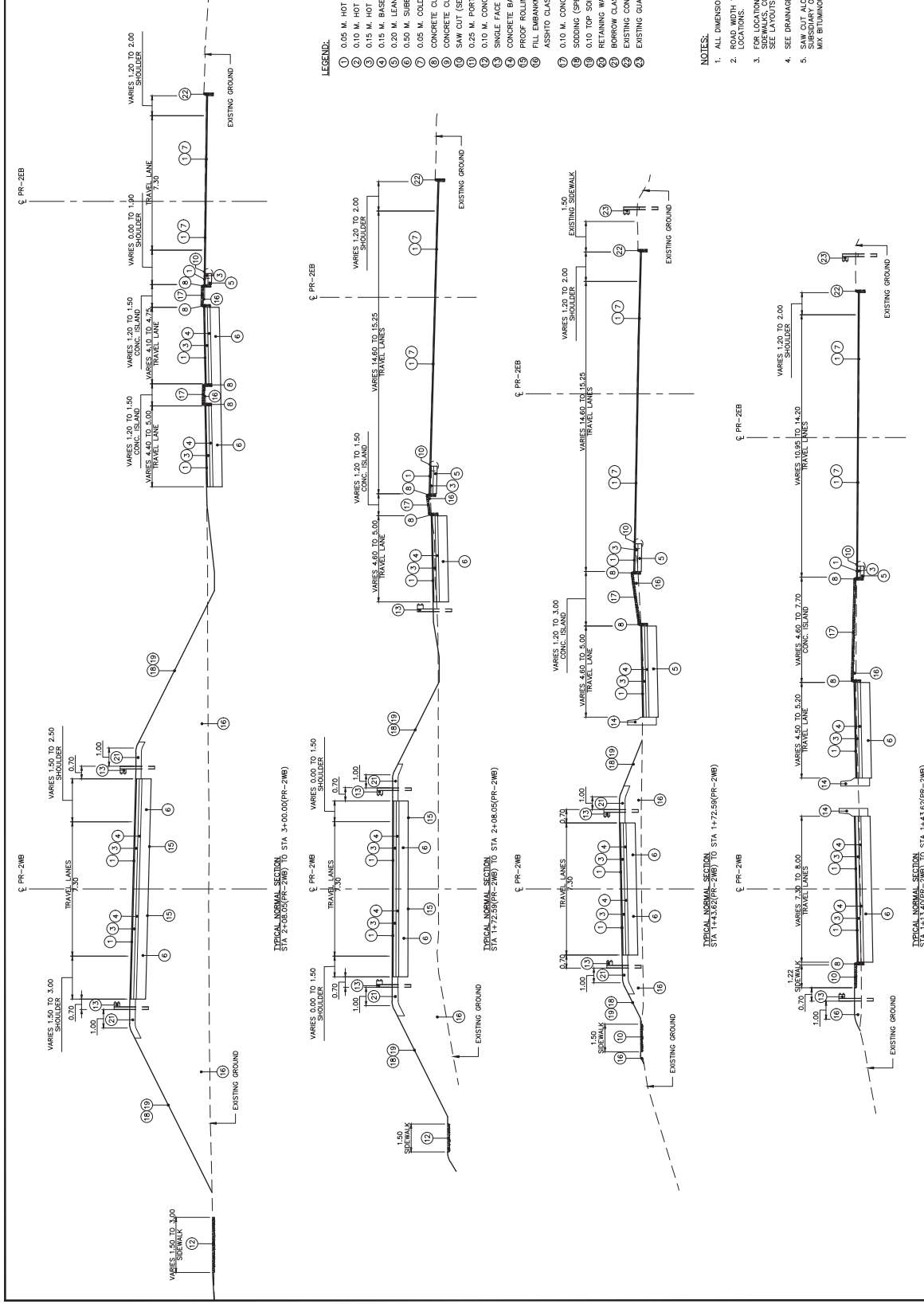
NO.	DATE	REVISIONS

SCALE: 1:100

TYPICAL SECTIONS

GR 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	02	82



- LEGEND:**
- 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX 5/75(1/2) (SPEC. 401)
  - 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX 8/75(1) (SPEC. 401)
  - 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX 8/75(1) (SPEC. 401)
  - 0.15 M. BASE COURSE MATERIAL, GRADING A (SPEC. 304)
  - 0.20 M. LEAN CONCRETE B/E (SPEC. 301)
  - 0.50 M. SUB-BASE COURSE (SPEC. 301)
  - 0.50 M. COLD MILLING (SPEC. 403)
  - CONCRETE CURB TYPE "B" (SPEC. 609)
  - CONCRETE CURB TYPE "C" (SPEC. 610)
  - SAW CUT (SEE NOTE 5) (SPEC. 401)
  - 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
  - 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
  - SINGLE FACE GUARDRAIL (SPEC. 606)
  - CONCRETE BARRIER TYPE "C" (SPEC. 610)
  - PROOF ROLLING (SPEC. 203)
  - FILL EMBARBMENT - BORROW CLASS "B" OR BETTER (SPEC. 203)
  - ASH/O CLASSIFICATION (SPEC. 203)
  - 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
  - SODDING (SPEC. 628)
  - 0.10 TOP SOIL (SPEC. 625)
  - RETAINING WALL (SPEC. 601 & SPEC. 602)
  - BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
  - EXISTING CONCRETE CURB TO REMAIN
  - EXISTING GUARDRAIL TO REMAIN

- NOTES:**
- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
  - ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
  - FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB AND OUTLETS, SEE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUT PLANS.
  - SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
  - SEE NOTE 5 FOR THE SPECIFICATIONS FOR THE SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MIX 8/75(1).

DATE	BY	DESIGN	REVISIONS
03/03/23			

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6  
PUERTO RICO

BAYAMON  
DATE

NO.	DATE	REVISIONS

SCALE: 1:100  
TYPICAL NORMAL SECTION  
STA. 4+48.62(PR-2WB) TO STA. 5+05.00(PR-2WB)

TYPICAL SECTIONS

GR	04
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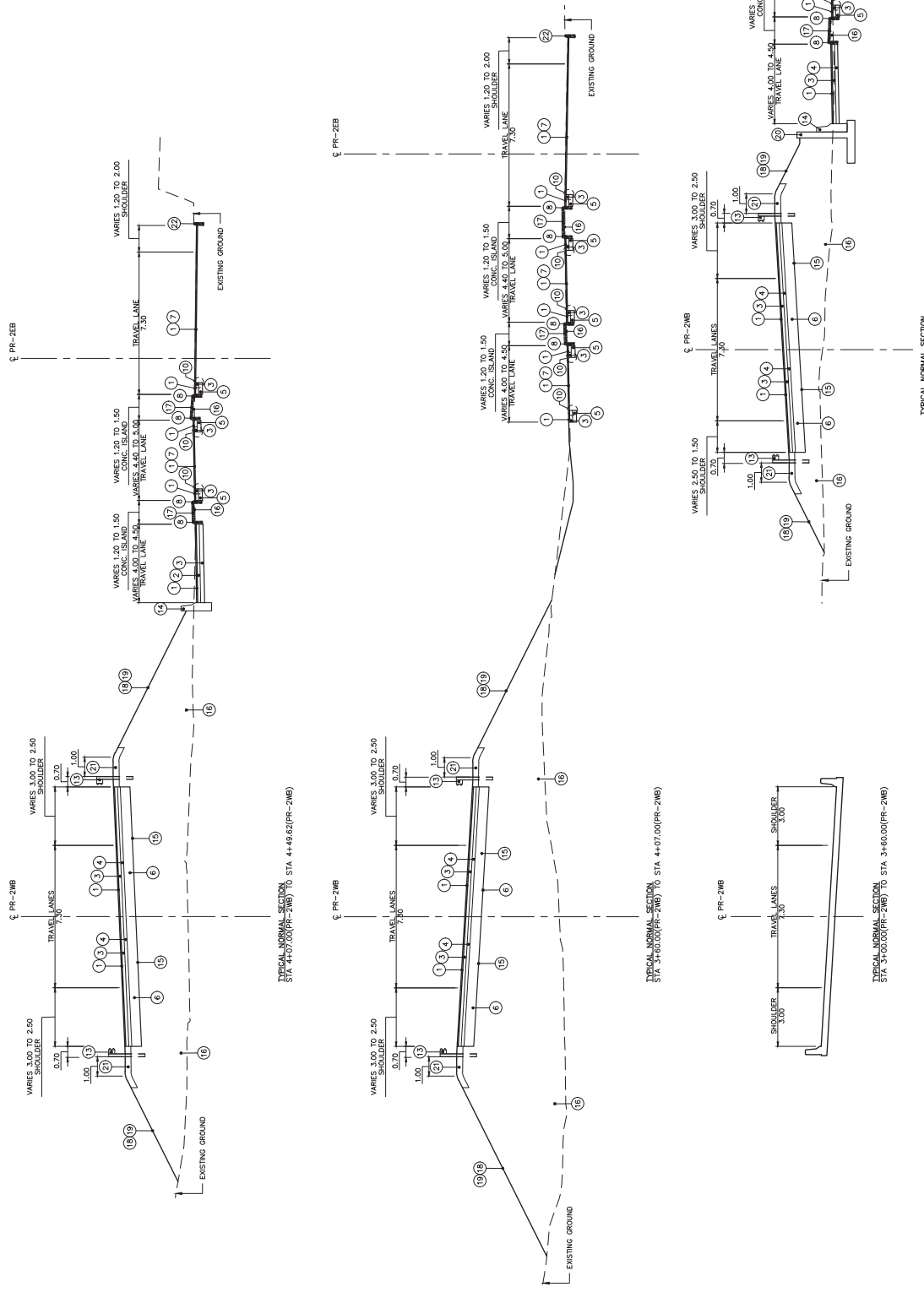
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	03	82

**LEGEND:**

- 1 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(12) (SPEC. 401)
- 2 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1) (SPEC. 401)
- 3 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1) (SPEC. 401)
- 4 0.20 M. LEAN CONCRETE BAE (SPEC. 305)
- 5 0.50 M. SUBBASE COURSE (SPEC. 301)
- 6 0.05 M. COLD MILLING (SPEC. 403)
- 7 CONCRETE CURB TYPE "D" (SPEC. 609)
- 8 CONCRETE CURB TYPE "B" (SPEC. 609)
- 9 SAW CUT (SEE NOTE 5) (SPEC. 401)
- 10 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
- 11 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
- 12 SINGLE FACE GUARDRAIL (SPEC. 606)
- 13 CONCRETE BARRIER TYPE "C" (SPEC. 610)
- 14 PROOF ROLLING (SPEC. 203)
- 15 FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
- 16 ASSHTO CLASSIFICATION (SPEC. 203)
- 17 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
- 18 SODDING (SPEC. 628)
- 19 0.10 TOP SOIL (SPEC. 625)
- 20 RETAINING WALL (SPEC. 601 & SPEC. 602)
- 21 BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
- 22 EXISTING CONCRETE CURB TO REMAIN
- 23 EXISTING GUARDRAIL TO REMAIN

**NOTES:**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. LOCATION VARIATIONS: SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
3. FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURBS AND GUTTERS, SIDEWALKS, CONCRETE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUT PLANS.
4. SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
5. SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1).



DATE	BY	DESIGN	REVISIONS
03/03/23			

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

DATE

REVISIONS

SCALE: 1:100

TYPICAL SECTIONS

GR 05

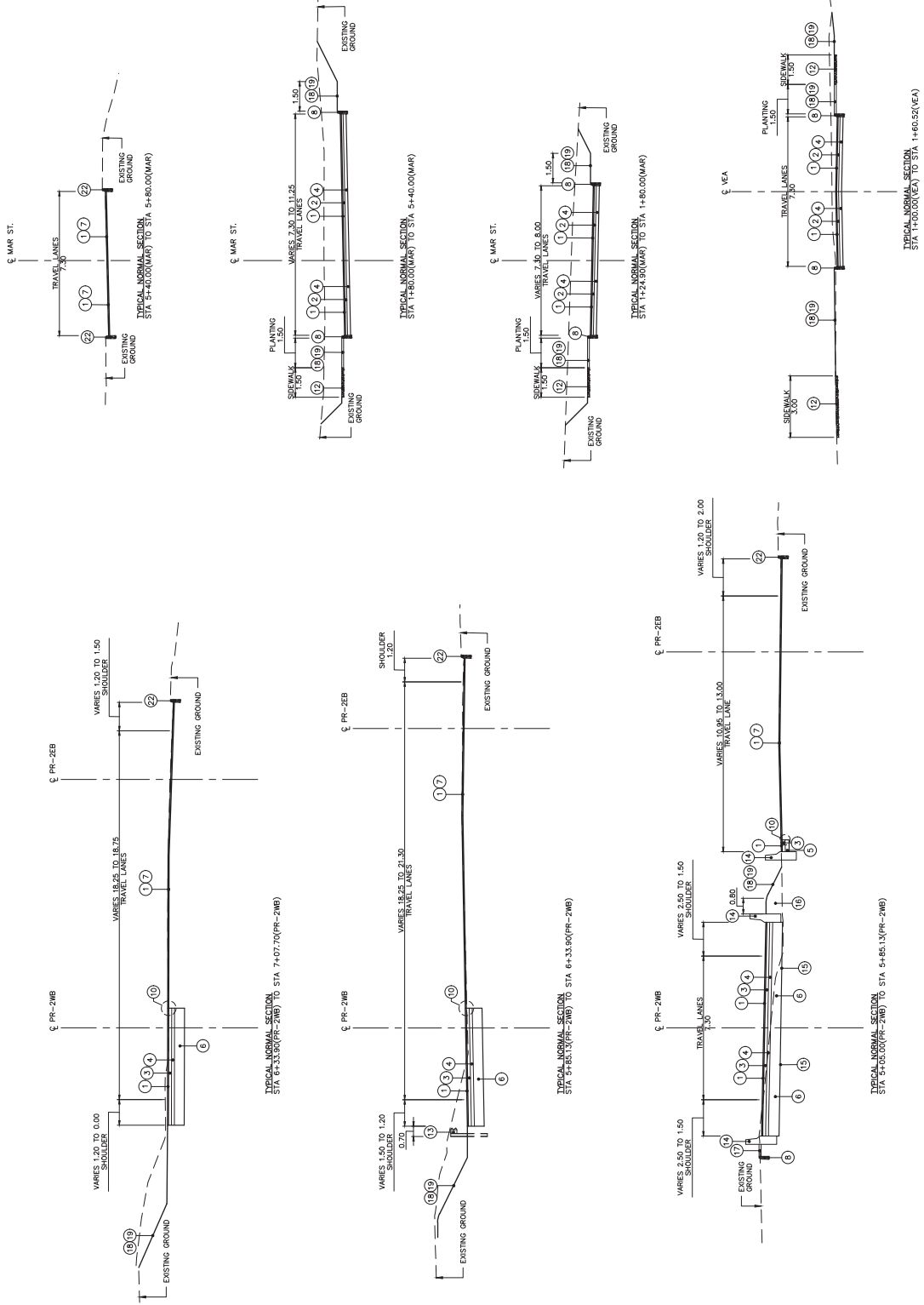
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	04	82

**LEGEND:**

- 1 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(12) (SPEC. 401)
- 2 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1) (SPEC. 401)
- 3 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1) (SPEC. 401)
- 4 0.15 M. BASE COURSE MATERIAL, GRADING A. (SPEC. 304)
- 5 0.20 M. LEAN CONCRETE BAE (SPEC. 305)
- 6 0.50 M. SUBBASE COURSE (SPEC. 301)
- 7 0.05 M. COLD MILLING (SPEC. 403)
- 8 CONCRETE CURB TYPE "D" (SPEC. 609)
- 9 CONCRETE CURB TYPE "B" (SPEC. 609)
- 10 SAW CUT (SEE NOTE 5) (SPEC. 401)
- 11 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
- 12 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
- 13 SINGLE FACE GUARDRAIL (SPEC. 606)
- 14 CONCRETE BARRIER TYPE "C" (SPEC. 610)
- 15 PROOF ROLLING SPEC. 203
- 16 FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
- 17 ASSHTO CLASSIFICATION (SPEC. 203)
- 18 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
- 19 SODDING (SPEC. 628)
- 20 0.10 TOP SOIL (SPEC. 625)
- 21 RETAINING WALL (SPEC. 601 & SPEC. 602)
- 22 BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
- 23 EXISTING CONCRETE CURB TO REMAIN
- 24 EXISTING GUARDRAIL TO REMAIN

**NOTES:**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
3. FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURBS AND CUTTERS, SIDEWALKS, CONCRETE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUT'S PLANS.
4. SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
5. SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1).



DATE	BY	REVISIONS
03/03/23		

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

SCALE: 1:100

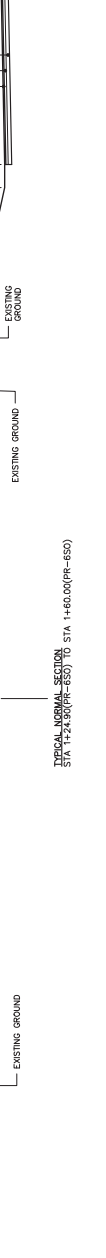
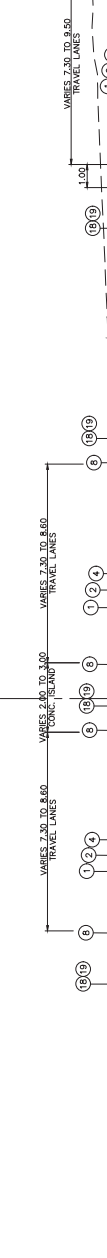
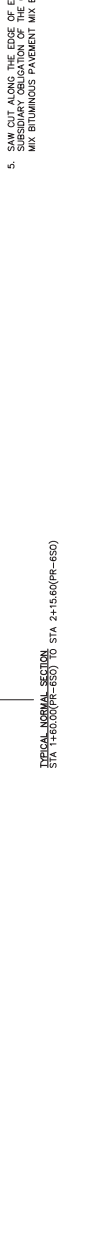
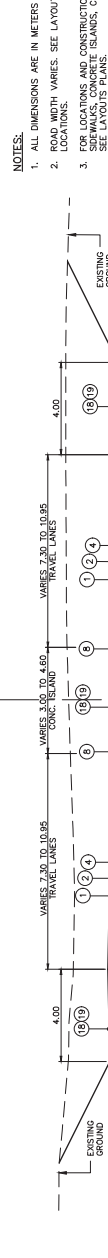
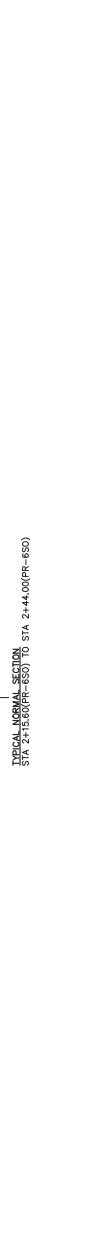
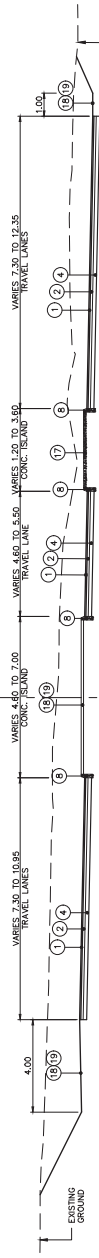
TYPICAL SECTIONS

GR 06

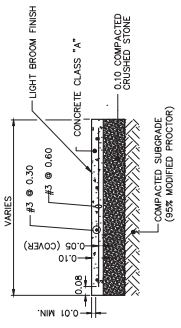
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	06	82

- LEGEND:**
- ① 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX S(75)(12) (SPEC. 401)
  - ② 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1) (SPEC. 401)
  - ③ 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1) (SPEC. 401)
  - ④ 0.15 M. BASE COURSE MATERIAL, GRADING A (SPEC. 304)
  - ⑤ 0.20 M. LEAN CONCRETE BAE (SPEC. 305)
  - ⑥ 0.50 M. SUBBASE COURSE (SPEC. 301)
  - ⑦ 0.05 M. COLD MILLING (SPEC. 403)
  - ⑧ CONCRETE CURB TYPE "D" (SPEC. 609)
  - ⑨ CONCRETE CURB TYPE "B" (SPEC. 609)
  - ⑩ SAW CUT (SEE NOTE 5) (SPEC. 401)
  - ⑪ 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
  - ⑫ 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
  - ⑬ SINGLE FACE GUARDRAIL (SPEC. 606)
  - ⑭ CONCRETE BARRIER TYPE "C" (SPEC. 610)
  - ⑮ PROOF ROLLING SPEC. 203
  - ⑯ FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
  - ⑰ ASHTO CLASSIFICATION (SPEC. 203)
  - ⑱ 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
  - ⑳ SODDING (SPEC. 628)
  - ㉑ 0.10 TOP SOIL (SPEC. 625)
  - ㉒ RETAINING WALL (SPEC. 601 & SPEC. 602)
  - ㉓ BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
  - ㉔ EXISTING CONCRETE CURB TO REMAIN
  - ㉕ EXISTING GUARDRAIL TO REMAIN

- NOTES:**
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
  2. ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
  3. FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB AND GUTTERS, SEE LAYOUT PLANS FOR INLETS, CURBS, CURB BARRIERS, CURBS PAVES, ETC., SEE LAYOUT PLANS.
  4. SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
  5. SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1).



**TYPICAL NORMAL SECTION**  
STA 1+24.90 (PR-650) TO STA 1+24.90 (PR-650)  
STA 1+40.00 (PR-650) TO STA 1+40.00 (PR-650)  
STA 1+46.00 (PR-650) TO STA 1+46.00 (PR-650)  
STA 1+24.90 (LUMA) TO STA 1+24.90 (LUMA)



- NOTE:**
1. CONTROL JOINTS @ 0.91 C-C.
  2. WHERE PROPOSED SIDEWALK ABUTS EXISTING SIDEWALK OR STRUCTURE, INSTALL A "J" CONSTRUCTION JOINT WITH FILLER AND JOINT SEALANT.

CONCRETE SIDEWALK DETAILS  
SCALE: NTS







VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(PR-2-WB)									
PC-VI	925.08°	230.000	0.257	21.753		262366.6728	231029.4332		LINE PR-2-WB BEGINS
PT-VI						262362.5636	231051.9302		STA.1+40.74(PR-2-WB)
VI [R] (PR-2-WB)						262366.8107	231075.9520	N 67°02'00" E	51.610
PC-VI						262439.7650	231133.9477		STA.1+48.65(PR-2-WB)
PT-VI						262450.4778	231193.7777	N 61°36'52" E	133.922
VI [L] (PR-2-WB)						262458.1089	231174.9796		STA.1+50.97(PR-2-WB)
PC-VI						262486.6232	231302.9030		STA.1+58.48(PR-2-WB)
PT-VI						262482.3287	231282.2686	N 70°12'21" E	94.054
VI [R] (PR-2-WB)						262488.3039	231301.3051		STA.1+72.26(PR-2-WB)
PC-VI						262504.8925	231379.4646		STA.1+81.59(PR-2-WB)
PT-VI						262512.8473	231449.6684	N 71°09'58" E	215.582
VI [L] (PR-2-WB)						262515.1572	231581.8044		STA.1+83.48(PR-2-WB)
PC-VI						262550.6611	231693.9142	N 67°13'33" E	31.417
PT-VI									LINE PR-2-WB ENDS

VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(PR-2-EB)									
PC-VI	0°04'10"	100.000	0.079	66.235	0.020	262339.9990	231036.1210		LINE PR-2-EB BEGINS
PT-VI						262364.6065	231097.1530	N 68°21'44" E	66.735
VI [R] (PR-2-EB)						262388.1388	231159.2477		VERTEX
PC-VI						262475.2050	231375.2016	N 68°18'32" E	299.238
PT-VI						262491.6938	231417.2021		STA.1+06.47(PR-2-EB)
VI [L] (PR-2-EB)						262545.9035	231535.8329		VERTEX
PC-VI						262571.1629	231602.4786	N 66°45'34" E	176.503
PT-VI									STA.1+13.47(PR-2-EB)
VI [R] (PR-2-EB)								N 67°45'39" E	72.001
PT-VI									LINE PR-2-EB ENDS

VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(CL-MAR)									
PC-VI	743°21'	30.000	22.863	7.719	39.072	262508.7032	231138.4884		LINE CL-MAR BEGINS
PT-VI						262551.4801	231172.0112		STA.1+33.05(CL-MAR)
VI [L] (CL-MAR)						262562.0810	231244.0592		VERTEX
PC-VI						262522.4034	231251.0545	S 88°32'59" E	84.926
PT-VI						262520.4499	231399.5473	S 89°14'37" E	148.506
VI [R] (CL-MAR)						262532.2836	231428.0952		STA.1+42.06(CL-MAR)
PC-VI						262596.5088	231582.9635	N 67°28'40" E	198.580
PT-VI									LINE CL-MAR ENDS

VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(PR-6-SO)									
PC-VI	341°59'54"	100.000	31.059	4.757	60.502	262483.9254	231421.0842	S 73°17'55" E	86.235
PT-VI						262459.5466	231240.5690		LINE PR-6-SO BEGINS
VI [L] (PR-6-SO)						262430.7723	231363.5688	S 98°36'01" E	68.044
PT-VI									STA.1+15.52(PR-6-SO)
VI [R] (PR-6-SO)									LINE PR-6-SO ENDS

VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(PR-6-NO)									
PC-VI	12°53'34"	200.000	22.370	1.243	44.556	262508.7052	231138.4884		LINE PR-6-NO BEGINS
PT-VI						262557.6883	231099.7478		STA.1+42.48(PR-6-NO)
VI [R] (PR-6-NO)						262552.5238	231086.8992	N 38°20'46" W	84.826
PC-VI						262570.5502	231163.3339		STA.1+44.50(CL-VEA)
PT-VI						262576.4894	231150.0733		STA.1+54.25(CL-VEA)
VI [L] (CL-VEA)						262582.7238	231129.3751	N 06°24'13" W	13.283
PT-VI									LINE CL-VEA ENDS

VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(CL-LUMA)									
PC-VI	43°57'43"	15.000	6.055	1.176	11.509	262544.8174	231170.6575		LINE CL-LUMA BEGINS
PT-VI						262548.6327	231169.0477		STA.1+04.14(CL-LUMA)
VI [R] (CL-LUMA)						262554.2111	231166.6939	N 22°52'37" W	10.196
PC-VI						262568.7253	231132.2765		STA.1+11.50(CL-VEA)
PT-VI						262569.5440	231130.6528	N 66°50'59" W	38.983
VI [L] (CL-VEA)						262576.4894	231150.0733		STA.1+54.25(CL-VEA)
PT-VI						262582.7238	231129.3751	N 06°24'13" W	13.283
VI [R] (CL-LUMA)									LINE CL-LUMA ENDS

VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(CL-LUMA)									
PC-VI	17°09'40"	50.000	7.544	0.566	14.976	262508.7052	231138.4884		LINE CL-LUMA BEGINS
PT-VI						262509.6206	231096.5031		STA.1+33.05(CL-LUMA)
VI [L] (CL-LUMA)						262512.4288	231078.4857	N 74°20'30" W	17.948
PT-VI									LINE CL-LUMA ENDS

VERTEX DATA

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(PR-6-SO)									
PC-VI	341°59'54"	100.000	31.059	4.757	60.502	262483.9254	231421.0842	S 73°17'55" E	86.235
PT-VI						262459.5466	231240.5690		LINE PR-6-SO BEGINS
VI [L] (PR-6-SO)						262430.7723	231363.5688	S 98°36'01" E	68.044
PT-VI									STA.1+15.52(PR-6-SO)
VI [R] (PR-6-SO)									LINE PR-6-SO ENDS





# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Caribbean Ecological Services

Field Office

P.O. Box 491

Boqueron, PR 00622

**JAN 14 2013**

In Reply Refer To:  
FWS/R4/CESFO/BKT/HUD

Mr. Efrain Maldonado  
Field Office Director  
U.S. Department of Housing and Urban Development  
235 Federico Costa Street, Suite 200  
San Juan, Puerto Rico 00918

Re: Blanket Clearance Letter for Federally  
sponsored projects, Housing and Urban  
Development

Dear Mr. Maldonado:

The U.S. Fish and Wildlife Service (USFWS) is one of two lead Federal Agencies responsible for the protection and conservation of Federal Trust Resources, including threatened or endangered species listed under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) (ESA). In the U.S. Caribbean, the USFWS has jurisdiction over terrestrial plants and animals, the Antillean manatee and sea turtles when nesting. The National Marine Fisheries Service has jurisdiction over marine species, except for the manatee. The ESA directs all Federal agencies to participate in conserving these species. Specially, section 7 of the ESA requires Federal agencies to consult with the USFWS to ensure that actions they fund authorize, permit, or otherwise carry out will not jeopardize the continued existence of any listed species or adversely modify designated critical habitat. The USFWS issued regulations in 1986 detailing the consultation process. As part of this consultation process, the USFWS review development projects to assist Federal agencies on the compliance of the ESA.

The U.S. Department of Housing and Urban Development (HUD) typically allocate grant funds for rural and urban development projects. Obligations under the ESA, as well as the National Environmental Policy Act (NEPA), require HUD to perform consultation and an environmental impact review prior to the project's authorization. Primarily, these projects involve repair or reconstruction of existing facilities associated with developed land.

In order to expedite the consultation process, the Caribbean Ecological Services Field Office has developed this Blanket Clearance Letter (BCL) to cover for activities and projects that typically result in no adverse effects to federally-listed species under our jurisdiction. If projects comply with the project criteria discussed below, no further consultation with the USFWS is needed.



### Project Criteria

1. Street resurfacing.
2. Construction of gutters and sidewalks along existing roads.
3. Reconstruction or emergency repairs of existing buildings, facilities and homes.
4. Rehabilitation of existing occupied single family homes, and buildings; provided that equipment storage or staging areas are not located on vacant property harboring a wetland and/or forested vegetation and that the lighting associated to the new facilities is not visible directly or indirectly from a beach.
5. Demolition of dilapidated single family homes or buildings; provided that the demolition debris is disposed in certified receiving facilities; equipment storage or staging areas are not located on vacant property harboring a wetland and/or forested vegetation.
6. Rebuilding of demolished single family homes or buildings, provided that the new construction is within the existing footprint of the previous structure and/or within pre-existing grassed or paved areas, and that the lighting associated to the new facilities are not visible directly or indirectly from a beach.
7. Activities within existing Right of Ways (ROWs) of roads, bridges and highways, when limited to actions that do not involve cutting native vegetation or mayor earth moving; and are not located within, or adjacent to, drainages, wetlands, or aquatic systems. These activities include the installation of potable water and sanitary pipelines.
8. Improvements to existing recreational facilities, including the installation of roofs to existing basketball courts, provided that the lighting associated to the facilities are not visible directly or indirectly from the beach.
9. Construction of electric underground systems in existing towns and communities, provided that the property is not a wetland area and the lighting associated to the facilities are not visible directly or indirectly from the beach.
10. Construction of facilities on vacant properties covered with grasses in urban areas, provided that the lighting associated to the facilities are not visible directly or indirectly from the beach.
11. Construction of houses, buildings or acquiring lands in urban areas covered by grass for relocation of low income families and/or facilities that have been affected by weather conditions.

### Determination:

Based on the nature of the projects described above and habitat characteristics described on project criteria, we have determined that the actions and type of projects described above may be conducted within this BCL without adversely affecting federally-listed

species under our jurisdiction. Thus, consultation under Section 7 of the Endangered Species Act is not required.

In all situations, HUD, and the municipalities are expected to implement Best Management Practices, where applicable, to ensure that impacts from erosion and stream sedimentation are appropriately minimized.

The Service encourages your agency to enhance the conservation of our trust resources (i.e.; listed species, wetlands, aquatic habitats, migratory birds and marine mammals). We therefore, provide the following recommendations that have proven to help in this way.

#### Water Crossing Structures:

1. Use of bottomless culverts or single span bridges instead of traditional box or RCP culverts or any other water crossing structure that impacts the stream bottom, particularly in streams which support native fish. The use of bottomless culverts or a short span bridge would provide a more stable crossing and would not alter the stream habitat. However, if bottomless structures or bridges are not feasible due to cost or engineering constraints, we recommend the following criteria be used to maintain good habitat in the streams:
  - a. The stream should not be widened to fit the bridge since this can lead to sedimentation during low flows and possible bank erosion during high flows. Rather, the bridge should be designed to fit the stream channel at the point of crossing. Culverts should be sized to carry natural bank full flow. Additional flow can be captured by culverts placed at a higher elevation so as not to impact bank full flows.
  - b. Bridge abutments, wing walls or any other structures should not intrude into the active stream channel.
  - c. All culvert footings must be countersunk into the stream channel at both the invert and outlet ends at a minimum of 10% of the culvert height. This will align the water crossing structure with the slope of the stream.
  - d. Waterways must not be blocked as to impede the free movement of water and fish. Materials moved during construction, such as grubbing, earth fills, and earth cut materials must not be piled where they can fall back into the stream and block the drainage courses.
  - e. Appropriate erosion and/or sedimentation control measures are to be undertaken to protect water quality until riverbanks are re-vegetated. It has been our experience that appropriate erosion and/or sedimentation control measures are not implemented properly by project contractors. In order to function properly, silt fences need to be buried 6" (proper depth is marked by a line on the silt fence) and supported at regular intervals by wood stakes. For that reason we are recommending that



the enclosed drawing of proper silt fence installation is included in all final project construction plans.

- f. Upon completion of a water crossing construction, any temporary fill, must be removed from the construction area and disposed in a landfill.

#### Limitations:

Actions that do not meet the above project criteria, such as actions requiring placement of fill, disturbance, or modification to land outside of an existing access road or ROW; actions that occur on vacant property harboring a wetland and/or forest vegetation; actions requiring excavation, clearing of native vegetation, or alteration of storm water drainage patterns; or actions that require lighting which can be directly or indirectly seen from a beach, must be individually coordinated through the Caribbean Ecological Services Field Office and will be evaluated on a case by case basis.

#### **The Service reserves the right to revoke or modify this BCL if:**

1. New information reveals that the categories of work covered in this BCL may affect listed or designated critical habitat in a manner, or to an extent, not previously considered.
2. The categories of work included in this BCL are subsequently modified to include activities not considered in this review.
3. New species are listed or critical habitat designated that may be affected.

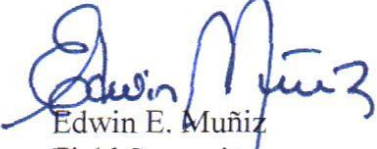
It is our mission to work with others, to conserve, protect and enhance fish wildlife and plants and their habitats for the continuing benefit of our people.

To obtain additional information on threatened and endangered species, you may visit our website <http://www.fws.gov/caribbean/ES> where you will also find the Map of the Species by Municipality and the Map of Critical Habitat. The USFWS has also developed a web based tool called IPac. Please visit <http://www.ecos.fws.gov/ipac> and familiarize yourself with the features we offer. We encourage you to begin your project planning process by requesting an **Official Species List** for your individual project that will include all species that may occur in the vicinity of the action area and includes a map of the action area. The site will also identify designated critical habitat, or other natural resources of concern that may be affected by your proposed project. At this time, best management practices or conservation measures are not available at the site but we expect the site to continue growing in its offering.

These maps provide information on the species/habitat relations within a municipality and could provide the applicants an insight if the proposed action is covered under this BCL or may affect a species, thus requiring individual review.

If you have any additional question regarding this BCL, please do not hesitate to contact Marelisa Rivera, Deputy Field Supervisor, at 787-851-7297 extension 206.

Sincerely yours,



Edwin E. Muñiz  
Field Supervisor

Enclosures (Fact Sheets)

cc: OCAM, San Juan  
Office of Federal Funds, 78 Municipalities of Puerto Rico  
AAA  
PRFAA  
DNER





## Ecological Services in the Caribbean

Caribbean Field Office

# Project evaluation



**Our mission** is to conserve, protect and enhance fish and wildlife and their habitats through consultation, cooperation and communication for the continuing benefit of the American people.

### Legal authorities:

- Endangered Species Act (ESA)
- Fish and Wildlife Coordination Act
- Migratory Bird Treaty Act
- Coastal Barriers Act

### Roles and Responsibilities:

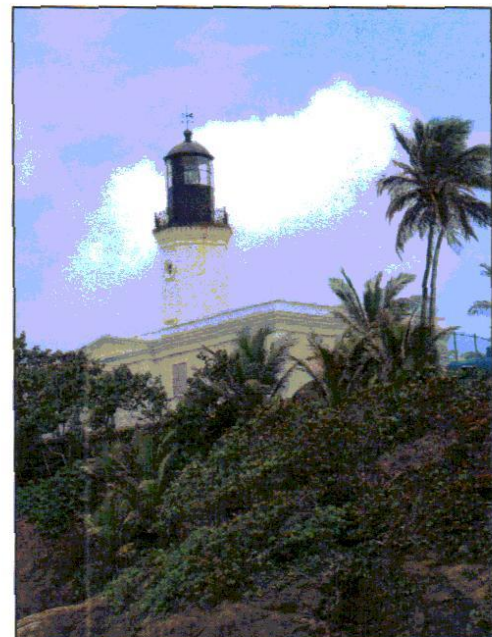
- Provide technical assistance to Federal and Commonwealth agencies to minimize possible impacts of land and water projects to our trust resources
  - \*Wetlands and other aquatic habitats
  - \*Endangered Species and their habitats
  - \*Migratory Birds
  - \*Critical Wildlife Areas
  - \*Coastal Barriers
- Assist with ESA Section 7 compliance through informal and formal consultation processes

### How do we assist others?

- Determine presence / absence of wetland resources, threatened and endangered species habitat, coastal barriers, important wildlife areas within the action area
- Evaluate possible direct, indirect and cumulative impacts
- Provide conservation recommendations to avoid, minimize and/or mitigate impacts
- General recommendations for habitat enhancement

### Minimum requirements for the evaluation of projects:

- An 8.5 by 11 inch copy of the specific site location on a USGS topographic map (1:20,000) marked with an arrow (➔)
- Project description
- Aerial photo of the project site
- Latitude and Longitude (degrees, minutes and seconds or decimal degrees)
- Environmental Documents (EA and EIS)
- Specific studies (by qualified personnel)



### For more information:

US Fish and Wildlife Service  
Caribbean Field Office  
Raod 301, Km. 5.1  
Bo. Corozo

Boquerón, PR 00622

<http://www.fws.gov>

<http://www.fws.gov/caribbean/es>



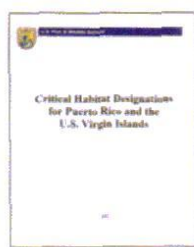


## Endangered Species Lists Using Web-based Tools

The U.S. Fish and Wildlife Service's Caribbean Ecological Services Field Office (CESFO) provides technical assistance to private individuals and organizations, as well as Federal, state, and local agencies pursuant to the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). To assist project sponsors or applicants with the process of determining whether a Federally-listed species and/or "critical habitat" may occur within their proposed project area, we have developed Web-based tools. These tools were developed primarily to assist Federal agencies that are consulting with us under Section 7(a)(2) of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

**IPaC.** The US Fish & Wildlife Service (USFWS) has a tool named IPaC. IPaC stands for Information, Planning, and Conservation. This system is designed for easy, public access to the natural resources information for which the USFWS has trust or regulatory responsibility. Examples include Threatened and Endangered species, migratory birds, National Refuge lands, Coastal Barrier Resource Units, and the management of invasive species. One of the primary goals of the IPaC system is to provide information in a manner that assists individuals in planning their activities within the context of natural resource conservation. The IPaC system also assists people through the various regulatory consultation, permitting and approval processes administered by the USFWS, helping achieve more effective and efficient results for both the project proponents and natural resources. Through IPaC, you can get a preliminary USFWS species list in addition to links to species life history information, the USFWS Migratory Bird program, and more. You can access IPaC at: <http://ecos.fws.gov/ipac>

**CESFO List of Threatened & Endangered Species and Critical Habitat Designations:** CESFO has developed another tool (Species Map) that can be used as a quick reference to find out where the Federally-listed species



are known to occur, as well as those likely to occur, in any given municipality in Puerto Rico and island in the

U.S. Virgin islands. It identifies general areas where the species may be located. However, it does not represent the absolute distribution of the species and does not constitute a recommendation or comment issued by our agency in reference to a proposed project. This list represents the best available information regarding known or likely occurrences of Federally-listed species and is subject to change as new information becomes available. You can access this database at <http://www.fws.gov/caribbean/es/PDF/Map/pdf>



Be aware that Section 9 of the ESA prohibits unauthorized taking of listed species and applies to Federal and non-Federal activities. Under the Act, it is illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import or export, ship in interstate or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any endangered fish or wildlife species and most threatened fish and wildlife species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. "Harm" includes any act which actually kills or injures fish or wildlife, and case law has clarified that such acts may include significant habitat modification or degradation that significantly impairs



essential behavioral patterns of fish or wildlife. For projects not authorized, funded, or carried out by a Federal agency, consultation with the Service pursuant to Section 7(a)(2) of the ESA is not required. However, no person is authorized to “take<sup>1</sup>” any listed species without appropriate authorizations from the Service. Therefore, we provide technical assistance to individuals and agencies to assist with project planning to avoid the potential for “take,” or when appropriate, to provide assistance with their application for an incidental take permit pursuant to Section 10(a)(1)(B) of the ESA.

If the project is within the distribution of the species, additional information may be needed to determine the presence of habitat. In some cases, specialized surveys may be needed to determine the presence or absence of the species in a particular area.

For additional information on fish and wildlife resources or State-listed species, we suggest contacting the Puerto Rico Department of Natural and Environmental Resources and the U.S. Virgin Islands Department of Planning and Natural Resources.

For further assistance, please feel free to contact us at (787) 851-7297 or visit our Web page at [www.fws.gov/caribbean/es](http://www.fws.gov/caribbean/es) if you need further assistance.

For further information visit our national websites at:  
<http://www.fws.gov>  
<http://ecos.fws.gov>





U.S. Fish & Wildlife Service

# Consultations with Federal Agencies

## *Section 7 of the Endangered Species Act*

The purposes of the Endangered Species Act are to provide a means for conserving the ecosystems upon which endangered and threatened species depend and a program for the conservation of such species. The ESA directs all Federal agencies to participate in conserving these species. Specifically, section 7 (a)(1) of the ESA charges Federal agencies to aid in the conservation of listed species, and section 7 (a)(2) requires the agencies to ensure that their activities are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitats.

### **How does the consultation process support the recovery of species and their ecosystems?**

The Endangered Species Program of the U.S. Fish and Wildlife Service uses section 7 tools in partnership with other Service programs and other Federal agencies to collaboratively solve conservation challenges, as well as create opportunities, using section 7 consultations, to recover the ecosystems of listed species. Consultations also provide ways to implement recovery tasks by addressing threats to listed species that may result from Federal agency programs and activities.

### **What is the consultation process that occurs under section 7(a)(2)?**

The provision under section 7 that is most often associated with the Service and other Federal agencies is section 7(a)(2). It requires Federal agencies to consult with the Service to ensure that actions they fund, authorize, permit, or otherwise carry out will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats. The



Photo Credit: USGS - Sirenia Project

USGS

*In response to requests for consultations from the U. S. Coast Guard with regard to manatees and sea turtles, the South Florida Office of the U. S. Fish and Wildlife Service has provided guidance about events such as firework displays, regattas, boat parades and races, and fishing tournaments.*

Service issued regulations in 1986 detailing the consultation process, and we have since completed a handbook describing the process in detail. The handbook is available on our web site at [http://www.fws.gov/endangered/esa-library/pdf/esa\\_section7\\_handbook.pdf](http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf).

### **What is the Service doing to facilitate the consultation process?**

Designing projects in ways that are compatible with the conservation needs of listed species and their ecosystems is among the most effective methods of ensuring a more rapid and efficient section 7 consultation process, as well as species' recovery. The Information, Planning, and Conservation System is an emerging tool for action agencies, their applicants, and other project proponents to use

during the initial phases of project development and assessment. The system will allow for more effective integration of listed resource conservation needs and the eventual streamlining of section 7(a)(2) consultation.

### **How does a consultation get started?**

Early coordination is one of the most effective methods of (1) streamlining section 7 consultation, (2) reducing the need to make project modifications during the consultation process, and (3) improving the ability of section 7 to fulfill its role as a recovery tool. Federal agencies, applicants, and the Service engage in early coordination to develop methods of integrating proposed activities with the conservation needs of listed resources before the proposed actions are fully designed.

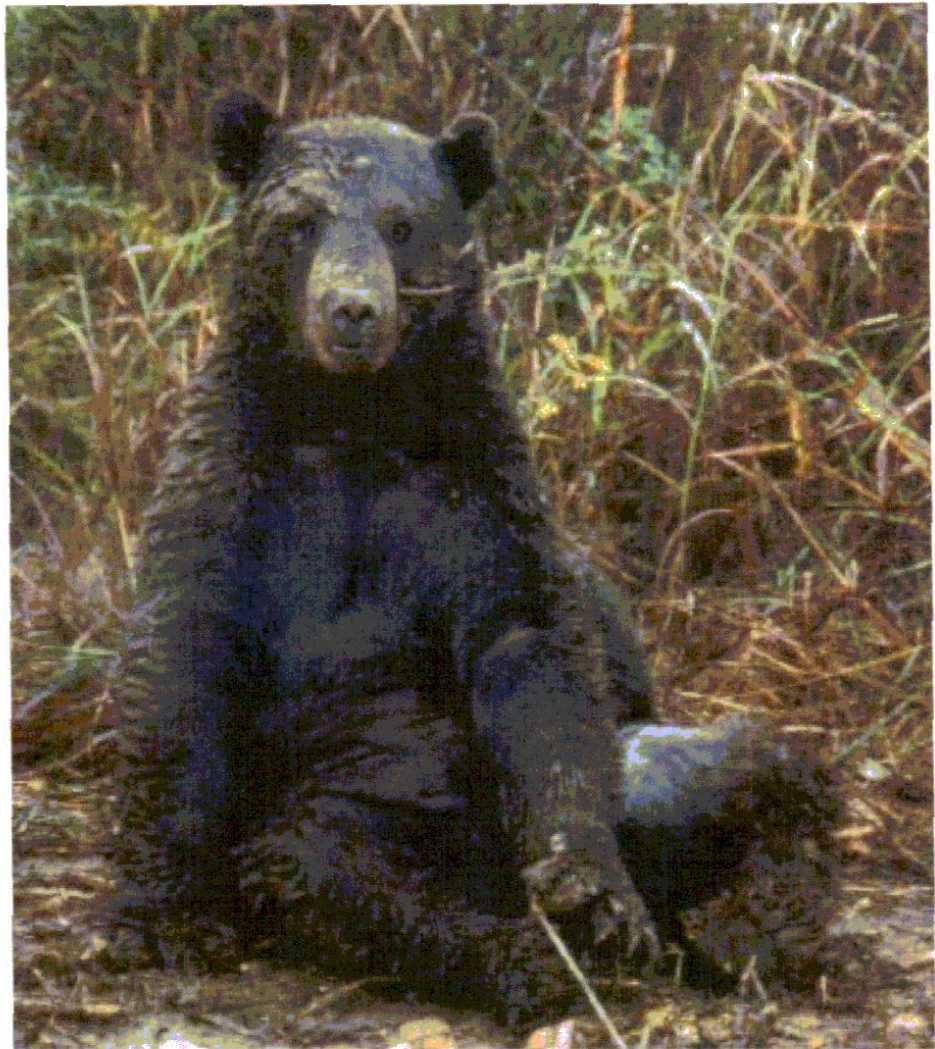


Before initiating an action, the Federal agency or its non-Federal permit applicant should coordinate with the Service as to the species that may be within their action area. If a listed species is present, the Federal agency must determine whether the project may affect it. If so, consultation may be required. If the action agency determines (and the Service agrees) that the project is not likely to adversely affect a listed species or designated critical habitat, and the Service concurs in writing, then the consultation (informal to this point) is concluded.

#### **What happens if a Federal project may adversely affect a listed species?**

If the Federal agency determines that a project is likely to adversely affect a listed species or designated critical habitat, the agency initiates formal consultation by providing information with regard to the nature of the anticipated effects. The ESA requires that consultation be completed within 90 days, and the regulations allow an additional 45 days for the Service to prepare a biological opinion. The analysis of whether or not the proposed action is likely to jeopardize the continued existence of the species or adversely modify designated critical habitat is contained in a biological opinion. If a jeopardy or adverse modification determination is made, the biological opinion must identify any reasonable and prudent alternatives that could allow the project to move forward.

The Service must anticipate any incidental take that may result from the proposed project and, provided that such take will not jeopardize the continued existence of the listed species, authorize that take in an incidental take statement. The latter contains clear terms and conditions designed to reduce the impact of the anticipated take to the species involved. The authorization of incidental take is contingent upon the Federal agency carrying out the terms and conditions. If the Service issues either a non-jeopardy opinion or a jeopardy opinion that contains reasonable and prudent alternatives, it may include an incidental take statement.



Dan Anderson/USFWS

*This Louisiana black bear was one of the largest ever captured on Tensas River National Wildlife Refuge, weighing in at over 400 pounds. The bear was trapped using a leg-hold cable snare that does not injure the animal. The biological information obtained, including weight, sex, a tooth for aging, and other measurements, is part of the Service's ongoing research efforts to aid in the recovery of this threatened subspecies. Afterwards, the bear was released on site.*

#### **What is the consultation workload?**

In Fiscal Year 2010, the Service assisted Federal agencies in carrying out their responsibilities under section 7 on more than 30,000 occasions. The vast majority of the workload was technical assistance to Federal agencies and informal consultations on actions that were not likely to adversely affect listed species or their designated critical habitat. A large percentage of projects, as initially planned, would have had adverse impacts to listed species, but were dealt with through informal consultation. In these situations, the Federal agency made changes to the project design so that adverse impacts to listed species were avoided.

#### **What type of guidance is available for other Federal agencies?**

Guidance is available on our section 7 web site at <http://www.fws.gov/endangered/what-we-do/consultations-overview.html>. Please call us at 703-358-2171 if you have any questions, or see our Endangered Species Program Contacts at <http://www.fws.gov/endangered/regions/index.html> to locate a Service office in your area.

**U. S. Fish and Wildlife Service  
Endangered Species Program  
4401 N. Fairfax Drive, Room 420  
Arlington, VA 22203  
703-358-2171  
<http://www.fws.gov/endangered/>**

April 2011



# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Bayamón County, Puerto Rico



## Local office

Caribbean Ecological Services Field Office

☎ (787) 834-1600

📠 (787) 851-7440

✉ [CARIBBEAN\\_ES@FWS.GOV](mailto:CARIBBEAN_ES@FWS.GOV)

MAILING ADDRESS

Post Office Box 491

Boqueron, PR 00622-0491

PHYSICAL ADDRESS

Office Park I

State Road #2 Km 156.5, Suite 303}

Mayaguez, PR 00680

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not *guaranteed to be found on or near the project area*. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Reptiles

NAME	STATUS
Puerto Rican Boa <i>Chilabothrus inornatus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/6628">https://ecos.fws.gov/ecp/species/6628</a>	Endangered

## Flowering Plants

NAME	STATUS
Palo De Rosa <i>Ottoschulzia rhodoxylon</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/5741">https://ecos.fws.gov/ecp/species/5741</a>	Threatened

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.



# Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

**What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?**

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The [data](#) in this location indicates there are no migratory [birds of conservation concern](#) expected to occur in this area.

There may be migratory birds in your project area, but we don't have any survey data available to provide further direction. For additional information, please refer to the links above for recommendations to minimize impacts to migratory birds or contact your local FWS office.

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern \(BCC\)](#) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the

existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

### Fish hatcheries

There are no fish hatcheries at this location.

### Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1A](#)

RIVERINE

[R2UBH](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

**NOTE:** This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

#### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

#### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal

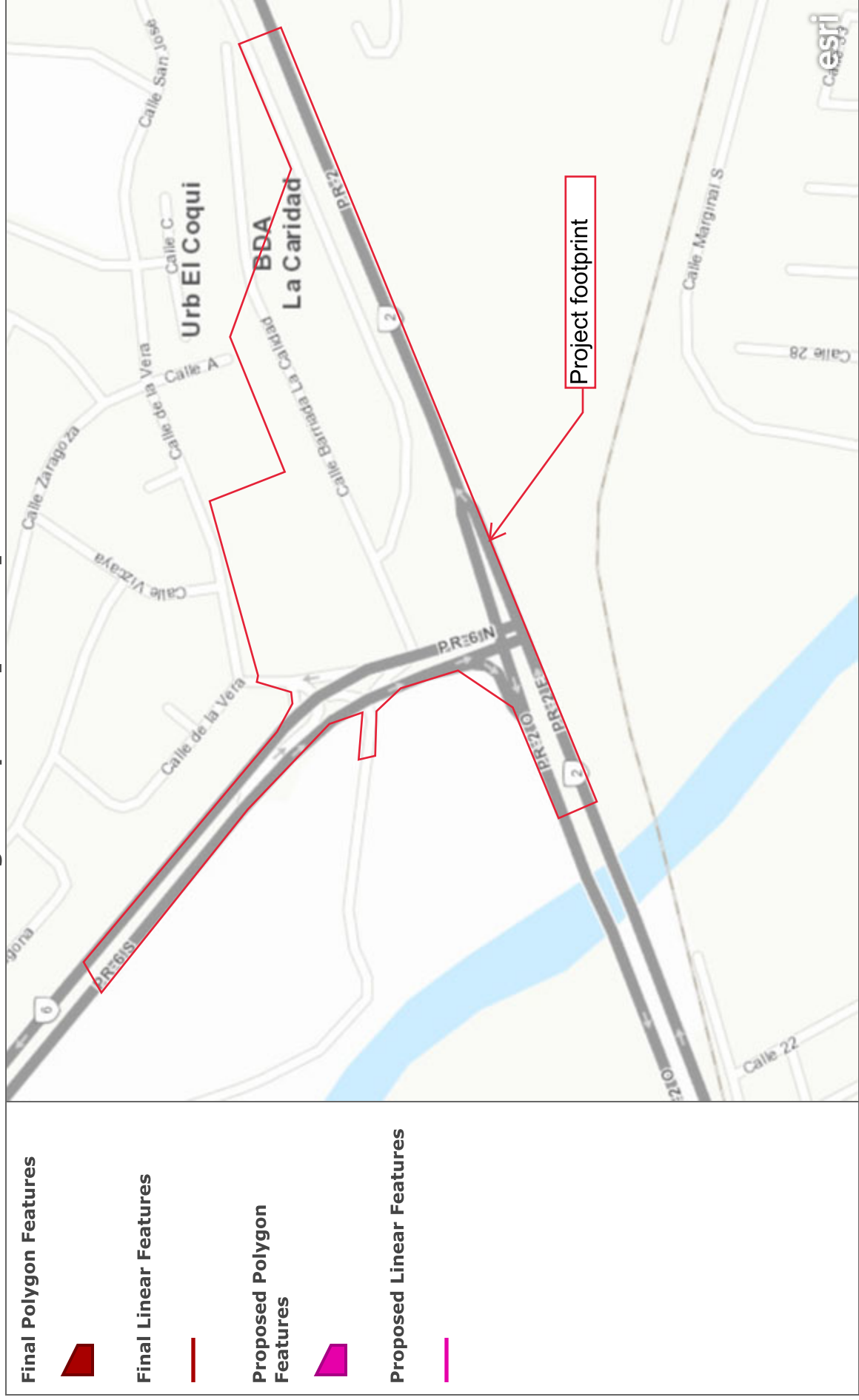
waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

#### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

# Critical Habitat for Threatened & Endangered Species [USFWS]



Final Polygon Features



Final Linear Features



Proposed Polygon Features



Proposed Linear Features



A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.



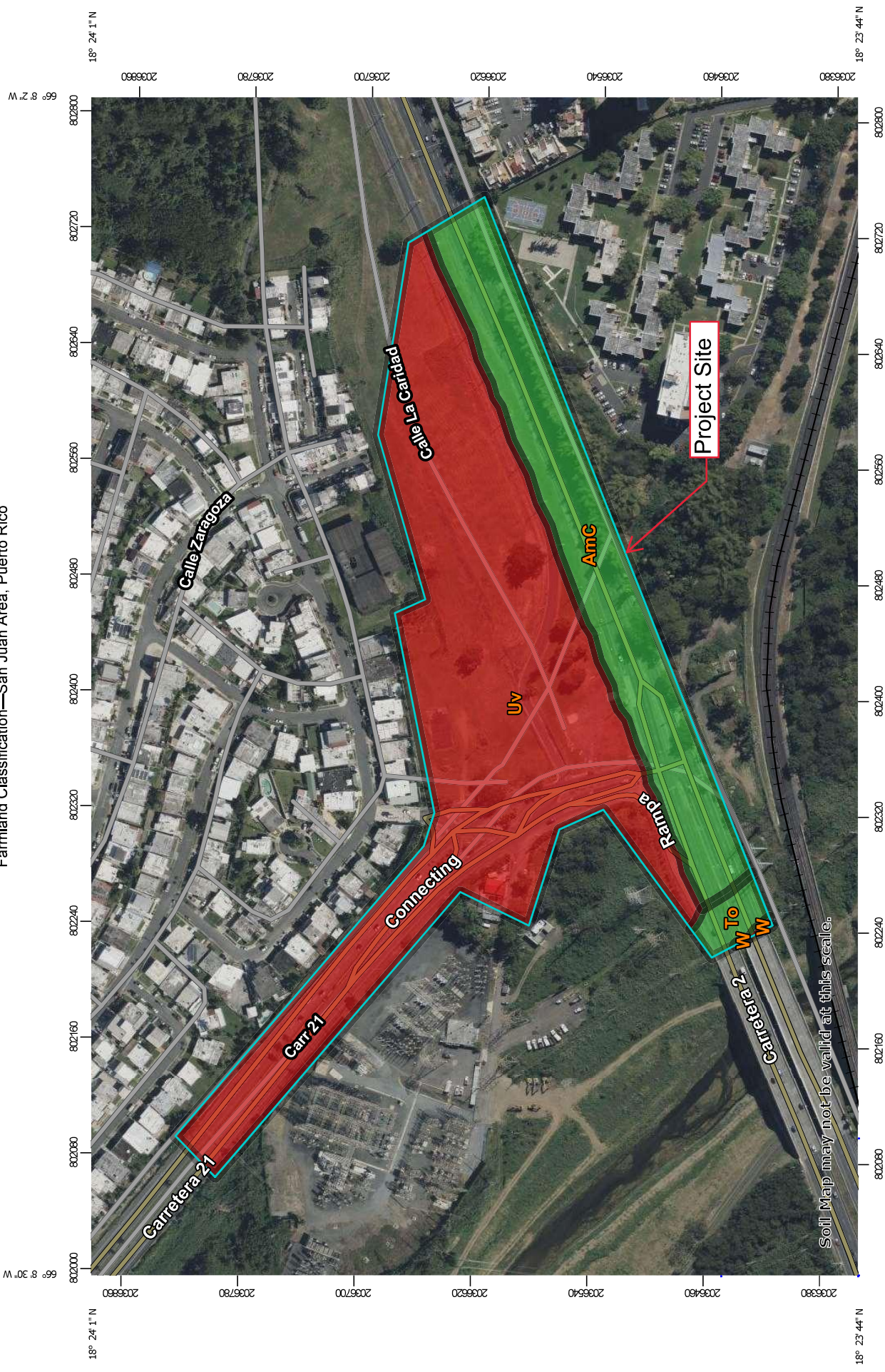
Esri, HERE, Garmin, INCREMENT P, USGS

Prepared by ICF

PR-CRP-001109 Geometric Improvements to PR-2 & PR-6 Intersection  
Coord (lat/log): 18.396966° , -66.138431°  
Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico

**Attachment 9: Farmland Classification Map**





Soil Map may not be valid at this scale.

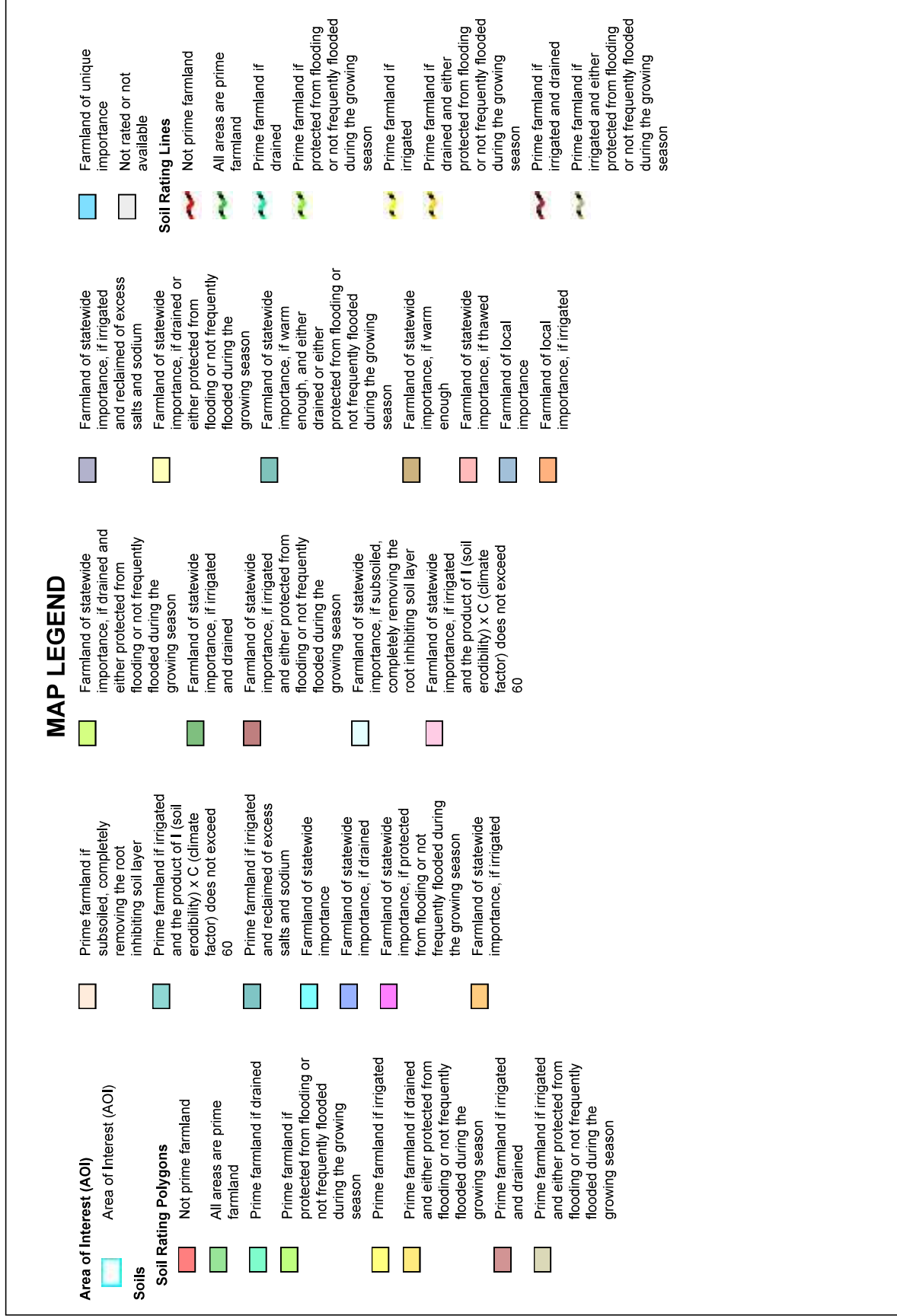
Map Scale: 1:3,720 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

Prepared by ICF





Farmland Classification—San Juan Area, Puerto Rico

	Prime farmland if subsoiled, completely removing the root inhibiting soil layer		Farmland of statewide importance, if drained and reclaimed of excess salts and sodium		Farmland of unique importance		Prime farmland if irrigated and reclaimed of excess salts and sodium
	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season		Not rated or not available		Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
	Prime farmland if irrigated and reclaimed of excess salts and sodium		Farmland of statewide importance, if either protected from flooding or not frequently flooded during the growing season	<b>Soil Rating Points</b>			
	Farmland of statewide importance		Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season		Not prime farmland		Farmland of statewide importance, if either protected from flooding or not frequently flooded during the growing season
	Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if warm enough		All areas are prime farmland		Prime farmland if irrigated and drained
	Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if thawed		Prime farmland if irrigated and drained		Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
	Prime farmland if irrigated importance, if irrigated importance, if irrigated		Farmland of local importance		Prime farmland if irrigated and drained		Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
	Farmland of local importance, if irrigated		Farmland of local importance, if irrigated		Prime farmland if irrigated and drained		Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Farmland Classification—San Juan Area, Puerto Rico

<p>Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season</p>	<p>Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium</p>	<p>Farmland of unique importance</p>	<p>The soil surveys that comprise your AOI were mapped at 1:20,000.</p>
<p>Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season</p>	<p>Farmland of statewide importance, if either protected from flooding or not frequently flooded during the growing season</p>	<p>Not rated or not available</p>	<p><b>Warning:</b> Soil Map may not be valid at this scale.</p>
<p>Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season</p>	<p>Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season</p>	<p><b>Water Features</b></p> <p>Streams and Canals</p>	<p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p>
<p>Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer</p>	<p>Farmland of statewide importance, if warm enough</p>	<p><b>Transportation</b></p> <p>Rails</p> <p>Interstate Highways</p>	<p>Please rely on the bar scale on each map sheet for map measurements.</p>
<p>Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60</p>	<p>Farmland of statewide importance, if warm enough</p>	<p>US Routes</p> <p>Major Roads</p> <p>Local Roads</p>	<p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)</p>
<p>Farmland of local importance, if irrigated</p>	<p>Farmland of local importance</p>	<p><b>Background</b></p> <p>Aerial Photography</p>	<p>Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.</p>
<p>Farmland of local importance, if irrigated</p>	<p>Farmland of local importance, if irrigated</p>		<p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p>
<p>Farmland of local importance, if irrigated</p>	<p>Farmland of local importance, if irrigated</p>		<p>Soil Survey Area: San Juan Area, Puerto Rico Survey Area Data: Version 17, Sep 13, 2023</p>
<p>Farmland of local importance, if irrigated</p>	<p>Farmland of local importance, if irrigated</p>		<p>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</p>
<p>Farmland of local importance, if irrigated</p>	<p>Farmland of local importance, if irrigated</p>		<p>Date(s) aerial images were photographed: Jan 23, 2022—Mar 1, 2022</p>
<p>Farmland of local importance, if irrigated</p>	<p>Farmland of local importance, if irrigated</p>		<p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

## Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AmC	Almirante clay, 5 to 12 percent slopes	All areas are prime farmland	5.4	27.2%
To	Toa silty clay loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	0.4	2.1%
Uv	Urban land-Vega Alta complex, 2 to 12 percent slopes	Not prime farmland	14.0	70.6%
W	Water	Not prime farmland	0.0	0.1%
<b>Totals for Area of Interest</b>			<b>19.8</b>	<b>100.0%</b>

### Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

### Rating Options

*Aggregation Method:* No Aggregation Necessary

*Tie-break Rule:* Lower

**Attachment 10: SHPO Consultation**



GOVERNMENT OF PUERTO RICO  
STATE HISTORIC PRESERVATION OFFICE

Executive Director | Carlos A. Rubio-Cancela | carubio@prshpo.pr.gov

August 17, 2023

**Lauren Bair Poche**

HORNE - Architectural Historian Manager  
10000 Perkins Rowe, Suite 610 Bldg G  
Baton Rouge, LA 70810

SHPO: 07-11-23-06 PUERTO RICO DISASTER RECOVERY, CDBG-DR CITY REVITALIZATION PROGRAM (CRP), PR-CRP-001109, GEOMETRIC IMPROVEMENTS TO PR-2 & PR-6 INTERSECTION, PR-2 KM 9.8 AND THE PR-6 KM 0.0, BAYAMÓN, PUERTO RICO

Dear Ms. Poche,

Our Office has received and reviewed the above referenced project in accordance with 54 USC 306108 (commonly known as Section 106 of the *National Historic Preservation Act, as amended*) and 36 CFR Part 800: *Protection of Historic Properties* from the Advisory Council on Historic Preservation. The State Historic Preservation Officer (SHPO) is to advise and assist federal agencies and other responsible entities when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or reduce the project's effects.

Our records support your finding of **no historic properties affected** within the project's area of potential effects.

Please note that should the Agency discover any historic properties at any point during project implementation, you should notify the SHPO immediately. If you have any questions concerning our comments, do not hesitate to contact our Office.

Sincerely,

Carlos A. Rubio-Cancela  
State Historic Preservation Officer

CARC/GMO/LGC





July 11, 2023

Carlos A. Rubio Cancela  
State Historic Preservation Officer  
Puerto Rico State Historic Preservation Office  
Cuartel de Ballajá (Tercer Piso)  
San Juan, PR 00902-3935

### **Puerto Rico Disaster Recovery, CDBG-DR City Revitalization (City-Rev) Program**

#### **Section 106 NHPA Effect Determination Submittal for PR-CRP-001109: Geometric Improvements to PR-2 & PR-6 Intersection Project, Bayamón, Puerto Rico – *No Historic Properties Affected***

Dear Architect Rubio Cancela,

On February 9, 2018, an allocation of Community Development Block Grant - Disaster Recovery (CDBG-DR) funds was approved by the United States Department of Housing and Urban Development (HUD) under the Federal Register Volume 83, No. 28, 83 FR 5844, to assist the Commonwealth of Puerto Rico in meeting unmet needs in the wake of Hurricanes Irma and Maria. On August 14, 2018, an additional \$8.22 billion recovery allocation was allocated to Puerto Rico under the Federal Register Volume 83, No. 157, 83 FR 40314. With these funding allocations, the Puerto Rico Department of Housing (PRDOH) aims to lead a comprehensive and transparent recovery for the benefit of Puerto Rico residents. To faithfully comply with HUD's environmental requirements, the Puerto Rico Department of Housing contracted Horne Federal, LLC (HORNE) to provide environmental records review services that will support the Department's objectives Puerto Rico Housing (PRDOH) for CDBG-DR.

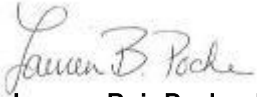
On behalf of PRDOH and the subrecipient, the Municipality of Bayamón, we are submitting documentation for the proposed Geometric Improvements to PR-2 & PR-6 Intersection Project as part of the City Revitalization Program. The proposed project is east of the National Register of Historic Places eligible Bayamón Traditional Urban Center, on the eastern side of the Río Bayamón.

Activities for the project located at the intersection between state roads PR-2 and PR-6 consist of the construction of a bridge structure, construction of a roundabout, and relocation of the existing frontage road and PR-6. Per the prepared NHPA Effect Determination Form, the proposed bridge structure will create a grade separation between the traffic of the PR-6 and traffic of the PR-2 in westbound direction going to Bayamón. The new roundabout will replace the existing intersection between the PR-6, existing frontage road and Villa España Main Access. The full scope of the project is described in detail within the submitted documentation, which includes mapping, photographs, and design plans.

Based on the provided documentation, the Program requests a concurrence with a determination that no historic properties affected is appropriate for this undertaking.

Please contact me with any questions or concerns by email at [lauren.poche@horne.com](mailto:lauren.poche@horne.com) or phone at 225-405-7676.

Kindest regards,



**Lauren Bair Poche. M.A.**

Architectural Historian, Historic Preservation Senior Manager

Attachments



October 20, 2022

**Arch. Carlos A. Rubio Cancela**

Executive Director

State Historic Preservation Officer

Cuartel de Ballajá Bldg.

San Juan, Puerto Rico

**Re: Authorization to Submit Documents**

Dear Arch. Rubio Cancela:

The U.S. Department of Housing (HUD) approved the allocations of Community Development Block Grant (CDBG-DR) funds on February 9, 2018. It also approved the allocation of Community Development Block Grant Mitigation (CDBG-MIT) funds on January 27, 2020. The purpose of these allocations is to address unsatisfied needs as a result of Hurricanes Irma and Maria in September 2017; and to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses.

To comply with the environmental requirements established by HUD, the Department of Housing of Puerto Rico (PRDOH) contracted Horne Federal LLC to provide environmental registry review services, among others, that will support the objectives of the agenda for both CDBG-DR and CDBG -MIT Programs.

In line to expedite the processes, Horne Federal LLC, is authorized to submit to the State Historic Preservation Officer, documentation of projects related to both the CDBG-DR and CDBG-MIT on behalf of PRDOH.


Cordially,

A handwritten signature in blue ink, appearing to be 'JB', is written over the typed name.

Juan C. Pérez Bofill, P.E. M.Eng

Director of Disaster Recovery

CDBG DR-MIT

<b>PUERTO RICO 2017 DISASTER RECOVERY, CDBG-DR PROGRAM</b> <b>CITY REVITALIZATION PROGRAM (CRP)</b> <b>Section 106 NHPA Effect Determination</b>	
<b>Subrecipient: Bayamon</b>	
<b>Project Name: Geometric Improvements to PR-2 &amp; PR-6 Intersection</b>	
<b>Project Number: 001109</b>	

<b>Project Location: Intersection of State Road PR-2 km. 9.8 and the PR-6 km. 0.0.</b>	
<b>Project Coordinates:</b> <b>North: 18.3996946°, -066.1407223°</b> <b>West: 18.3963454°, -066.1396233°</b> <b>East: 18.3984433°, -066.1342496°</b> <b>South 18.3971619°, -066.1374593°</b> <b>(coordinates from Plan Layout Control Plan GR-07 in NAD 83 converted)</b>	
<b>TPID (Número de Catastro): N/A</b>	
<b>Type of Undertaking:</b> <input checked="" type="checkbox"/> Substantial Repair <input type="checkbox"/> New Construction	
<b>Construction Date (AH est.): circa 1940</b>	<b>Property Size (acres): n/a</b>

<b>SOI-Qualified Architect/Architectural Historian: N/A</b>
<b>Date Reviewed:</b>
<b>SOI-Qualified Archaeologist: Marisol Rodríguez Miranda</b>
<b>Date Reviewed: 06/26/2023</b>

In compliance with Section 106 of the National Historic Preservation Act (NHPA), the Program is responsible for identifying historic properties listed in the NRHP and any properties not listed that would be considered eligible for listing that are located within the geographic area of potential effects (APE) of the proposed project and assessing the potential effects of its undertakings on these historic properties.

## 1. Project Description (Undertaking)

The undertaking is located in the Juan Sanchez Ward of the Municipality of Bayamón. (Figure 1). It is located in the intersection between the state roads PR-2 ( KM. 9.8) & PR-6. Include a section of 1.055 kms of PR. 2 and 875 mts of PR 6 to the North, near the entrance of Villa España Development.

The Autonomous Municipality of Bayamón (AMB) is proposing improvements at the intersection between the state roads PR-2 & PR-6. The project includes the construction of bridge structure, construction of roundabout and relocation of the existing frontage road and PR-6. The bridge structure creates a grade separation between the traffic of the PR-6 and traffic of the PR-2 in westbound direction (To Bayamón). The roundabout design will replace the existing stop intersection between the PR-6, existing frontage road and Villa España Main Access. The project also includes a signalized intersection with new technology, LED traffic lights, traffic cameras & sensors and new programming. Further coordination with the AMB Dep. of Transportation will provide a solar back-up system. The intersection upgrade reduces the traffic conflicts, and it is expected to reduce the congestion during the peak hour and reduce the frequency and/or severity of the crashes related to intersection maneuvers.

606 Barbosa Avenue, Building Juan C. Cordero Dávila, Río Piedras, PR 00918 | P.O. Box 21365 San Juan, PR 00928-1365  
 Tel: (787)274-2527 | www.vivienda.pr.gov



Subrecipient: Bayamon

Project Name: Geometric Improvements to PR-2 & PR-6 Intersection


Project Number: 001109



Figure 1 Location of the undertaking in the 2023 satellite image of Google earth system showing the project footprint and the staging areas.

The proposed project will start in the PR-2 at kilometer 9.20 and will finish in the PR-2 at kilometer 9.95 with the geometric improvements in the PR-6, Frontage Road, and Villa España Main Access. The state roads impacted by the project serve as principal arterial that connect the Municipality of Bayamón with the Municipalities of Guaynabo and San Juan. Also, the improvement provides capacity to manage the AMB is proposing improvements at the intersection between the state roads PR-2 & PR-6. The project includes the construction of bridge structure, construction of roundabout and relocation of the existing frontage road and PR-6. The bridge structure creates a grade separation between the traffic of the PR-6 and traffic of the PR-2 in westbound direction (To Bayamón). The roundabout design will replace the existing stop intersection between the PR-6, existing frontage road and Villa España Main Access. The project also includes a signalized intersection with new technology, LED traffic lights, traffic cameras & sensors and new programming. Further coordination with the AMP DOT will provide a solar back-up system. The intersection upgrade reduces the traffic conflicts, and it is expected to reduce the congestion during the peak hour and reduce the frequency and/or severity of the crashes related to intersection maneuvers.

The estimated construction cost is \$12,548,889.00 and the construction drawings are 60% completed. The Puerto Rico Aqueduct & Sewer Authority (PRASA) is reviewing the project

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<b>Project Number: 001109</b>	

documents for initial recommendations and the communication companies (Claro, Liberty, etc.) will conduct adjustments on the existing infrastructure. The Puerto Rico Electric and Power Authority (PREPA) / LUMA already issued an initial recommendation to the electric utility drawings. The Puerto Rico Department of Transportation and Public Works (DTOP) has no objection to the development of the project according to the communication received from the Agency.

The proposed project will start in the PR-2 at kilometer 9.20 and will finish in the PR-2 at kilometer 9.95 with the geometric improvements in the PR-6, Frontage Road, and Villa España Main Access. The state roads impacted by the project serve as principal arterial that connect the Municipality of Bayamón with the Municipalities of Guaynabo and San Juan. Also, the improvement provides capacity to manage the future traffic increase and traffic generated by new development at the vicinity of the intersection.

In case of natural disasters, the roads serve as connectors to provide support to the communities in Bayamón and surrounding areas. During the impact of Irma and Maria hurricanes, the traffic flow was vastly affected by the lack of power and the national outage, the traffic lighting system was out of service. The proposed project will minimize such problems providing uninterrupted flow at the PR-2 through the intersection with the PR-6 and two-phase signal system to control only the left turn movements. The impacted areas will include: Hato Tejas, Juan Sánchez, Sierra Bayamón and Cerro Gordo communities including downtown Bayamón.

The planned project will serve the low and moderate-income community while improving access in developing communities. The infrastructure will be used for an activity whose benefits will be available to all the residents in a particular area that is residential and commercial, and at least 51% of those residents are L/M income persons. The interstate PR-2 is one of the main highways with heavy traffic in peak hours.

**2. Area of Potential Effects**

As defined in 36 CFR §800.16(d), the area of potential effects (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties if any such properties exist. Based on this definition and the nature and scope of the Undertaking, the Program has determined that the direct APE for this project includes .33miles along the PR 2 and .27 miles ( an approximate area of 44 square miles) This does not include the staging area that is located to the southeast of the project North of PR2 and south of Villa España Development.

The visual APE is the viewshed of the proposed project. The area is a part of PR 2 that does not have edifications . Only in the section of the PR 6 we have to the left the PREPA Juan Sanchez Transmission Center facilities and the back part of the Villa España Development. The staging area is located to the north between the PR 2 and the south limit of Villa España development. (Figure 2)) The project is located outside the Traditional Urban Center.(approximate 1km to the west) (Figure 3)



Subrecipient: Bayamon

Project Name: Geometric Improvements to PR-2 & PR-6 Intersection

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Figure 2 Location of the undertaking in relation of the traditional urban center established by SHPO.



Figure 3 Area of potential Effect of the undertaking including the footprint and the staging areas.



Subrecipient: Bayamon

Project Name: Geometric Improvements to PR-2 & PR-6 Intersection

Project Number: 001109

### 3. Identification of Historic Properties – Archaeology

Existing information on previously identified historic properties has been reviewed to determine if any such properties are located within the APE of this undertaking. The review of this existing information shows the project area does not have historic properties.

#### 3.1 Archaeological Sites

There are no archaeological sites located within the APE of the undertaking. Located to the north are BN 02 and BN 13 at .75 mile of the north limit of the project. (Figure 4)



Figure 4 Image showing the nearest archaeological sites in relation with the undertaking. They area located outside the .25-mile buffer zone.

In the ICP/CAT and SHPO archives we identify six (6) archaeological assessments within the APE. In the vicinity of the project, and three (3) archaeological reports dating from 1990 to 1999. Three of them are for residential developments, and three are for infrastructure, including including the super-aqueduct, electrical high voltage lines and the urban train. Those regional investigations have positive results but not near the undertaking.

#### 3.2 Archaeological investigations

The projects near the undertaking are Caparra Court Phase IA by Jaime Velez located approximately 100 mts from the East limit of the project. La Colina Development, by Virginia Rivera, located 900 mts approx. to the east. This project described ceramics from the prehispanic period (Esperanza) in the surface but negative results in the borings. The photographs in the report shows that the lot was perturbed, and the surface layers were removed leaving the rock exposed. My appreciation is that there could exist a prehispanic

**Subrecipient: Bayamon**

**Project Name: Geometric Improvements to PR-2 & PR-6 Intersection**

**Project Number: 001109**

settlement that was perturbed prior to the site visit. The third report is for a project located to the east, Suchville Gardens that present a negative result. ( Figure 5)




Figure 5 Image showing the archaeological investigations performed near the undertaking. The lines show the alignment of three major projects that crosses near the undertaking. Caparra court is located within the .25-mile buffer zone.

Table 1 Archaeological studies in the vicinity of the undertaking and revised in the agencies. Shadowed are the ones cited in the text.

Author	Title	Phase	Year	Code	Result
Velez, Jaime	Suchville Gardens	IA	1990	ICP/CAT-BA-91-04-02 SHPO 09-24-90-07	Negative
Velez, Jaime	Caparra Court	IA-IB	1995	ICP/CAT-BA-95-07-05 SHPO-07-12-95-01	Negative
Rivera, Virginia	La Colina Development	IA-IB	1999	SHPO-03-26-99-01	Negative
Arana Lanza, Anabel	North coast super aqueduct	IA	1995	ICP/CAT_BT-95-09-03	Recommends Phase Ib
Medina, Norma	Instalacion de Cable Soterrado de 15 kv	IA	2002	SHPO 02-19-02-03	Recomends Phase Ib
Questell, Eduardo	Urban Train		1992	08-17-92-01	Negative
Rivera, Virginia	Periferical Norte	IA-IB	1994	ICP/CAT 94-06-03 SHPO-11-25-94-18	Negative



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### 3.3 History of the area of the project.

The area under research is part of the East bank of the Bayamón River near where the main Spanish settlement was established. The urban core was built in the early stages of Puerto Rico development after the Spanish colonization this fertile area was part of the sugar canes plantations located along the rivers that runs through areas of the Hondo and Bayamón rivers.


The Bayamón River was one of the navigable rivers on the island, from the Coast of Palo Seco to the area where today is located the Bayamón urban zone. Once the intensive mining in the island was finished, the residents of the Caparra town settled in the Bayamón River zone and dedicated themselves to the raising of cattle and the development of “conucos” (crop plantations) in the river valleys known as “vegas.”

In 1542 Governor Melgarejo says that :

“Ay un rio que se llama Bayamón, que sale de la boca de dentro la boya del puerto de la cibdad de puertorrico y estala boca de la cibdad, casi media legua, poco menos, suben por el barcos del servicio de la cibdad a traer leña, .... en la ribera del dicho rio **algunas haciendas que llaman conucos**, en donde se hace el cazabe, que es el pan de esta tierra y maíz y se crían plátanos en abundancia. ...” (Melgarejo 1582)

By the time of 1540's the island was divided into estates. Many of them were short-lived, perhaps due to the harshness of the conditions at the beginning of the conquest. Some of them are in the Rio Bayamón zone where the Hacienda of Dona Maria Rincon was registered in 1545. In 1547 that of Don Juan Salinas and in 1548 the best known of Gregorio de Santa Olaya. This last was founded in Bayamón as a horse powered “ingenio,” along with others in the Toa area. In XVI Century, many of the structures in the haciendas were built in masonry, they had a main house, and they were prepared to defend themselves against the attacks of the indigenous settlers or pirates. (Pumarada, Luis 2021, Evolución Azucarera en Puerto Rico hasta la primera década del siglo veinte) Francisco Moscoso refers that some haciendas have a main house, grinding house in in stone, purge house in stone, bohios for the black slaves and the paraphernalia of the sugar process. (Moscoso, Francisco Agricultura Y Sociedad en Puerto Rico, siglos 16 al 18: un acercamiento desde la historia, ICP, 1999).

Coll y Toste refers that the Bishop Damián López de Haro in his visit says that there were three churches in the banks of the Bayamón River adding the “estancias” in Guaynabo, and of Bayamón up to the mouth of the river , in both sides. ( Marin , 1999). In 1640 there were reported four (4) trapiches in Bayamón. Interesting is that in late XVI Early XVII Century the sugar cane plantations were replaced by ginger, a less laborious and more expensive product, This persists until late XVII century when the ginger-based economy collapses, the sugar economy declines,

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and the cattle economy begins to take off. The export of hides becomes the main economic activity. So, in that century most of the area along the river was populated with “cattle “hatos.” (Moscoso, Francisco, “Oro y azúcar en Puerto Rico: Gonzalo de Santa Olalla, 1500-1550”, Revista del Centro de Investigaciones Históricas, Número 10, 1998.) Interesting is that in 1647 Torres Vargas call this river “Guayamon”

During the XVII Century the town continued developing along the Bayamón River. According to Marin, other investigators said that the Alto del Embarcadero is the place where the Bayamón and Hondo rivers met, and where the inhabitants shipped their fruits to the capital. However, he says that topographical and toponymic analyzes indicate that the Alto del Embarcadero was the hill where the town is located, and the pier was located in the incoming bend of the old bed of the Bayamón River, at the end of today Barbosa Street in the urban area.

In the early XVIII Century, eight “ingenios” were located between Canóvanas and Bayamón. The Hacienda Santa Cruz was located to the east of the Bayamón River and the Ingenio San Antonio. It is around the Santa Cruz hacienda that during this century a population center begins to form. In the Valley of the Bayamón River two churches were formed, the Santa Ana and the Valle Hermoso. In the west bank of the river a “caserío” was formed with a chapel and book of births. (Roces Villar, Martin Los municipios de Puerto Rico Vol. I. 13. Ediciones Ripe pag 52-53). The Santa Cruz ( Hacienda de la Santa Cruz) is the only one that keep mentioning through the Centuries.

In 1770, the councilor of the Cabildo of San Juan, Don Francisco Lopez, requested a license and provision to the Vicar General of the Diocese for the transfer of the Church of Santa Cruz to the site called “Alto del Embarcadero”. This permission was granted in 1772, thus stating this as the date of the foundation of the town of Bayamón. (Mario Rodríguez, 1985 Bayamón Notas para su Historia, OECH, Comité Historia de los Pueblos, San Juan Puerto Rico).

Later on this century, Fray Iñigo Abbad y La Sierra described the area with some trapiches for liquor and kilns, lime, and brick ovens. He says that the terrain flooded most part of the year and for that reason a cattle “Hato” was established there. This asseveration is not clear because if the area was flooded it may not be suitable for crops, but the area always appears to have haciendas.

In the XIX centuries the area continued its development based on the production of the haciendas located on both sides of the river as we are going to describe later. This is the time the government begins to organize the urban development of the towns. By the middle of the century there were six sugar mills, 108 coffee plantations and 384 minor fruit plantations, ( Marin, 1999)

In the XX century the population begin to grow from both sides the access main road, now PR 2

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and the development moves from the sea connected lands to the Central connected areas. According to Agustin Sthal, early in the century they begin considering the canalization of the Bayamón River.

### 3.4 Brief History of the Project Area and the road ( PR 2)

The area of the undertaking as we said was located at the east bank of the Bayamón River. In the first centuries all the economic development of Bayamón was connected to the west bank and with the roads that connected the city to Palo Seco. The other main road was the one that connected to Vega Alta. All the mentions of this area were that was inhabited by estancias associated with main haciendas and then to the Centrales. When the train was constructed, It also connect to the north. So, there was no "official" cross from the town to the east bank.



Figure 6 Sketch presented by the municipality of Bayamón in a history available online, It shows the settlement in the 16<sup>th</sup> and 17<sup>th</sup> Century.

We can appreciate the area in the "Itinerario de Bayamón " publicado published by the Spanish Army in 1886. Here we can see a road that goes from the Town to the Hacienda de Santa Cruz to the bank of the river, but no crossing is marked to the east bank. In the east bank a sign says "Chimenea de la Antigua Hacienda Caridad". To the east are the lands of the Hacienda Juan Domingo and to the north the Hacienda Santa Ana. According to a croquis made by the Bayamón Municipality and presented in brief municipality history they marked the lands in the 16 and 17 Centuries they marked the area at the west bank as Hacienda Santa Cruz and the east bank as Hacienda Santa Ana. ( Figure 7)



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Figure 7 Fragment of the 1886 sketch of Bayamón, The map is upside-down for purposes of presentation, Showing the approximate location of the undertaking.

In the 1892 map of the defenses of San Juan ( Memorias de un plan de defensa para la Plaza de San Juan) The area is marked as part of the “old Hacienda Caridad” ,, the specific area of the undertaking has the same toponymies that in the 1886 map, To the north we can see the Sanat Ana Hill and the Train tracks, . Leaving from the town to the south is a “Camino a Guainabo”

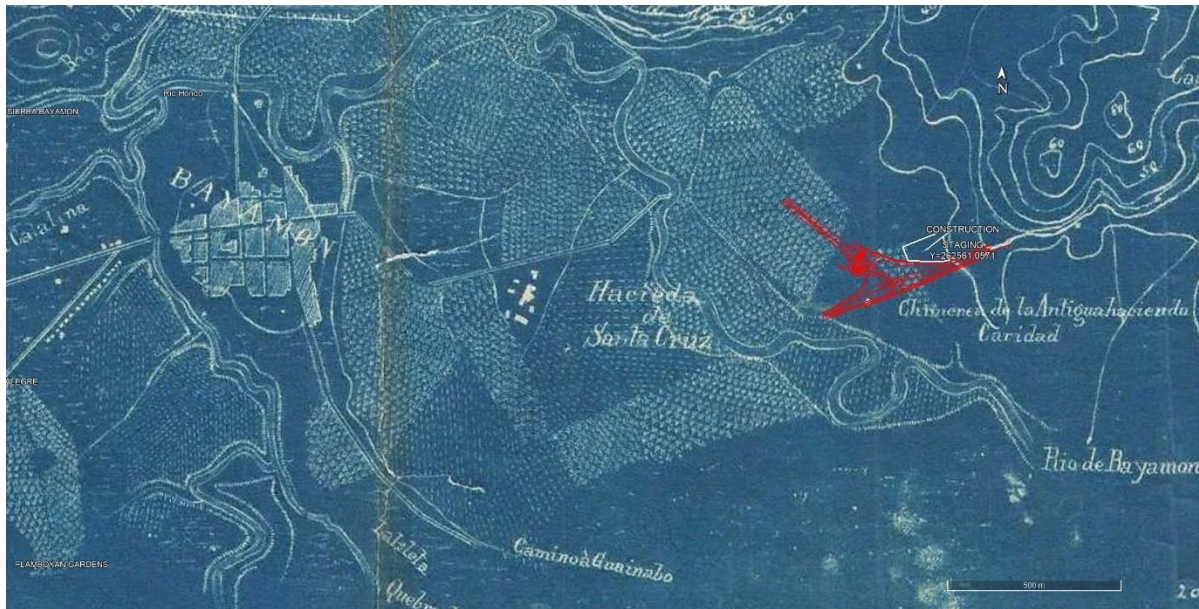


Figure 8 Fragment of the 1892 Memorias de un plan de defensa para la Plaza de San Juan. Showing the Bayamón area. We can see the Bayamón town to the left and the area to the south and West of the Bayamón River named Hacienda Santa Cruz. To the east bank where the undertaking is located the reference is to an old Hacienda Caridad. ( source: Archivo General de Puerto Rico)

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We have not found any reference to the Hacienda Caridad in any of the documents revised. 1902 in the "Biografía de Las Riquezas de Puerto Rico", Ferreras Pagán described in the area of Bayamón the Hacienda Palmas located in Palo Seco, Hacienda San Antonio and the "Factoría Central Santa Juanita, property of Don Antonio Monroig. This last was founded in 1890 and located in the Río Bayamón at 1 kilometer from the railway. Other Trapiche were mentioned in the area Santa Rosa located east of Bayamón on the south side of the Río Piedras Road.



Figure 9 maps of roads built until 1908 (Revista de Obras Publicas ano 13 num 6 1925)(Source: Puerto Rico National Archive)

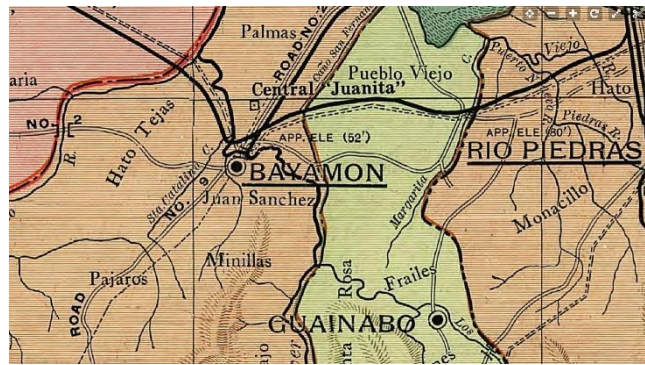


Figure 10 Fragment of 1915 Rand McNally map with Puerto Rico Roads

In 1908 the road was not built as we can see in a detail of the public works presented in the Public Work Magazine published in 1924 that presents a map of the roads that exists in 1898 and one of the roads built until 1908. In that map what we know as PR 2 in the section of the undertaking was not built. What was named PR 2 and the bridge shown in a photo over the Bayamón River is for a bridge in the north of the town. (Figure 9) In 1915 the Rand McNally there is not a crossing at that site. (Figure 10)

In 1925 a description in the Public Works magazine says the town was connected to San Juan through a road and a bridge over the bay and the "circunvalacion" train I think it refers to the road to Cataño and San Juan but the map shows a road named "carretera 2", by context of the description of the road it that goes through Juan Sánchez but to the North. Other roads In the text they described the municipal roads and when mentioned this road is located to the north in the sector of Hato Tejas. But they described some municipal roads that cross the ward of Juan Sanchez and Pueblo Viejo without names. The Camino de Santa Cruz, begin in the Comercio street and goes to the road to Aguas-Buenas and the Camino to Guaynabo goes to Rio Piedras at La Muda Sector, crosses Juan Sanchez and Guaynabo wards Santa Rosa and Camarones, This last is the most likely to go through the area of study. (Garcia, Córdova, Ramon, Descripción Geográfica del Municipio de Bayamón, Revista de Obras Públicas, Año 2 núm. 15 Pages 215-230)



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In the 1930's the area begins to change. In the time between wars there was a need to connect more efficiently the military bases, so the section of PR 2 in Bayamón was built. These caused the migration of population from neighborhood towns. The concept of corridors was designed with the objective of reducing the population and the employment pressure in the San Juan area. In the 1949s the new PR 2 was improved, and the settlement begin along the road.

We revised the 1940 Census map that shows the Road to Rio Piedras. We georeferenced the map and observe that the alignment is not the same in the area of the undertaking, it is slightly to the north. we observe the same in the 1941 USGS Quadrangle . In that quadrangle there are some constructions to the south of the road.

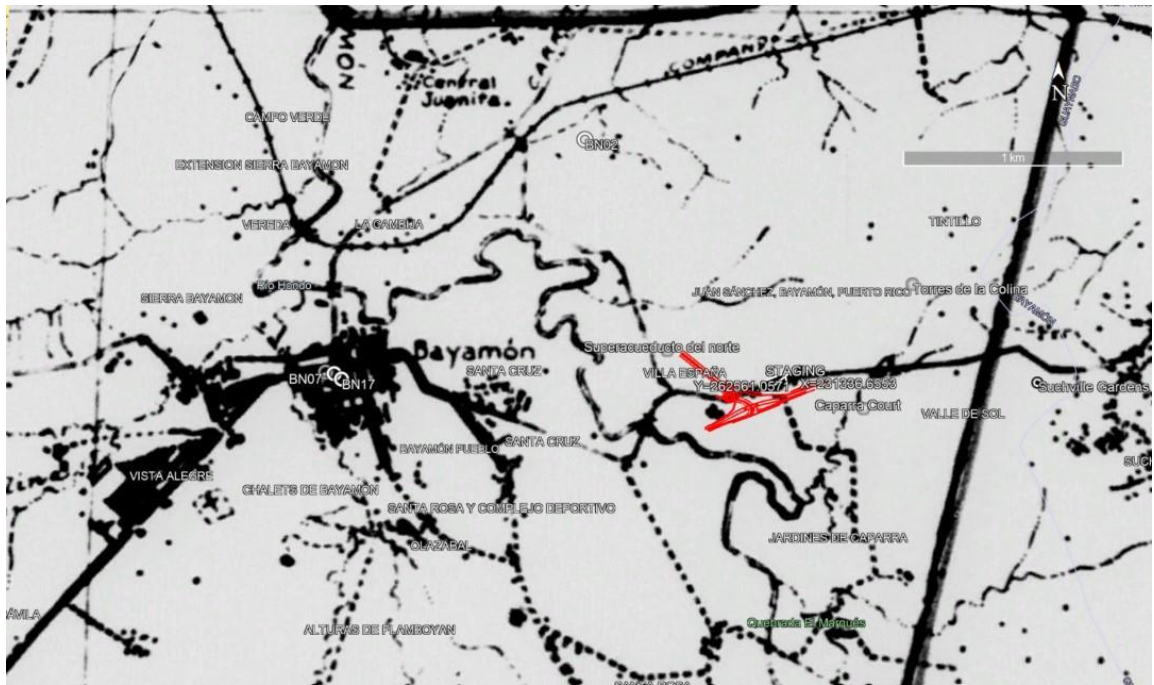


Figure 11 Fragment of the 1940 Census Map for the Bayamón district. This is the first map where we see the PR 2 was built. ( source: US National Archives)

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Figure 12 1941 USGS Quadrangle map. The area of the road appears to be more to the north than the actual PR2 but is an error of referencing in the system. ,

In the 1950 DTOP aerial photo the Road is aligned, and the area is still used for crops. There appears that some structures in the area where the roundabout is going to be built that maybe correspond to the remains of the structures associated to the sugar process that the XIX Century maps mentioned existed there as remains of the Hacienda Caridad. (Figure 13)



Figure 13 1951 DTOP Aerial Photo showing the Bayamón area. It shows that there were some structures in the area where the roundabout is going to be built. ( Source: DTOP)



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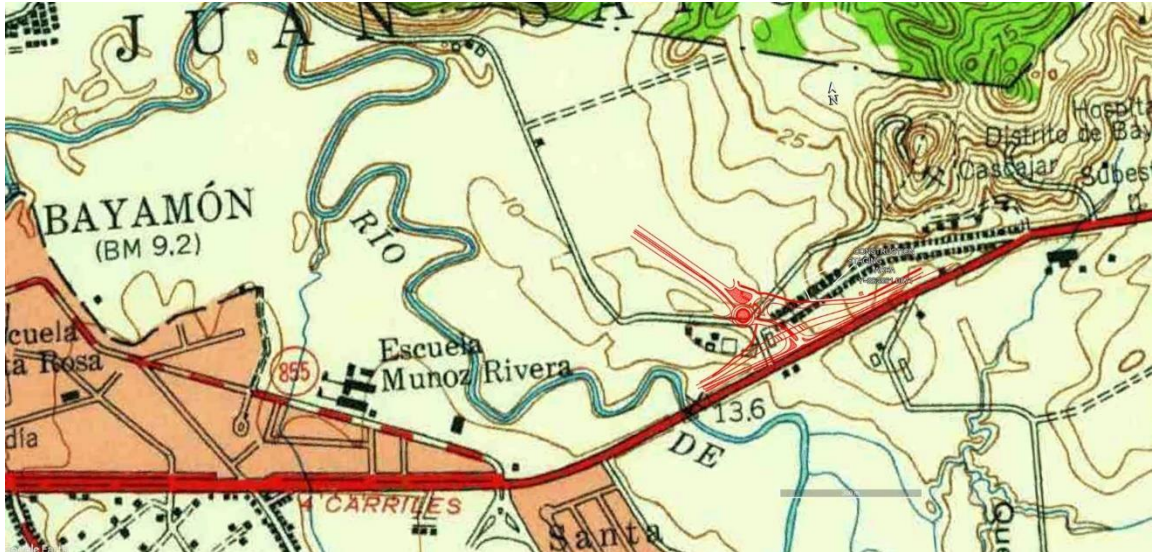


Figure 14 1953 USGS Quadrangle showing the area of the undertaking with the road to the north of the PR 2 and constructions ( source: topoview)

The 1953 USGS Quadrangle shows a road that goes to the north of PR 2 and has structures at both sides. Then there is that road that bends to the north . In the south in that corner there were some structures in what now is occupied by the PREPA facilities. It is a possibility that is the PREPA facility but that cannot be verified with the information available.(Figure 15) In the 1963 Quadrangle we can observe for the first time the Villa España Development that was built by that time. Interesting is that in that they identified the area as La Caridad. The area where the PREPA substation is already built. And the Juan Sanchez Transmission Center is also built.



Figure 15 1963 Quadrangle showing the undertaking. This is the first time since XIX Century that we see the name La Caridad.

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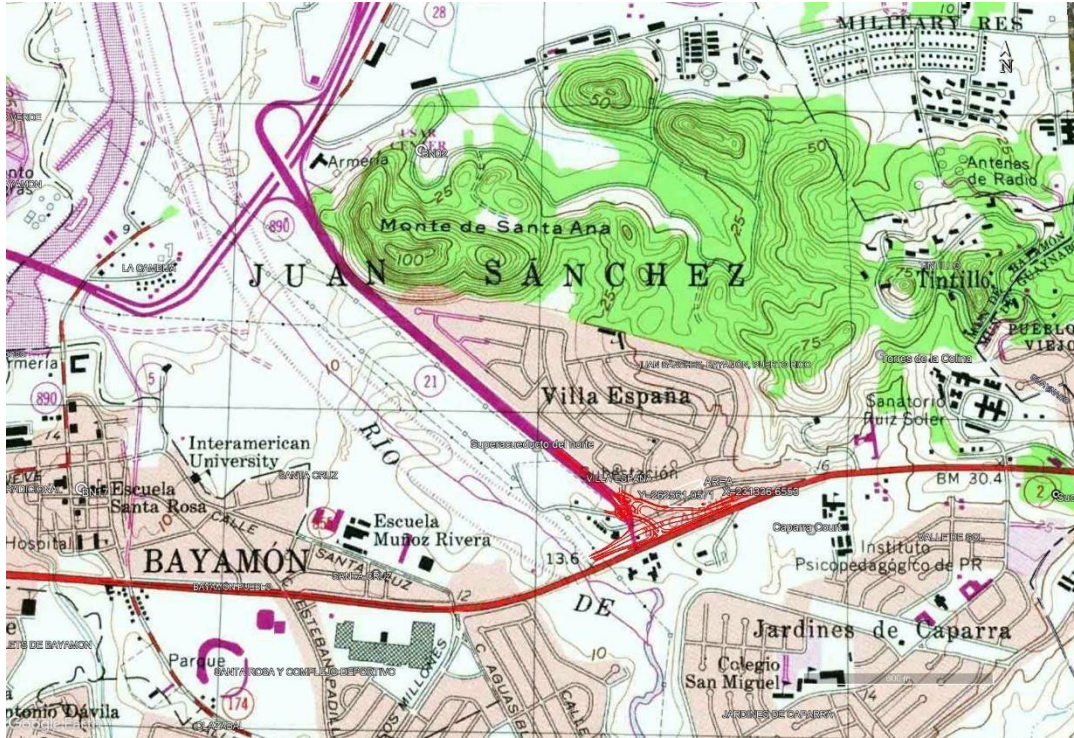



Figure 16 Fragment of 1982 Quadrangle (source topoview) The alignment of the roads is the same as today.

In the 1982 Quadrangle we can see the PR 6 already built. It is not shown in the 1971 Quadrangle, so it was built in the early 1980's. The canalization of the Bayamón River made in 1976 was a major change in the area. With the construction of the Urban Train in the late XX century the transformations in the area finished.

### 3.5 ARCHAEOLOGICAL RESOURCES AND POTENTIAL FOR INTACT DEPOSITS

As discussed before in this consultation, the portion of PR 2 that occupies this undertaking, was part of the haciendas that developed along the riverbanks of the Bayamón River. Although is located near the foundational area of the municipality, the urban core developed mostly to the west bank of the river.



<b>PUERTO RICO 2017 DISASTER RECOVERY, CDBG-DR PROGRAM</b> <b>CITY REVITALIZATION PROGRAM (CRP)</b> <b>Section 106 NHPA Effect Determination</b>	
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<b>Project Name: Geometric Improvements to PR-2 &amp; PR-6 Intersection</b>	
<b>Project Number: 001109</b>	

Based on the data collected and analyzed in this report, there are no evidence of prehispanic or post-hispanic settlements in this area. Archaeological materials identified in the Torres de la Colina project let us know that this area was inhabited during that period. Other evidence shows as with that settlement, the remains of indigenous settlements in this area are located near the hills to the north.


An intensive field inspection of the area where the roundabout is proposed was performed. We emphasize in the area near the PREPA facilities and the modern structures and the area between the PR2 and Villa España where the road will expand and the round about built. The surface inspection of the area of the undertaking allowed us to observe the changes that the area has undergone over the years.

The project goes from the start of the bridge over the Bayamón river to the west until shortly before the Caparra Court urbanization, along PR 2. (Photos 1 , 2, 5,6,7,8) Entering through PR 6 to the north, to the right we have the entrance to the Villa Espana Urbanization and to the left the entrance to the PREPA facilities. ( Photos 4, 10, 11, 12) Before reaching it, there are still some private structures, that we understand could be part of the structures that we can see on the maps before the construction of the aforementioned facilities. (Photos 13,14) In photos 1 to 14 we show the different areas of highways PR 2 and PR 6 that will be affected. The staging area will be located in a vacant lot located between PR 2 and the urbanization.

The close inspection of the area has definitely suffered many impacts over time. The first is represented by the construction of PR 2 . This road, as we can see in the figures was built in the 1940's over an existing road and realigned to eliminate the curve to the north. So, we can assume the area between both roads was impacted. We can appreciate that later, modern features like the islet and entrance were added to that area with the subsequent changes in the alignment of the road. Later features like sidewalks, islands, detour, etc where added at this side of the road. The construction of the PREPA Bayamón substation facilities, altered that area of what would be the southwest corner of the undertaking.

Subsequently, the Villa España urbanization was built, altering this area, and leaving the remnant between PR 2 and the urbanization. Finally the construction of PR 6 again altered the area leaving the easement that we can see today. This easement is mostly the one that will be used for the construction of the roundabout. This development was built in the 1960's so no investigation for archaeological investigation was conducted. Later the canalization of the Bayamón River affected all the area to the west, changing the topography.

Surface inspection of that easement shows remains of concrete slabs and other features. It seems also the area was used as staging area for PR 6, because is used at this time for the present repair of the road. The part of the area that limits with Villa España shows traces that it was cut and delineated to reduce the slope in that area.

<b>PUERTO RICO 2017 DISASTER RECOVERY, CDBG-DR PROGRAM</b> <b>CITY REVITALIZATION PROGRAM (CRP)</b> <b>Section 106 NHPA Effect Determination</b>	 <small>GOVERNMENT OF PUERTO RICO DEPARTMENT OF HOUSING</small>
<b>Subrecipient: Bayamon</b>	
<b>Project Name: Geometric Improvements to PR-2 &amp; PR-6 Intersection</b>	
<b>Project Number: 001109</b>	


In photo 15 we show the surface of the area where the road will be expanded, where you can see the surface covered with asphalt and cement. As I said it is used as a staging area for the project that currently repairing PR 6. In photo 16 we show the area to the north of PR 2 in the southwest corner of the project that shows the unevenness of PR 2 with this area where PREPA facilities are located to the north.

As conclusion we can said the possible settlements associated to the area of sugar processing that is mentioned in the XIX Century maps as part of the Hacienda Caridad were possibly destroyed during the construction of PR 2, Villa España Development and the PREPA substation. During our field inspection we emphasize in that area and no structure was appreciated. The only area that appears to have the less alteration is the area where the private structures are located. But this is not going to be altered by this project. By the other side the easement was impacted during construction, realignment, expansion and improvement of PR2, the construction of Villa España development, construction of the structures in the south of the easement and construction of PR 6.

Based on the historic evaluation and our observations in the field inspection we can conclude the area has low probabilities to present intact areas that can present remains of past settlements in the area.

**Identification of Historic Properties – Architecture**

As said before the undertaking will not affect any existing structure.

<b>PUERTO RICO 2017 DISASTER RECOVERY, CDBG-DR PROGRAM</b> <b>CITY REVITALIZATION PROGRAM (CRP)</b> <b>Section 106 NHPA Effect Determination</b>	
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<b>Project Name: Geometric Improvements to PR-2 &amp; PR-6 Intersection</b>	
<b>Project Number: 001109</b>	

**Determination**

No Historic Properties identified within or near the undertaking.

The following historic properties have been identified within the APE: n/a

Direct Effect:

- No direct Effect
- Indirect Effect:

Based on the results of our historic property identification efforts, the Program has determined that project actions **will not affect** the historic properties that compose the Area of Potential Effect.

**Recommendation (Please keep on same page as SHPO Staff Section)**

The Puerto Rico Department of Housing requests that the Puerto Rico SHPO concur that the following determination is appropriate for the undertaking (Choose One):

- No Historic Properties Affected
- No Adverse Effect  
Condition (if applicable):
- Adverse Effect  
Proposed Resolution (if applicable)

**This Section is to be Completed by SHPO Staff Only**

The Puerto Rico State Historic Preservation Office has reviewed the above information and:	
<input type="checkbox"/> <b>Concurs</b> with the information provided. <input type="checkbox"/> <b>Does not concur</b> with the information provided.	
<b>Comments:</b>   	
Carlos Rubio-Cancela State Historic Preservation Officer	Date:

Subrecipient: Bayamon

Project Name: Roundabout and Geometric Improvements

Project Number: 000119

### Project Photo key





Subrecipient: Bayamon

Project Name: Roundabout and Geometric Improvements

Project Number: 000119



Photo #: 1

View of the beginning of the project looking to west (core of town) The arrow shows the end of the project at the beginning of the bridge.

Date:6/23/2023



Photo #:2

From the intersection of PR 2 and PR 6 to the east (San Juan) The red line shows the approximate limit of the project.

Date:6/23/2023

**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 3**

**View of the center of the road at the intersection of PR 2 and PR6.**

**Date:6/23/2023**



**Photo #:4**

**View of PR 6 at the intersection with PR 2 to the north. The right Villa Espana development entrance. At the left, PREPA Facilities entrance.**

**Date:6/23/2023**



**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 5**

**View to the West of the PR 2 section of the project from the intersection with PR 6. The arrow shows the west limit of the project**

**Date:6/23/2023**



**Photo #:6**

**View from the west limit of the project to the east along PR 2. The arrow shows the center of the roundabout.**

**Date:6/23/2023**

**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 7**

**View from the West of the bridge. The arrow shows the west limit of the project.**

**Date:6/23/2023**



**Photo #: 8**

**View from the south sidewalk of PR 2 in the intersection to the West.**

**Date:6/23/2023**



**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 9**

**View from the south PR 2 sidewalk to the east. Showing the approximate area of the staging area**

**Date:6/23/2023**



**Photo #: 10**

**View from the PR 2 sidewalk to the PR 6 to the north.**

**Date:6/23/20223**

**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 11**

**View from the north limit of the project at PR 6 to the north.**

**Date:6/23/2023**



**Photo #: 12**

**View from the north limit of the project at PR 6 toward PR 2 intersection. The arrow shows Villa España entrance.**

**Date:6/23/2023**



**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 13**

**View of the entrance to the PREPA facilities located at the southwest corner of the project. The structures to the right are private buildings.**

**Date:6/23/2023**



**Photo #: 14**

**View of the PREPA entrance from the west looking to PR 6.**

**Date:6/23/2023**



**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 15**

**View of the surface of the land located at the northeast of the intersection. It shows asphalt and cement. No structures were appreciated but tit appears to be impacted first by construction.**

**Date:6/23/2023**



**Photo #:16**

**View of the surface of the land at the northwest of the intersection**

**Date:6/23/2023**



**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 17**

**View of the Villa Espana entrance from PR 6**

**Date:6/23/2023**



**Photo #:18**

**View of the PR 2 to the east**

**Date:6/23/2023**

**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 19**

**View to the west from the east limit of the undertaking. At right the staging area.**

**Date:6/26/2023**



**Photo #:20**

**View of the proposed staging area. It is a remain of land between the road and the development,**

**Date:6/26/2023**



**Subrecipient: Bayamon**

**Project Name: Roundabout and Geometric Improvements**

**Project Number: 000119**



**Photo #: 21**

**Top view of the staging area from google earth system. The area shows remains of structures., Asphalt and cement**


**Date:6/26/2023**



**Photo #:22**

**Another view from google earth of the staging area at north of the PR2  
 The surface is disturbed.**

**Date:6/23/2023**

<b>PUERTO RICO 2017 DISASTER RECOVERY, CDBG-DR PROGRAM</b> <b>CITY REVITALIZATION PROGRAM (CRP)</b> <b>Section 106 NHPA Effect Determination</b>	
<b>Subrecipient: Bayamon</b>	
<b>Project Name: Roundabout and Geometric Improvements</b>	
<b>Project Number: 000119</b>	

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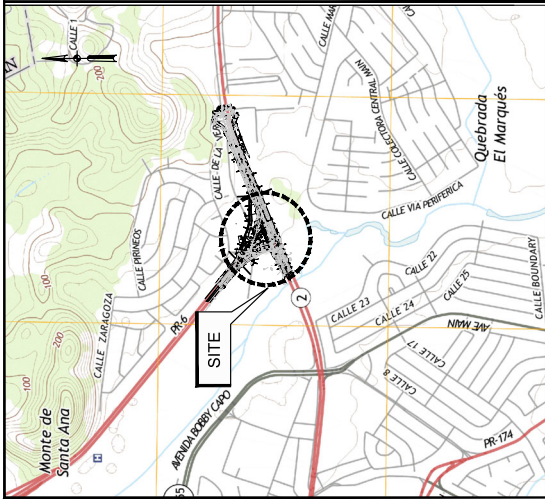
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Puerto Rico Urbano, Tomos 3 y 4. San Juan Puerto Rico



LOCATION PLAN  
SCALE: 1:20,000

# PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	00	82

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02	TYPICAL SECTIONS	GR-03	35	GRADING PLAN	DR-03	68	GROSS SECTIONS KEY PLAN	CS-01
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28	LAYOUT PLAN	PP-02	61	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-02			
29	LAYOUT PLAN	PP-03	62	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-03			
30	PROFILES LINE PR-2, MB	PP-04	63	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-04			
31	PROFILES LINE PR-6, VEA & LUMA ACCESS	PP-05	64	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-05			
32	PROFILE LINE MARG	PP-06	65	TRAFFIC SIGNING AND PAVEMENT MARKING	TS-06			

DATE	BY	DESIGN	WORK
03/03/23			
CHECK	DESIGN	DESIGN	WORK
FINAL CHECK	DESIGN	DESIGN	WORK
DATE	BY	DESIGN	WORK
03/03/23			

**CMA** ARCHITECT & ENGINEERS  
 100 CALLE DE LOS ANGELES #200  
 BAYAMON, PUERTO RICO 00961  
 TEL: (787) 252-1234  
 FAX: (787) 252-1235

MUNICIPALITY OF BAYAMON  
 BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

SCALE: AS SHOWN	TITLE SHEET, LOCATION PLAN AND INDEX	GR
		01

LEGEND.

FEATURE	PROPOSED	EXISTING	SYMBOL	REMARKS
CENTER LINE	---	---		IDENTIFY
SURVEY MONUMENT	A			IDENTIFY
SPOT ELEVATION	1425			IDENTIFY
BENCH MARK	B.M. X No.3			IDENTIFY
HORIZONTAL P.I.				TRUE
NORTH ARROW				MAGNETIC
CONTOUR LINES				IDENTIFY ROAD
PAVEMENT				IDENTIFY
SIDEWALK				IDENTIFY
GUARD RAIL				IDENTIFY TYPE
BARRIER				IDENTIFY TYPE
BARRIAGE				IDENTIFY TYPE
RETAINING WALL				IDENTIFY TYPE
CONC. PARAPETS				IDENTIFY TYPE
BARBED WIRE FENCE				IDENTIFY TYPE
CHAIN LINK FENCE				IDENTIFY TYPE
PROPERTY LINE (G)				IDENTIFY IF C.O.A.
ROW LINE & MON.(G)				IDENTIFY LIMITS
ACCESS CONTROL				IDENTIFY
TOP OF CUT				IDENTIFY SIZE
TOE OF SLOPE				AS PER TYPE
PIPES				IDENTIFY TYPE
HEADWALLS				IDENTIFY
MANHOLE				IDENTIFY
INLETS				IDENTIFY
WATER COURSE				IDENTIFY
DITCH				IDENTIFY
PAVED DITCH				IDENTIFY
LAKE OR POND				IDENTIFY
SWAMP				IDENTIFY IF REQ.
WOODS				IDENTIFY IF REQ.
TREES				IDENTIFY IF REQ.
EDGE OF WOODS				IDENTIFY IF REQ.
HEDGE				IDENTIFY
RIP RAP				IDENTIFY
RIP RAP PAVING				IDENTIFY
ROCK				IDENTIFY
BUILDING				IDENTIFY TYPE, ETC.
FOUNDATION				IDENTIFY
BLDG TO DEMOLISH				IDENTIFY
SIGNS, GROUND, MTD				UPPER = CODE LOWER = LOCATION
PROP. SIGN IDENT.				
TRAFFIC DETECTOR				
PALM TREES				
MATCH TO EXISTING				
LUMINARY				
ELECTRICAL OR TELEPHONE POLE AND JUNK WIRE				
DIRT ROAD				
CHAIN LINK FENCE				

ABBREVIATIONS.

ABUTMENT	ABUT.	AGGREGATE	A.G.	ALUMINUM	AL.	ANGLE	ANG.	ASBESTOS	ASB.	BACKSIGHT	B.K.	BASED WIRE FENCE	B.W.F.	BENCH MARK	B.M.	BITUMINOUS CONCRETE	B.T. CONC.	BUILDINGS COATED CORRUGATED METAL PIPE	B.L.D.G.	CAST IRON PIPE	C.I.P.	CATCH BASIN	C.B.	CENTER TO CENTER	C. TO C.	COATED	C.O.	COMMUNICATION	COM.	CONCRETE	CONC.	COORDINATES	COORD.	CORRUGATED METAL PIPE	C.M.P.	CURB METER	C.M.	CURVE TO SPIRAL	C. TO S.	DIA.	DIA.	DIAMETER	D.M.	DRIVEWAY	DRY.	DRAINAGE	D.W.	END TO END	E. TO E.	ENGINEER	ENGR.	EXCAVATION	EXC.	EXISTING	EX.	EXISTING GROUND	E.G.	EXPANSION	E.P.	EXTERNAL DISTANCE	E.D.	EXTREME HIGH WATER	E.H.W.	FEDERAL AID	F.A.	FEDERAL AID SECONDARY	F.A.S.	FILL	F.	FORWARD	F.W.	GALVANIZED IRON	G.I.	GAS VALVE	G.V.	GRAVEL	GR.	HEADWALL	H.W.	HORIZONTAL LEVEL	H.L.	HYDRANT	H.	INVERT ELEVATION	I.E.	JUNCTION BOX	J.B.	LENGTH OF CURVE	L.C.	MAIN LINE	M.L.	MANHOLE	M.H.	MAXIMUM	M.AX.	MEAN HIGH WATER	M.H.W.	MINIMUM	M.I.N.	MONUMENT	M.
ABUTMENT	ABUT.	AGGREGATE	A.G.	ALUMINUM	AL.	ANGLE	ANG.	ASBESTOS	ASB.	BACKSIGHT	B.K.	BASED WIRE FENCE	B.W.F.	BENCH MARK	B.M.	BITUMINOUS CONCRETE	B.T. CONC.	BUILDINGS COATED CORRUGATED METAL PIPE	B.L.D.G.	CAST IRON PIPE	C.I.P.	CATCH BASIN	C.B.	CENTER TO CENTER	C. TO C.	COATED	C.O.	COMMUNICATION	COM.	CONCRETE	CONC.	COORDINATES	COORD.	CORRUGATED METAL PIPE	C.M.P.	CURB METER	C.M.	CURVE TO SPIRAL	C. TO S.	DIA.	DIA.	DIAMETER	D.M.	DRIVEWAY	DRY.	DRAINAGE	D.W.	END TO END	E. TO E.	ENGINEER	ENGR.	EXCAVATION	EXC.	EXISTING	EX.	EXISTING GROUND	E.G.	EXPANSION	E.P.	EXTERNAL DISTANCE	E.D.	EXTREME HIGH WATER	E.H.W.	FEDERAL AID	F.A.	FEDERAL AID SECONDARY	F.A.S.	FILL	F.	FORWARD	F.W.	GALVANIZED IRON	G.I.	GAS VALVE	G.V.	GRAVEL	GR.	HEADWALL	H.W.	HORIZONTAL LEVEL	H.L.	HYDRANT	H.	INVERT ELEVATION	I.E.	JUNCTION BOX	J.B.	LENGTH OF CURVE	L.C.	MAIN LINE	M.L.	MANHOLE	M.H.	MAXIMUM	M.AX.	MEAN HIGH WATER	M.H.W.	MINIMUM	M.I.N.	MONUMENT	M.

GENERAL NOTES.

- 1 - METRIC SYSTEM HAS BEEN USED THROUGHOUT THE PROJECT UNLESS OTHERWISE SPECIFIED.
- 2 - ALL ELEVATIONS ARE REFERRED TO MEAN SEA LEVEL AND GIVEN IN METERS.
- 3 - THE HORIZONTAL CONTROL ARE REFERRED TO THE STATE PLANE COORDINATE SYSTEM FOR PUERTO RICO AND THE US VIRGIN ISLANDS, NAD83, EPOCH 2010, ADJUSTMENT 2011, LAMBERT PROJECTION
- 4 - NORTH ARROW INDICATION POINTS TO TRUE NORTH.
- 5 - NEW CONSTRUCTION SHALL MEET HORIZONTAL AND VERTICAL ALIGNMENTS OF EXISTING FACILITIES.
- 6 - ATTENTION IS CALLED TO ALL BIDDERS THAT THERE ARE UTILITIES INSTALLED IN THE CONSTRUCTION AREA OF THIS PROJECT, WHICH ARE THE PROPERTY OF THE FOLLOWING ENTITIES: BAYAMON, LUJAN, SAN JUAN, THE PUERTO RICO POWER AND LIGHT COMPANY, THE PUERTO RICO AIRPORT AND STREET AUTHORITY AND CABLE TV.
- 7 - ALTHOUGH THOSE UTILITIES WERE SHOWN ON THE PLANS USING THE INFORMATION OBTAINED FROM THE RESPECTIVE OWNERS, THE CONTRACTOR SHALL EXERCISE UTMOST CARE IN VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO THE COMMENCEMENT WITH THE OWNERS OF SUCH UTILITIES FOR THE EXACT LOCATION OF THE SAME OR ANY OTHER THAT MIGHT BE IN THE AREA PRIOR TO THE COMMENCEMENT OF ANY WORK IN THE VICINITY OF THESE UTILITIES.
- 8 - FOR STANDARD MODEL DRAWINGS, REFER TO THE STANDARD DRAWINGS BOOK ADOPTED BY THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY.
- 9 - EXISTING PAVEMENT AREAS THAT COULD BE AFFECTED DURING THE CONSTRUCTION SHALL BE REPAIRED. THIS WORK SHALL BE A SUBSIDIARY OBLIGATION UNDER SPEC. 401 AND ITS PAY ITEMS.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET No.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	01	82



DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

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ENGINEERS

MUNICIPALITY OF BAYAMON  
BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

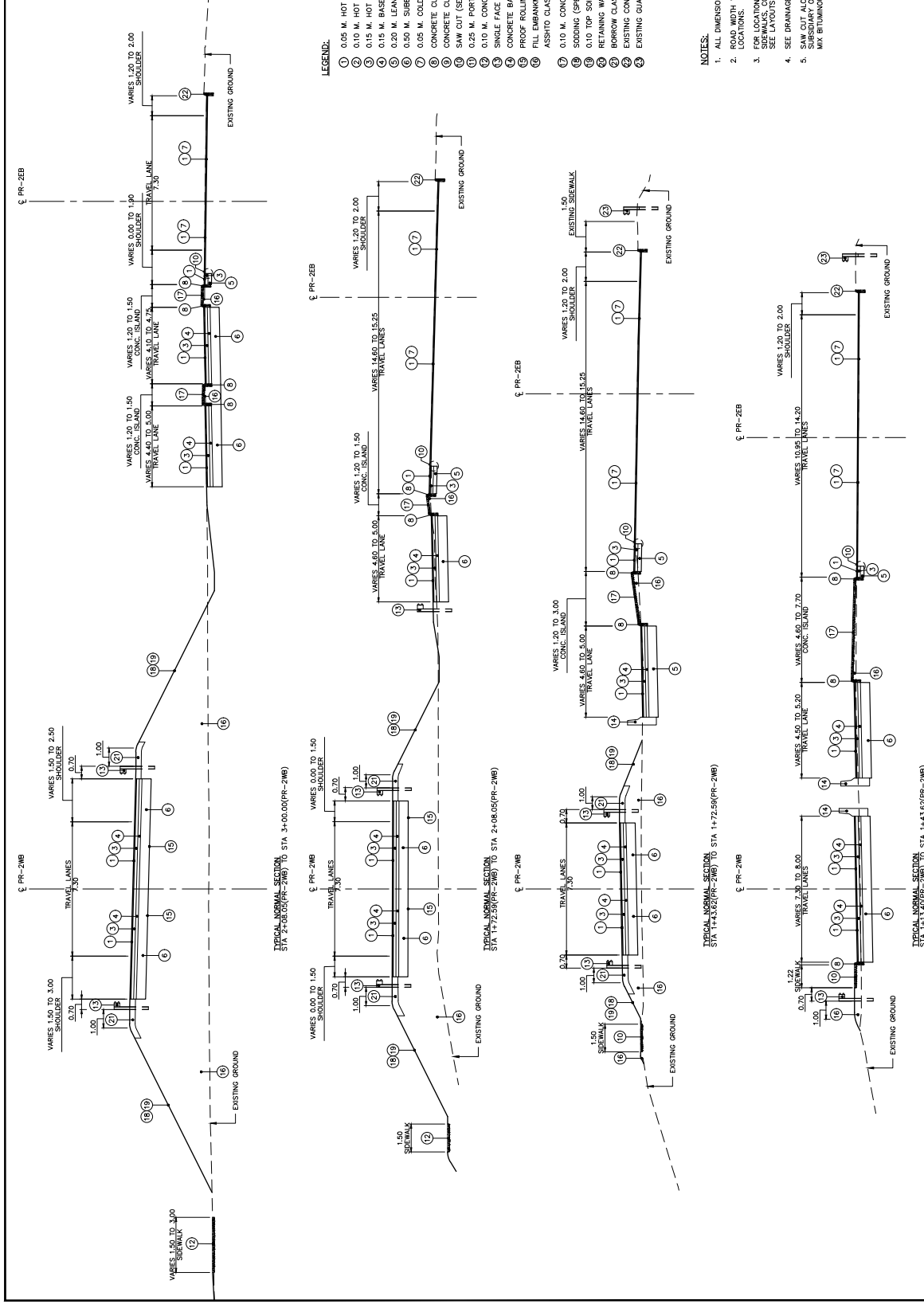
REVISIONS

SCALE: 1:100

TYPICAL SECTIONS

GR 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	02	82



- LEGEND:**
- 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX 5/75(1/2) (SPEC. 401)
  - 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX 8/75(1) (SPEC. 401)
  - 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX 8/75(1) (SPEC. 401)
  - 0.15 M. BASE COURSE MATERIAL GRADING A (SPEC. 304)
  - 0.20 M. LEAN CONCRETE B/E (SPEC. 301)
  - 0.50 M. SUB-BASE COURSE (SPEC. 301)
  - 0.50 M. COLD MILLING (SPEC. 403)
  - CONCRETE CURB TYPE "B" (SPEC. 609)
  - CONCRETE CURB TYPE "C" (SPEC. 610)
  - SAW CUT (SEE NOTE 5) (SPEC. 401)
  - 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
  - 0.25 M. CONCRETE SIDEWALK (SPEC. 608)
  - 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
  - SINGLE FACE GUARDRAIL (SPEC. 606)
  - CONCRETE BARRIER TYPE "C" (SPEC. 610)
  - PROOF ROLLING (SPEC. 203)
  - FILL EMBANKMENT - BORROW CLASS "B" OR BETTER (SPEC. 602)
  - ASHFO CLASSIFICATION (SPEC. 203)
  - 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
  - SODDING (SPEC. 628)
  - 0.10 TOP SOIL (SPEC. 625)
  - RETAINING WALL (SPEC. 601 & SPEC. 602)
  - BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
  - EXISTING CONCRETE CURB TO REMAIN
  - EXISTING GUARDRAIL TO REMAIN

- NOTES:**
- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
  - ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
  - FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB AND GUTTERS, SEE LAYOUT PLANS. ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUT PLANS.
  - SEE CHANGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS. SEE NOTE 5 FOR THE SPECIFICATIONS FOR THE SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MIX 8/75(1).

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/02/23					

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISIONS

SCALE: 1:100

TYPICAL SECTIONS

GR 04

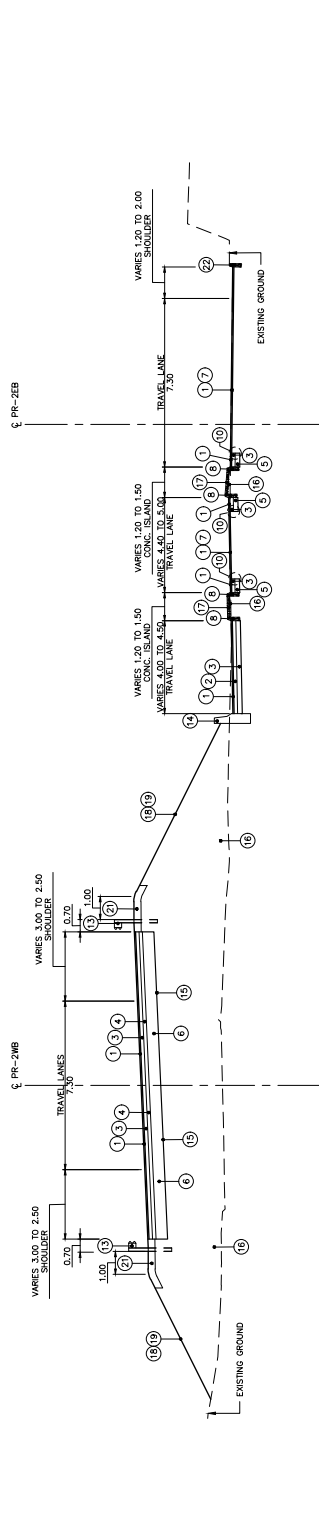
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	03	82

**LEGEND:**

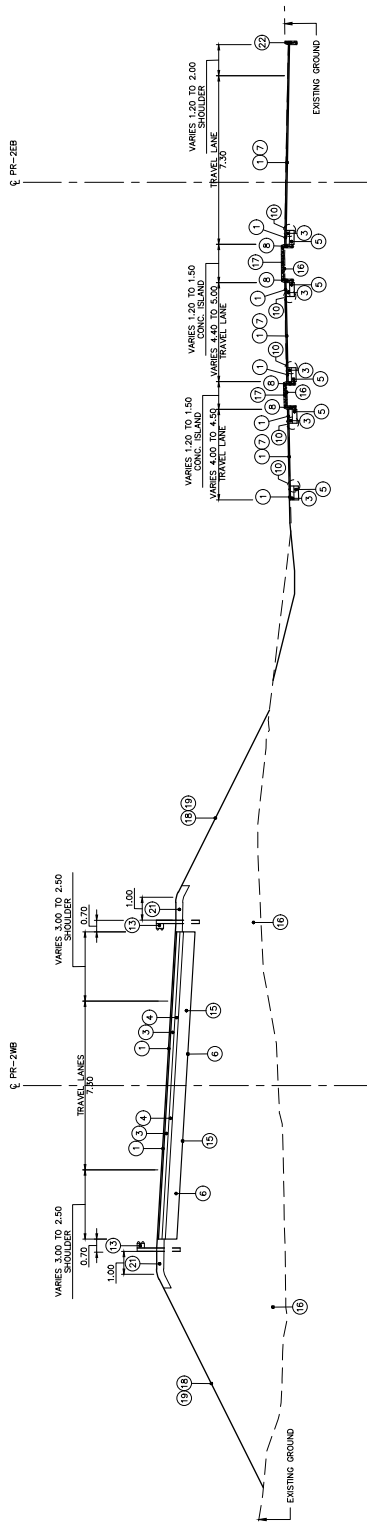
- ① 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(12) (SPEC. 401)
- ② 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1) (SPEC. 401)
- ③ 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1) (SPEC. 401)
- ④ 0.15 M. BASE COURSE MATERIAL, GRADING A. (SPEC. 304)
- ⑤ 0.20 M. LEAN CONCRETE BAE (SPEC. 305)
- ⑥ 0.50 M. SUBBASE COURSE (SPEC. 301)
- ⑦ 0.05 M. COLD MILLING (SPEC. 403)
- ⑧ CONCRETE CURB TYPE "D" (SPEC. 609)
- ⑨ CONCRETE CURB TYPE "B" (SPEC. 609)
- ⑩ SAW CUT (SEE NOTE 5) (SPEC. 401)
- ⑪ 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
- ⑫ 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
- ⑬ SINGLE FACE GUARDRAIL (SPEC. 606)
- ⑭ CONCRETE BARRIER TYPE "C" (SPEC. 610)
- ⑮ PROOF ROLLING (SPEC. 203)
- ⑯ FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
- ⑰ ASSHTO CLASSIFICATION (SPEC. 203)
- ⑱ 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
- ⑲ SODDING (SPEC. 628)
- ⑳ 0.10 TOP SOIL (SPEC. 625)
- ㉑ RETAINING WALL (SPEC. 601 & SPEC. 602)
- ㉒ BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
- ㉓ EXISTING CONCRETE CURB TO REMAIN
- ㉔ EXISTING GUARDRAIL TO REMAIN

**NOTES:**

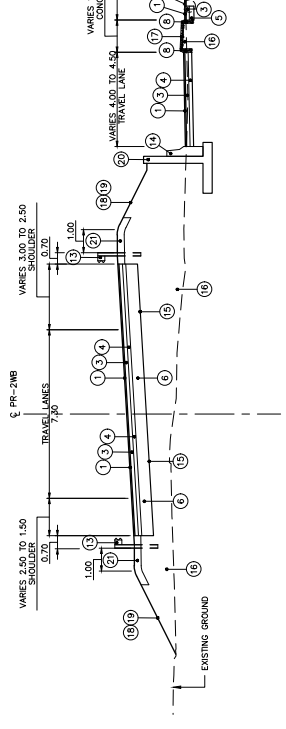
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. LOCATION VARIATIONS: SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
3. FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURBS AND GUTTERS, SIDEWALKS, CONCRETE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUTS PLANS.
4. SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
5. SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MKX B(75)(1).



TYPICAL NORMAL SECTION  
STA 4+07.00(PR-2WB) TO STA 4+48.62(PR-2WB)



TYPICAL NORMAL SECTION  
STA 4+48.62(PR-2WB) TO STA 4+60.00(PR-2WB)



TYPICAL NORMAL SECTION  
STA 3+00.00(PR-2WB) TO STA 3+60.00(PR-2WB)

TYPICAL NORMAL SECTION  
STA 4+48.62(PR-2WB) TO STA 5+05.00(PR-2WB)

DATE	BY	DESIGN	WORK
03/03/23			
		CHECK	
		FINAL CHECK	
		SCHEMATIC PLANS	

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

DATE

REVISIONS

SCALE: 1:100

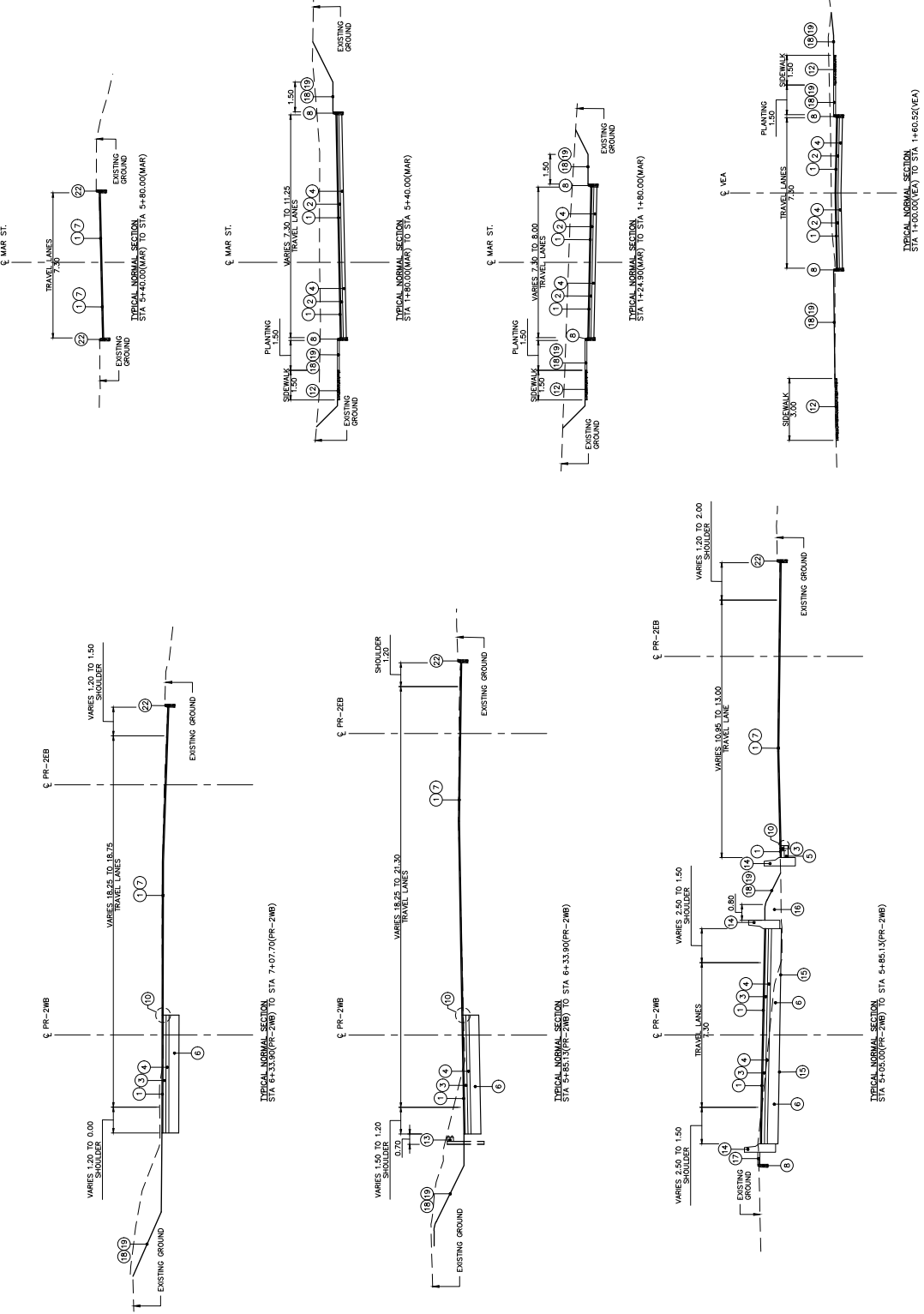
TYPICAL SECTIONS

GR 05

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	04	82

- LEGEND:**
- 1 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX S(75)(12) (SPEC. 401)
  - 2 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1) (SPEC. 401)
  - 3 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1) (SPEC. 401)
  - 4 0.15 M. BASE COURSE MATERIAL, GRADING A. (SPEC. 304)
  - 5 0.20 M. LEAN CONCRETE BAE (SPEC. 305)
  - 6 0.50 M. SUBBASE COURSE (SPEC. 301)
  - 7 0.05 M. COLD MILLING (SPEC. 403)
  - 8 CONCRETE CURB TYPE "D" (SPEC. 609)
  - 9 CONCRETE CURB TYPE "B" (SPEC. 609)
  - 10 SAW CUT (SEE NOTE 5) (SPEC. 401)
  - 11 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
  - 12 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
  - 13 SINGLE FACE GUARDRAIL (SPEC. 606)
  - 14 CONCRETE BARRIER TYPE "C" (SPEC. 610)
  - 15 PROOF ROLLING SPEC. 203
  - 16 FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
  - 17 ASSHTO CLASSIFICATION (SPEC. 203)
  - 18 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
  - 19 SODDING (SPEC. 628)
  - 20 0.10 TOP SOIL (SPEC. 625)
  - 21 RETAINING WALL (SPEC. 601 & SPEC. 602)
  - 22 BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
  - 23 EXISTING CONCRETE CURB TO REMAIN
  - 24 EXISTING GUARDRAIL TO REMAIN

- NOTES:**
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
  2. WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
  3. FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURBS AND CUTTERS, SIDEWALKS, CONCRETE ISLANDS, CONC. BARRIERS, GUARD RAILS, ETC., SEE LAYOUT'S PLANS.
  4. SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
  5. SAW CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MIX B(75)(1).



DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON  
BAYAMON

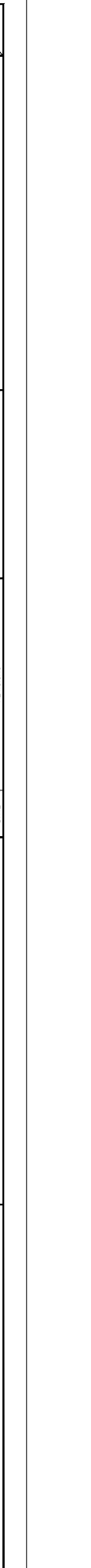
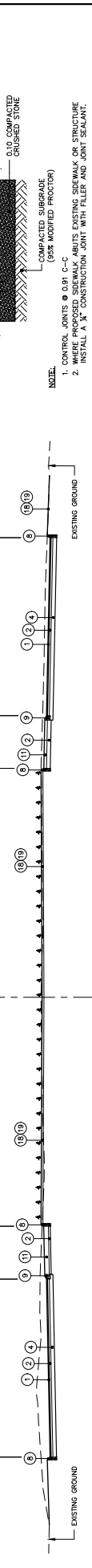
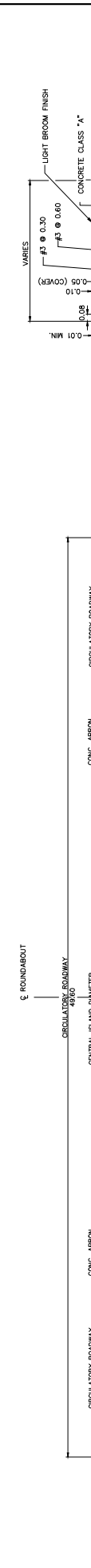
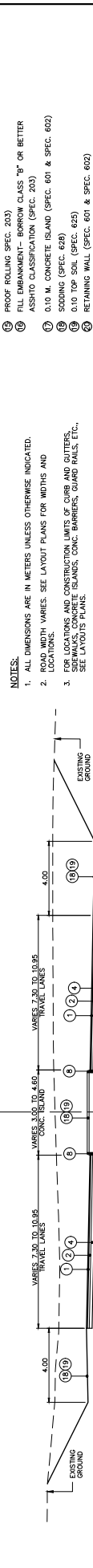
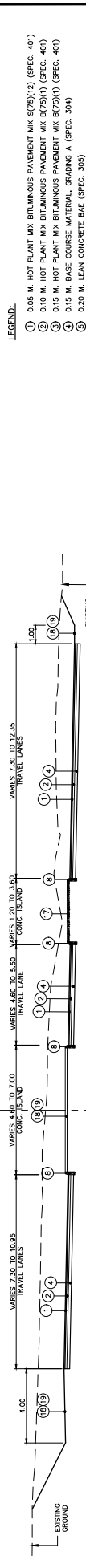
PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO  
DATE  
REVISIONS

SCALE: 1:100

TYPICAL SECTIONS

GR 06



**LEGEND:**

- 0.05 M. HOT PLANT MIX BITUMINOUS PAVEMENT MK S(75)(12) (SPEC. 401)
- 0.10 M. HOT PLANT MIX BITUMINOUS PAVEMENT MK B(75)(1) (SPEC. 401)
- 0.15 M. HOT PLANT MIX BITUMINOUS PAVEMENT MK B(75)(1) (SPEC. 401)
- 0.15 M. BASE COURSE MATERIAL, GRADING A (SPEC. 304)
- 0.20 M. LEAN CONCRETE BAE (SPEC. 305)
- 0.50 M. SUBBASE COURSE (SPEC. 301)
- 0.05 M. COLD MILLING (SPEC. 403)
- CONCRETE CURB TYPE "D" (SPEC. 609)
- CONCRETE CURB TYPE "B" (SPEC. 609)
- CONCRETE CURB TYPE "D" (SPEC. 401)
- SAM CUT (SEE NOTE 5) (SPEC. 401)
- 0.25 M. PORTLAND CEMENT CONCRETE PAVEMENT (SPEC. 501)
- 0.10 M. CONCRETE SIDEWALK (SPEC. 608)
- SINGLE FACE GUARDRAIL (SPEC. 606)
- CONCRETE BARRIER TYPE "C" (SPEC. 610)
- PROOF ROLLING SPEC. 203)
- FILL EMBANKMENT - BORROW CLASS "B" OR BETTER
- ASHTO CLASSIFICATION (SPEC. 203)
- 0.10 M. CONCRETE ISLAND (SPEC. 601 & SPEC. 602)
- SOILING (SPEC. 628)
- 0.10 TOP SOIL (SPEC. 625)
- RETAINING WALL (SPEC. 601 & SPEC. 602)
- BORROW CLASS "D" (MINIMUM THICKNESS ALLOWED 0.30 M.) (SPEC. 203)
- EXISTING CONCRETE CURB TO REMAIN
- EXISTING GUARDRAIL TO REMAIN

**NOTES:**

- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
- ROAD WIDTH VARIES. SEE LAYOUT PLANS FOR WIDTHS AND LOCATIONS.
- FOR LOCATIONS AND CONSTRUCTION LIMITS OF CURB AND GUTTERS, SEE LAYOUT PLANS.
- SEE LAYOUT PLANS.
- SEE DRAINAGE PLANS FOR INLET LOCATIONS & PIPE DIMENSIONS.
- SAM CUT ALONG THE EDGE OF EXISTING TRAVEL LANE TO BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER HOT PLANT MIX BITUMINOUS PAVEMENT MK B(75)(1).



**NOTE:**

- CONTROL JOINTS @ 0.91 C-C.
- WHERE PROPOSED SIDEWALK ABUTS EXISTING SIDEWALK OR STRUCTURE, INSTALL A "X" CONSTRUCTION JOINT WITH FILLER AND JOINT SEALANT.

CONCRETE SIDEWALK DETAILS  
SCALE: NTS



PR-2 & PR-6	BAYAMÓN	P.R.	2023	07	82
MUNICIPALITIES ISLAND FISCAL YEAR SHEET NO. TOTAL SHEETS					

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(PR-6-NB)									
PC-VI									
VT [R] (PR-6-NB)	17°53'34"	200.600	22.370	1.243	44.556	262508.7052	231138.4864	231099.7419	LINE PR-6-NB BEGINS
PT-VI						262508.9922	231066.9922	231066.9922	STA.1+42.70(PR-6-NB)
STA.4+00.00(PR-6-NB)						262701.5500	230816.3339	215.358	LINE PR-6-NB ENDS

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(QC-VEA)									
PC-VI									
VT [R] (QC-VEA)	43°57'43"	15.000	6.055	1.176	11.509	262544.8174	231170.6575	231169.0477	LINE QC-VEA BEGINS
PT-VI						262544.8174	231169.0477	231169.0477	STA.1+14.14(QC-VEA)
STA.1+60.50(QC-VEA)						262508.7052	231066.9922	231066.9922	LINE QC-VEA ENDS

VERTEX	CURVE ELEMENTS			COORDINATES			BEARING	DISTANCE TO VERTEX	REMARKS
	Δ	R	T	E	L	Y			
STA.1+00.00(QC-LUMA)									
PC-VI									
VT [L] (QC-LUMA)	17°09'40"	50.000	7.544	0.566	14.976	262508.7052	231138.4864	231099.7419	LINE QC-LUMA BEGINS
PT-VI						262508.9922	231066.9922	231066.9922	STA.1+50.18(QC-LUMA)
STA.1+60.50(QC-LUMA)						262508.7052	231066.9922	231066.9922	LINE QC-LUMA ENDS

SCALE:	NTS
REVISIONS	
DATE	
PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO	
BAYAMÓN	
MUNICIPALITY OF BAYAMÓN	
CMA ARCHITECTS & ENGINEERS	



**GENERAL NOTES**

- NO WORK OTHER THAN MOBILIZATION, TRAFFIC CONTROL, AND PROJECT FIELD OFFICE, SHALL BE PERFORMED UNTIL THE PROGRESS SCHEDULE IS APPROVED BY THE ENGINEER.
- ALL TEMPORARY CONTROL DEVICES SHALL COMPLY WITH THE SUPPLEMENTAL SPECIFICATION NUMBER 638 - CONSTRUCTION, SECTION 901.01 - "CONTROL DEVICES FOR ROAD AND BRIDGE CONSTRUCTION, 2005 EDITION.
- EQUIPMENT, MATERIALS, AND OTHER DEVICES USED FOR CONSTRUCTION SHALL BE REMOVED FROM THE ROADWAY AFTER WORK HOURS AND SHALL BE STAGED AT A MINIMUM OF 10 METERS FROM THE TRAVEL WAY.
- THE DRUM SPACING SHALL BE 3 METERS.
- ANY ALTERATION TO THE SCHEDULE MAY IMPROVE TRAFFIC OPERATIONS WITHIN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL SUBMIT ANY PROPOSED ALTERATION TO THE ENGINEER FOR REVIEW. THE PROPOSED DATE OF IMPLEMENTATION FOR REVIEW. IF THE PROPOSED ALTERATION IS APPROVED IT SHALL BE IMPLEMENTED AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER THE INSTALLATION OF TEMPORARY CONTROL DEVICES. THE CONTRACTOR SHALL NOT COMMENCE ANY OF THE CONSTRUCTION PHASES WITHOUT A PUBLIC NOTICE IS ISSUED OR WITHOUT DIRECT CONSENT FROM THE ENGINEER.
- THE CONSTRUCTION SIGNS INSTALLATION SHOULD BE IN ACCORDANCE TO THE TEMPORARY TRAFFIC SIGNS MOUNTING DETAILS.
- THE CONTRACTOR SHALL FURNISH TEMPORARY CONTROL DEVICES THAT MEET THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) CRITERIA FOR THE APPLICABLE CRASH WORTHINESS STANDARD.
- ALL EXISTING SIGNS AND TRAFFIC CONTROL SIGNS DETERMINED BY THE ENGINEER TO BE UNNECESSARY OR CONTRADICTORY TO THE APPLICABLE CONSTRUCTION SIGNS AND OPERATION, SHALL BE IMMEDIATELY COVERED WITH RED PAINT OR RED PAPER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF THE COVERINGS TO ENSURE THAT THE SIGN IS NOT READABLE. THIS WORK IS A SUBSIDIARY OBLIGATION OF THE CONTRACT UNDER EXISTING PAY ITEMS.
- DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL TAKE ALL THE NECESSARY PRECAUTIONS AND MEASURES TO AVOID FALLING DEBRIS, TOOLS, EQUIPMENT OR ANY OTHER MATERIALS INTERFERENCE OR OBSTRUCTION TO THE TRAVEL OF THE ROADWAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF THE MATERIALS NECESSARY FOR IMPLEMENTING THIS REQUIREMENT IS SUBSIDIARY OBLIGATION OF THE CONTRACT UNDER EXISTING PAY ITEMS.
- THE CONTRACTOR SHALL MAINTAIN ACCESS AT ALL TIMES TO ADJACENT PROPERTIES DURING CONSTRUCTION. THIS WORK SHALL REQUIRE COORDINATION WITH BUSINESS AND PRIVATE OWNERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THIS REQUIREMENT IS SUBSIDIARY OBLIGATION OF THE CONTRACT UNDER EXISTING PAY ITEMS.
- NO EXCAVATION AND / OR PAVEMENT DROP OFF SHALL REMAIN OPEN WITHIN THE TRAVELED WAY WHEN THE CONTRACTOR OR ITS PERSONNEL IS NOT WORKING AND PHYSICALLY PRESENT AT THE WORK SITE.
- IN CASE THAT THE WORKS AFFECTED THE EXISTING LUMINAIRES THE CONTRACTOR SHALL PROVIDE ADEQUATE ILLUMINATION IN THE AFFECTED AREA. THE GLARE OF THE TEMPORARY ILLUMINATION SHOULD NOT AFFECT THE DRIVER'S VISIBILITY.
- ALL EXISTING STORM DRAINAGE SYSTEMS BE KEPT FUNCTIONING AT ALL TIMES AND PROVIDE MEANS TO PREVENT CLOGGING OF THESE SYSTEMS DURING CONSTRUCTION. THIS APPLIES ON ALL PHASES OF CONSTRUCTION.
- IN ALL CONSTRUCTION OPERATIONS UNDER THIS CONTRACT, ALL PRECAUTIONS SHALL BE EXERCISED IN SUCH A WAY AS TO AVOID UNNECESSARY INCONVENIENCES TO TRAFFIC.
- REPAIR OF DAMAGE TO EXISTING PAVEMENTS CAUSED BY CONSTRUCTION OPERATION OR EQUIPMENT SHALL BE CONTRACTOR'S RESPONSIBILITY AND UNDERTAKEN AT THE CONTRACTOR'S EXPENSE.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC DEVICES, THE CONTRACTOR SHALL REFER TO THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY STANDARD DRAWINGS, 2012 EDITION.

- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - FLASHING ARROW
  - TEMPORARY CONSTRUCTION SIGN
  - ARROW BOARD SUPPORT OR TRAILER
  - TEMPORARY SIGN IDENTIFICATION
  - X = CODE NUMBER
  - Y = LOCATION
  - ● ● DRUMS (SPACING @ 3.0m EACH)

**WARRANTY**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PROTECTION OF TRAFFIC DEVICES, THE CONTRACTOR SHALL REFER TO THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY STANDARD DRAWINGS, 2012 EDITION.

**NIGHTTIME CONSTRUCTION GENERAL NOTES:**

- NIGHTTIME CONSTRUCTION SHALL ONLY BE PERMITTED BETWEEN THE HOURS OF 8:00 PM AND 5:00 AM SUNDAY THRU THURSDAY.
- CONTRACTOR'S VEHICLES SHALL BE EQUIPPED WITH ROTATING AMBER LIGHTS WHEN IN USE ON THE ROADWAY DURING NIGHT WORK.
- LIGHTING SHALL BE PROVIDED FOR NIGHTTIME OPERATIONS. SEE SPECIAL PROVISION 938 "LIGHTING FOR NIGHTTIME CONSTRUCTION, 2005 EDITION.
- LANE CLOSURES SHALL BE STARTED AT LOCATIONS PROVIDING OPTIMUM VISIBILITY.
- MILING AND RESURFACING, PAVEMENT MARKING AND ANY OTHER WORK THAT REQUIRE LANE CLOSURE SHALL BE PERFORMED DURING NIGHTTIME.

**CONSTRUCTION SCHEDULE**

**WORK PHASE I**

- PROVIDE TEMPORARY CONSTRUCTION SIGNS, TRAFFIC CONTROL DEVICES AND DETOUR EXISTING TRAFFIC, AS INDICATED IN DRAWINGS PLANS.
- CONSTRUCTION WORKS CONSISTS IN PART OF THE ROUNDABOUT, THE DEMOLITION AND RECONSTRUCTION OF THE PR-2 MARGINAL, EXISTING SIDEWALK AND CURB & GUTTER OF THE PR-2 AND PR-6. THE PR-2 MARGINAL SHOULD BE CLOSED AND SHOULD BE RECONSTRUCTED IN ACCORDANCE WITH THE DRAWING PLANS. FURTHERMORE,
- WORKING HOURS WILL BE FROM 9AM TO 3PM ALL WEEK LONG.

**WORK PHASE II**

- PROVIDE TEMPORARY CONSTRUCTION SIGNS, TRAFFIC CONTROL DEVICES AND DETOUR EXISTING TRAFFIC, AS INDICATED IN DRAWINGS PLANS.
- CONSTRUCTION WORKS CONSISTS IN PART OF THE ROUNDABOUT, THE DEMOLITION AND CONSTRUCTION OF PART OF THE CENTRAL MEDIAN AT PR-6, AS PROPOSED IN DRAWING PLANS.
- WORKING HOURS WILL BE FROM 9AM TO 3PM ALL WEEK LONG.

**WORK PHASE III**

- PROVIDE TEMPORARY CONSTRUCTION SIGNS, TRAFFIC CONTROL DEVICES AND DETOUR EXISTING TRAFFIC, AS INDICATED IN DRAWINGS PLANS.
- CONSTRUCTION WORKS CONSISTS IN THE SPLITTER ISLANDS AND CHANNELIZING ISLANDS AT PR-2 AND PR-6, AS INDICATED IN DRAWINGS PLANS.
- WORKING HOURS WILL BE FROM 9AM TO 3PM ALL WEEK LONG.

**WORK PHASE IV**

- PROVIDE TEMPORARY CONSTRUCTION SIGNS, TRAFFIC CONTROL DEVICES AND DETOUR EXISTING TRAFFIC, AS INDICATED IN DRAWINGS PLANS.
- CONSTRUCTION WORKS CONSISTS IN PART OF THE ROUNDABOUT, THE DEMOLITION AND CONSTRUCTION OF THE MEDIAN ISLAND IN PR-2, NEW SPLITTER ISLAND AT EAST SIDE OF THE PR-2, AS PROPOSED IN THE DRAWING PLAN.
- WORKING HOURS WILL BE FROM 9AM TO 3PM ALL WEEK LONG.

**WORK PHASE V**

- PROVIDE TEMPORARY CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES AS APPLICABLE OF EACH TYPICAL APPLICATION, ACCORDING TO THE INTERSECTION IMPROVEMENTS WORKS.
- DRAWING PLANS SHOWS CONSISTS IN PART OF THE ROUNDABOUT, THE DEMOLITION AND RECONSTRUCTION OF THE PR-2 MARGINAL AND CONSTRUCTION OF THE SPLITTER ISLANDS AND CHANNELIZING ISLANDS. THIS WORK IS A SUBSIDIARY OBLIGATION OF PERMANENT SIGNS AND PAVEMENT MARKING SHOULD BE DONE, AS PROPOSED IN DRAWING PLANS.
- WORKING HOURS WILL BE FROM 9AM TO 3PM FROM MONDAY TO FRIDAY.

**WORK PHASE VI**

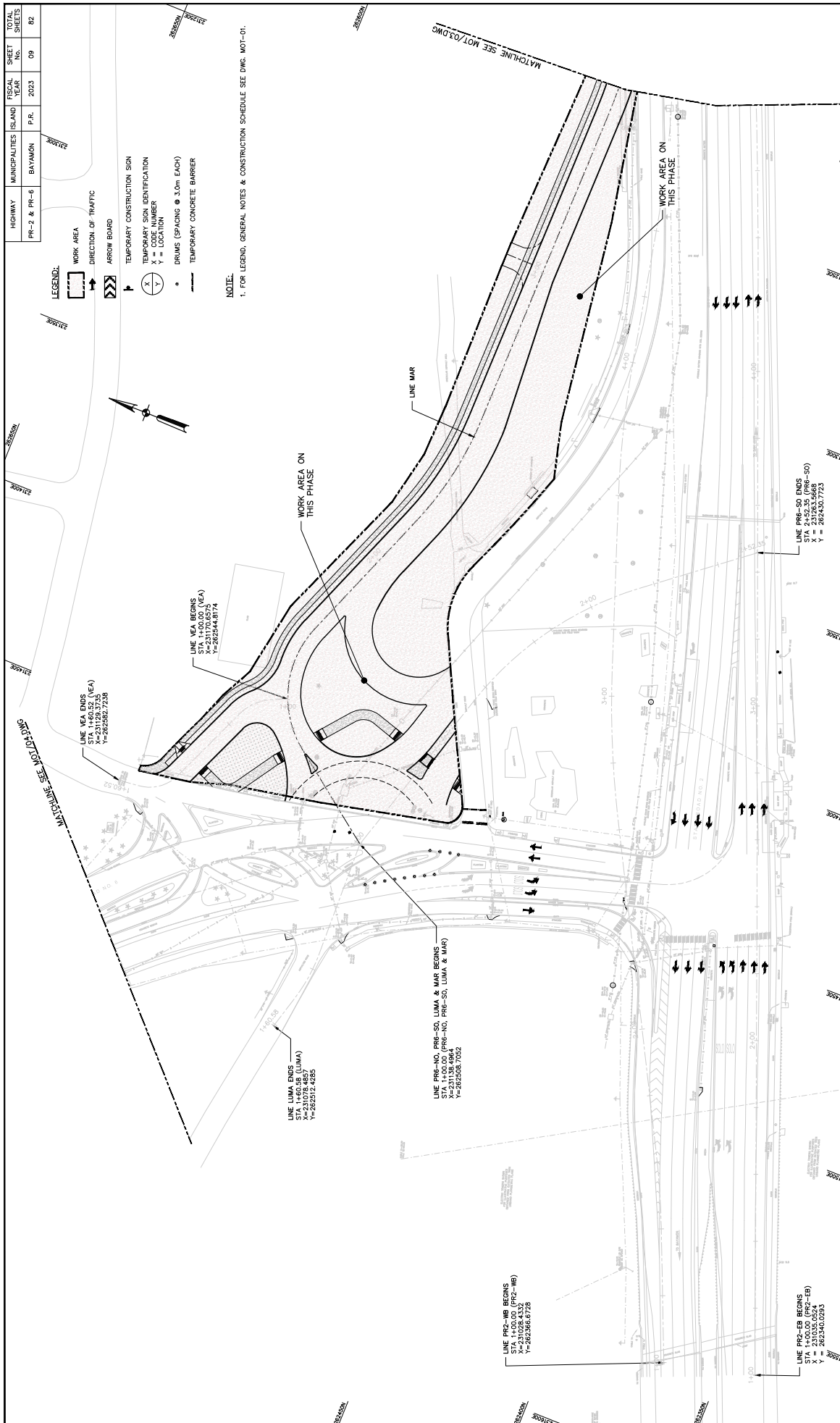
- PROVIDE TEMPORARY CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES AS APPLICABLE OF EACH TYPICAL APPLICATION, ACCORDING TO THE INTERSECTION IMPROVEMENTS WORKS.
- CONSTRUCTION WORKS CONSISTS IN PART OF THE ROUNDABOUT, THE DEMOLITION AND RECONSTRUCTION OF THE PR-2 MARGINAL AND CONSTRUCTION OF THE SPLITTER ISLANDS AND CHANNELIZING ISLANDS. THIS WORK IS A SUBSIDIARY OBLIGATION OF PERMANENT SIGNS AND PAVEMENT MARKING SHOULD BE DONE, AS PROPOSED IN DRAWING PLANS.
- WORKING HOURS WILL BE FROM 9AM TO 3PM FROM MONDAY TO FRIDAY.

MPH	TAPER LENGTH (Mts.)	BUFFER SPACE* (Mts.)
<45	55	47
45-50	55	61
50-55	75	76
55-60	100	101
60-65	165	110
65-70	183	130
70-75	200	150
75-80	220	174
80-85	238	197

\*Buffer length (L) and 3.05 m/ft. Space for a typical lane of 3.66 m/ft.

 <b>CMA</b> ARCHITECT & ENGINEERS	MUNICIPALITY OF BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: NTS	MAINTENANCE OF TRAFFIC, CONSTRUCTION SCHEDULE AND GENERAL NOTES
	BAYAMÓN	2023	01	DATE	REVISIONS

DATE	BY
03/09/23	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	
SPERMATIC PLANS	



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	09	82

- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - ARROW BOARD
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - X = CODE NUMBER
  - Y = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

MOT	02	MAINTENANCE OF TRAFFIC PHASE I	SCALE: 1:500	REVISIONS	
				DATE	
MUNICIPALITY OF BAYAMÓN		PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS		PUERTO RICO	
BAYAMÓN		#AM 2218		DATE	

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	03/03/23	

**CMA**  
 ARCHITECTS &  
 ENGINEERS

WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK	03/07/23	

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MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

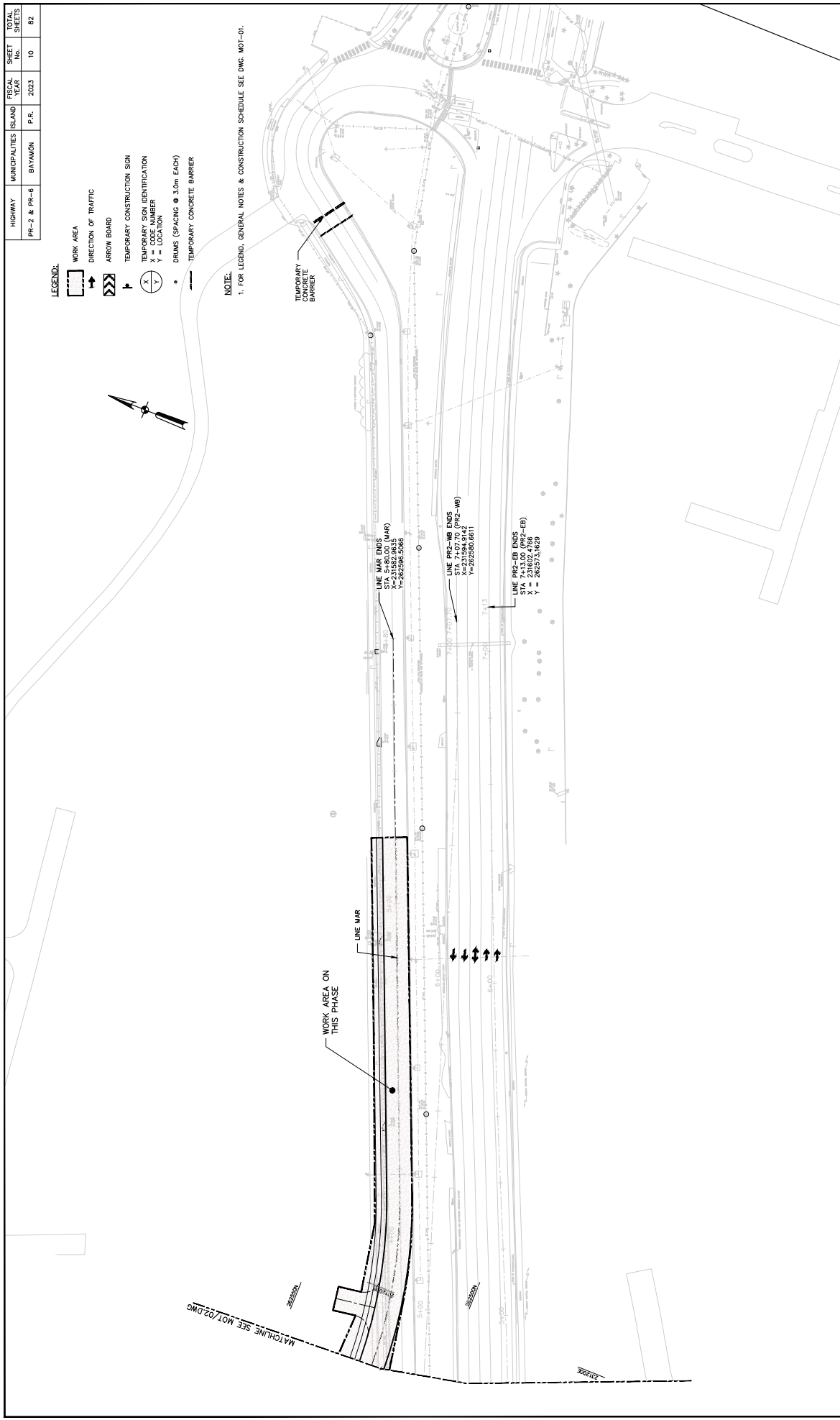
PUERTO RICO

REVISIONS	DATE

SCALE: 1:500

MAINTENANCE OF TRAFFIC  
PHASE I

MOT 03



**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

**NOTE:**  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	10	82

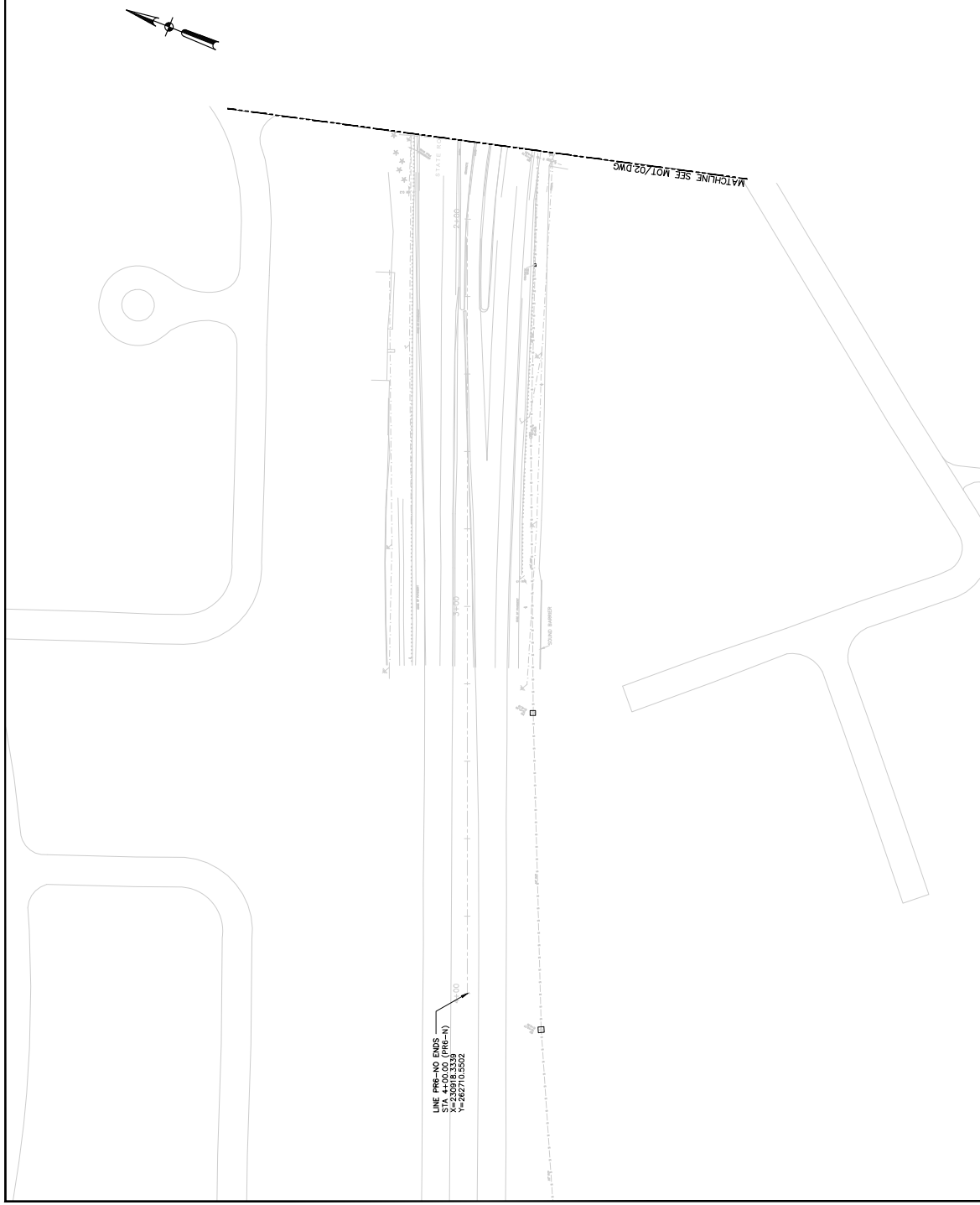
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	11	82

**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

**NOTE:**

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.



LINE PR6-HO ENDS  
 STA 4400.00 (PR6-N)  
 STA 4400.00 (PR6-S)  
 Y=282710.5502

<p><b>CMA</b>                  ARCHITECT &amp;                  ENGINEERS</p>	MUNICIPALITY OF BAYAMÓN BAYAMÓN	PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	MAINTENANCE OF TRAFFIC PHASE I	MOT 04
	#44 2218 <small>ISSUED FOR PERMIT REVIEW                  DATE: 03/09/23                  DRAWN: FRANCISCO RIVERA ROSENDO                  CHECKED: FRANCISCO RIVERA ROSENDO</small>	REVISIONS	DATE			

WORK	BY	DATE
DESIGN		
DRAWING		
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FINAL CHECK		03/09/23

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

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 ARCHITECT & ENGINEERS

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 ENGINEERS

MUNICIPALITY OF BAYAMÓN

BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS

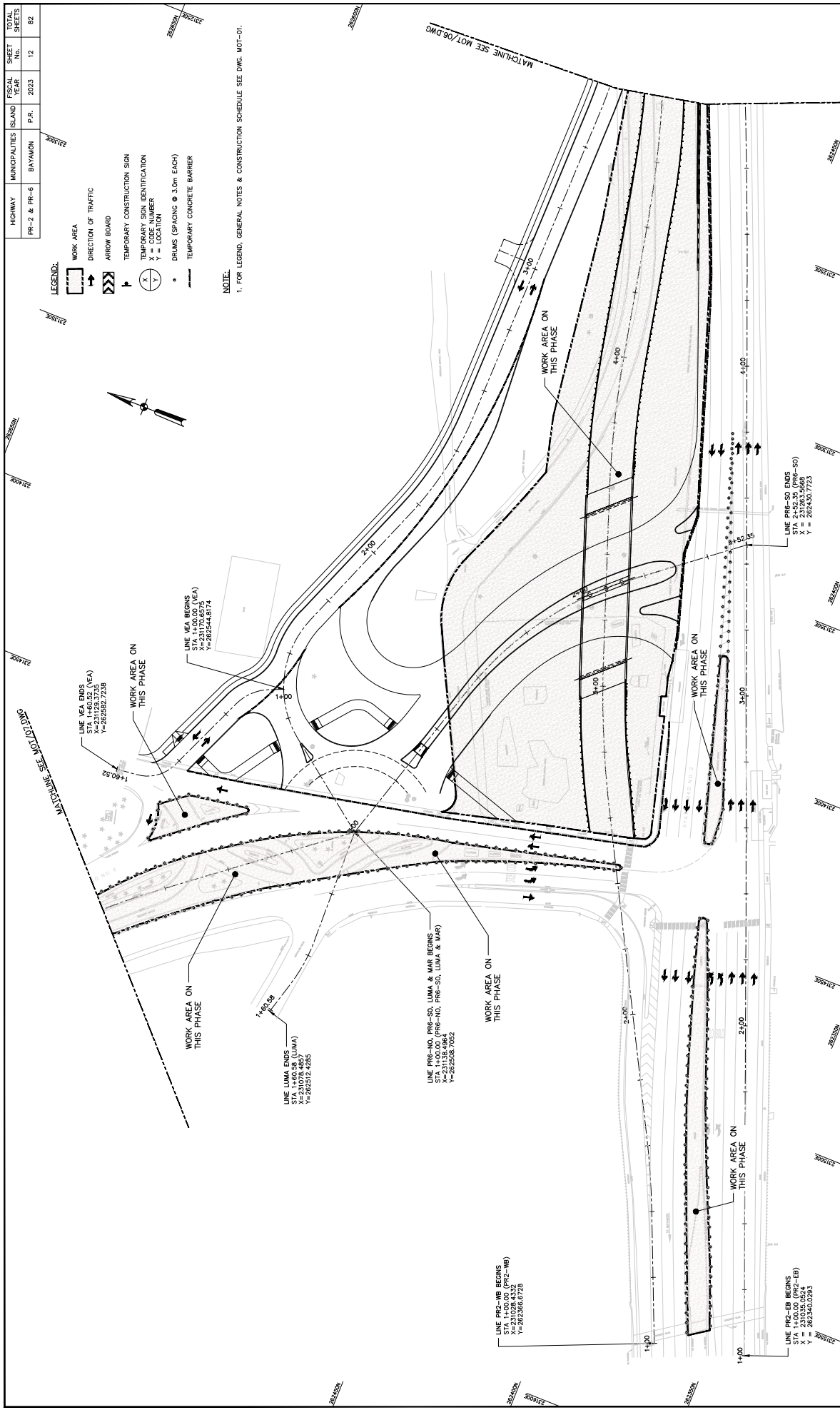
PUERTO RICO

REVISIONS	DATE

SCALE: 1:500

MAINTENANCE OF TRAFFIC  
 PHASE II

MOT 05



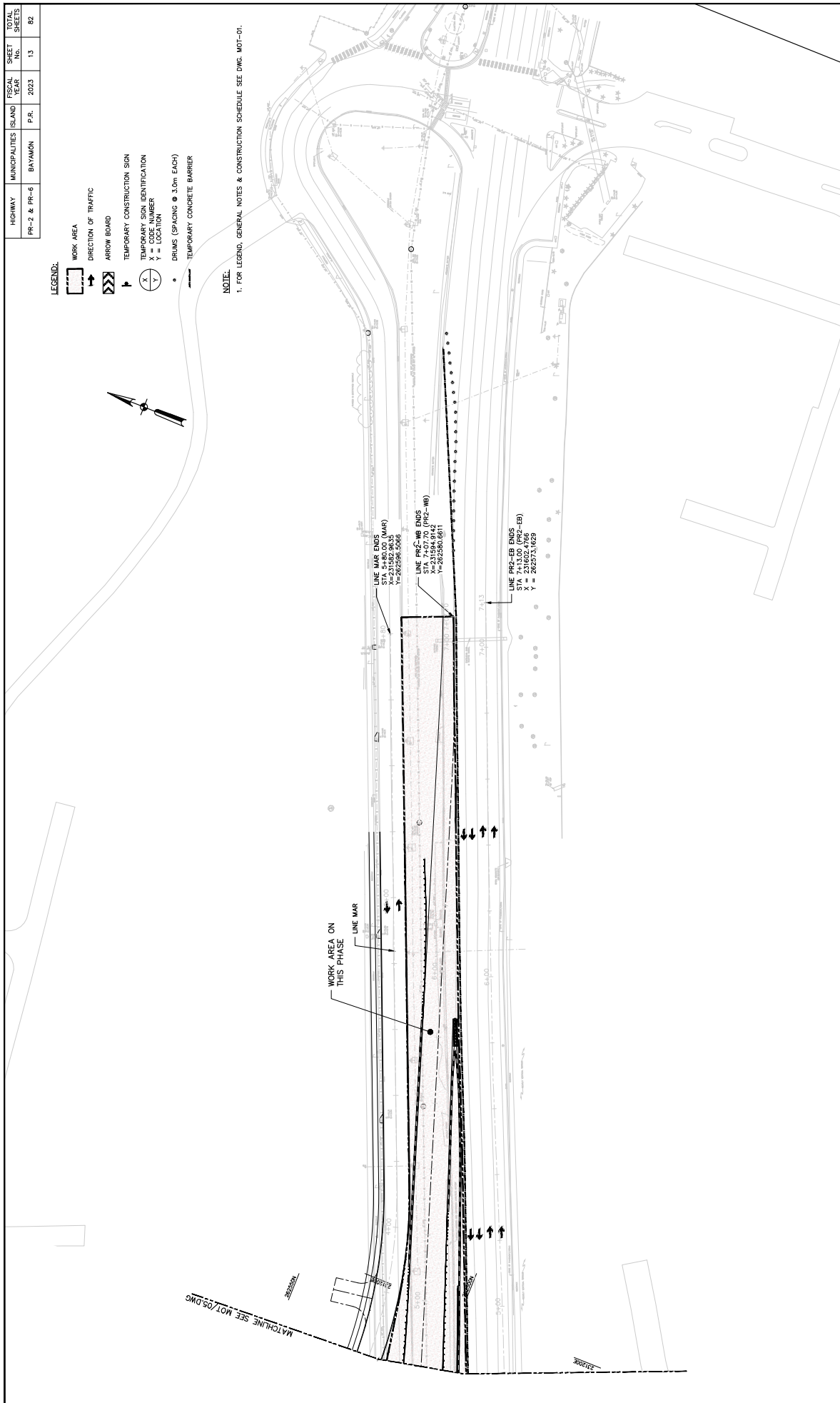
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	12	82

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	13	82

**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.










MOT	06	MAINTENANCE OF TRAFFIC PHASE II	SCALE: 1:500	REVISIONS	
				DATE	
MUNICIPALITY OF BAYAMÓN		PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO		
CMA ARCHITECT & ENGINEERS		BAYAMÓN	CMA# 2218		
WORK	BY	DATE	DESIGN	DATE	FINAL CHECK
		03/09/23	SCHEMATIC PLANS		



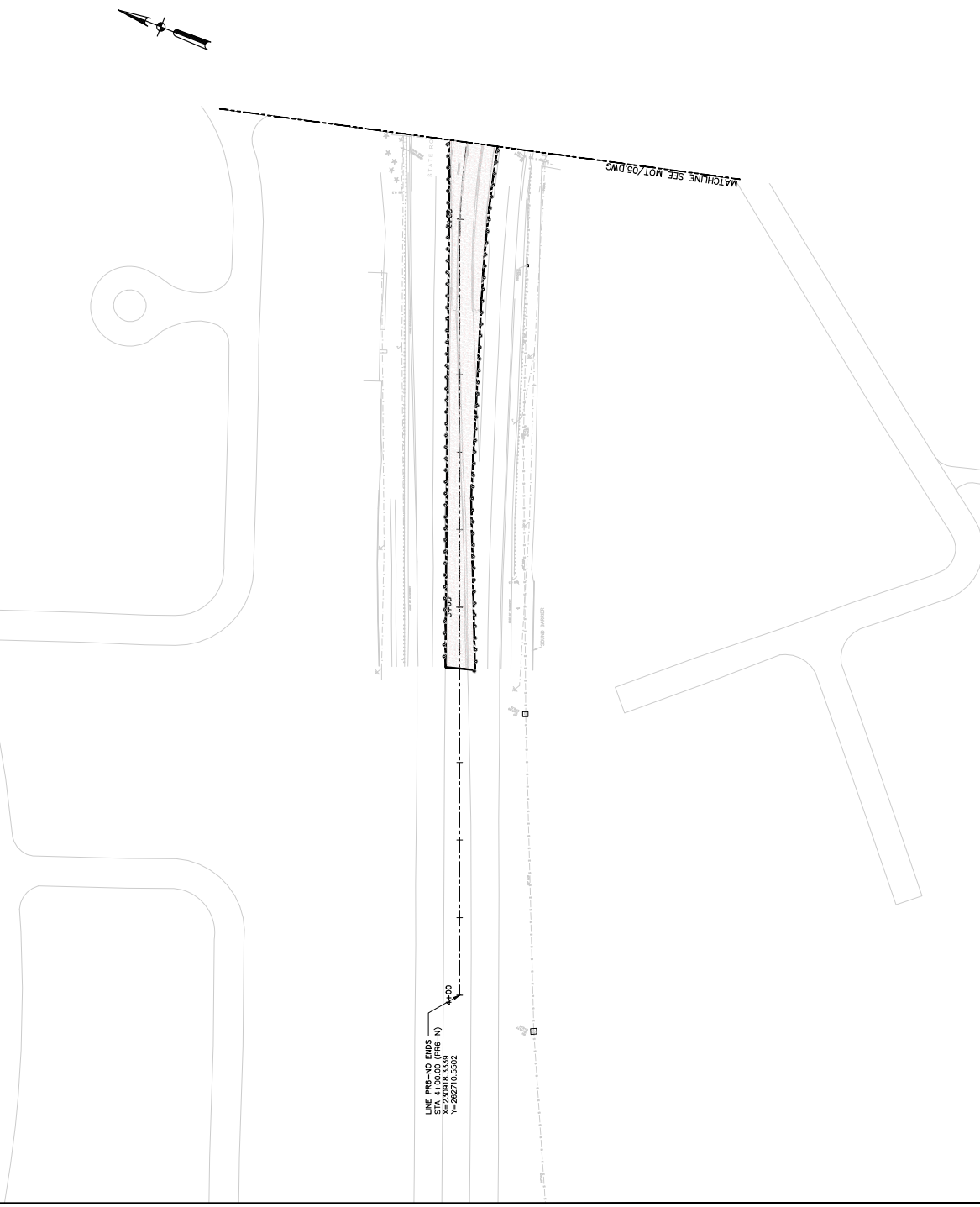
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	14	82

**LEGEND:**

-  WORK AREA
-  DIRECTION OF TRAFFIC
-  ARROW BOARD
-  TEMPORARY CONSTRUCTION SIGN
-  TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
-  DRUMS (SPACING @ 3.0m EACH)
-  TEMPORARY CONCRETE BARRIER

**NOTE:**

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.



LINE PR6-HO ENDS  
 STA 4+40.00 (PR6-N)  
 Y=282710.5502

MATCHLINE SEE MOT/05.DWG

WORK	DATE	BY
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	09/07/23	

<b>CMA</b> ARCHITECT & ENGINEERS	MUNICIPALITY OF BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS	BAYAMÓN PUERTO RICO	REVISIONS	SCALE: 1:500	MAINTENANCE OF TRAFFIC PHASE II	MOT 07
			DATE			

#44 2218 <small>ISSUED FOR PERMIT REVIEW          DATE: 08/14/2023          DRAWN: JAVIER RIVERA          CHECKED: JAVIER RIVERA</small>
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DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

02023 CMA A&E L.P.  
 CMA ARCHITECT & ENGINEERS

MUNICIPALITY OF BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6  
 BAYAMON

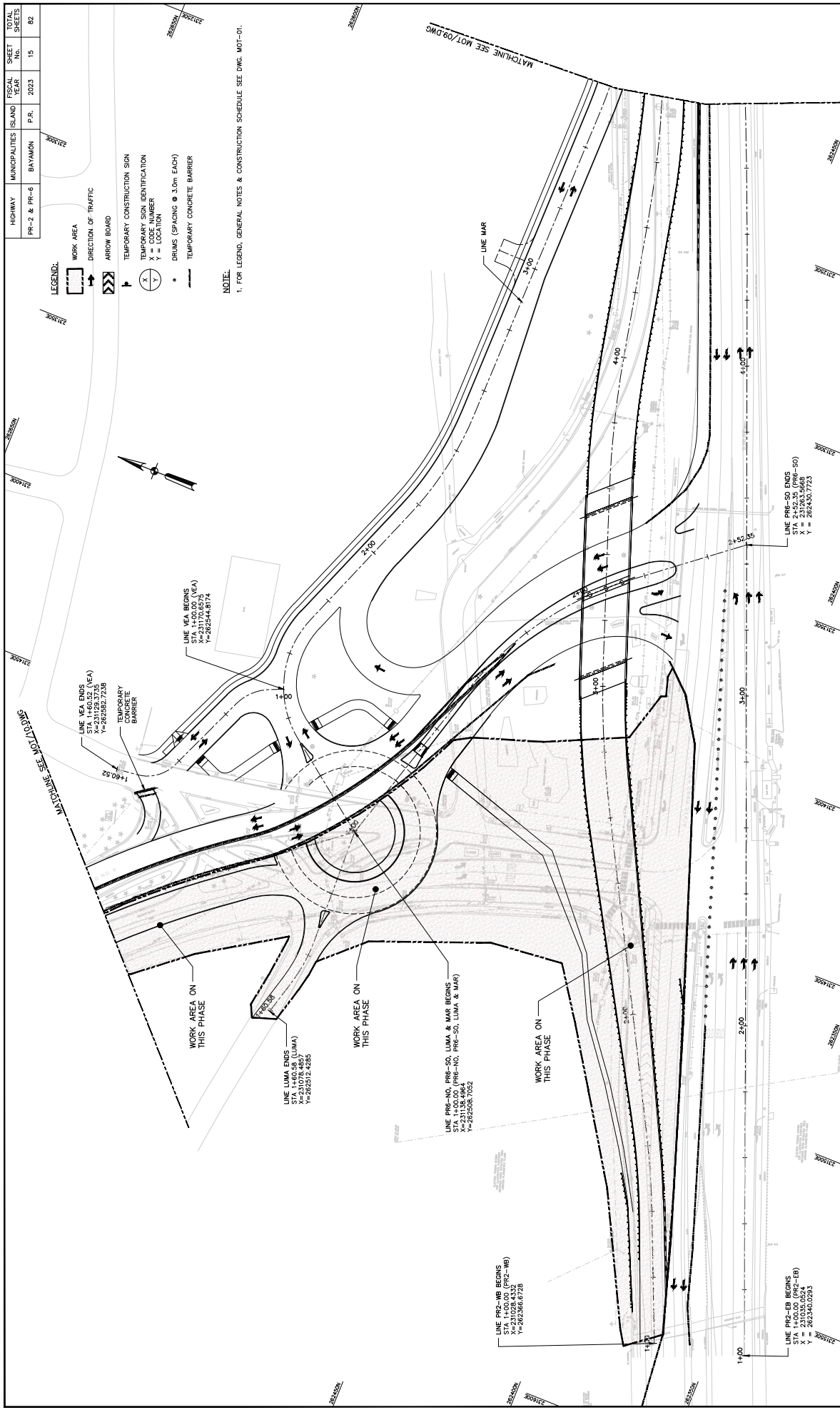
PUERTO RICO  
 DATE

REVISIONS	DATE

SCALE: 1:500

MAINTENANCE OF TRAFFIC  
 PHASE III

MOT 08



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	15	82

**LEGEND:**  
 WORK AREA  
 DIRECTION OF TRAFFIC  
 ARROW BOARD  
 TEMPORARY CONSTRUCTION SIGN  
 TEMPORARY SIGN IDENTIFICATION  
 X = CODE NUMBER  
 Y = LOCATION  
 DRUMS (SPACING @ 3.0m EACH)  
 TEMPORARY CONCRETE BARRIER

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

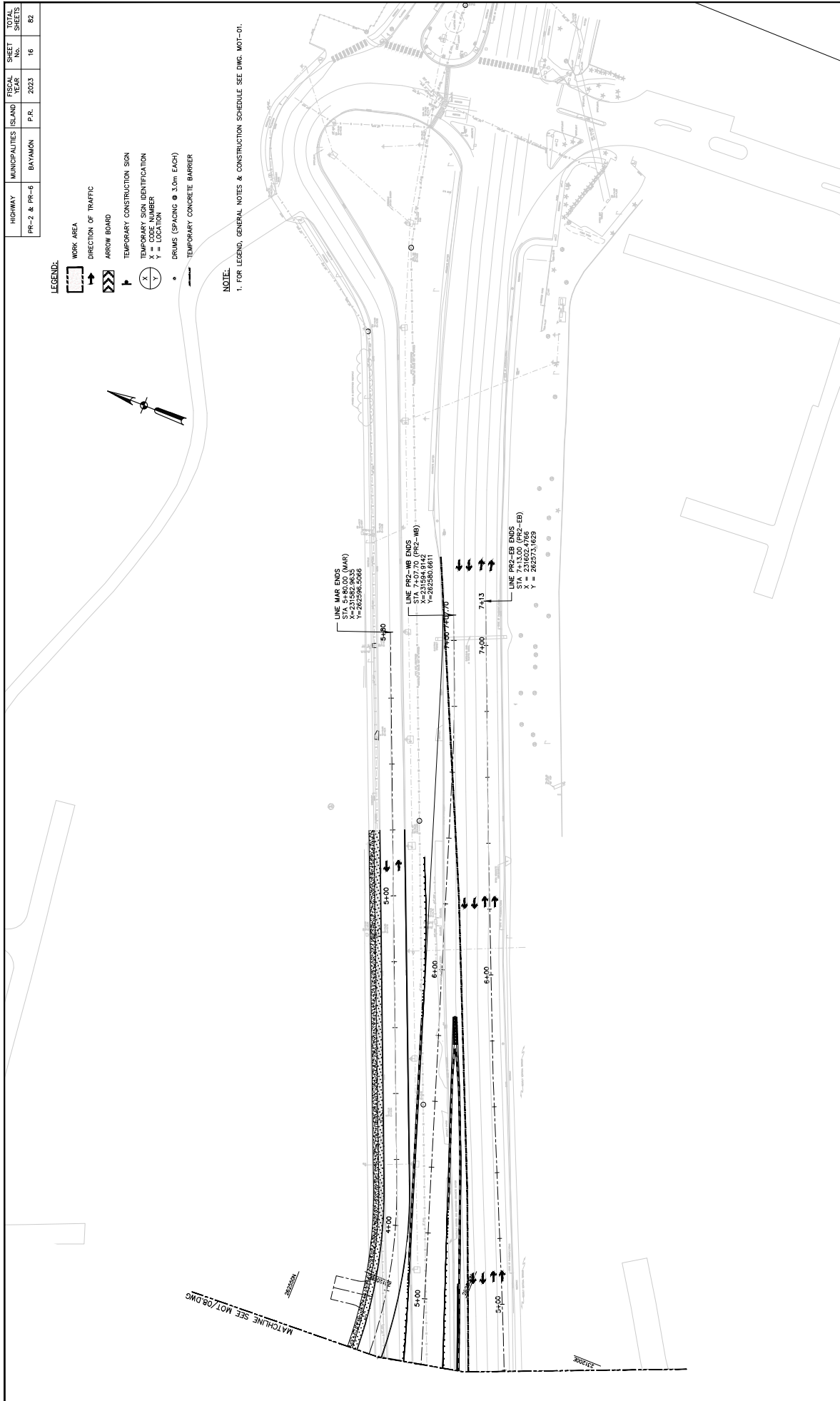
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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	16	82

LEGEND:

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

NOTE:  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.



MOT	09	MAINTENANCE OF TRAFFIC PHASE III	SCALE: 1:500	REVISIONS	
				DATE	
MUNICIPALITY OF BAYAMÓN		PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	BAYAMÓN	
CMA ARCHITECT & ENGINEERS		CMA# 2218		ISSUED FOR PERMIT REVIEW DATE: 03/07/23 DRAWN BY: [Name] CHECKED BY: [Name]	
WORK	BY	DATE			
DESIGN					
DRAWING					
CHECK					
FINAL CHECK		03/07/23			

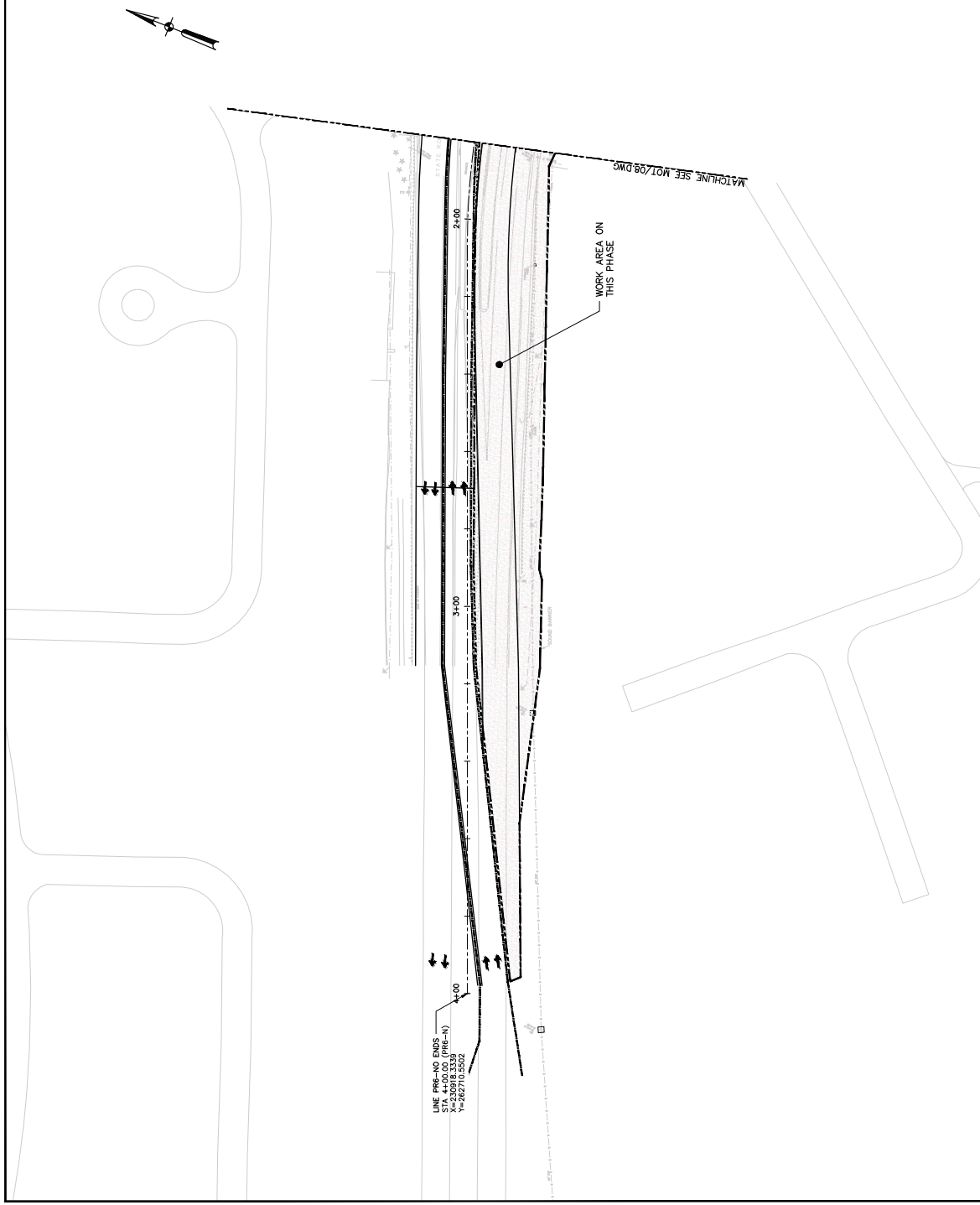
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	17	82

**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

**NOTE:**

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

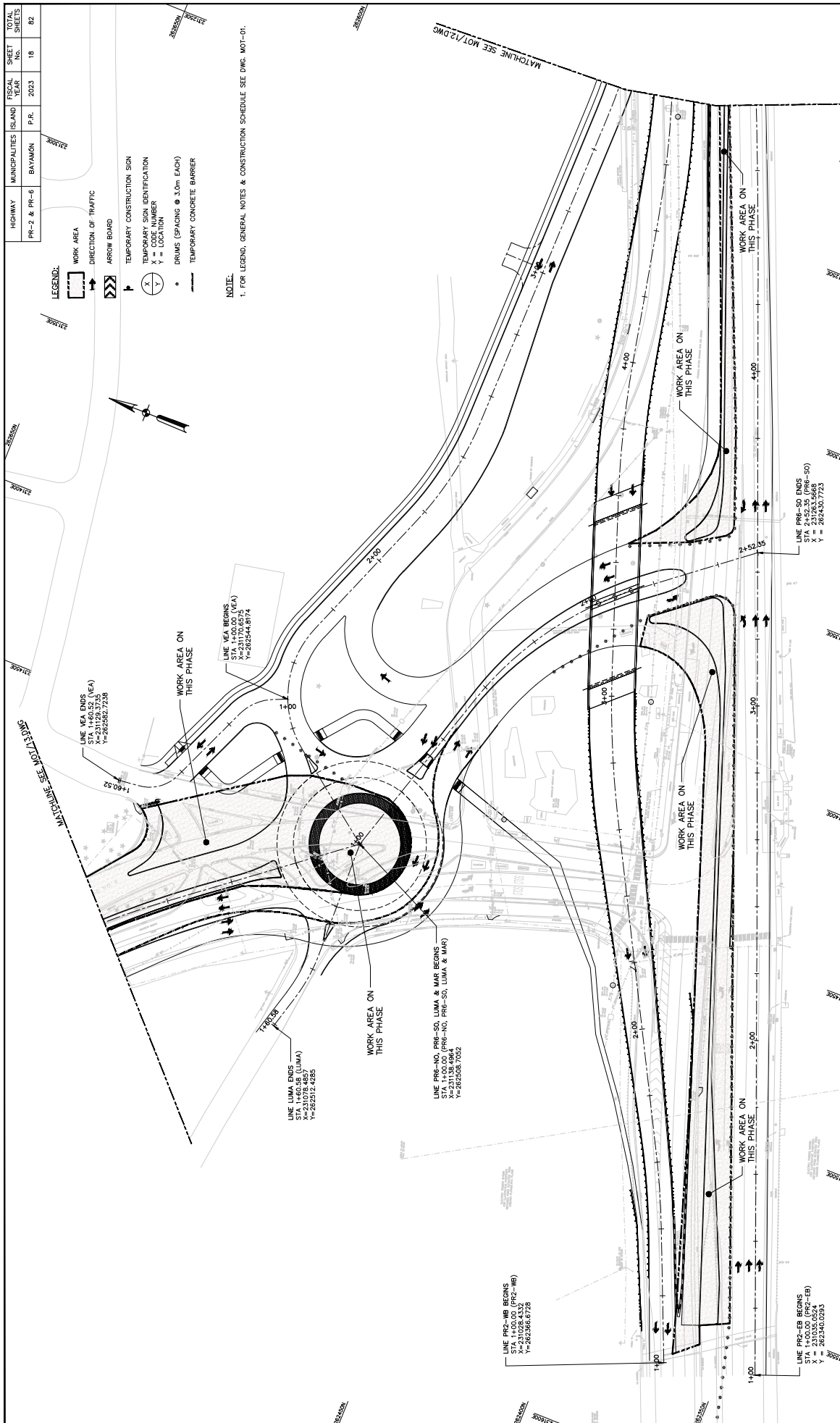


MUNICIPALITY OF BAYAMÓN	BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	REVISIONS	SCALE: 1:500	MAINTENANCE OF TRAFFIC PHASE III	MOT 10
				DATE			

**CMA**  
 ARCHITECT &  
 ENGINEERS

PROJ. NO. 22102  
 SHEET NO. 17 OF 82

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		03/02/23



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	18	82

- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - ARROW BOARD
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
    - X = CODE NUMBER
    - Y = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER

**NOTE:**  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK	03/03/23
						03/03/23
MUNICIPALITY OF BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS BAYAMÓN						
PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS PUEERTO RICO						
SCALE: 1:500						
MAINTENANCE OF TRAFFIC PHASE IV						
MOT 11						



444 2282  
BAYAMÓN

DATE

REVISIONS

SCALE: 1:500

MAINTENANCE OF TRAFFIC  
PHASE IV

MOT 11

WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK	03/07/23	

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MUNICIPALITY OF BAYAMÓN

BAYAMÓN

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

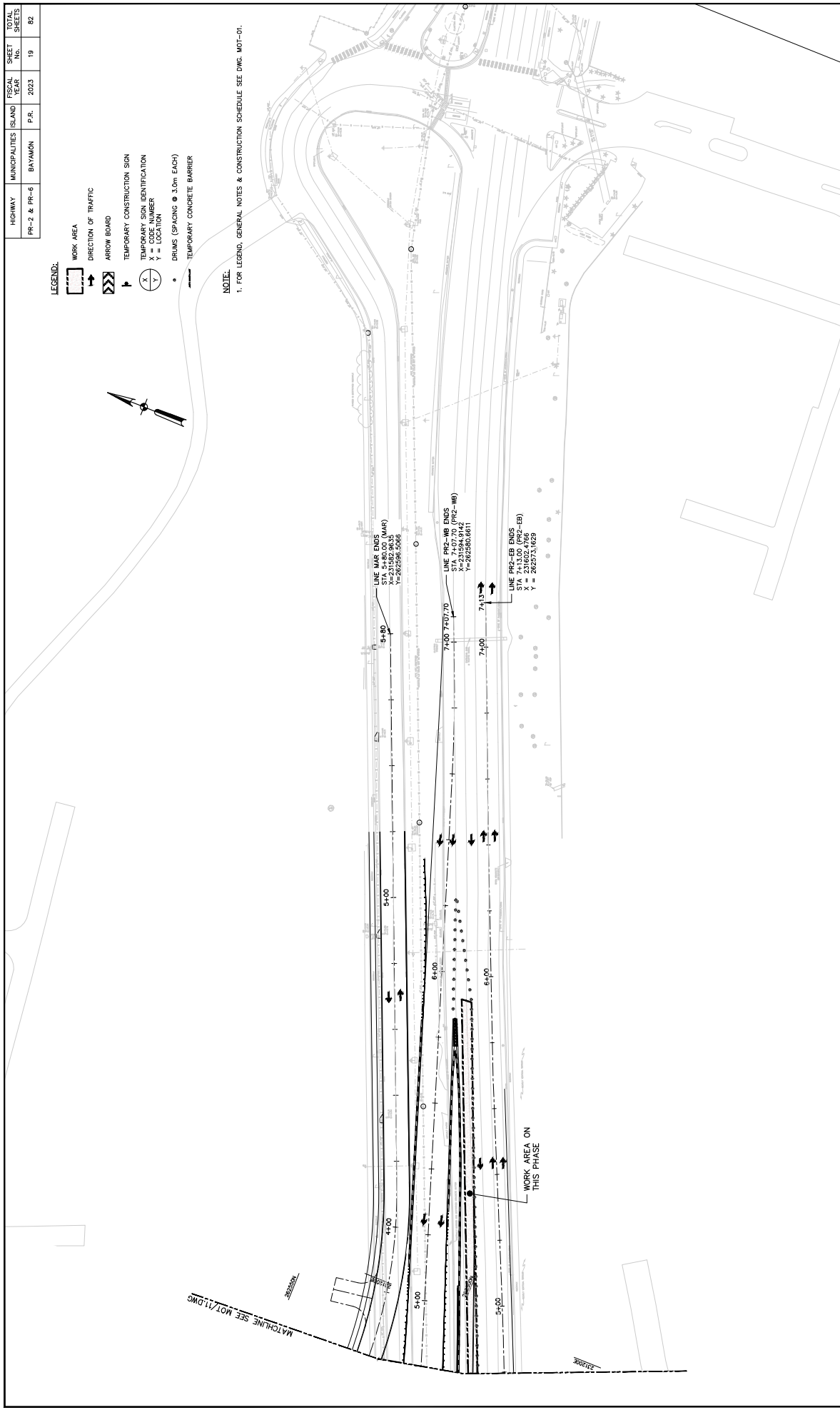
REVISIÓN

DATE

SCALE: 1:500

MAINTENANCE OF TRAFFIC PHASE IV

MOT 12



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	19	82



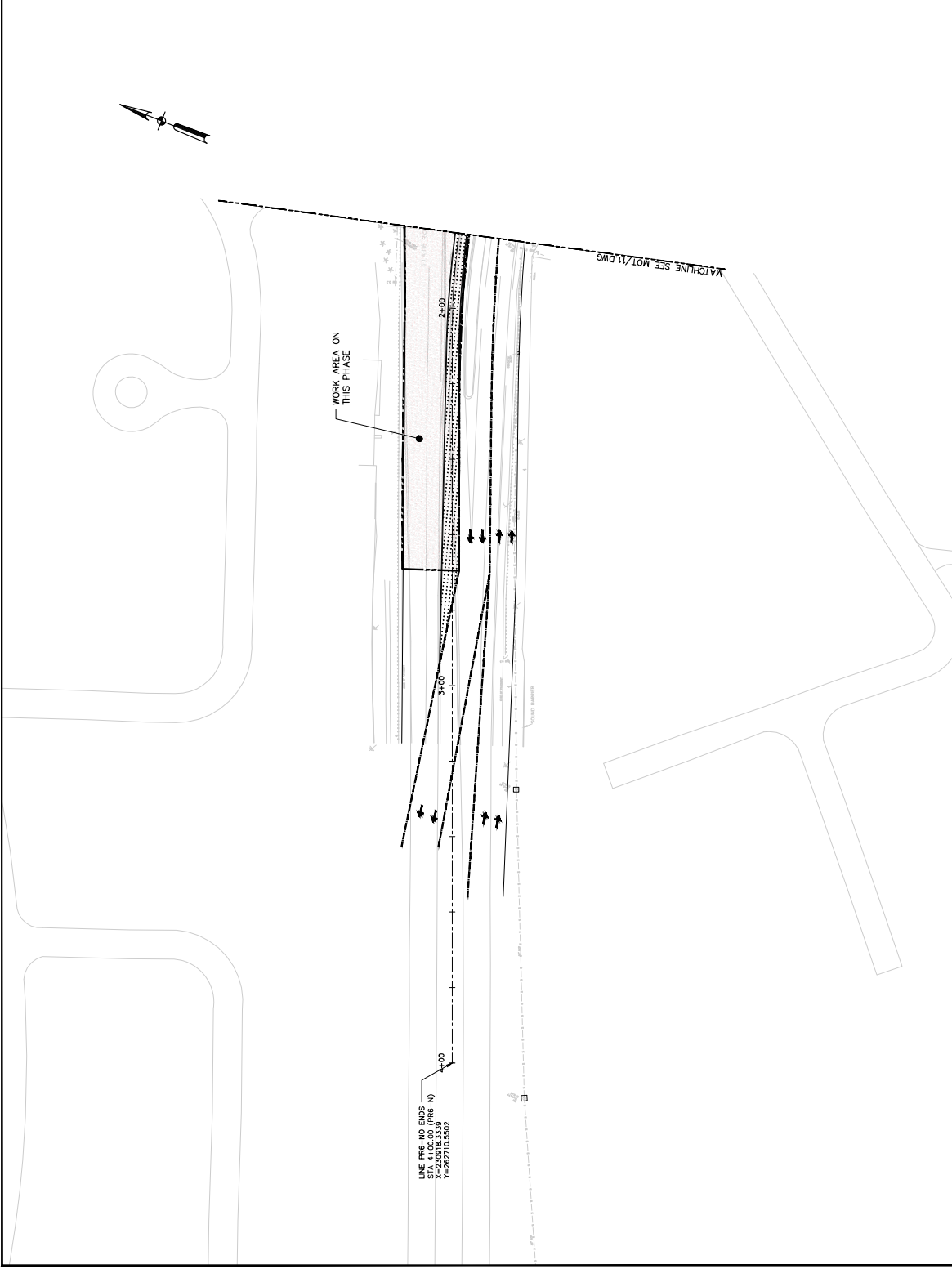
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	20	82

**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

**NOTE:**

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.



MUNICIPALITY OF BAYAMÓN	BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	DATE	REVISIONS	SCALE: 1:500	MAINTENANCE OF TRAFFIC PHASE IV	MOT	13
				DATE	REVISIONS				

**CMA**  
ARCHITECT &  
ENGINEERS

PROYECTO DE MEJORA GEOMÉTRICA EN LAS INTERSECCIONES DE LAS CARRETERAS PR-2 Y PR-6 EN BAYAMÓN, P.R.  
#22102

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		03/07/23

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

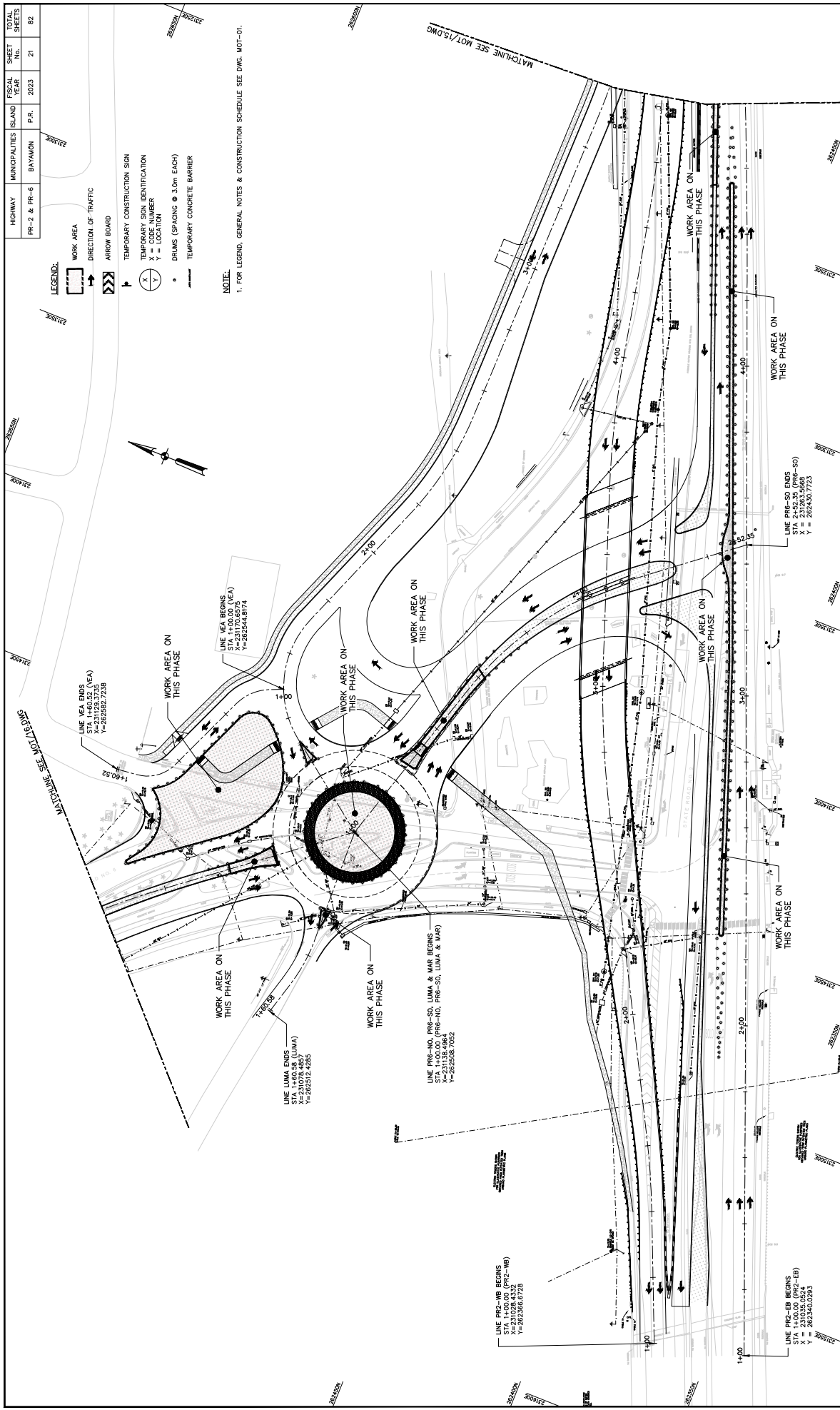
PR-2 AND PR-6

SCALE: 1:500

MAINTENANCE OF TRAFFIC

PHASE V

MOT 14



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	21	82

- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - ARROW BOARD
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - X = CODE NUMBER
  - Y = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER

**NOTE:**  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK	09/07/23	
SCHEMATIC PLANS		

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MUNICIPALITY OF BAYAMÓN

BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

NO.	DATE	REVISIONS

SCALE: 1:500

MAINTENANCE OF TRAFFIC PHASE V

MOT 15



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	22	82

LEGEND:

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

NOTE:  
1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

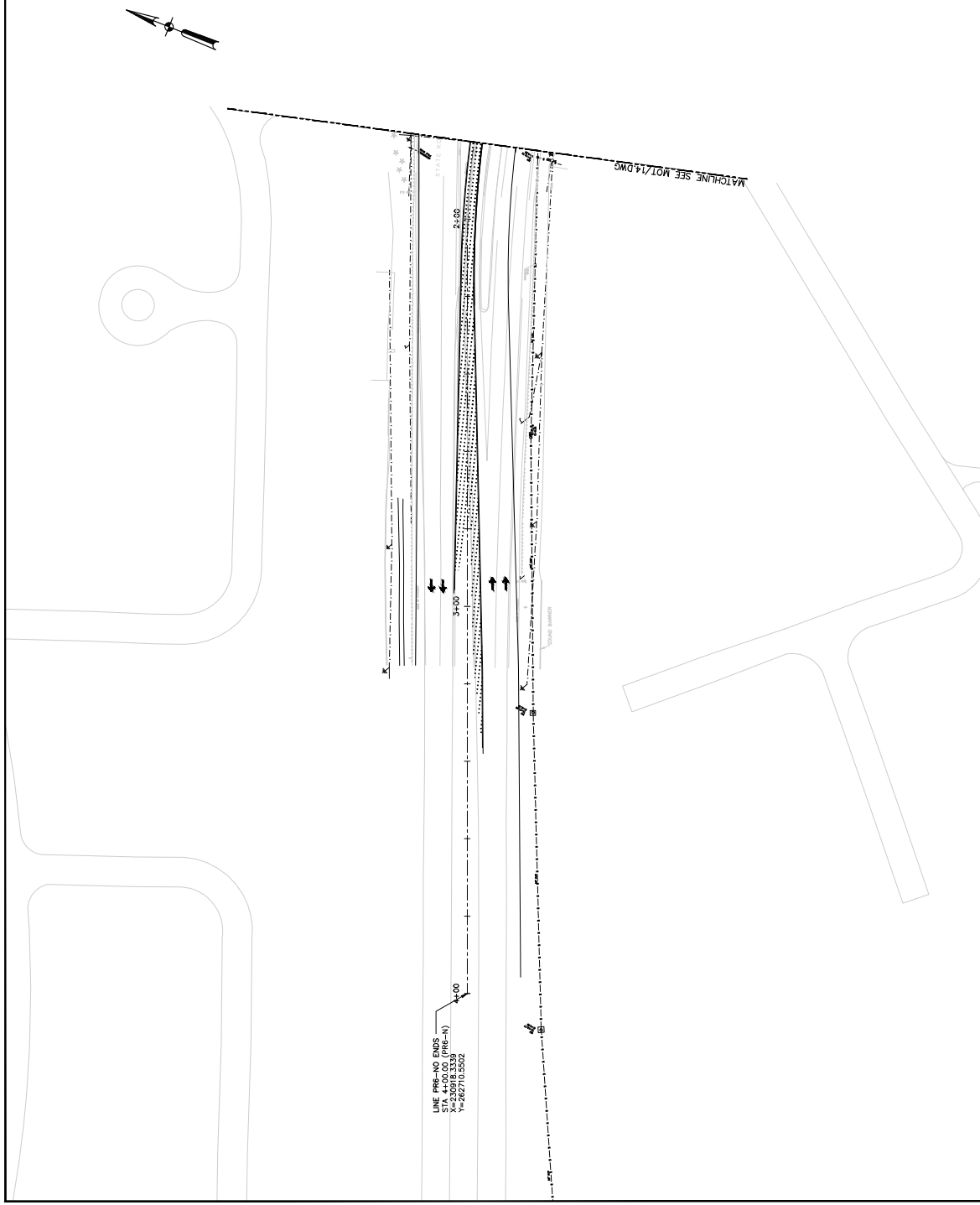
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	23	82

**LEGEND:**

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

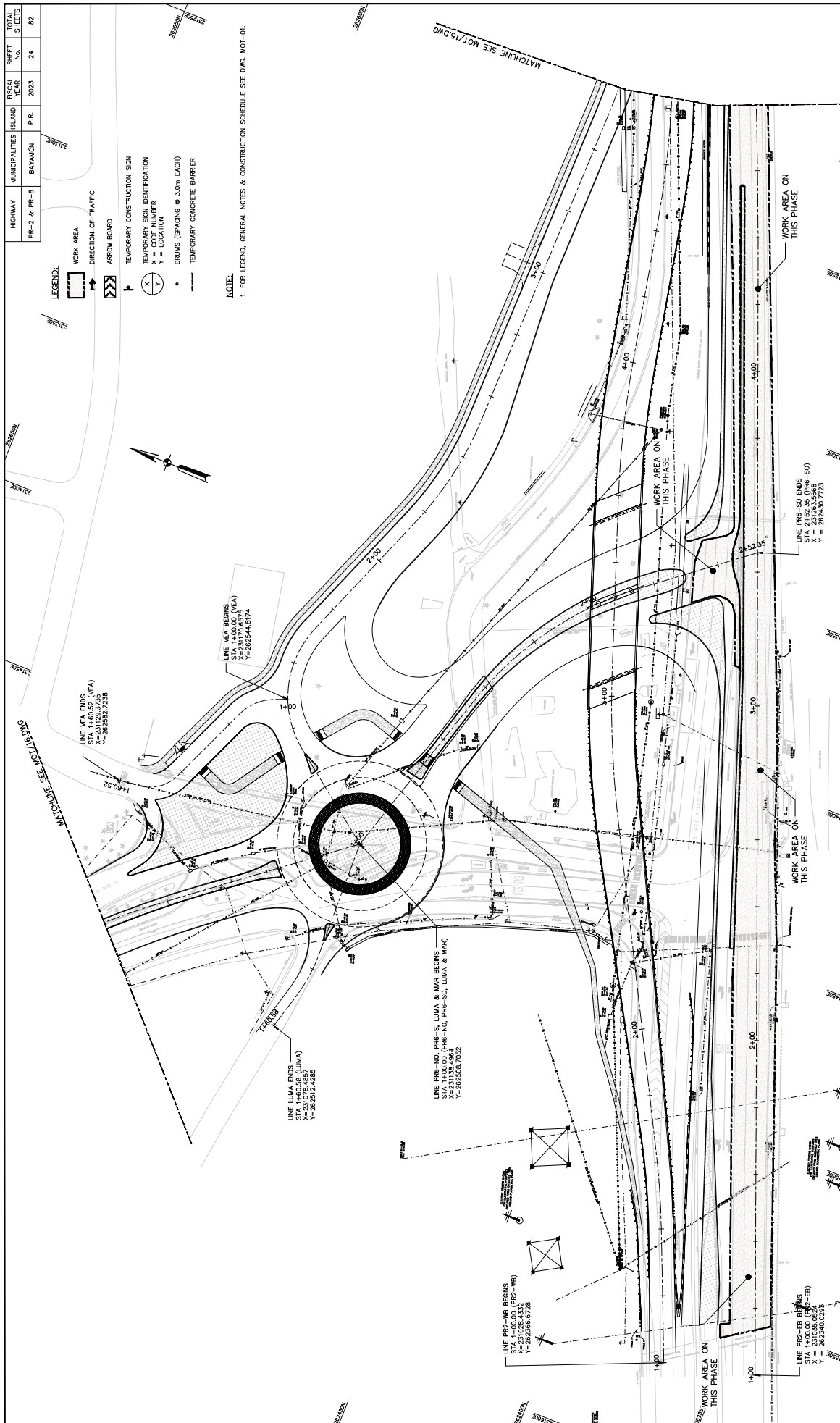
**NOTE:**

1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.



<p><b>CMA</b> ARCHITECT &amp; ENGINEERS</p>	MUNICIPALITY OF BAYAMÓN BAYAMÓN	PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO	SCALE: 1:500	MOT MAINTENANCE OF TRAFFIC PHASE V	16
	#4# 2218 <small>ISSUED FOR PERMIT REVIEW                  DATE: 03/07/23                  DRAWN BY: FRR</small>		REVISIONS DATE		

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		03/07/23



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	24	82

- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - ARROW BOARD
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - X = CODE NUMBER
  - Y = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.

MOT	17	MAINTENANCE OF TRAFFIC PHASE VI	SCALE: 1:500	REVISIONS	
				DATE	
MUNICIPALITY OF BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS			PUERTO RICO		
BAYAMÓN			A44 2282		



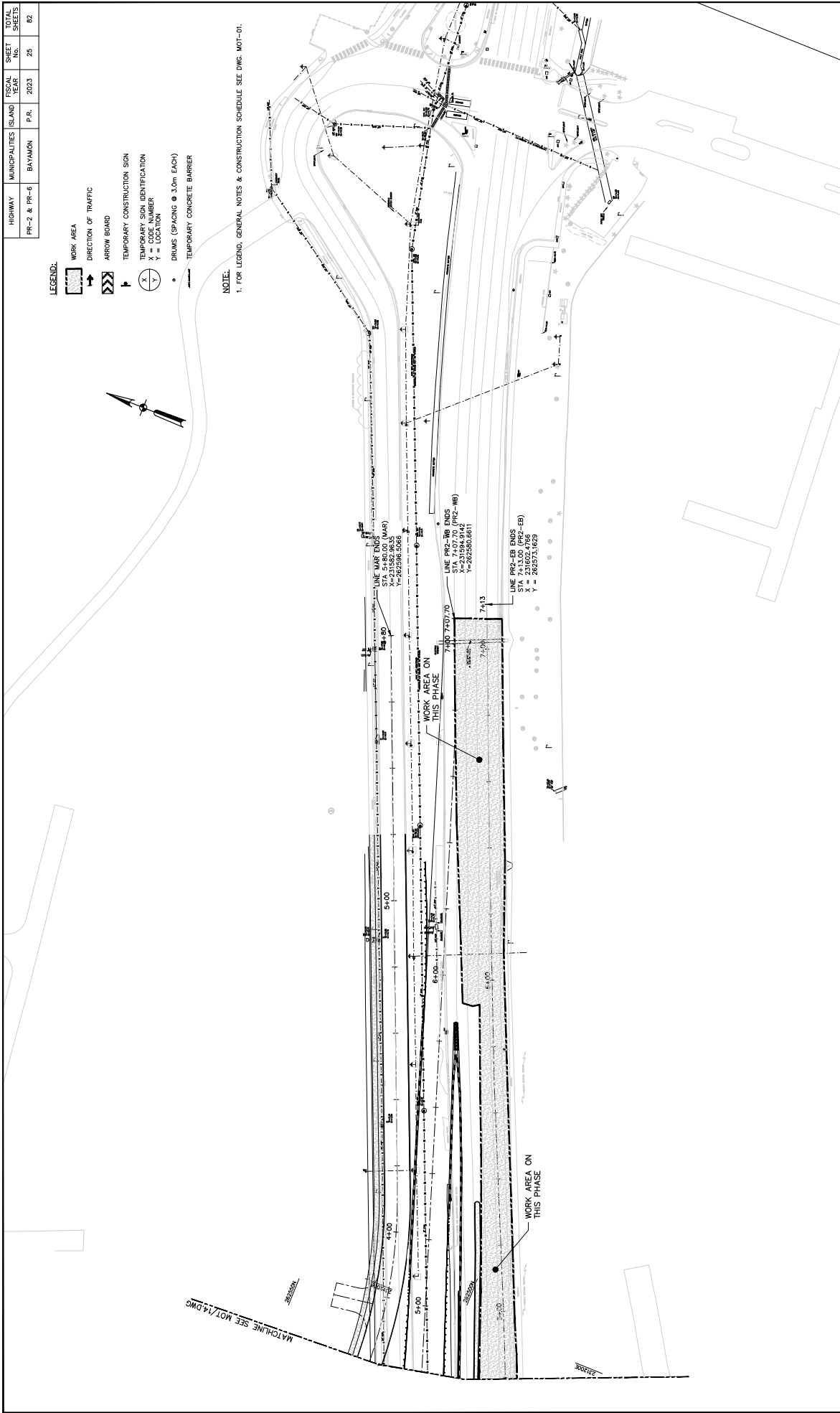
DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	25	82

LEGEND:

- WORK AREA
- DIRECTION OF TRAFFIC
- ARROW BOARD
- TEMPORARY CONSTRUCTION SIGN
- TEMPORARY SIGN IDENTIFICATION
- X = CODE NUMBER
- Y = LOCATION
- DRUMS (SPACING @ 3.0m EACH)
- TEMPORARY CONCRETE BARRIER

NOTE:  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.



MOT	18	MAINTENANCE OF TRAFFIC PHASE VI	SCALE: 1:500	REVISIONS	
				DATE	
BAYAMÓN		PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	CMA# 2218 <small>ISSUED FOR REVIEW 03/09/23                  DESIGNED BY: FRANCISCO RIVERA ROSENDO                  CHECKED BY: FRANCISCO RIVERA ROSENDO</small>	
MUNICIPALITY OF BAYAMÓN		CMA ARCHITECT & ENGINEERS <small>1000 CARRILLO DRIVE, SUITE 200                  SAN JUAN, PUERTO RICO 00906                  TEL: (787) 763-1234</small>			

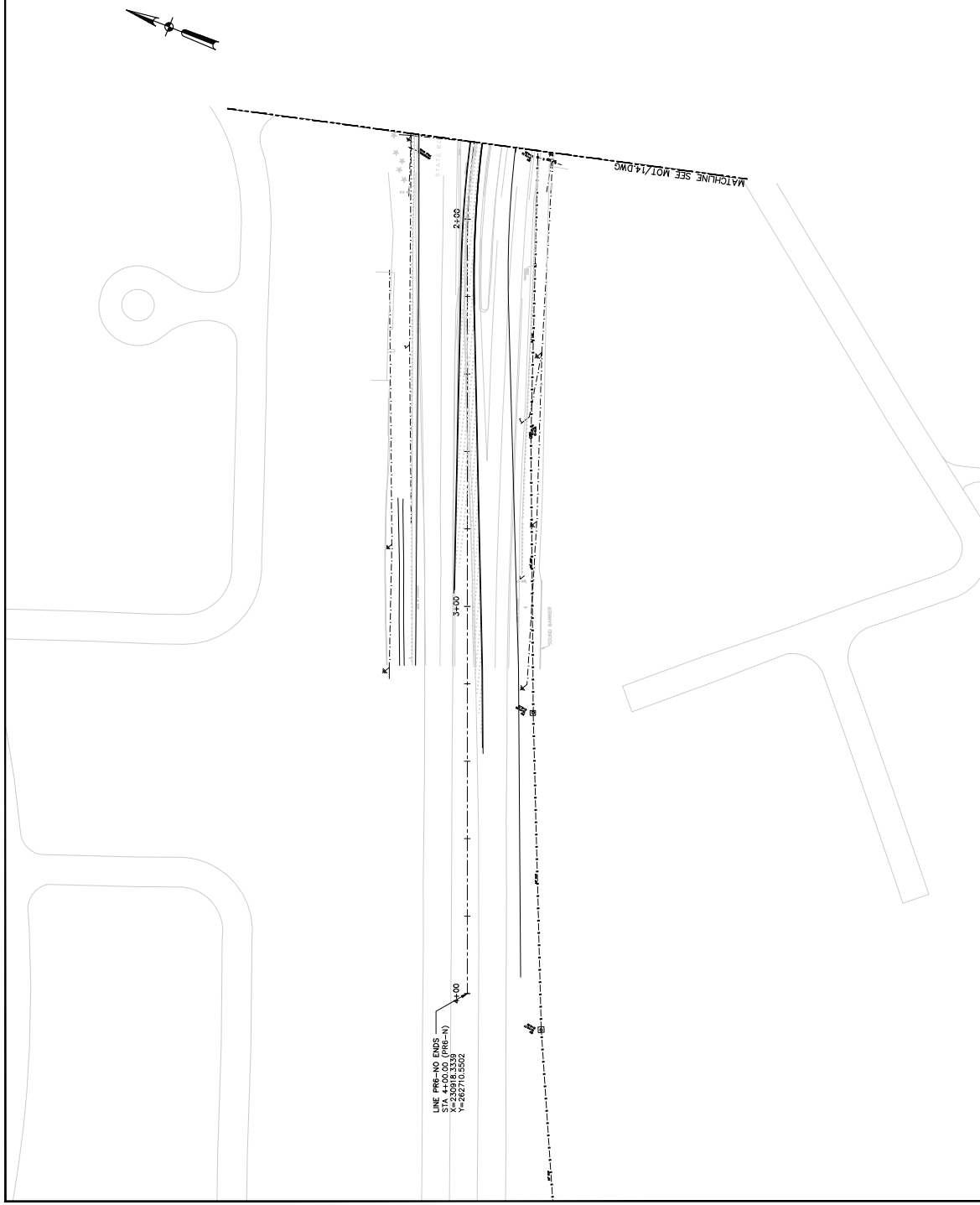
WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK	03/09/23	



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	26	82

- LEGEND:**
- WORK AREA
  - DIRECTION OF TRAFFIC
  - ARROW BOARD
  - TEMPORARY CONSTRUCTION SIGN
  - TEMPORARY SIGN IDENTIFICATION
  - X = CODE NUMBER
  - Y = LOCATION
  - DRUMS (SPACING @ 3.0m EACH)
  - TEMPORARY CONCRETE BARRIER

**NOTE:**  
 1. FOR LEGEND, GENERAL NOTES & CONSTRUCTION SCHEDULE SEE DWG. MOT-01.



	MUNICIPALITY OF BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS BAYAMÓN	PUERTO RICO	SCALE: 1:500	MOT MAINTENANCE OF TRAFFIC PHASE VI	19
	#44 2218 <small>ISSUED FOR PERMIT REVIEW                  DATE: 03/07/23                  DRAWN: FRANCISCO RIVERA                  CHECKED: FRANCISCO RIVERA</small>	REVISIONS	DATE		

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		03/07/23

DATE	03/03/23
BY	
DESIGN	
DRAWING	
REVISIONS	
CHECK	
FINAL CHECK	
DATE	03/03/23

PP 01

LAYOUT PLAN

SCALE: 1:500

REVISIONS

DATE

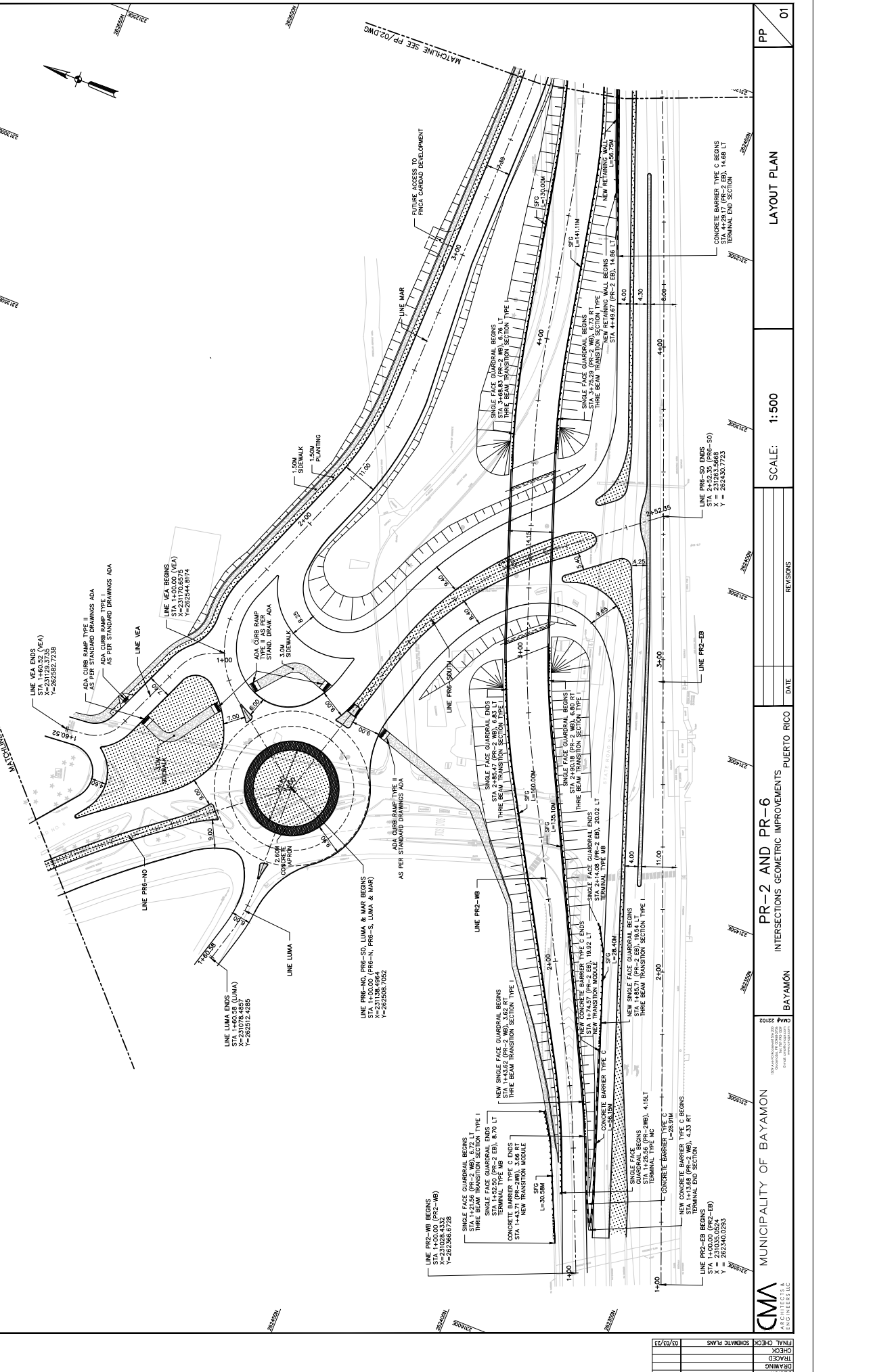
REVISIONS

DATE

REVISIONS

DATE

REVISIONS



**CMA ARCHITECTS & ENGINEERS**  
 858 CAROL ANN DRIVE, SUITE 200, BAYAMÓN, PUERTO RICO 00961  
 TEL: 787-265-0285 FAX: 787-265-0285  
 WWW.CMA-ARCHITECTS.COM

**MUNICIPALITY OF BAYAMÓN**  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

**PR-2 AND PR-6**  
 BAYAMÓN

SCALE: 1:500

LAYOUT PLAN

PP 01

DATE

REVISIONS

DATE

REVISIONS

DATE

REVISIONS

DATE

REVISIONS

DATE

REVISIONS

FILE: C:\PM\WORKSPACE\2022\CHECKOUT\PP-01.DWG DATE: March 10, 2023 8:41 AM USER: Francisco Rivera Roberts

DATE	BY	WORK
03/03/23		FINAL CHECK
		CHECK
		DESIGNED
		DRAWING
		DATE

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ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

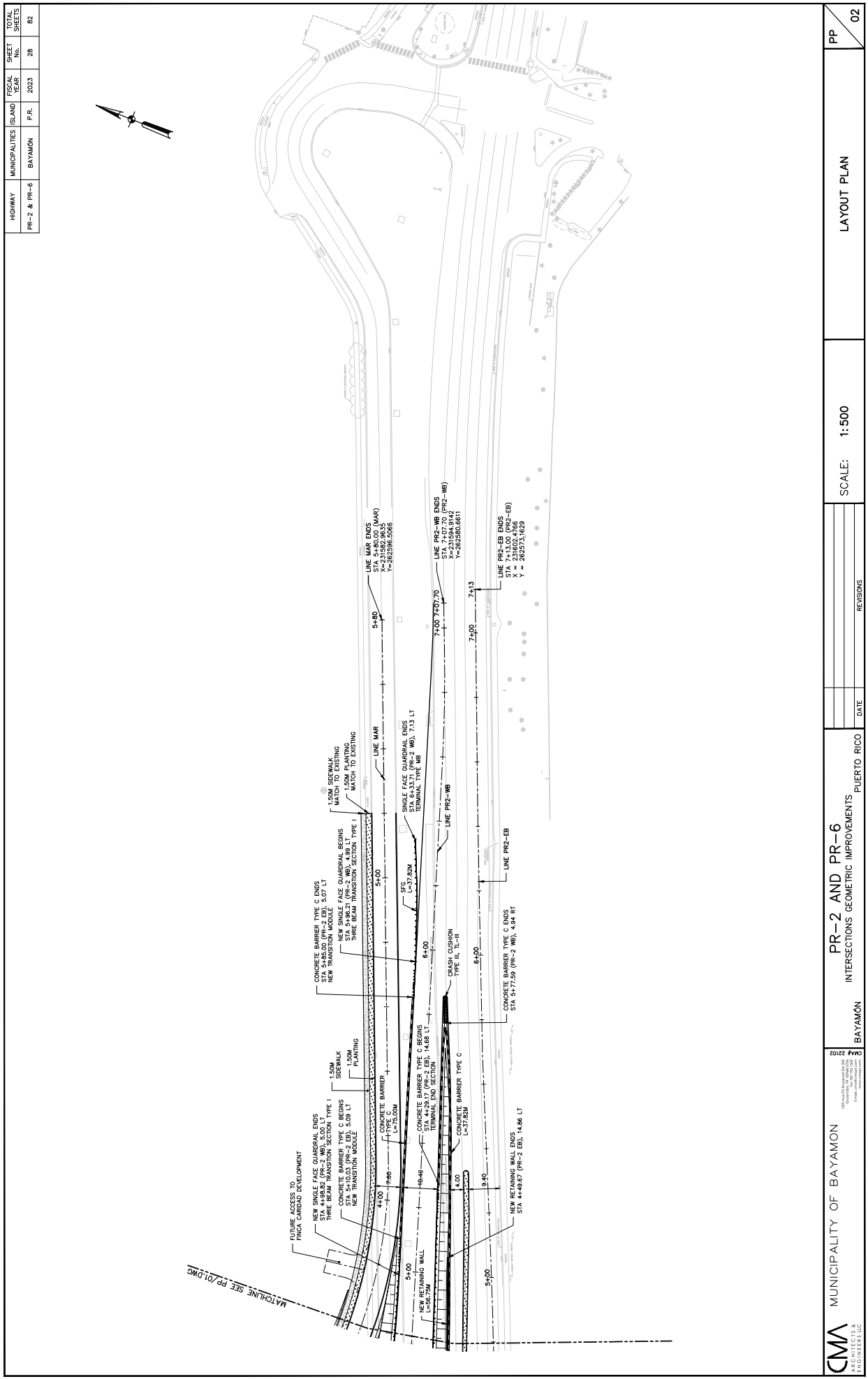
REVISIONS	DATE

SCALE: 1:500

LAYOUT PLAN

PP 02

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	28	82



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		03/03/23

**CMA**  
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ENGINEERS

MUNICIPALITY OF BAYAMON

CHAF # 2212  
1000 P.R. ROAD, SUITE 200  
SAN JUAN, P.R. 00909  
TEL: (787) 763-1234  
WWW.CMA-PR.COM

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

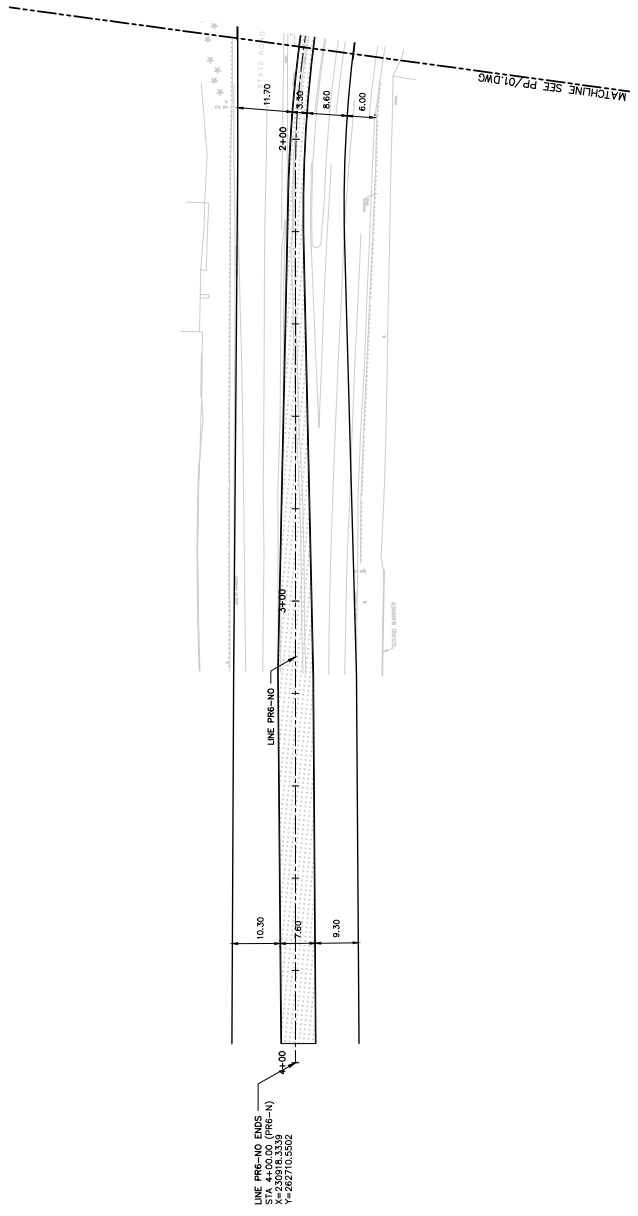
REVISIONS	DATE

SCALE: 1:500

LAYOUT PLAN

PP 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	29	82



WORK	DATE	BY
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	03/03/23	

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 SCHEMATIC PLANS

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 ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

REVISIONS	DATE

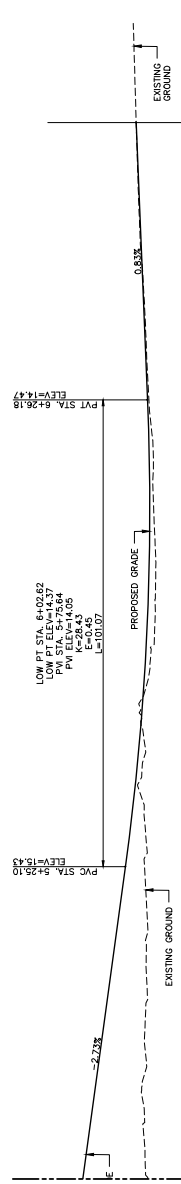
SCALE: AS SHOWN

PROFILE  
 LINE PR-2 WB

PP 04

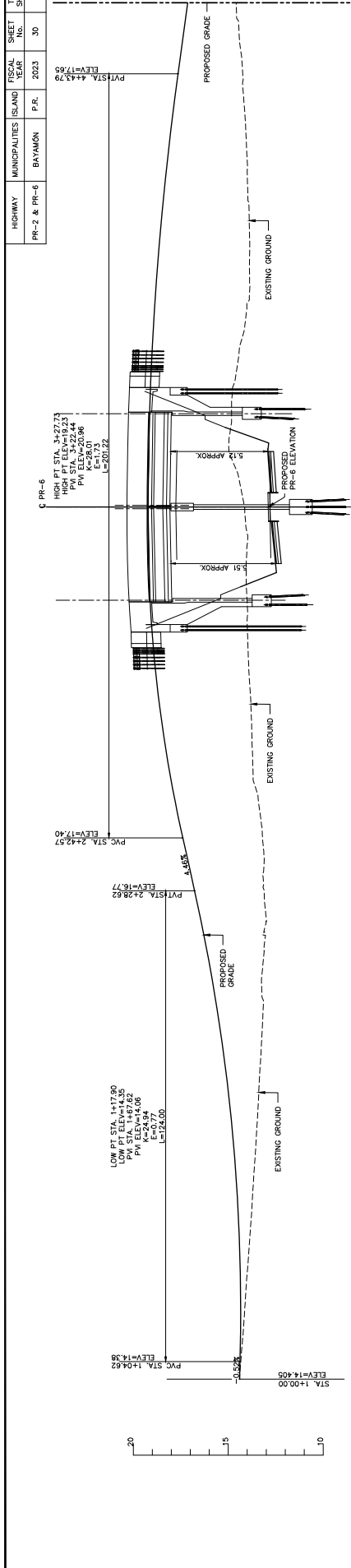
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14.61	16.66	14.56
14.50	16.11	14.50
14.55	15.57	14.55
14.72	15.06	14.72
14.82	14.72	14.82
14.92	14.27	14.92
14.98	14.27	14.98
15.04	14.14	15.04
15.08	14.14	15.08
14.81	14.14	14.81
14.78	14.14	14.78
14.92	14.07	14.92
14.97	14.07	14.97
14.92	14.00	14.92
14.82	14.00	14.82
14.78	14.00	14.78
14.70	14.00	14.70
14.62	14.00	14.62
14.56	14.00	14.56

LINE PR-2 WB PROFILE  
 SCALE: 1:500(V)  
 1:100(H)



LINE PR-2 WB PROFILE  
 SCALE: 1:100(V)  
 1:100(H)

14.56	17.20	14.56
14.61	16.66	14.56
14.50	16.11	14.50
14.55	15.57	14.55
14.72	15.06	14.72
14.82	14.72	14.82
14.92	14.27	14.92
14.98	14.27	14.98
15.04	14.14	15.04
15.08	14.14	15.08
14.81	14.14	14.81
14.78	14.14	14.78
14.92	14.07	14.92
14.97	14.07	14.97
14.92	14.00	14.92
14.82	14.00	14.82
14.78	14.00	14.78
14.70	14.00	14.70
14.62	14.00	14.62
14.56	14.00	14.56



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	30	82

PR-6  
 HIGH PT STA. 3+27.24  
 HIGH PT ELEV.=14.73  
 PVI STA. 3+22.44  
 PVI ELEV.=20.96  
 K=28.43  
 L=20.22  
 E=1.73

PR-6  
 HIGH PT STA. 3+27.24  
 HIGH PT ELEV.=14.73  
 PVI STA. 3+22.44  
 PVI ELEV.=20.96  
 K=28.43  
 L=20.22  
 E=1.73

PR-6  
 HIGH PT STA. 3+27.24  
 HIGH PT ELEV.=14.73  
 PVI STA. 3+22.44  
 PVI ELEV.=20.96  
 K=28.43  
 L=20.22  
 E=1.73

PR-6  
 HIGH PT STA. 3+27.24  
 HIGH PT ELEV.=14.73  
 PVI STA. 3+22.44  
 PVI ELEV.=20.96  
 K=28.43  
 L=20.22  
 E=1.73

PR-6  
 HIGH PT STA. 3+27.24  
 HIGH PT ELEV.=14.73  
 PVI STA. 3+22.44  
 PVI ELEV.=20.96  
 K=28.43  
 L=20.22  
 E=1.73

PR-6  
 HIGH PT STA. 3+27.24  
 HIGH PT ELEV.=14.73  
 PVI STA. 3+22.44  
 PVI ELEV.=20.96  
 K=28.43  
 L=20.22  
 E=1.73





WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK	03/03/23	

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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

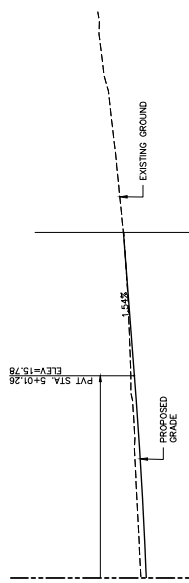
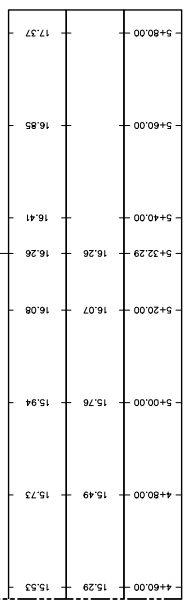
PUERTO RICO

REVISIONS	DATE

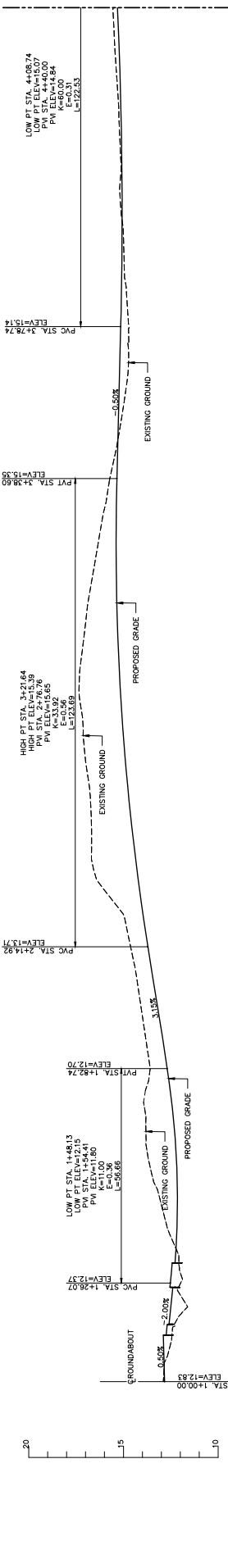
SCALE: AS SHOWN

PROFILE LINE MARG

PP 06

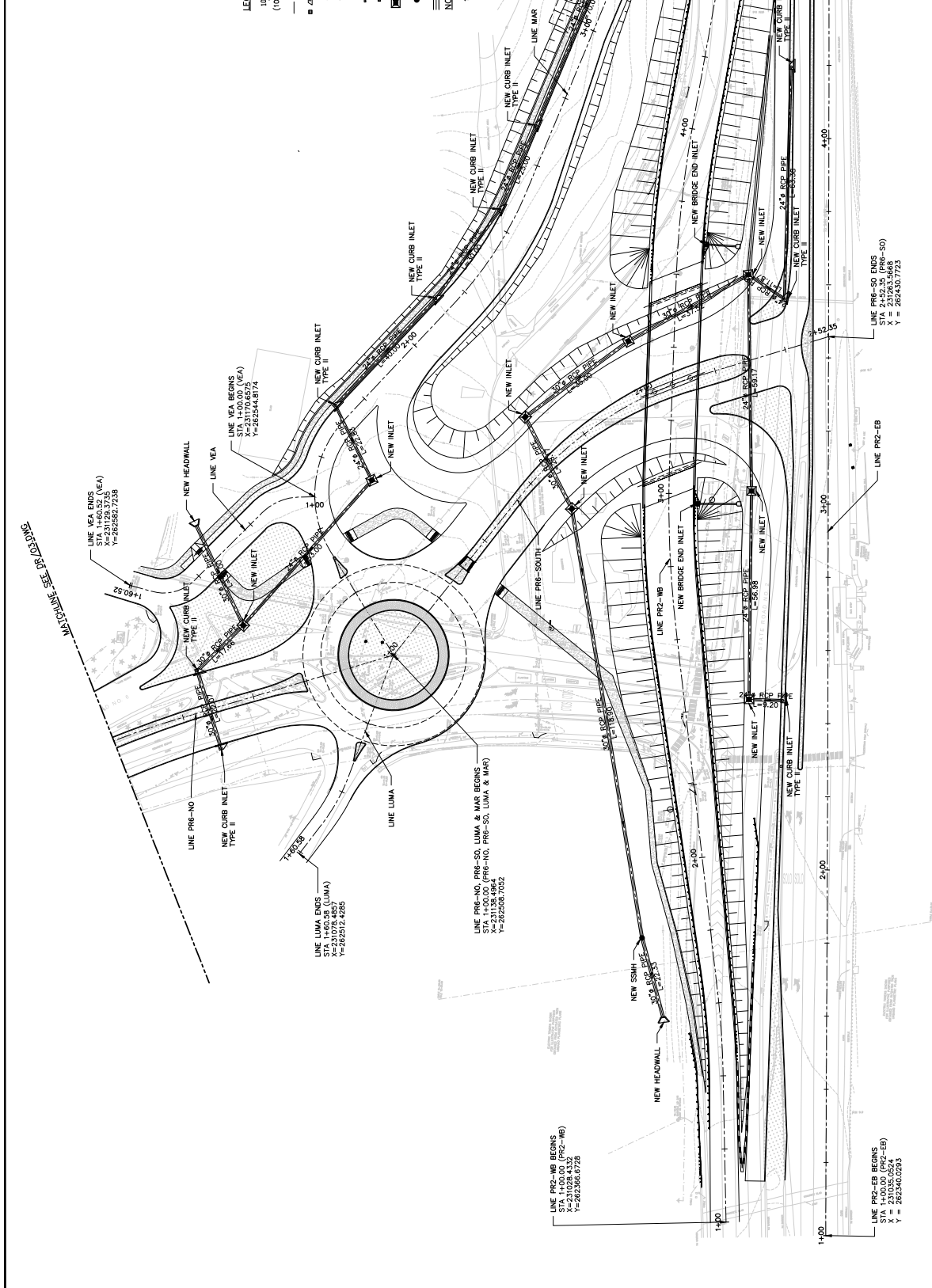


STATION	PROPOSED ELEVATION	EXISTING ELEVATION
1+00.00	12.83	12.89
1+20.00	11.63	12.49
1+40.00	12.18	12.64
1+60.00	12.22	13.73
1+80.00	13.66	12.61
2+00.00	14.10	13.24
2+20.00	13.86	14.84
2+40.00	14.41	16.68
2+60.00	14.83	16.88
2+80.00	15.13	17.31
3+00.00	15.32	17.01
3+20.00	15.39	16.39
3+40.00	15.34	15.66
3+60.00	15.24	14.93
3+80.00	15.14	14.74
4+00.00	15.08	15.12
4+20.00	15.15	15.29
4+40.00	15.29	15.33



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	32	82

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	33	82

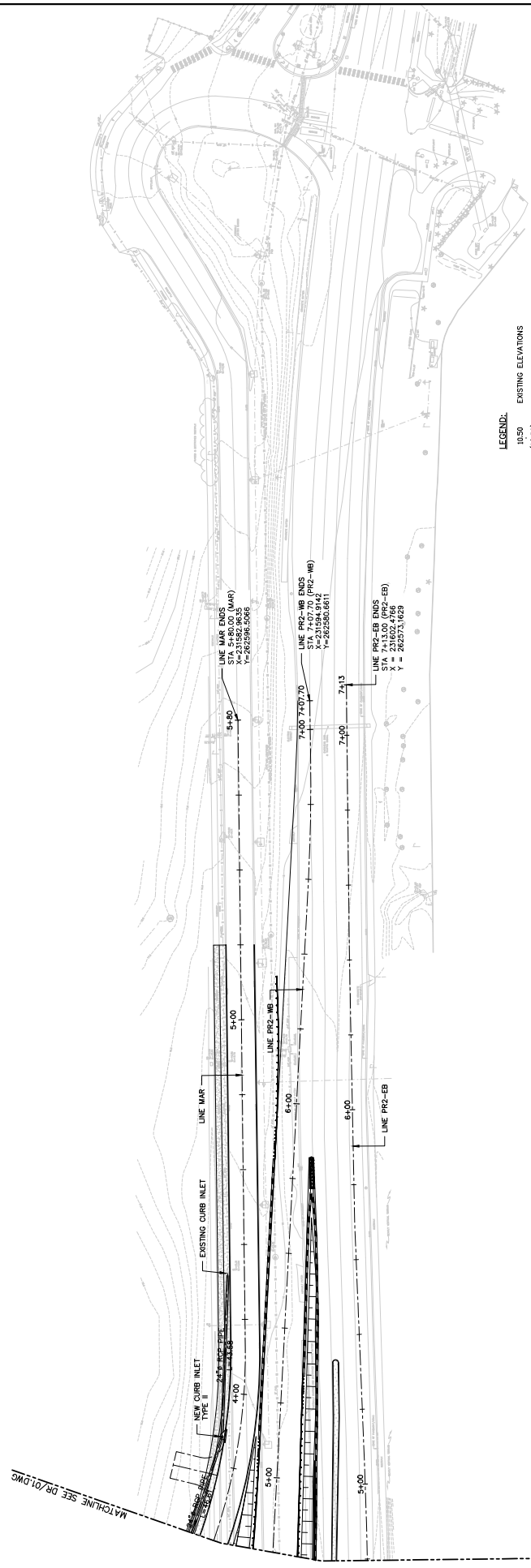


- LEGEND.**
- 10.50 EXISTING ELEVATIONS
  - (10.50) PROPOSED ELEVATIONS
  - S— EXISTING STORM SEWER PIPE
  - ▣ EXISTING INLET
  - EXISTING MANHOLE
  - ⌒ EXISTING HEADWALL
  - ▭ NEW CURB INLET TYPE II
  - ▭ NEW CURB INLET TYPE III
  - ▭ NEW INLET TYPE AS INDICATED
  - PROPOSED STORM SEWER MANHOLE (S.S.M.H.)
  - ▭ PROPOSED STORM SEWER PIPE
- NOTE.**
1. FOR DRAINAGE PROFILES SEE DWG. DR/4\*\*.

DATE	BY	DESIGN	REVISIONS	DATE	DATE
03/03/23					

	<b>MUNICIPALITY OF BAYAMÓN</b> INTERSECTIONS GEOMETRIC IMPROVEMENTS	<b>PR-2 AND PR-6</b> BAYAMÓN	SCALE: 1:500	DRAINAGE PLAN	DR 01
	PUERTO RICO	REVISIONS	DATE		

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	34	82



- LEGEND:**
- 10.50 EXISTING ELEVATIONS
  - (10.50) PROPOSED ELEVATIONS
  - S — EXISTING STORM SEWER PIPE
  - ▣ EB EXISTING INLET
  - ⊙ EXISTING MANHOLE
  - ∩ EXISTING HEADWALL
  - ▤ NEW CURB INLET TYPE II
  - ▥ NEW CURB INLET III
  - ▧ NEW INLET TYPE AS INDICATED
  - PROPOSED STORM SEWER MANHOLE (S.S.M.H.)
  - ▩ PROPOSED STORM SEWER PIPE
- NOTE:**  
1. FOR DRAINAGE PROFILES SEE DWG. DR/4.

WORK	DATE	BY	MUNICIPALITY OF BAYAMÓN	PR-2 AND PR-6	INTERSECTIONS GEOMETRIC IMPROVEMENTS	BAYAMÓN	PUERTO RICO	SCALE: 1:500	DR	02	
	DESIGN	DATE									
REVISIONS	DATE	REVISIONS									



REG. NO. 22102  
CMA ARCHITECT & ENGINEERS

FINAL CHECK	03/09/23
CHECK	
DESIGN	
DATE	

WORK	DATE	BY
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	03/03/23	

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ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

100 Calle de la Industria, P.O. Box 10000  
Bayamón, Puerto Rico 00961  
Phone: (787) 262-1200  
Fax: (787) 262-1201  
www.cmaae.com

BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

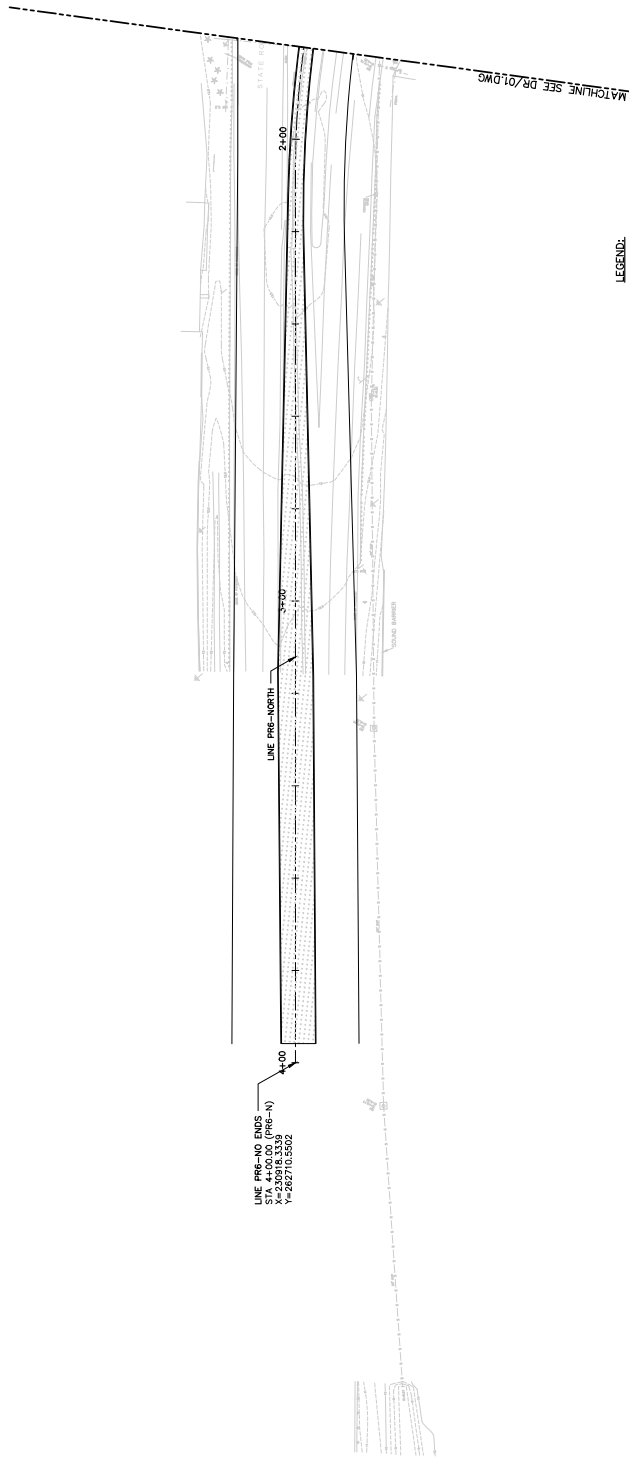
REVISIONS	DATE

SCALE: 1:500

DRAINAGE PLAN

DR 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	35	82



- LEGEND:**
- 10.50 EXISTING ELEVATIONS
  - (10.50) PROPOSED ELEVATIONS
  - S — EXISTING STORM SEWER PIPE
  - 24x36 EXISTING INLET
  - EXISTING MANHOLE
  - ∩ EXISTING HEADWALL
  - ▤ NEW CURB INLET TYPE II
  - ▥ NEW CURB INLET III
  - ▧ NEW INLET TYPE AS INDICATED
  - PROPOSED STORM SEWER MANHOLE (S.S.M.H.)
  - PROPOSED STORM SEWER PIPE
- NOTE:**
- FOR DRAINAGE PROFILES SEE DWG. DR/A\*\*.

DATE	BY	DESIGN	WORK
03/03/23			
		CHECK	FINAL CHECK
		DESIGN	SCHEMATIC PLANS

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ENGINEERS

MUNICIPALITY OF BAYAMÓN

BAYAMÓN

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

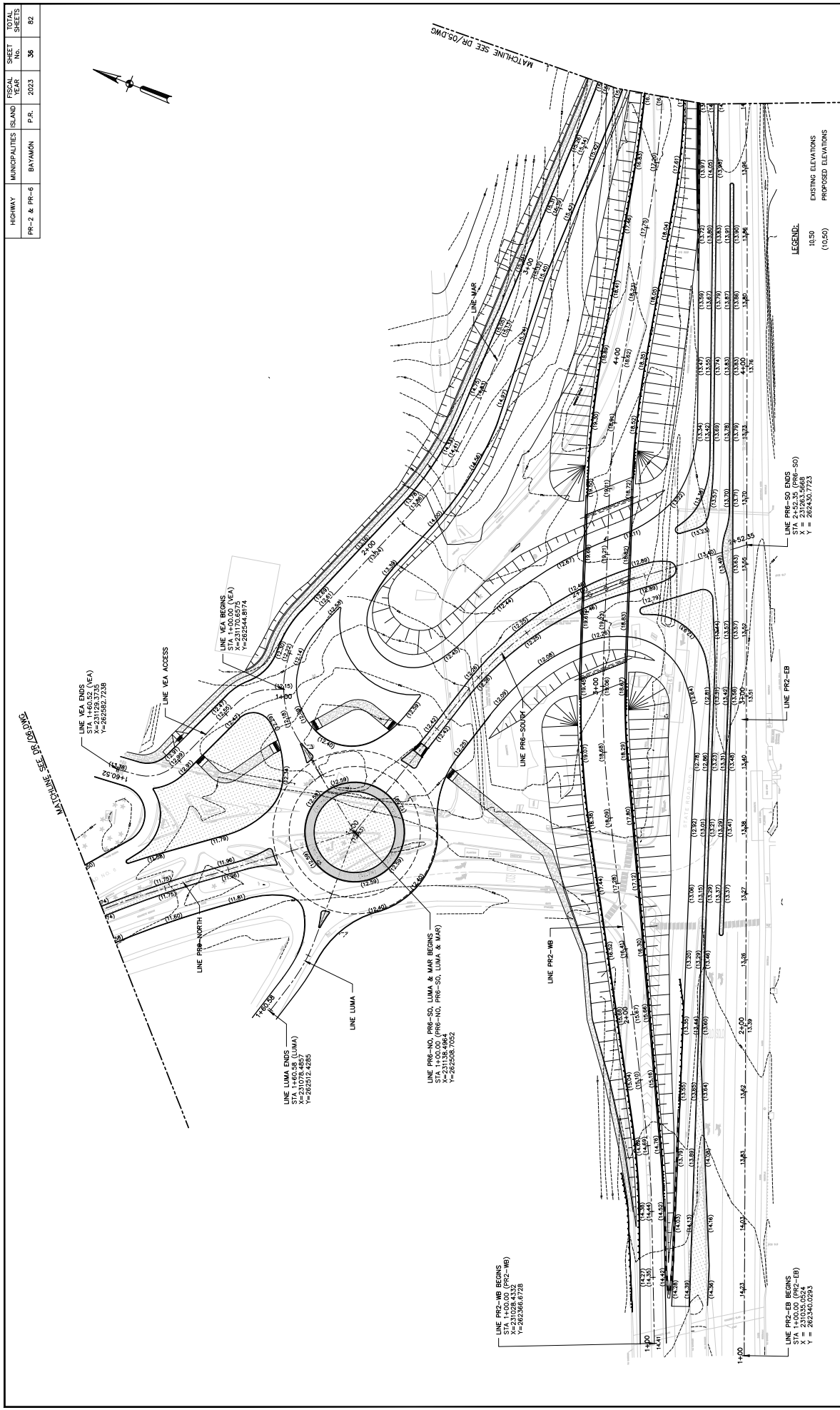
REVISIONS

SCALE: 1:500

GRADING PLAN

DR 04

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	36	82



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		03/03/23

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

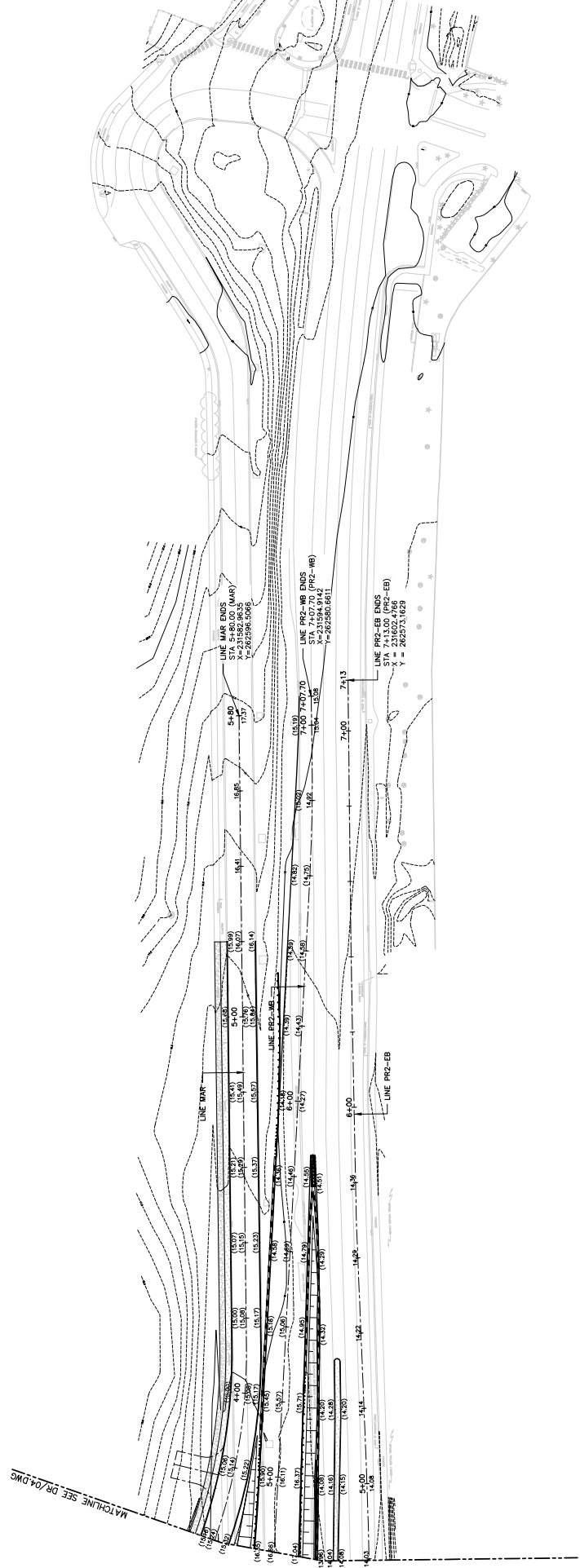
PUERTO RICO

SCALE: 1:500

GRADING PLAN

DR 05

LEGEND:  
10.00 EXISTING ELEVATIONS  
10.50 PROPOSED ELEVATIONS



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	37	82



WORK	BY	DATE
DESIGN		
DRAWING		
REVISIONS		
CHECK		
FINAL CHECK		03/03/23

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ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

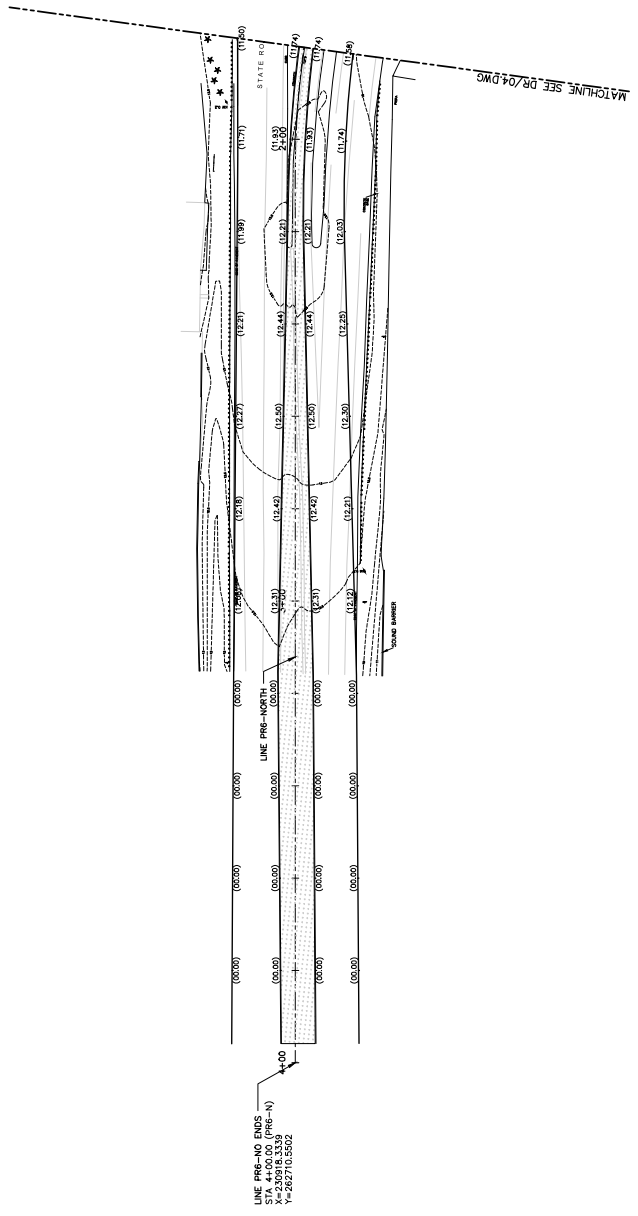
NO.	DATE	REVISIONS

SCALE: 1:500

GRADING PLAN

DR 06

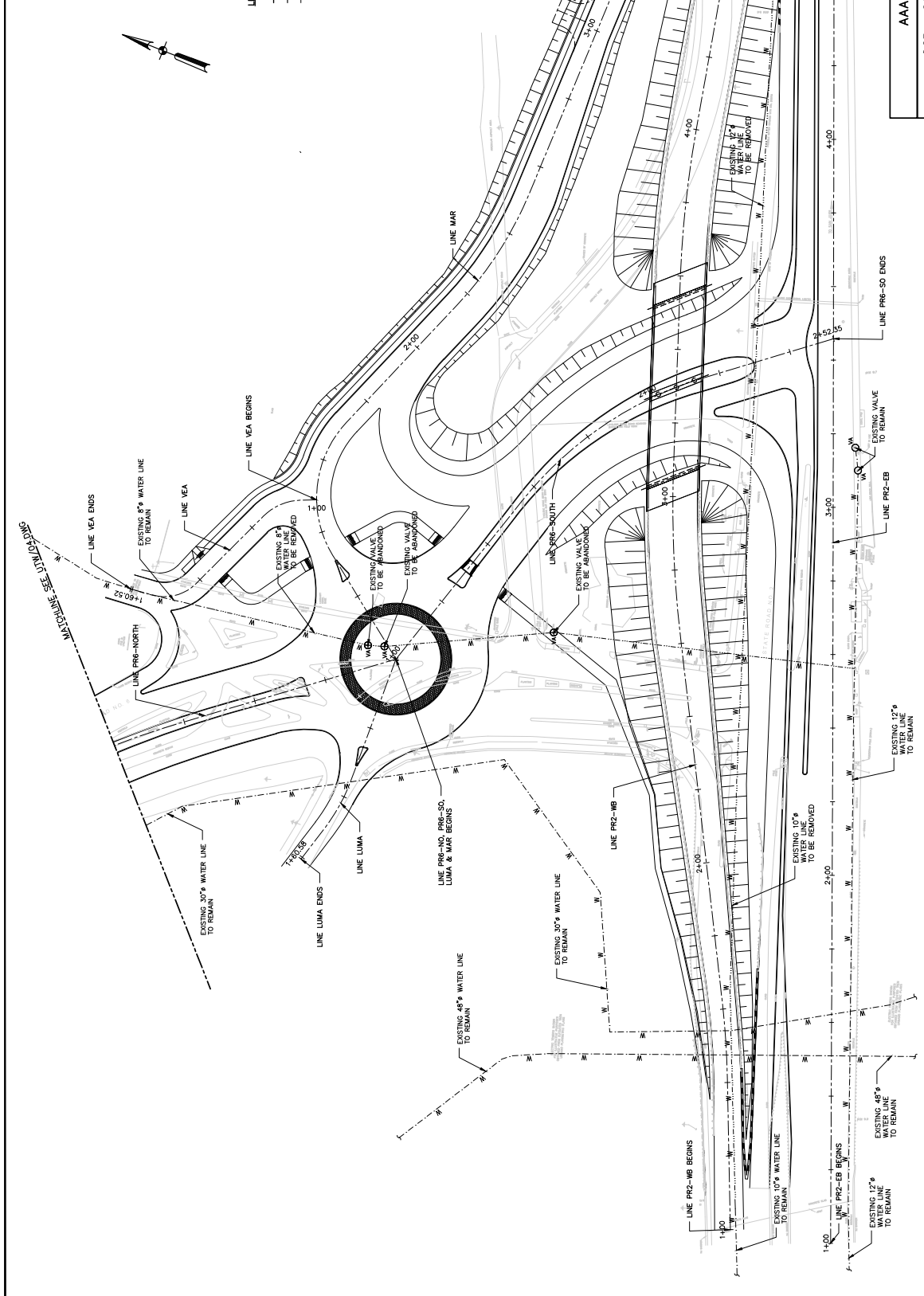
LEGEND:  
EXISTING ELEVATIONS  
10.00  
(10.50)  
PROPOSED ELEVATIONS



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	36	62



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	40	82



- LEGEND:**
- NEW PIPE LINE TO BE INSTALLED
  - - - EXISTING PIPE LINE TO REMAIN
  - - - EXISTING PIPE LINE TO BE REMOVED
  - EXIST. VALVE TO REMAIN
  - EXIST. VALVE TO BE ABANDONED
  - ⊕ NEW WATER METER
  - ⊕ EXISTING FIRE HYDRANT

APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
 BY \_\_\_\_\_  
 DATE \_\_\_\_\_

This approval does not relieve the Contractor of all or any portion of the responsibility of any of our facilities that are shown on this plan. The Contractor shall be held liable for any damage or injury to the public utility or to the Contractor's property.

AAA-RM-20-11-0015	UTW	02
OCPe: 2020-307303-SRI-033078		
P.R.A.S.A. UTILITIES PLAN		

SCALE: 1:500

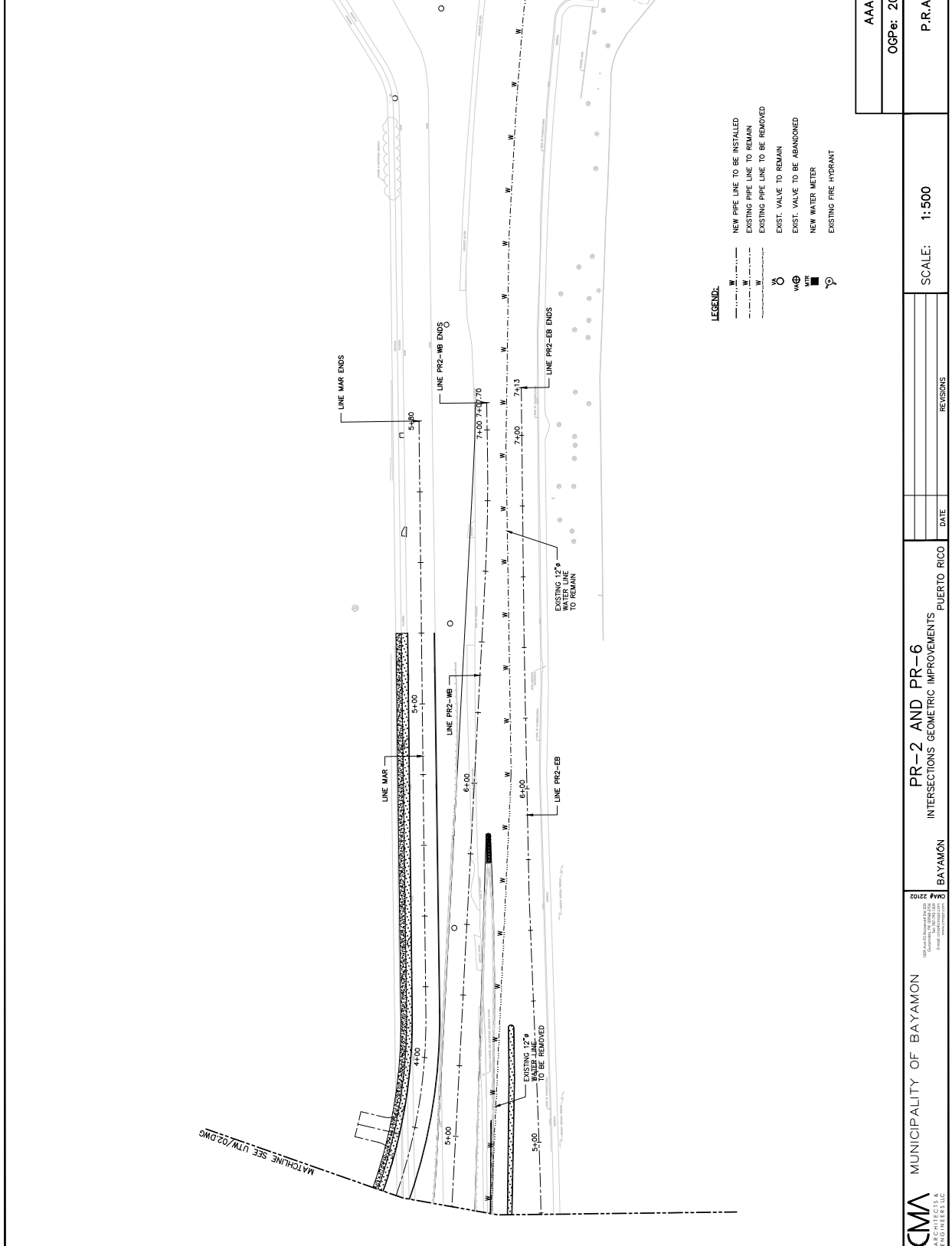
REVISIONS	DATE

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

**CMA** ARCHITECTS & ENGINEERS  
 BAYAMÓN #442282  
 100 CALLE DE LAS AMERICAS, SUITE 200  
 BAYAMÓN, P.R. 00957  
 TEL: (787) 262-1234  
 FAX: (787) 262-1235  
 WWW.CMA-ARCHITECTS.COM

DATE	BY	WORK
03/03/23		FINAL CHECK
		DESIGN
		DRAWING
		CHECK

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	41	82



**LEGEND:**

- NEW PIPE LINE TO BE INSTALLED
- - - EXISTING PIPE LINE TO REMAIN
- - - EXIST. VALVE TO BE REMOVED
- - - EXIST. VALVE TO REMAIN
- - - EXIST. VALVE TO BE ABANDONED
- NEW WATER METER
- ⊕ EXISTING FIRE HYDRANT

APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
 BY \_\_\_\_\_  
 DATE \_\_\_\_\_

This approval does not relieve Contractor and/or Authority of any other responsibilities. It is the responsibility of the Contractor to ensure that all work is done in accordance with the approved plans and specifications. No warranty is made by the Authority for the accuracy of the information provided on the drawings and could be incorrect if used in part during the construction phase.

AAA-RM-20-11-0015
OCPe: 2020-307303-SRI-033078
P.R.A.S.A. UTILITIES PLAN

SCALE: 1:500

REVISIONS	DATE

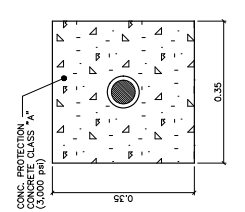
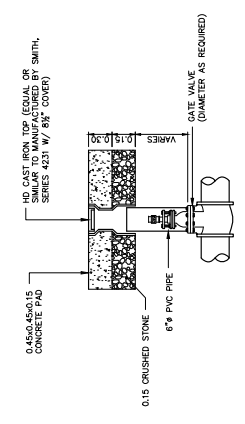
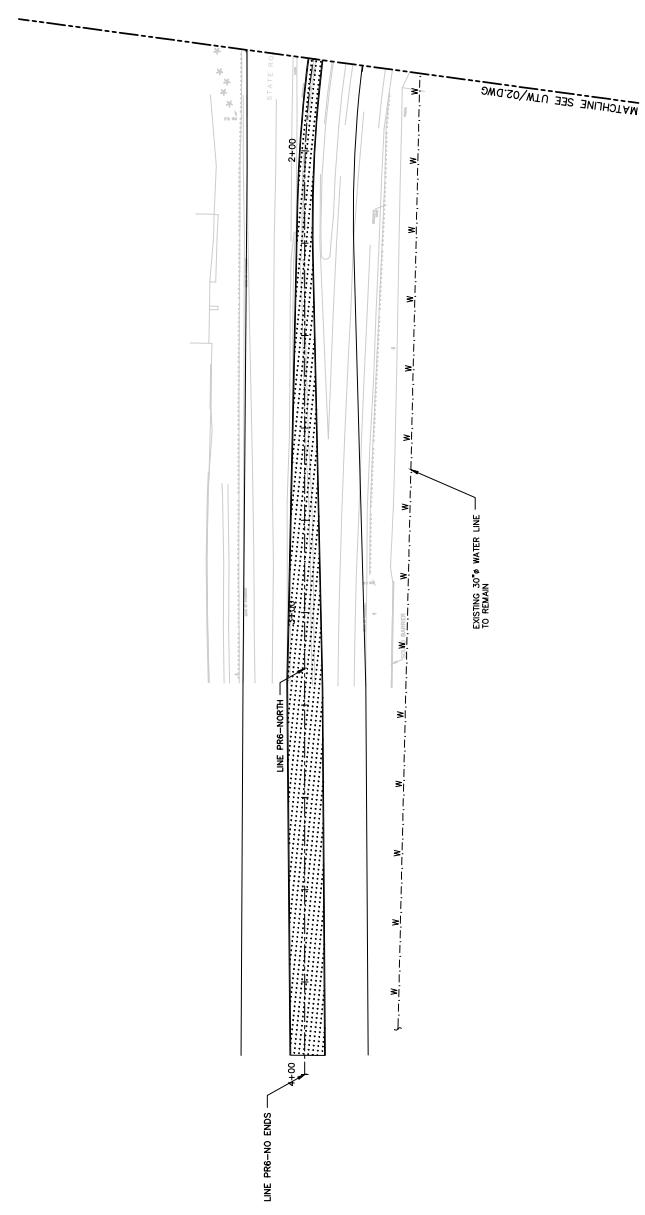
MUNICIPALITY OF BAYAMÓN  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMÓN

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

CMA ARCHITECT & ENGINEERS

0203 CMA A&E LLC

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	42	82



VALVE PROTECTION DETAIL  
N.T.S.

APPROVED  
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
BY \_\_\_\_\_ DATE \_\_\_\_\_  
This approval does not constitute a contract or a warranty. It is the responsibility of the contractor to verify the accuracy of all information provided and to ensure that all work complies with the applicable codes and standards. The contractor shall be responsible for obtaining all necessary permits and for the safety of the construction team.

AAA-RM-20-11-0015
OGPe: 2020-307303-SRI-033078
P.R.A.S.A. UTILITIES PLAN
UTW 04

SCALE: 1:500

REVISIONS	DATE

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

BAYAMÓN

MUNICIPALITY OF BAYAMÓN



DATE	BY	WORK
03/03/23		
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		

DATE	BY	WORK
03/03/23		FINAL CHECK
		SCHEMATIC PLANS
		CHECK
		DESIGN
		PERMITS
		ISSUES

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

#462202  
100 CALLE DEL OCEANO #200  
SAN JUAN, P.R. 00906  
Tel: (787) 762-1200  
Fax: (787) 762-1201  
www.cma-engineers.com

BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO

REVISIONS	DATE

SCALE: NTS

P.R.A.S.A. SANITARY UTILITIES  
LEGEND AND NOTES

UTS 01

**GENERAL NOTES:**

- ALL RELOCATION WORK IS INCLUDED IN THIS CONTRACT.
- THE LOCATION OF EXISTING SANITARY LINES IN THIS PLAN IS APPROXIMATE. THE CONTRACTOR SHALL CONTACT THE NEAREST P.R.A.S.A. OFFICE TO VERIFY THE EXACT LOCATION BEFORE RELOCATION BEGINS.
- ALL STANDARD SPECIFICATIONS WILL PREVAIL FOR FACILITIES RELOCATION IN THIS PROJECT.
- THE CONTRACTOR SHALL OBTAIN P.R.A.S.A.'S APPROVAL FOR THE PROPOSED MATERIALS PRIOR TO THE PURCHASE.
- ALL SANITARY SEWER SERVICE CONNECTIONS SHALL BE 4" P.V.C. PIPE.
- THE EXISTING WATER METERS SHALL BE MAINTAINED IN SERVICE AT ALL TIMES. PROVISIONAL RELOCATION SHALL BE DONE FOR THIS ITEM BUT SHALL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR COVERED UNDER THIS ITEM.
- THE CONTRACTOR SHALL TAKE CARE TO TAKE PRECAUTIONS TO DISRUPT THE WATER SERVICE DURING THE EARTHWORK.
- THE CONTRACTOR SHALL NOT TAKE WATER FROM P.R.A.S.A.'S WATER SYSTEM FOR SPRINKLING OR CONTROLLING DUST DURING CONSTRUCTION.
- A DETECTABLE TAPE (SIMILAR TO TERRA TAPE) 12" BELOW FINISH GRADE SHALL BE INSTALLED UNDER THE SANITARY PIPES. NO DIRECT PAYMENT SHALL BE DONE FOR THIS ITEM. CONTRACTOR COULDS UNDER THE PAY ITEM FOR P.V.C. PIPE.

**LEGEND:**

- - - - - 5 - - - - - EXISTING SANITARY PIPE LINE TO REMAIN
- - - - - 5 - - - - - EXIST. PIPE LINE TO BE REMOVED OR ABANDONED AS INDICATED
- - - - - 2 - - - - - NEW PIPE LINE TO BE INSTALLED
- SMH EXISTING SANITARY MANHOLE TO REMAIN
- SMH NEW SANITARY MANHOLE TO BE INSTALLED
- SMH EXIST. SANITARY MANHOLE TO BE REMOVED OR ABANDONED AS INDICATED
- SMH EXIST. SANITARY MANHOLE TO REMAIN

APPROVED  
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
This approved does not release Contractor and / or Agent's responsibility in connection project of any of our facilities that the contractor shall be held responsible for any damages that may be suffered wholly or in part during the construction phase.

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	43	82

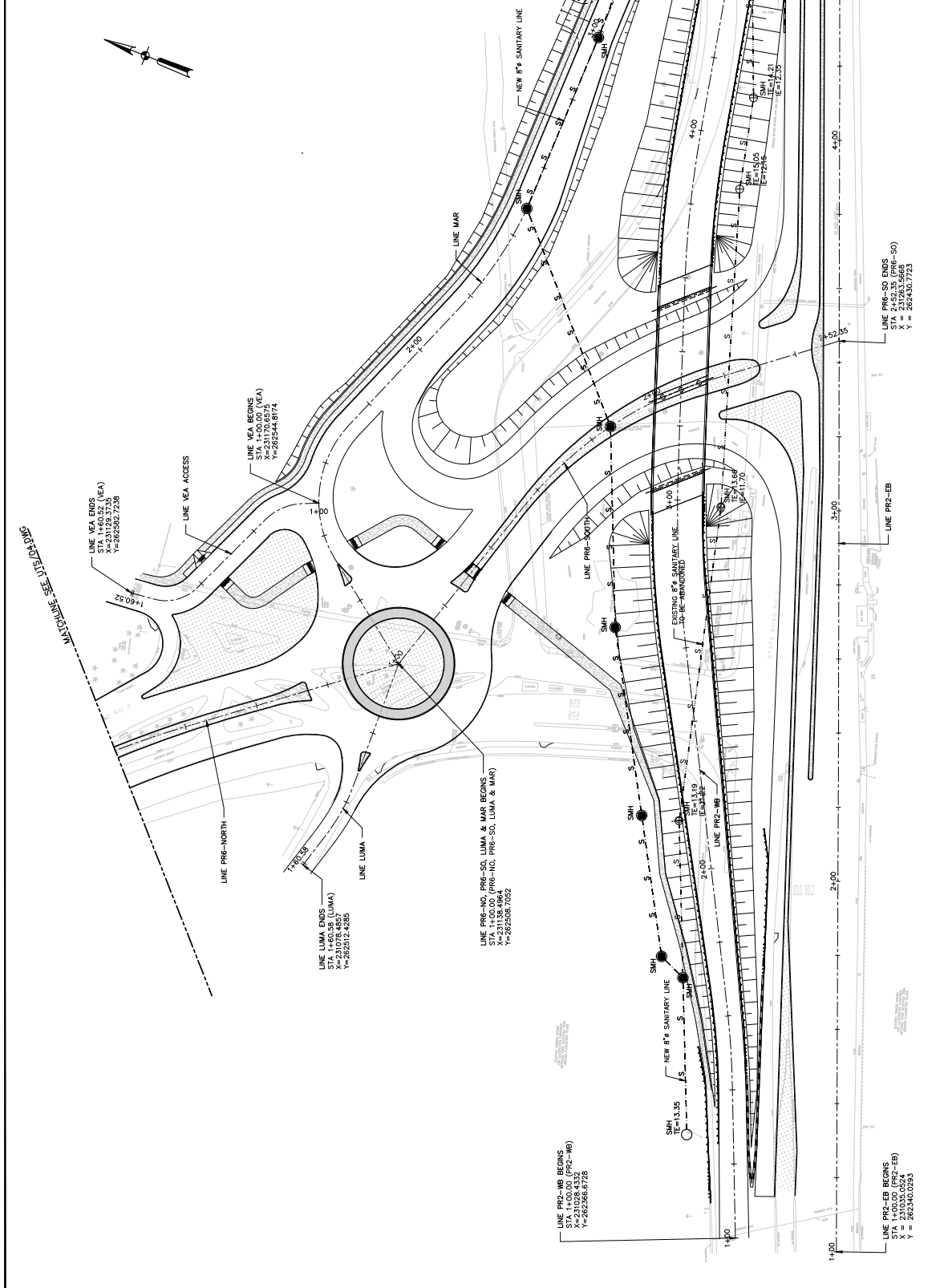


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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	44	82

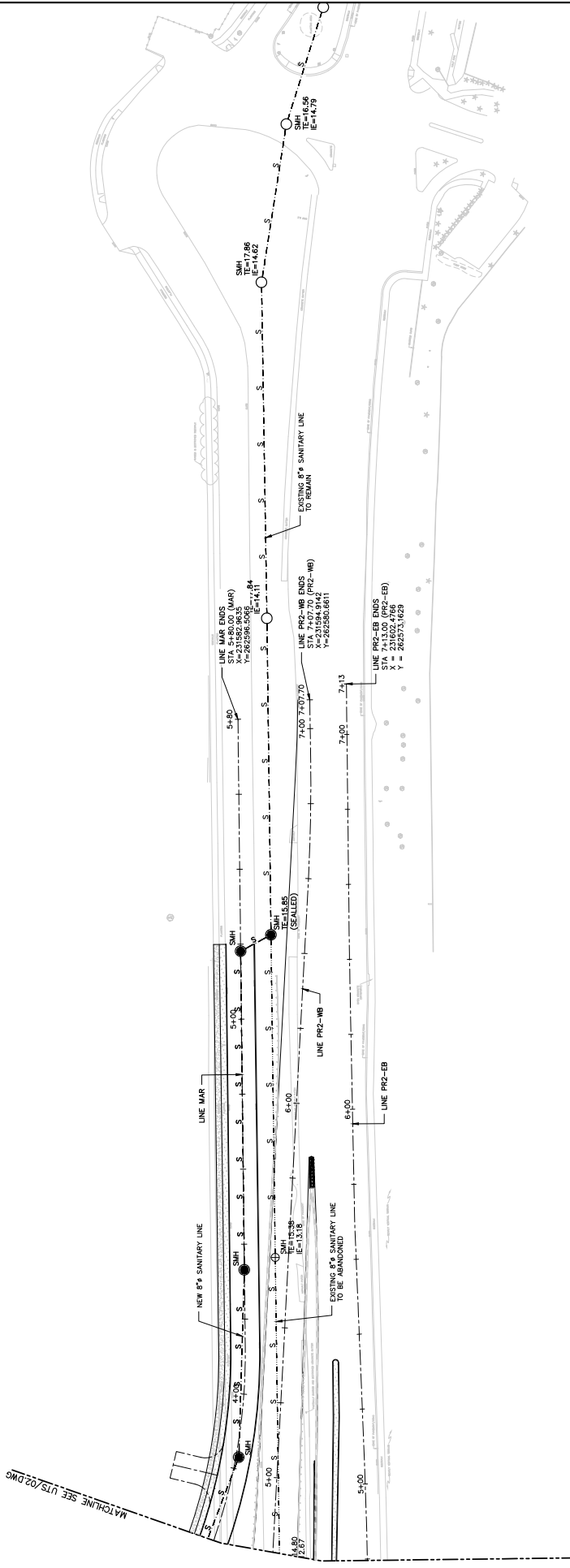
APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
 BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

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<b>CMA</b> ARCHITECT & ENGINEERS	<b>MUNICIPALITY OF BAYAMÓN</b> BAYAMÓN	<b>PR-2 AND PR-6</b> INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO	DATE: _____	REVISIONS	
				DATE	
FINAL CHECK: 03/09/23 CHECKED: _____ DESIGNED: _____ BY: _____ DATE: _____	<b>P.R.A.S.A. SANITARY UTILITIES PLAN</b>		SCALE: 1:500	UTS	02

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	45	82



APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

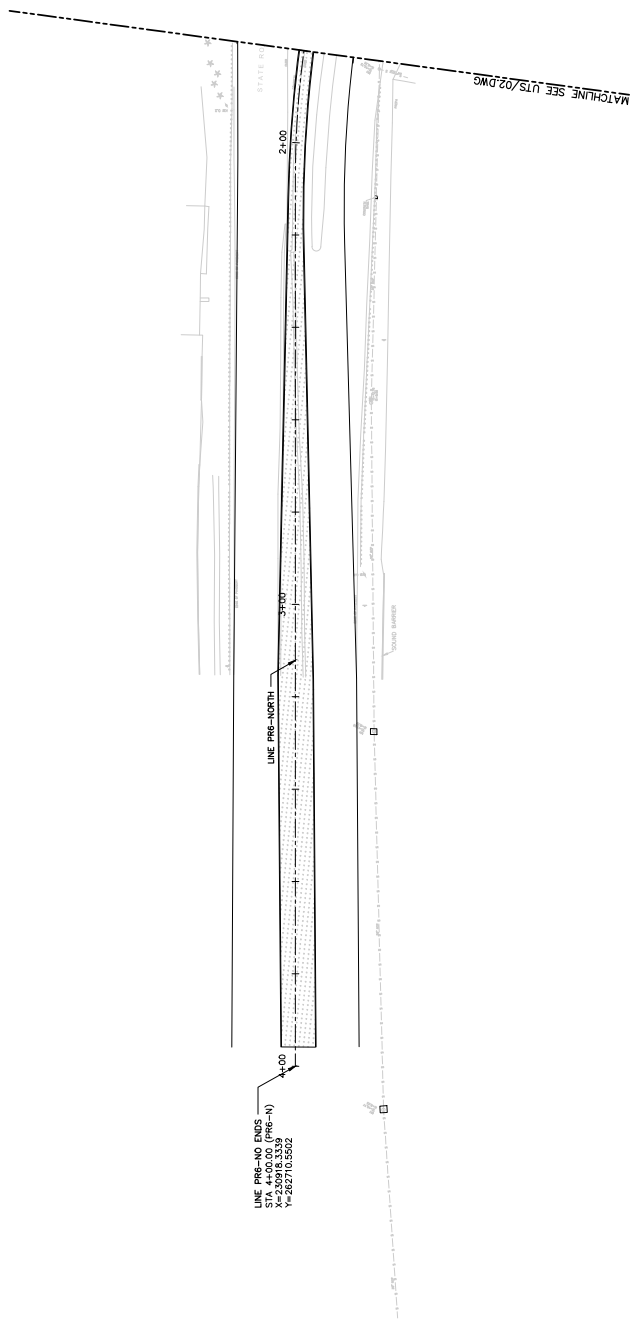
BY \_\_\_\_\_  
 DATE \_\_\_\_\_

This approval does not release Contractor and/or Authority from their respective responsibilities. It is the responsibility of the Contractor to ensure that all work is done in accordance with the approved plans and specifications. No liability shall be assumed by the Authority for any errors or omissions in the original study or in part during the construction phase.

FINAL CHECK	03/09/23
CHECK	
DESIGNED	
DESIGN	
WORK	

	MUNICIPALITY OF BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	UTS	03
	BAYAMÓN	PR-2 AND PR-6				

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	46	82



APPROVED  
 PUERTO RICO AQUEDUCT AND SEWER AUTHORITY  
 BY \_\_\_\_\_  
 DATE \_\_\_\_\_

This approval does not constitute a contract or warranty. The contractor shall be responsible for the accuracy of the information provided. The contractor shall be held liable for any errors or omissions. The contractor shall be held liable for any damages or injuries resulting from the use of the information provided. The contractor shall be held liable for any costs incurred by the authority in connection with the construction of the project.

WORK	DATE	BY
DESIGN		
DRAWING		
CHECK	03/09/23	
FINAL CHECK		

	MUNICIPALITY OF BAYAMÓN	BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO	SCALE: 1:500 REVISIONS DATE	P.R.A.S.A. SANITARY UTILITIES PLAN UTS 04
	#4# 2202 100 CALLE DEL MAR #2202 BAYAMÓN, P.R. 00951 TEL: (787) 263-1234 FAX: (787) 263-1235 WWW.CMAA-LLC.COM	PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	REVISIONS DATE

DATE	03/09/23
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	
DATE	03/09/23

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

SCALE: NTS

LEGEND, LOCATION PLAN AND NOTES

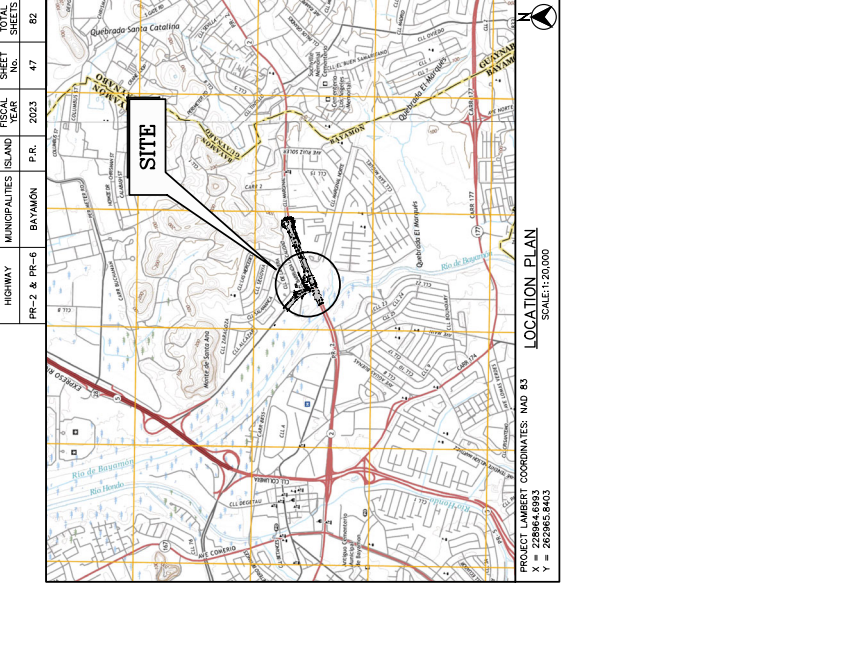
UTE 01

- SYSTEMS (LUMA)**
- THE PROJECT OWNER IS RESPONSIBLE TO PERFORM THE REQUIRED PRIMARY AND SECONDARY CABLE TESTS WITH ITS PARAMETERS ESTABLISHED BY LUMA FOR SUCH TESTS. WITH A REPRESENTATIVE OF THE INSPECTOR OFFICE OF THE UTILITIES CORP. PRESENT, THE CONTRACTOR SHALL VERIFY THE UTILITIES CORRESPONDING TO THE PROJECT AND THE NAME OF THE ASSIGNED PRIVATE INSPECTOR PRIOR TO THE BEGINNING OF THE PROJECT.
  - DURING THE CABLE INSTALLATION, THE CABLE SHALL BE PROTECTED FROM HARMFUL AND SCRATCHES. THE CONTRACTOR SHALL EMPLOY THE RECOMMENDED PULLING PRACTICES IN ORDER TO NOT EXCEED THE SPECIFIED CABLE TENSION.
  - THE MANHOLE COVERS TO BE INSTALLED IN THE PLANTING AREAS AS PER THE SPECIFICATIONS ON THE STANDARD URD-52.
  - ON LINES WHERE THE PROJECT IS LOCATED WITHIN A WIRE CENTER, THE CONTRACTOR SHALL BE PAC SCHEDULED 80 OR FIBERGLASS AS APPROVED BY LUMA.
  - INSPECTED BY LUMA PRIOR TO BEING COVERED AND COMPACTED.
  - ANY DUCTBANK EXPOSED TO VEHICULAR TRAFFIC SHALL BE PROTECTED FROM DAMAGE. THE CONTRACTOR SHALL PROVIDE A MINIMUM CLEARANCE OF 13 INCHES FROM THEM.
  - THE QUANTITY OF SPARE REPLACEMENT FUSES TO BE INSTALLED IN EACH SUBSTATION SHALL BE AS SPECIFIED IN THE PROJECT DOCUMENTS.
  - THE CONNECTORS TO BE USED FOR THE ANTENNAS EXTERIOR, METAL FRESHMAN-HELD OR COMPRESSION OF THE CONTRACTOR SHALL PROVIDE THE FISHWIRE IN EVERY SUBSTATION.
  - ANY DISTRIBUTION SYSTEM SHALL HAVE A MAXIMUM GROUND RESISTANCE OF 5 OHMS. GROUNDING RODS WILL BE INSTALLED AT 40' INTERVALS AND SHALL BE 1/2" DIAMETER AND FOUR FEET LONG FOR EVERY 100 FT. AND ON ALL TRANSFORMERS.
  - THE POLE BASES SHALL BE INSPECTED BY LUMA DURING CONSTRUCTION.
  - PRIOR TO THE BEGINNING OF THE CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE EXACT LOCATION OF THE EXISTING UNDERGROUND UTILITIES AND COORDINATE THE WORKS WITH THE DIRECTOR OF THE UTILITIES CORP. TO AVOID ANY DAMAGE TO THE EXISTING PIPES UTILITIES. THIS SHALL BE CONSIDERED A SUBSTANTIAL OBLIGATION OF THE CONTRACTOR.
  - DISRUPT THE WATER AND SANITARY SERVICE DURING THE WORKS. IF IT'S AFFICED, THE CONTRACTOR SHALL PROVIDE AN ALTERNATIVE SERVICE TO THE CONTRACTOR.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE EXISTING UTILITIES FROM ANY DAMAGE TO EXISTING FACILITIES. IDENTIFIED BY THE UTILITIES OWNER TO BE PROTECTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AT HIS OWN COST.
  - ALL MANHOLES (SANITARY, ELECTRICAL, TELEPHONE, ETC.) AND VALVES SHALL RE-SET TO FINAL GRADE ELEVATIONS.

- GENERAL NOTES (LUMA)**
- THESE DRAWINGS CORRESPOND WITH THE INSCRIPTION DRAWINGS SUBMITTED TO THE ADMINISTRATION BY THE PROJECT OWNER. THE CONTRACTOR SHALL OBTAIN, PRIOR TO THE PROJECT BEGINNING DATE, ALL THE NECESSARY PERMITS FROM THE MUNICIPAL AND PRIVATE ENTITIES RELATED TO THE PROPOSED TYPE OF PROJECT.
  - THE OWNER OF THIS WORK SHALL CONTRACT THE SERVICES OF A REGISTERED ELECTRICAL ENGINEER TO INSPECT THE ELECTRICAL CONSTRUCTION WORKS ACCORDING TO THE CONTRACT DOCUMENTS AND THE CERTIFICATION OF PLANS OF PROTECTOR DE CONSTRUCCION DE BAYAMON. THE CONTRACTOR SHALL PROVIDE THE NAME OF THE ASSIGNED PRIVATE INSPECTOR PRIOR TO THE BEGINNING OF THE PROJECT.
  - THE EXECUTION OF THE ELECTRICAL WORKS, AS DESIGNED AND CONSTRUCTION PRACTICES ACCORDING TO THE CONSTRUCTION STANDARDS AS WELL AS WITH THE CODES, I.E.C., I.N.F.A., N.E.M.A AND ADOPTED STANDARDS OF THE I.E.E., I.N.F.A., N.E.M.A AND ADOPTED STANDARDS OF THE I.E.E.
  - THE CONTRACTOR IS NOT AUTHORIZED TO MAKE VARIATIONS TO THIS DESIGN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS FOR THIS WORK ABOUT ANY COURT THAT MAY ARISE FROM THE INTERPRETATION OF DRAWINGS, ABOUT THE EXECUTION OF THE WORKS, ABOUT THE EXISTING FIELD CONDITIONS AND THOSE CONSIDERED FOR DESIGN PURPOSES.
  - TO LUMA THE DATE FOR THE BEGINNING OF THESE WORKS BY SUBMITTING TO THE ENGINEERING DEPARTMENT OF THE UTILITIES CORP. THE PROJECT DOCUMENTS, AT LEAST FIFTEEN DAYS PRIOR TO THE PROPOSED DATE.
  - THE PRIVATE INSPECTOR AND THE ELECTRICAL CONTRACTOR SHALL MEET WITH THE UTILITIES CORP. PRIOR TO THE BEGINNING OF THE WORKS TO BE COORDINATED WITH THE UTILITIES CORP. ENGINEERING DEPARTMENT OF THE CORRESPONDING REGION.
  - ALL WORK ON ENERGIZED LINES, INCLUDING THE UTILITY GRID CONNECTION OF THIS PROJECT, SHALL BE DONE BY LUMA. MATERIALS AND LABOR. THE PROPRIETOR SHALL REQUEST AN ESTIMATE FOR THE WORKS TO BE PERFORMED BY LUMA. SEE PROJECT SCHEDULE REMARK NOTES.
  - ANY WORK WITHIN LUMA ELECTRICAL EASEMENT LIMITS SHALL BE APPROVED BY LUMA PRIOR TO THE BEGINNING OF THE WORKS.
  - LUMA WILL NOT APPROVE THE UTILITY GRID CONNECTION OF PROJECTS WITH INVASION OF EASEMENT CONDITIONS OR CLEARANCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REQUIRED SAFETY CLEARANCES.

- MATERIALS (LUMA)**
- ALL EQUIPMENT USED ON THE CONSTRUCTION SHALL COMPLY WITH I.E.E.E., ANSI, N.E.M.A AND ASTM APPLICABLE STANDARDS.
  - THE CONTRACTOR IS RESPONSIBLE TO VERIFY WITH LUMA APPROVED BY LUMA PRIOR TO THEIR INSTALLATION. LUMA SHALL BE RESPONSIBLE FOR THE VERIFICATION OF THE EQUIPMENT TO BE TRANSFERRED TO ITS USE AND/OR AS ITS PROPERTY.
  - ALL EQUIPMENT AND MATERIAL INCLUDING TRANSFORMERS AND SUBSTATION CABINETS) TO BE INSTALLED WITHIN ONE STAINLESS STEEL. WITH THE EXCEPTION OF METER BASES.
  - ON ALL UNDERGROUND SYSTEMS 15 KV TERMINATIONS SHALL BE USED FOR PRIMARY CABLES AND 48 KV TERMINATIONS SHALL BE USED FOR SECONDARY CABLES. ALL INSULATORS SHALL BE USED FOR DISTRIBUTION VOLTAGES AND 48 KV POLYMER INSULATORS SHALL BE USED FOR 38 KV LINES.
  - THE CONTRACTOR IS RESPONSIBLE OF LABELING EVERY EQUIPMENT AND MATERIAL WITH THE PROPERTY NUMBER PROVIDED BY THE CORRESPONDING DISTRIBUTION ENGINEERING DEPARTMENT.
- SPECIAL NOTES (LUMA)**
- THE PROJECT OWNER WILL CONTRIBUTE TO LUMA:
    - THE SUM OF \$ 800 FOR IMPROVEMENTS TO THE EXISTING ELECTRICAL SYSTEM
    - EVALUATION DATED
  - THIS CONTRIBUTION IS DONE ACCORDING TO THE PROJECT DOCUMENTS. THE CONTRACTOR SHALL DETERMINE Y CORREAR LAS PORTADONES DE DESARROLLO Y MANTENIMIENTO.
  - THE LUMA WILL NOT EXERCISE THE PROJECT UNTIL THE B.O.W. (RIGHT OF WAY) HAS BEEN GRANTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE JUDICIAL DIVISION OF THE P.R. J.E.E.A. THE EXTENSION OF THIS NOTE APPLIES TO ALL TYPES OF WORKS, BEING INSIDE OR OUTSIDE THE PROJECT LIMITS.
  - THE INSTALLATION OF METERING SYSTEMS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE METERING OFFICE, THE LESSORER OR THE REGION OF THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF THE EQUIPMENT. THE USE AND THE LOCATION OF THE EQUIPMENT SHALL BE APPROVED BY LUMA.
  - THE INSTALLATION OF SUBSTATIONS, TRANSFORMERS OR OTHER ELECTRICAL SYSTEMS OR OTHER UTILITIES IS PROHIBITED.

LEGEND	
SYMBOLS	DESCRIPTION
—R—	EXISTING OVERHEAD LINE TO REMAIN. 4.18KV, 2 PHASE, 3 WIRE
—E—4.18KV (1)	EXISTING OVERHEAD LINE TO REMAIN. 4.18KV, 3 PHASE, 4 WIRE
—E—13.2KV	EXISTING OVERHEAD LINE TO REMAIN. 13.2KV, 3 PHASE, 4 WIRE
—E—38KV	EXISTING OVERHEAD LINE TO REMAIN. 38KV, 3 PHASE, 4 WIRE
■	CONCRETE UTILITY POLE
●	WOODEN UTILITY POLE
■	EXISTING POLE MOUNTED TRANSFORMER
→	EXISTING GUY WIRE
E	EXISTING TO REMAIN
—E—115KV	EXISTING OVERHEAD LINE TO REMAIN. 115KV, 3 PHASE, 4 WIRE
—E—220KV	EXISTING OVERHEAD LINE TO REMAIN. 220KV, 3 PHASE, 4 WIRE
—E—216KV	EXISTING OVERHEAD LINE TO REMAIN. 216KV, 3 PHASE, 3 WIRE



HIGHWAY	PR-2 & PR-6
MUNICIPALITIES	BAYAMON
ISLAND	P.R.
FISCAL YEAR	2023
SHEET NOS.	47
TOTAL SHEETS	82

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON  
BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

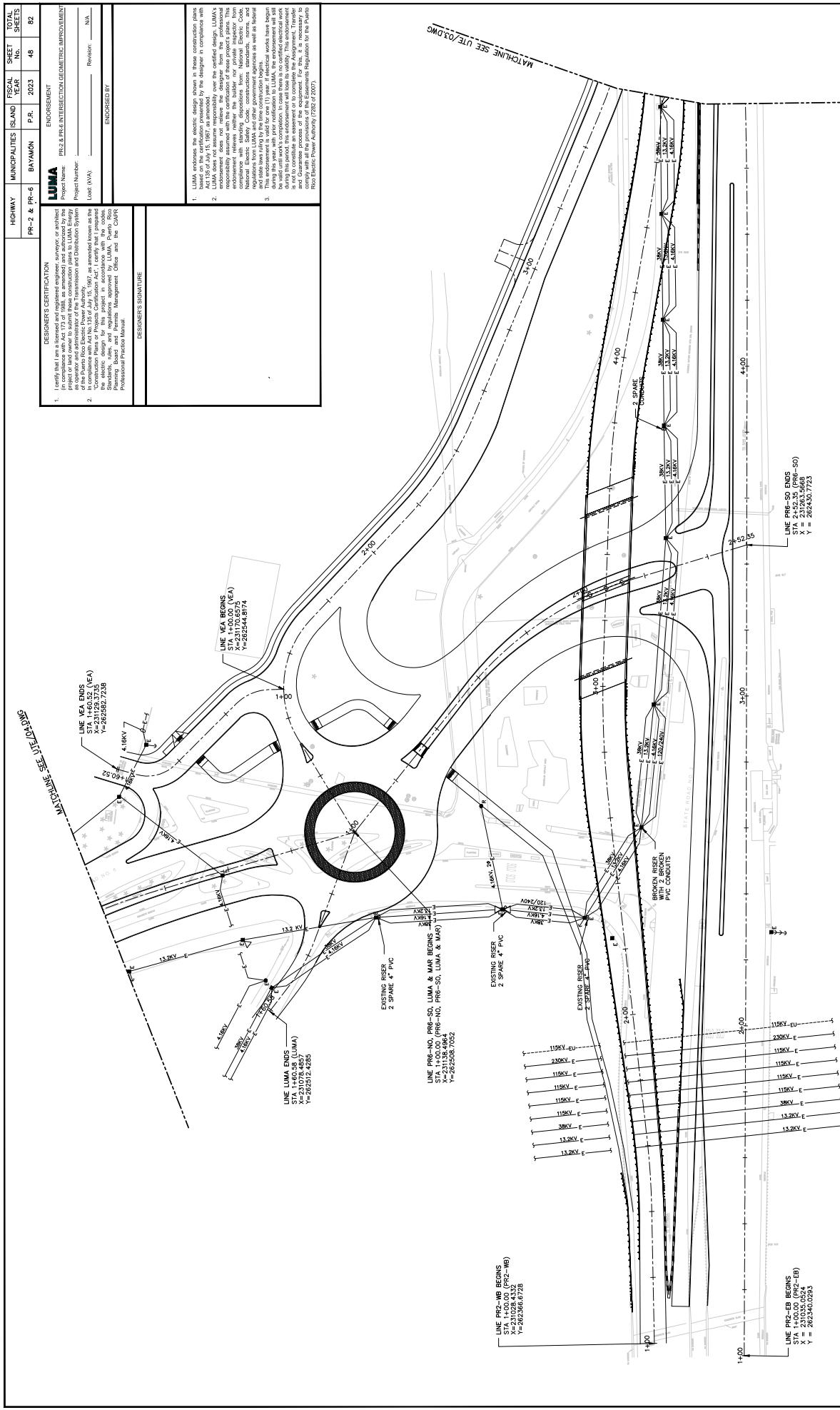
PUERTO RICO

REVISIONS

SCALE: 1:500

EXISTING ELECTRICAL UTILITIES PLAN

UTE 02



**DESIGNER'S CERTIFICATION**  
I, the undersigned, certify that the design, construction, and maintenance of the project on and over the site of the intersection and adjacent roadway shown on this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer in the State of Puerto Rico. I am duly Licensed Professional Engineer in the State of Puerto Rico. I am duly Licensed Professional Engineer in the State of Puerto Rico. I am duly Licensed Professional Engineer in the State of Puerto Rico.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**  
LUMA  
PR2 & PR6 INTERSECTION GEOMETRIC IMPROVEMENTS  
Project Name:  
Project Number:  
Load (KVA):  
Revised: N/A  
ENDORSED BY:

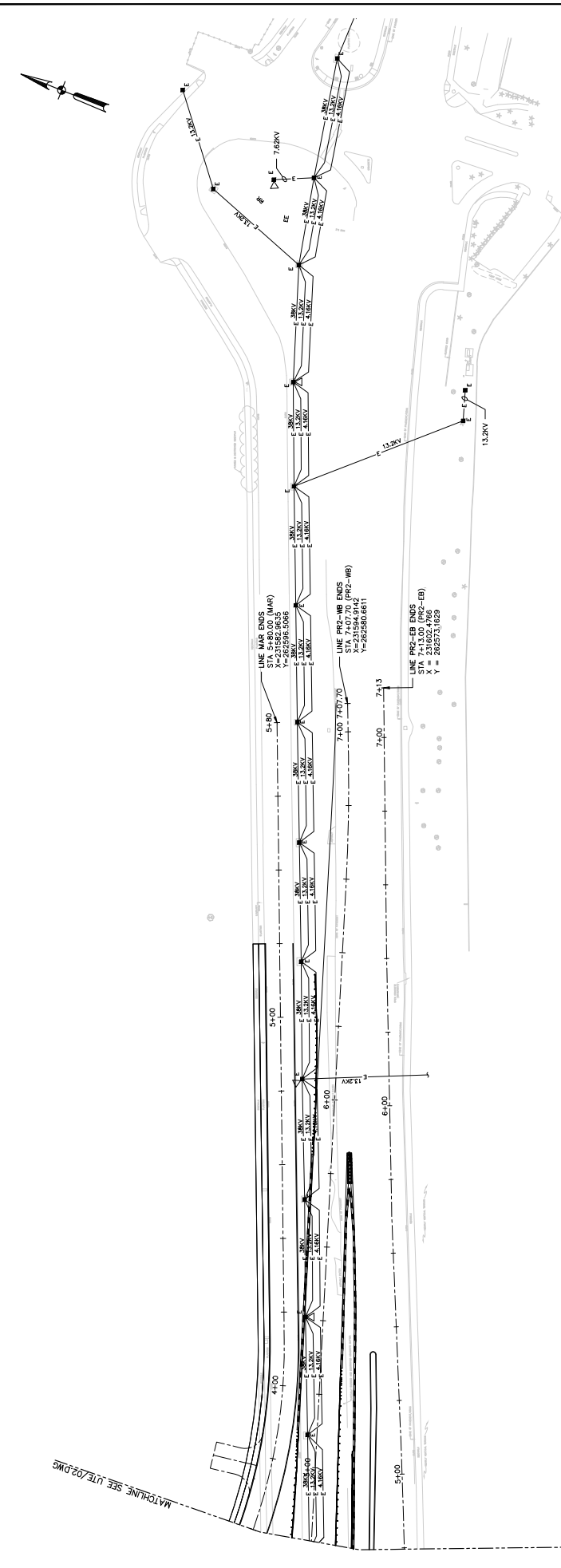
LUMA certifies that the design shown on this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer in the State of Puerto Rico. I am duly Licensed Professional Engineer in the State of Puerto Rico. I am duly Licensed Professional Engineer in the State of Puerto Rico. I am duly Licensed Professional Engineer in the State of Puerto Rico.

PR-2 & PR-6 BAYAMON P.R. 2023 48 82

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	03/03/23	

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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	49
				82



**DESIGNER'S CERTIFICATION**

I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 170 of 1988, its amendments and authorized by the Professional Regulation Commission to practice my profession as an engineer, surveyor, or architect as supervisor and administrator of the Transmission and Distribution System.

2. In compliance with Act No. 133 of July 15, 1987, as amended known as the Professional Regulation Act, I hereby certify that the project is in compliance with the Standards, rules and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Professional Regulation Commission.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**

**LUMA**  
 PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT

Project Name: \_\_\_\_\_  
 Project Number: \_\_\_\_\_  
 Load (kVA): \_\_\_\_\_  
 Revision: \_\_\_\_\_  
 Date: \_\_\_\_\_

**ENDORSED BY**

1. LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the Professional Regulation Act of 1987. LUMA does not assume any responsibility for the design. LUMA's endorsement is based on the certification of the designer and the responsibility assumed with the certification of these project plans. The endorsement releases neither the designer nor the project engineer from their professional liability to the client. LUMA's endorsement is not a National Electrical Safety Code, contributions, standards, norms, and regulations. LUMA's endorsement is not a guarantee of safety and state laws ruling by the time construction begins.

2. Upon this year, with prior notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified expiration work, the endorsement will be valid until the expiration date of the contract. LUMA does not coordinate an department or to complete the Assignment. Transfer of the endorsement to another company will be the responsibility of the company with all the provisions of the Establishment Regulation for the Puerto Rico Electric Power Authority (2007 of 2007).

<p><b>CMA</b>          ARCHITECT &amp;          ENGINEERS</p>	MUNICIPALITY OF BAYAMÓN	<p>PR-2 AND PR-6          INTERSECTIONS GEOMETRIC IMPROVEMENTS</p>	<p>BAYAMÓN</p>	<p>PUERTO RICO</p>	SCALE: 1:500	<p>REVISIONS</p>	
	<p>EXISTING ELECTRICAL UTILITIES PLAN</p>				DATE		
	<p>UTE 03</p>						



WORK	DATE
BY	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	03/03/23

**CMA**  
ARCHITECTS &  
ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

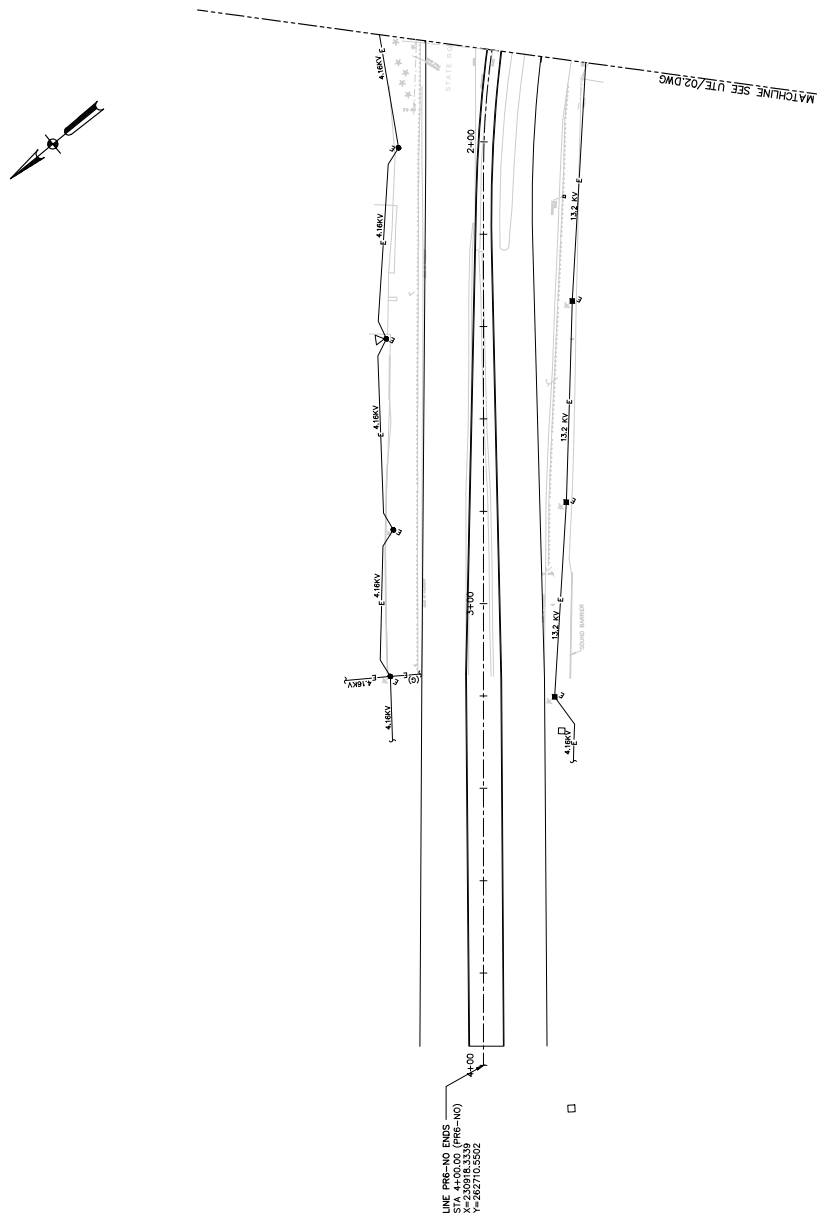
REVISIONS	DATE

SCALE: 1:500

LUMA  
EXISTING ELECTRICAL UTILITIES PLAN

UTE  
04

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	50
				82



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STA 46+00.00 (PR6-HO)  
E=262710.5502  
Y=262710.5502

**DESIGNER'S CERTIFICATION**  
I certify that I am a licensed and registered engineer, surveyor, or architect (in compliance with Act 173 of 1988, its amendments and authorized by the Board of Professional Engineers, Architects, and Surveyors) and I am acting as an engineer and administrator of the Transmission and Distribution System in compliance with Act No. 133 of July 15, 1997, as amended known as the Electric Service Law. I have prepared this project in accordance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority, Management Office and the CHART Professional Practice Manual.

DESIGNER'S SIGNATURE

**ENDORSEMENT**  
**LUMA**  
PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
Project Name:  
Project Number:  
Load (kVA):  
Revision:  
M.A.  
ENDORSED BY:

1. LUMA endorses the design shown in these construction plans based on the certification presented by the designer in compliance with the Standards, rules, and regulations approved by LUMA, Puerto Rico Electric Power Authority (PREPA) and the CHART Professional Practice Manual.  
2. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the certification of the project plans. The responsibility assumed with the certification of these project plans: The design is based on the information provided by the client. The design is based on the information provided by the client. The design is based on the information provided by the client.  
3. During this year, with prior notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified expiration work, the endorsement will be valid until the expiration date of the contract. It is not to constitute an assignment or to complete the Assignment. Transfer of the endorsement to another company without the prior written consent of the company with all the provisions of the Establishment Regulation for the Puerto Rico Electric Power Authority (2007 of 2007).

DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

PUERTO RICO

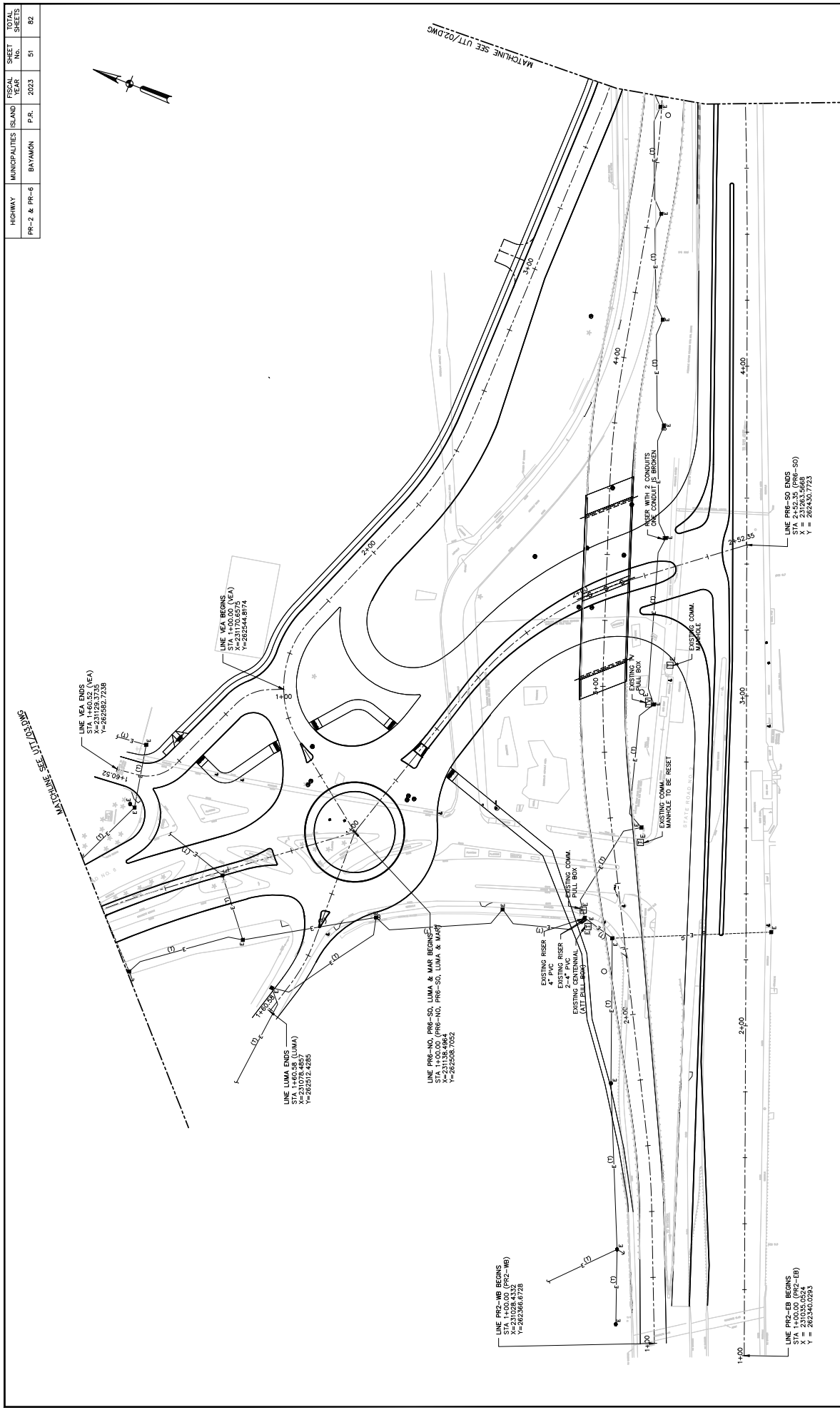
REVISIONS	DATE

SCALE: 1:500

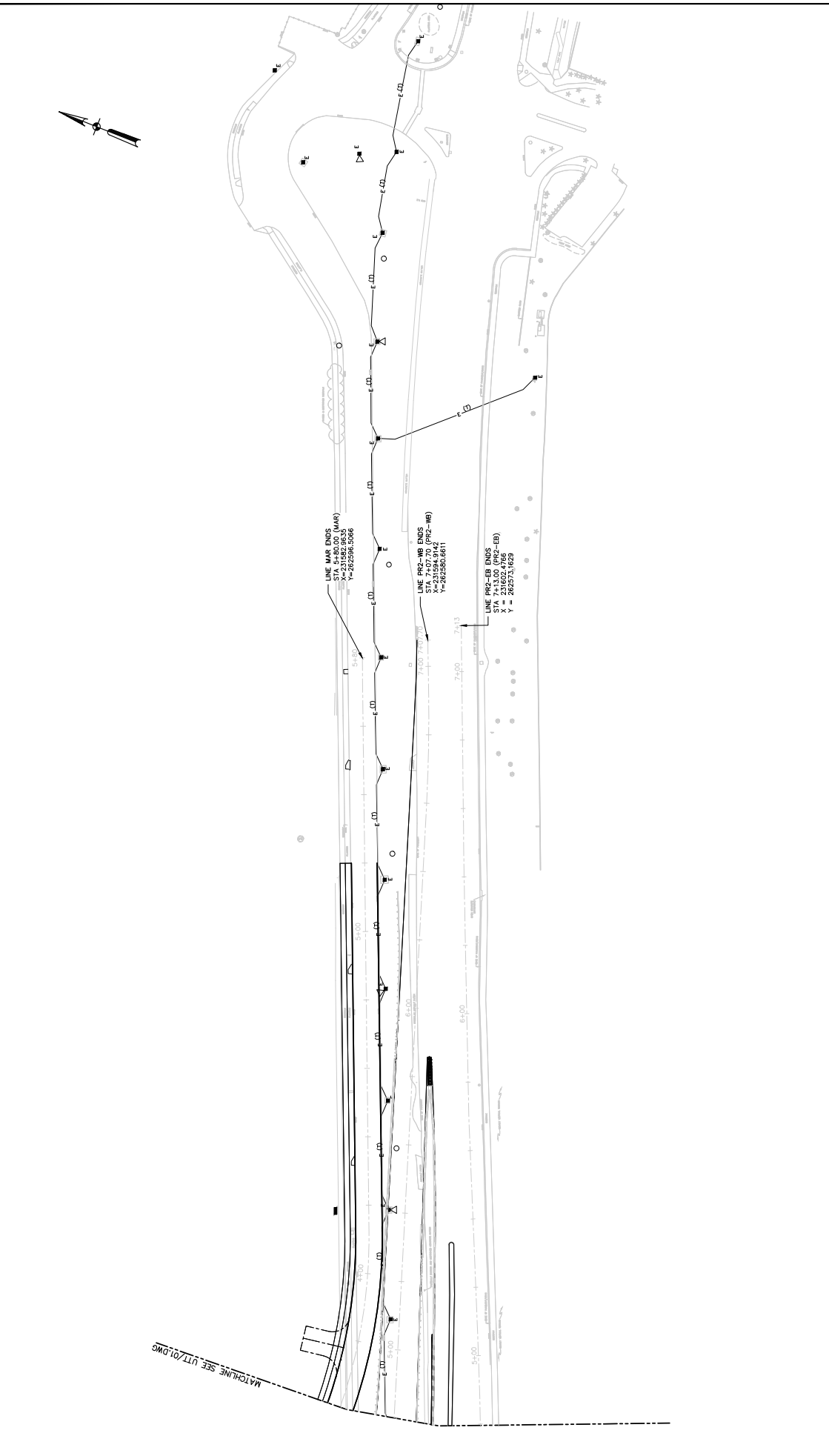
EXISTING UTILITY COMMUNICATION PLAN

UTT 01

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	51	82



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	52	82



<b>CMA</b> ARCHITECT & ENGINEERS	MUNICIPALITY OF BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS BAYAMÓN	PUERTO RICO DATE REVISIONS	SCALE: 1:500	EXISTING UTILITY COMMUNICATION PLAN	UTT 02
	CMA# 22102 1000 Calle Comercio, Bayamón, P.R. 00961 Phone: (787) 262-5753 Email: info@cmaa.net	PUERTO RICO	DATE REVISIONS	SCALE: 1:500	EXISTING UTILITY COMMUNICATION PLAN

WORK	DATE	BY
DESIGN		
DRAWING		
CHECK	03/09/23	
FINAL CHECK		

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	09/09/23	SCHEMATIC PLANS

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MUNICIPALITY OF BAYAMON

REG. PROFESSIONAL ENGINEER NO. 10000  
 REG. PROFESSIONAL ARCHITECT NO. 10000  
 CMA ARCHITECT & ENGINEERS  
 10000000000000000000

BAYAMON

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PUERTO RICO

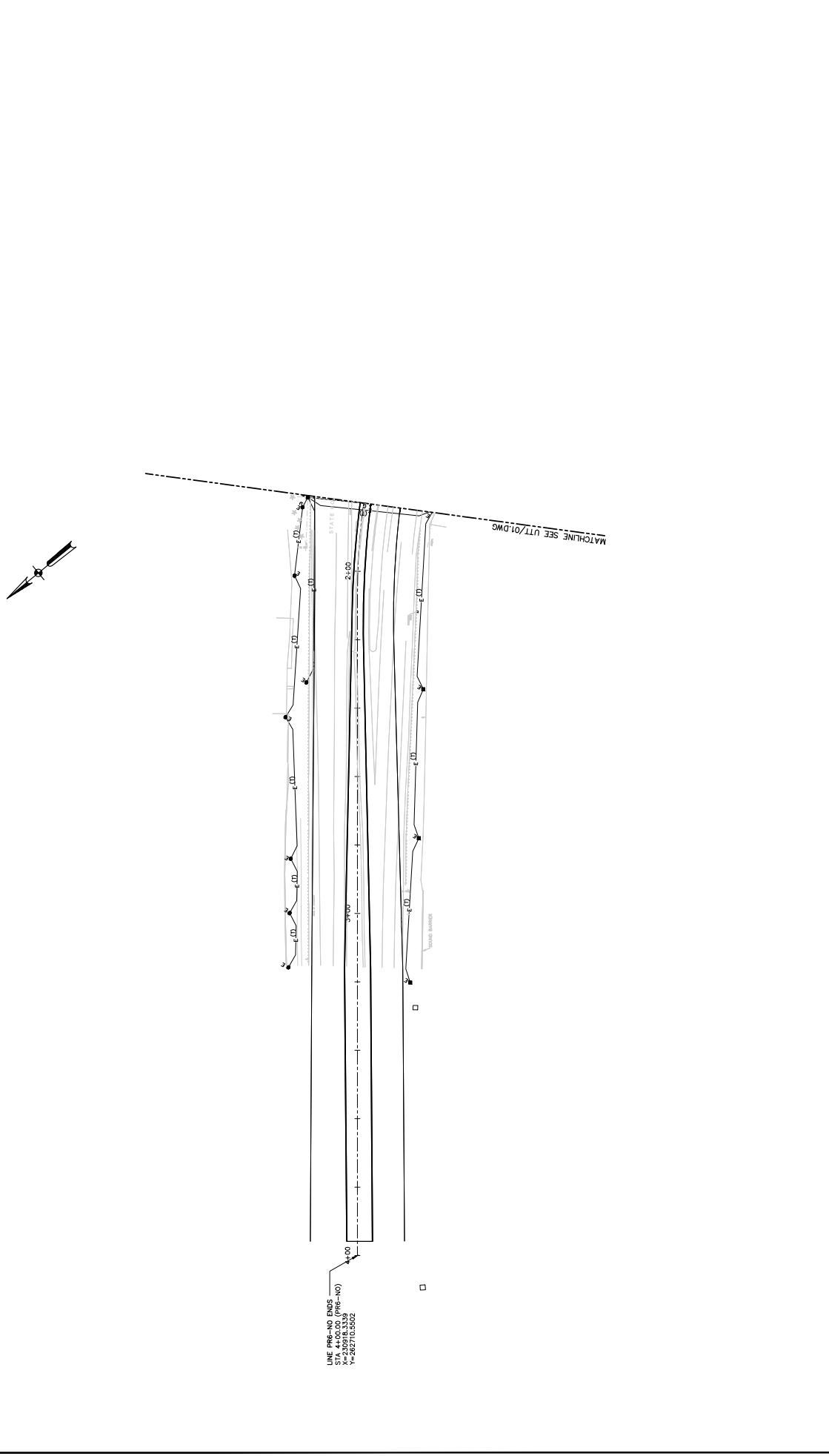
REVISIONS	DATE

SCALE: 1:500

EXISTING UTILITY COMMUNICATION PLAN

UTT  
 03

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	53	82





DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

CMA ARCHITECTS & ENGINEERS  
 1000 CARRILLO STREET, SUITE 200  
 SAN JUAN, PUERTO RICO 00909  
 TEL: (787) 762-1100  
 FAX: (787) 762-1101  
 WWW.CMAA-PR.COM

MUNICIPALITY OF BAYAMON

BAYAMON

PR-2 AND PR-6  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS

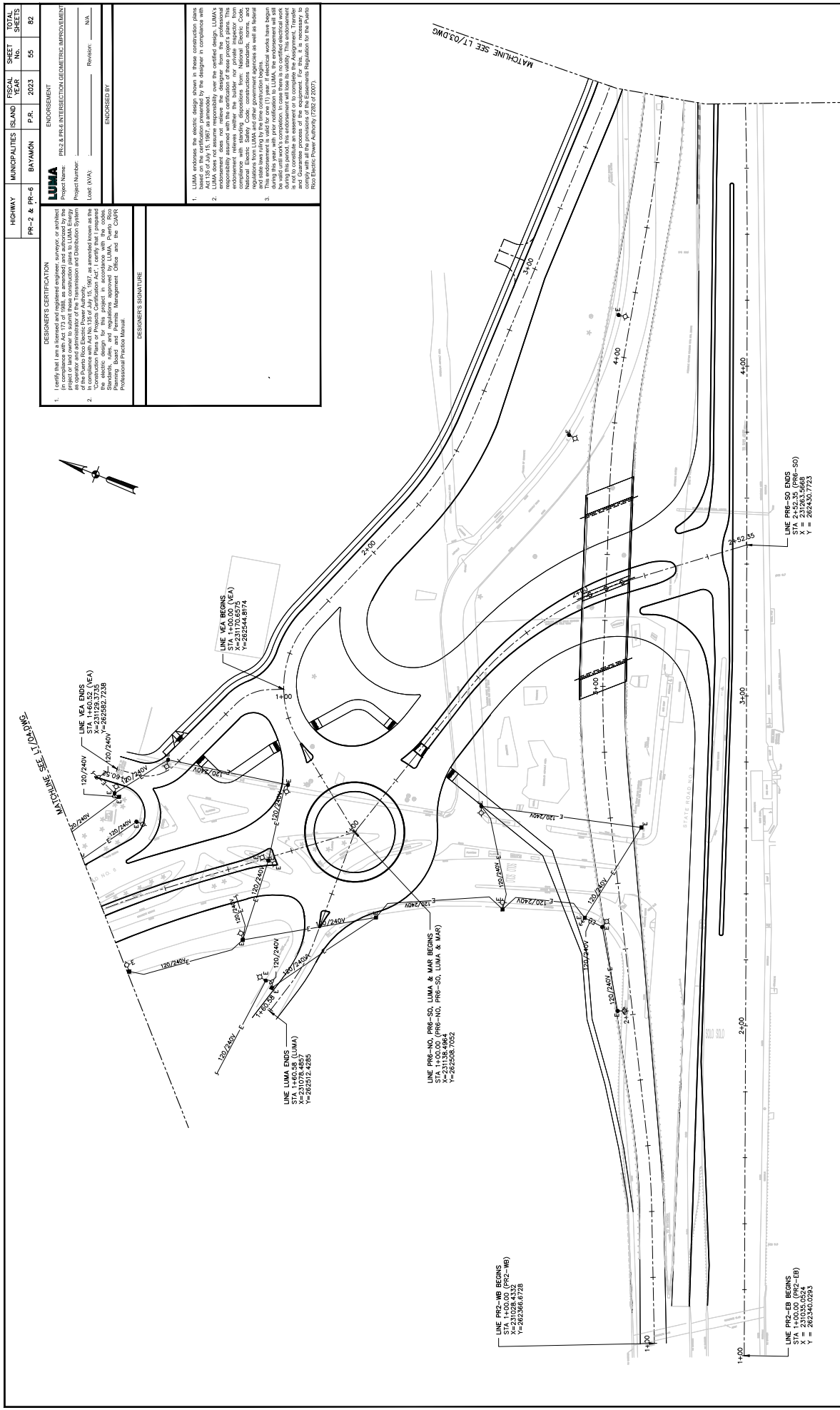
PUERTO RICO

NO.	DATE	REVISIONS

SCALE: 1:500

EXISTING LIGHTING PLAN

LT 02



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	95	82

**DESIGNER'S CERTIFICATION**  
 I hereby certify that this project was designed and constructed in accordance with the provisions of the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico.

**ENDORSEMENT**  
 LUMA  
 Project Name: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 Project Number: \_\_\_\_\_  
 Load (KV): \_\_\_\_\_  
 Revision: N/A  
 ENDORSED BY: \_\_\_\_\_

**DESIGNER'S SIGNATURE**

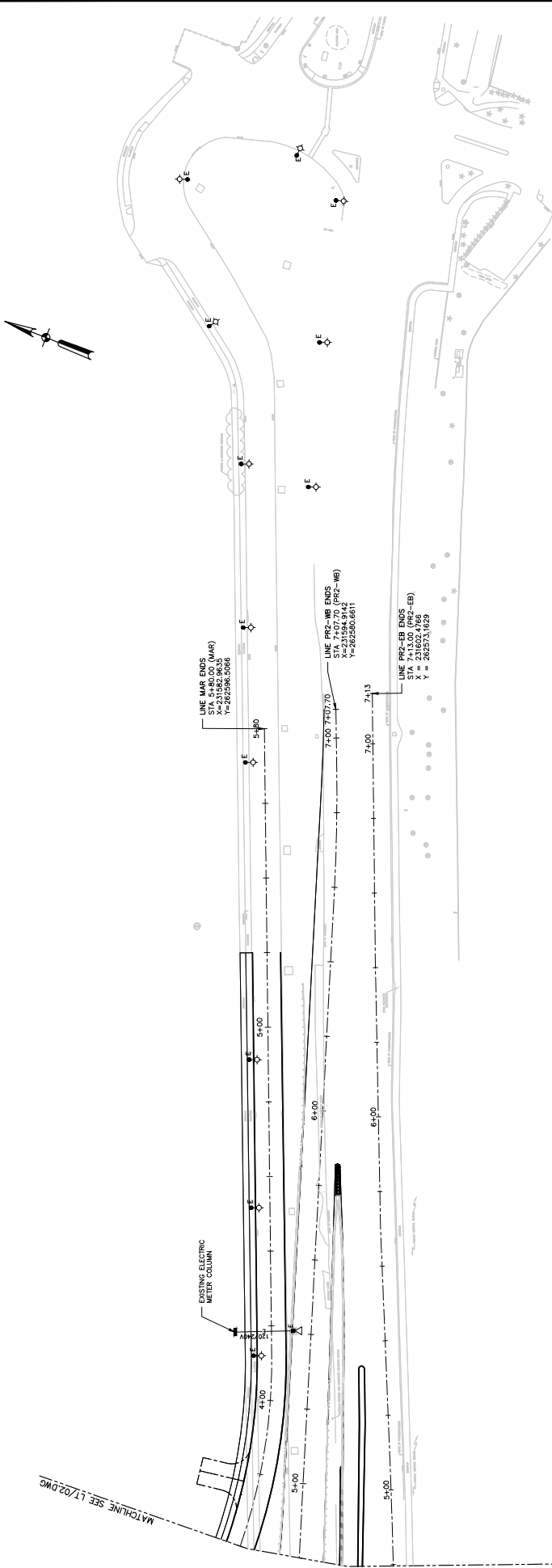
1. I hereby certify that this project was designed and constructed in accordance with the provisions of the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico.

2. I hereby certify that this project was designed and constructed in accordance with the provisions of the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico.

3. I hereby certify that this project was designed and constructed in accordance with the provisions of the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico, and the laws, rules and regulations of the Municipality of Bayamon, Puerto Rico.



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	56	82



**DESIGNER'S CERTIFICATION**  
 I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 170 of 1988, as amended and authorized by the Board of Professional Engineers, Architects, and Surveyors, as the supervisor and administrator of the Transmission and Distribution System, in compliance with Act No. 153 of July 15, 1997, as amended known as the Electric Service Law, and that I am duly qualified to prepare and submit the electronic design for this project in accordance with the regulations, standards, codes, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Department of Management. Other title: the CHARTERED PROFESSIONAL PRACTICE MANUAL.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**  
**LUMA**  
 PR-2 & PR-6 INTERSECTION GEOMETRIC IMPROVEMENT  
 Project Name:  
 Project Number:  
 Load (MVA):  
 Revision:  
 M.A.  
 ENCOURSED BY

LUMA endorses the electric design shown in these construction plans based on the certification presented by the designer in compliance with the regulations, standards, codes, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Department of Management. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the verification of the design and the responsibility assumed with the certification of these project plans. The endorsement release neither the builder nor grants any responsibility to the National Electric Safety Code, contributions, standards, norms, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Department of Management. Other title: the CHARTERED PROFESSIONAL PRACTICE MANUAL.

**DESIGNER'S SIGNATURE**

**SCALE: 1:500**

**EXISTING LIGHTING PLAN**

LT 03

 CMA ARCHITECTS & ENGINEERS 100 CALLE DEL MAR, SUITE 200 SAN JUAN, PUERTO RICO 00906 TEL: (787) 763-1234 FAX: (787) 763-1235 WWW.CMA-ARCHITECTS.COM	BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO	DATE	REVISIONS
		SCALE: 1:500	DATE
MUNICIPALITY OF BAYAMÓN CMA# 2218	PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	DATE	REVISIONS

DATE	BY	WORK
03/07/23		FINAL CHECK
		CHECK
		PREPARED
		DRAWING
		DESIGN

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MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

DATE

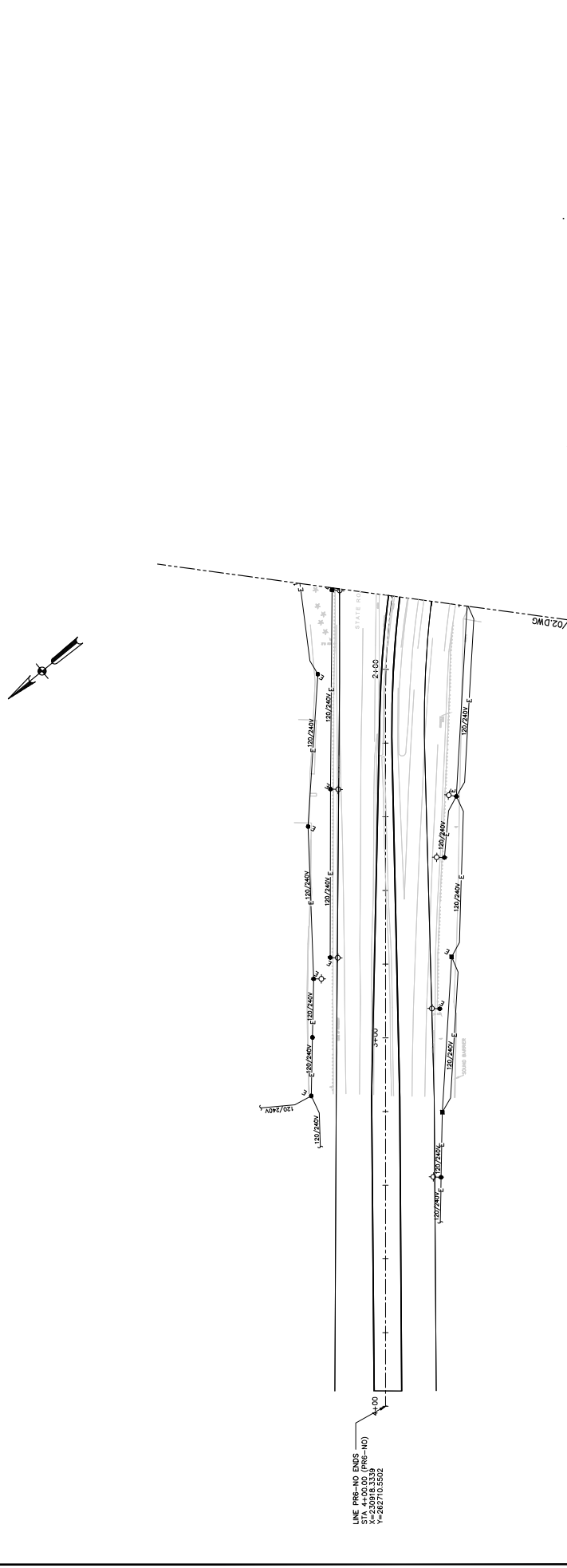
REVISIONS

SCALE: 1:500

EXISTING LIGHTING PLAN

LT 04

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	57
				82



**DESIGNER'S CERTIFICATION**

I certify that I am a licensed and registered engineer, surveyor, or architect (in compliance with Act 175 of 1988, its amendments and authorized by the Board of Professional Engineers, Architects, and Surveyors) and I am acting as an engineer and administrator of the Transmission and Distribution System in compliance with Act No. 153 of July 15, 1987, as amended known as the Electric Service Law, and its amendments, and I am duly registered with the electric codes for this project in accordance with the Electric Standards, rules and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Management Office and the CHART Professional Practice Manual.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**

**LUMA**  
**PR-2 AND PR-6 INTERSECTION GEOMETRIC IMPROVEMENT**

Project Name: \_\_\_\_\_  
 Project Number: \_\_\_\_\_  
 Load (MVA): \_\_\_\_\_  
 Revision: \_\_\_\_\_  
 M.A. \_\_\_\_\_

**ENDORSED BY**

LUMA endorses the electric design shown in these construction plans based on the certification presented by the designer in compliance with the following conditions:

- LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the verification of the design and the responsibility assumed with the certification of these project plans. The endorser releases neither the builder nor general contractor from their responsibility to comply with the applicable codes, standards, norms, and regulations approved by LUMA, Puerto Rico Electric Power Authority, and the Management Office and the CHART Professional Practice Manual.
- During this year, with their notification to LUMA, the endorser will still be valid until work is completed. In case there is no specified electrical work to be completed, the endorser will be responsible for the completion of the work in order to complete the Assignment. Transfer of responsibility to the contractor will be the responsibility of the contractor company with all the provisions of the Elements Regulation for the Puerto Rico Electric Power Authority (258 of 2007).

DATE	BY	DATE	CHECK	DATE	TOTAL SHEETS
					82

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	58	82

**DESIGNER'S CERTIFICATION**  
 I, the undersigned, certify that the design of this project was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón. I certify that the design was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón.

**DESIGNER'S SIGNATURE**  
 \_\_\_\_\_

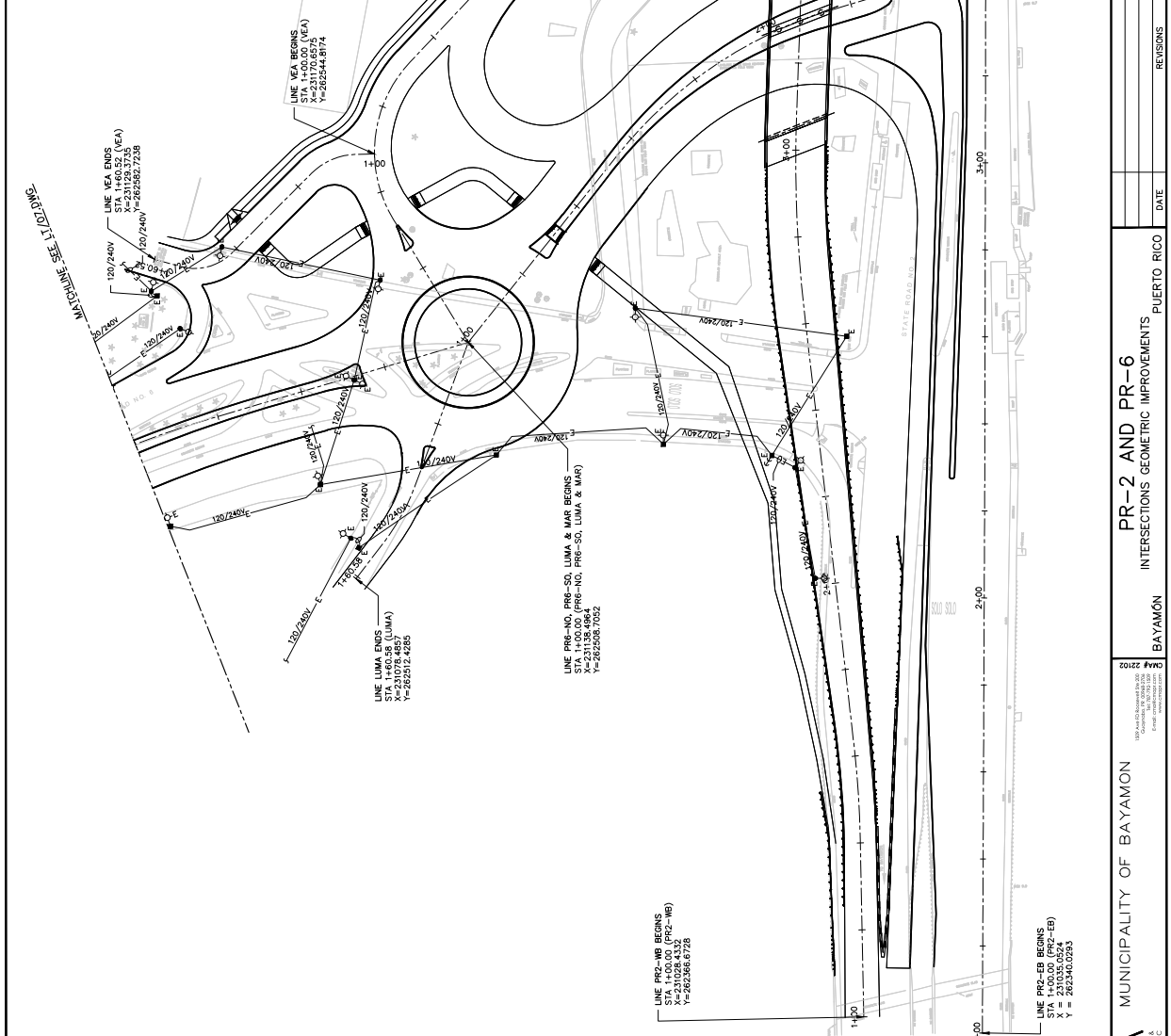
**ENDORSEMENT**  
 Project Name: \_\_\_\_\_  
 Project Number: \_\_\_\_\_  
 Date: \_\_\_\_\_

**ENDORSEMENT**  
 Project Name: \_\_\_\_\_  
 Project Number: \_\_\_\_\_  
 Date: \_\_\_\_\_

1. I, the undersigned, certify that the design of this project was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón. I certify that the design was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón.

2. I, the undersigned, certify that the design of this project was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón. I certify that the design was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón.

3. I, the undersigned, certify that the design of this project was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón. I certify that the design was prepared by me or under my direct supervision and in accordance with the laws and regulations of the Municipality of Bayamón.



**REVISIONS**

NO.	DATE	DESCRIPTION

**SCALE: 1:500**

**LIGHTING PLAN**

**PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS**

**BAYAMÓN**

MUNICIPALITY OF BAYAMÓN

CMA ARCHITECTS & ENGINEERS

1850 CAROL DEAN DRIVE SUITE 200  
 BAYAMÓN, P.R. 00961  
 TEL: (787) 262-5656 FAX: (787) 262-5657  
 EMAIL: CMA@CMAE1.COM WWW.CMAE1.COM

APR 22 2023

PROJECT: PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

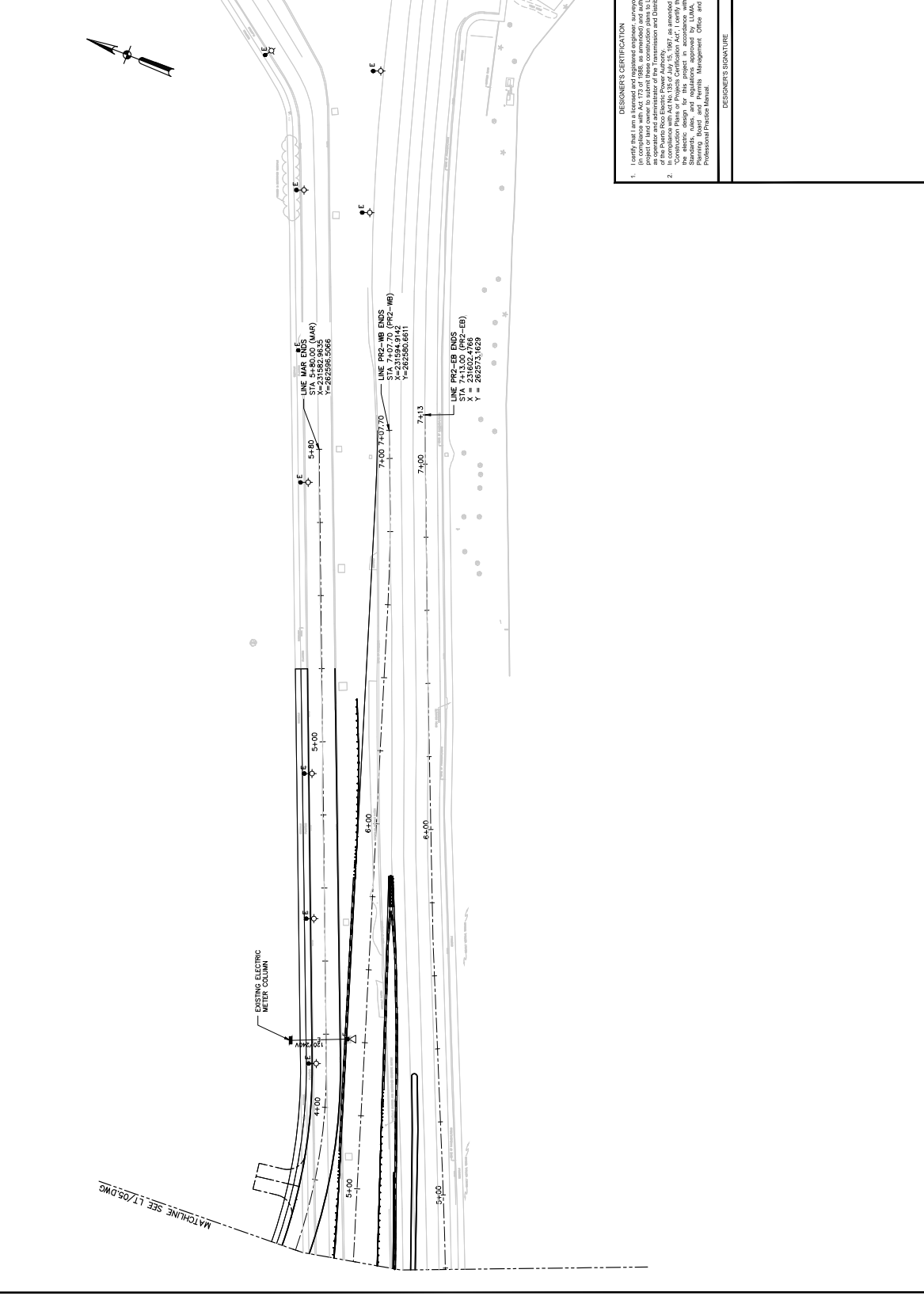
SHEET: 05

FINAL CHECK	03/29/23
CHECK	
DRAWING	
DESIGN	
WORK	

WORK	BY	DATE
DESIGN		
DRAWING		
CHECKED		
FINAL CHECK		03/03/23
SCHEMATIC PLANS		

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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	59
				82



**CMA** ARCHITECT & ENGINEERS

MUNICIPALITY OF BAYAMÓN

404# 2218

100 CALLE DEL MAR AVENUE SUITE 2000 BAYAMÓN, P.R. 00961  
 Phone: (787) 221-2218  
 Email: info@cmamex.com

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

SCALE: 1:500

REVISIONS

NO.	DATE	DESCRIPTION

LT	06
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**DESIGNER'S CERTIFICATION**

I certify that I am a licensed and registered engineer, surveyor, or architect in compliance with Act 175 of 1988, its amendments and authorized by the Board of Professional Engineers, Architects, and Surveyors (BPEAS) as supervisor and administrator of the Transmission and Distribution System in compliance with Act No. 135 of July 15, 1997, as amended known as the Electric Service Law, and that I am duly registered with the Board of Electric Design for this project in accordance with the Electric Service Law, its amendments, and regulations approved by LUMA, Puerto Rico Electric Power Authority (PEREPA), and the Department of Energy and Professional Practice Manual.

**DESIGNER'S SIGNATURE**

**ENDORSEMENT**

**LUMA**  
 PEREPA  
 PROJECT NAME: PR-2 & PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 PROJECT NUMBER: \_\_\_\_\_  
 LOAD (MVA): \_\_\_\_\_  
 REVISION: \_\_\_\_\_  
 M.A. \_\_\_\_\_  
 ENCOUNTERED BY: \_\_\_\_\_

LUMA endorses the electric design shown in these construction plans based on the certification presented by the designer in compliance with the Electric Service Law, its amendments, and regulations approved by LUMA. LUMA does not assume responsibility over the certified design. LUMA's responsibility is limited to the verification of the design and the responsibility assumed with the certification of these project plans. The endorsement release neither the designer nor the project sponsor from their respective responsibilities under the Electric Service Law, its amendments, National Electrical Safety Code, contributions, standards, norms, and regulations approved by LUMA, Puerto Rico Electric Power Authority (PEREPA), and the Department of Energy and state laws ruling by the time construction begins.

During this year, with your notification to LUMA, the endorsement will be valid until work is completed. In case there is no specified electrical work to be completed, the endorsement will be valid until the work is completed. It is not to constitute an assignment or to complete the Assignment. Transfer of the endorsement to another company will be in accordance with the provisions of the Electric Service Law (Title of 2007).



DATE	03/09/23	BY	
DESIGN			
DRAWING			
CHECK			
FINAL CHECK			
SCHEMATIC PLANS			
DATE			

<b>CMA</b> ARCHITECTS & ENGINEERS 1000 GARDEN CITY AVENUE SUITE 1000 GARDEN CITY, NY 11530 TEL: 516.466.1100 FAX: 516.466.1101 WWW.CMAAEC.COM	BAYAMÓN INTERSECTIONS GEOMETRIC IMPROVEMENTS PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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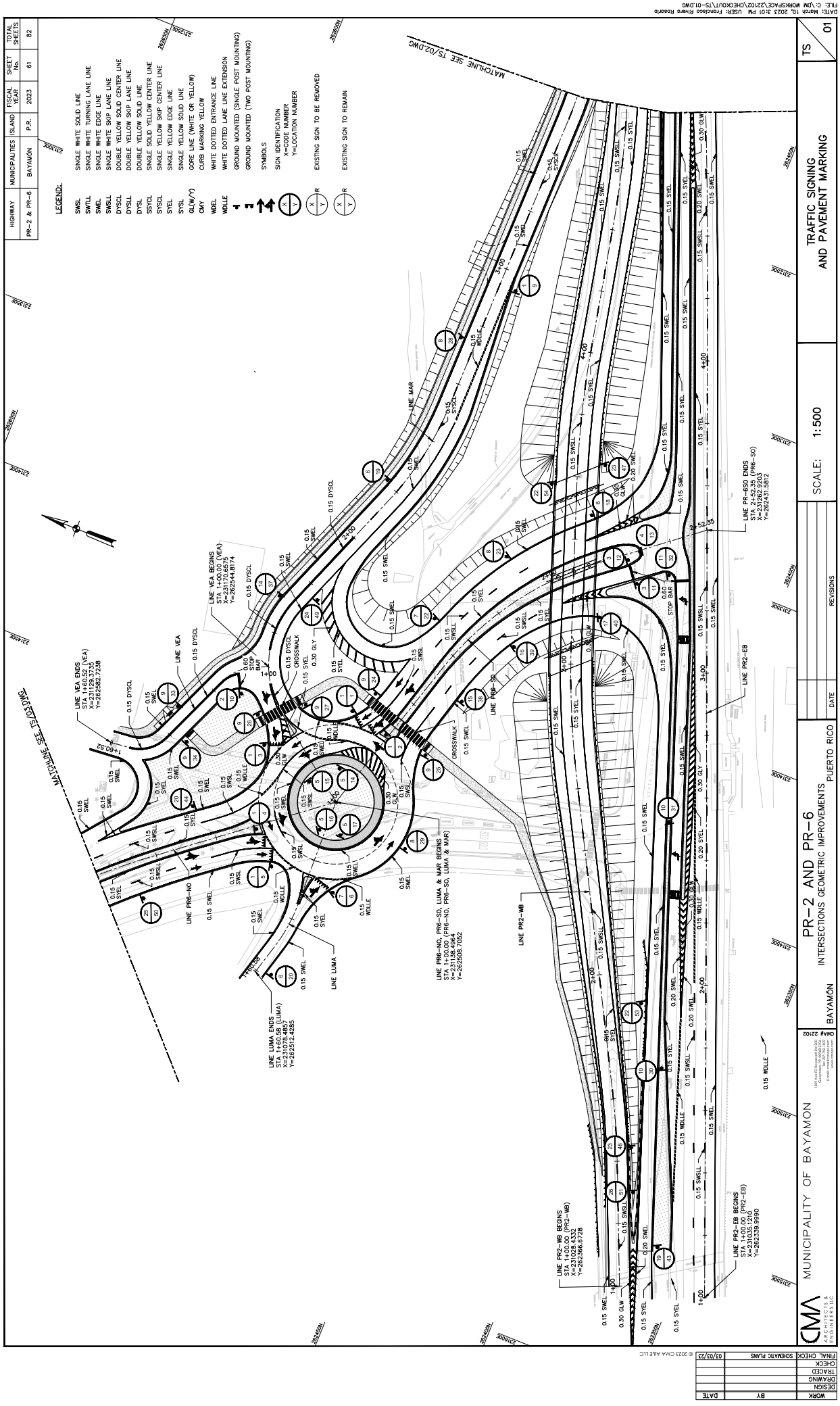
MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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MUNICIPALITY OF BAYAMÓN PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	REVISIONS DATE	TS 01
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HIGHWAY PR-2 & PR-6	MUNICIPALITIES BAYAMÓN	ISLAND P.R.	FISCAL YEAR 2023	SHEET NO. 61	TOTAL SHEETS 82
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WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	03/02/23	

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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

REVISIONS	DATE

SCALE: 1:500

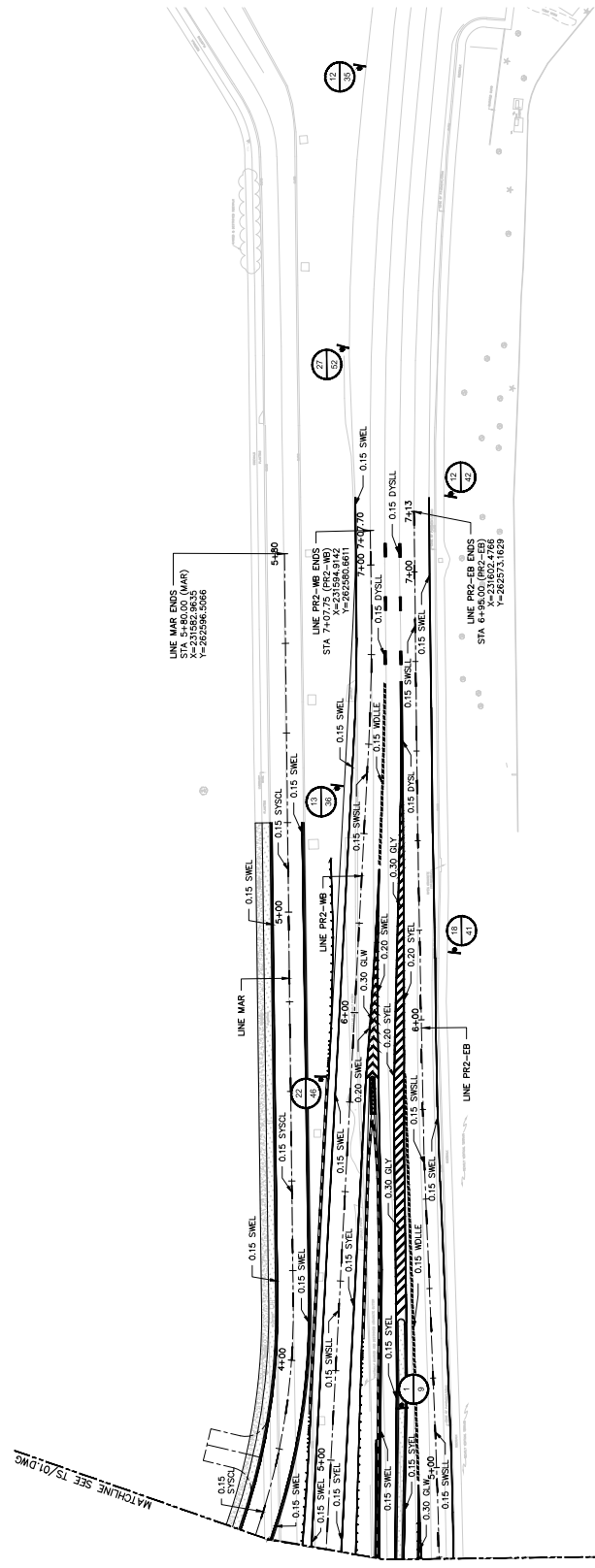
TRAFFIC SIGNING AND PAVEMENT MARKING

TS 02

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	62	82

LEGEND:

- SWEL SINGLE WHITE SOLID LINE
- SWTL SINGLE WHITE TURNING LANE LINE
- SWEL SINGLE WHITE EDGE LINE
- SWLL SINGLE WHITE SHIP LANE LINE
- DYSL DOUBLE YELLOW SOLID CENTER LINE
- DYSL DOUBLE YELLOW SHIP LANE LINE
- SYSL SINGLE SOLID YELLOW CENTER LINE
- SYSL SINGLE SOLID YELLOW SHIP CENTER LINE
- SYEL SINGLE YELLOW EDGE LINE
- SYSL SINGLE YELLOW SOLID LINE
- GL(W/Y) GORE LINE (WHITE OR YELLOW)
- CMY CURB MARKING YELLOW
- WDEL WHITE DOTTED ENTRANCE LINE
- WOLE WHITE DOTTED LANE LINE EXTENSION
- GROUND MOUNTED (SINGLE POST MOUNTING)
- GROUND MOUNTED (TWO POST MOUNTING)
- SYMBOLS
- SIGN IDENTIFICATION
- X=CODE NUMBER
- Y=LOCATION NUMBER
- EXISTING SIGN TO BE REMOVED
- EXISTING SIGN TO REMAIN



WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK	03/02/23	

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**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON

#A4 2218  
1830 CAYMAN DRIVE, SUITE 200  
FARMINGTON, CT 06030  
PHONE: 860.634.1000  
WWW.CMAAEC.COM

BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

DATE

REVISIONS

SCALE: 1:500

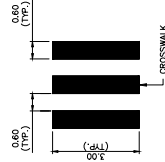
TRAFFIC SIGNING  
AND PAVEMENT MARKING

TS  
03

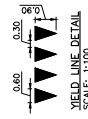
HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	63	82

**LEGEND:**

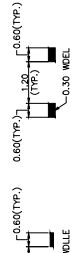
- SMEL SINGLE WHITE SOLID LINE
  - SMEL SINGLE WHITE TURNING LANE LINE
  - SMEL SINGLE WHITE EDGE LINE
  - SMELL SINGLE WHITE SHIP LANE LINE
  - DYSEL DOUBLE YELLOW SOLID CENTER LINE
  - DYSEL DOUBLE YELLOW SHIP LANE LINE
  - DYSEL DOUBLE YELLOW EDGE LINE
  - SYSEL SINGLE SOLID YELLOW CENTER LINE
  - SYSEL SINGLE YELLOW SHIP CENTER LINE
  - SYSEL SINGLE YELLOW EDGE LINE
  - SYEL SINGLE YELLOW SOLID LINE
  - SL(W/Y) GORE LINE (WHITE OR YELLOW)
  - CMY CURB MARKING YELLOW
  - WEL WHITE DOTTED ENTRANCE LINE
  - WELLE WHITE DOTTED ENTRANCE LINE EXTENSION
  - GROUND MOUNTED (SINGLE POST MOUNTING)
  - GROUND MOUNTED (TWO POST MOUNTING)
- SYMBOLS**
- ⬆ SIGN IDENTIFICATION
  - X=CODE NUMBER
  - Y=LOCATION NUMBER
- ⊖ EXISTING SIGN TO BE REMOVED
  - ⊕ EXISTING SIGN TO REMAIN



EXISTING SIGN TO BE REMOVED  
SCALE: 1:80



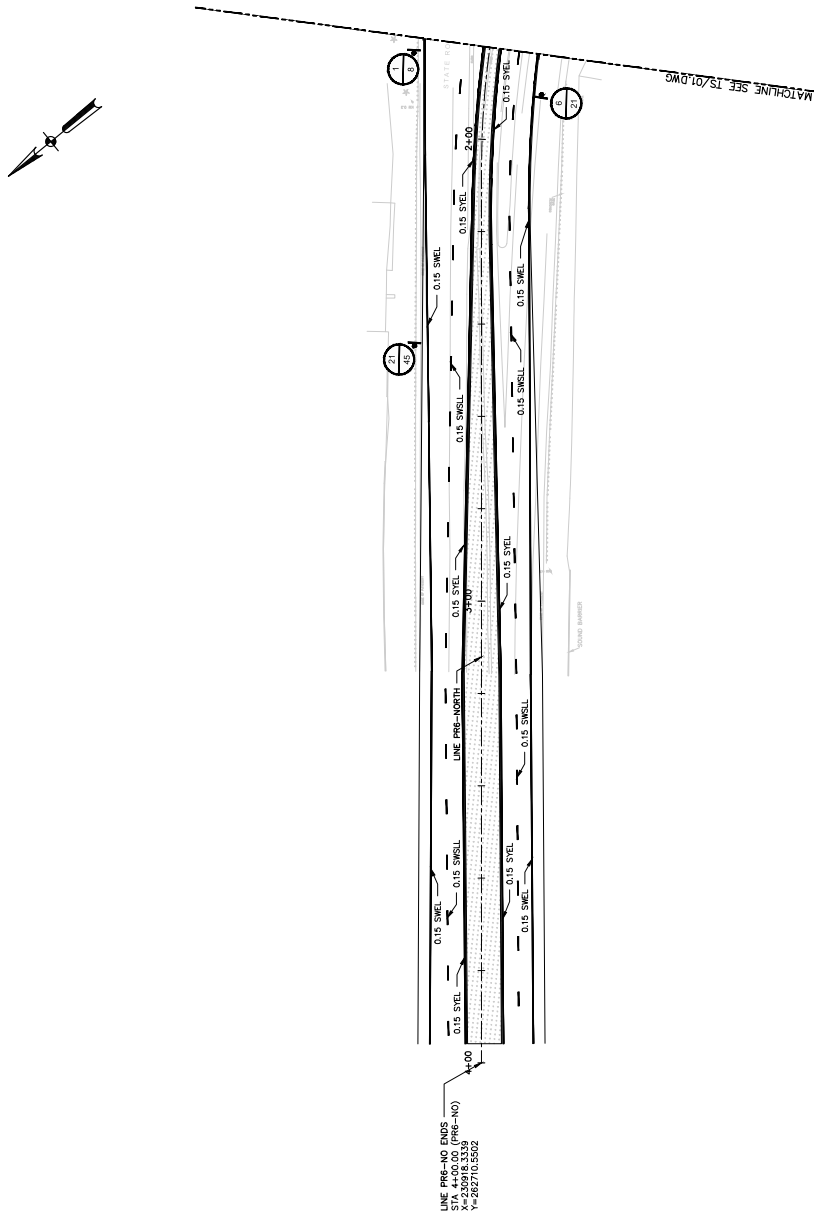
EXISTING SIGN TO REMAIN  
SCALE: 1:100



YIELD LINE DETAIL  
SCALE: 1:100



WHITE DOTTED ENTRANCE LINE (WALLE) DETAIL  
SCALE: 1:100



SIGN DATA TABLE

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF SIGN PANEL	OVERHEAD STRUCTURE TYPE	REFERENCE MANUAL	TOTAL ITEM
1	1, 2, 3, 4, 5, 6, 7, 8	R1-2		36" x 36" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	9
2	10	R1-1		30" x 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
3	11, 12	R10-6		24" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	2
4	13	R4-7		24" x 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
5	14, 15, 16, 17	R6-46		48" x 24"	N/A	SEE D.T.P.W. MANUAL 2020	4
6	18, 19, 20, 21	W2-6 W3-1		30" x 30" 18" x 18"	N/A	SEE D.T.P.W. MANUAL 2020	4
7	22	D1-1		66" x 42"	N/A	SEE GUIDE SIGN DETAIL	1
8	23, 28, 29	W11-2 W16-1P		24" x 24" 30" x 12"	N/A	SEE D.T.P.W. MANUAL 2020	3
9	24, 25, 26, 27, 33, 34	W11-2 W16-7(1)		24" x 24" 24" x 12"	N/A	SEE D.T.P.W. MANUAL 2020	6
10	30, 31	R3-5(1)		30" x 30"	N/A	SEE D.T.P.W. MANUAL 2020	2

SIGN DATA TABLE

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF SIGN PANEL	OVERHEAD STRUCTURE TYPE	REFERENCE MANUAL	TOTAL ITEM
11	32	R3-1		30" x 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
12	35, 42	R2-1		24" x 30"	N/A	SEE D.T.P.W. MANUAL 2020	2
13	36	M3-1 M3-4 M1-6b M1-6b M6-2(1) M6-3		36" x 18" 36" x 18" 36" x 36" 36" x 36" 21" x 15" 21" x 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
14	37	D1-1		72" x 60"	N/A	SEE GUIDE SIGN DETAIL	1
15	38	M2-1 M1-6b		21" x 15" 36" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
16	39	D1-2		90" x 42"	N/A	SEE GUIDE SIGN DETAIL	1
17	40	M3-2 M3-4 M1-6b M1-6b M6-1(1) M6-2(1)		36" x 18" 36" x 18" 36" x 36" 36" x 36" 21" x 15" 21" x 15"	N/A	SEE D.T.P.W. MANUAL 2020	1
18	41	M3-2 M1-6b		36" x 18" 36" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
19	43	M3-4 M1-6b		36" x 18" 36" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	1
20	44	M3-1 M1-6b		36" x 18" 36" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	1

SIGN DATA TABLE

CODE NUMBER	LOCATION NUMBER	SIGN CODE	LEGEND	SIZE OF SIGN PANEL	OVERHEAD STRUCTURE TYPE	REFERENCE MANUAL	TOTAL ITEM
21	45	R2-1		24" x 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
22	46, 53, 54	OM-3(1)		12" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	3
23	47, 48	OM-3(1)		12" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	2
24	49	W4-2(1)		30" x 30"	N/A	SEE D.T.P.W. MANUAL 2020	1
25	50	D1-1		84" x 24"	N/A	SEE GUIDE SIGN DETAIL	1
26	51	W4-13(1)		48" x 48"	N/A	SEE D.T.P.W. MANUAL 2020	1
27	52	M2-1 M1-6b		21" x 15" 36" x 36"	N/A	SEE D.T.P.W. MANUAL 2020	1

**CMA** MUNICIPALITY OF BAYAMON  
 ARCHITECT & ENGINEERS

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS BAYAMON

SCALE: NTS

SIGN DATA TABLE

TS 04

DATE: 03/03/23

BY: [Signature]

DESIGN: [Signature]

DRAWING: [Signature]

CHECK: [Signature]

FINAL CHECK: [Signature]

DATE	BY	DESCRIPTION
03/03/23 <td> <td>PRELIMINARY PLANS </td></td>	<td>PRELIMINARY PLANS </td>	PRELIMINARY PLANS
		FINAL CHECK
		DESIGN
		DRAWINGS
		REVISIONS

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MUNICIPALITY OF BAYAMÓN

BAYAMÓN

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

NO.	DATE	REVISIONS

SCALE: NTS

KILOMETER REPORT SEAL LOCATION DETAILS

TS 05

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	65	82

**SIGN DETAIL**

SIGN NUMBER	7/22
WIDTH x HEIGHT	5'-0" x 3'-0"
BORDER WIDTH	1"
CORNER RADIUS	3"
MOUNTING	Channel
BACKGROUND	Reflective
LEGEND/BORDER TYPE	Reflective
COLOUR	Green
COLOUR/BOARD TYPE	Reflective
COLOUR	White/Pink

Dimensions are in inches/mms

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE
M A R G I N A L	D 2000	52.1 B

Letter locations are panel edge to lower left corner

**SIGN DETAIL**

SIGN NUMBER	25/20
WIDTH x HEIGHT	7'-0" x 2'-0"
BORDER WIDTH	1"
CORNER RADIUS	1.5"
MOUNTING	Channel
BACKGROUND	Green
LEGEND/BORDER TYPE	Reflective
COLOUR	White
COLOUR/BOARD TYPE	Reflective
COLOUR	White/Pink

Dimensions are in inches/mms

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE
M A R G I N A L	D 2000	52.1 B

Letter locations are panel edge to lower left corner

**SIGN DETAIL**

SIGN NUMBER	14/27
WIDTH x HEIGHT	6'-0" x 2'-0"
BORDER WIDTH	1"
CORNER RADIUS	3"
MOUNTING	Channel
BACKGROUND	Ground
LEGEND/BORDER TYPE	Reflective
COLOUR	Green
COLOUR/BOARD TYPE	Reflective
COLOUR	White/Pink

Dimensions are in inches/mms

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE
U R B . V I L L A E S P A Ñ A	D 2000	56.6 B
E S P A Ñ A	D 2000	2.8 B
UR	D 2000	39.9 B

Letter locations are panel edge to lower left corner

**SIGN DETAIL**

SIGN NUMBER	14/27
WIDTH x HEIGHT	6'-0" x 2'-0"
BORDER WIDTH	1"
CORNER RADIUS	3"
MOUNTING	Channel
BACKGROUND	Ground
LEGEND/BORDER TYPE	Reflective
COLOUR	Green
COLOUR/BOARD TYPE	Reflective
COLOUR	White/Pink

Dimensions are in inches/mms

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE
U R B . V I L L A E S P A Ñ A	D 2000	56.6 B
E S P A Ñ A	D 2000	2.8 B
UR	D 2000	39.9 B

Letter locations are panel edge to lower left corner

**SIGN DETAIL**

SIGN NUMBER	16/28
WIDTH x HEIGHT	7'-6" x 3'-0"
BORDER WIDTH	1"
CORNER RADIUS	3"
MOUNTING	Channel
BACKGROUND	Reflective
LEGEND/BORDER TYPE	Reflective
COLOUR	Green
COLOUR/BOARD TYPE	Reflective
COLOUR	White/Pink

Dimensions are in inches/mms

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE
C U I A Y N A B O B A Y A M Ó N	D 2000	56.2 B
B A Y A M Ó N	D 2000	46.6 B

Letter locations are panel edge to lower left corner

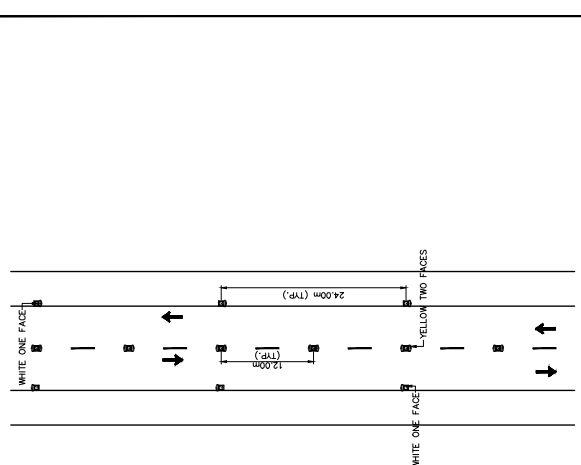
**SIGN DETAIL**

SIGN NUMBER	16/28
WIDTH x HEIGHT	7'-6" x 3'-0"
BORDER WIDTH	1"
CORNER RADIUS	3"
MOUNTING	Channel
BACKGROUND	Reflective
LEGEND/BORDER TYPE	Reflective
COLOUR	Green
COLOUR/BOARD TYPE	Reflective
COLOUR	White/Pink

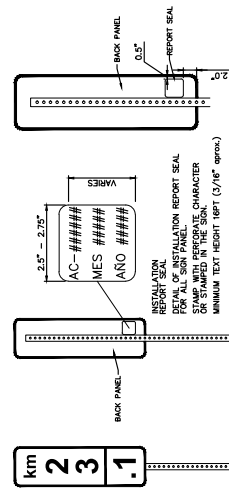
Dimensions are in inches/mms

LETTER POSITIONS (X)	LENGTH	SERIES/SIZE
C U I A Y N A B O B A Y A M Ó N	D 2000	56.2 B
B A Y A M Ó N	D 2000	46.6 B

Letter locations are panel edge to lower left corner



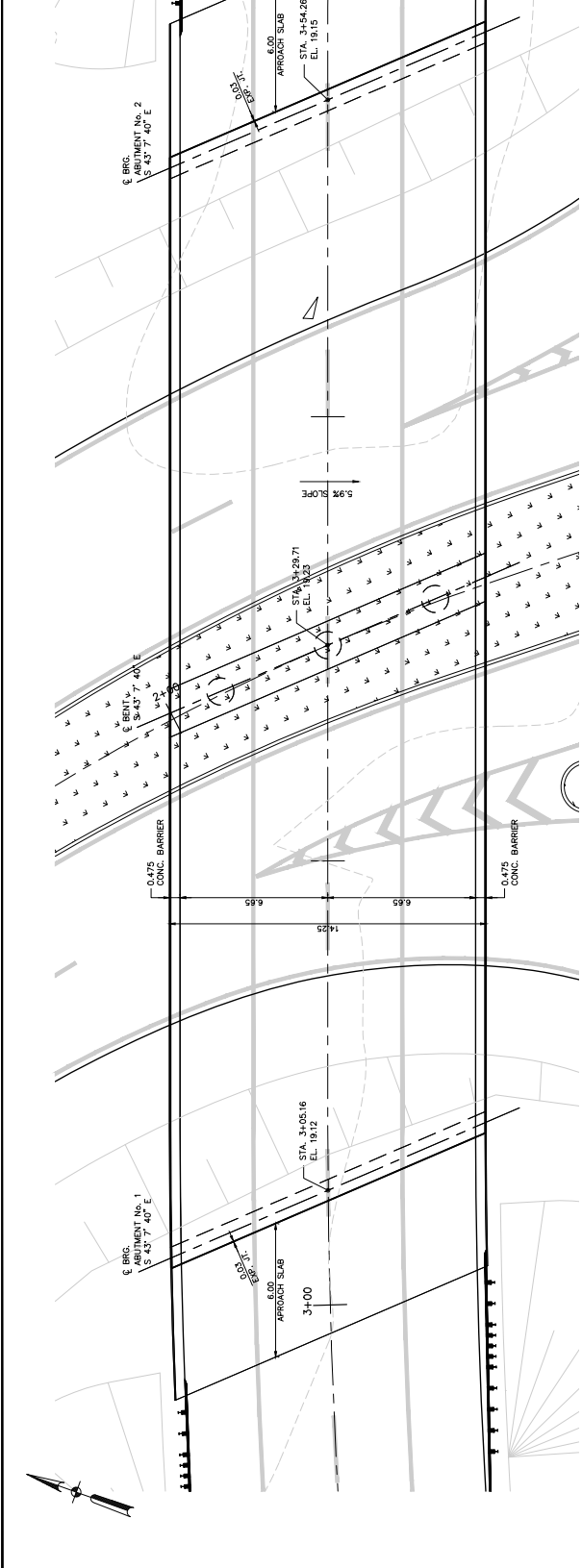
TYPICAL LANES RAISED PAVEMENT MARKERS DETAIL  
SCALE: NTS



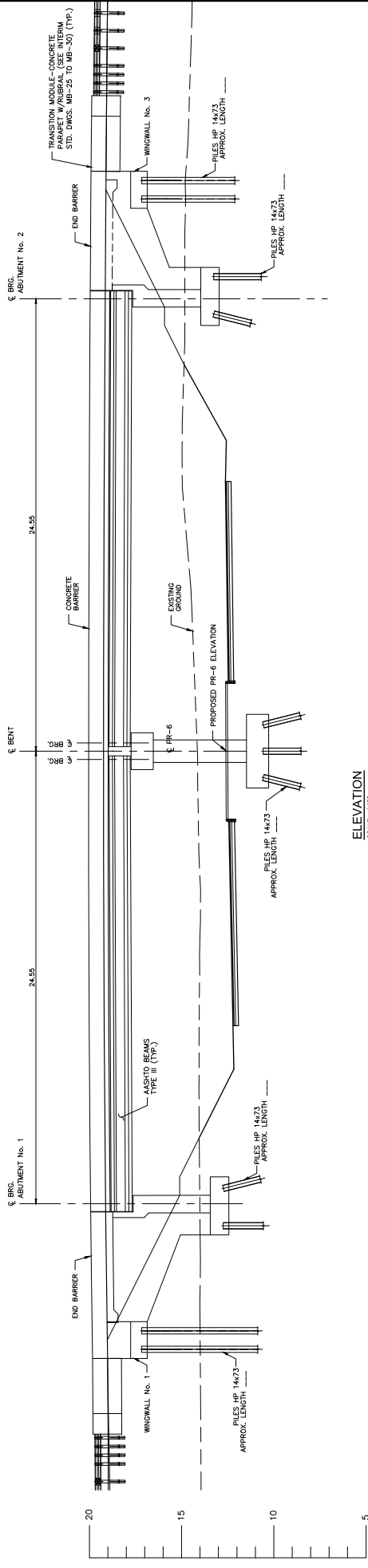
NOTE:  
1. ALL NEW SIGNS SHALL BE COMPLIANCE WITH THE SIGN LABEL ACCORDING TO STD. DMC. 51.

DETAIL FOR KILOMETER SIGN REPORT SEAL LOCATION

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	66	82



PLAN  
SCALE: 1/100



ELEVATION  
SCALE: 1/100

MUNICIPALITY OF BAYAMÓN	BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	ISSUED FOR BID	SCALE: AS SHOWN	PLAN AND ELEVATION	BR 02
				DATE			
#48 2282 <small>1000 Calle de la Universidad, P.O. Box 2282, Bayamón, P.R. 00961-2282</small>				JAC			



MUNICIPALITY OF BAYAMÓN

PR-2 AND PR-6

INTERSECTIONS GEOMETRIC IMPROVEMENTS

REVISIONS

JAC

SCALE: AS SHOWN

PLAN AND ELEVATION

BR 02

WORK	BY	DATE
DESIGN		
DRAWING		
CHECK		
FINAL CHECK		
SCHEMATIC PLANS		03/09/23

DATE	BY	WORK
03/09/23		
CHECK	DESIGN	DRAWING
FINAL CHECK	SCHEMATIC PLANS	

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**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMÓN

#462282  
1850 P.O. BOX 1000  
SAN JUAN, P.R. 00901-1000  
Tel: (787) 763-1000  
Fax: (787) 763-1001

BAYAMÓN  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

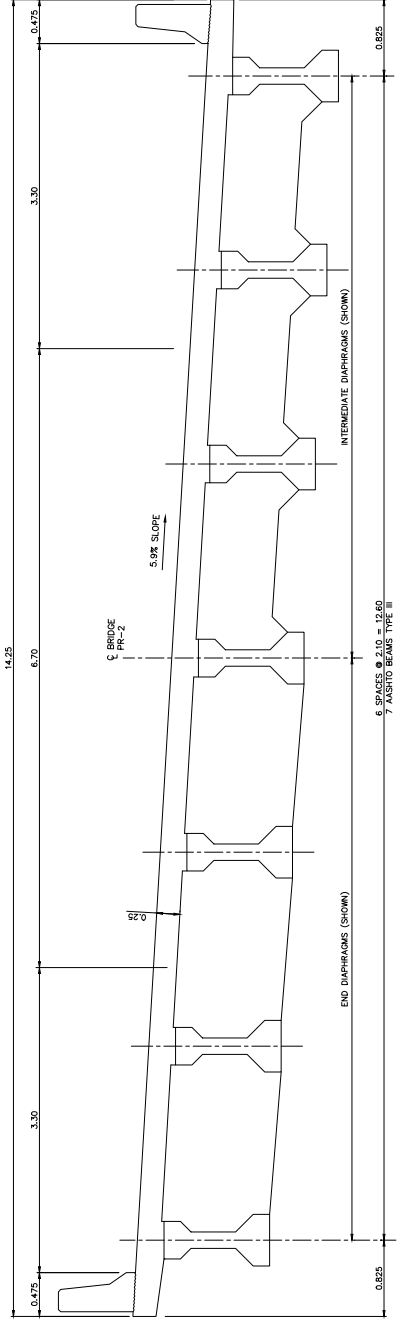
DATE	ISSUED FOR	REVISIONS
07/19/04	ISSUED FOR BID	JAC

SCALE: AS SHOWN

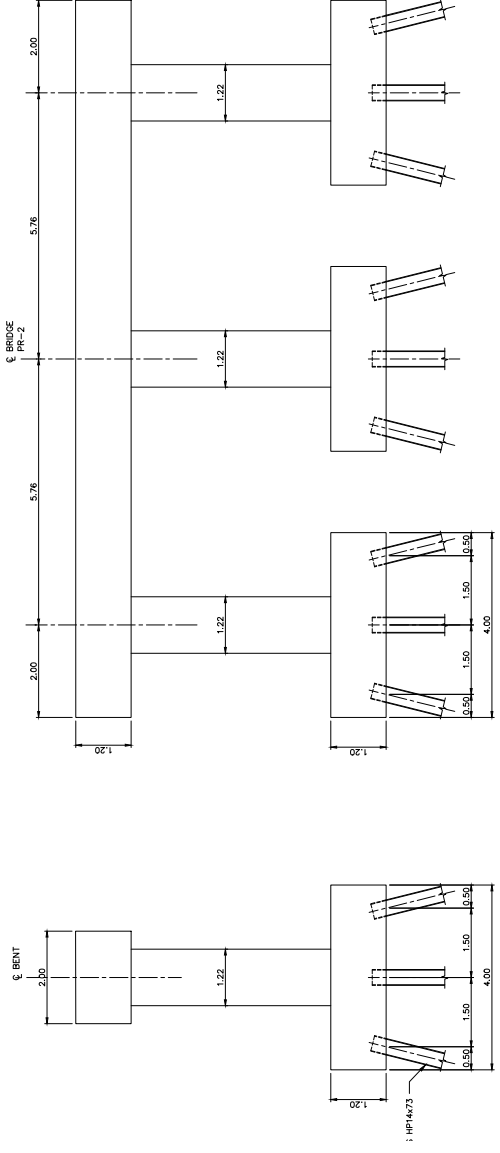
TYPICAL CROSS SECTION  
AND BARRIER DETAILS

BR  
04

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	67	82

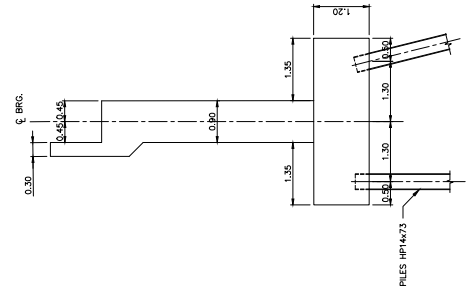


TYPICAL CROSS SECTION  
SCALE: 1/32



BENT ELEVATION  
SCALE: 1/30

BENT SECTION  
SCALE: 1/30



TYPICAL ABUTMENT SECTION  
SCALE: 1/32



DATE	BY	DESCRIPTION
03/03/23		FINAL CHECK SCHEMATIC PLANS
		CHECK
		DESIGNED
		DRAWINGS
		WORK

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BAYAMON INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

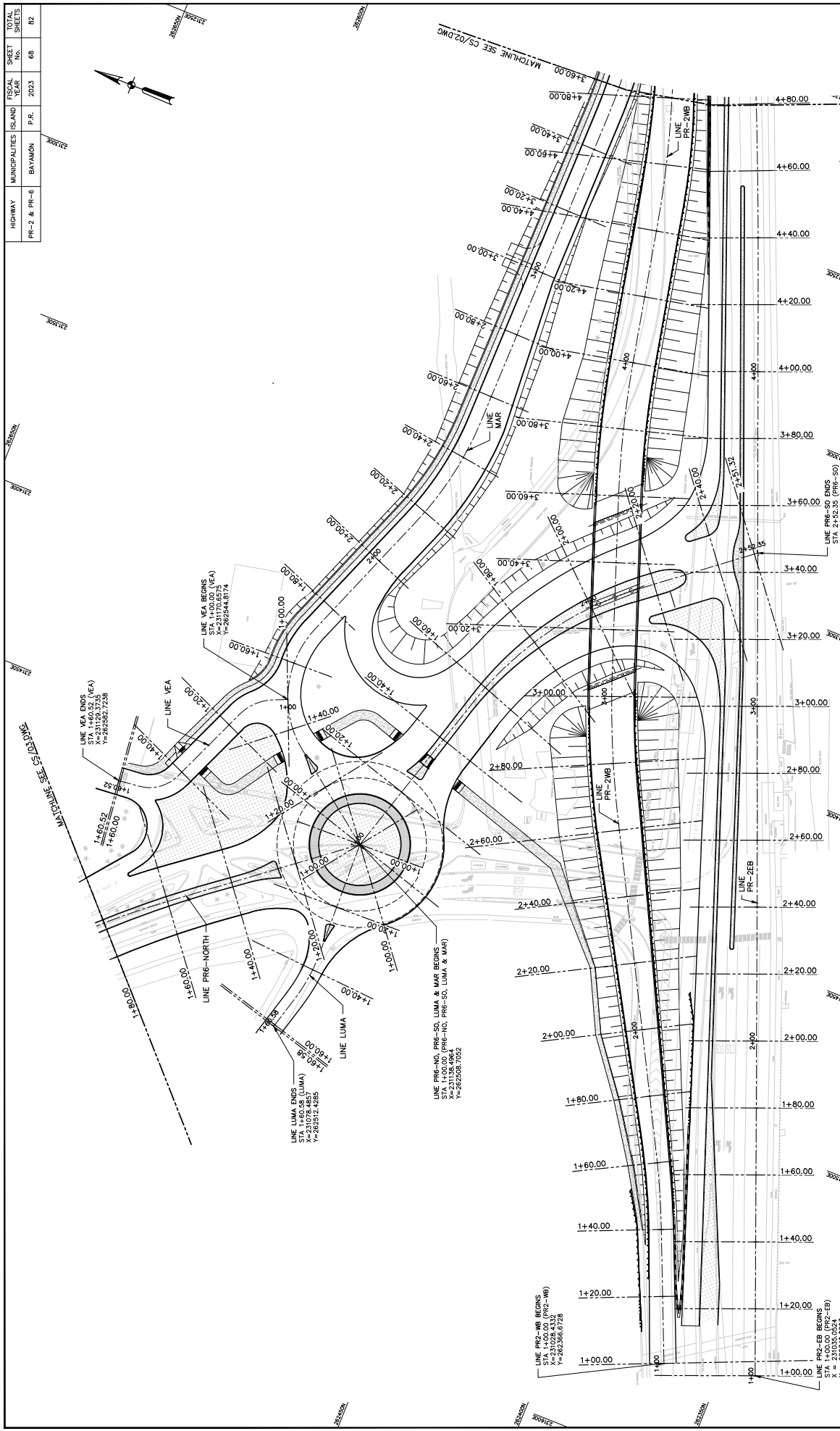
DATE

REVISIONS

SCALE: 1:500

CROSS SECTIONS KEY PLAN

CS 01



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	68	82

WORK	DATE	BY
DESIGN		
DRAWING		
REVISIONS		
CHECK	03/07/23	
FINAL CHECK		

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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON

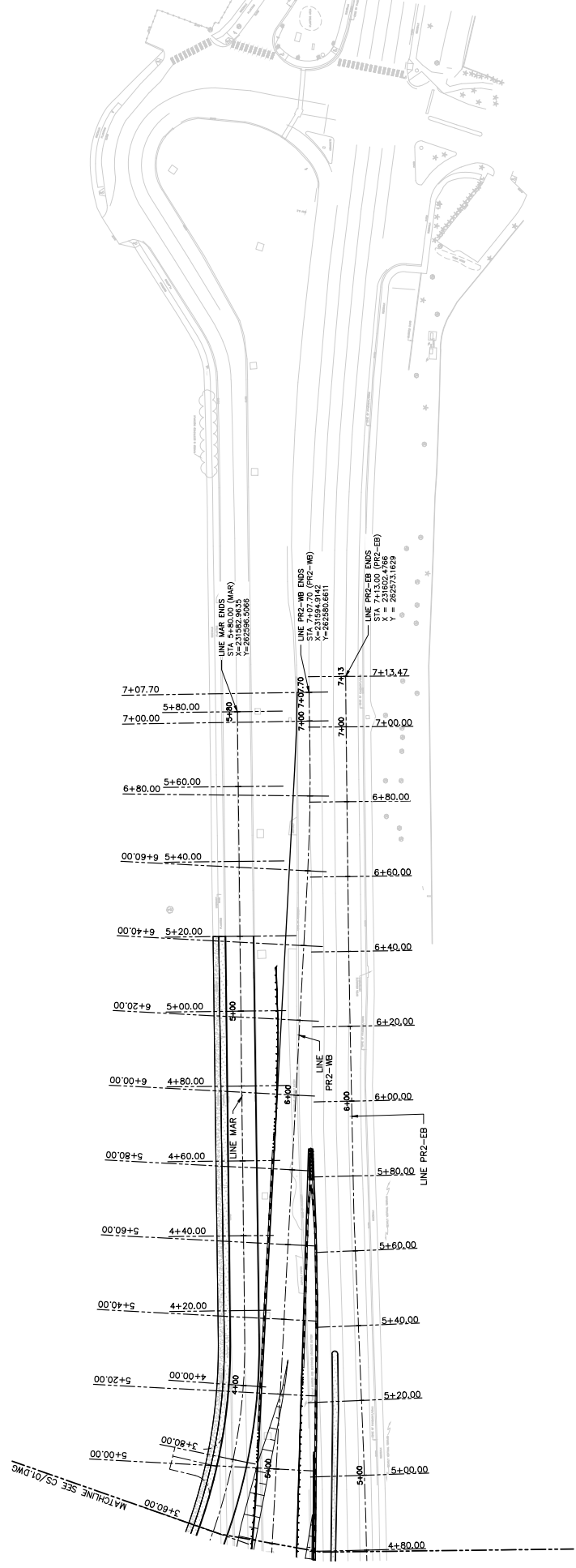
PUERTO RICO

REVISIONS

SCALE: 1:500

CROSS SECTIONS KEY PLAN

CS 02



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	69	82

WORK	BY	DATE
DESIGN		
DRAWING		
ISSUED		
CHECK		
FINAL CHECK	03/03/23	

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MUNICIPALITY OF BAYAMON

CH# 2212  
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TEL: (787) 762-1234  
FAX: (787) 762-1235  
WWW.CMA-PR.COM

BAYAMON

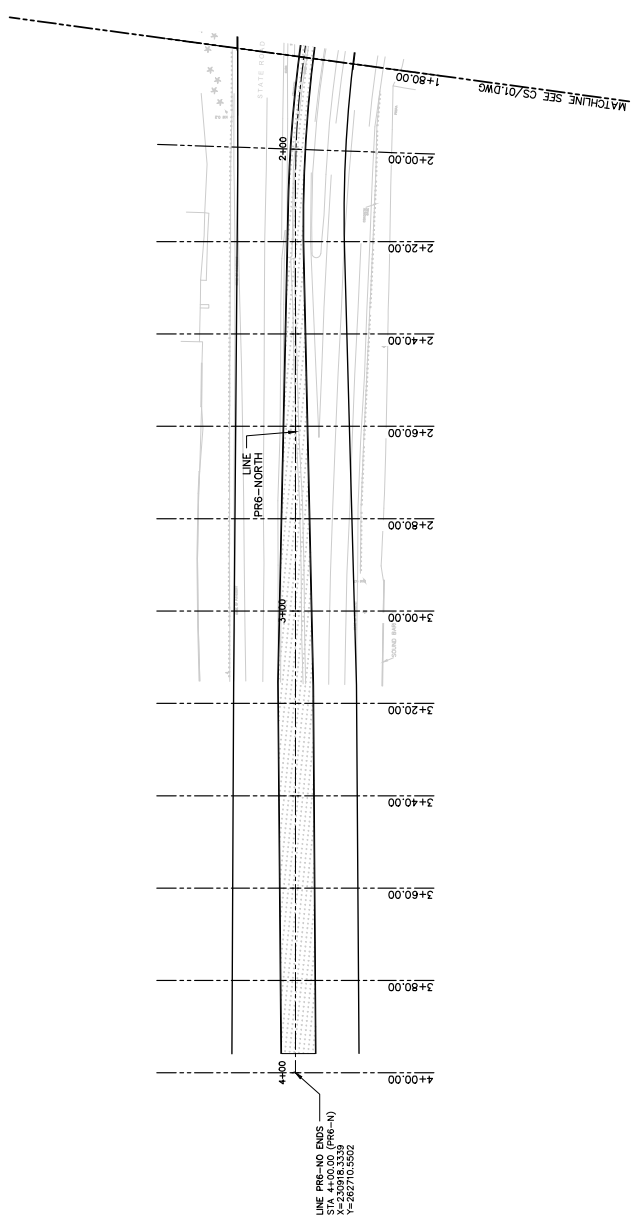
PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS  
PUERTO RICO

REVISIONS	DATE

SCALE: 1:500

CROSS SECTIONS KEY PLAN

CS 03



LINE PR6-NO ENDS  
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2+800.00 <math>Y=282710.3319</math>  
2+800.00 <math>Y=282710.3319</math>

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	70	82



DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

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MUNICIPALITY OF BAYAMON

PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

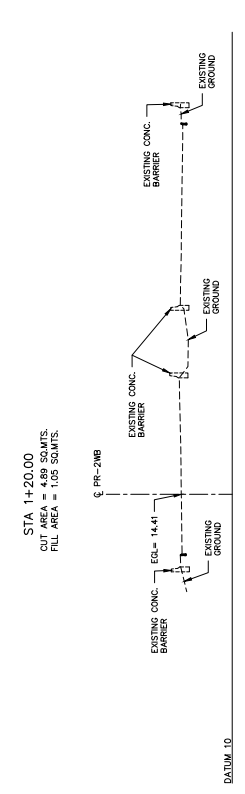
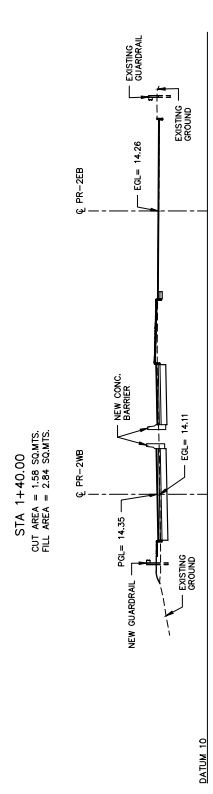
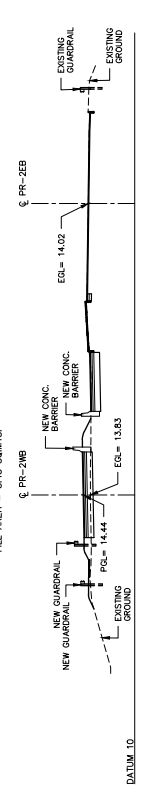
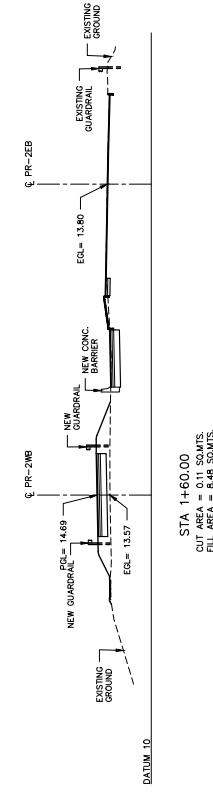
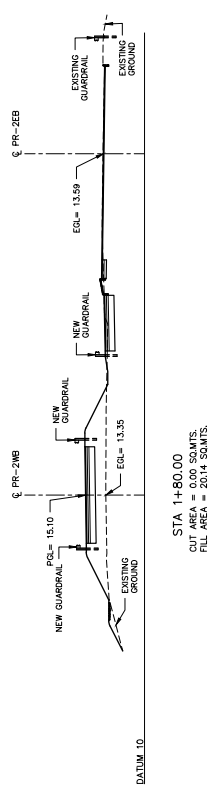
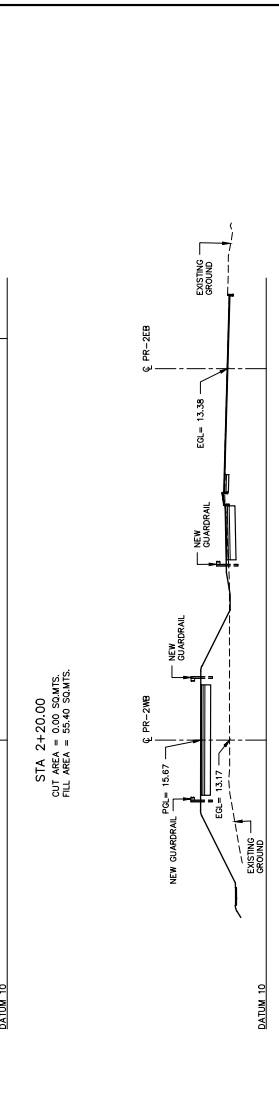
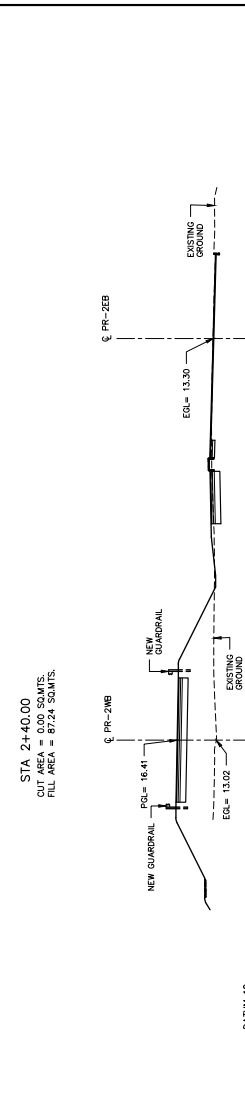
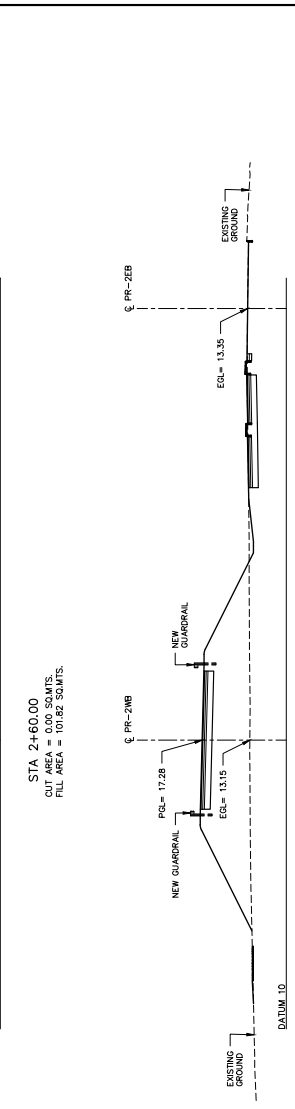
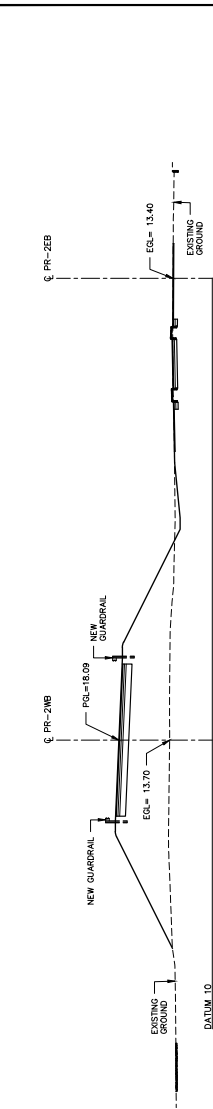
REVISIONS

SCALE: 1:200

CROSS SECTIONS  
LINE PR-2WB & PR-2EB

CS 04

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	71	82



DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/07/23					

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MUNICIPALITY OF BAYAMON

BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

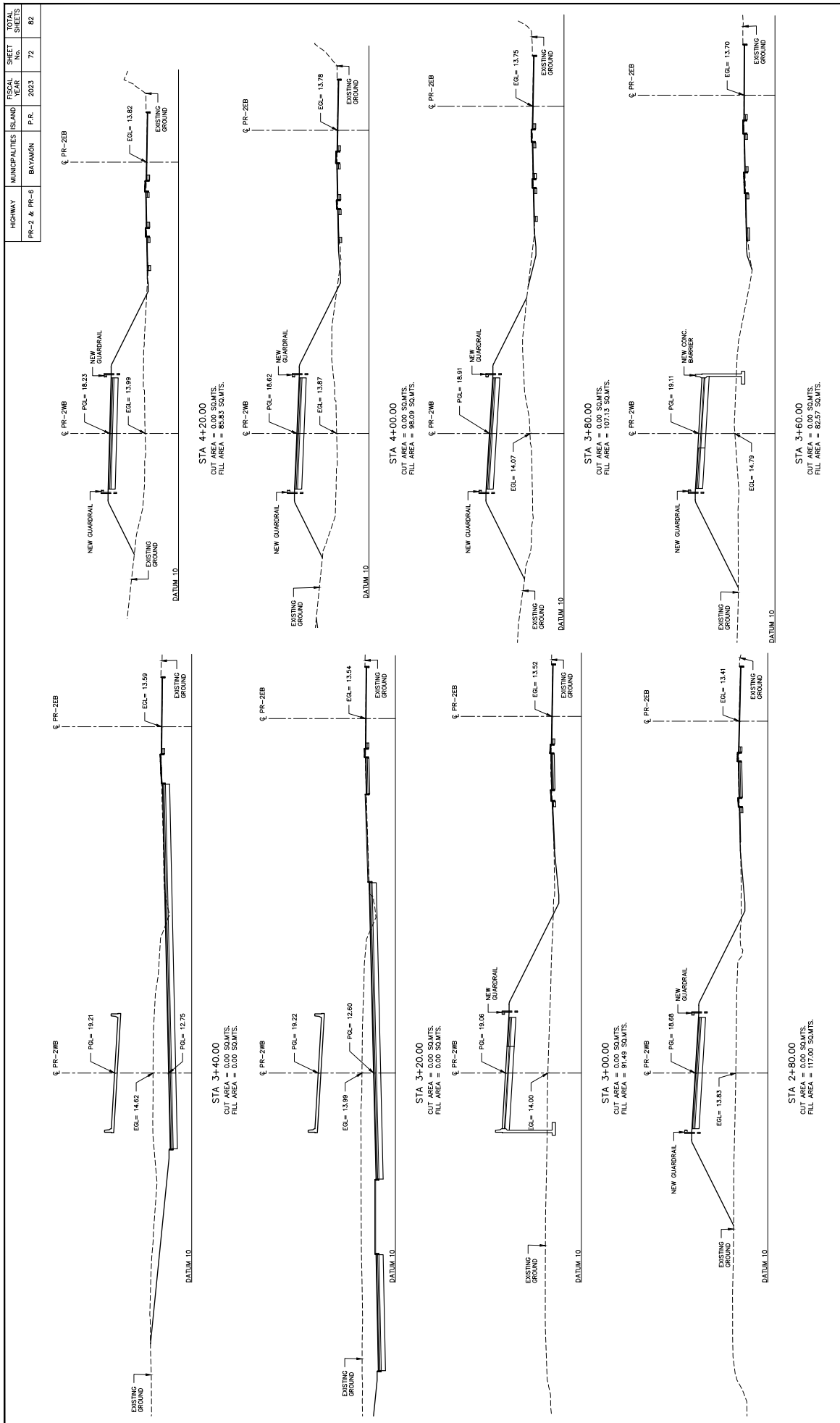
PUERTO RICO

NO.	DATE	REVISIONS

SCALE: 1:200

CROSS SECTIONS  
LINE PR-2WB & PR-2EB

CS 05



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	72	82

DATE	BY	DESCRIPTION
03/02/23		FINAL CHECK
		CHECK
		DESIGNED
		DRAWING
		WORK



MUNICIPALITY OF BAYAMON  
 INTERSECTIONS GEOMETRIC IMPROVEMENTS  
 BAYAMON

2022  
 PUERTO RICO

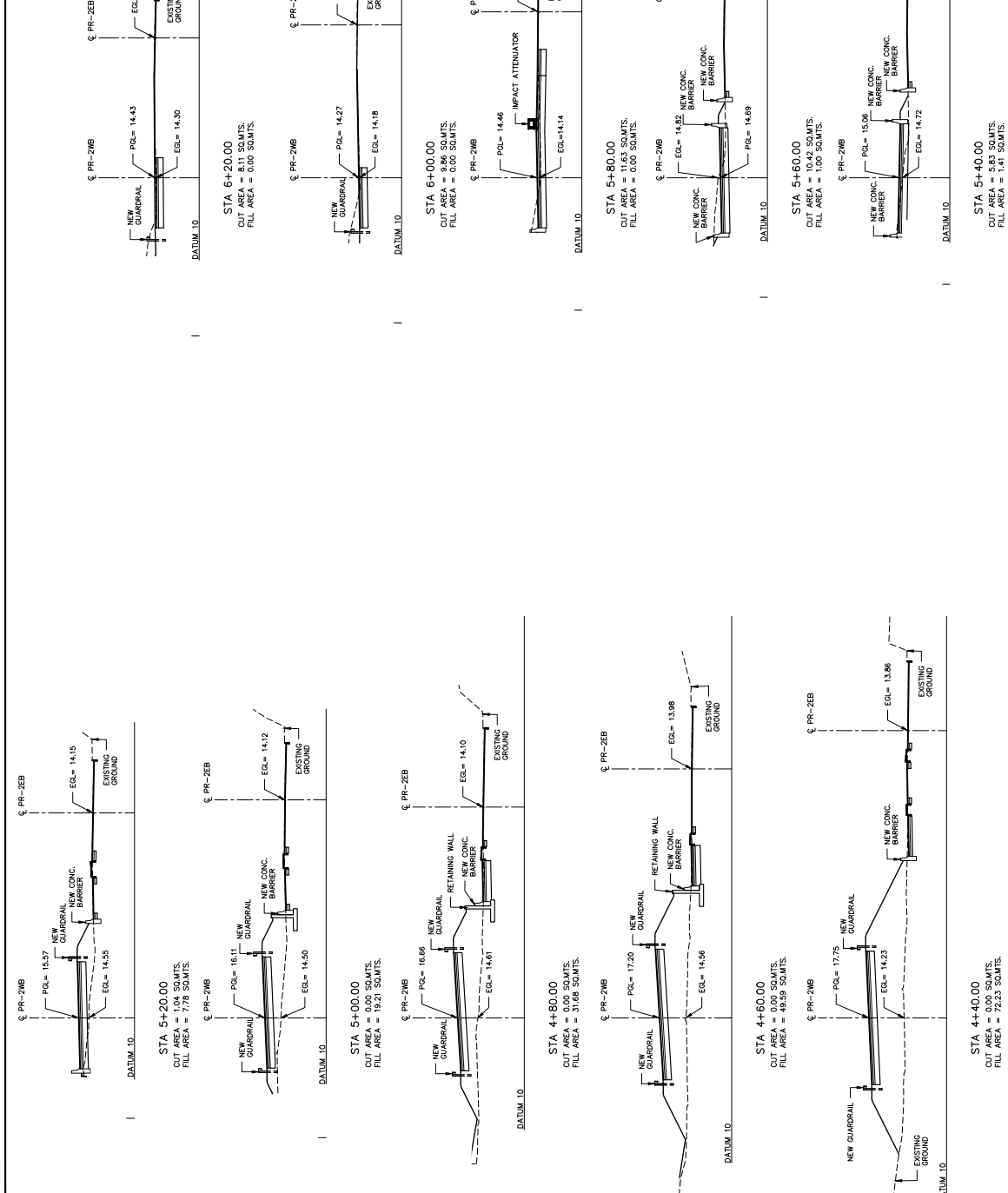
NO.	DATE	REVISIONS

SCALE: 1:200

CROSS SECTIONS  
 LINE PR-2WB & PR-2EB

CS 06

ROAD	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	73	82





DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

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MUNICIPALITY OF BAYAMON

**PR-2 AND PR-6**  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PUERTO RICO

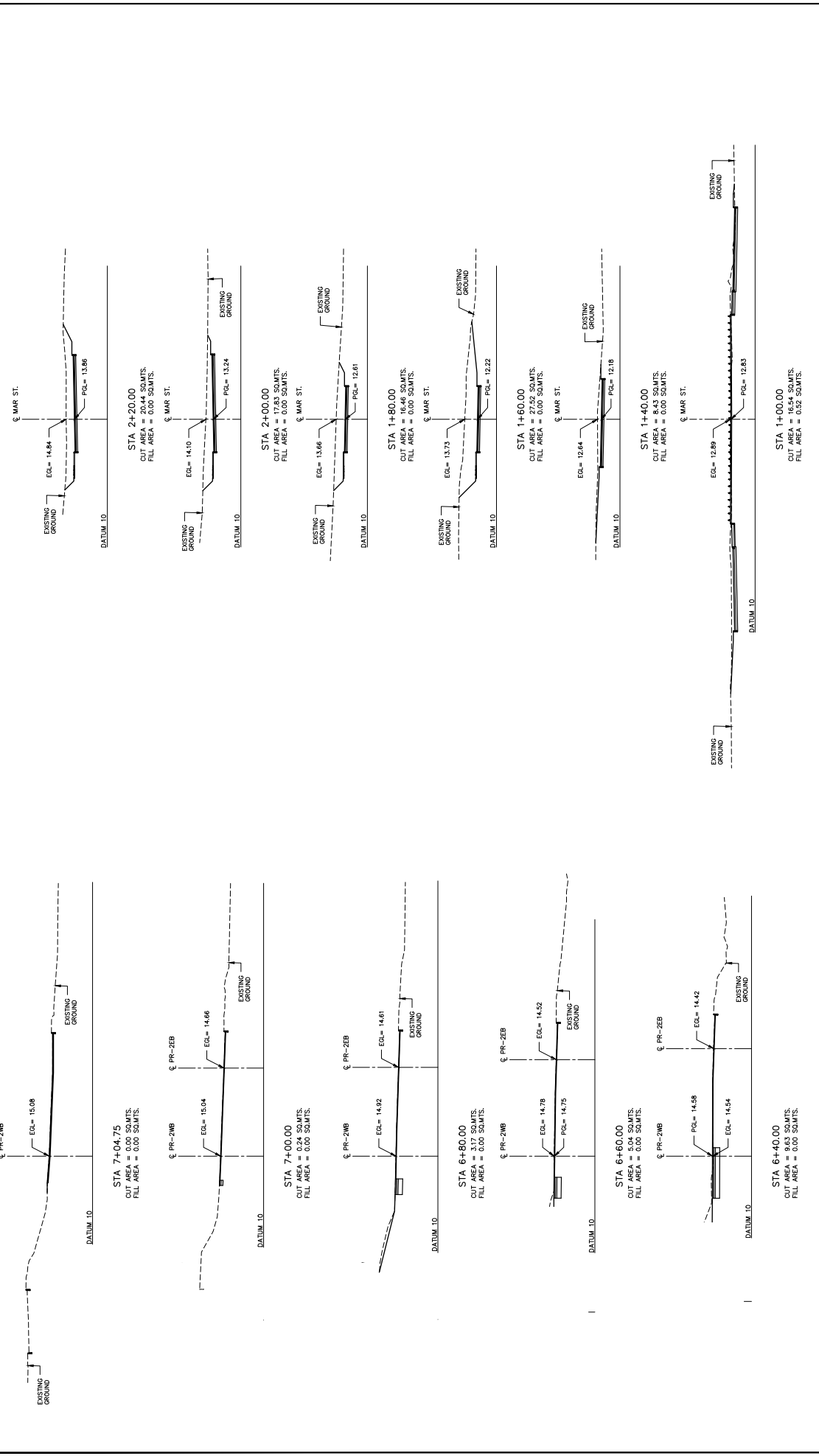
NO.	DATE	REVISIONS

SCALE: 1:200

LINE PR-2WB, PR-2EB & MARGINAL ST.

CS 07

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	74	82



DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/09/23					

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ENGINEERS

MUNICIPALITY OF BAYAMON

BAYAMON

INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6

PUERTO RICO

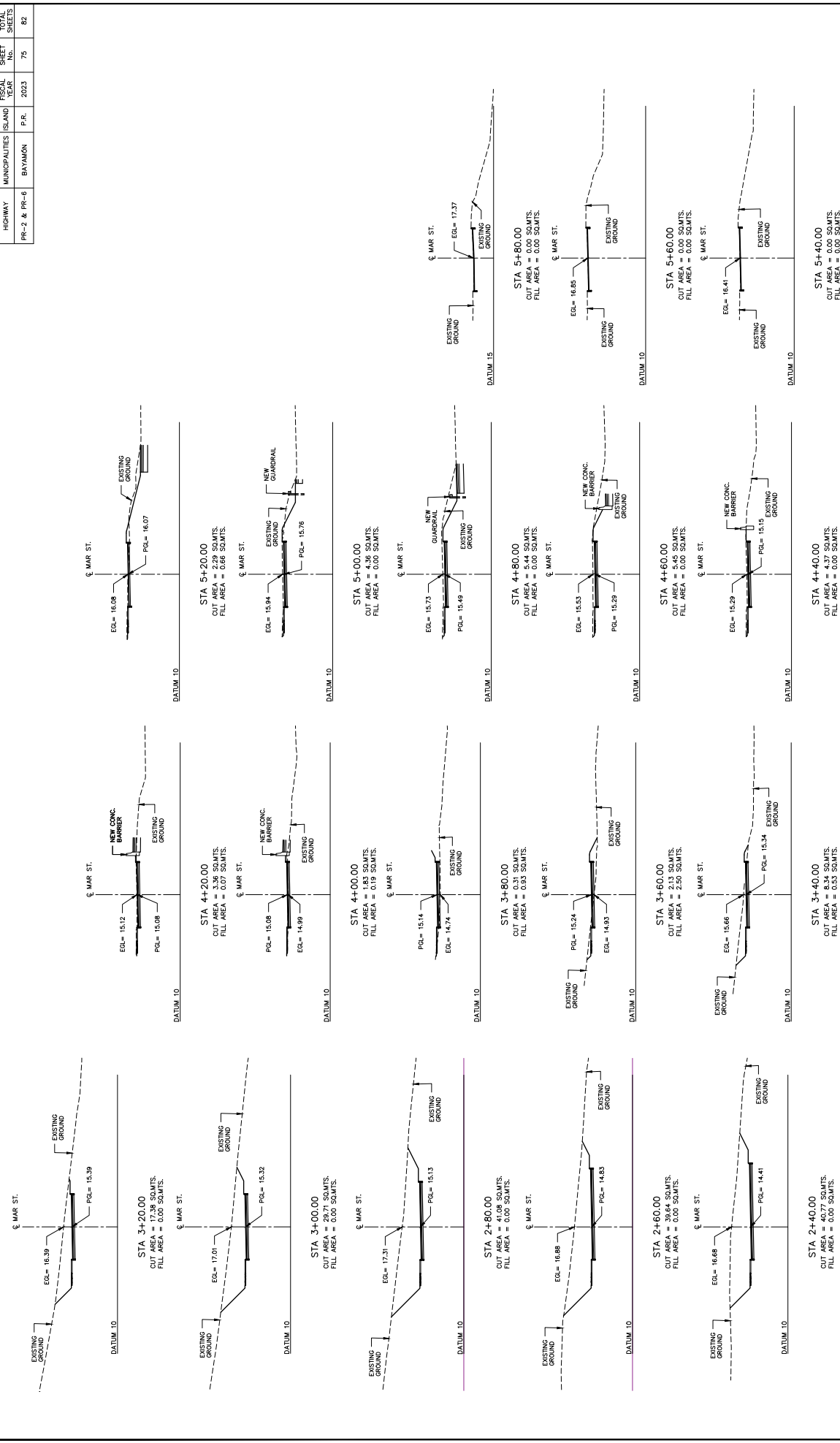
REVISIONS	DATE

SCALE: 1:200

CROSS SECTIONS  
LINE MARGINAL ST.

CS 08

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	75	82





DATE	
DESIGN	
DRAWING	
CHECK	
FINAL CHECK	03/03/23

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PR-2 AND PR-6  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN

PUERTO RICO

NO.	DATE	REVISIONS

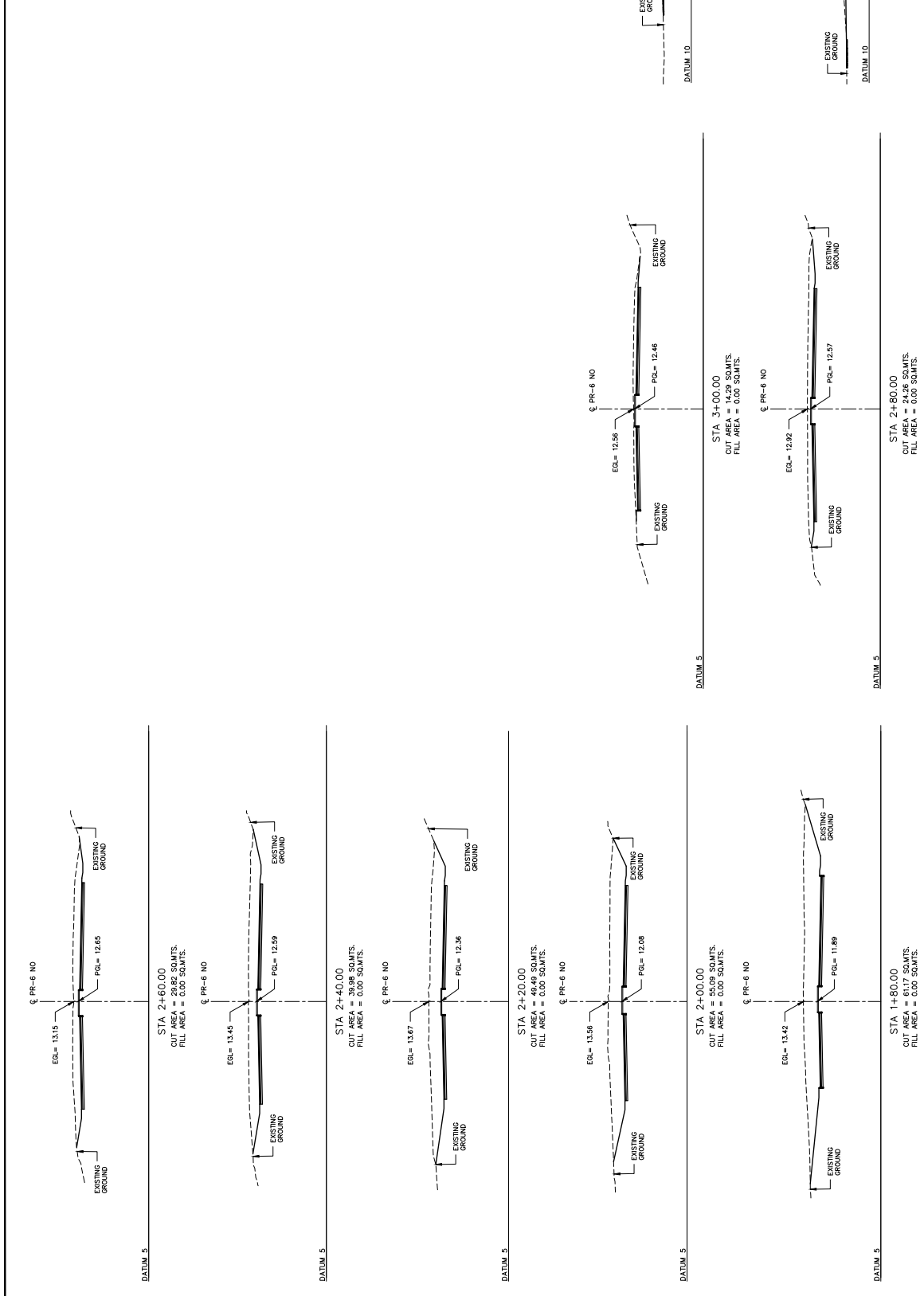
SCALE: 1:200

CROSS SECTIONS

LINE PR-6 NORTH & VILLA ESPANA

CS 10

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NOS.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	77	82



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	78	82

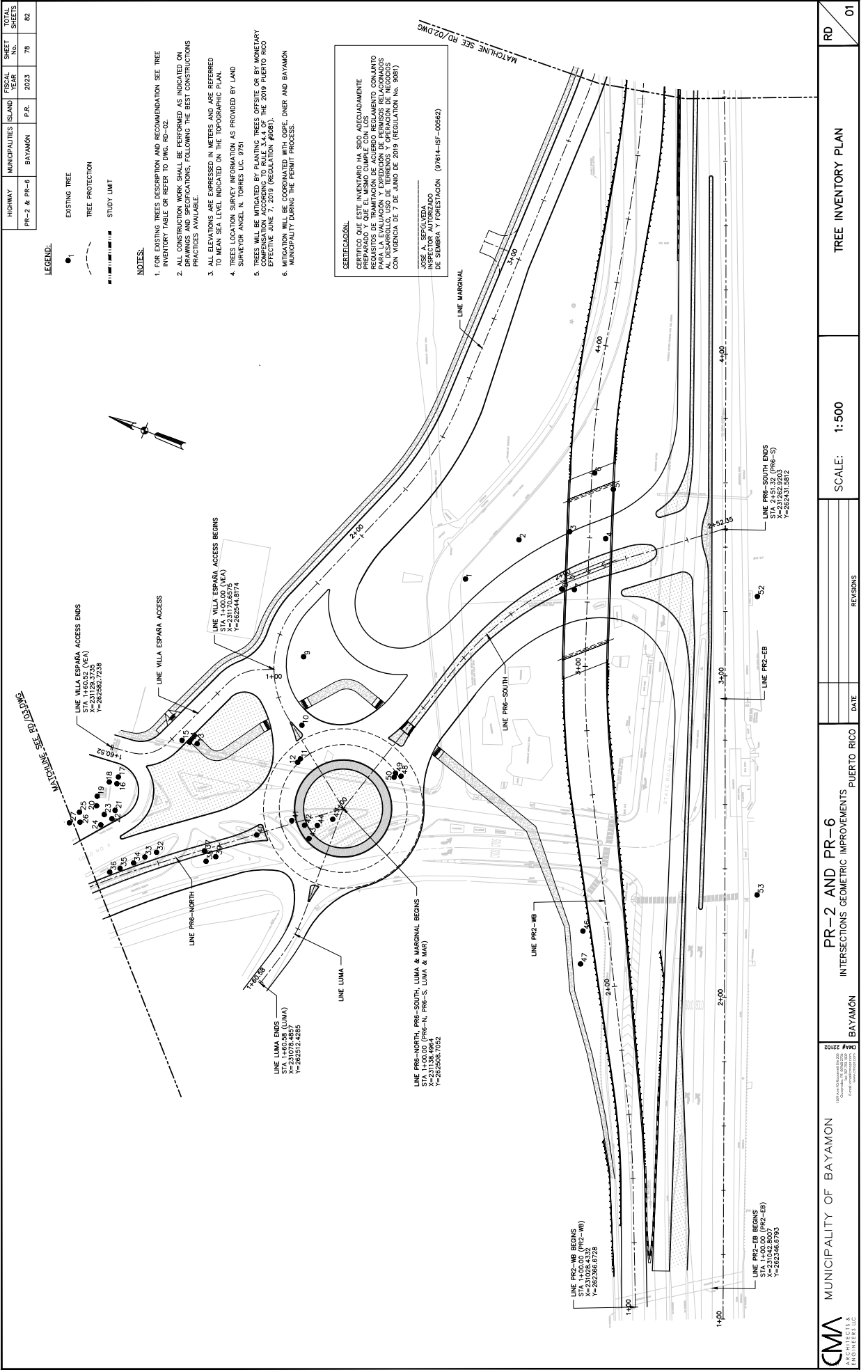
**LEGEND.**

- 1 EXISTING TREE
- TREE PROTECTION
- STUDY LIMIT

**NOTES:**

1. FOR EXISTING TREES DESCRIPTION AND RECOMMENDATION SEE TREE INVENTORY TABLE OR REFER TO DIMG-RD-02.
2. ALL CONSTRUCTION WORK SHALL BE PERFORMED AS INDICATED ON DRAWINGS AND SPECIFICATIONS, FOLLOWING THE BEST CONSTRUCTIONS PRACTICES AVAILABLE.
3. ALL ELEVATIONS ARE EXPRESSED IN METERS AND ARE REFERRED TO MEAN SEA LEVEL INDICATED ON THE TOPOGRAPHIC PLAN.
4. TREES LOCATION SURVEY INFORMATION AS PROVIDED BY LAND SURVEYOR ANGEL N. TORRES LIC. 9751
5. TREES WILL BE MITIGATED BY PLANTING TREES OFFSITE OR BY MONETARY CONTRIBUTION TO THE MUNICIPALITY OF BAYAMÓN, EFFECTIVE JUNE 7, 2019 (REGULATION #987).
6. MITIGATION WILL BE COORDINATED WITH CORP. DNER, DNER AND BAYAMÓN MUNICIPALITY DURING THE PERMIT PROCESS.

**CERTIFICACION.**  
 CERTIFICADO QUE ESTE INVENTARIO HA SIDO ADECUADAMENTE PREPARADO QUE EL MISMO CUMPLE CON LOS REQUISITOS PARA LA EVALUACION Y EMISION DE PERMISOS RELACIONADOS AL DESARROLLO, USO DEL TERRENO Y EMISION DE PERMISOS CON VIGENCIA DEL 7 DE JUNIO DE 2019 (REGULACION No. 9887)  
 JOSE A. SEPULVEDA  
 INGENIERO EN AGRICULTURA Y FORESTACION (97614-ISF-00462)



DATE	BY	DESIGN	DRAWING	CHECK	FINAL CHECK
03/03/23					

NO.	DATE	REVISIONS

MUNICIPALITY OF BAYAMÓN	BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	DATE	REVISIONS
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CMA ARCHITECTS & ENGINEERS	PR-2 AND PR-6	SCALE: 1:500	RD	01
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HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	79	82

RD	02
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WORK	DATE	BY
DESIGN		
DRAWING		
CHECK	03/09/23	
FINAL CHECK		

MUNICIPALITY OF BAYAMON	BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO
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SCALE:	1:500
--------	-------

REVISIONS	DATE

**PR-2 AND PR-6**  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMÓN, PUERTO RICO

CMA ARCHITECT & ENGINEERS  
100 CALLE DE LA UNIVERSIDAD, SUITE 400  
SAN JUAN, PUERTO RICO 00906  
Tel: (787) 763-1234 Fax: (787) 763-1235  
www.cmaarchitect.com

PROJECT # 2202

**TREE INVENTORY PLAN**

CERTIFICACION  
CERTIFICADO QUE ESTE INVENTARIO HA SIDO ADECUADAMENTE  
PREPARADO Y QUE EL MISMO CUMPLE CON LOS REQUISITOS  
ESTABLECIDOS EN LA LEY DE PROTECCION DEL AMBIENTE  
PARA LA EVALUACION Y EMISION DE PERMISOS RELACIONADOS  
AL DESARROLLO, USO DE TERRENOS Y OPERACION DE NEGOCIOS  
CON VIGENCIA DE 7 DE JUNIO DE 2019 (REGULACION No. 9081)

JOSE A. SEPULVEDA  
INSPECTOR AUTORIZADO  
DE SUGERIA Y FORESTACION (97614-ISF-05662)

NOTES:

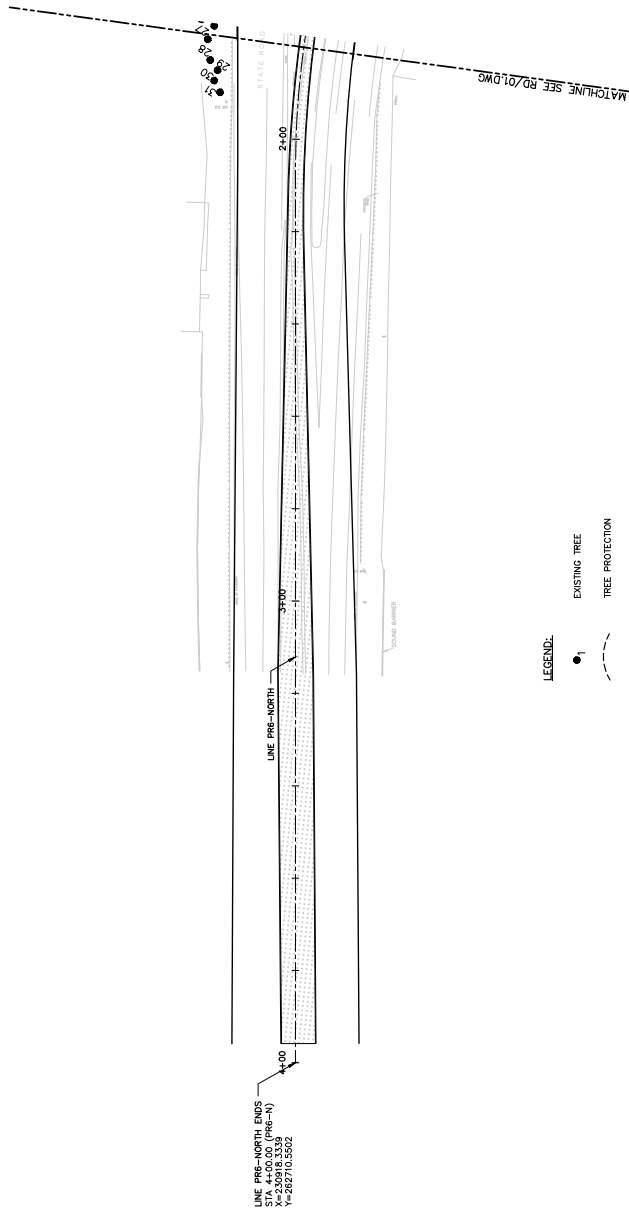
- FOR EXISTING TREES DESCRIPTION AND RECOMMENDATION SEE TREE INVENTORY TABLE OR REFER TO DWG. RD-02.
- ALL CONSTRUCTION WORK SHALL BE PERFORMED AS INDICATED ON PERMITS AND SPECIFICATIONS, FOLLOWING THE BEST CONSTRUCTIONS PRACTICES APPLICABLE.
- ALL ELEVATIONS ARE EXPRESSED IN METERS AND ARE REFERRED TO MEAN SEA LEVEL INDICATED ON THE TOPOGRAPHIC PLAN.
- TREES LOCATION SURVEY INFORMATION AS PROVIDED BY LAND SURVEYOR ANGEL N. TORRES U.C. 9781
- TREES WILL BE MITIGATED BY PLANTING TREES OFFSITE OR BY MONETARY CONTRIBUTION TO THE 2019 PUERTO RICO OFFSHORE FORESTRY PROGRAM, EFFECTIVE JUNE 7, 2019 (REGULATION #9081).
- MITIGATION WILL BE COORDINATED WITH OOSE, DNER AND BAYAMÓN MUNICIPALITY DURING THE PERMIT PROCESS.



MATCHLINE SEE RD/01/DWG



HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	80	82



- LEGEND:**
- EXISTING TREE
  - - - TREE PROTECTION
  - - - - - STUDY LIMIT

**NOTES:**

1. FOR EXISTING TREES DESCRIPTION AND RECOMMENDATION SEE TREE INVENTORY TABLE OR REFER TO DWG. RD-02.
2. ALL CONSTRUCTION WORK SHALL BE PERFORMED AS INDICATED ON DRAWINGS AND SPECIFICATIONS, FOLLOWING THE BEST CONSTRUCTIONS PRACTICES AVAILABLE.
3. ALL ELEVATIONS ARE EXPRESSED IN METERS AND ARE REFERRED TO MEAN SEA LEVEL INDICATED ON THE TOPOGRAPHIC PLAN.
4. TREES LOCATION SURVEY INFORMATION AS PROVIDED BY LAND SURVEYOR ANGEL N. TORRES LIC. 9751
5. TREES WILL BE MITIGATED BY PLANTING TREES OFFSITE OR BY MONETARY COMPENSATION UNDER THE 2019 PUERTO RICO EFFECTIVE JUNE 7, 2019 (REGULATION #8081).
6. MITIGATION WILL BE COORDINATED WITH COSUE DNER AND BAYAMÓN MUNICIPALITY DURING THE PERMIT PROCESS.

**CERTIFICACION:**  
 CERTIFICO QUE ESTE INVENTARIO HA SIDO ADECUADAMENTE ELABORADO DE ACUERDO A LOS REQUISITOS PARA LA EVALUACION Y EMISION DE PERMISOS RELACIONADOS CON LA VELOCIDAD DE TRAFICO EN CARRETERAS CON VELOCIDAD DE 7 DE JUNIO DE 2019 (REGULATION NO. 8081)  
 INGENIERO EN CARRETERAS  
 INSPECTOR AUTORIZADO  
 DE SIEMBRA Y FORESTACION (97614-ISF-00962)

 MUNICIPALITY OF BAYAMON	<b>PR-2 AND PR-6</b> INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO	SCALE: 1:500	<b>TREE INVENTORY PLAN</b>	RD 03
	BAYAMÓN	#2282	DATE	REVISIONS	

DATE	BY	DESIGN	CHECK	FINAL CHECK
				03/09/23

DATE	BY	DESIGN	CHECK	FINAL CHECK
03/03/23				

**CMA**  
ARCHITECT &  
ENGINEERS

MUNICIPALITY OF BAYAMON  
INTERSECTIONS GEOMETRIC IMPROVEMENTS

PR-2 AND PR-6  
PUERTO RICO

BAYAMON

SCALE: NTS

REVISIONS

DATE

RD 04

REFORESTATION DETAILS

FISCAL YEAR 2023

MUNICIPALITIES BAYAMON

PR-2 & PR-6

TOTAL SHEETS 82

SHEET NO. 81

ISLAND P.R.

DATE: March 10, 2023 8:36 AM USER: Francisco Rivera Rosendo

FILE: 19271-NB-22.DWG

DATE: 01/17/2020

USER: BRUNO

PROJECT: MORRIS LICE CENTER CHECKOUT (B-04-DWG)

SEQUENCE: 26

NO.	COMMENTS	DATE	BY	REVISIONS
1	Clasificación de terreno	13	5	3
2	Clasificación de terreno	26	46	3
3	Clasificación de terreno	30	46	3
4	Clasificación de terreno	11	30	3
5	Clasificación de terreno	24	50	3
6	Clasificación de terreno	28	40	3
7	Clasificación de terreno	16	40	3
8	Clasificación de terreno	16	40	3
9	Clasificación de terreno	12	40	3
10	Clasificación de terreno	24	40	3
11	Clasificación de terreno	28	45	3
12	Clasificación de terreno	9	45	3
13	Clasificación de terreno	8	25	3
14	Clasificación de terreno	8	25	3
15	Clasificación de terreno	8	25	3
16	Clasificación de terreno	13	4	3
17	Clasificación de terreno	10	20	3
18	Clasificación de terreno	10	20	3
19	Clasificación de terreno	10	20	3
20	Clasificación de terreno	10	20	3
21	Clasificación de terreno	10	20	3
22	Clasificación de terreno	10	20	3
23	Clasificación de terreno	10	20	3
24	Clasificación de terreno	10	20	3
25	Clasificación de terreno	10	20	3
26	Clasificación de terreno	10	20	3
27	Clasificación de terreno	10	20	3
28	Clasificación de terreno	10	20	3
29	Clasificación de terreno	10	20	3
30	Clasificación de terreno	10	20	3
31	Clasificación de terreno	10	20	3
32	Clasificación de terreno	4	20	3
33	Clasificación de terreno	10	20	3
34	Clasificación de terreno	8	20	3
35	Clasificación de terreno	8	20	3
36	Clasificación de terreno	8	20	3
37	Clasificación de terreno	8	15	3
38	Clasificación de terreno	8	15	3
39	Clasificación de terreno	8	15	3
40	Clasificación de terreno	4	4	3
41	Clasificación de terreno	8	15	3
42	Clasificación de terreno	8	15	3
43	Clasificación de terreno	8	15	3
44	Clasificación de terreno	8	15	3
45	Clasificación de terreno	8	15	3
46	Clasificación de terreno	13	40	3
47	Clasificación de terreno	28	45	3
48	Clasificación de terreno	4	30	3
49	Clasificación de terreno	4	30	3
50	Clasificación de terreno	4	30	3
51	Clasificación de terreno	36	50	3
52	Clasificación de terreno	13	40	3

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMON	P.R.	2023	81	82

DATE:	DATE:	DATE:	DATE:
10/03/23	09/07/23	09/29/23	09/29/23
DESIGN	DESIGN	DESIGN	DESIGN
DRAWING	DRAWING	DRAWING	DRAWING
CHECK	CHECK	CHECK	CHECK
TOTAL SHEETS	TOTAL SHEETS	TOTAL SHEETS	TOTAL SHEETS
82	82	82	82

DATE:	DATE:	DATE:	DATE:
10/03/23	09/07/23	09/29/23	09/29/23
DESIGN	DESIGN	DESIGN	DESIGN
DRAWING	DRAWING	DRAWING	DRAWING
CHECK	CHECK	CHECK	CHECK
TOTAL SHEETS	TOTAL SHEETS	TOTAL SHEETS	TOTAL SHEETS
82	82	82	82

**DATA:**

- 7 TOTAL
- 7 REMAIN
- 1 TO BE CUT

**TREES TO BE AFFECTED**

- 7 TREES

**REQUIRED MITIGATION**

- TREES BY FERMIER:
- TREES EVERY 20 FT. = 0 FT. - 20 = 0 TREES
- TREES BY PARKING SPACES:
- TREES PER 4 SPACES = 0 - 14 = 0 TREES

- 2 TREES
- 2 TREES < 24" = 14 X 2 = 2 TREES
- OWNER AND PRIMA AGREEMENT 2017-00017-A)

**COMPENSATORY MITIGATION**

- TOTAL = 2 TREES

**III PROPOSED TREES PLANTING NOTES.**

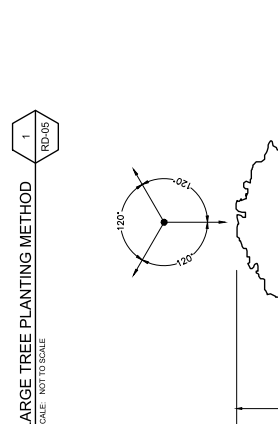
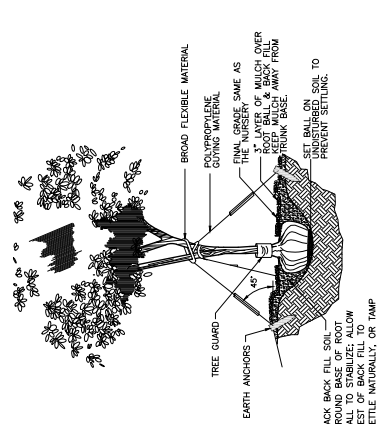
1. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING AS SHOWN.
2. ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY ANSI Z60.1 (RECOMMENDED PRACTICES FOR TREE STOCK), PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. UNLESS SPECIFICALLY NOTED, ALL PLANTS SHALL BE OF SPECIMEN QUALITY, EXCEPTIONALLY HEAVY, SYMMETRICAL, SO TRAINED OR FIRMED IN DEVELOPMENT AND APPEARANCE AS TO BE TRUNK-FREE OF DISSEASURES, BRUISES, WOUNDS, SPLITTING, AND HEAVILY BRANCHED OR DEEPLY FOLIATED WHEN THEY SHALL BE SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF. TREE TRUNKS SHALL BE FREE OF SORES, BARK EATING INSECTS, OR OTHER CONDITIONS THAT WOULD PREVENT VIGOROUS GROWTH.
4. ALL PLANTING ACTIVITIES SHALL BE DONE UNDER THE FULL TIME SUPERVISION OF A CERTIFIED ARBORIST, AUTHORIZED INSPECTOR FOR PLANTING AND FORESTRATION OR LICENSED LANDSCAPE ARCHITECT. ACCORDING TO PLANNING BOARD JOINT REGULATION NO. 9081 EFFECTIVE JUNE 7, 2019.
5. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
6. NO SUBSTITUTION OF PLANT SPECIES WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER.
7. ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES WILL BE A PLANT WITH EQUIVALENT OVERALL CHARACTERISTICS AS TO CORONA, LEAF AND FRUIT, COLOR, TIME OF BLOSSOM AND ADAPTABILITY TO THE SITE CONDITIONS.
8. ALL PROPOSED NEW TREES SHALL BE STAKED OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. THE CONTRACTOR SHALL ADJUST THE LOCATIONS OF THE STAKES AS ORDERED BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DELIVERY OF TREE PITS AND THE DELIVERY OF MATERIALS FOR PLANTING. THE CONTRACTOR SHALL AVOID DAMAGE TO ALL UTILITIES DURING CONSTRUCTION.
9. THE MINIMUM DISTANCE SHALL BE PLANTED 15 FEET FROM ELECTRICAL LEADINGS.
10. NO TREE SHALL BE PLANTED ABOVE UNDERGROUND WATER PIPES. THE MINIMUM DISTANCE SHALL BE PLANTED 15 FEET.
11. CONTRACTOR SHALL STAKE OR CUY TREES INSURING THAT THE TRUNK IS NOT DAMAGED AND THAT THE STAKING SYSTEM SHALL ADEQUATELY SUPPORT THE TREE IN ADVERSE WITH CONDITIONS.
12. STAKING AND GIVING SHALL BE COMPLETED IMMEDIATELY AFTER PLANTING. TREES UP TO 2" (5cm) CALIPER ARE TO BE STAKED WITH TWO STAKES AND SEPARATE FLEXIBLE TIES AS SHOWN ON DRAWING. TREES OVER 2" (5cm) CALIPER ARE TO BE STAKED AT APPROXIMATELY A 45-DEGREE ANGLE TO GROUND PLANE AND DISTRIBUTED AT 120-DEGREE INTERVALS AROUND THE TRUNK. ANCHORS SHALL BE DRIVEN TO MINIMUM VERTICAL DEPTH AS FOLLOWS.
13. TREE CARE OPERATION SHALL COMPLY WITH THE GUIDELINES ESTABLISHED BY ANSI Z620-1996 (THE AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS TREE SHARUB & OTHER WOODY PLANTS MAINTENANCE STANDARDS PRACTICES) AND ANSI Z621-1996 (FERTILIZATION STANDARD PRACTICES) STANDARDS.
14. ALL WEEDS OR SOFT TILLAGE WORK SHALL BE DONE BY A FIRM EMPLOYEES IN LAWN WORK. THE FULL-TIME SUPERVISION OF THE PREPARATION OF THE SUB GRADE SHALL BE DONE UNDER THE SUPERVISION OF A GRADUATE OF A RECOGNIZED TURF MANAGEMENT OR LANDSCAPE OPERATIONS PROGRAM.

**I GENERAL NOTES.**

1. UNLESS NOTED OTHERWISE, NEW TREES PLANTED IN ROWS SHALL BE SPACED AS SHOWN IN DRAWINGS. EXISTING TREES TO BE REMOVED SHALL BE MARKED AS TO BE REMOVED IN CLUSTERS WILL BE SUBJECTED TO THE SITE FINAL CONDITIONS. NEW TREES TO BE PLANTED SHALL BE INDICATED BY THE PROJECT DESIGNERS.
2. FINAL LOCATION SHALL BE DETERMINED ON SITE BY CONTRACTOR PRIOR TO DIGGING OF PLANTING HOLE. ON DESIGNATED REFORESTATION AREAS.
3. CONTRACTOR SHALL ASSURE THAT NO DAMAGE IS MADE TO EXISTING UTILITY LINES WHILE EXCAVATING FOR PLANTING MATERIAL.
4. PLANTING SOIL AND TRASH SHALL NOT BE DEPOSITED AROUND EXISTING AND NEW PLANTED TREES.
5. TREES SHALL NOT BE PLANTED IN COMPACTED SOIL AREA WITHIN OF PLANTING HOLE SHALL BE 3 TIMES ROOT BALL DIAMETER IN HIGHLY COMPACTED SOIL.
6. CONTRACTOR SHALL ASSURE PROPER DRAINAGE AND AERATION OF SOIL.
7. CONTRACTOR SHALL PROTECT EXISTING UTILITIES.
8. TO AVOID ROOT PHONING ON TREES PLANTED, ROOT CONTROL BARRIERS CAN BE USED.
9. IF A ROOT CONTROL SYSTEM WILL BE USED, THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER FOR THE SPECIFICATIONS OF THE SYSTEM TO BE USED.
10. RESTORE ALL DISTURBED SURFACES FOLLOWING COMPLETION OF CONSTRUCTION.
11. UPON COMPLETION OF THE REFORESTATION PLAN THE OWNER SHALL BE RESPONSIBLE FOR MAINTAINING AN 100% SURVIVAL RATE OF THE TREES PLANTED BY THE END OF A ONE YEAR PERIOD.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING MONITORING, MAINTENANCE AND CORRECTIVE MEASURES SUCH AS WATERING, FERTILIZING, REPLANTING AND/OR REGRADING THE FORE STATION AT THE END OF A ONE YEAR PERIOD.
13. MAINTENANCE SHALL CONSIST OF PRUNING, WATERING, CULTIVATING, MULCHING, AND WEEDING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND APPLYING SUCH SPRAYS OR OTHER MATERIALS AS ARE NECESSARY TO KEEP PLANTINGS FREE OF INSECTS AND DISEASES AND IN VIGOROUS CONDITION.
14. PLANTING AREAS AND PLANTS SHALL BE PROTECTED AT ALL TIMES AGAINST TRESPASSING AND OTHER DAMAGE. IF THE CONTRACTOR BELIEVES THAT A PLANT BECOMES DAMAGED OR INJURED, IT SHALL BE TREATED OR REPLACED AS DIRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
15. THE AUTHORIZED INSPECTOR FOR PLANTING AND FORESTRATION, HIRED BY THE OWNER SHALL BE INSPECTED THE PLANTING PLAN EVERY THREE MONTHS, TO FINAL CERTIFICATION WHEN THE WORKS END.

**II TRANSPORTATION & STORAGE OF PLANT MATERIAL NOTES:**

1. BEFORE ANY MATERIAL IS GOING FOR REFRESHMENT, OVER PLANT MATERIAL-HEAD STORAGE PLANT MATERIAL, IN STORAGE WILL BE REJECTED IF EXCESSIVE GROWTH OR DIE BACK OF BRANCHES HAS OCCURRED IN STORAGE.
2. BRANCHES SHALL BE TIED WITH ROPE OR TWINE ONLY, IN SUCH A MANNER THAT NO DAMAGE WILL OCCUR TO THE BARK AND BRANCHES.
3. BRANCHES SHALL BE TIED WITH ROPE OR TWINE ONLY, IN SUCH A MANNER THAT NO DAMAGE WILL OCCUR TO THE BARK AND BRANCHES.
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15. BRANCHES SHALL BE TIED WITH ROPE OR TWINE ONLY, IN SUCH A MANNER THAT NO DAMAGE WILL OCCUR TO THE BARK AND BRANCHES.



**RED-05**

RD-05

2

SCALE: NOT TO SCALE

CMA ARCHITECT & ENGINEERS

MUNICIPALITY OF BAYAMON

PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS

BAYAMON PUERTO RICO

DATE: 09/29/23 BY: [ ]

REVISIONS

DATE: [ ]

SCALE: NTS

RD 05

REFORESTATION DETAILS

**CERTIFICACION:**

RESERVADO QUE SE ASESUREN LAS CONDICIONES DE ADECUAMIENTO PREPARADO Y QUE EL MISMO CUMPLE CON LOS REQUISITOS DE TRATAMIENTO DE ADECUO, REGLAMENTO COMUNITARIO PARA LA PROTECCION DEL MEDIO AMBIENTE Y LA PRESERVACION AL DESARROLLO, USO DE TERRENOS Y OPERACION DE NEGOCIOS CON VIGENCIA DE 7 DE JUNIO DE 2019 (REGULATION NO. 9081)

JOSE A. SEPULVEDA  
INSPECTOR AUTORIZADO  
DE SIEMBRA Y REFORESTACION (9704-ISF-00662)

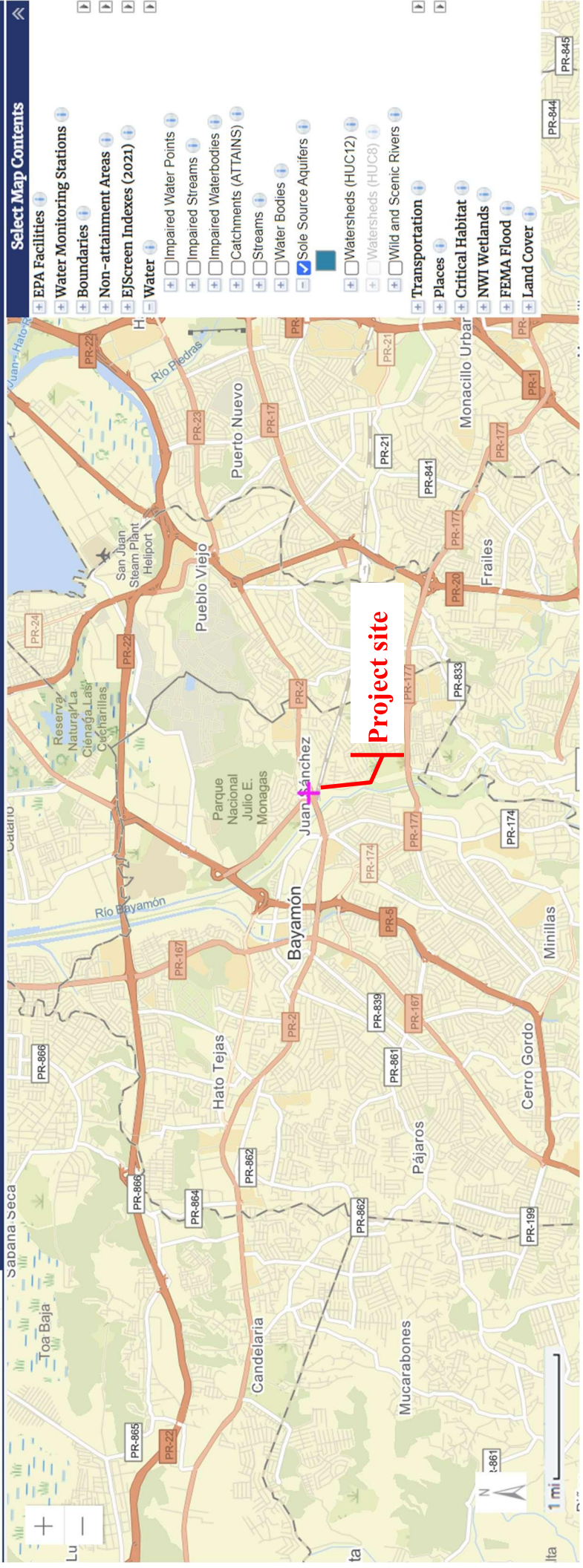
**Attachment 11: Sole Source Aquifers Map**

# Sole Source Aquifers Map

PR-CRP-001109 - Geometric Improvements to PR-2 & PR-6 Intersection

**Coord (lat/log): 18.396966°, -66.138431°**

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Source: U.S. EPA, 2023, accessed May 17, 2023, at URL <https://nepassisttool.epa.gov/nepassist/nepamap.aspx> Prepared by ICF

**Attachment 12: Wetlands Map**





U.S. Fish and Wildlife Service

# National Wetlands Inventory

## PR-CRP-001109, Bayamon

### Geometric Improvements to PR-2 & PR-6 Intersection



October 20, 2023

#### Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



Prepared by ICF

National Wetlands Inventory (NWI)  
This page was produced by the NWI mapper

**Attachment 13: Wetlands Site Visit Report and Photos**



ARCHITECTS &  
ENGINEERS LLC

Municipio Autónomo de Bayamón

## OBSERVATIONS REPORT

July 11, 2023

CLIENT

DATE

PR-2 & PR-6 Intersection Improvement

22102

PROJECT NAME - LOCATION

CMA JOB No.

July 11, 2023

José A. Sepúlveda

VISIT DATE, TIME

PREPARED BY:

PRESENT AT SITE:

DISTRIBUTION:

José A. Sepúlveda

PREPARED BY:

ISSUED DATE: 07-23-2023

### 1. INTRODUCTION

The proposed project consists of the improvement of PR-2 & PR-6 Intersection. According to USFWS National Wetland Inventory Map (<https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>) (See Attachment USFWS National Wetland Inventory Map) the figure depicts that part of the proposed project is located within wetland areas. The NWI maps for the area were photo interpreted based on 1983 imagery, in which the composition of the flora, visible hydrology and geography were identified. Based on the information obtained, the areas were classified according to the Classification of Wetlands and Deepwater Habitats of the United States (FWS/OBS - 79/31. December 1979).

There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site. Based on site visits to the project, the area is not located within wetland area. Therefore, the proposed project will not impact any wetland areas.

### 2. SITE VISIT AND OBSERVATIONS

As requested by Bayamon Municipality a site visit was performed on July 11, 2023, to determine the conditions at the project area and if any wetland indicators are present. During our site visit no wetlands indicators are present on the proposed project activities. See enclosed Wetland Determination Data Form – Caribbean Islands Region and the location of the Observation Point (OP-1).

### 3. ISSUES AND CONCERNS

To avoid any impact to any nearby stream such as Rio Bayamón all construction activities and staging areas shall be within the limits of the project construction.



#### 4. PHOTOGRAPHS



Photo No. 1 View of the PR-2 north area looking west. No wetland present.



Photo No. 2 View of the PR-2 north area looking northeast. No wetland present.





Photo No. 3 Soil sample at OP-1 No wetland indicators.



Photo No. 4 Soil sample at OP-1





Photo No. 4 Electrical Tower lines north of PR-2. No wetland indicators.

END OF DOCUMENT





U.S. Fish and Wildlife Service

# National Wetlands Inventory

## PR-2 & PR-6 Intersection Improvements



U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands\_team@fws.gov

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

July 11, 2023

### Wetlands

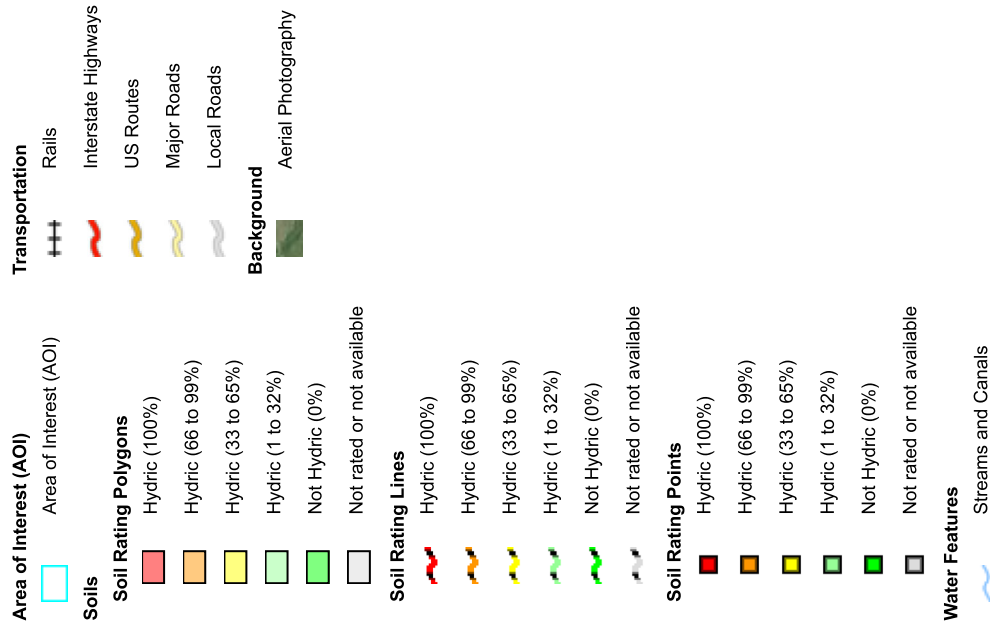
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine



Hydric Rating by Map Unit—San Juan Area, Puerto Rico  
(PR-2)



## MAP LEGEND



## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Juan Area, Puerto Rico  
 Survey Area Data: Version 16, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 23, 2022—Mar 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AmC	Almirante clay, 5 to 12 percent slopes	0	6.3	28.3%
To	Toa silty clay loam, 0 to 2 percent slopes, occasionally flooded	5	3.4	15.1%
Uv	Urban land-Vega Alta complex, 2 to 12 percent slopes	0	9.7	43.5%
W	Water	0	2.9	13.1%
<b>Totals for Area of Interest</b>			<b>22.4</b>	<b>100.0%</b>



## Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

### References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

## Rating Options

*Aggregation Method: Percent Present*

*Component Percent Cutoff: None Specified*

*Tie-break Rule: Lower*



**WETLAND DETERMINATION DATA FORM – Caribbean Islands Region**

Project/Site: PR-2 & PR-6 Intersection Municipality/Town: BAYAMON Sampling Date: 07/11/2023  
 Applicant/Owner: MUNICIPIO AUTONOMO DE BAYAMON PR or USVI: PR Sampling Point: OP-1  
 Investigator(s): JOSE SEPULVEDA, CMA ARCH. & ENG. LLC Ward/Estate: JUAN SANCHEZ WARD  
 Landform (hillslope, terrace, etc.): SLOPE / URBAN AREA Local relief (concave, convex, none): SLOPE Slope (%): 45%  
 Lat: 18.396852° Long: -66.139275° Datum: NAD 83  
 Soil Map Unit Name: URBAN LAND- VEGA ALTA COMPLEX NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: THE AREA IS UPLAND SINCE THE CHANNELIZATION OF THE RIO HONDO SINCE 1990'S. NO WETLAND INDICATOR OBSERVED.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>DYPSIS LUTESCENS</u>			<u>UPL</u>	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. <u>ALBIZIA PROCERA</u>			<u>UPL</u>	
3. _____				
4. _____				
5. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot size: _____)</b>				
1. _____				
2. _____				
3. _____				
_____ = Total Cover				
<b>Herb Stratum (Plot size: _____)</b>				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>†</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>†</sup> (Explain)
1. <u>DIGITARIA CILIARIS</u>			<u>FACU</u>	
2. <u>SORGHUM HALEPENSE</u>			<u>FACU</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				
<b>Woody Vine Stratum (Plot size: _____)</b>				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____				
2. _____				
3. _____				
_____ = Total Cover				
Remarks: THE AREA IS NEAR THE EXISTING ELECTRICAL TRANSMISSION TOWERS, SIDEWALK, ROAD AND BRIDGE. NO HYDROPHITIC VEGETATION OBSERVED. THE AREA WAS ALTERED BY THE URBAN DEVELOPMENT AND STREAM CHANNELIZATION DURING THE 1990'S.				

**SOIL**

Sampling Point: OP-1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	10YR4/4, 3/4							

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Organic Bodies (A6)
- 5 cm Mucky Mineral (A7)
- Muck Presence (A8)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- Stratified Layers (A5)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

Remarks:

NO HYDRIC SOIL INDICATORS OBSERVED.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required: check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Fiddler Crab Burrows (C10)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Saturation Present? (includes capillary fringe) Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes \_\_\_\_\_ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

NO PRIMARY HYDROLOGY INDICATORS AT THE OBSERVED POINT. RIO BAYAMON IS LOCATED AT 100 METERS TO THE WEST. THE OP IS LOCATED AT ELEVATION 13.3 MTS. APPROXIMATELY. SEE ENCLOSED FIGURES AND PHOTOS

## Wetlands (CEST and EA)

General requirements	Legislation	Regulation
Executive Order 11990 discourages that direct or indirect support of new construction impacting wetlands wherever there is a practicable alternative. The Fish and Wildlife Service's National Wetlands Inventory can be used as a primary screening tool, but observed or known wetlands not indicated on NWI maps must also be processed. Off-site impacts that result in draining, impounding, or destroying wetlands must also be processed.	Executive Order 11990	24 CFR 55.20 can be used for general guidance regarding the 8 Step Process.
<b>References</b>		
<a href="https://www.hudexchange.info/environmental-review/wetlands-protection">https://www.hudexchange.info/environmental-review/wetlands-protection</a>		

**1. Does this project involve new construction as defined in Executive Order 11990, expansion of a building's footprint, or ground disturbance?**

The term "new construction" shall include draining, dredging, channelizing, filling, diking, impounding, and related activities and any structures or facilities begun or authorized after the effective date of the Order.

No → *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below.*

Yes → *Continue to Question 2.*

**2. Will the new construction or other ground disturbance impact an on- or off-site wetland?**

The term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds. Wetlands under E.O. 11990 include isolated and non-jurisdictional wetlands.

No, a wetland will not be impacted in terms of E.O. 11990's definition of new construction.  
→ *Based on the response, the review is in compliance with this section. Continue to the Worksheet Summary below. Provide a map or any other relevant documentation to explain your determination.*

Yes, there is a wetland that be impacted in terms of E.O. 11990's definition of new construction.

→ You must determine that there are no practicable alternatives to wetlands development by completing the 8-Step Process.

Provide a completed 8-Step Process as well as all documents used to make your determination, including a map. Be sure to include the early public notice and the final notice with your documentation.

Continue to Question 3.

- 3. For the project to be brought into compliance with this section, all adverse impacts must be mitigated. Explain in detail the exact measures that must be implemented to mitigate for the impact or effect, including the timeline for implementation.**

**Which of the following mitigation actions have been or will be taken? Select all that apply:**

- Permeable surfaces
- Natural landscape enhancements that maintain or restore natural hydrology through infiltration
- Native plant species
- Bioswales
- Evapotranspiration
- Stormwater capture and reuse
- Green or vegetative roofs with drainage provisions
- Natural Resources Conservation Service conservation easements
- Compensatory mitigation

## **Worksheet Summary**

### **Compliance Determination**

Provide a clear description of your determination and a synopsis of the information that it was based on, such as:

- Map panel numbers and dates
- Names of all consulted parties and relevant consultation dates
- Names of plans or reports and relevant page numbers
- Any additional requirements specific to your region

The Autonomous Municipality of Bayamón (MAB) proposes geometric improvements at the intersection between the state highways PR-2 & PR-6, as well as improvements to the access to the Villa España and Calle Marginal, parallel to PR-2 heading west. The proposed project is part of the Bayamón City Revitalization Program. The proposed project aims to revitalize the road infrastructure of the MAB and address the needs of the population after the damage caused by Hurricanes Irma and Maria.

According to National Wetland Inventory Map (<https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper>) (See Attachment A Figure 6- USFWS National Wetland Inventory Map) part of the proposed project is identified as located within PEM1A (Palustrine, Emergent, persistent temporary flooded) wetland area. The wetlands displayed on the Wetlands Mapper show wetland type and extent using a biological definition of wetlands. There is no attempt to define the limits of proprietary jurisdiction of any federal, state, or local government, or to establish the geographical scope of the regulatory programs of government agencies. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

### **Are formal compliance steps or mitigation required?**

- Yes  
 No

**Attachment 14: Wild and Scenic Rivers Map**



# Wild and Scenic Rivers Map

PR-CRP-001109 - Geometric Improvements to PR-2 & PR-6 Intersection

**Coord (lat/log): 18.396966°, -66.138431°**

Intersection of roads PR-2 & PR-6, Bayamón, Puerto Rico



Version 2023.04.001

Home | Mobile | Help

18°23'50.9"N 66°08'15.7"W X Q

Basemap Imagery Draw Erase Save Session Tools More Data

**Project site**

**24.07 miles**

**Select Map Contents**

- EPA Facilities
- Water Monitoring Stations
- Boundaries
- Non-attainment Areas
- EIScreen Indexes (2021)
- Water
  - Impaired Water Points
  - Impaired Streams
  - Impaired Waterbodies
  - Catchments (ATTAINS)
  - Streams
  - Water Bodies
  - Sole Source Aquifers
  - Watersheds (HUC12)
  - Watersheds (HUC8)
  - Wild and Scenic Rivers
- Transportation
- Places
- Critical Habitat
- NWI Wetlands
- FEMA Flood
- Land Cover

Source: U.S. EPA, 2023, NEPAassist, accessed May 17, 2023, at URL <https://nepassitool.epa.gov/nepassit/nepamap.aspx>

**Attachment 15: Geotechnical Investigation**



BAIGES GEOTECHNICAL ENGINEERS LLC

## Geotechnical Investigation for State Road PR-2 & PR-6 Intersection Geometric Improvements, Municipality of Bayamón, Puerto Rico

BGE 2023-118

May 30, 2023



Submitted to : Mr. José O. Colón, PE  
CMA Architects & Engineers, LLC  
1509 Ave F D Roosevelt,  
Guaynabo, PR 00968

Date : May 30, 2023

Prepared by : James A. Baigés, MECE, PE  
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**BAIGES GEOTECHNICAL ENGINEERS, LLC**

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**APPENDIX B - FIELD AND LABORATORY TESTING PROCEDURES**

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**APPENDIX D - RESULTS OF PILE CAPACITY ANALYSIS**



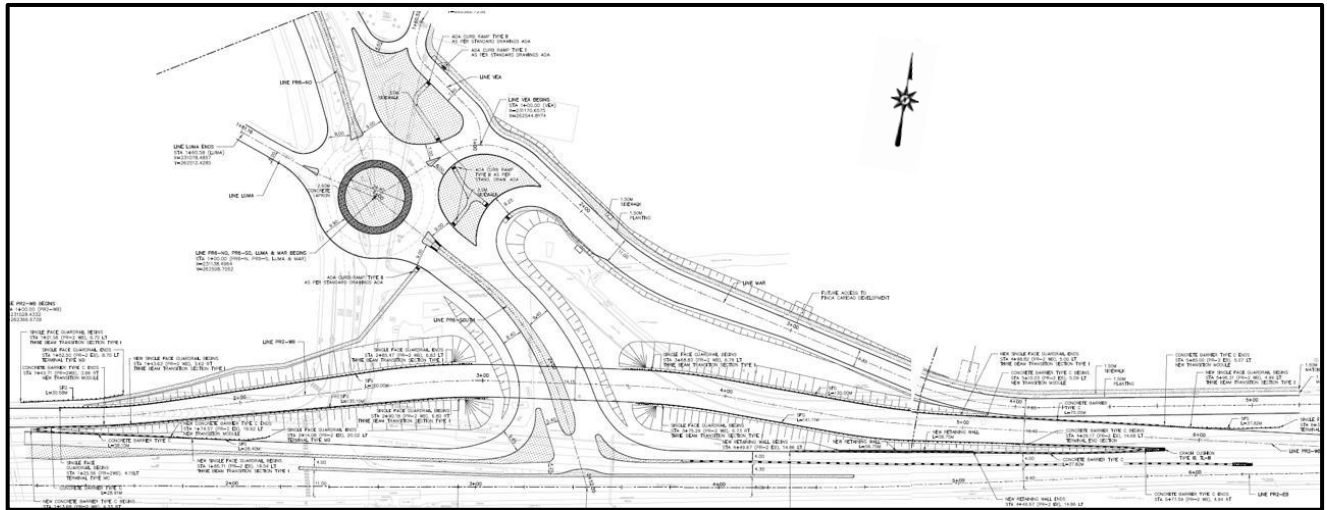
## 1.0 INTRODUCTION AND PROJECT DESCRIPTION

This report presents the result of the geotechnical investigation for proposed geometric improvements at the intersection of roadway PR-2 and PR-6 in the Municipality of Bayamón, Puerto Rico. This investigation was requested by Eng. José A. Carro, P.E., Partner of CMA Architects & Engineers, LLC, the Project Designers, on behalf of the Municipality of Bayamón, Puerto Rico. This report provides a summary of the activities performed during the investigation, a description of subsurface conditions encountered at the site, and presents geotechnical recommendations to assist the design effort of the project. **Figure 1** presents the location of the project site.



**Figure 1 - Site Location Plan**

According to preliminary plans provided, the project includes a new two-span bridge, approach fill embankment roadway, a new rotunda, and new access and exists roads as shown in **Figure 2 -Site Layout Plan**.



**Figure 2 – Project Layout Plan**

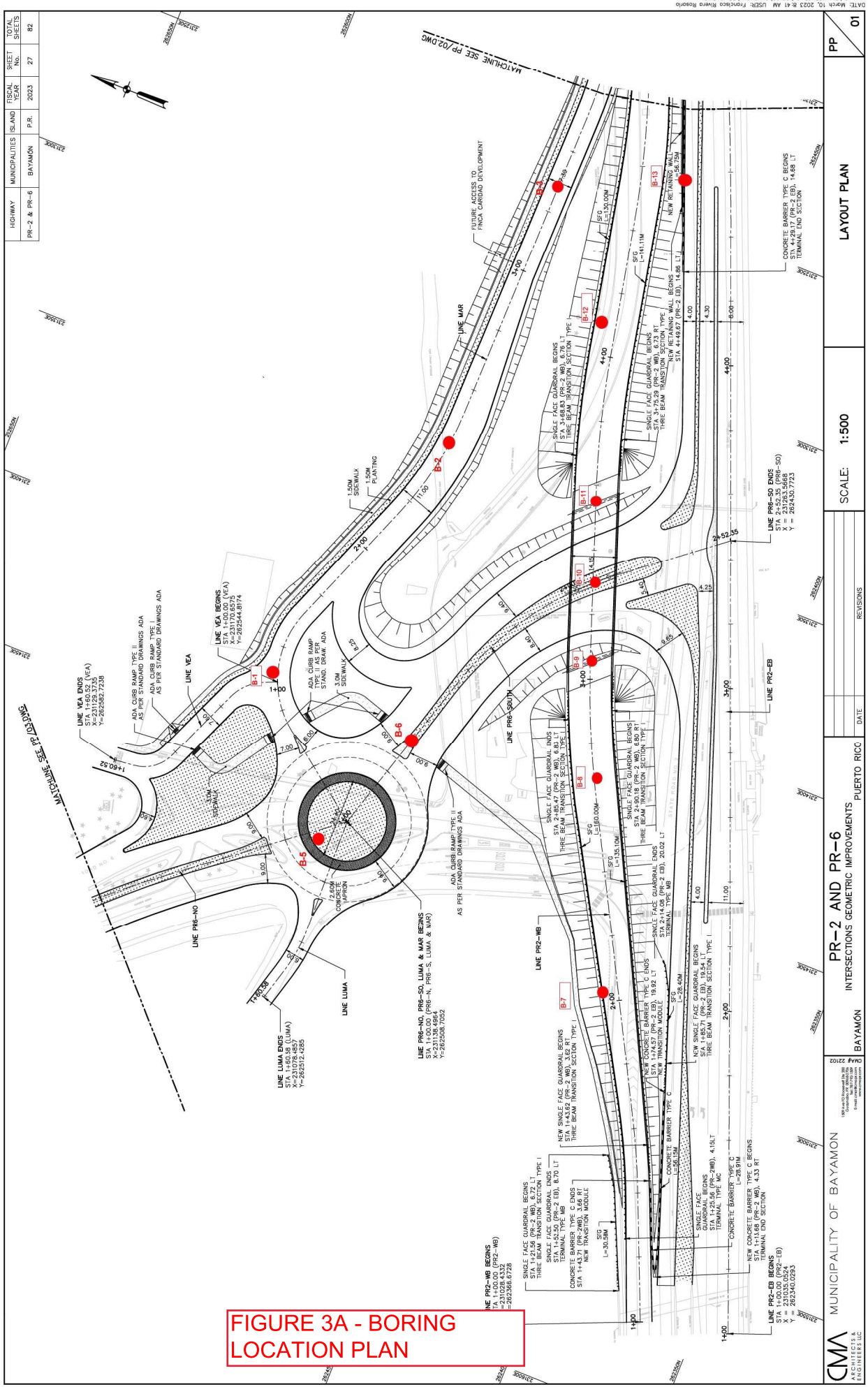
The purpose of our study was to evaluate the subsurface conditions for the proposed project and to provide geotechnical recommendations for the design and construction. The following activities were performed to accomplish these objectives:

- a) Field exploration program consisted of 14 exploratory borings drilled along the new bridge and roadway alignment, new rotunda, new retaining wall, and access and exit ramps to the intersection.
- b) Laboratory testing program including index and classification tests.
- c) Engineering analysis and development of geotechnical recommendations for the design and construction of a new bridge structure, approach embankment, and roadway section conforming to AASHTO LRFD guidelines and requirements.
- d) Preparation of this geotechnical report.

## 2.0 GEOTECHNICAL INVESTIGATION

The geotechnical investigation performed consisted of drilling 14 borings, B-1 to B-14, to depths ranging from 15 to 75 feet for a total of 575 lineal feet of exploration. The location of the borings was established in the field by BGE using a handheld GPS. The locations were selected to evaluate subsurface conditions and obtain representative disturbed soil samples. **Figure 3a and 3b** shows the approximate locations of the borings.





**FIGURE 3A - BORING LOCATION PLAN**

DATE	BY	DESIGN	TRACED	CHECK	FINAL CHECK
03/03/23					

WORK	DATE	BY

DESIGN	DATE	BY

TRACED	DATE	BY

CHECK	DATE	BY

FINAL CHECK	DATE	BY

ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
BAYAMON	2023	27	82

MUNICIPALITIES	HIGHWAY
BAYAMON	PR-2 & PR-6

PP	LAYOUT PLAN
01	

SCALE:	1:500
--------	-------

REVISIONS	DATE	DATE

INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICO
--------------------------------------	-------------

BAYAMON	PR-2 AND PR-6
---------	---------------

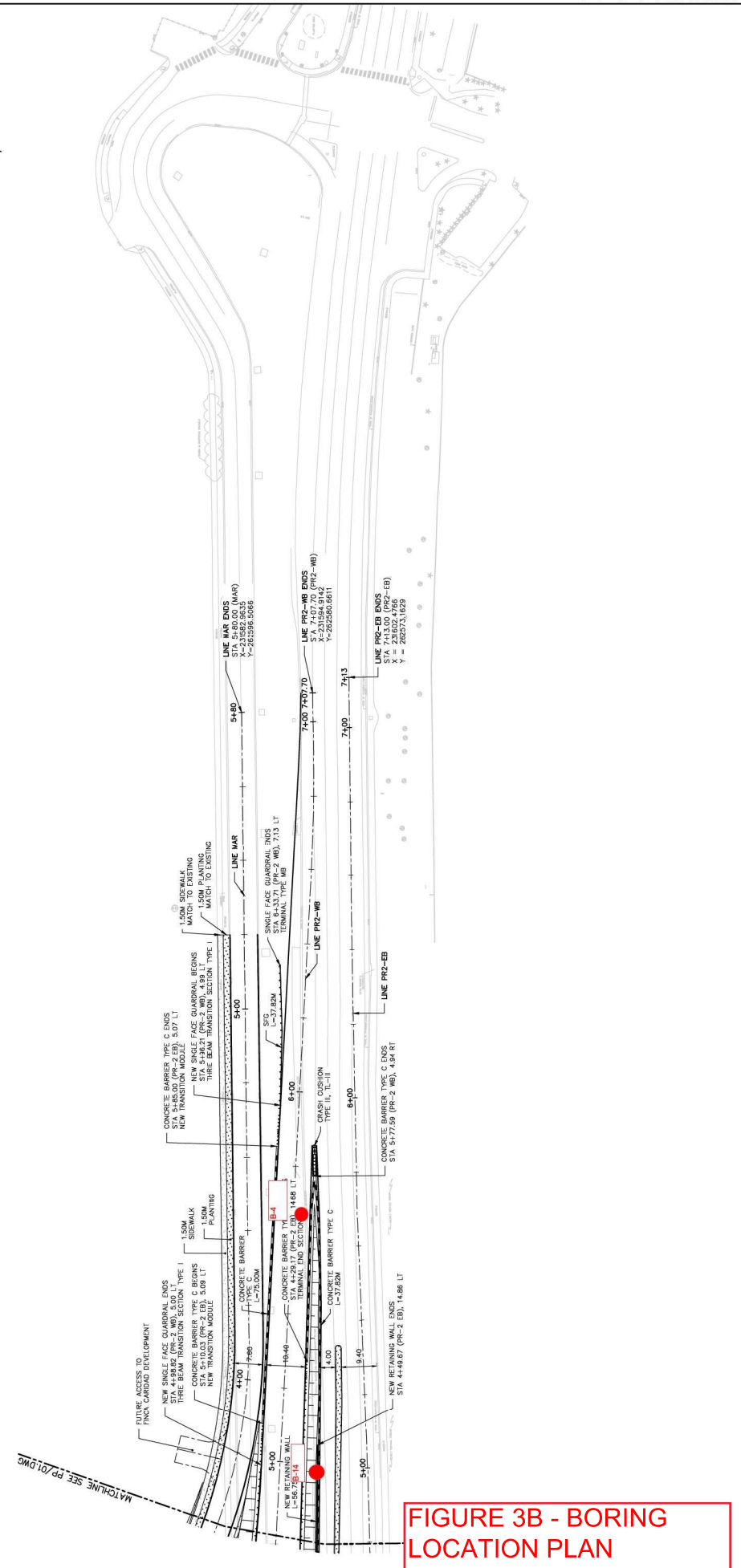
MUNICIPALITY OF BAYAMON
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CMA ARCHITECTS & ENGINEERS LLC
--------------------------------

FILE: C:\DM\WORKSPACE\2023\CHECKOUT\PP-01.DWG
---

DATE: March 10, 2023 8:41 AM USER: Pricilla Rivero
--

HIGHWAY	MUNICIPALITIES	ISLAND	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PR-2 & PR-6	BAYAMÓN	P.R.	2023	28	82



MUNICIPALITY OF BAYAMÓN	PR-2 AND PR-6 INTERSECTIONS GEOMETRIC IMPROVEMENTS	SCALE: 1:500	PP	02
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NO.	DATE	REVISIONS

BAYAMÓN	PUERTO RICCO
---------	--------------

BAYAMÓN	INTERSECTIONS GEOMETRIC IMPROVEMENTS	PUERTO RICCO
---------	--------------------------------------	--------------

PROJECT NO.	DATE	DRAWING NO.	SHEET NO.	TOTAL SHEETS
2022	03/07/23	PP-02	28	82

DATE	BY	DESIGN	TRACING	CHECK	FINAL CHECK	SCALE	SHEETS	TOTAL SHEETS

A summary of pertinent soil boring information, including coordinate locations, ground surface elevation, and depth of drilling is provided in **Table 1**.

**Table 1 – General Boring Information**

Boring	Depth (ft)	Elevation (m)	Easting	Northing
B-1	15	13.15	66.138333	18.398194
B-2	15	16.70	66.137500	18.397992
B-3	15	16.10	66.136663	18.397977
B-4	15	14.60	66.135552	18.398055
B-5	15	12.86	66.138691	18.397908
B-6	15	12.83	66.138383	18.397777
B-7	50	13.10	66.138802	18.397019
B-8	60	13.80	66.138244	18.397266
B-9	75	14.00	66.137666	18.397397
B-10	75	14.51	66.137719	18.397475
B-11	75	14.79	66.137497	18.397550
B-12	60	14.00	66.136941	18.397722
B-13	50	14.56	66.136508	18.397655
B-14	50	14.55	66.136149	18.397791

Exploration borings were performed using a trailer-mounted CME-55 drill rig except for Borings B-1 to B-6 where a portable tripod mounted motorized cathead was used. The samples were collected using a 24-inch split-spoon sampler driven into the ground ahead of the advancing auger during the performance of the Standard Penetration Test (SPT) (ASTM D-1452) and using an automatic and manual SPT hammer. The number of blows required to drive the split-spoon sampler into the soil was recorded in the field; the N-value of the SPT represents the number of blows required for the penetration of the 6-18 inches of the sampler. The samples were secured and transported to the laboratory for unconfined compression testing, and natural moisture

content determinations, soil classification and visual/manual soil descriptions following standard laboratory procedures.

The results of the field operations, laboratory testing, and detailed descriptions of the soils encountered at the boring location are documented in the boring log included in **Appendix A**. **Appendix B** contains a description of the drilling, sampling, and testing procedure. In addition, 20 soil classification tests were performed on select soil samples collected during SPT testing to assist the classification of the soil stratum encountered at the site.

These tests consisted of the following:

- Water Content Determination (ASTM D-2216).
- Atterberg Limits (Liquid and Plastic Limit, and Plastic Index - ASTM D-4318).
- Particle-Size Distribution Tests (ASTM D-6913).
- Classification of Soils for Engineering Purposes (ASTM D 2487).

Results of the soil classification test (Atterberg Limits / Grain-size Distribution Tests) indicate that fill and in-situ materials consist of lean clay to clay classifying as CL to CH according to the Unified Soil Classification System (USCS) and similarly A-7-5 to A-7-6 as per the American Association of State and Highway Officials (AASHTO). **Appendix C** includes the results of the soil classification tests. **Table 2** and **Figure 4** presents a summary of the soil classification tests.

**Table 2 - Summary of Soil Classification Tests**

Boring No.	Depth (ft)	Description	Water Content (%)	Atterberg Limits (%)			Grain-Size Distribution (%)			Soil Classification	
				Plastic Limit	Liquid Limit	Plastic Index	Gravel (%)	Sand (%)	Fines (%)	USCS	AASHTO
B-2	4-6	Fat clay with sand, reddish gray	29	22.59	66.44	38.85		26.8	73.2	CH	A-7-6
B-3	4-6	Clayey sand, pinkish gray	23	21.77	46.89	25.12	4.5	52.8	42.7	SC	A-7-6
B-5	8-10	Fat clay with sand, yellowish brown	33	25.35	59.24	33.89		16.5	83.5	CH	A-7-6
B-6	6-8	Sandy fat clay, light brownish	37	22.3	53.78	31.48	2.8	29.3	67.9	CH	A-7-6
B-8	18.5-20	Sandy fat Clay, light yellowish brown	30	23.98	55.62	31.64		33.5	66.5	CH	A-7-6
B-9	10-11.5	Fat clay with sand, pinkish white	40	30.44	66.49	36.05		21.1	78.9	CH	A-7-5
B-9	28.5-30	Sandy lean clay, brownish yellow	26	20.42	47.02	26.6		35.3	64.7	CL	A-7-6
B-9	48.5-50	Fat clay	36	27.16	61.13	33.97		1.3	98.7	CH	A-7-6
B-10	24-25.5	Fat clay, dark red	36	25.67	71.5	45.83		0.8	99.2	CH	A-7-6
B-10	44-45.5	Sandy fat clay, brownish yellow	29	23.6	51.69	28.09		46.4	53.6	CH	A-7-6
B-10	59-60.5	Fat clay with sand, yellowish brown	24	24.28	57.75	33.47		16.6	83.4	CH	A-7-6
B-11	29-30.5	Fat clay with sand, yellowish brown	29	25.32	60.74	35.42		24.9	75.1	CH	A-7-6
B-11	44-45.5	Sandy fat clay, yellowish brown	26	21.78	59.71	37.93	0.8	25.2	74	CH	A-7-6
B-11	64-65.5	Lean clay with sand, pinkish white	16	20.04	48.59	28.55		21.9	78.1	CL	A-7-6
B-12	7.5-9	Sandy lean clay, light brown	20	22.23	36.69	14.46		34.1	65.9	CL	A-6
B-12	18.5-20	Sandy lean clay, light yellowish brown	23	21.27	45.68	24.41	1.7	47	51.3	CL	A-7-6
B-13	5-6.5	Fat clay, yellowish brown	28	23.32	60.5	37.18		14.9	85.1	CH	A-7-6
B-13	28.5-30	Sandy fat clay, brownish yellow	15	19.48	51.13	31.65		35.5	64.5	CH	A-7-6
B-14	5-6.5	Lean clay with sand, brownish yellow	23	21.25	41.03	19.78		27.1	72.9	CL	A-7-6
B-14	18.5-20	Clayey sand, pale yellow	19	17.07	32.22	15.15		71.7	28.3	SC	A-2-6

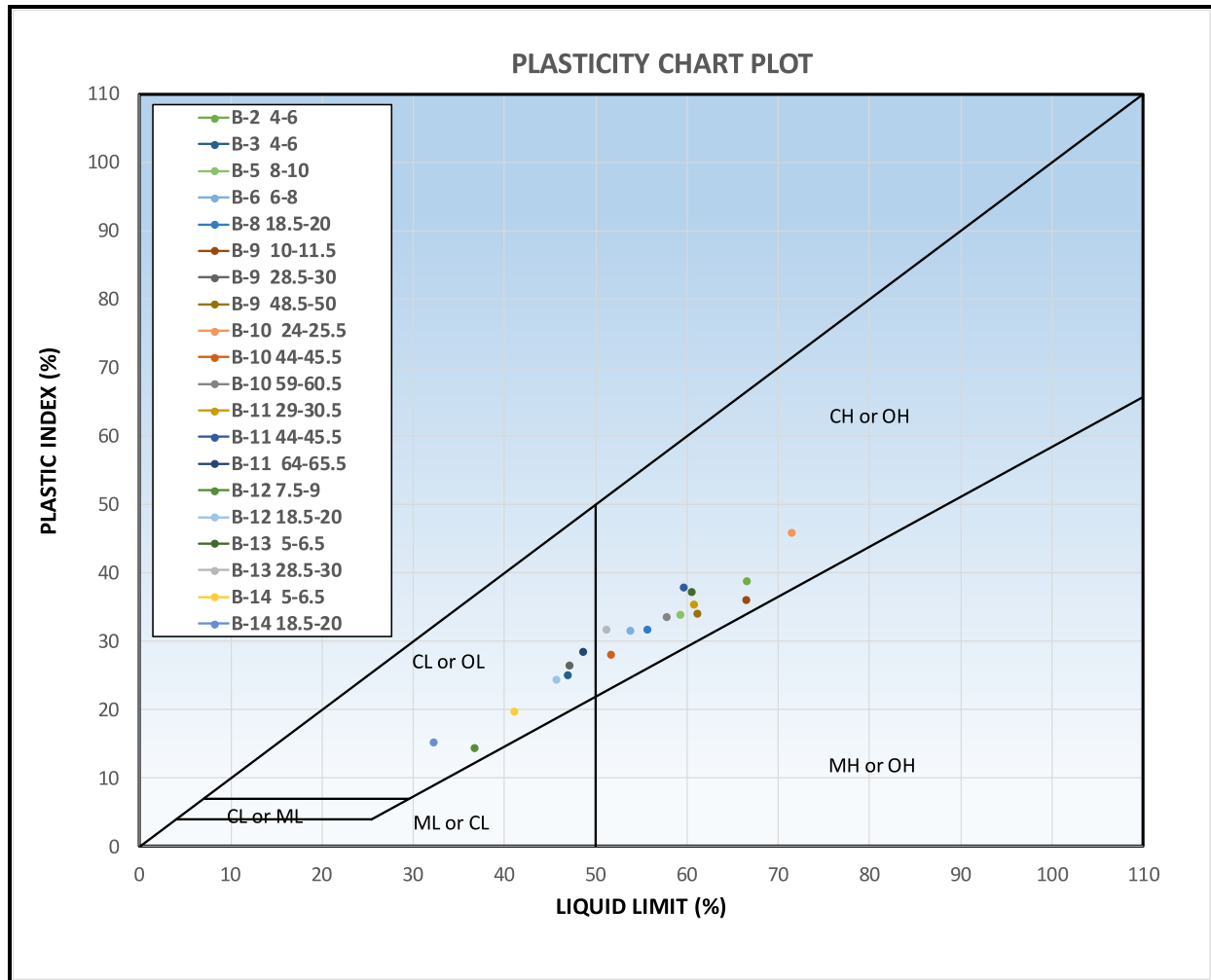


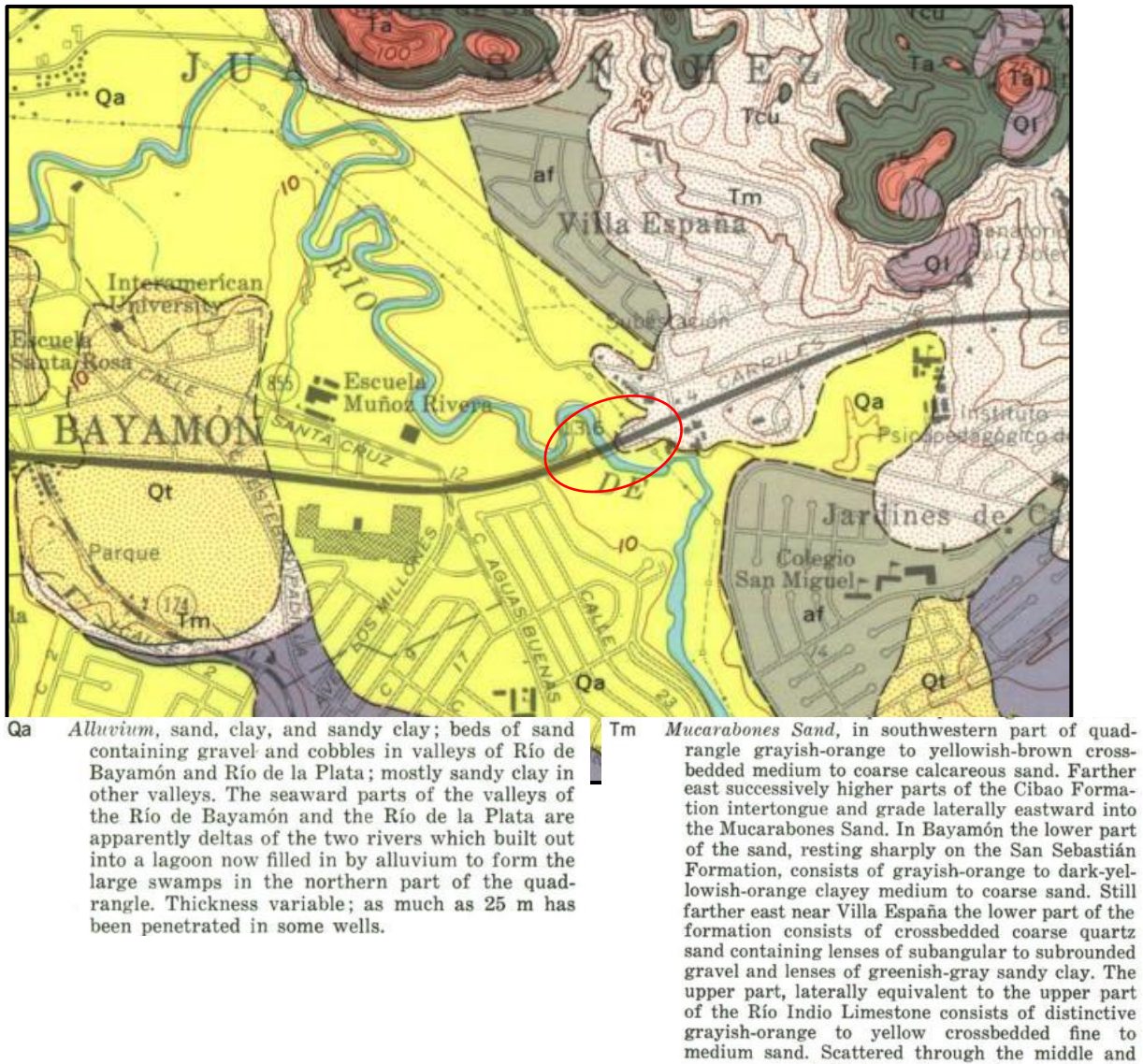
Figure 4 - Atterberg Limit Test Results PL-LL Chart

### 3.0 GEOLOGIC SETTING AND SUBSOIL CONDITIONS

According to the Geologic Map of the Bayamon Quadrangle (Misc. Map I-751) prepared by Watson H. Monroe 1974 of the US Geologic Survey indicates that the project site is underlain by Mucarabones Sand, Tm (lower Miocene or upper Oligocene). This unit is described as a calcareous sand which may be resting on the San Sebastian Formation which consist of a grayish-orange to dark yellowish-orange clayey sand with may be interbedded by greenish-gray sandy clay in the Villa España Sector sandy clay. Along the western portion of the site, some Alluvium Deposits (Qa) may be encountered consisting of sand, clay to sandy clay, thus, some fill material



may be expected placed during the construction of the PR-2 roadway embankment for the existing bridge structure over Río de Bayamón. **Figure 5** includes a portion of the geologic USGS map including the project site location.



**Figure 5 - Site USGS Geologic Map of the Bayamón Quadrangle (partial representation)**

Results of the subsoil exploration are marginally in agreement with the descriptions included in the USCGS geologic map with the findings attained in the exploration borings. The site is mantled by a man-made fill layer to depths ranging from 2 to 15 feet; **Table 3** includes the fill thickness observed at each boring location.

**Table 3 – Existing Fill Thickness**

Boring	Existing Fill Thickness (ft)
B-1	7
B-2	2
B-3	2
B-4	8
B-5	1
B-6	8
B-7	10
B-8	13
B-9	10
B-11	15
B-12	8
B-13	2
B-14	4

The fill content is variable consisting of alternating soft dark gray clay with occasional roots and organic content, soft red clay, dark brown clay, and hard clay to sandy clay. Unsuitable and soft fill materials were encountered among the north portion of the project site as per Borings B-1 to B-6. In addition, within the region comprised location of Boring B-7 to B-9, the fill material mostly consisted of a soft, bluish gray clay with occasional organic content extending to depths ranging from 9 to 13 feet (average 10 feet).

Underlying the fill material (were observed), clay deposits mantle the site. The clay deposit is interbedded with clay layers with trace to sand content with slight calcareous content at depth and encountered in a stiff to hard consistency usually increasing with depth. Groundwater was observed in boring B-8 to B-14 during drilling ranging from 12 to 25 feet within the explored depths at the time the drilling activities were conducted. Detailed description of the subsoil profile is included in the boring logs presented in **Appendix A**.

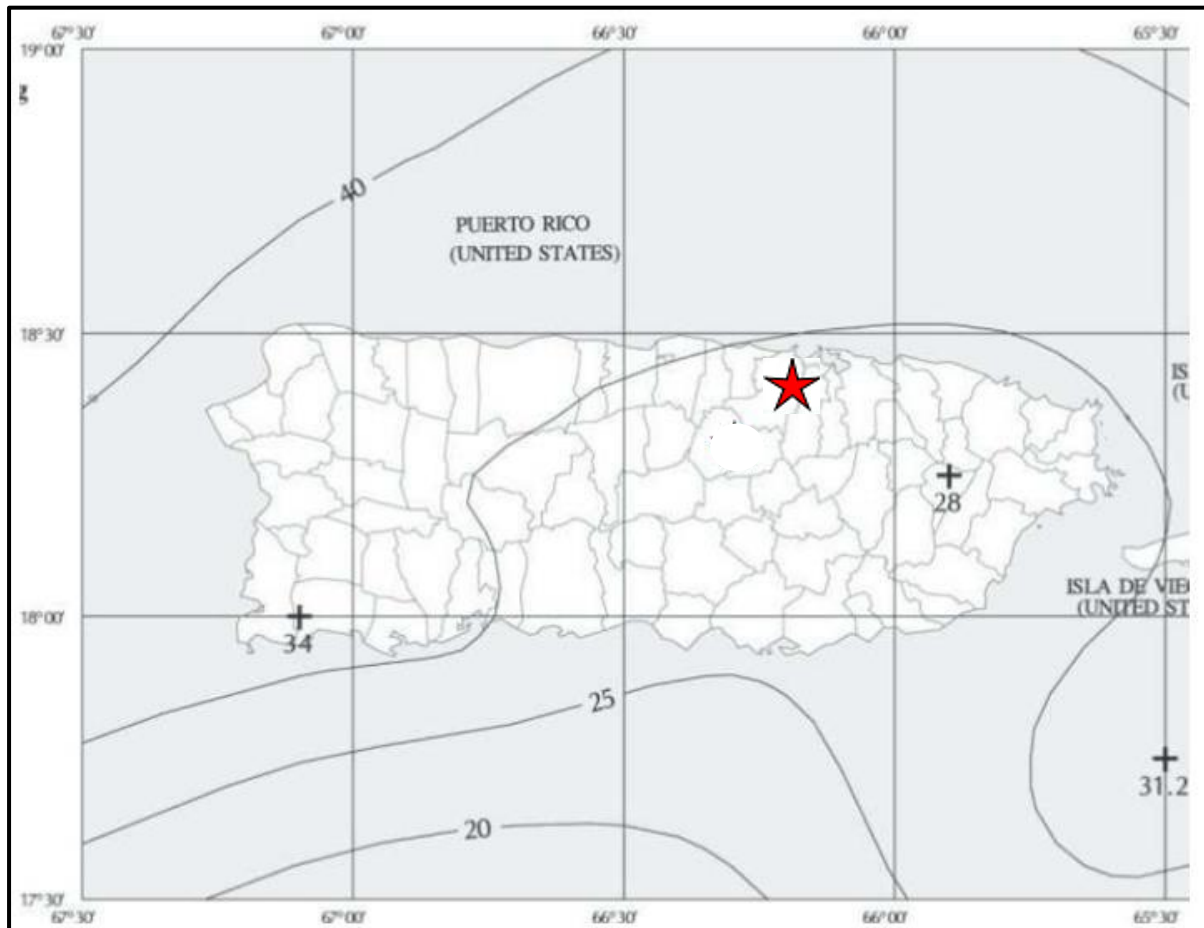
#### 4.0 SEISMIC SITE CLASS RECOMMENDATIONS

The geological setting underlying the project site may be classified corresponding to Site Class D based on the soil types and profiles as determined using definitions described in Table 3.10.3.1-1 herein presented as **Table 4** and included the AASHTO LRFD Bridge Design Specifications.

**Table 4 – Site Class based on Soil Type and Profile as per Table 3.10.3.1-1  
 AASHTO LRFD Bridge Design Specifications**

Table 3.10.3.1-1—Site Class Definitions

Site Class	Soil Type and Profile
A	Hard rock with measured shear wave velocity, $\bar{v}_s > 5,000$ ft/s
B	Rock with $2,500$ ft/sec $< \bar{v}_s < 5,000$ ft/s
C	Very dense soil and soil rock with $1,200$ ft/sec $< \bar{v}_s < 2,500$ ft/s, or with either $\bar{N} > 50$ blows/ft, or $\bar{s}_u > 2.0$ ksf
D	Stiff soil with $600$ ft/s $< \bar{v}_s < 1,200$ ft/s, or with either $15 < \bar{N} < 50$ blows/ft, or $1.0 < \bar{s}_u < 2.0$ ksf
E	Soil profile with $\bar{v}_s < 600$ ft/s or with either $\bar{N} < 15$ blows/ft or $\bar{s}_u < 1.0$ ksf, or any profile with more than 10.0 ft of soft clay defined as soil with $PI > 20$ , $w > 40$ percent and $\bar{s}_u < 0.5$ ksf
F	Soils requiring site-specific evaluations, such as: <ul style="list-style-type: none"> <li>• Peats or highly organic clays (<math>H &gt; 10.0</math> ft of peat or highly organic clay where <math>H</math> = thickness of soil)</li> <li>• Very high plasticity clays (<math>H &gt; 25.0</math> ft with <math>PI &gt; 75</math>)</li> <li>• Very thick soft/medium stiff clays (<math>H &gt; 120</math> ft)</li> </ul>



**Figure 6 – Peak Horizontal Acceleration for Puerto Rico, Culebra, Vieques, St. John, and St. Croix with 7 percent probability of exceedance in 75 years (Approx. 1,000-year Return Period – Figure 3.10.2.1-20 AASHTO LRFD Bridge Design Specifications**

Based on **Figure 6** includes AASHTO LRFD Bridge Design Specifications Table 3.10.2.1-20, the Horizontal Peak Ground Acceleration Coefficient, PGA, of 0.29g.

## 5.0 GEOTECHNICAL RECOMMENDATIONS

The following conclusions and recommendations presented below are based on the site reconnaissance, field observations, site conditions evaluation, available geologic literature, and engineering assessment.

### 5.1 Earthwork

Results of the subsoil exploration reveal the presence of a non-engineered fill material and unsuitable material (occ. organic) was encountered mostly on the north and east area of the project site; refer to detail descriptions. We recommend to thoroughly excavate the existing fill material until encountering the in-situ materials and to replace it with select engineer fill material to achieve the proposed final grade elevations. **Table 5** presents the estimate recommended undercut excavation depth and elevation based on the existing grade elevations at the boring location.

**Table 5 – Recommended Undercut Excavation**

Boring	Line	Station	Description	EGE (m)	FGE (m)	Proposed Cut (-) / Fill (+) m	Rec. Exc. Depth from EGE (ft)	Rec. Undercut Exc. from EGE (m)	Rec. Undercut Exc Elev (m)
B-1	Line MAR	1+51	Roadway	13.15	12.2	-0.95	7	2.1	11.0
B-2	Line MAR	2+51	Roadway	16.7	14.5	-2.20	2	0.6	16.1
B-3	Line MAR	3+31	Roadway	16.1	15.4	-0.70	2	0.6	15.5
B-4	Line PR-2 WB	5+66	Roadway	14.6	14.75	0.15	8	2.4	12.2
B-5	Line PR-6 North	1+06	Roadway	12.86	12.86	0.00	1	0.3	12.6
B-6	Line PR-6 South	1+31	Roadway	12.83	12.83	0.00	8	2.4	10.4
B-7	Line PR-2 WB	2+06	Fill Embankment Roadway	13.1	16.02	2.92	10	3.0	10.1
B-8	Line PR-2 WB	2+71	Fill Embankment Roadway	13.8	18.5	4.70	13	4.0	9.8
B-9	Line PR-2 WB	3+05	Bridge 1 Abut 1 (West)	14	19.06	5.06	10	3.0	11.0
B-14	Line PR-2 WB	5+00 (South)	Retaining Wall	14.55	16.11	1.56	4	1.2	13.3



The undercut excavation shall extend the roadway section and the planned embankment side slopes. Please note that the unsuitable fill material was also encountered at the location of Abutment 1 (west) of the proposed bridge structure and shall be replaced prior to installing the pile foundation. In addition, since the recommended undercut excavation depths/elevation is based on the observations at the locations of the borings performed; it is recommended that the Geotechnical Engineer perform several test exploratory excavations throughout the area to confirm and to/or evaluate the final extension of the undercut excavation.

The following earthwork recommendations shall be implemented following the specifications contained in PRHTA's Standard Specifications for Road and Bridge Construction (SSRBC).

- a) Before any earthwork operation begins it is recommended that the ground surface throughout the proposed alignment be cleared and grubbed of any vegetation cover, roots, and topsoil that may exist, as per SSRBC-201.
- b) All soft and organic soils at the ground surface shall be considered as topsoil for stripping purposes, unless otherwise indicated.
- c) Conducted undercut excavation as per construction plans detail.
- d) Before placing any earth fill, the newly cleared and grubbed surface shall be compacted with several passes of a heavy vibratory roller to densify any loose soil remaining at the exposed surface and to detect any soft soil spots that may have to be excavated, as per SSRBC-203.1.10. If any unstable area is detected by the proof rolling operations, that area may require being under-cut as defined in SSRBC-203-1.05. The undercut soils shall be classified as unsuitable material and replaced with select fill material. The extent and depth of soil replacement shall be determined in the field by the Project Engineer as the undercut and proof-rolling proceeds.+



- e) All embankments shall be constructed according to the Construction Methods detailed in SSRBC-203-3.04 and 3.05, generally placing borrow material in 9- to 12-inch thick horizontal layers and each layer compacted to 95% of maximum dry density as obtained in the Modified Proctor Test (ASTM-D-1557).
- f) Fill slopes shall be built with inclinations of 2.0(H):1.0(V) or shallower. To prevent erosion of the slope surface, runoff should not be permitted to enter fill slope areas, other than runoff from rain falling directly on the slope. The fill slopes shall be covered with a topsoil layer, seeded and planted with appropriate vegetation and covered with an erosion control mat upon completion of embankment construction to protect the surface until it is covered with vegetation.
- g) Cut slopes for the proposed roadway shall be constructed with inclinations of 1.5H: 1V or as recommended in Section 4.2 of this report. Cut slopes for the new retention pond located northwest of the intersection of PR-345A and PR-345 roadways shall be excavated at an inclination ratio of 1.5H: 1V.
- h) A qualified soil technician working under the direct supervision of a Geotechnical Engineer must be present during the clearing and grubbing operation, surface preparation for earthfill placement, and the excavation and removal of any unfavorable soft soil encountered, and to perform field density tests (ASTM-2922-Nuclear Density Gauge) during the compaction of the required earth fill layers.

## 5.2 Pavements Design Recommendations

We recommend a California Bearing Ratio (CBR) value of 15 for the fill materials soils and 20 for the cut sections to establish the design subbase and pavement thickness for the roadways.

### 5.3 Bridge 1 - Foundation Analysis Driven Pile Foundation Recommendations

A pile foundation is recommended to support the new 2-span bridge structure.

Figure 7 includes plots of the N-Values and unconfined compressive strength with depth for Borings B-9 to B-11.

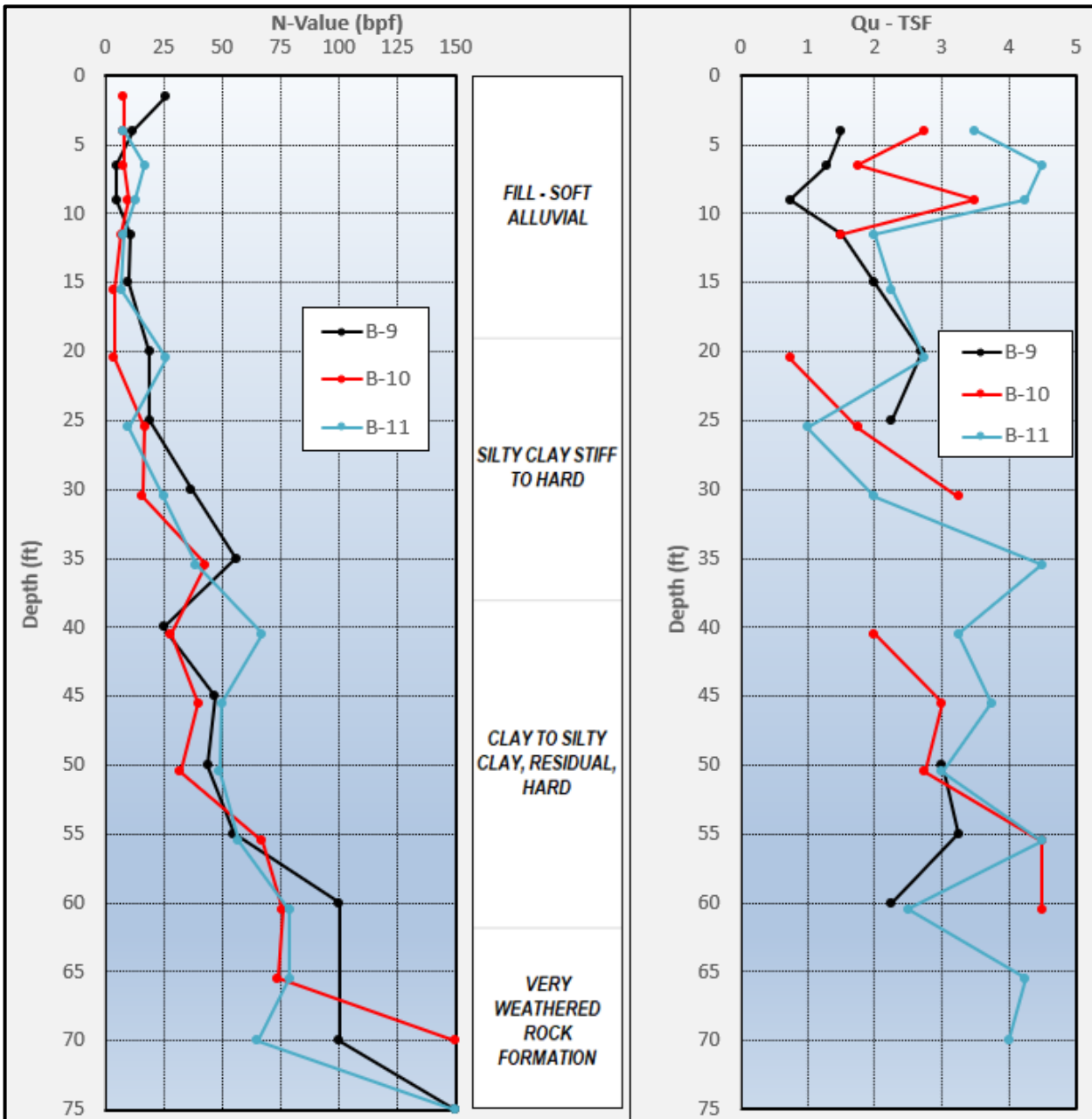


Figure 7 – Variation of N-Value and Unconfined Compressive Strength with Depth along Bridge 1.

Axial pile load analysis was carried out at for the bridges’ abutment (west and east) and central pier using HP14x73 steel piles based on the subsoil profile inferred from the borings drilled. The ultimate axial load capacity was calculated using the computer program ALL PILE version 7.21L developed by CivilTech Software. ALL PILE estimates the axial load capacity of ACP piles based on the methods of analysis developed by NAVFAC DM 7<sup>1</sup>. The ultimate compressive capacity of the piles will be developed principally by skin friction resistance within the stiff to hard clay materials with some end bearing resistance. **Table 6** presents the estimated nominal (ultimate) pile capacities in compression and tension for different pile penetration lengths; **Appendix D** includes the detailed results of the pile capacity analysis. Thus, the estimate pile lengths are referred to the existing ground surface; the pile length shall be adjusted to the design cutoff elevation.

**Table 6 – Estimated Nominal Pile Capacity Recommendations for HP14x73 Steel Pile for Bridge 1**

Location	EGE (m)	Pile Penetration Length		Tip Elev (m)	Estimate Pile Nominal Capacities (kips)	
		ft	meters		Compression	Tension
Abutment 1 - West (Boring B-9)	19.1	45	13.72	5.38	400	300
		55	16.77	2.33	550	450
		65	19.82	-0.72	650	525
Pier 1 (Boring B-10)	19.22	50	15.24	3.98	450	350
		60	18.29	0.93	600	450
		70	21.34	-2.12	780	550
Abutment 2 - East (Boring B-11)	19.11	55	16.77	2.34	600	450
		65	19.82	-0.71	700	525
		75	22.87	-3.76	800	650

These capacities shall be reduced by the applicable Resistance Factor (Rf) Reduction factor according to the LRFD method recommended by AASHTO which in this case are subjected that a pile load testing program be conducted, thus Rf=0.65 ; Section

1 This program uses procedures described in the Foundations & Earth Structures, Design Manual 7.02, published by Department of Navy, Naval Facilities Engineering Command.

5.2 includes details regarding the recommended pile-testing program for the bridge structure.

Lateral loading resistance shall be provided by installing piles at an inclination no exceeding 1H: 3V or steeper. The lateral capacity of the battered pile may be calculated as the horizontal component of the axial load capacity recommended of the pile in **Table 6**.

#### **5.4 Load Testing Programs for Driven Piles Foundation for Bridge 1**

We recommend that a load-testing program be implemented for the new bridge to verify that the design pile capacities are obtained within the recommended depths. We recommend that the load-testing program be performed under the direct supervision of the Geotechnical Engineer who shall evaluate the results and provide a final driving or acceptance criterion to attain the pile or drilled shaft capacities.

We recommend the following pile load-testing program:

- a) Six test penetration piles (2 per abutment/pier) shall be driven and monitored using the Pile Driving Analyzer (PDA) as described below.
- b) We recommend performing restrrike tests using the PDA to evaluate the long-term pile capacity.
- c) Dynamic Pile Load Tests must be performed using the PDA as per ASTM D 4945, and Standard Static Axial Compressive Load Tests as per ASTM D 1143. In the dynamic pile load tests, the nominal pile capacity is determined by measuring the dynamic response of the pile in the field during installation (*End of Driving – EOD*) and after the pile setup has taken place (*Beginning of Restrike – BOR*) using the PDA. A minimum of 7-10 days shall be allowed between the end of driving the pile and the field load test of the pile during restrrike testing to allow the dissipation of excess pore water pressures developed during driving and to allow the pile to develop its maximum capacity.

- d) Before the start of foundation work, the Contractor shall submit to the Owner/Project Geotechnical Engineer information concerning type and capacity of the pile hammer and pile driving equipment to be used to assure that the equipment and materials used will not damage the piles during driving. A wave equation analysis shall be performed using the proposed hammer and pile type to estimate the stresses induced in the pile during driving. We recommend using a pile-driving hammer with a minimum rated energy of 70 k-ft for the driving of the HP steel piles.
- e) The Geotechnical Engineer shall provide a pile driving criteria for each structure based on the results of the wave equation analyses, results of the driving of the test penetration, and the results of the dynamic and static piles load tests. The pile driving criteria shall include at least the required minimum pile embedment, pile driving hammer fuel setting (if applicable), minimum ram stroke height, and minimum recorded blow count. Qualified pile driving inspector shall be present during the pile driving activities to assure that the piles are installed according to the driving criterion established by the Geotechnical Engineer.

#### **5.5 New Retaining Wall for Roadway Alignment PR-2 West Bound (WB) from Station 4+50 to 5+15**

A new retaining wall is proposed along the south roadway shoulder of Line PR-2 West Bound. Preliminary plans provided show that the wall will retain the bottom of the new fill roadway embankment and with a maximum 2-meter height. The retaining wall foundations may be designed using an allowable bearing pressure of 3,000 psf resting on the in-situ materials at a minimum depth of 1.0 meter below the existing grade elevation. Any fill material encountered shall be entirely removed and replaced with select A-1-b following compaction procedures included in Section 5.1 of this report.

The retaining wall shall be designed to resist horizontal earth pressures. Because the wall is not restricted from rotational movement, a reduction of the earth pressures may be allowed due to the mobilization of the soil shear strength. Therefore, the foundation walls

shall be designed for a triangular earth pressure diagram using an "active" lateral earth pressure coefficient of active lateral earth pressure,  $K_a = 0.34$  shall be used at the top of the wall and a soil unit weight of 130 pounds per cubic feet. Any other surcharge load acting on the ground surface and must be added to the previously mentioned lateral pressures to determine the final design lateral loads acting on the retaining walls. The lateral earth pressure recommendations assume that adequate drainage, backfill, and construction details are included in the design drawings as construction requirements. We recommend that a geotextile fabric, crushed stone layer (sheathing) as per SSRBC 209, and perforated drainage pipe (or weep holes through the walls) be included in the design such that any water that may reach the back of the wall is disposed rapidly and efficiently to prevent the development of unbalanced water forces behind the wall.

## 6.0 CLOSURE

This report has been submitted to CMA Architects and Engineers, LLC for use in the design and construction of the project. The study was conducted in accordance with generally accepted standards in the geotechnical engineering profession. The recommendations presented herein are based on our interpretation and understanding of site conditions and the proposed construction. Any changes in the nature, design, or location of the proposed project from those indicated in this report should be brought to our attention as such changes that may affect our recommendations. The conclusions and recommendations contained in this report would no longer be applicable unless the changes are reviewed and the conclusions of this report are modified or verified in writing by Baiges Geotechnical Engineers, LLC is not responsible for any claims, damages, or liability associated with interpretation or reuse of the subsurface data or engineering analysis contained herein by others without the express written authorization of Geo Cim.

Although the evaluation approaches used in this study are consistent with those used in ordinary geotechnical engineering studies, unexpected conditions may be encountered during construction. The nature and extent of variations between the explored locations may not



construction. The nature and extent of variations between the explored locations may not become evident until construction of the project is underway. Subsurface conditions different from those anticipated based on our assessment may necessitate re-evaluation of these recommendations and adjustments in project design. It is advised that the undersigned be retained to observe geologic/geotechnical conditions during construction to help confirm that our assumptions and recommendations are valid, to verify general compliance with design concepts and recommendations, and to assist in the development of design changes should subsurface conditions differ from those anticipated prior to the start of construction.

In the event that any changes in the nature, design, or location of the proposed development are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed, and the conclusions of this report are modified in writing by us. We shall not be responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analysis contained herein without the express written authorization of the undersigned.

We request to be consulted should there be any questions as to the intent and general scope of our recommendations and to be informed of any changes in the scope of the project which may require our revision of these recommendations or if additional recommendations are needed.

Respectfully submitted,

**BAIGES GEOTECHNICAL ENGINEERS, LLC**

James A. Baigés, MECE, PE  
President  
Geotechnical Engineer





# APPENDIXES

**BAIGES GEOTECHNICAL ENGINEERS, LLC**

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**APPENDIX A**  
**BORING LOGS**



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-1  
 Job No. BGE 2023-118  
 Sheet No. 1 of 1

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 15.00 FT  
**Drill Equipment:** Tripod mounted cathead w/ donut SPT 140 lb  
**Drill Method:**  
**Driller:** JDA Drilling Service

**Date:** 4/24/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** Not observed  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'										
2'	Fill; Silty clay, stiff, dark brown	2-3-5-5	8		31					
3'	Fill; Clay, little fine sand, medium stiff, reddish brown to olive gray  as above.  - as above, little wea. limestone rock fragments.	2-3-3-3	6	2.00	25					
4'										
5'										
6'										
7'		2-4-4-6	8		27					
8'		3-4-7-11	11	2.00	17					
9'	Sandy clay to clay, occ. with little wea limestone frag., stiff, yellowish brown.	7-9-14-16	23		27					
10'										
11'										
12'										
13'										
14'										
15'										

End of Boring B-1 @ 15 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-2  
 Job No. BGE 2023-118  
 Sheet No. 1 of 1

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 15.00 FT  
**Drill Equipment:** Tripod mounted cathead w/ donut SPT 140 lb  
**Drill Method:**  
**Driller:** JDA Drilling Service

**Date:** 4/24/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** Not observed  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'	Fill: Silty clay, medium stiff, trace, roost, dark brown	2-2-4-5	6	2.00	34					
2'										
3'	Silt, trace fine sand, very stiff, red	4-6-8-11	14		29	66.44	22.59	38.85	CH	73.2
4'										
5'	Clay, trace fine sand, hard, pale brown to tan	11-14-18-21	32	2.50	31				A-7-6	
6'										
7'										
8'										
8'	as above	9-16-18-16	34		32					
9'	Sandy clay to silt, hard, brownish red to yellowish brown.	10-24-26-28	50	2.75	20					
10'										
11'										
12'										
13'										
14'										
14'	- as above, some wea limestone rock frags.	20-23-29-30	52		25					
15'										

End of Boring B-2 @ 15 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-3  
 Job No. BGE 2023-118  
 Sheet No. 1 of 1

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 15.00 FT  
**Drill Equipment:** Tripod mounted cathead w/ donut SPT 140 lb  
**Drill Method:**  
**Driller:** JDA Drilling Service

**Date:** 4/25/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** Not observed  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'	Fill; Silty clay, trace fine sand, trace roots, soft, yellowish brown	2-2-3-4	5	3.75	25					
2'										
3'	Silt, some sand, stiff, pale yellow to tan	3-5-7-13	12	1.75	23	46.89	21.7	25.12	SC	42.7
4'										
5'										
6'										
7'	Clayey sand to sandy clay, very stiff to hard, pale yellowish to tan	5-10-14-15	24	1.50	25				A-7-6	
8'										
9'										
10'										
11'										
12'	Clayey sand to sandy clay, hard, yellowish brown.	17-23-24-29	47		19					
13'										
14'										
15'										

End of Boring B-3 @ 15 ft depth





**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-4  
 Job No. BGE 2023-118  
 Sheet No. 1 of 1

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 15.00 FT  
**Drill Equipment:** Tripod mounted cathead w/ donut SPT 140 lb  
**Drill Method:**  
**Driller:** JDA Drilling Service

**Date:** 4/25/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** Not observed  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)																																												
1'	Fill; Asphalt pavement and coarse sand base, black	11-31-19-12	50		8																																																	
2'											3'	Fill, Clay, plastic, trace roots, soft, bluish gray  As above, little sand	4-3-3-2	6	0.50	36						4'	5'	6'	7'	Clay, some sand, lean, hard, pale yellow	2-2-3-3	5	0.25	36						8'	9'	10'	11'	Clay, some sand, lean, hard, pale yellow	3-2-2-3	4		32						12'	13'	14'	15'	15'
3'	Fill, Clay, plastic, trace roots, soft, bluish gray  As above, little sand	4-3-3-2	6	0.50	36																																																	
4'																																																						
5'																																																						
6'																																																						
7'	Clay, some sand, lean, hard, pale yellow	2-2-3-3	5	0.25	36																																																	
8'																																																						
9'																																																						
10'																																																						
11'	Clay, some sand, lean, hard, pale yellow	3-2-2-3	4		32																																																	
12'																																																						
13'																																																						
14'																																																						
15'																																																						
15'	End of Boring B-4 @ 15 ft depth	50/4"	>100		12																																																	



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-5  
Job No. BGE 2023-118  
Sheet No. 1 of 1

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 15.00 FT  
**Drill Equipment:** Tripod mounted cathead w/ donut SPT 140 lb  
**Drill Method:**  
**Driller:** JDA Drilling Service

**Date:** 4/25/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** Not observed  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)																																																													
1'	Fill; Silty clay, trace roots, stiff, little wea limestone frags (gravel-size), dark yellowish brown	3-4-7-6	11	3.25	16																																																																		
2'											3'	Fill; Clay with some sand to little wea limestone frags (gravel-size), yellowish brown to pale yellow.	8-12-10-9	22	3.00	17						4'	5'	6'	as above	6-10-9-8	19	1.00	32						7'	Fill: Sandy clay to clay with little sand, little wea limestone gravel, soft, yellowish brown	2-2-3-3	5	1.00	33						8'	9'	Clay, little silt, trace to fine sand, stiff, dark yellowish brown.	4-7-10-15	17	2.50	38	59.24	25.35	33.89	CH A-7-6	83.5	10'	11'	12'	13'	Lean clay, plastic, stiff, red with gray veins.	2-4-5-6	9	1.00	36					
3'	Fill; Clay with some sand to little wea limestone frags (gravel-size), yellowish brown to pale yellow.	8-12-10-9	22	3.00	17																																																																		
4'											5'											6'	as above	6-10-9-8	19	1.00	32						7'	Fill: Sandy clay to clay with little sand, little wea limestone gravel, soft, yellowish brown	2-2-3-3	5	1.00	33						8'	9'	Clay, little silt, trace to fine sand, stiff, dark yellowish brown.	4-7-10-15											17	2.50	38	59.24										
5'																																																																							
6'	as above	6-10-9-8	19	1.00	32																																																																		
7'	Fill: Sandy clay to clay with little sand, little wea limestone gravel, soft, yellowish brown	2-2-3-3	5	1.00	33																																																																		
8'											9'	Clay, little silt, trace to fine sand, stiff, dark yellowish brown.	4-7-10-15	17	2.50	38	59.24	25.35	33.89	CH A-7-6	83.5	10'	11'	12'	13'	Lean clay, plastic, stiff, red with gray veins.	2-4-5-6	9	1.00	36						14'	15'																																		
9'	Clay, little silt, trace to fine sand, stiff, dark yellowish brown.	4-7-10-15	17	2.50	38	59.24	25.35	33.89	CH A-7-6	83.5																																																													
10'																																																																							
11'																																																																							
12'																																																																							
13'	Lean clay, plastic, stiff, red with gray veins.	2-4-5-6	9	1.00	36																																																																		
14'																																																																							
15'																																																																							

End of Boring B-5 @ 15 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-6  
 Job No. BGE 2023-118  
 Sheet No. 1 of 1

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 15.00 FT  
**Drill Equipment:** Tripod mounted cathead w/ donut SPT 140 lb  
**Drill Method:**  
**Driller:** JDA Drilling Service

**Date:** 4/25/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** Not observed  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'	Fill; Silty Clay, stiff, dark brown  as above  as above, trace roots	3-4-5-5	9	3.50	23					
2'										
3'										
4'										
5'										
6'										
7'	Clay, little sand, soft, dark gray.	1-1-3-4	4		37	53.78	22.3	31.48	CH A-7-6	67.9
8'										
9'	Silty Clay, stiff, trace organic matter and peat, dark brown to dark gray	5-7-7-8	14	1.50	36					
10'										
11'										
12'	Clay, trace sand, very stiff, yellowish brown	5-8-8-9	16	1.00	23					
13'										
14'										
15'										

End of Boring B-6 @ 15 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-7  
 Job No. BGE 2023-118  
 Sheet No. 1 of 2

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**Boring End At:** 50.00 FT  
**Date:** 5/21/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs**  
**GS Elevation:**  
**During drilling:** Not observed  
**After drilling:**  
**Drill Method:** Safety SPT 140 lb  
**Driller:** JDA Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'	Concrete Slab - 4 inches									
2'	Fill - Asphalt pavement, some coarse sand, black	8-25-14	39		6					
3'	Fill; Clay with little sand and fine gravel, stiff yellowish brown.	15-10-7-6	17	2.25	22					
4'										
5'										
6'										
7'	Fill; Clay with trace organic matter, trace sand, soft olive gray to yellowish brown mixed	3-3-2-3	5	1.25	34					
8'										
9'										
10'	Silty clay, plastic, stiff ,olive gray to yellowish brown	3-4-4-5	8		61					
11'										
12'										
13'										
14'	Clay, lean, very stif, pale brown to tan	6-7-10-12	17	1.25	28					
15'										
16'										
17'										
18'	As above, oxidized planes, very stiff.	8-10-10-10	20		45					
19'										
20'										
21'										
22'										
23'	Clay, trace fine sand, hard, pale brownish yellow to tan	10-14-18-21	32	4.50	12					
24'										
25'										
26'										
27'										
28'										
29'										
30'										



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-7  
 Job No. BGE2023-219  
 Sheet No. 2 of 2

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 50.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

**Date:** 5/21/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** Not observed  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
31'	As above	14-18-24-32	42	3.50	19					
32'										
33'										
34'										
35'										
36'										
37'										
38'										
39'										
40'										
41'		11-14-19-27	33	4.50	23					
42'										
43'										
44'										
45'										
46'										
47'										
48'										
49'										
50'										
50'		17-29-50	79	4.00	19					

End of Boring B-7 @ 50 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-8  
 Job No. BGE 2023-118  
 Sheet No. 1 of 2

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 60.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb  
**Driller:** A&B Drilling Services, Inc.

**Date:** 5/3/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** 18 ft  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)																																																																				
1'	Fill - Asphalt pavement, some coarse sand, black	5-3-2	5	2.50	27																																																																									
2'											3'	Fill - Clay, soft, bluish gray.	3-4-5	9	1.00	31						4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	Clay, oxidized stains, very stiff, olive yellowish brown to olive yellow, red streaks	6-5-8	13	2.00	46						14'	15'	16'	17'	Clay, very stiff, little fine sand, olive to yellowish brown mixed	4-6-9	15	2.50	30	55.62	23.98	31.64	CH A-7-6	66.5	18'	19'	20'	21'	22'	23'	24'	25'	As above, reddish brown	9-10-15	25	4.25	22						26'	27'	28'	Clay, trace fine sand, hard, olive to reddish brown	8-14-19
3'	Fill - Clay, soft, bluish gray.	3-4-5	9	1.00	31																																																																									
4'																																																																														
5'																																																																														
6'																																																																														
7'																																																																														
8'																																																																														
9'																																																																														
10'																																																																														
11'																																																																														
12'																																																																														
13'	Clay, oxidized stains, very stiff, olive yellowish brown to olive yellow, red streaks	6-5-8	13	2.00	46																																																																									
14'																																																																														
15'																																																																														
16'																																																																														
17'	Clay, very stiff, little fine sand, olive to yellowish brown mixed	4-6-9	15	2.50	30	55.62	23.98	31.64	CH A-7-6	66.5																																																																				
18'																																																																														
19'																																																																														
20'																																																																														
21'																																																																														
22'																																																																														
23'																																																																														
24'																																																																														
25'											As above, reddish brown	9-10-15	25	4.25	22																																																															
26'																																																																														
27'																																																																														
28'	Clay, trace fine sand, hard, olive to reddish brown	8-14-19	33	4.50	21																																																																									
29'																																																																														
30'																																																																														





**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-8  
 Job No. BGE2023-219  
 Sheet No. 2 of 2

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 60.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

**Date:** 5/3/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** 7 ft  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
31'	As above	12-17-27	44	4.50	25					
32'										
33'										
34'										
35'										
36'										
37'										
38'										
39'										
40'										
41'										
42'										
43'	Residual sand with some silt/clay, coarse grained, compact, friable, hard/dense, olive.	11-18-21	39	3.00	22					
44'										
45'										
46'										
47'										
48'										
49'										
50'										
51'										
52'										
53'										
54'										
55'	18-17-26	43	4.50	24						
56'										
57'										
58'										
59'										
60'										
60'	16-23-52	75	2.00	15						

End of Boring B-8 @ 60 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-9  
 Job No. BGE 2023-118  
 Sheet No. 1 of 3

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**Boring End At:** 75.00 FT  
**Date:** 4/5/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs:**  
 During drilling: 7 ft  
 After drilling:  
**GS Elevation:**  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)																																																																																																																																														
1'	Fill - Asphalt pavement, some coarse sand, black	5-8-18	26		5																																																																																																																																																			
2'											3'	Fill - Clay, very stiff, olive yellowish brown	4-6-6	12	1.50	37						4'	5'	6'	Fill, Clay, trace silt, soft to medium stiff, olive yellowish brown, red streaks	2-2-3	5	1.30	42						7'	8'	Fill, soft, trace organic matter (roots), bluish gray w/ yellowish brown mixed	2-2-3	5	0.75	38						9'	10'	11'	Clay, stiff, red with olive gray veins.	3-4-7	11	1.50	40	66.49	30.44	36.05	CH A-7-6	78.9	12'	13'	14'	15'	As above.	3-4-6	10	2	35					16'	17'	18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35						19'	20'	21'	22'	23'	24'	25'	6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'																																					
3'	Fill - Clay, very stiff, olive yellowish brown	4-6-6	12	1.50	37																																																																																																																																																			
4'											5'											6'	Fill, Clay, trace silt, soft to medium stiff, olive yellowish brown, red streaks	2-2-3	5	1.30	42						7'	8'	Fill, soft, trace organic matter (roots), bluish gray w/ yellowish brown mixed	2-2-3											5	0.75	38																9'	10'	11'	Clay, stiff, red with olive gray veins.	3-4-7	11	1.50	40	66.49	30.44	36.05											CH A-7-6	78.9	12'	13'	14'	15'	As above.	3-4-6	10	2	35					16'	17'	18'											Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35						19'	20'	21'	22'	23'	24'	25'	6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'
5'											6'	Fill, Clay, trace silt, soft to medium stiff, olive yellowish brown, red streaks	2-2-3	5	1.30	42						7'											8'	Fill, soft, trace organic matter (roots), bluish gray w/ yellowish brown mixed			2-2-3	5	0.75	38						9'																			10'	11'	Clay, stiff, red with olive gray veins.																					3-4-7	11	1.50	40	66.49	30.44	36.05	CH A-7-6	78.9	12'	13'	14'	15'	As above.	3-4-6	10	2	35					16'	17'	18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins											3-8-11	19	2.70	35						19'	20'	21'	22'	23'	24'	25'	6-9-10	19											2.25
6'	Fill, Clay, trace silt, soft to medium stiff, olive yellowish brown, red streaks	2-2-3	5	1.30	42																																																																																																																																																			
7'											8'	Fill, soft, trace organic matter (roots), bluish gray w/ yellowish brown mixed	2-2-3	5	0.75	38						9'	10'	11'	Clay, stiff, red with olive gray veins.	3-4-7	11	1.50	40	66.49	30.44	36.05	CH A-7-6		78.9	12'										13'	14'	15'	As above.											3-4-6	10	2	35																																			16'	17'	18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35						19'	20'																					21'	22'	23'	24'	25'	6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37	
8'	Fill, soft, trace organic matter (roots), bluish gray w/ yellowish brown mixed	2-2-3	5	0.75	38																																																																																																																																																			
9'											10'											11'	Clay, stiff, red with olive gray veins.	3-4-7										11		1.50	40	66.49	30.44	36.05	CH A-7-6	78.9	12'	13'	14'	15'	As above.	3-4-6	10	2	35					16'	17'	18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35																																				19'	20'											21'	22'																					23'	24'	25'	6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24				
10'											11'	Clay, stiff, red with olive gray veins.	3-4-7	11	1.50	40	66.49	30.44	36.05	CH A-7-6	78.9	12'																					13'	14'	15'	As above.	3-4-6	10	2	35					16'	17'	18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins																		3-8-11	19	2.70	35						19'														20'	21'											22'	23'																					24'	25'	6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.			8-13-24	37		26
11'	Clay, stiff, red with olive gray veins.	3-4-7	11	1.50	40	66.49	30.44	36.05	CH A-7-6	78.9																																																																																																																																														
12'											13'											14'																					15'	As above.	3-4-6	10	2	35					16'	17'	18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11										19	2.70	35						19'										20'	21'	22'	23'	24'	25'	6-9-10	19	2.25	42																	26'	27'		28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37		26	47.02	20.42	26.6	CL A-7-6										64.7	29'	30'																	
13'											14'											15'																					As above.	3-4-6	10	2	35					16'	17'	18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins																				3-8-11										19	2.70	35						19'	20'	21'	22'			23'	24'											25'	6-9-10	19	2.25										42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.		8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'								
14'											15'											As above.			3-4-6	10	2	35					16'		17'								18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35						19'																																							20'	21'	22'	23'			24'	25'											6-9-10	19	2.25	42														26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.												8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'
15'											As above.											3-4-6			10	2	35																																																																																																																													
16'											17'											18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35						19'	20'	21'	22'	23'	24'	25'	6-9-10	19	2.25	42																																																					26'			27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'																																								
17'											18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35						19'											20'	21'	22'	23'	24'	25'	6-9-10	19	2.25	42																			26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37																												26	47.02	20.42	26.6	CL A-7-6	64.7	29'											30'																																									
18'	Silty Clay, very plastic, very stiff, yellowish red to reddish brown, oxidized stains and gray veins	3-8-11	19	2.70	35																																																																																																																																																			
19'											20'											21'											22'	23'	24'	25'	6-9-10	19	2.25	42																		26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37														26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'																																																																				
20'											21'											22'											23'	24'	25'	6-9-10	19	2.25	42															26'		27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37					26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'																																																																																
21'											22'											23'											24'	25'	6-9-10	19	2.25	42					26'											27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24														37		26	47.02	20.42								26.6	CL A-7-6	64.7	29'	30'																																																																	
22'											23'											24'											25'	6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'						30'																																																																																											
23'											24'											25'											6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.											8-13-24			37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'																																																																																					
24'											25'											6-9-10	19	2.25	42					26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'													30'																																																																																																
25'											6-9-10	19	2.25	42																																																																																																																																										
26'	27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.	8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'																																																																																																																																										
27'	28'	Sandy clay, very stiff, oxidized planes, brownish yellow.											8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7	29'	30'																																																																																																																																	
28'	Sandy clay, very stiff, oxidized planes, brownish yellow.																					8-13-24	37		26	47.02	20.42	26.6	CL A-7-6	64.7																																																																																																																										
29'			30'																																																																																																																																																					
30'																																																																																																																																																								



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-9  
 Job No. BGE2023-219  
 Sheet No. 2 of 3

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**Boring End At:** 75.00 FT  
**Date:** 3/29/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs**  
**GS Elevation:**  
**During drilling:** 7 ft  
**After drilling:**  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
31'										
32'										
33'	Sand, fine grained, residual, hard to dense, brownish yellow	14-23-33	56		24					
34'										
35'										
36'										
37'										
38'	- medium coarse grained.	9-11-14	25		23					
39'										
40'										
41'										
42'	Clay, little to some sand, compact, hard, olive to brownish yellow	15-25-22	47		20					
43'										
44'										
45'										
46'	Clay, residual, very stiff to hard, olive brown mixed.	13-18-23	41	3.00	36	61.13	27.16	33.97	CH A-7-6	99.2
47'										
48'										
49'										
50'										
51'	Clay, trace fine sand, hard, olive yellow.	22-25-30	55	3.25	28					
52'										
53'										
54'										
55'		28-50/3"	78	2.25	21					
56'										
57'										
58'										
59'										
60'										



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-9  
 Job No. BGE2023-219  
 Sheet No. 3 of 3

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 75.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

**Date:** 3/29/2023  
**Groundwater Depth (ft) bgs:**  
**During drilling:** 7 ft  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
61'	Very weathered rock formation sampled as coarse to medium sand, compact, friable, hard, pale yellowish brown to olive yellow.									
62'										
63'										
64'		50/5"	100		24					
65'										
66'										
67'										
68'										
69'										
70'		28-50/4"	100		25					
71'										
72'										
73'										
74'										
75'		50/4"	150		21					

End of Boring B-9 @ 75 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-10  
 Job No. BGE 2023-118  
 Sheet No. 1 of 3

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 70.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** GeoCim

**Date:** 5/2/2023  
**Groundwater Depth (ft) bgs:**  
**During drilling:** 15.5 ft  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'	Fill; Sandy clay with asphalt frags, some sand, dark brown	3-4-4	8							
2'										
3'										
4'										
5'	Fill; Silty clay, plastic, trace fine sand, medium to stiff, red.	2-4-4	8	1.75	30					
6'										
7'										
8'										
9'										
10'										
11'	Silty Clay, soft, red and olive yellowish	1-1-3	4		38					
12'										
13'										
14'										
15'	Silty Clay, very stiff, bluish gray	2-2-2	4	0.75	36					
16'										
17'										
18'										
19'										
20'										
21'										
22'										
23'	Clay, very stiff, olive yellowish brown	5-6-11	17	1.75	36	71.5	25.67	45.83	CH A-7-6	99.2
24'										
25'										
26'										
27'										
28'										
29'										
30'										



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-10  
 Job No. BGE 2023-118  
 Sheet No. 2 of 3

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**Boring End At:** 70.00 FT  
**Date:** 3/29/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs**  
**GS Elevation:**  
**During drilling:** 7 ft  
**After drilling:** 7.25  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
31'	As above; little sand, hard	4-6-10	16	3.25	29					
32'										
33'										
34'	Silty Clay to clayey silt, little sand, very stiff, yellowish olive to brownish yellow	9-15-28	43		22					
35'										
36'										
37'										
38'										
39'	Clay, residual, relict structures, little weathered rock frags (gravel size; angular), olive, oxidized stains, olive	8-11-17	28	2.00	26					
40'										
41'										
42'										
43'										
44'										
45'	as above; sandy, red stained	12-16-24	40	3.00	29	51.69	23.6	28.06	CH A-7-6	53.6
46'										
47'										
48'	Silty Clay, to clayey silt, little fine sand, hard, olive yellow to brownish yellow.	9-9-23	32	2.75	37					
49'										
50'										
51'										
52'										
53'	Silty clay, lean, hard, yellowish brown, oxidized mottled.	17-24-43	67	4.50	22					
54'										
55'										
56'										
57'										
58'										
59'										
60'										





**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-10  
 Job No. BGE 2023-118  
 Sheet No. 3 of 3

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**Boring End At:** 70.00 FT  
**Date:** 3/29/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs:**  
 During drilling: 7 ft  
 After drilling:  
**GS Elevation:**  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** GeoCim

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
61'	Clay, little fine sand, hard, dark bluish gray to gray.	18-35-41	76	4.50	24	57.75	24.28	33.47	CH A-7-6	83.4
62'										
63'										
64'										
65'	Very weathered rock formation sampled as coarse sand and gravel, dense, dark olive to gray.	21-32-42	74		22					
66'										
67'										
68'										
69'										
70'										

End of Boring B-10 @ 70 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-11  
 Job No. BGE 2023-118  
 Sheet No. 1 of 3

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**Boring End At:** 75.00 FT  
**Date:** 5/3/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs:**  
 During drilling: 15.5 ft  
 After drilling:  
**GS Elevation:**  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** GeoCim

Depth ft	Description of Material	Blows/6" N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'	Fill; construction debris; drilling without sampling								
2'									
3'	Fill, Silty clay, with roots, dark brown.								
4'		4-4-4	8	3.75	34				
5'	Fill; Sandy clay, stiff, red, olive gray mixed.								
6'		4-7-10	17	4.50	22				
7'									
8'									
9'		5-6-7	13	4.25	17				
10'									
11'		3-4-4	8	2.00	40				
12'									
13'									
14'									
15'									
16'		2-3-4	7	2.25	31				
17'									
18'	Sandy Clay, stiff, olive brown to olive.  - medium stiff								
19'									
20'		7-10-16	26	2.75	34.0				
21'									
22'									
23'									
24'									
25'									
26'		3-3-7	10	1.00	51				
27'									
28'									
29'									
30'									



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-11  
 Job No. BGE 2023-118  
 Sheet No. 2 of 3

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**Boring End At:** 75.00 FT  
**Date:** 3/29/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs:**  
 During drilling: 7 ft  
 After drilling:  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
31'	Clay, very stiff, olive brown to yellowish brown  - trace sand.	7-12-13	25	2.50	29	60.74	25.32	35.42	CH A-7-6	75.1
32'										
33'										
34'										
35'										
36'	Clay, lean, residual, oxidized planes, hard, olive	16-27-40	67	3.25	21					
37'										
38'										
39'										
40'										
41'	Clay, little sand, residual, oxidized planes, hard, olive	12-21-29	50	3.75	26	59.71	21.78	37.93	CH A-7-6	74
42'										
43'										
44'										
45'										
46'	Sandy silty clay to some sand, hard, olive to yellowish olive	13-23-26	49	3.00	22					
47'										
48'										
49'										
50'										
51'	Clay, residual, hard, oxidized veins, gray.	20-26-31	57	4.50	20					
52'										
53'										
54'										
55'										
56'										
57'										
58'										
59'										
60'										



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-11  
 Job No. BGE 2023-118  
 Sheet No. 3 of 3

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**Boring End At:** 75.00 FT  
**Date:** 3/29/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs:**  
 During drilling: 7 ft  
 After drilling:  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** GeoCim

Depth ft	Description of Material	Blows/6" N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)	
61'	Clay, little to trace fine sand, hard, compact, olive.	16-29-50	79	4.00	16	48.59	20.04	28.55	CL A-7-6	78.1
62'										
63'										
64'										
65'										
66'		16-33-46	79	4.50	24					
67'	Silty Clay, hard, oxidized planes, dark olive to gray,	29-31-34	65	4.50	22					
68'										
69'										
70'										
71'										
72'										
73'	Very weathered rock formation sampled as coarse sand and gravel, dense, dark olive to gray.	50/3"	>150		19					
74'										
75'										

End of Boring B-11 @ 75 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-12  
 Job No. BGE 2023-118  
 Sheet No. 1 of 2

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**Boring End At:** 60.00 FT  
**Date:** 5/3/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs**  
**GS Elevation:**  
**During drilling:** 25  
**After drilling:** 12  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
1'	Fill - Sandy clay with organic matter (roots), dark brown  as above, little wea limestone rock frags	3-4-7	11		19					
2'										
3'										
4'										
5'	As above, some roots, reddish brown	4-7-9	16	2.75	20					
6'										
7'										
8'	Clay, little to some sand, very stiff, red, oxidized mottled	11-9-12	21	2.75	20	36.69	22.23	14.46	CL A-6	65.9
9'										
10'										
11'	Clay, very stiff, brownish yellow and pale gray mixed, oxidized mottled	5-8-12	20	2.50	28					
12'										
13'										
14'	Sandy Clay, little sand to sandy, residual, compact, very stiff, pale brown to tan  As above	9-13-16	29		22					
15'										
16'										
17'										
18'										
19'										
20'										
21'										
22'										
23'										
24'	8-11-17	28		24						
25'										
26'										
27'	Clay to clayey silt, trace fine sand, hard, olive yellowish brown	25-50/2"	>100		16					
28'										
29'										
30'										



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-12  
 Job No. BGE2023-219  
 Sheet No. 2 of 2

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 60.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

**Date:** 3/29/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** 7 ft  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)										
31'	As above	12-16-20	36	3.00	29															
32'																				
33'																				
34'																				
35'																				
36'																				
37'	Clay trace fine sand, hard, dark olive to bluish gray	22-25-50/5"	60	4.50	21															
38'																				
39'																				
40'																				
41'																				
42'																				
43'																				
44'																				
45'											37-50/3"	>100	4.50	23						
46'																				
47'																				
48'																				
49'																				
50'	50/5"	>150	4.50	17																
51'																				
52'																				
53'																				
54'																				
55'	- reddish brown to gray	43-50/5"	>100	4.50	22															
56'																				
57'																				
58'																				
59'																				
60'																				

End of Boring B-12 @ 60 ft depth





**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-13  
 Job No. BGE 2023-118  
 Sheet No. 1 of 2

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 50.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

**Date:** 5/3/2023  
**Groundwater Depth (ft) bgs:**  
**During drilling:** 25  
**After drilling:**

Depth ft	Description of Material	Blows/6" N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)									
1'	Fill - Silty clay with little sand, medium stiff, dark brown	2-4-5	6	22														
2'																		
3'	Clay, trace sand, oxidized mottles, very stiff, olive yellowish brown	4-8-13	21	4.50	33	48.59	20.04	28.55	CH A-7-6	85.1								
4'																		
5'																		
6'																		
7'		8-11-13	24	4.50	28													
8'																		
9'											As above, trace fine sand, hard.	15-24-29	53	29				
10'																		
11'	As above	11-19-22	41	21														
12'																		
13'																		
14'	Clay, trace to little sand, hard, pale olive, oxidized planes.	9-12-18	30	2.25	34													
15'																		
16'																		
17'																		
18'																		
19'																		
20'		As above	27-50/5"	>100	2.00	29												
21'																		
22'																		
23'																		
24'																		
25'											15-25-18	43	4.50	34				
26'																		
27'																		
28'																		
29'																		
30'	As above	33-50/5"	>100	15	51.13	19.48	31.65	CH A-7-6	64.5									



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-13  
 Job No. BGE2023-219  
 Sheet No. 2 of 2

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**Boring End At:** 50.00 FT  
**Date:** 5/3/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs**  
**GS Elevation:**  
**During drilling:** 7 ft  
**After drilling:**  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)				
31'														
32'														
33'	Clay, little silt to silty, trace fine sand, hard, bluish gray to olive.	20-23-26	49	2.00	28									
34'														
35'														
36'														
37'	Clay, hard, bluish gray to yellowish brown	28-50/3"	>100	4.50	20									
38'														
39'														
40'														
41'														
42'														
43'														
44'														
45'											26-50/3"	>100	4.50	18
46'														
47'														
48'														
49'														
50'	26-50/2"				25									

End of Boring B-13 @ 50 ft depth



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-14  
 Job No. BGE 2023-118  
 Sheet No. 1 of 2

**Project:** PR-2 & PR-6 Intersection Geometric Improvements  
**Site Location:** Bayamón, Puerto Rico  
**Boring End At:** 45.00 FT  
**Date:** 5/3/2023  
**Drill Equipment:** CME-55  
**Groundwater Depth (ft) bgs:**  
     **During drilling:** 25  
     **After drilling:**  
**GS Elevation:**  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)																																																																																																																																																
1'	Fill - Silty clay with little roots, dark brown	7-6-6	12		21																																																																																																																																																					
2'											3'	Fill; Clay with wea limestone frags, (gravel-size), medium stiff, brownish yellow	2-4-3	7	3.50	29						4'	5'	6'	Silty clay, little fine sand, very stiff, brownish yellow.	7-11-14	15	2.75	23	41.03	21.25	19.78	CL A-7-6	72.9	7'	8'	Sandy clay to silty, hasrd, brownish yellow	11-13-16	29	2.50	23						9'	10'	11'	Sand, medium grained, dense/hard, yellowish brown	9-13-17	30		20						12'	13'	Clay, silty, hard, yellowish brown	10-14-19	33	4.50	25						14'	15'	16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34	57		19	32.22	17.07	15.15	SC A-2-6	28.3	18'	19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14						24'	25'	26'	27'	28'	29'	30'	17-24-38	62	4.25	24																																										
3'	Fill; Clay with wea limestone frags, (gravel-size), medium stiff, brownish yellow	2-4-3	7	3.50	29																																																																																																																																																					
4'											5'											6'	Silty clay, little fine sand, very stiff, brownish yellow.	7-11-14	15	2.75	23	41.03	21.25	19.78	CL A-7-6	72.9	7'	8'	Sandy clay to silty, hasrd, brownish yellow	11-13-16											29	2.50	23						9'	10'	11'	Sand, medium grained, dense/hard, yellowish brown	9-13-17	30												20																12'	13'	Clay, silty, hard, yellowish brown	10-14-19											33	4.50	25						14'	15'	16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34	57		19	32.22	17.07	15.15	SC A-2-6	28.3	18'	19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14						24'	25'	26'	27'	28'	29'	30'	17-24-38	62	4.25	24				
5'											6'	Silty clay, little fine sand, very stiff, brownish yellow.	7-11-14	15	2.75	23	41.03	21.25	19.78	CL A-7-6	72.9	7'											8'	Sandy clay to silty, hasrd, brownish yellow			11-13-16	29	2.50	23						9'									10'	11'	Sand, medium grained, dense/hard, yellowish brown																															9-13-17	30																						20																12'	13'	Clay, silty, hard, yellowish brown											10-14-19	33	4.50	25						14'	15'	16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34
6'	Silty clay, little fine sand, very stiff, brownish yellow.	7-11-14	15	2.75	23	41.03	21.25	19.78	CL A-7-6	72.9																																																																																																																																																
7'											8'	Sandy clay to silty, hasrd, brownish yellow	11-13-16	29	2.50	23						9'	10'	11'	Sand, medium grained, dense/hard, yellowish brown	9-13-17	30		20							12'										13'	Clay, silty, hard, yellowish brown	10-14-19	33	4.50	25						14'	15'	16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34	57		19	32.22	17.07	15.15	SC A-2-6	28.3	18'	19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14						24'	25'	26'																					27'	28'	29'	30'											17-24-38	62	4.25	24																											
8'	Sandy clay to silty, hasrd, brownish yellow	11-13-16	29	2.50	23																																																																																																																																																					
9'											10'											11'	Sand, medium grained, dense/hard, yellowish brown	9-13-17	30		20						12'	13'	Clay, silty, hard, yellowish brown	10-14-19	33	4.50	25						14'	15'											16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34											57		19	32.22	17.07	15.15											SC A-2-6	28.3	18'	19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14						24'	25'	26'	27'	28'	29'	30'	17-24-38	62	4.25	24																																							
10'											11'	Sand, medium grained, dense/hard, yellowish brown	9-13-17	30		20						12'											13'	Clay, silty, hard, yellowish brown											10-14-19	33											4.50	25																																				14'											15'	16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34	57		19	32.22	17.07	15.15	SC A-2-6	28.3	18'	19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14																24'	25'	26'	27'	28'	29'	30'	17-24-38	62	4.25	24
11'	Sand, medium grained, dense/hard, yellowish brown	9-13-17	30		20																																																																																																																																																					
12'											13'	Clay, silty, hard, yellowish brown	10-14-19	33	4.50	25						14'	15'	16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34	57		19	32.22	17.07	15.15														SC A-2-6	28.3	18'	19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32					58	3.25	14						24'	25'																								26'											27'	28'	29'											30'	17-24-38	62	4.25	24																																
13'	Clay, silty, hard, yellowish brown	10-14-19	33	4.50	25																																																																																																																																																					
14'											15'											16'	17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34									57		19	32.22	17.07	15.15	SC A-2-6	28.3	18'	19'	20'	21'	22'			23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14																24'	25'	26'	27'	28'	29'	30'	17-24-38	62	4.25	24																																																																										
15'											16'											17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized																			14-23-34	57		19	32.22			17.07																					15.15	SC A-2-6	28.3	18'	19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14						24'	25'	26'	27'	28'	29'											30'	17-24-38	62	4.25	24																																													
16'											17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34	57		19	32.22	17.07	15.15	SC A-2-6	28.3	18'																																																			19'	20'	21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown											16-26-32	58	3.25	14						24'	25'	26'	27'	28'	29'	30'	17-24-38	62	4.25	24																																														
17'	Clayey sand (medium-coarse grained), hard, yellowish brown, oxidized	14-23-34	57		19	32.22	17.07	15.15	SC A-2-6	28.3																																																																																																																																																
18'											19'											20'				21'	22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14																																											24'	25'																					26'	27'	28'	29'	30'	17-24-38	62	4.25	24																																																
19'											20'											21'		22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58						3.25	14						24'														25'	26'					27'	28'	29'	30'	17-24-38	62	4.25	24																																																																																						
20'											21'											22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32																58	3.25	14													24'					25'	26'	27'	28'	29'	30'	17-24-38	62		4.25	24																																																																																			
21'											22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14						24'																											25'	26'	27'	28'	29'		30'	17-24-38	62	4.25	24																																																																																														
22'	23'	Clay, little silt, trace sand, hard, yellowish brown	16-26-32	58	3.25	14						24'											25'																											26'	27'	28'	29'	30'		17-24-38	62	4.25	24																																																																																															
23'	Clay, little silt, trace sand, hard, yellowish brown											16-26-32											58																											3.25	14																																																																																																							
24'																																																										25'	26'	27'	28'	29'	30'	17-24-38	62	4.25	24																																																																																							
25'																													26'	27'	28'	29'	30'														17-24-38	62										4.25	24																																																																																															
26'																										27'	28'	29'	30'	17-24-38	62	4.25	24																																																																																																																									
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28'													29'	30'	17-24-38	62	4.25	24																																																																																																																																								
29'		30'	17-24-38	62	4.25	24																																																																																																																																																				
30'	17-24-38	62	4.25	24																																																																																																																																																						



**BAIGES GEOTECHNICAL ENGINEERS, LLC**

LOG OF BORING NO. B-14  
 Job No. BGE2023-219  
 Sheet No. 2 of 2

**Project:** Improvements to Villa Pesquera Facilities  
**Site Location:** Río Grande, Puerto Rico  
**GS Elevation:**  
**Coordinates:**

**Boring End At:** 45.00 FT  
**Drill Equipment:** CME-55  
**Drill Method:** HSA SPT 140 lb Manual  
**Driller:** A&B Drilling Services, Inc.

**Date:** 5/3/2023  
**Groundwater Depth (ft) bgs**  
**During drilling:** 25 ft  
**After drilling:**

Depth ft	Description of Material	Blows/6"	N bpf	qu tsf	W (%)	LL (%)	PL (%)	PI (%)	USCS [AASHTO]	Fines (%)
31'										
32'										
33'	Clay, hard, bluish gray	18-20-26	46	4.50	20					
34'										
35'										
36'										
37'	Clay, hard, bluish gray to yellowish brown	17-39-50/4"	89	3.50	22					
38'										
39'										
40'										
41'										
42'										
43'										
44'										
45'	19-35-50	88	3.75	26						

End of Boring B-14 @ 45 ft depth



**APPENDIX B**

**FIELD AND LABORATORY TESTING PROCEDURES**



## Appendix B

### Field and Laboratory Test Procedures

#### I. DRILLING METHODS

##### A. Hollow Stem Auger Boring - Dry Sample method (ASTM-D-1452)

In the auger method, borings are advanced by turning a hydraulic powered auger into the ground in 5 feet increments or less. As the auger penetrates the cuttings rise to the surface on the spirals. The depth from which the material comes, however, cannot be accurately determined. Therefore, soil samples are not taken from the spiral augers. With the use of a hollow stem auger, a sampling apparatus may be inserted in the hollow stem to the bottom of the auger, eliminating the need for casings. The sampling procedures are described in the following paragraphs.

##### B. Wash Boring - Dry Sample Method

For inaccessible locations a portable drilling unit is used which consists of a tripod mounted motorized cathead which is used to drive casings and sampling rods to conduct this method of drilling. Borings are advanced into the ground by the wash-boring-dry sample method. The borings are normally cased through most of this length by the drop of a 140 lbs. hammer from a height of 30 inches. The casing diameter is 2-1/2 inches. The number of blows for every foot of penetration the casing advanced is recorded and is reported in the boring logs. When driving of the casing becomes too difficult due to the hardness of the soils encountered, and the hole does not cave-in, the boring may be advanced without casing by continuous washing out of the soils with the drill rods. The color and nature of the soils washed out (gravel, sand, silts or clay) is examined and recorded in order to determine the extent of each soil strata this is complemented with the sampling operations which are regularly made every five feet.

##### C. Core Borings (ASTM-D-2113)

Core Borings are used when necessary to penetrate into rock and obtain a continuous rock sample. The sample is obtained by means of a core barrel which is attached to the drill rods. At the end of the core barrel is a special bit studded with industrial diamonds which cuts into the rock. The drill rod, and hence the core barrel and diamond bit are rotated as downward pressure is applied. As the bit cuts into the rock, the rock core is free to move into the inner core barrel head, which is suspended on a swivel and therefore does not follow the motion of the outer core barrel with its bit. Cooling water or bentonite slurry is circulated through the drill rod and the core barrel. Penetration depends on the length of the core barrel and the quality of the rock (amount of joints or fractures). Rock discontinuities such as joints and fractures affect the length of penetration in a given core run. The runs are longer as the rock quality increases. As the core barrel is withdrawn, the core lifter, located inside the diamond bit, wedges itself around the bottom of the rock core



and thus permits it to be pulled free from the underlying rock. The two most common core sizes are NWM which produces a core of 2.15 inches diameter and HWM which produces a core 3.00 inches in diameter.

## II. SAMPLING IN SOILS

### A. Standard Penetration Test (ASTM-D-1586)

The standard penetration tests are made with a split-spoon sampler 2.0 inches/O.D. diameter, 1.375 inches I.D. diameter, 18 inches long. The sampler is driven into the ground by the drop of a 140 pounds hammer from a height of 30 inches. The number of blows from the three consecutive six inches of penetration of the sampler is recorded and the number of blows for the last foot of penetration is reported as the N-value. The samples are stored and sealed in glass jars for future classification tests in the laboratory.

The standard penetration test has been correlated with the consistency of fine grained soils and with the angle of internal friction or the relative density of sands. Such correlations can be used for preliminary estimates and to aid in the stratigraphic classification of the soil strata at a given site.

In the case of fine grained soils, the correlations of the SPT with the undrained shear strength of medium and stiff silts and clays of low sensitivity have been found to be fairly good; however, in the case of the soft silts and clays the SPT gives poor estimates of the undrained shear strength. Testing in undisturbed samples and vane shear tests are recommended in such cases.

### B. Undisturbed Sampling

Undisturbed Samples are obtained using thin wall brass or zinc coated steel shelly tubes 2" to 3" O.D. by 24" to 30" long. The sampler is forced to penetrate the soil by static force or downward pressure and is pulled out also using static pull. The samplers are sealed in the field and shipped to the laboratory where the samples are extruded at the time of testing by pushing in the same direction that the sample penetrated the sampler. Special care is taken in packing and handling these samples to avoid disturbance.

## III. LABORATORY TESTING

### A. Atterberg Limits (ASTM-D-2166)

The Atterberg limits and related indices are very commonly used in soil mechanics works mainly for soil identification and classification purposes. They are also used in connection with some semi-empirical methods of design for preliminary estimates.

## B. Unconfined Compression Test (ASTM-D-2166)

The best quality samples recovered in the split-spoon sampler are subjected to unconfined compression to failure. These samples cannot be regarded as “undisturbed” and the strengths obtained are lower than the “true” in-situ value due to the effect of disturbances and sensitivity of the soil. Furthermore, increased brittleness or friability of the soil structure results in strength values lower than the in-situ undrained strength. Therefore, the unconfined strength values measured in the split-spoon samples are used only as an index property for classification and identification purposes. When more accurate values of strength are needed, undisturbed samples from thin-wall shelly tubes are used.

## C. Natural Moisture Content (ASTM-D-2216)

The natural moisture content is the water content of the soil in-situ. The soil sample is obtained from the SPT sampler or shelly tubes. Approximately 40 gms. of soil are weighed and then placed in an oven for 24 hours at a temperature of 105 – 110 C. The natural moisture content, “W<sub>n</sub>” is obtained from the difference between the weights in the natural state and after oven drying, divided by the dry weight of the sample and expressed in percentage.

## IV. SOIL DESCRIPTION (ASTM-D-2488)

The description of the soils include the type (gravel, sand, silt, clay, organic), consistency (if a fine grained soil), size and roundness (if a coarse grained soil), color, and some other special characteristic which can aid in the identification and classification of the soil such as presence of rubbish, organic matter, shells and fossils, stratification and structure, cementation, mineral composition, relict structures, stains and others.

To aid in the preparation of these descriptions some simple tests are made such as those recommended by the Unified Soil Classification system for field classification (dilatancy, dry strength, shine, toughness). To approximate the consistency of fine grained soils (soft, medium, stiff, hard), a simple test is performed with the hand: a hard fine grained soil is difficult to indent with the thumbnail, stiff soils are readily indented with the thumb, medium soils can be penetrated by moderate thumb pressure and soft soils are easily penetrated with the thumb.

The description of coarse grained soils (sands and gravel) includes size (fine, medium coarse) and roundness (angular, sub-angular, sub-rounded, rounded and well-rounded).

The relative amount of coarse fractions in fine grained soils is estimated by placing a representative sample or some 50 gms. in a graduated cylinder filled with water. The mix is shaken and allowed to settle. Particles of a size larger than fine sand are visible to the naked eye while silts and clays are not. In this manner, estimates of the relative amounts of the coarse fraction are made and reported as:

Trace	1	10%
Little	10	20%
Some	20	35%
Sandy, gravelly, silty or clayey	35	50%

The relative density of sands has been correlated with the results of the Standard Penetration Test, as follows:

For Granular Soils	
<u>N-Blows/ft.</u>	<u>Relative Density</u>
0 – 4	Very loose
4 – 10	Loose
10 – 30	Medium
30 – 50	Dense
over 50	Very dense

These are very approximate correlations which vary with, among other factors, overburden pressure (Gibbs and Holtz, 1957, and Peck and Bazaraa, 1967). These correlations are meaningless in soils with a significant amount of gravel or cobbles.

The relative amounts of the fine grained soils is estimated based on the reaction of the soils to the dilatancy, shine, dry strength and toughness tests, with adjective indicating the less active fraction i.e. a sandy clay behaves more like a clay than a sand.

The consistency of cohesive soils has also been correlated to the results of the Standard Penetration Test, as shown below. The correlation, however, is greatly affected by the clay structure and factors such as sensitivity.

For Cohesive Soils

<u>Unconfined Compressive Strength (T.S.F.)</u>	<u>N-Blows/Ft.</u>	<u>Consistency</u>
Less than 0.25	Less than 2	Very soft
0.25 – 0.50	2 – 4	Soft
0.50 – 1.00	4 – 8	Medium
1.00 – 2.00	8 – 15	Stiff
2.00 – 4.00	15 – 30	Very stiff
More than 4.00	More than 30	Hard

Once the soil samples have been tested, they are stored for three months after the date of our final report, and then destroyed, unless required in writing by the client to store them for a longer period.



**APPENDIX C**  
**RESULTS OF SOIL CLASSIFICATION TESTS**

## Sieve Test

Report #: 001-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

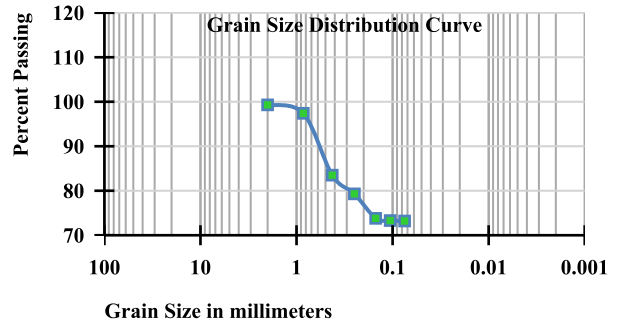
**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Reddish gray (5/1)  
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-2  
**Depth (ft):** 4-6

### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	228.2	Tare #	9043	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	455.6	Dry Wt	227.4	Dry Wt.+ Tare	455.6		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	61.44
50mm 2 in								Plastic Limit (PL)	22.59
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	38.85
25mm 1 in								Non-Plastic	
19mm 3/4 in								Percent Gravel	0
12.5mm 1/2 in								Percent Sand	26.8
9.5mm 3/8 in								Percent Fines	73.2
4.75mm #4						Soil Classification Method			
2.36mm #8						USCS: CH			
2mm #10	1.6	0.7	99.3	99		AASHTO: A-7-6 (16)			
0.85mm #20	5.9	2.6	97.4	97		Soil Description: Fat Clay with sand			
0.425mm #40	37.6	16.5	83.5	84					
0.25mm #60	47	20.7	79.3	79					
0.15mm #100	59.5	26.2	73.8	74					
0.106mm #140	60.8	26.7	73.3	73					
0.075mm #200	61	26.8	73.2	73					



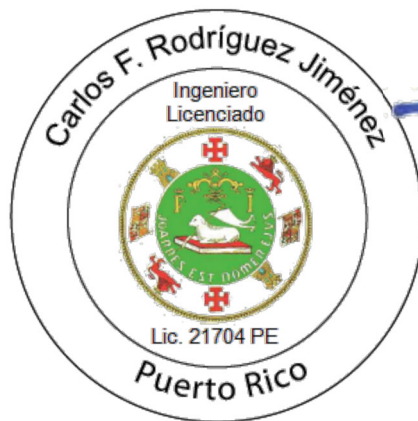
**Remarks:**

B-2, 4-6

**Report Copied to:**

James A. Baigés

Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



Carlos Felipe Rodríguez, P.E.

**GEO-Engineering**

Date Signed: 05/23/2023 07:16 PM

Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 001-L2

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

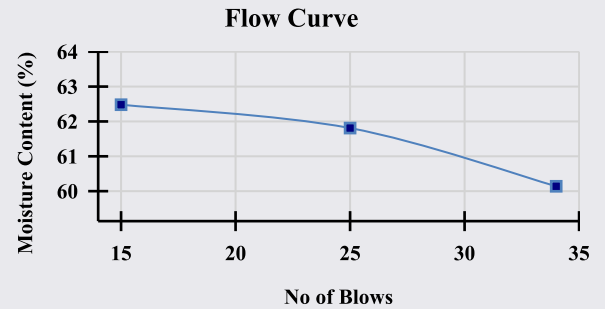
## SAMPLE DATA

**Boring No:** B-2  
**Sample Location / No:**  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:**

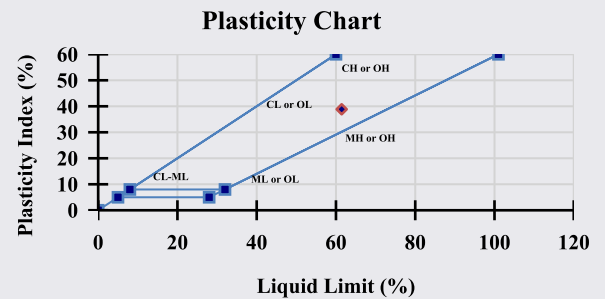
**Field Activity Date:** 05/11/2023  
**Depth (ft):** 4-6

## Soil Classification:

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	40	38	87	1246	1258
Tare Mass (g)	14.32	14.55	14	4.18	4.17
Tare + Wet Soil (g)	30.76	31.48	30.59	11.3	12.85
Tare + Dry Soil (g)	24.48	24.97	24.36	9.98	11.26
Number of Blows	25	15	34		
Moisture Content (%)	61.81	62.48	60.14	22.76	22.43



<b>Liquid Limit (LL)</b>	61.44
<b>Plastic Limit (PL)</b>	22.59
<b>Plasticity Index (PI)</b>	38.85



Non-Plastic:  Yes  No

## Remarks:

B-2, 4-6

## Report Copied to:

James A. Baigés



*[Signature]*

Carlos Felipe Rodríguez, P.E.

GEO-Engineering

Date Signed: 05/23/2023 07:16 PM

Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.



## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 001-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-2 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 4-6  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9043	
Pan Weight	228.2	
MOISTURE CONTENT		Calculation
Wet Weight	455.6	227.4
Dry Weight	455.6	227.4
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	455.6	227.4
Wash Weight	289.2	61
Percent Passing (%)	73.18	

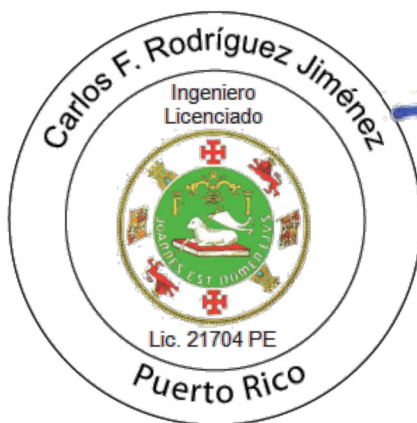
**Remarks:**

B-2, 4-6

**Report Copied to:**

James A. Baigés

Lab Representative: GEO LABTECH  
 Cert No: BN# 3242 / TN# 9687



**Carlos Felipe Rodríguez, P.E.**

**GEO-Engineering**

Date Signed: 05/23/2023 07:16 PM

Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

## Sieve Test

Report #: 002-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Pinkish gray (7/2)

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-3  
**Depth (ft):** 4-6

### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	226.5	Tare #	9046	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	710.2	Dry Wt	483.7	Dry Wt.+ Tare	710.2		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard		Physical Properties	Results
						D-4318	Atterberg Limits	Liquid Limit (LL)	46.89
75mm 3 in								Plastic Limit (PL)	21.77
50mm 2 in								Plasticity Index (PI)	25.12
37.5mm 1.5 in						D-2487	Classification of Soil	Non-Plastic	
25mm 1 in								Percent Gravel	4.5
19mm 3/4 in	12	2.5	97.5	98		Soil Classification Method			
12.5mm 1/2 in	12	2.5	97.5	98		USCS: SC			
9.5mm 3/8 in	12	2.5	97.5	98		AASHTO: A-7-6 (4)			
4.75mm #4	22	4.5	95.5	96		Soil Description: Clayey Sand			
2mm #10	47.1	9.7	90.3	90					
0.85mm #20	95.4	19.7	80.3	80					
0.425mm #40	212.9	44	56	56					
0.25mm #60	247.9	51.3	48.7	49					
0.15mm #100	271.2	56.1	43.9	44					
0.106mm #140	275.3	56.9	43.1	43					
0.075mm #200	277.3	57.3	42.7	43					

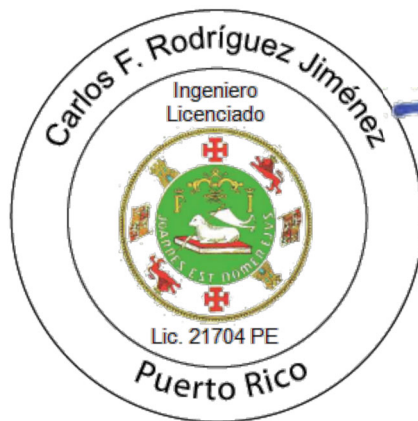
### Remarks:

B-3, 4-6

### Report Copied to:

James A. Baigés

Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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GEO-Engineering

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 002-L2

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

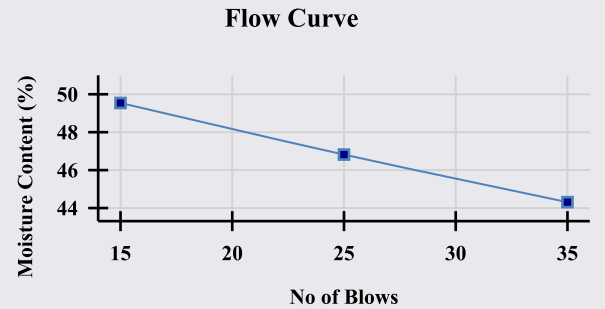
## SAMPLE DATA

**Boring No:** B-3  
**Sample Location / No:**  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:**

**Field Activity Date:** 05/11/2023  
**Depth (ft):** 4-6

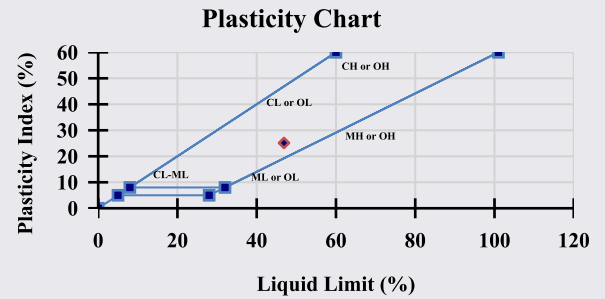
**Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
<b>Tare No.</b>	90	74	13	1264	1303
<b>Tare Mass (g)</b>	14.47	14.4	14.26	4.2	4.18
<b>Tare + Wet Soil (g)</b>	30.65	30.11	30.35	11.99	11.1
<b>Tare + Dry Soil (g)</b>	25.29	25.1	25.41	10.6	9.86
<b>Number of Blows</b>	15	25	35		
<b>Moisture Content (%)</b>	49.54	46.82	44.31	21.72	21.83



<b>Liquid Limit (LL)</b>	46.89
<b>Plastic Limit (PL)</b>	21.77
<b>Plasticity Index (PI)</b>	25.12

Non-Plastic:  Yes  No



**Remarks:**

B-3, 4-6

**Report Copied to:**

James A. Baigés

Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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**Carlos Felipe Rodríguez, P.E.**

**GEO-Engineering**

Date Signed: 05/23/2023 07:16 PM

Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 002-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-3 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 4-6  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9046	
Pan Weight	226.5	
MOISTURE CONTENT		Calculation
Wet Weight	710.2	483.7
Dry Weight	710.2	483.7
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	710.2	483.7
Wash Weight	503.5	277
Percent Passing (%)	42.73	

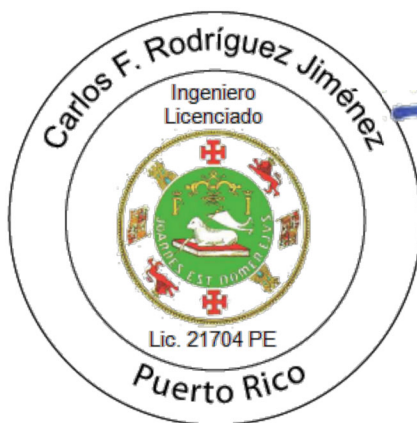
**Remarks:**

B-3, 4-6

**Report Copied to:**

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Lab Representative: GEO LABTECH  
 Cert No: BN# 3242 / TN# 9687



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## Sieve Test

Report #: 003-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Yellowish brown  
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-5  
**Depth (ft):** 8-10

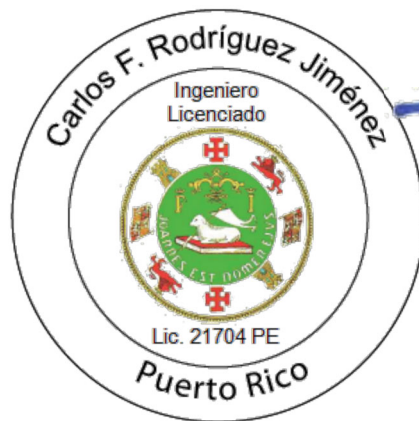
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	60.8	Tare #	9032	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	309.9	Dry Wt	249.1	Dry Wt.+ Tare	309.9		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	59.24
50mm 2 in								Plastic Limit (PL)	25.35
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	33.89
25mm 1 in								Non-Plastic	
19mm 3/4 in								Percent Gravel	0
12.5mm 1/2 in								Percent Sand	16.5
9.5mm 3/8 in								Percent Fines	83.5
4.75mm #4						Soil Classification Method			
2mm #10						USCS: CH			
0.85mm #20	14.5	5.8	94.2	94		AASHTO: A-7-6 (16)			
0.425mm #40	26.9	10.8	89.2	89		Soil Description: Fat Clay with sand			
0.25mm #60	32.4	13	87	87					
0.15mm #100	38	15.3	84.7	85					
0.106mm #140	40.3	16.2	83.8	84					
0.075mm #200	41	16.5	83.5	84					

**Remarks:**

B-5, 8-10

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 003-L2

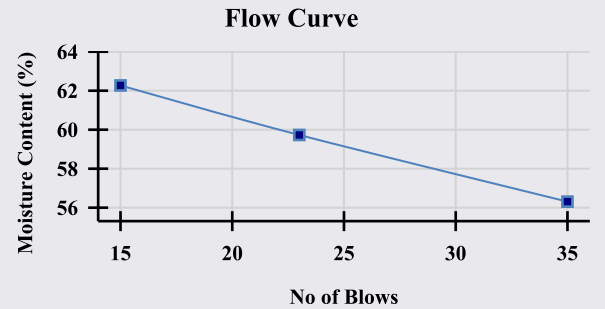
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

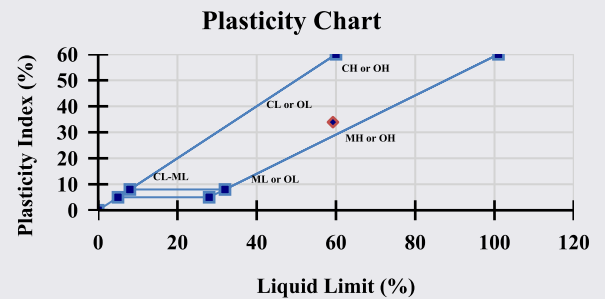
**Boring No:** B-5 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 8-10  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	44	73	3	1263	1238
Tare Mass (g)	13.78	13.94	14.3	4.19	4.34
Tare + Wet Soil (g)	30.38	30.44	30.29	11.05	11.13
Tare + Dry Soil (g)	24.01	24.27	24.53	9.69	9.73
Number of Blows	15	23	35		
Moisture Content (%)	62.27	59.73	56.31	24.73	25.97



<b>Liquid Limit (LL)</b>	59.24
<b>Plastic Limit (PL)</b>	25.35
<b>Plasticity Index (PI)</b>	33.89

Non-Plastic:  Yes  No



**Remarks:**  
B-5, 8-10

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 003-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-5 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 8-10  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9032	
Pan Weight	60.8	
MOISTURE CONTENT		Calculation
Wet Weight	309.9	249.1
Dry Weight	309.9	249.1
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	309.9	249.1
Wash Weight	101.8	41
Percent Passing (%)	83.54	

**Remarks:**  
B-5, 8-10

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## Sieve Test

Report #: 004-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Light brownish gray (6/2)

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-6  
**Depth (ft):** 6-8

### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	226.6	Tare #	9048	Moisture Content (%)	0	Intended Use				
Water Wt	0	Wet Wt.+ Tare	323.5	Dry Wt	96.9	Dry Wt.+ Tare	323.5			
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results		
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	53.78	
50mm 2 in									Plastic Limit (PL)	22.30
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	31.48	
25mm 1 in									Non-Plastic	
19mm 3/4 in									Percent Gravel	2.8
12.5mm 1/2 in								Percent Sand	29.3	
9.5mm 3/8 in								Percent Fines	67.9	
4.75mm #4	2.7	2.8	97.2	97		Soil Classification Method				
2mm #10	6.3	6.5	93.5	94		USCS: CH				
0.85mm #20	12.6	13	87	87		AASHTO: A-7-6 (11)				
0.425mm #40	22.3	23	77	77		Soil Description: Sandy fat Clay				
0.25mm #60	26.6	27.5	72.5	73						
0.15mm #100	29.4	30.3	69.7	70						
0.106mm #140	30.6	31.6	68.4	68						
0.075mm #200	31.1	32.1	67.9	68						

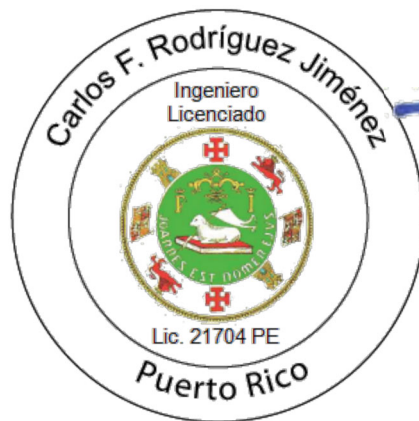
### Remarks:

B-6, 6-8

### Report Copied to:

James A. Baigés

Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



Carlos Felipe Rodríguez, P.E.

GEO-Engineering

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 004-L2

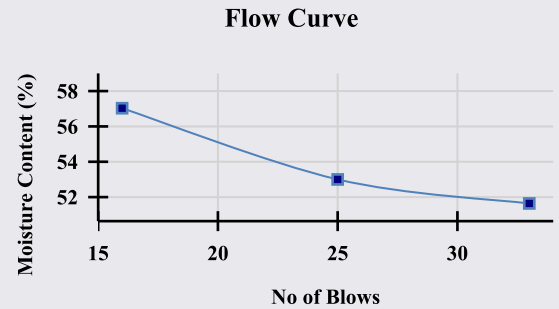
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

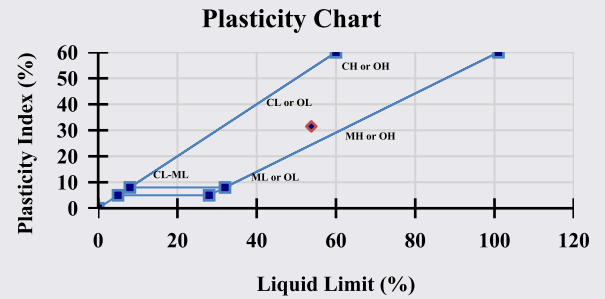
**Boring No:** B-6 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 6-8  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
<b>Tare No.</b>	13	85	39	1206	1263
<b>Tare Mass (g)</b>	14.25	13.79	14.31	4.21	4.19
<b>Tare + Wet Soil (g)</b>	27.77	30.41	27.56	11.21	11.23
<b>Tare + Dry Soil (g)</b>	22.86	24.75	22.97	9.93	9.95
<b>Number of Blows</b>	16	33	25		
<b>Moisture Content (%)</b>	57.03	51.64	53	22.38	22.22



<b>Liquid Limit (LL)</b>	53.78
<b>Plastic Limit (PL)</b>	22.30
<b>Plasticity Index (PI)</b>	31.48

Non-Plastic:  Yes  No



**Remarks:**

B-6, 6-8

**Report Copied to:**

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Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 004-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-6 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 6-8  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

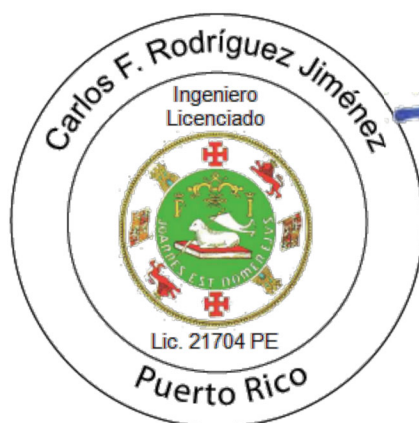
MOISTURE CONTENT & PERCENT FINES		
Pan #	9048	
Pan Weight	226.6	
MOISTURE CONTENT		Calculation
Wet Weight	323.5	96.9
Dry Weight	323.5	96.9
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	323.5	96.9
Wash Weight	257.8	31.2
Percent Passing (%)	67.8	

**Remarks:**

B-6, 6-8

**Report Copied to:**

James A. Baigés



Carlos Felipe Rodríguez, P.E.

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Date Signed: 05/23/2023 07:16 PM

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## Sieve Test

Report #: 005-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Light yellowish brown  
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-8  
**Depth (ft):** 18.5-20

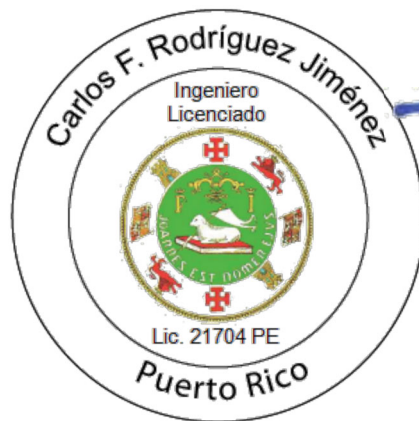
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	228	Tare #	9045	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	405.3	Dry Wt	177.3	Dry Wt.+ Tare	405.3		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	55.62
50mm 2 in					Plastic Limit (PL)			23.98	
37.5mm 1.5 in					Plasticity Index (PI)			31.64	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0	
12.5mm 1/2 in					Percent Sand			33.5	
9.5mm 3/8 in							Percent Fines	66.5	
4.75mm #4						Soil Classification Method			
2mm #10	0.2	0.1	99.9	100		USCS: CH			
0.85mm #20	2.2	1.2	98.8	99		AASHTO: A-7-6 (11)			
0.425mm #40	20.8	11.7	88.3	88		Soil Description: Sandy Fat Clay			
0.25mm #60	37.9	21.4	78.6	79					
0.15mm #100	50.4	28.4	71.6	72					
0.106mm #140	56.5	31.9	68.1	68					
0.075mm #200	59.4	33.5	66.5	67					

**Remarks:**  
B-8, 18.5-20

**Report Copied to:**

Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 005-L2

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

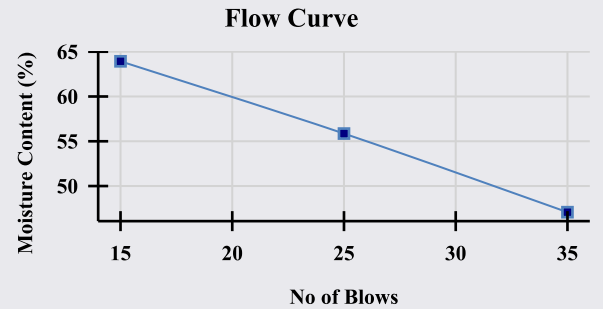
## SAMPLE DATA

**Boring No:** B-8  
**Sample Location / No:**  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:**

**Field Activity Date:** 05/11/2023  
**Depth (ft):** 18.5-20

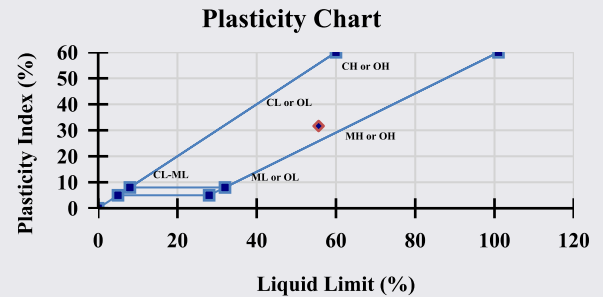
## Soil Classification:

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	39	85	52	1305	1253
Tare Mass (g)	14.31	13.79	14.1	4.2	4.45
Tare + Wet Soil (g)	36.24	34.66	32.69	14.17	14.23
Tare + Dry Soil (g)	29.22	27.18	25.44	12.24	12.34
Number of Blows	35	25	15		
Moisture Content (%)	47.08	55.86	63.93	24.01	23.95



<b>Liquid Limit (LL)</b>	55.62
<b>Plastic Limit (PL)</b>	23.98
<b>Plasticity Index (PI)</b>	31.64

Non-Plastic:  Yes  No



**Remarks:**  
B-8, 18.5-20

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**GEO-Engineering**  
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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 005-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

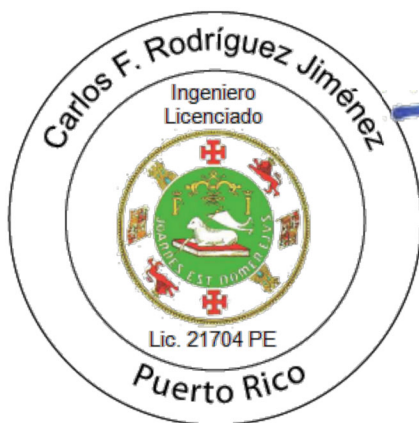
**Boring No:** B-8 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 18.5-20  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9045	
Pan Weight	228	
MOISTURE CONTENT		Calculation
Wet Weight	405.3	177.3
Dry Weight	405.3	177.3
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	405.3	177.3
Wash Weight	288	60
Percent Passing (%)	66.16	

**Remarks:**  
B-8, 18.5-20

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## Sieve Test

Report #: 006-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Pinkish white (8/2)

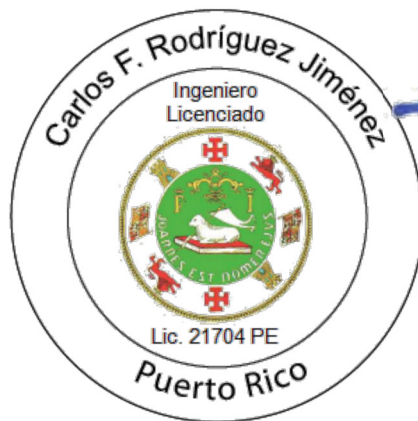
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-9  
**Depth (ft):** 10-11.5

### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	233.1	Tare #	9038	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	556.2	Dry Wt	323.1	Dry Wt.+ Tare	556.2		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	66.49
50mm 2 in					Plastic Limit (PL)			30.44	
37.5mm 1.5 in					Plasticity Index (PI)			36.05	
25mm 1 in						D-2487	Classification of Soil	Percent Gravel	0
19mm 3/4 in					Percent Sand			21.1	
12.5mm 1/2 in					Percent Fines			78.9	
9.5mm 3/8 in						Soil Classification Method			
4.75mm #4						USCS: CH			
2mm #10	1.2	0.4	99.6	100		AASHTO: A-7-5 (16)			
0.85mm #20	12.4	3.8	96.2	96		Soil Description: Fat Clay with sand			
0.425mm #40	51.6	16	84	84					
0.25mm #60	62.6	19.4	80.6	81					
0.15mm #100	67.2	20.8	79.2	79					
0.106mm #140	68.1	21.1	78.9	79					
0.075mm #200	68.3	21.1	78.9	79					

**Remarks:**  
B-9, 10-11.5

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 006-L2

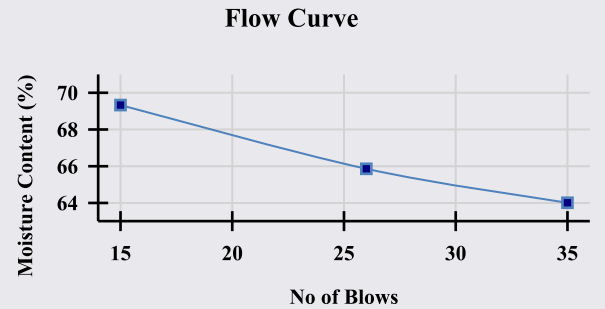
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

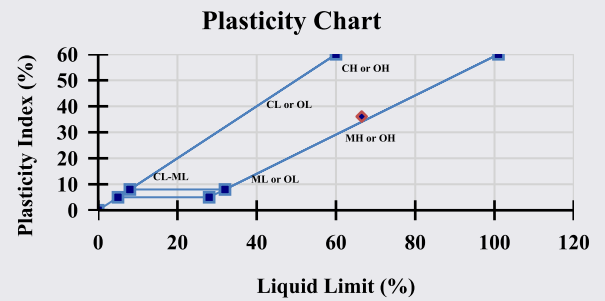
**Boring No:** B-9 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 10-11.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	73	46	52	1235	1260
Tare Mass (g)	14.29	14.57	14.1	4.45	4.18
Tare + Wet Soil (g)	30.41	30.36	30.14	11.14	11.16
Tare + Dry Soil (g)	23.81	24.09	23.88	9.58	9.53
Number of Blows	15	26	35		
Moisture Content (%)	69.33	65.86	64.01	30.41	30.47



<b>Liquid Limit (LL)</b>	66.49
<b>Plastic Limit (PL)</b>	30.44
<b>Plasticity Index (PI)</b>	36.05

Non-Plastic:  Yes  No



**Remarks:**  
B-9, 10-11.5

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Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 006-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-9  
**Sample Location / No:**  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

**Field Activity Date:** 05/11/2023  
**Depth (ft):** 10-11.5

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9038	
Pan Weight	233.1	
MOISTURE CONTENT		Calculation
Wet Weight	556.2	323.1
Dry Weight	556.2	323.1
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	556.2	323.1
Wash Weight	301.3	68.2
Percent Passing (%)	78.89	

**Remarks:**  
B-9, 10-11.5

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Lab Representative: GEO LABTECH  
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## Sieve Test

Report #: 007-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Brownish yellow (6/6)

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-9  
**Depth (ft):** 28.5-30

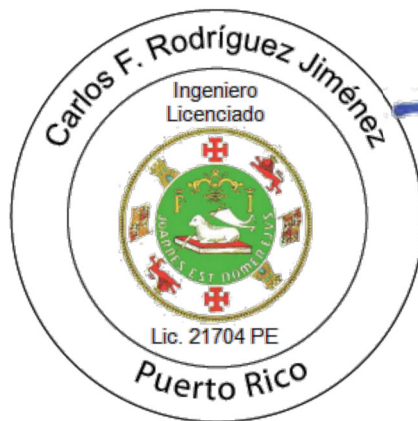
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	226.3	Tare #	9047	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	663	Dry Wt	436.7	Dry Wt.+ Tare	663		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	47.02
50mm 2 in								Plastic Limit (PL)	20.42
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	26.6
25mm 1 in								Non-Plastic	
19mm 3/4 in								Percent Gravel	0
12.5mm 1/2 in						Soil Classification Method			
9.5mm 3/8 in						USCS: CL			
4.75mm #4						AASHTO: A-7-6 (8)			
2mm #10	1.9	0.4	99.6	100		Soil Description: Sandy lean Clay			
0.85mm #20	10.3	2.4	97.6	98					
0.425mm #40	54.8	12.5	87.5	88					
0.25mm #60	93.3	21.4	78.6	79					
0.15mm #100	146.3	33.5	66.5	67					
0.106mm #140	152.4	34.9	65.1	65					
0.075mm #200	154	35.3	64.7	65					

**Remarks:**  
B-9, 28.5-30

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Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 007-L2

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

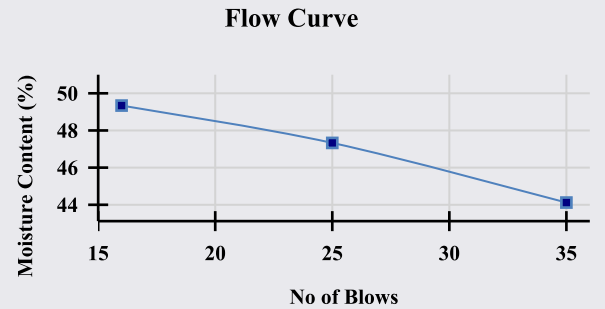
## SAMPLE DATA

**Boring No:** B-9  
**Sample Location / No:**  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:**

**Field Activity Date:** 05/11/2023  
**Depth (ft):** 28.5-30

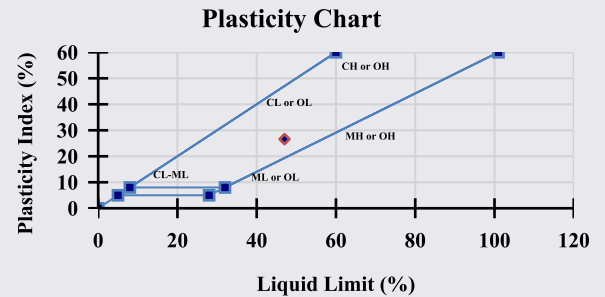
## Soil Classification:

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	10	20	81	1215	1307
Tare Mass (g)	14.42	14.07	14.33	4.23	4.18
Tare + Wet Soil (g)	30.22	30.6	30.27	11.07	11.02
Tare + Dry Soil (g)	25	25.29	25.39	9.91	9.86
Number of Blows	16	25	35		
Moisture Content (%)	49.34	47.33	44.12	20.42	20.42



<b>Liquid Limit (LL)</b>	47.02
<b>Plastic Limit (PL)</b>	20.42
<b>Plasticity Index (PI)</b>	26.6

Non-Plastic:  Yes  No



**Remarks:**  
B-9, 28.5-30

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Lab Representative: GEO LABTECH  
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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 007-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

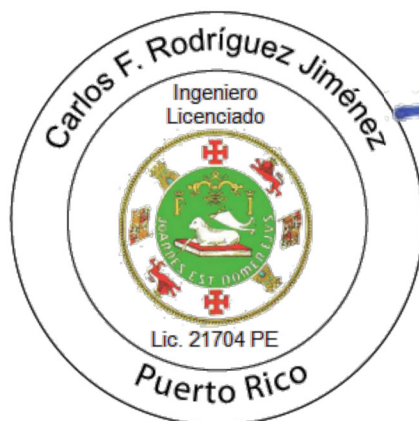
**Boring No:** B-9 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 28.5-30  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9047	
Pan Weight	226.3	
MOISTURE CONTENT		Calculation
Wet Weight	663	436.7
Dry Weight	663	436.7
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	663	436.7
Wash Weight	379.1	152.8
Percent Passing (%)	65.01	

**Remarks:**  
B-9, 28.5-30

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## Sieve Test

Report #: 008-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

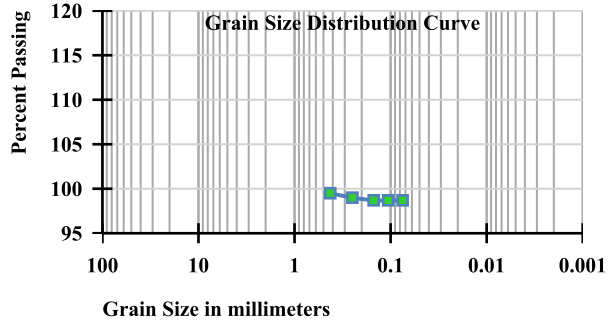
**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:**

**Field Activity Date:** 05/11/2023  
**Sample No:**

**Boring No:** B-9  
**Depth (ft):** 48.5-50

### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	158.6	Tare #	8011	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	681.8	Dry Wt	523.2	Dry Wt.+ Tare	681.8		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	61.13
50mm 2 in					Plastic Limit (PL)			27.16	
37.5mm 1.5 in					Plasticity Index (PI)			33.97	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0	
12.5mm 1/2 in					Percent Sand			1.3	
9.5mm 3/8 in							Percent Fines	98.7	
4.75mm #4						Soil Classification Method			
2mm #10						USCS: CH			
0.85mm #20						AASHTO: A-7-6			
0.425mm #40	2.6	0.5	99.5	100		Soil Description: Fat Clay			
0.25mm #60	5	1	99	99					
0.15mm #100	6.8	1.3	98.7	99					
0.106mm #140	6.9	1.3	98.7	99					
0.075mm #200	7	1.3	98.7	99					



**Remarks:**  
B-9, 48.8-50

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Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 008-L2

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

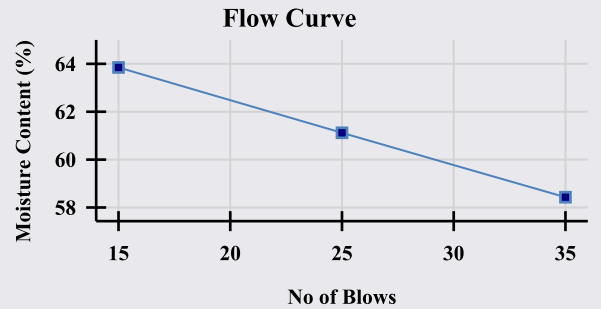
## SAMPLE DATA

**Boring No:** B-9  
**Sample Location / No:**  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:**

**Field Activity Date:** 05/11/2023  
**Depth (ft):** 48.5-50

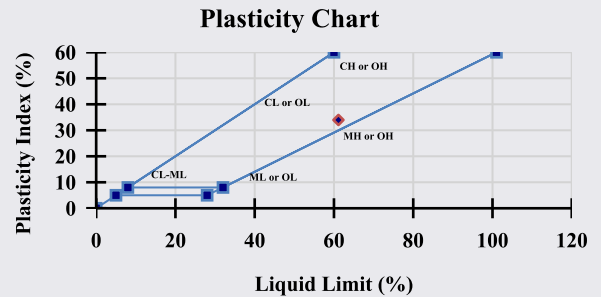
## Soil Classification:

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	35	29	45	1211	1221
Tare Mass (g)	14.1	14.34	14.31	4.22	4.26
Tare + Wet Soil (g)	30.96	30.5	30.28	11.87	11.73
Tare + Dry Soil (g)	24.39	24.37	24.39	10.21	10.16
Number of Blows	15	25	35		
Moisture Content (%)	63.85	61.12	58.43	27.71	26.61



<b>Liquid Limit (LL)</b>	61.13
<b>Plastic Limit (PL)</b>	27.16
<b>Plasticity Index (PI)</b>	33.97

Non-Plastic:  Yes  No



**Remarks:**  
B-9, 48.8-50

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Carlos Felipe Rodríguez, P.E.

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 008-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

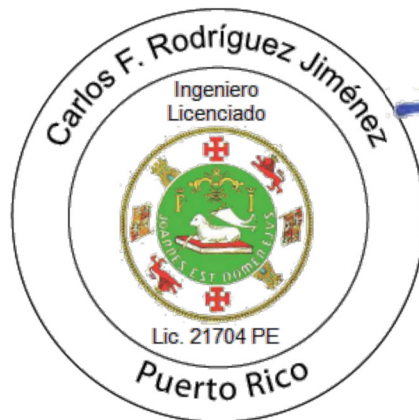
**Boring No:** B-9 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 48.5-50  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	8011	
Pan Weight	158.6	
MOISTURE CONTENT		Calculation
Wet Weight	681.8	523.2
Dry Weight	681.8	523.2
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	681.8	523.2
Wash Weight	166.1	7.5
Percent Passing (%)	98.57	

**Remarks:**  
B-9, 48.8-50

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Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

## Sieve Test

Report #: 009-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Dark red (3/6)

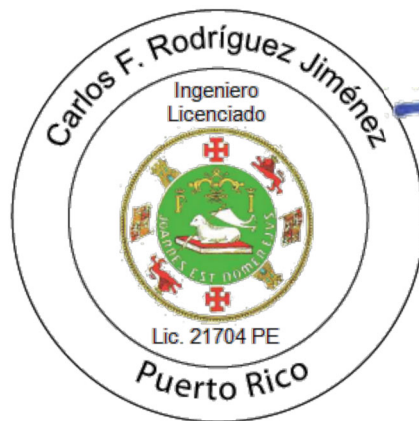
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-10  
**Depth (ft):** 24-25.5

### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	150	Tare #	8006	Moisture Content (%)	0	Intended Use				
Water Wt	0	Wet Wt.+ Tare	260.9	Dry Wt	110.9	Dry Wt.+ Tare	260.9			
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results		
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	71.5	
50mm 2 in									Plastic Limit (PL)	25.67
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	45.83	
25mm 1 in									Non-Plastic	
19mm 3/4 in									Percent Gravel	0
12.5mm 1/2 in						Soil Classification Method				
9.5mm 3/8 in						USCS: CH				
4.75mm #4						AASHTO: A-7-6				
2mm #10						Soil Description: Fat Clay				
0.85mm #20										
0.425mm #40	0.4	0.4	99.6	100						
0.25mm #60	0.6	0.5	99.5	100						
0.15mm #100	0.7	0.6	99.4	99						
0.106mm #140	0.7	0.6	99.4	99						
0.075mm #200	0.9	0.8	99.2	99						

**Remarks:**  
B-10, 24-25.5

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Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 009-L2

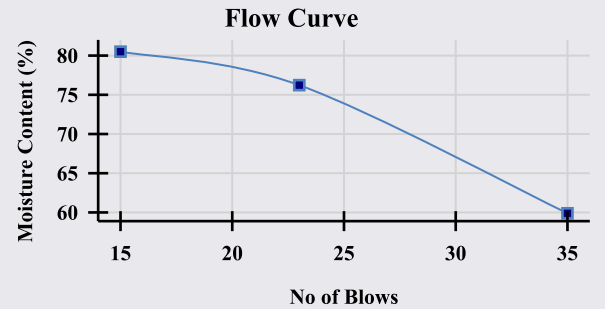
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

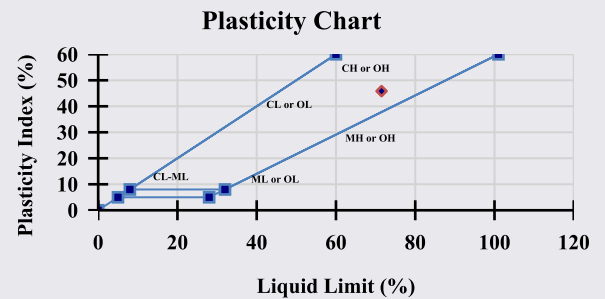
**Boring No:** B-10 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 24-25.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	44	85	39	1206	1246
Tare Mass (g)	13.79	13.79	14.3	4.21	4.19
Tare + Wet Soil (g)	28.66	23.8	28	14.69	13.48
Tare + Dry Soil (g)	23.09	19.47	21.89	12.54	11.59
Number of Blows	35	23	15		
Moisture Content (%)	59.89	76.23	80.5	25.81	25.54



<b>Liquid Limit (LL)</b>	71.5
<b>Plastic Limit (PL)</b>	25.67
<b>Plasticity Index (PI)</b>	45.83

Non-Plastic:  Yes  No



**Remarks:**  
B-10, 24-25.5

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James A. Baigés



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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 009-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-10 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 24-25.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	8006	
Pan Weight	150	
MOISTURE CONTENT		Calculation
Wet Weight	260.9	110.9
Dry Weight	260.9	110.9
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	260.9	110.9
Wash Weight	151.1	1.0999999999999999
Percent Passing (%)	99.01	

**Remarks:**  
B-10, 24-25.5

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James A. Baigés

Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



**Carlos Felipe Rodríguez, P.E.**

**GEO-Engineering**

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## Sieve Test

Report #: 010-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Brownish yellow  
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-10  
**Depth (ft):** 44-45.5

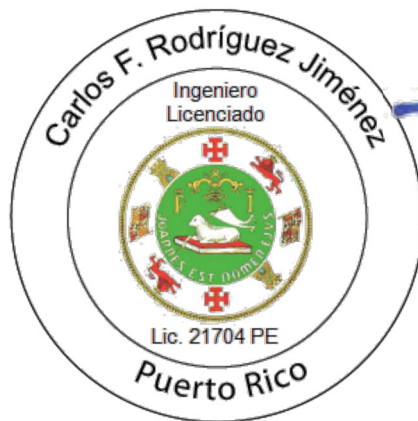
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	56.5	Tare #	8402	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	146.4	Dry Wt	89.9	Dry Wt.+ Tare	146.4		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	51.69
50mm 2 in					Plastic Limit (PL)			23.60	
37.5mm 1.5 in					Plasticity Index (PI)			28.09	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0	
12.5mm 1/2 in					Percent Sand			46.4	
9.5mm 3/8 in							Percent Fines	53.6	
4.75mm #4						Soil Classification Method			
2mm #10	0.4	0.4	99.6	100		USCS: CH			
0.85mm #20	8.1	9	91	91		AASHTO: A-7-6 (6)			
0.425mm #40	24.5	27.3	72.7	73		Soil Description: Sady Fat Clay			
0.25mm #60	32.4	36	64	64					
0.15mm #100	39.1	43.5	56.5	57					
0.106mm #140	40.6	45.2	54.8	55					
0.075mm #200	41.7	46.4	53.6	54					

**Remarks:**  
B-10, 44-45.5

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Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 010-L2

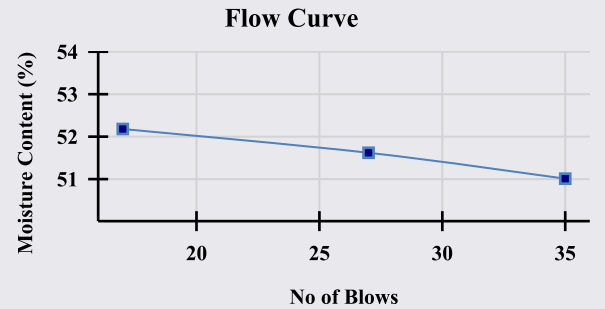
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

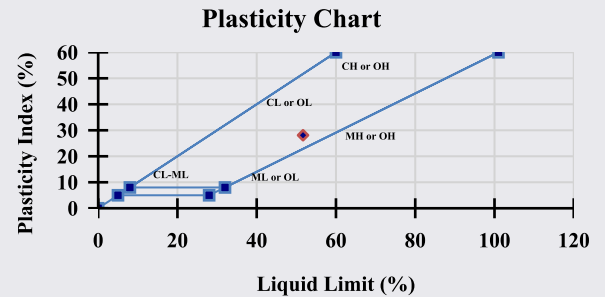
**Boring No:** B-10 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 44-45.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	11	22	34	1232	1253
Tare Mass (g)	14.52	14.04	13.23	4.31	4.45
Tare + Wet Soil (g)	30.91	30.93	30.49	11.82	13.59
Tare + Dry Soil (g)	25.29	25.18	24.66	10.39	11.84
Number of Blows	17	27	35		
Moisture Content (%)	52.18	51.62	51.01	23.52	23.68



<b>Liquid Limit (LL)</b>	51.69
<b>Plastic Limit (PL)</b>	23.60
<b>Plasticity Index (PI)</b>	28.09

Non-Plastic:  Yes  No



**Remarks:**  
B-10, 44-45.5

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 010-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

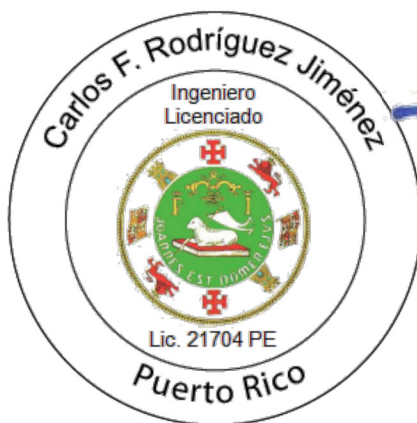
**Boring No:** B-10 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 44-45.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	8402	
Pan Weight	56.5	
MOISTURE CONTENT		Calculation
Wet Weight	146.4	89.9
Dry Weight	146.4	89.9
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	146.4	89.9
Wash Weight	98	41.5
Percent Passing (%)	53.84	

**Remarks:**  
B-10, 44-45.5

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## Sieve Test

Report #: 011-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/24/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Yellowish brown (5/6)

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-10  
**Depth (ft):** 59-60.5

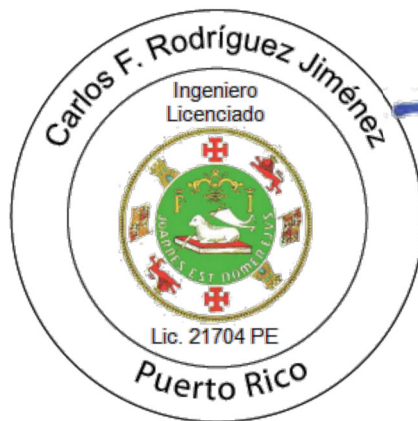
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	101.1	Tare #	8002	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	202.9	Dry Wt	101.8	Dry Wt.+ Tare	202.9		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	57.75
50mm 2 in					Plastic Limit (PL)			24.28	
37.5mm 1.5 in					Plasticity Index (PI)			33.47	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0	
12.5mm 1/2 in					Percent Sand			16.6	
9.5mm 3/8 in							Percent Fines	83.4	
4.75mm #4						Soil Classification Method			
2mm #10	0.8	0.8	99.2	99		USCS: CH			
0.85mm #20	2.3	2.3	97.7	98		AASHTO: A-7-6 (16)			
0.425mm #40	6.5	6.4	93.6	94		Soil Description: Fat Clay with sand			
0.25mm #60	12.1	11.9	88.1	88					
0.15mm #100	15.6	15.3	84.7	85					
0.106mm #140	16.6	16.3	83.7	84					
0.075mm #200	16.9	16.6	83.4	83					

**Remarks:**  
B-10, 59-60.5

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Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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**GEO-Engineering**

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 011-L2

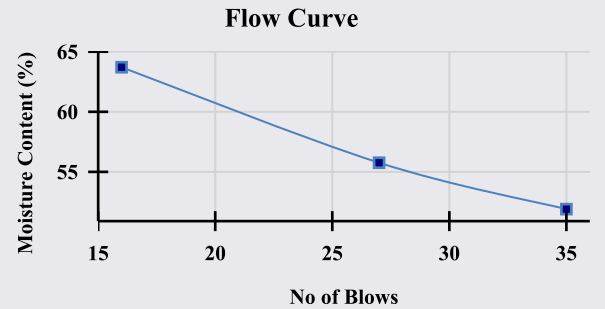
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/24/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

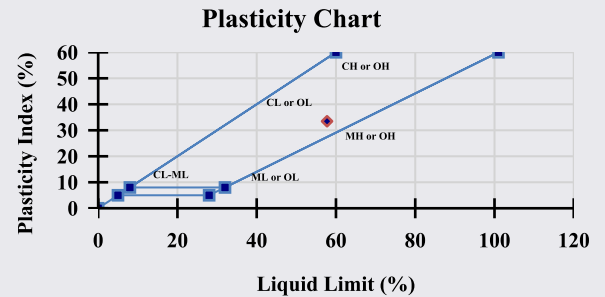
**Boring No:** B-10 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 59-60.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	35	38	51	1303	1215
Tare Mass (g)	14.1	14.56	14.17	4.18	4.23
Tare + Wet Soil (g)	28.91	26.46	32.44	11.08	12.32
Tare + Dry Soil (g)	23.85	22.2	25.33	9.74	10.73
Number of Blows	35	27	16		
Moisture Content (%)	51.9	55.76	63.71	24.1	24.46



<b>Liquid Limit (LL)</b>	57.75
<b>Plastic Limit (PL)</b>	24.28
<b>Plasticity Index (PI)</b>	33.47

Non-Plastic:  Yes  No



**Remarks:**  
B-10, 59-60.5

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 011-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/24/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-10 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 59-60.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	8002	
Pan Weight	101.1	
MOISTURE CONTENT		Calculation
Wet Weight	202.9	101.8
Dry Weight	202.9	101.8
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	202.9	101.8
Wash Weight	117.9	16.8
Percent Passing (%)	83.5	

**Remarks:**  
B-10, 59-60.5

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## Sieve Test

Report #: 012-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Yellowish brown  
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-11  
**Depth (ft):** 29-30.5

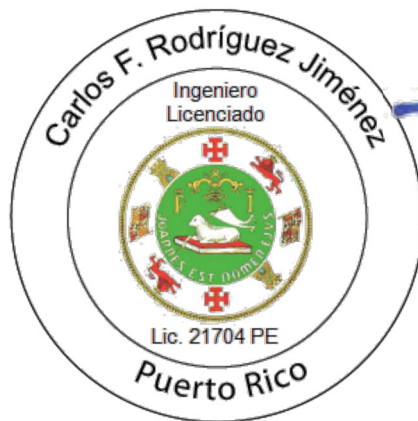
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	257.5	Tare #	9296	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	380.1	Dry Wt	122.6	Dry Wt.+ Tare	380.1		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	60.74
50mm 2 in					Plastic Limit (PL)			25.32	
37.5mm 1.5 in					Plasticity Index (PI)			35.42	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0	
12.5mm 1/2 in					Percent Sand			24.9	
9.5mm 3/8 in							Percent Fines	75.1	
4.75mm #4						Soil Classification Method			
2mm #10						USCS: CH			
0.85mm #20						AASHTO: A-7-6 (15)			
0.425mm #40	2.8	2.3	97.7	98		Soil Description: Fat Clay with sand			
0.25mm #60	14.1	11.5	88.5	89					
0.15mm #100	24.4	19.9	80.1	80					
0.106mm #140	28.6	23.3	76.7	77					
0.075mm #200	30.5	24.9	75.1	75					

**Remarks:**  
B-11, 29-30.5

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Lab Representative: GEO LABTECH  
Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 012-L2

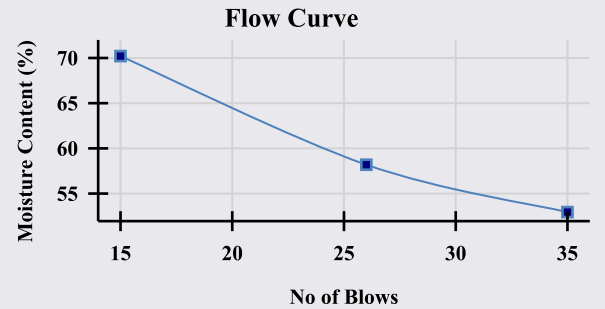
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

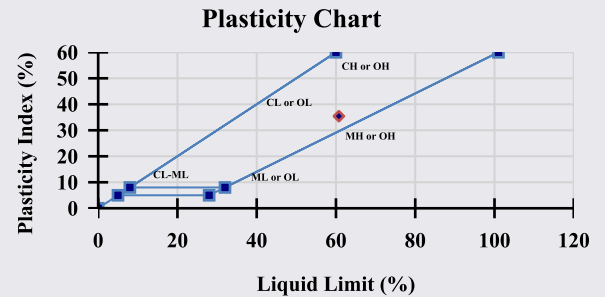
**Boring No:** B-11 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 29-30.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
<b>Tare No.</b>	44	74	90	1246	1211
<b>Tare Mass (g)</b>	13.78	14.4	14.46	4.18	4.22
<b>Tare + Wet Soil (g)</b>	27.27	27.83	31.26	14.28	12.38
<b>Tare + Dry Soil (g)</b>	22.6	22.89	24.33	12.18	10.78
<b>Number of Blows</b>	35	26	15		
<b>Moisture Content (%)</b>	52.95	58.19	70.21	26.25	24.39



<b>Liquid Limit (LL)</b>	60.74
<b>Plastic Limit (PL)</b>	25.32
<b>Plasticity Index (PI)</b>	35.42

Non-Plastic:  Yes  No



**Remarks:**  
B-11, 29-30.5

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Cert No: BN# 3242 / TN# 9687



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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 012-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

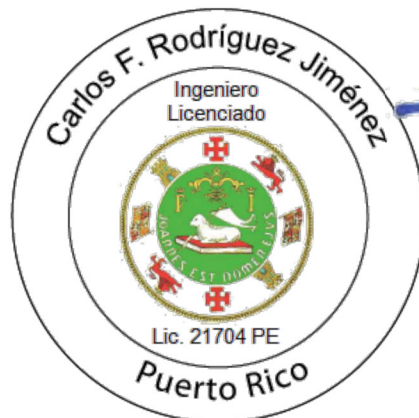
**Boring No:** B-11 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 29-30.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9296	
Pan Weight	257.5	
MOISTURE CONTENT		Calculation
Wet Weight	380.1	122.6
Dry Weight	380.1	122.6
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	380.1	122.6
Wash Weight	288.2	30.7
Percent Passing (%)	74.96	

**Remarks:**  
B-11, 29-30.5

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Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

## Sieve Test

Report #: 013-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Yellowish brown

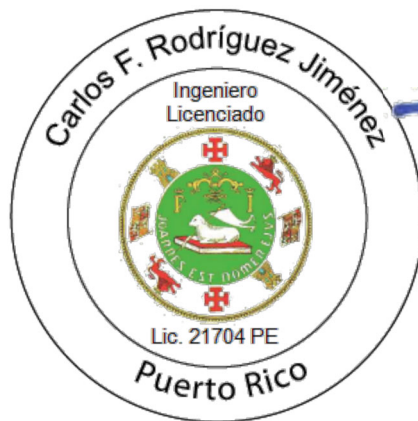
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-11  
**Depth (ft):** 44-45.5

### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	218.8	Tare #	2007	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	356.1	Dry Wt	137.3	Dry Wt.+ Tare	356.1		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	59.71
50mm 2 in					Plastic Limit (PL)			21.78	
37.5mm 1.5 in					Plasticity Index (PI)			37.93	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0.8	
12.5mm 1/2 in					Percent Sand			25.2	
9.5mm 3/8 in							Percent Fines	74	
Soil Classification Method						USCS: CH			
AASHTO: A-7-6 (16)						Soil Description: Sandy fat Clay			
4.75mm #4	1.1	0.8	99.2	99					
2mm #10	5.5	4	96	96					
0.85mm #20	9.5	6.9	93.1	93					
0.425mm #40	14.6	10.6	89.4	89					
0.25mm #60	22.7	16.5	83.5	84					
0.15mm #100	31.3	22.8	77.2	77					
0.106mm #140	34.3	25	75	75					
0.075mm #200	35.7	26	74	74					

**Remarks:**  
B-11, 44-45.5

**Report Copied to:**



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Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

## Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 013-L2

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

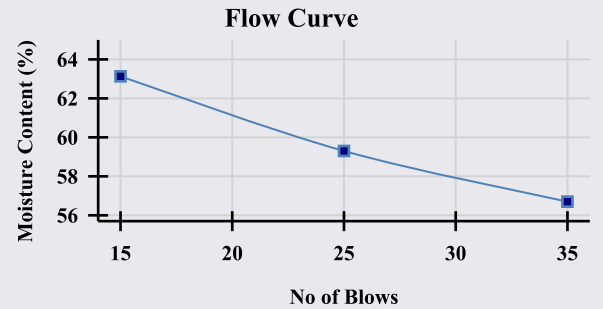
### SAMPLE DATA

**Boring No:** B-11  
**Sample Location / No:**  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:**

**Field Activity Date:** 05/11/2023  
**Depth (ft):** 44-45.5

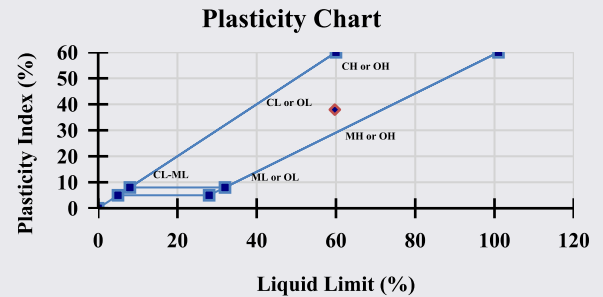
### Soil Classification:

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	42	62	47	1238	1216
Tare Mass (g)	14.31	14.52	14.28	4.34	4.26
Tare + Wet Soil (g)	30.9	30.45	30.53	11.18	12.02
Tare + Dry Soil (g)	24.48	24.52	24.65	9.95	10.64
Number of Blows	15	25	35		
Moisture Content (%)	63.13	59.3	56.7	21.93	21.63



<b>Liquid Limit (LL)</b>	59.71
<b>Plastic Limit (PL)</b>	21.78
<b>Plasticity Index (PI)</b>	37.93

Non-Plastic:  Yes  No



**Remarks:**  
B-11, 44-45.5

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 013-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

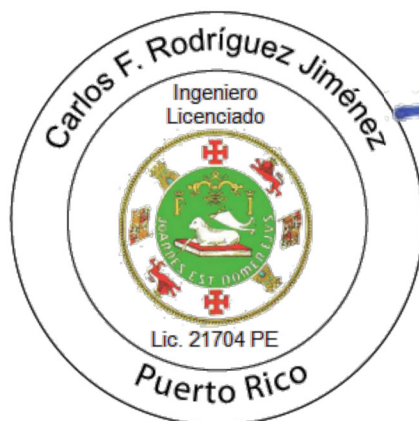
**Boring No:** B-11 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 44-45.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
<b>Pan #</b>	2007	
<b>Pan Weight</b>	218.8	
MOISTURE CONTENT		Calculation
<b>Wet Weight</b>	356.1	137.3
<b>Dry Weight</b>	356.1	137.3
<b>Moisture Percent (%)</b>	0	
PERCENT FINES		Calculation
<b>Dry Weight</b>	356.1	137.3
<b>Wash Weight</b>	254.4	35.6
<b>Percent Passing (%)</b>	74.07	

**Remarks:**  
B-11, 44-45.5

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## Sieve Test

Report #: 014-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Pinkish white (8/2)

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-11  
**Depth (ft):** 64-65.5

### SIEVE ANALYSIS AND TEST RESULTS

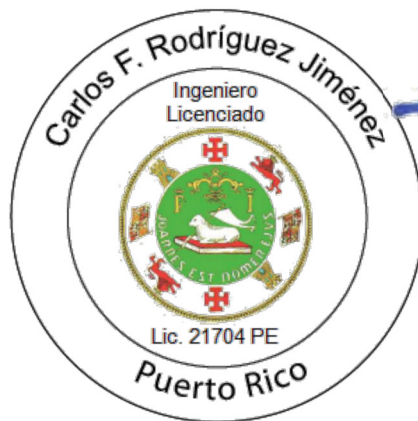
<b>Tare Wt</b>	227.1	<b>Tare #</b>	2009	<b>Moisture Content (%)</b>	0	<b>Intended Use</b>	
<b>Water Wt</b>	0	<b>Wet Wt.+ Tare</b>	351.3	<b>Dry Wt</b>	124.2	<b>Dry Wt.+ Tare</b>	351.3

Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard		Physical Properties	Results
						D-4318	Atterberg Limits	Liquid Limit (LL)	48.59
75mm 3 in								Plastic Limit (PL)	20.04
50mm 2 in								Plasticity Index (PI)	28.55
37.5mm 1.5 in								Non-Plastic	
25mm 1 in								Percent Gravel	0
19mm 3/4 in								Percent Sand	21.9
12.5mm 1/2 in								Percent Fines	78.1
9.5mm 3/8 in								<b>Soil Classification Method</b> USCS: CL AASHTO: A-7-6 (11) Soil Description: Lean Clay with sand	
4.75mm #4									
2mm #10	4.8	3.9	96.1	96					
0.85mm #20	12.9	10.4	89.6	90					
0.425mm #40	20.1	16.2	83.8	84					
0.25mm #60	22.8	18.4	81.6	82					
0.15mm #100	25.7	20.7	79.3	79					
0.106mm #140	26.8	21.6	78.4	78					
0.075mm #200	27.2	21.9	78.1	78					

**Remarks:**  
B-11, 64-65.5

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 014-L2

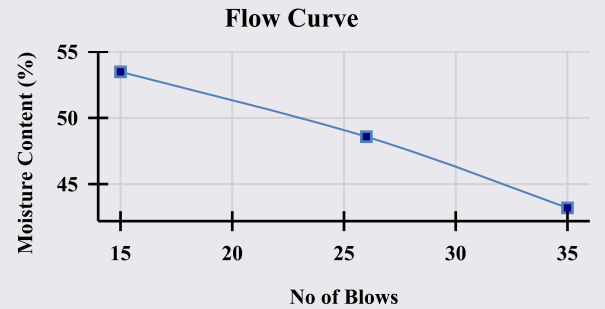
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

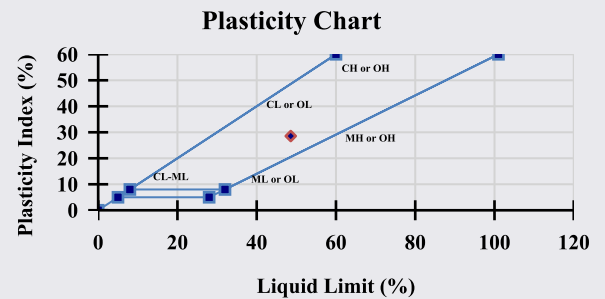
**Boring No:** B-11 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 64-65.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	40	38	87	1258	1263
Tare Mass (g)	14.82	14.56	13.98	4.16	4.19
Tare + Wet Soil (g)	34.31	30.74	37.83	11.71	9.96
Tare + Dry Soil (g)	28.43	25.45	29.52	10.42	9.02
Number of Blows	35	26	15		
Moisture Content (%)	43.2	48.58	53.48	20.61	19.46



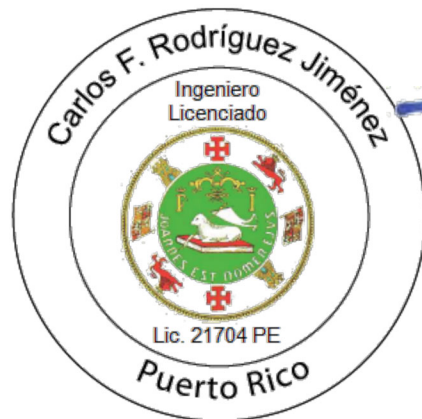
<b>Liquid Limit (LL)</b>	48.59
<b>Plastic Limit (PL)</b>	20.04
<b>Plasticity Index (PI)</b>	28.55

Non-Plastic:  Yes  No



**Remarks:**  
B-11, 64-65.5

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 014-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

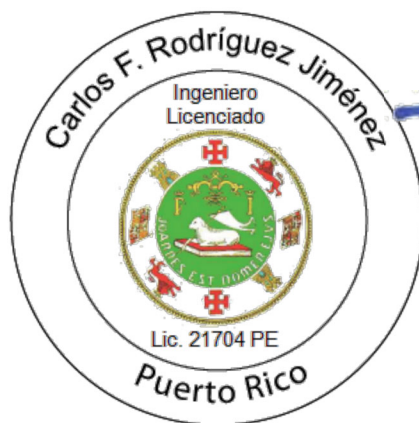
**Boring No:** B-11 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 64-65.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	2009	
Pan Weight	227.1	
MOISTURE CONTENT		Calculation
Wet Weight	351.3	124.2
Dry Weight	351.3	124.2
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	351.3	124.2
Wash Weight	254.5	27.4
Percent Passing (%)	77.94	

**Remarks:**  
B-11, 64-65.5

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## Sieve Test

Report #: 015-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Light brown  
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-12  
**Depth (ft):** 7.5-9

### SIEVE ANALYSIS AND TEST RESULTS

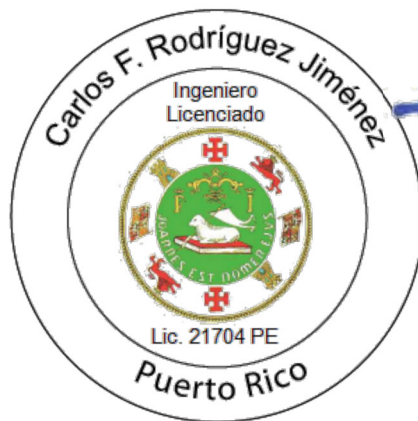
Tare Wt	108.6	Tare #	9008	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	668.1	Dry Wt	559.5	Dry Wt.+ Tare	668.1		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	36.69
50mm 2 in								Plastic Limit (PL)	22.23
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	14.46
25mm 1 in								Non-Plastic	
19mm 3/4 in								Percent Gravel	0
12.5mm 1/2 in						Soil Classification Method			
9.5mm 3/8 in						USCS: CL			
4.75mm #4	0.2	0	100	100		AASHTO: A-6 (2)			
2mm #10	3.4	0.6	99.4	99		Soil Description: Sandy lean Clay			
0.85mm #20	42.5	7.6	92.4	92					
0.425mm #40	162.4	29	71	71					
0.25mm #60	185.1	33.1	66.9	67					
0.15mm #100	189.6	33.9	66.1	66					
0.106mm #140	190.5	34	66	66					
0.075mm #200	190.8	34.1	65.9	66					

**Remarks:**

B-12, 7.5-9

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Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 015-L2

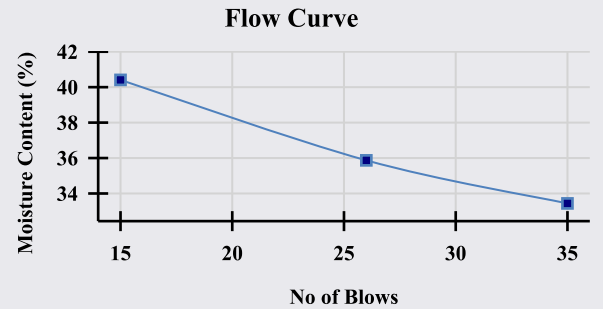
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

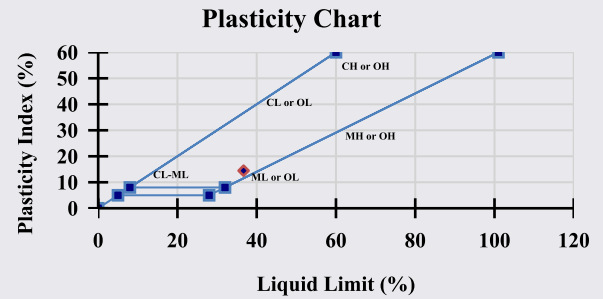
**Boring No:** B-12 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 7.5-9  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	35	74	44	1238	1263
Tare Mass (g)	14.1	14.41	13.78	4.34	4.19
Tare + Wet Soil (g)	39.08	35.28	34.28	14.66	15.6
Tare + Dry Soil (g)	32.82	29.77	28.38	12.76	13.55
Number of Blows	35	26	15		
Moisture Content (%)	33.44	35.87	40.41	22.57	21.9



<b>Liquid Limit (LL)</b>	36.69
<b>Plastic Limit (PL)</b>	22.23
<b>Plasticity Index (PI)</b>	14.46

Non-Plastic:  Yes  No



**Remarks:**  
B-12, 7.5-9

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 015-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-12 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 7.5-9  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
<b>Pan #</b>	9008	
<b>Pan Weight</b>	108.6	
MOISTURE CONTENT		Calculation
<b>Wet Weight</b>	668.1	559.5
<b>Dry Weight</b>	668.1	559.5
<b>Moisture Percent (%)</b>	0	
PERCENT FINES		Calculation
<b>Dry Weight</b>	668.1	559.5
<b>Wash Weight</b>	299.8	191.2
<b>Percent Passing (%)</b>	65.83	

**Remarks:**

B-12, 7.5-9

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## Sieve Test

Report #: 016-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Light yellowish brown

**Field Activity Date:** 05/11/2023  
**Sample No.:**  
**Boring No.:** B-12  
**Depth (ft):** 18.5-20

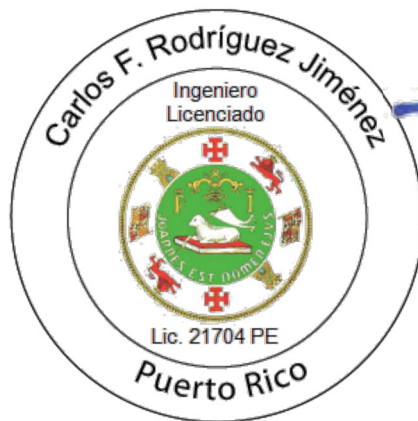
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	268.1	Tare #	9001	Moisture Content (%)	0	Intended Use				
Water Wt	0	Wet Wt.+ Tare	715.3	Dry Wt	447.2	Dry Wt.+ Tare	715.3			
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results		
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	45.68	
50mm 2 in									Plastic Limit (PL)	21.27
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	24.41	
25mm 1 in									Non-Plastic	
19mm 3/4 in									Percent Gravel	1.7
12.5mm 1/2 in	3.4	0.8	99.2	99		Soil Classification Method				
9.5mm 3/8 in	4.6	1	99	99		USCS: CL				
4.75mm #4	7.8	1.7	98.3	98		AASHTO: A-7-6 (5)				
2mm #10	17.7	4	96	96		Soil Description: Sandy lean Clay				
0.85mm #20	59.9	13.4	86.6	87						
0.425mm #40	182.5	40.8	59.2	59						
0.25mm #60	207.7	46.4	53.6	54						
0.15mm #100	214.8	48	52	52						
0.106mm #140	216.8	48.5	51.5	52						
0.075mm #200	218	48.7	51.3	51						

**Remarks:**  
B-12, 18.5-20

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Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 016-L2

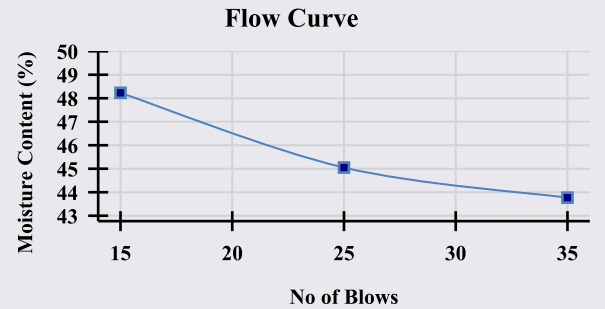
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

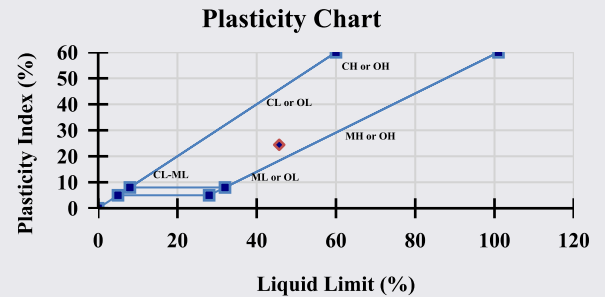
**Boring No:** B-12 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 18.5-20  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	35	87	74	1253	1305
Tare Mass (g)	14.1	14	14.4	4.45	4.2
Tare + Wet Soil (g)	30.39	30.71	30.79	11.3	11.2
Tare + Dry Soil (g)	25.09	25.52	25.8	10.11	9.96
Number of Blows	15	25	35		
Moisture Content (%)	48.23	45.05	43.77	21.02	21.53



<b>Liquid Limit (LL)</b>	45.68
<b>Plastic Limit (PL)</b>	21.27
<b>Plasticity Index (PI)</b>	24.41

Non-Plastic:  Yes  No



**Remarks:**  
B-12, 18.5-20

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Cert No: BN# 3242 / TN# 9687



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Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.

## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 016-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-12 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 18.5-20  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9001	
Pan Weight	268.1	
MOISTURE CONTENT		Calculation
Wet Weight		-268.1
Dry Weight		-268.1
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	715.3	447.2
Wash Weight	486.1	218
Percent Passing (%)	51.25	

**Remarks:**  
B-12, 18.5-20

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## Sieve Test

Report #: 017-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Yellowish brown

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-13  
**Depth (ft):** 5-6.5

### SIEVE ANALYSIS AND TEST RESULTS

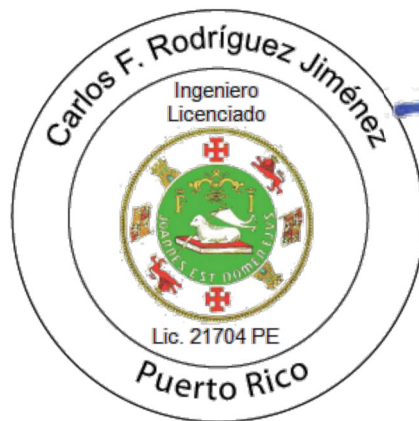
Tare Wt	274	Tare #	9004	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	568.8	Dry Wt	294.8	Dry Wt.+ Tare	568.8		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	60.5
50mm 2 in					Plastic Limit (PL)			23.32	
37.5mm 1.5 in					Plasticity Index (PI)			37.18	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0	
12.5mm 1/2 in					Percent Sand			14.9	
9.5mm 3/8 in							Percent Fines	85.1	
4.75mm #4						Soil Classification Method			
2mm #10	0.4	0.1	99.9	100		USCS: CH			
0.85mm #20	2.5	0.8	99.2	99		AASHTO: A-7-6 (19)			
0.425mm #40	9.1	3.1	96.9	97		Soil Description: Fat Clay			
0.25mm #60	25.2	8.5	91.5	92					
0.15mm #100	39.2	13.3	86.7	87					
0.106mm #140	42.7	14.5	85.5	86					
0.075mm #200	43.8	14.9	85.1	85					

### Remarks:

B-13, 5-6.5

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 017-L2

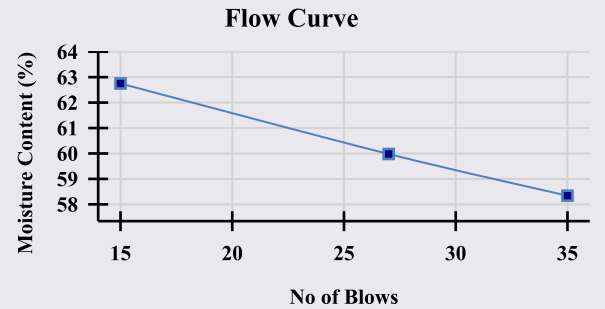
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

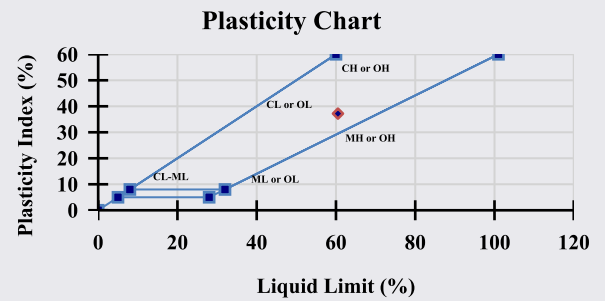
**Boring No:** B-13 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 5-6.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	51	32	78	1260	1264
Tare Mass (g)	14.17	14.35	14.54	4.18	4.2
Tare + Wet Soil (g)	30.25	30.3	30.39	11.24	11.16
Tare + Dry Soil (g)	24.05	24.32	24.55	9.95	9.8
Number of Blows	15	27	35		
Moisture Content (%)	62.75	59.98	58.34	22.36	24.29



<b>Liquid Limit (LL)</b>	60.5
<b>Plastic Limit (PL)</b>	23.32
<b>Plasticity Index (PI)</b>	37.18

Non-Plastic:  Yes  No



**Remarks:**  
B-13, 5-6.5

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**Wash 200 Analysis (ASTM D1140/D2216)**

Report #: 017-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/23/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

**SAMPLE DATA**

**Boring No:** B-13 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 5-6.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

**MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)**

MOISTURE CONTENT & PERCENT FINES		
<b>Pan #</b>	9004	
<b>Pan Weight</b>	274	
MOISTURE CONTENT		Calculation
<b>Wet Weight</b>	568.8	294.8
<b>Dry Weight</b>	568.8	294.8
<b>Moisture Percent (%)</b>	0	
PERCENT FINES		Calculation
<b>Dry Weight</b>	568.8	294.8
<b>Wash Weight</b>	317.3	43.3
<b>Percent Passing (%)</b>	85.31	

**Remarks:**

B-13, 5-6.5

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## Sieve Test

Report #: 018-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Brownish yellow

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-13  
**Depth (ft):** 28.5-30

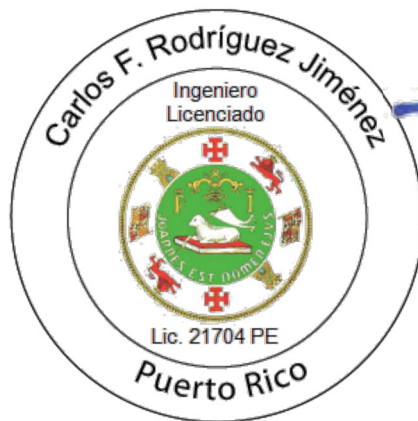
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	61.28	Tare #	9055	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	264.6	Dry Wt	203.3	Dry Wt.+ Tare	264.6		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	51.13
50mm 2 in					Plastic Limit (PL)			19.48	
37.5mm 1.5 in					Plasticity Index (PI)			31.65	
25mm 1 in						D-2487	Classification of Soil	Non-Plastic	
19mm 3/4 in					Percent Gravel			0	
12.5mm 1/2 in					Percent Sand			35.5	
9.5mm 3/8 in							Percent Fines	64.5	
4.75mm #4						Soil Classification Method			
2mm #10	5.8	2.9	97.1	97		USCS: CH			
0.85mm #20	26.5	13	87	87		AASHTO: A-7-6 (10)			
0.425mm #40	51.8	25.5	74.5	75		Soil Description: Sandy Fat Clay			
0.25mm #60	64.8	31.9	68.1	68					
0.15mm #100	70.2	34.5	65.5	66					
0.106mm #140	71.6	35.2	64.8	65					
0.075mm #200	72.2	35.5	64.5	65					

**Remarks:**  
B-13, 28.5-30

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Cert No: BN# 3242 / TN# 9687



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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 018-L2

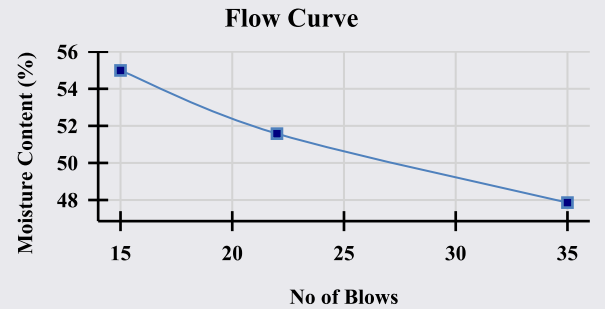
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

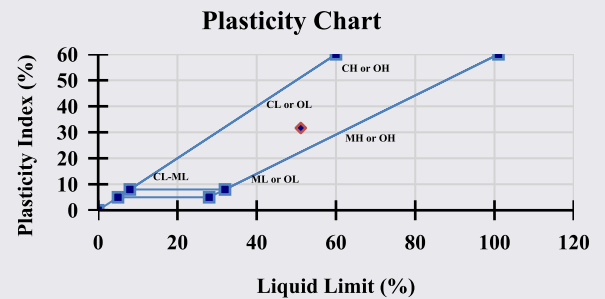
## SAMPLE DATA

**Boring No:** B-13 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 28.5-30  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	85	39	52	1258	1301
Tare Mass (g)	13.79	14.31	14.1	4.17	4.23
Tare + Wet Soil (g)	32.73	30.59	30.69	11.12	11.82
Tare + Dry Soil (g)	26.01	25.05	25.32	9.98	10.59
Number of Blows	15	22	35		
Moisture Content (%)	54.99	51.58	47.86	19.62	19.34



<b>Liquid Limit (LL)</b>	51.13
<b>Plastic Limit (PL)</b>	19.48
<b>Plasticity Index (PI)</b>	31.65



Non-Plastic:  Yes  No

**Remarks:**  
B-13, 28.5-30

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 018-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

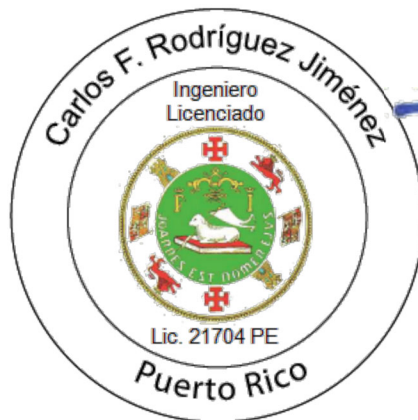
**Boring No:** B-13 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 28.5-30  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9055	
Pan Weight	61.28	
MOISTURE CONTENT		Calculation
Wet Weight	264.6	203.32
Dry Weight	264.6	203.32
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	264.6	203.32
Wash Weight	132.7	71.42
Percent Passing (%)	64.87	

**Remarks:**  
B-13, 28.5-30

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## Sieve Test

Report #: 019-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

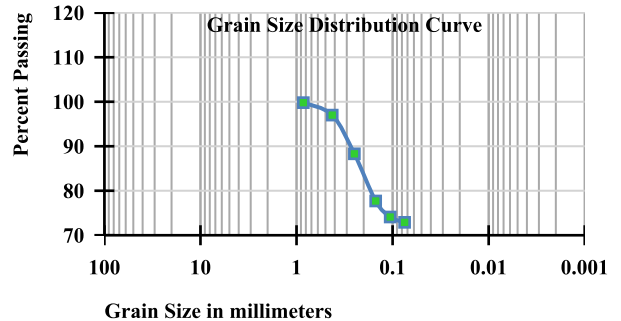
### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Brownish yellow

**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-14  
**Depth (ft):** 5-6.5

### SIEVE ANALYSIS AND TEST RESULTS

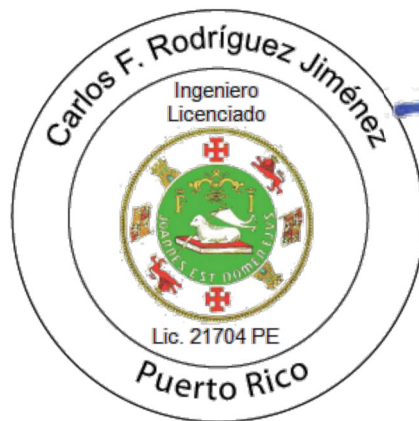
Tare Wt	61.7	Tare #	9033	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	338.1	Dry Wt	276.4	Dry Wt.+ Tare	338.1		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	41.03
50mm 2 in								Plastic Limit (PL)	21.25
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	19.78
25mm 1 in								Non-Plastic	
19mm 3/4 in								Percent Gravel	0
12.5mm 1/2 in								Percent Sand	27.1
9.5mm 3/8 in								Percent Fines	72.9
4.75mm #4						Soil Classification Method			
2mm #10						USCS: CL			
0.85mm #20	0.5	0.2	99.8	100		AASHTO: A-7-6 (5)			
0.425mm #40	8.2	3	97	97		Soil Description: Lean Clay with sand			
0.25mm #60	32.3	11.7	88.3	88					
0.15mm #100	61.7	22.3	77.7	78					
0.106mm #140	71.6	25.9	74.1	74					
0.075mm #200	74.8	27.1	72.9	73					



**Remarks:**  
B-14, 5-6.5

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Cert No: BN# 3242 / TN# 9687



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**GEO-Engineering**

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# Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 019-L2

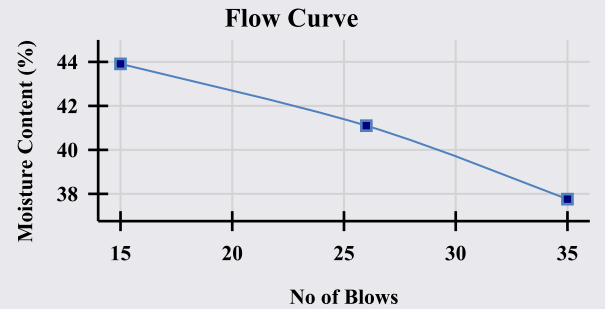
**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

## SAMPLE DATA

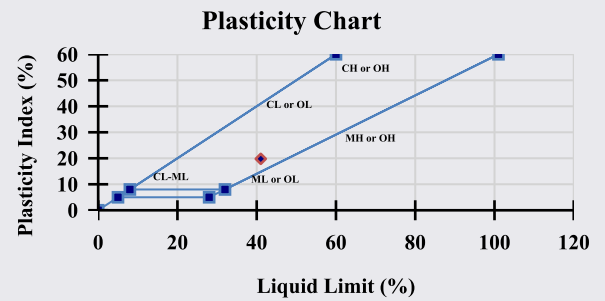
**Boring No:** B-14 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 5-6.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

ASTM 4318 / AASHTO T89 & 90					
	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	73	3	87	1301	1258
Tare Mass (g)	13.94	14.31	13.98	4.23	4.16
Tare + Wet Soil (g)	38.53	30.79	37.48	14.51	14.19
Tare + Dry Soil (g)	31.79	25.99	30.31	12.72	12.42
Number of Blows	35	26	15		
Moisture Content (%)	37.76	41.1	43.91	21.08	21.43



<b>Liquid Limit (LL)</b>	41.03
<b>Plastic Limit (PL)</b>	21.25
<b>Plasticity Index (PI)</b>	19.78

Non-Plastic:  Yes  No



**Remarks:**  
B-14, 5-6.5

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 019-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/26/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-14 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 5-6.5  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9033	
Pan Weight	61.7	
MOISTURE CONTENT		Calculation
Wet Weight	338.1	276.4
Dry Weight	338.1	276.4
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	338.1	276.4
Wash Weight	136.6	74.9
Percent Passing (%)	72.9	

**Remarks:**

B-14, 5-6.5

**Report Copied to:**

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 Cert No: BN# 3242 / TN# 9687



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## Sieve Test

Report #: 020-L1

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/24/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Test Procedure:** ASTM D422  
**Sampled At:** In-situ  
**Visual Classification:** Pale yellow (8/4)  
**Field Activity Date:** 05/11/2023  
**Sample No:**  
**Boring No:** B-14  
**Depth (ft):** 18.5-20

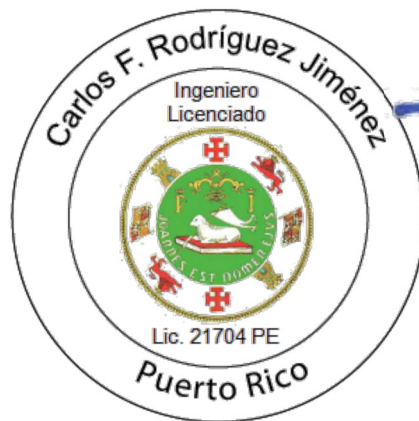
### SIEVE ANALYSIS AND TEST RESULTS

Tare Wt	61.4	Tare #	9036	Moisture Content (%)	0	Intended Use			
Water Wt	0	Wet Wt.+ Tare	518.7	Dry Wt	457.3	Dry Wt.+ Tare	518.7		
Sieve Sizes	Individual Wt. Retained	% Retained	% Passing	% Passing Total Sample	Spec Limits	Standard	Physical Properties	Results	
75mm 3 in						D-4318	Atterberg Limits	Liquid Limit (LL)	32.22
50mm 2 in								Plastic Limit (PL)	17.07
37.5mm 1.5 in						D-2487	Classification of Soil	Plasticity Index (PI)	15.15
25mm 1 in								Non-Plastic	
19mm 3/4 in								Percent Gravel	0
12.5mm 1/2 in								Percent Sand	71.7
9.5mm 3/8 in								Percent Fines	28.3
4.75mm #4						Soil Classification Method			
2mm #10	3	0.7	99.3	99		USCS: SC			
0.85mm #20	58.8	12.9	87.1	87		AASHTO: A-2-6 (0)			
0.425mm #40	237	51.8	48.2	48		Soil Description: Clayey Sand			
0.25mm #60	304.4	66.6	33.4	33					
0.15mm #100	322.9	70.6	29.4	29					
0.106mm #140	326.8	71.5	28.5	29					
0.075mm #200	328.1	71.7	28.3	28					

**Remarks:**  
B-14, 18.5-20

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Cert No: BN# 3242 / TN# 9687



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## Atterberg (ASTM4318 / AASHTO T89 & 90)

Report #: 020-L2

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/24/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-14 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 18.5-20  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:**  
**Soil Description:** **Soil Classification:**

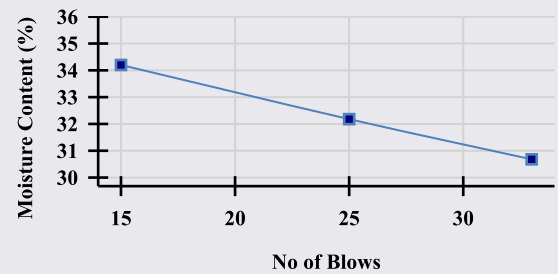
#### ASTM 4318 / AASHTO T89 & 90

	Liquid Limit (s)			Plastic Limit (s)	
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2
Tare No.	3	87	29	1263	1258
Tare Mass (g)	14.31	13.98	14.36	4.19	4.16
Tare + Wet Soil (g)	36.63	34.93	37.16	14.65	14.76
Tare + Dry Soil (g)	31.39	29.83	31.35	13.11	13.23
Number of Blows	33	25	15		
Moisture Content (%)	30.68	32.18	34.2	17.26	16.87

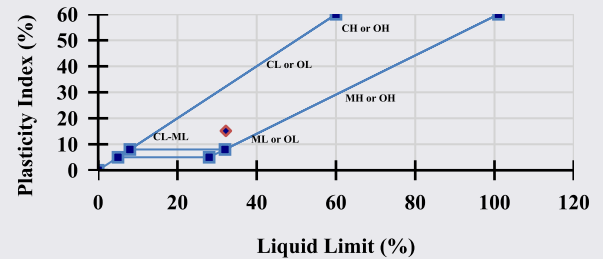
<b>Liquid Limit (LL)</b>	32.22
<b>Plastic Limit (PL)</b>	17.07
<b>Plasticity Index (PI)</b>	15.15

Non-Plastic:  Yes  No

#### Flow Curve



#### Plasticity Chart



**Remarks:**  
B-14, 18.5-20

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## Wash 200 Analysis (ASTM D1140/D2216)

Report #: 020-L3

**Client:** Baiges Geotechnical Engineers LLC  
**Project:** Baiges Geotechnical - Int. PR-2 & PR-6  
**Location:** Guaynabo, 00966

**Report Date:** 05/24/2023  
**Project #:** L-713-2023-INT-PR-2-PR-6

### SAMPLE DATA

**Boring No:** B-14 **Field Activity Date:** 05/11/2023  
**Sample Location / No:** **Depth (ft):** 18.5-20  
**Sample Source:** In-situ  
**Visual Classification:**  
**Test Procedure:** Wash 200 Analysis (ASTM D1140/D2216)

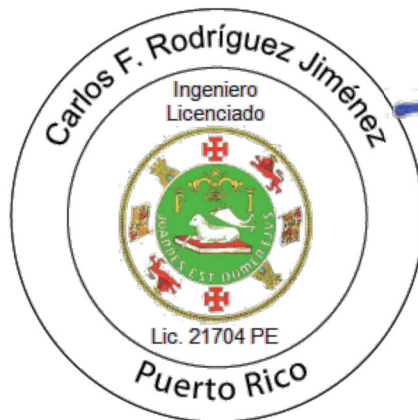
### MOISTURE CONTENT & PERCENT FINES (ASTM D1140/D2216)

MOISTURE CONTENT & PERCENT FINES		
Pan #	9036	
Pan Weight	61.4	
MOISTURE CONTENT		Calculation
Wet Weight	518.7	457.3
Dry Weight	518.7	457.3
Moisture Percent (%)	0	
PERCENT FINES		Calculation
Dry Weight	518.7	457.3
Wash Weight	389.2	327.8
Percent Passing (%)	28.32	

**Remarks:**  
B-14, 18.5-20

**Report Copied to:**

Lab Representative: GEO LABTECH  
 Cert No: BN# 3242 / TN# 9687



**Carlos Felipe Rodriguez, P.E.**

**GEO-Engineering**

Date Signed: 05/24/2023 05:28 PM

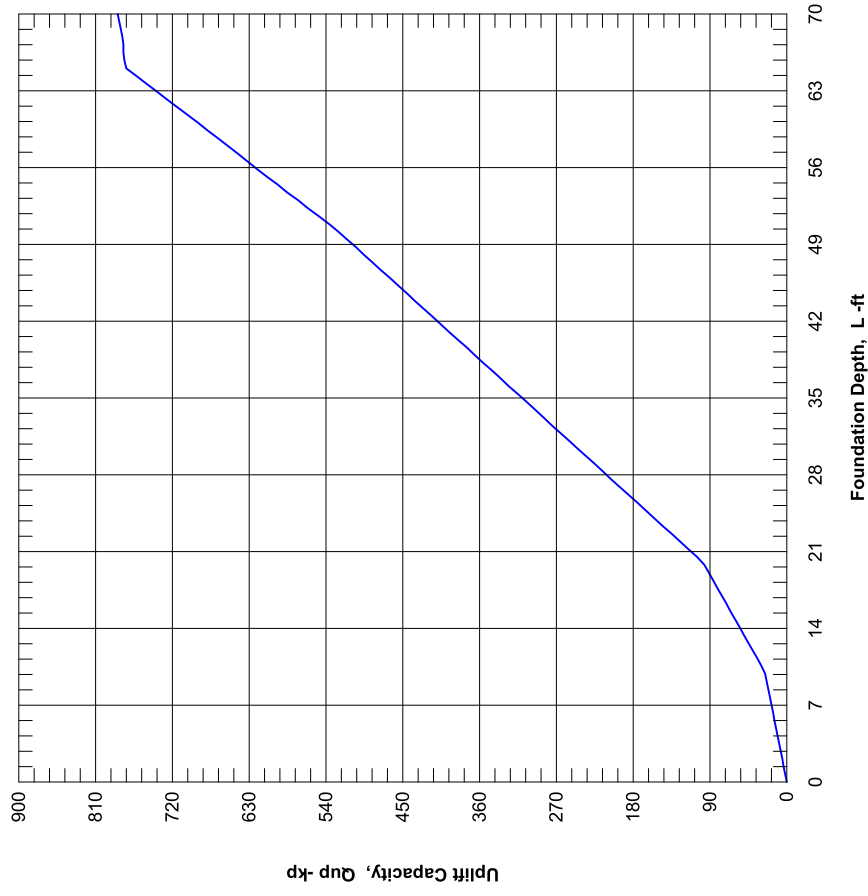
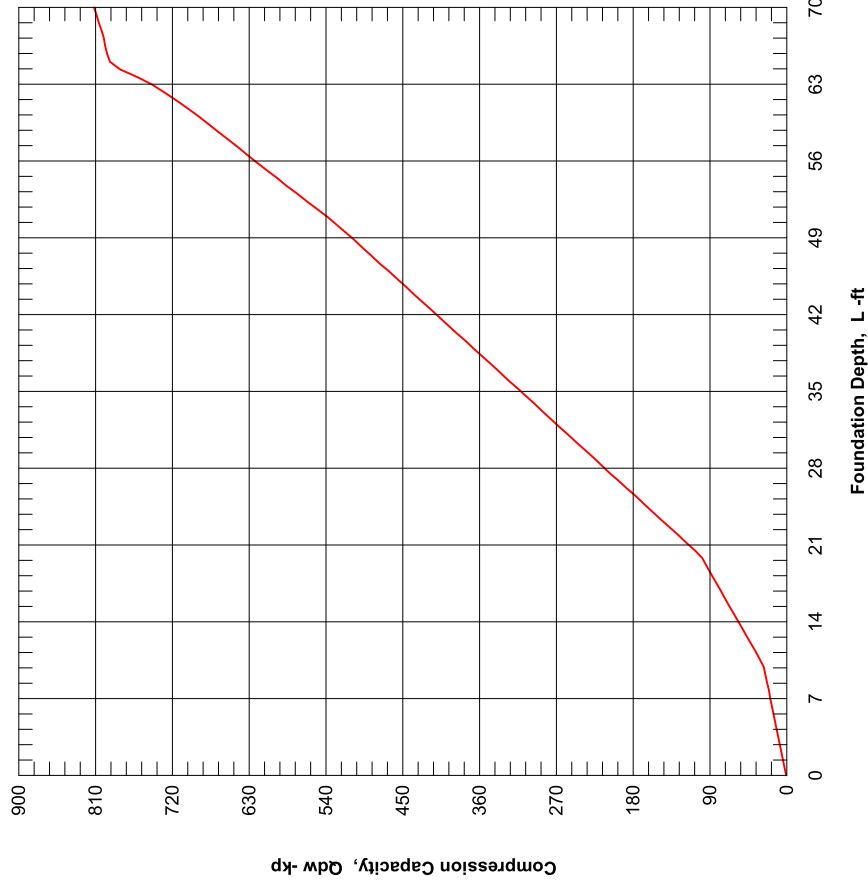
Notes: The results above apply only to the specific samples noted using the aforementioned test method(s) and do not represent any other sample. Reports may not be reproduced except in full without permission.



**APPENDIX D**

**RESULTS OF PILE CAPACITY ANALYSIS**

# ULTIMATE CAPACITY vs FOUNDATION DEPTH





# FOUNDATION PROFILE & SOIL CONDITIONS



## FOUNDATION PROPERTIES

Depth	Width-in	A'-in <sup>2</sup>	Per.-in	I'-in <sup>4</sup>	E -kp/2	W -kp/ft
0.0	14.6	21.4	56.4	729.0	29000	0.07

Steel (smooth)

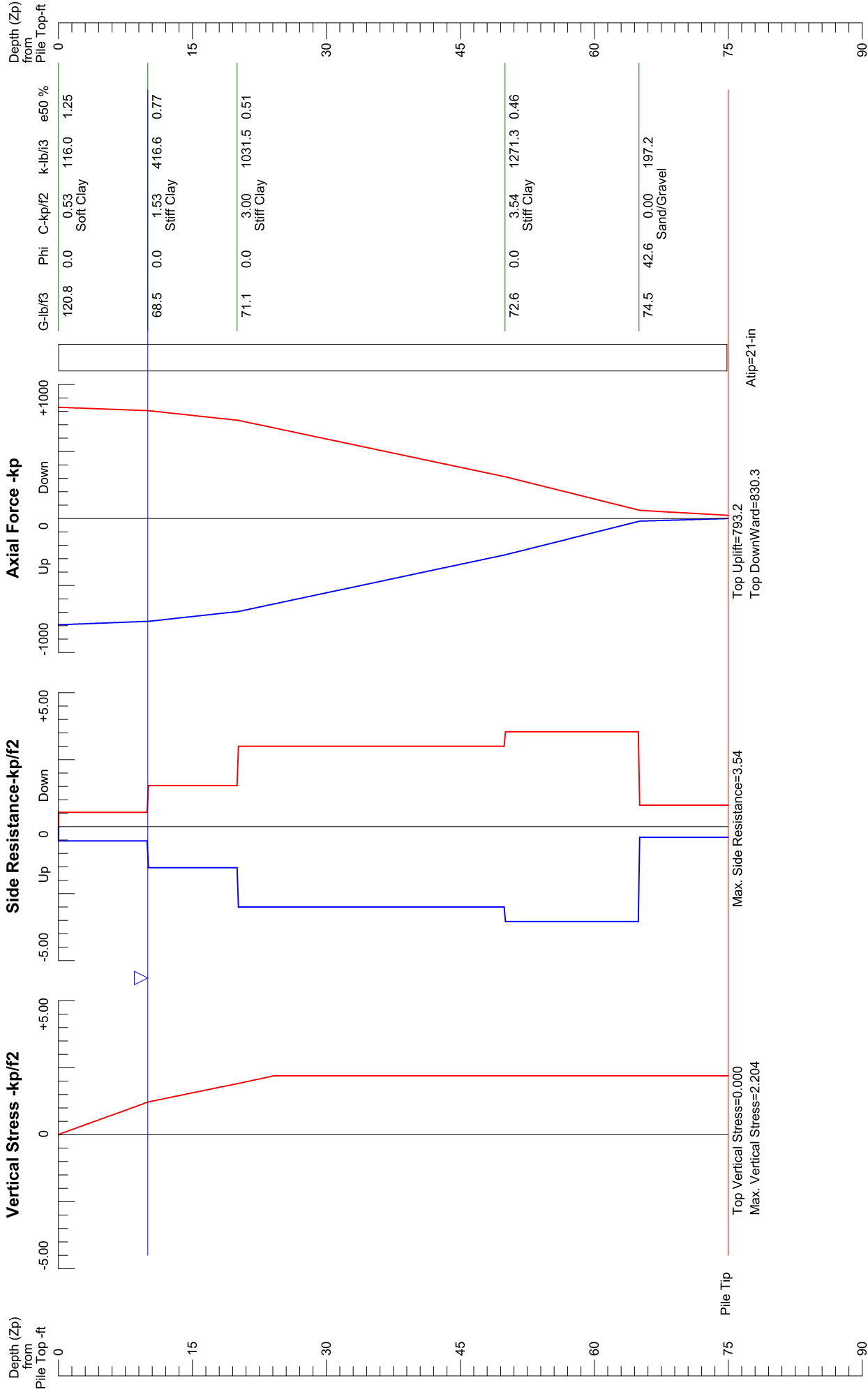
## SOIL PROPERTIES



Batter Angle=0 (Pile diameter not to scale) Surface Angle=0

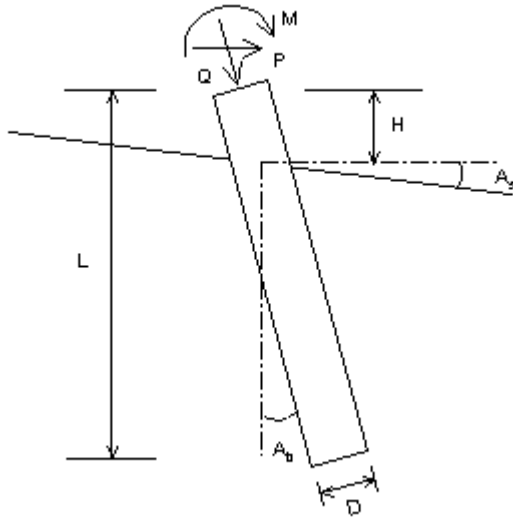
# SOIL STRESS, SIDE RESISTANCE, & AXIAL FORCE vs DEPTH

Based on Ultimate Load Condition



# VERTICAL ANALYSIS

Figure 1



Driving Steel Pile (Open end)

**Loads:**

Load Factor for Vertical Loads= 1.0  
 Load Factor for Lateral Loads= 1.0  
 Loads Supported by Pile Cap= 0 %  
 Shear Condition: Static

(with Load Factor)

Vertical Load, Q= 800.0 -kp

**Profile:**

Pile Length, L= 75.0 -ft  
 Top Height, H= 0 -ft  
 Slope Angle, As= 0  
 Batter Angle, Ab= 0  
 Fixed Head Condition

**Soil Data:**

**Pile Data:**

Depth -ft	Gamma -lb/f3	Phi	C -kp/f2	K -lb/i3	e50 or Dr %	Nspt	Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0	120.8	0.0	0.53	116.0	1.25	6	0.0	14.6	21.4	56.4	729.0	29000	0.07
10	68.5	0.0	1.53	416.6	0.77	12	75.0						
20	71.1	0.0	3.00	1031.5	0.51	24							
50	72.6	0.0	3.54	1271.3	0.46	28							
65	74.5	42.6	0.00	197.2	95.94	60							

**Vertical Capacity:**

Weight above Ground= 0.00 Total Weight= 5.25-kp \*Soil Weight is not included  
 Side Resistance (Down)= 806.698-kp Side Resistance (Up)= 787.997-kp  
 Tip Resistance (Down)= 23.582-kp Tip Resistance (Up)= 0.000-kp  
 Total Ultimate Capacity (Down) Qult= 830.279-kp Total Ultimate Capacity (Up)= 793.247-kp  
 Total Allowable Capacity (Down) Qallow= 549.589-kp Total Allowable Capacity (Up) Qallow= 399.249-kp  
 N/G! Qallow < Q

**Settlement Calculation:**

At Q= 800.00-kp Settlement= 0.68510-in  
 At Xallow= 5.00-in Q= 99999.00000-kp

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.

**Attachment 16: Viability Study**



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# Análisis de viabilidad para mejoras geométricas en intersecciones, Bayamón, PR PR-2 con PR-6, PR-6 con marginal PR-2 y PR-6 con calle de acceso a Urb. Villa España

CMA Architects & Engineers, LLC  
Noviembre, 2022



## **PR-2 con PR-6 (geometría de la red existente)**

Esta intersección se ve afectada y afecta directamente la operación de otras tres intersecciones; por lo que la modificación de la misma debe ser evaluado en conjunto. Una de estas intersecciones es el acceso a una facilidad de la Autoridad de Energía Eléctrica. Este ultimo no genera conflictos significativos a las demás intersecciones por lo que no se considerará en el análisis. En términos generales la PR-2 discurre de Este a Oeste con dos y tres carriles por dirección mientras la PR-6 lo hace de Norte a Sur con dos carriles por dirección. Las intersecciones en la red so todas tipo "T" con virajes a la derecha canalizados y carriles cortos de viraje a izquierda. Las siguientes figuras muestran el área alrededor de la misma y el esquema geométrico de la red analizada



Foto aérea (Fuente: Google Earth)



Esquema Geométrico del modelo de capacidad



## **Análisis de viabilidad para mejoras geométricas en intersecciones, PR-2 con PR-6 , Bayamón**

Los análisis de capacidad realizados en este estudio fueron los correspondientes a las horas pico de la mañana y tarde para los escenarios existente (2022) y el horizonte de diseño 2042. Las tablas a continuación resumen los flujos pico que fueron utilizados en los análisis existentes.

**Flujos Pico Existente PR-2 con PR-6**

2022	Sur			Este			Norte			Oeste			Total Hora				
	S-U	S-L	S-T	S-R	E-U	E-L	E-T	E-R	N-U	N-L	N-T	N-R		W-U	W-L	W-T	W-R
Pico AM	--	--	--	--	0	--	1192	360	8	248	--	244	12	648	2000	--	4712
Pico PM	--	--	--	--	0	--	2216	256	0	208	--	568	4	356	984	--	4592

**Flujos Pico Existente PR6 con Marginal PR-2**

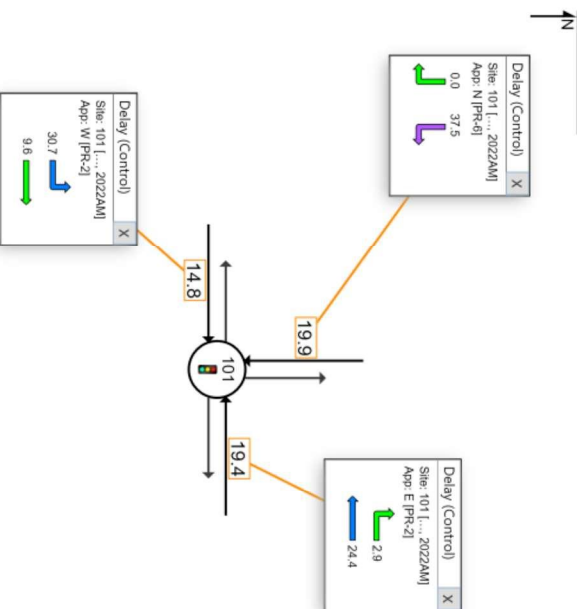
2022	Sur			Este			Norte			Oeste			Total Hora				
	S-U	S-L	S-T	S-R	E-U	E-L	E-T	E-R	N-U	N-L	N-T	N-R		W-U	W-L	W-T	W-R
Pico AM	0	--	728	292	--	0	--	72	4	488	640	--	--	--	--	--	2224
Pico PM	0	--	604	12	--	4	--	320	12	32	796	--	--	--	--	--	1780

**Flujo Pico Existente PR-6 con acceso a Villa España**

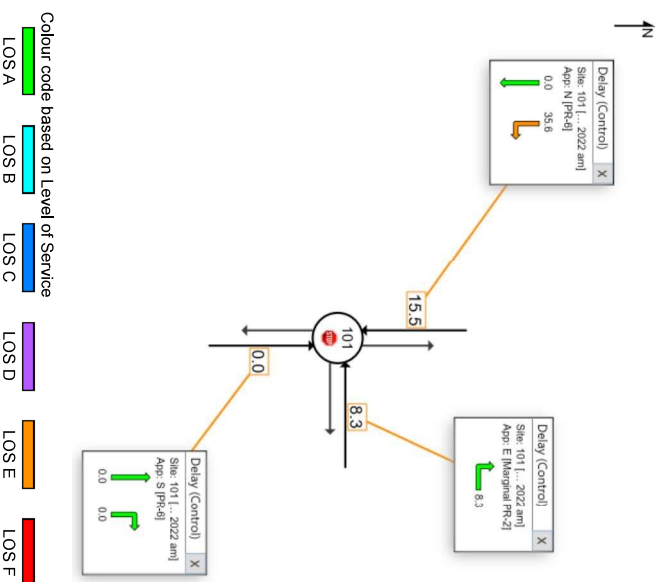
2022	Sur			Este			Norte			Oeste			Total Hora				
	S-U	S-L	S-T	S-R	E-U	E-L	E-T	E-R	N-U	N-L	N-T	N-R		W-U	W-L	W-T	W-R
Pico AM	0	--	708	76	0	104	--	56	4	12	1036	--	--	--	--	--	1996
Pico PM	4	--	760	140	0	52	--	28	8	52	748	--	--	--	--	--	1792

# Análisis de capacidad condición existente 2022 AM

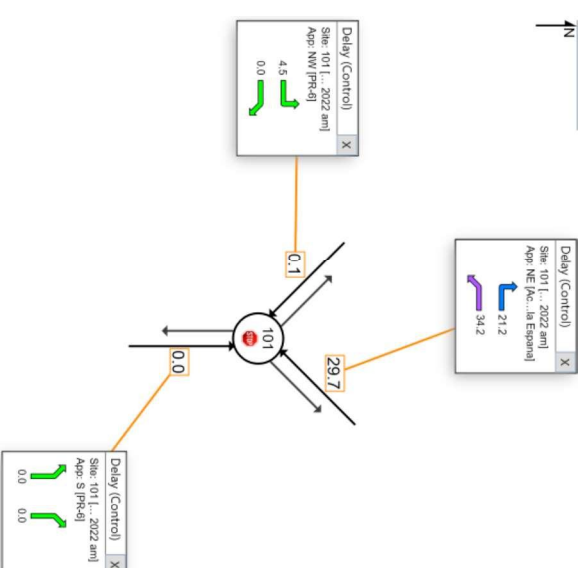
## Demora promedio y LOS PR-2 con PR-6



## Demora promedio y LOS PR-6 con Marginal PR-2



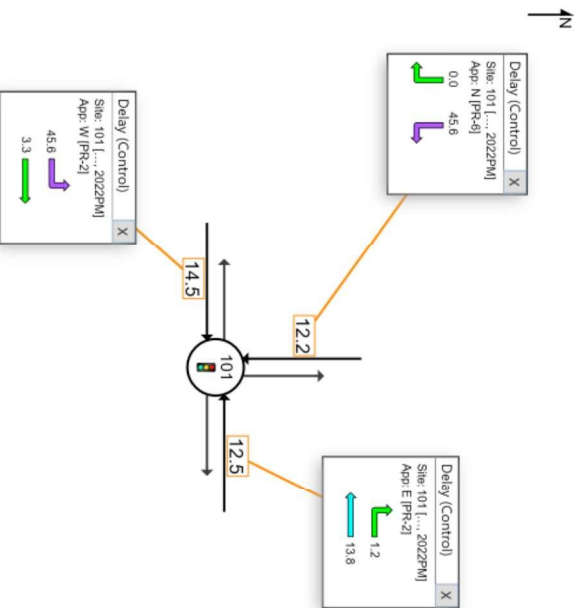
## Demora promedio y LOS PR-6 con Acceso Vila España



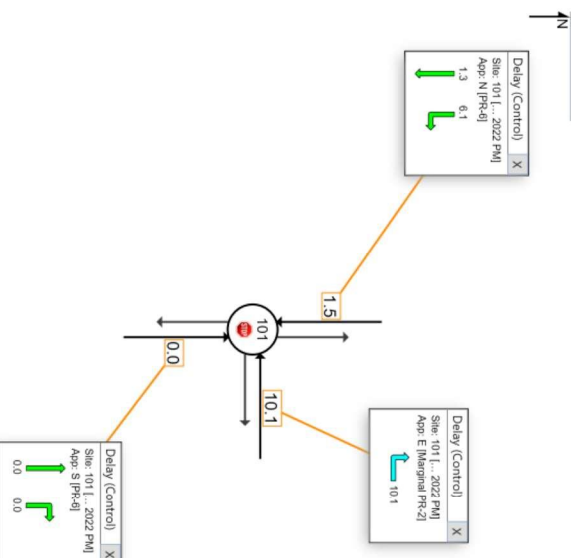
La condición existente en la red bajo estudio, durante el periodo pico de la mañana, muestra demoras y niveles de servicio aceptables. Nuestra visita al campo reveló un fuerte flujo vehicular que utiliza la marginal de la PR-2 desde la PR-6 en dirección Norte, con el propósito de desplazarse hacia el Este durante la hora pico de mañana sin pasar por los semáforos de la PR-2. Los movimientos con os peores niveles de servicio durante este periodo fueron la salida de la Urb. Villa España y el mencionado viraje a la izquierda desde la PR-6 a la marginal de la PR-2. De estos el más crítico es el viraje a la izquierda ya que bloquea uno de los dos carriles de la PR-6 en el acceso norte de esa intersección.

# Análisis de capacidad condición existente 2022 PM

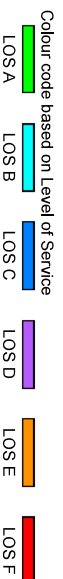
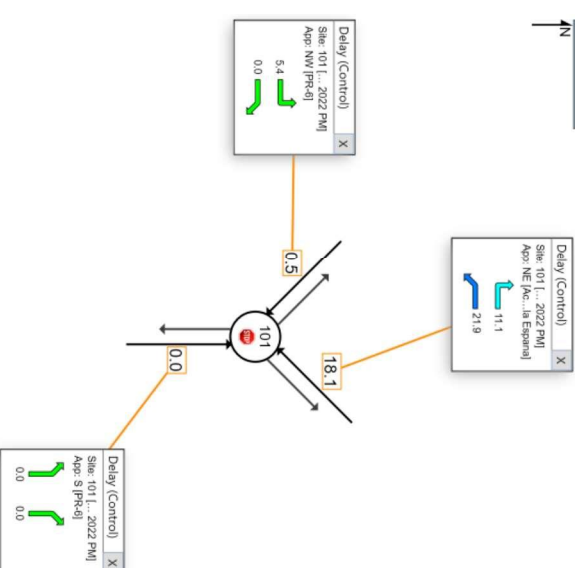
## Demora promedio y LOS PR-2 con PR-6



## Demora promedio y LOS PR-6 con Marginal PR-2



## Demora promedio y LOS PR-6 con Acceso Vila España



El periodo pico de la tarde, en la red bajo estudio muestra demoras y niveles de servicio aceptables. Como era de esperarse la los movimientos con mayor demora son los correspondientes a los movimientos en las vías menores. Sin embargo, la demora aceptable en el acceso Este de la PR-2 viene acompañada de una cola significativa de unos 26 vehículos por carril; aunque la misma se disipa con rapidez.

# Análisis de viabilidad para mejoras geométricas en intersecciones, PR-2 con PR-6 , Bayamón



Tabla de generacion de viajes

Alternative: Alternative 1  
Phase:  
Project: Finca Caridad

Open Date: 9/15/2022  
Analysis Date: 9/15/2022

ITE	Land Use	Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
220	LOW-RISE 1 - 3 the townhouses	59	58	117	2	5	7	6	3	9
16	Dwelling Units									
221	MID-RISE 1 - 1 Residential Tower 1	163	162	325	5	16	21	16	11	27
60	Dwelling Units									
231	MID-RISE-COMM 1 - 2 The Village	145	144	289	7	18	25	21	9	30
84	Dwelling Units									
231	MID-RISE-COMM 1 -	103	103	206	5	13	18	15	7	22
60	Dwelling Units									
820	CENTERSHOPPING 1	589	588	1177	18	11	29	57	62	119
31,18	1000 Sq. Ft. G.L.A.									
	Undeveloped Volume	1059	1055	2114	37	63	100	115	92	207
	Internal Capture Trips	0	0	0	1	1	2	22	22	44
	Pass-By Trips	0	0	0	0	0	0	16	16	32
	Volume Added to Adjacent Streets	1059	1055	2114	36	62	98	77	54	131

Los análisis de capacidad realizados en este escenario (2042) fueron los correspondientes a las horas pico de la mañana y tarde. Para proyectar los flujos existentes al escenario en el futuro se utilizó un factor de proyección 1.17 según se obtuvo en el documento HIGHWAY PERFORMANCE MONITORING SYSTEM publicado por la Autoridad de Carreteras y Transportación). Además se le añadieron los flujos asociados al desarrollo denominado Finca Caridad. La tabla a continuación resume los flujos que se estima generará el proyecto durante las horas pico de las vías adyacentes.

## **Análisis de viabilidad para mejoras geométricas en intersecciones, PR-2 con PR-6 , Bayamón**

Las tablas a continuación resumen los flujos pico que definen los mencionados escenarios de análisis.

**Flujos Pico Futuro 2042 PR-2 con PR-6**

2042	Sur			Este			Norte			Oeste			Total Hora				
	S-U	S-L	S-T	S-R	E-U	E-L	E-T	E-R	N-U	N-L	N-T	N-R		W-U	W-L	W-T	W-R
Pico AM	--	--	--	--	0	--	1395	421	9	290	--	298	14	765	2340	--	5532
Pico PM	--	--	--	--	0	--	2593	300	0	243	--	683	5	440	1151	--	5415

**Flujos Pico Futuro 2042 PR-6 con marginal PR-2**

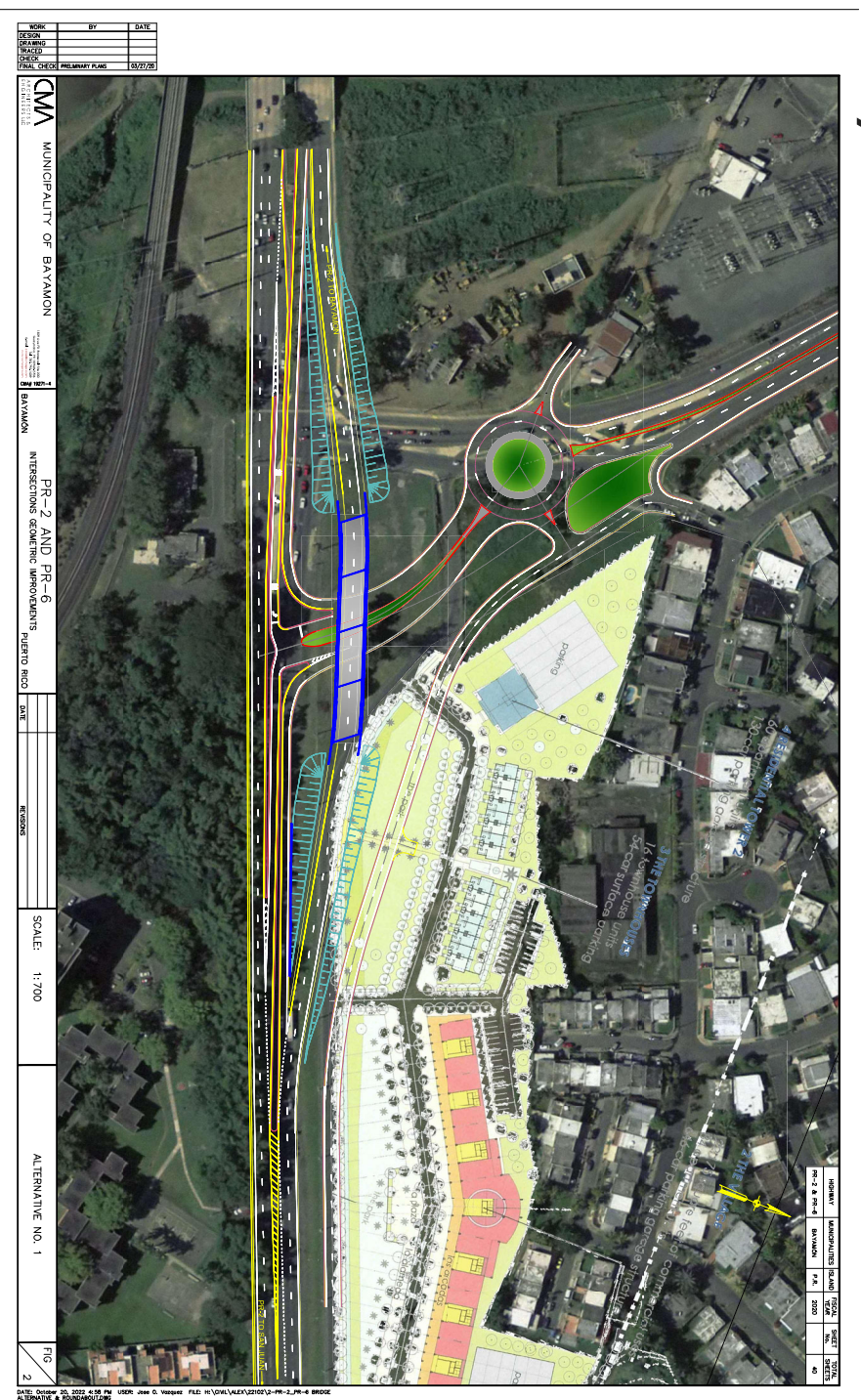
2042	Sur			Este			Norte			Oeste			Total Hora				
	S-U	S-L	S-T	S-R	E-U	E-L	E-T	E-R	N-U	N-L	N-T	N-R		W-U	W-L	W-T	W-R
Pico AM	0	--	852	349	--	13	--	106	5	584	749	--	--	--	--	--	2658
Pico PM	0	--	707	37	--	23	--	406	14	77	931	--	--	--	--	--	2195

**Flujos Pico Futuro 2042 PR-6 con acceso s Villa España**

2042	Sur			Este			Norte			Oeste			Total Hora				
	S-U	S-L	S-T	S-R	E-U	E-L	E-T	E-R	N-U	N-L	N-T	N-R		W-U	W-L	W-T	W-R
Pico AM	0	--	850	89	0	122	--	66	5	14	1225	--	--	--	--	--	2371
Pico PM	5	--	921	164	0	61	--	33	9	61	915	--	--	--	--	--	2169



# Geometría propuesta para la red de intersecciones asociada a la intersección entre la PR-2 y la PR-6

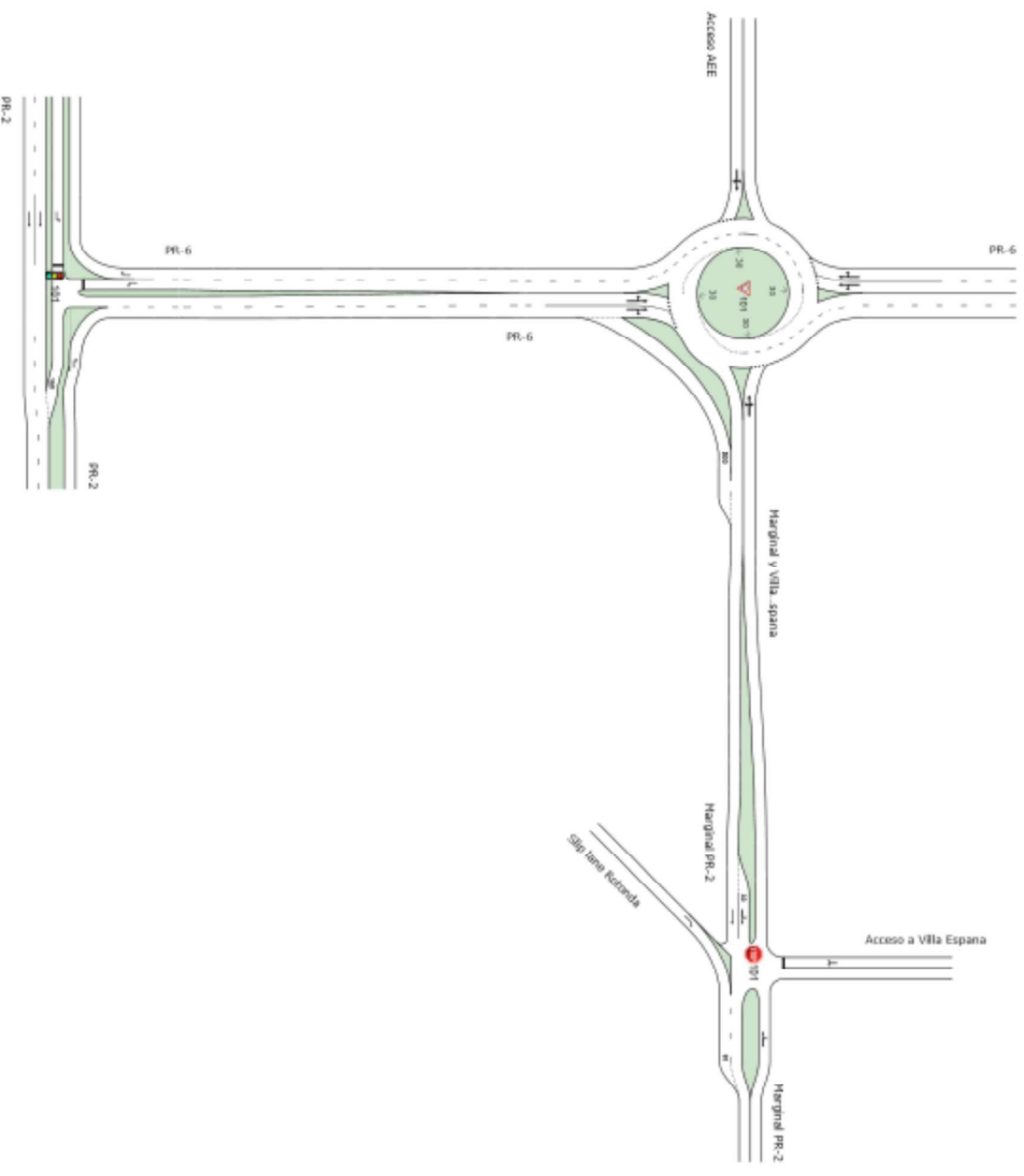


Las mejoras geométrica propuestas para la intersección entre la PR-2 y la PR-6 persiguen la reducción de la dependencia al sistema de semáforo y simplificar los conflictos en las demás intersecciones con una de prioridad tipo rotonda. La intersección circular estará diseñada siguiendo los parámetros de una rotonda moderna; incluyendo un "áprom". La cantidad de carriles será de dos por dirección en cada uno de los accesos de la PR-6 y dos carriles circularán alrededor de la isleta central. Además los accesos Este y Oeste constarán con un carril por dirección. Así se muestra en la figura a adjunta.



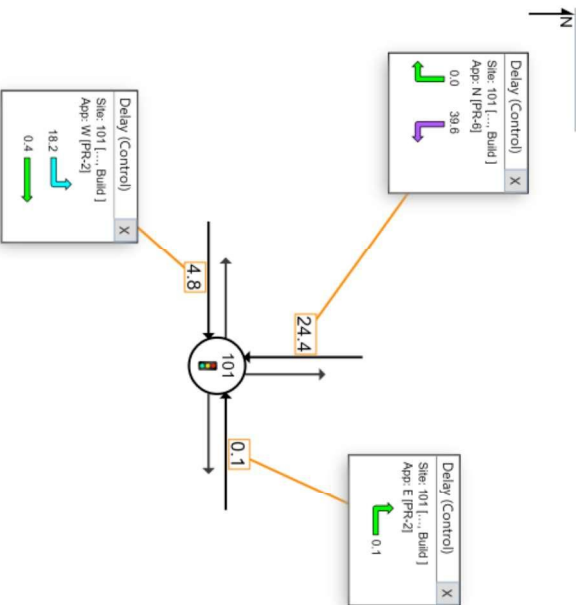
## ***Esquema geométrico para modelaciones de la red de intersecciones asociada a la intersección entre la PR-2 y la PR-6***

La figura adjunta presenta el esquema geométrico del modelo de capacidad para los cambios propuestos en las intersecciones de la red. La misma no incorpora los movimientos continuos en la PR-2; ya que los mismos no serán procesados por el semáforo. Además se sugiere una modificación a la propuesta donde la prioridad en la intersección de la marginal y el acceso a Villa España, se cambie a priorizar la marginal, se añada un carril corto de viraje a izquierda y se incorpore un “slip Lane a la rotonda que maneje el flujo de la PR-6 Sur a la marginal y se mantenga segregado hasta pasar la intersección con Villa España. Este detalle no se representa adecuadamente en esta imagen por limitaciones del modelo de capacidad.

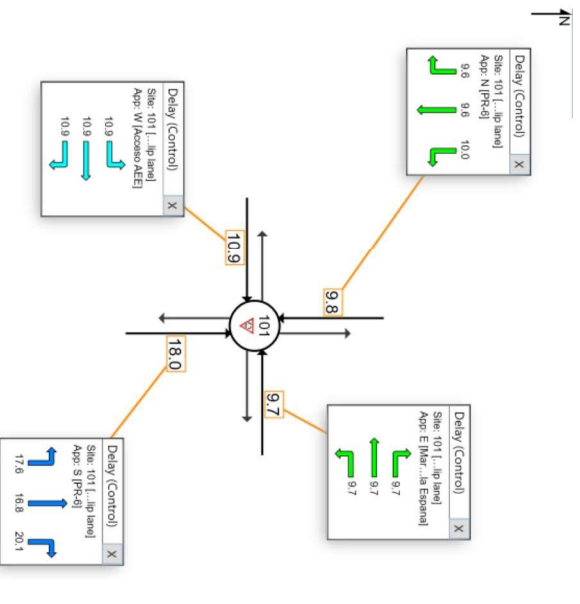


# Análisis de capacidad condición propuesta 2042 AM

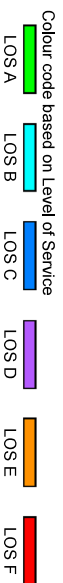
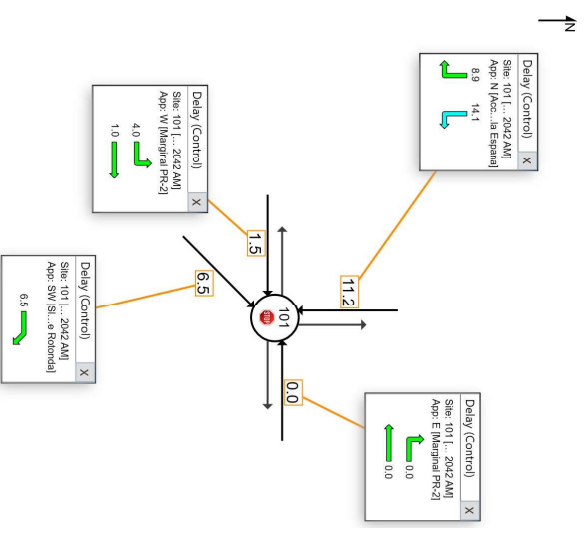
## Demora promedio y LOS PR-2 con PR-6



## Demora promedio y LOS PR-6 con Marginal PR-2 y acceso a AEE



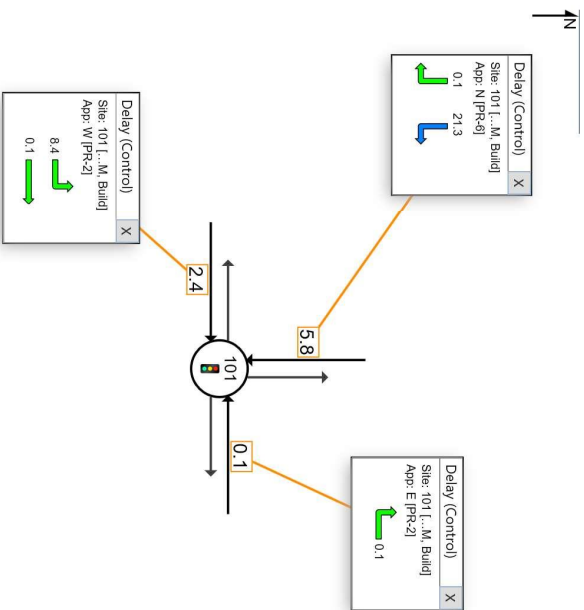
## Demora promedio y LOS Marginal PR-2 con Acceso Vila España



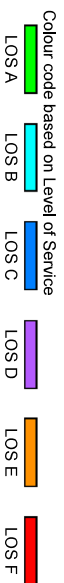
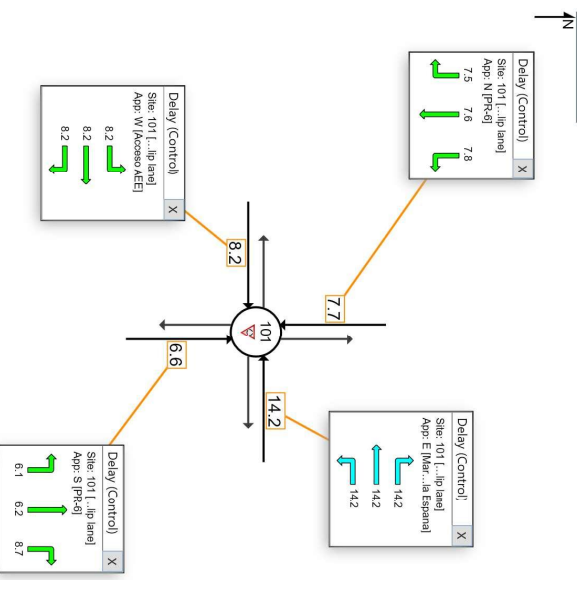
El análisis de la condición futura muestra buenos niveles de servicio con demoras promedio por debajo de los 25 segundos en el peor movimiento.

# Análisis de capacidad condición propuesta 2042 PM

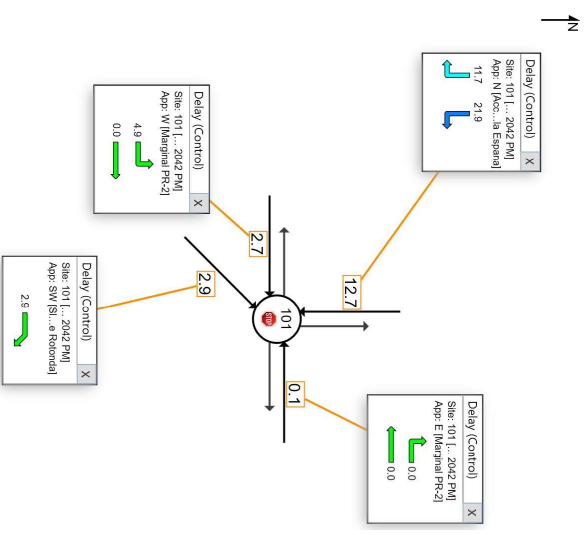
## Demora promedio y LOS PR-2 con PR-6



## Demora promedio y LOS PR-6 con Marginal PR-2 y acceso a AEE



## Demora promedio y LOS Marginal PR-2 con Acceso Vila España



El análisis de la condición futura muestra buenos niveles de servicio con demoras promedio por debajo de los 22 segundos en el peor movimiento.

# MOVEMENT SUMMARY

**Site: 101 [PR-2 con PR-6, 2042 AM, Build (Site Folder: General)]**

PR-2 con PR-6, 2042 AM, Build  
 Site Category: Proposed Design 2  
 Signals - EQUISAT (Pretimed) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total Veh/h]	DEMAND FLOWS [Total Veh/h]	HV] %	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Veh]	Dist.] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: PR-2														
16	R2	421	421	5.0	5.0	0.275	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	53.8
Approach		421	421	5.0	5.0	0.275	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	53.8
North: PR-6														
7	L2	478	478	5.0	5.0	*0.832	39.6	LOS D	15.9	126.1	0.99	0.95	1.22	34.0
14	R2	298	298	5.0	5.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	54.4
Approach		776	776	5.0	5.0	0.832	24.4	LOS C	15.9	126.1	0.61	0.58	0.75	39.3
West: PR-2														
5	L2	765	765	5.0	5.0	*0.832	18.2	LOS B	23.0	182.5	0.90	0.88	1.06	37.1
2	T1	2340	2340	5.0	5.0	0.647	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	64.2
Approach		3105	3105	5.0	5.0	0.832	4.8	LOS A	23.0	182.5	0.22	0.22	0.26	57.5
All Vehicles		4302	4302	5.0	5.0	0.832	7.8	LOS A	23.0	182.5	0.27	0.26	0.32	53.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

# MOVEMENT SUMMARY

**Site: 101 [PR-2 con PR-6, 2042 PM, Build (Site Folder: General)]**

PR-2 con PR-6, 2042 PM, Build  
 Site Category: Proposed Design 2  
 Signals - EQUISAT (Pretimed) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total Veh/h]	DEMAND FLOWS [Total Veh/h]	HV] %	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Veh]	Dist.] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: PR-2														
16	R2	300	300	5.0	5.0	0.196	0.1	LOSA	0.0	0.0	0.00	0.00	0.00	53.8
Approach		300	300	5.0	5.0	0.196	0.1	LOSA	0.0	0.0	0.00	0.00	0.00	53.8
North: PR-6														
7	L2	251	251	5.0	5.0	*0.460	21.3	LOS C	6.2	49.4	0.85	0.71	0.85	39.9
14	R2	683	683	5.0	5.0	0.445	0.1	LOSA	0.0	0.0	0.00	0.00	0.00	54.3
Approach		934	934	5.0	5.0	0.460	5.8	LOSA	6.2	49.4	0.23	0.19	0.23	49.2
West: PR-2														
5	L2	440	440	5.0	5.0	*0.464	8.4	LOSA	8.4	66.4	0.65	0.57	0.65	44.0
2	T1	1151	1151	5.0	5.0	0.318	0.1	LOSA	0.0	0.0	0.00	0.00	0.00	64.8
Approach		1591	1591	5.0	5.0	0.464	2.4	LOSA	8.4	66.4	0.18	0.16	0.18	59.7
All Vehicles		2825	2825	5.0	5.0	0.464	3.3	LOSA	8.4	66.4	0.18	0.15	0.18	56.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
 Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.  
 LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).  
 Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).  
 Delay Model: HCM Delay Formula (Geometric Delay is not included).  
 Queue Model: HCM Queue Formula.  
 Gap-Acceptance Capacity: Traditional M1.  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

\* Critical Movement (Signal Timing)

## MOVEMENT SUMMARY

**Site: 101 [PR-6 con Marginal y acceso a Villa Espana y AEE, 2042 AM - Slip lane (Site Folder: General)]**

PR-6 con Marginal y acceso a Villa Espana y AEE, 2042 AM

Site Category: Proposed Design 2 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total Veh/h]	HV] %	DEMAND FLOWS [Total Veh/h]	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Veh]	Dist.] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
<b>South: PR-6</b>														
3	L2	12	5.0	13	5.0	0.689	17.6	LOS C	6.7	52.8	0.79	1.06	1.58	21.8
8	T1	745	5.0	810	5.0	0.689	16.8	LOS C	9.1	72.1	0.78	1.04	1.51	42.8
18	R2	429	5.0	466	5.0	0.689	20.1	LOS C	9.1	72.1	0.77	0.99	1.40	33.2
Approach		1186	5.0	1289	5.0	0.689	18.0	LOS C	9.1	72.1	0.78	1.02	1.47	39.9
<b>East: Marginal y Villa Espana</b>														
1	L2	81	5.0	88	5.0	0.310	9.7	LOS A	1.2	9.4	0.64	0.66	0.70	34.1
6	T1	5	5.0	5	5.0	0.310	9.7	LOS A	1.2	9.4	0.64	0.66	0.70	29.0
16	R2	97	5.0	105	5.0	0.310	9.7	LOS A	1.2	9.4	0.64	0.66	0.70	46.0
Approach		183	5.0	199	5.0	0.310	9.7	LOS A	1.2	9.4	0.64	0.66	0.70	41.4
<b>North: PR-6</b>														
7	L2	544	5.0	591	5.0	0.569	10.0	LOS A	3.9	30.8	0.41	0.24	0.41	45.7
4	T1	695	5.0	755	5.0	0.569	9.6	LOS A	3.9	30.8	0.39	0.23	0.39	48.3
14	R2	12	5.0	13	5.0	0.569	9.6	LOS A	3.8	30.2	0.39	0.23	0.39	45.3
Approach		1251	5.0	1360	5.0	0.569	9.8	LOS A	3.9	30.8	0.40	0.23	0.40	47.0
<b>West: Acceso AEE</b>														
5	L2	12	5.0	13	5.0	0.084	10.9	LOS B	0.3	2.0	0.74	0.74	0.74	45.2
2	T1	5	5.0	5	5.0	0.084	10.9	LOS B	0.3	2.0	0.74	0.74	0.74	35.4
12	R2	12	5.0	13	5.0	0.084	10.9	LOS B	0.3	2.0	0.74	0.74	0.74	30.1
Approach		29	5.0	32	5.0	0.084	10.9	LOS B	0.3	2.0	0.74	0.74	0.74	38.7
All Vehicles		2649	5.0	2879	5.0	0.689	13.5	LOS B	9.1	72.1	0.59	0.62	0.91	43.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.



# MOVEMENT SUMMARY

**Site: 101 [PR-6 con Marginal y acceso a Villa Espana y AEE, 2042 PM - Slip lane (Site Folder: General)]**

PR-6 con Marginal y acceso a Villa Espana y AEE, 2042 PM  
 Site Category: Proposed Design 2  
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total Veh/h]	HV] %	DEMAND FLOWS [Total Veh/h]	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Veh]	Dist.] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
<b>South: PR-6</b>														
3	L2	12	5.0	13	5.0	0.326	6.1	LOSA	1.5	12.0	0.33	0.21	0.33	29.0
8	T1	587	5.0	638	5.0	0.326	6.2	LOSA	1.7	13.8	0.33	0.21	0.33	52.3
18	R2	141	5.0	153	5.0	0.326	8.7	LOSA	1.7	13.8	0.34	0.21	0.34	42.3
Approach		740	5.0	804	5.0	0.326	6.6	LOSA	1.7	13.8	0.33	0.21	0.33	50.6
<b>East: Marginal y Villa Espana</b>														
1	L2	78	5.0	85	5.0	0.583	14.2	LOS B	4.2	32.9	0.73	0.91	1.25	31.0
6	T1	5	5.0	5	5.0	0.583	14.2	LOS B	4.2	32.9	0.73	0.91	1.25	26.4
16	R2	346	5.0	346	5.0	0.583	14.2	LOS B	4.2	32.9	0.73	0.91	1.25	43.4
Approach		429	5.0	436	5.0	0.583	14.2	LOS B	4.2	32.9	0.73	0.91	1.25	41.5
<b>North: PR-6</b>														
7	L2	132	5.0	132	5.0	0.448	7.8	LOSA	2.6	20.2	0.34	0.19	0.34	50.2
4	T1	856	5.0	930	5.0	0.448	7.6	LOSA	2.6	20.2	0.33	0.18	0.33	50.1
14	R2	12	5.0	12	5.0	0.448	7.5	LOSA	2.5	19.8	0.32	0.18	0.32	47.1
Approach		1000	5.0	1074	5.0	0.448	7.7	LOSA	2.6	20.2	0.33	0.18	0.33	50.1
<b>West: Acceso AEE</b>														
5	L2	12	5.0	12	5.0	0.062	8.2	LOSA	0.2	1.5	0.65	0.65	0.65	47.8
2	T1	5	5.0	5	5.0	0.062	8.2	LOSA	0.2	1.5	0.65	0.65	0.65	38.3
12	R2	12	5.0	13	5.0	0.062	8.2	LOSA	0.2	1.5	0.65	0.65	0.65	32.7
Approach		29	5.0	30	5.0	0.062	8.2	LOSA	0.2	1.5	0.65	0.65	0.65	41.2
All Vehicles		2198	5.0	2345	5.0	0.583	8.5	LOSA	4.2	32.9	0.41	0.33	0.51	48.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
 Roundabout LOS Method: Same as Sign Control.  
 Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

# MOVEMENT SUMMARY

**Site: 101 [Marginal con acceso a Villa Espana, 2042 AM (Site Folder: General)]**

Marginal con acceso a Villa Espana, 2042 AM

Site Category: Proposed Design 2

Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total Veh/h]	HV [%]	DEMAND FLOWS [Total Veh/h]	HV [%]	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Veh]	Dist. m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Marginal PR-2														
6	T1	110	3.0	120	3.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	64.4
16	R2	9	3.0	10	3.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	61.8
Approach		119	3.0	129	3.0	0.071	0.0	NA	0.0	0.0	0.00	0.00	0.00	64.2
North: Acceso a Villa Espana														
7	L2	54	3.0	59	3.0	0.187	14.1	LOS B	0.7	5.1	0.29	0.21	0.29	46.9
14	R2	68	3.0	74	3.0	0.187	8.9	LOS A	0.7	5.1	0.29	0.21	0.29	47.2
Approach		122	3.0	133	3.0	0.187	11.2	LOS B	0.7	5.1	0.29	0.21	0.29	47.1
West: Marginal PR-2														
5	L2	94	3.0	102	3.0	0.197	4.0	LOS A	0.7	5.5	0.17	0.03	0.17	57.0
2	T1	544	3.0	591	3.0	0.197	1.0	LOS A	0.7	5.5	0.06	0.01	0.06	62.8
Approach		638	3.0	693	3.0	0.197	1.5	NA	0.7	5.5	0.08	0.01	0.08	61.9
SouthWest: Slip lane Rotonda														
12ax	R1	429	3.0	466	3.0	0.265	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	55.4
Approach		429	3.0	466	3.0	0.265	6.5	NA	0.0	0.0	0.00	0.00	0.00	55.4
All Vehicles		1308	3.0	1422	3.0	0.265	3.9	NA	0.7	5.5	0.07	0.03	0.07	58.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

**Site: 101 [Marginal con acceso a Villa Espana, 2042 PM (Site Folder: General)]**

Marginal con acceso a Villa Espana, 2042 PM  
 Site Category: Proposed Design 2  
 Stop (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	INPUT VOLUMES [Total Veh/h]	DEMAND FLOWS [Total Veh/h]	HV [%]	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Veh]	Dist. m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Marginal PR-2													
6	T1	369	401	5.0	0.264	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	63.9
16	R2	60	65	5.0	0.264	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	61.2
Approach		429	466	5.0	0.264	0.1	NA	0.0	0.0	0.00	0.00	0.00	63.5
North: Acceso a Villa Espana													
7	L2	6	7	5.0	0.125	21.9	LOS C	0.5	3.9	0.56	0.48	0.56	46.2
14	R2	55	60	5.0	0.125	11.7	LOS B	0.5	3.9	0.56	0.48	0.56	46.5
Approach		61	66	5.0	0.125	12.7	LOS B	0.5	3.9	0.56	0.48	0.56	46.5
West: Marginal PR-2													
5	L2	165	179	5.0	0.169	4.9	LOSA	0.7	5.7	0.48	0.39	0.48	52.1
2	T1	135	147	5.0	0.082	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	65.0
Approach		300	326	5.0	0.169	2.7	NA	0.7	5.7	0.27	0.21	0.27	57.2
SouthWest: Slip lane Rotonda													
12ax	R1	141	153	5.0	0.089	2.9	LOSA	0.0	0.0	0.00	0.00	0.00	55.3
Approach		141	153	5.0	0.089	2.9	NA	0.0	0.0	0.00	0.00	0.00	55.3
All Vehicles		931	1012	5.0	0.264	2.1	NA	0.7	5.7	0.12	0.10	0.12	58.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

**Attachment 17: Luma Recommendation**



jueves, 30 de marzo de 2023

Sr. Pedro Ramos Vélez  
Gerente División Infraestructura  
PO Box 41118  
Santurce, PR 00940

Estimado señor Ramos:

OGPe: 2020-307303-SRI-066461  
LUMA: 23-7-080  
Carga: 0kVA  
Proyecto: Mejoras Geométricas a la intersección PR-2 con PR-6  
Dirección: Carr. PR-2 KM HM 9.2 intersección Carr. PR-6  
Municipio: Bayamón

**LUMA** cómo agente operador del sistema de transmisión y distribución eléctrica de la Autoridad de Energía Eléctrica (AEE) le presenta sus comentarios con relación al proyecto de referencia de información y recomendación necesaria de la infraestructura eléctrica que será impactada por las mejoras a realizarse.

El diseñador deberá leer y entender este informe; de haber dudas relacionadas al mismo, debe aclararlas con la ingeniera supervisora de Ingeniería de Distribución de la Región de Bayamón antes de radicar el plano para endoso. Además, debe analizar y estudiar este informe e incluir y conformar parte del plano las notas pertinentes que se especifican como "Incluir nota al efecto en los planos de diseño".

Incluimos nuestra evaluación del proyecto y representación gráfica con información sobre facilidades eléctricas relacionadas al mismo:

1. El proyecto está localizado en:
  - Coordenadas proyección en metros +este +norte: 262515.154, 231130.007
  - Coordenadas geográficas latitud y longitud: 18.397918, -66.138717
2. Deberá presentar plano de diseño para endoso y la Certificación de Planos de Construcción Eléctrica para la distribución eléctrica correspondiente, acompañados por la Estampilla Digital Especial, y firmados digitalmente. Estos deberán ser radicados mediante el Portal Único de Negocios (SBP por sus siglas en inglés) de la Oficina de Gerencia de Permisos (OGPe) (ver Comunicado Técnico 18-01 y 17-01), y deberán cumplir con los siguientes reglamentos, directrices, comunicados e información técnica específica que se presenta a continuación:
  - a. Asegurarse que el diseño propuesto cumpla con el "Reglamento conjunto para la evaluación y expedición de permisos relacionados al desarrollo, uso de terrenos y operación de negocios" del 7 de junio de 2019, los NUEVOS patrones de Construcción de LUMA y los siguientes Comunicados Técnicos AEE:
    - i. 07-02 "Pruebas a cables soterrados nuevos y sus accesorios en proyectos privados" del 29 de junio de 2007
    - ii. 12-01: Política Pública para la Construcción de Sistemas Eléctricos
    - iii. Los Criterios de Diseño para Sistemas Eléctricos Aéreos de Transmisión y Distribución deben ser tomando en consideración una velocidad probable de viento de 160 mph.
    - iv. 13-03: Bases de Hormigón para Postes de Líneas Eléctricas
    - v. 14-03: Equipos con Aislación en Goma de Silicón
    - vi. 15-02: Postes para Sistemas de Distribución Eléctrica Primaria
    - vii. 15-03: Revisión de Parámetros para Transformadores según Reglamentación del Departamento de Energía Federal (DOE)

- b. Los sistemas de alumbrado a construirse deberán cumplir con los siguientes Comunicados de la AEE:
    - i. 07-01: Sistemas de Alumbrado
    - ii. 16-03: Proyectos de Construcción con Sistemas de Alumbrado Público; esta consulta la podrá realizar a través del correo electrónico: [energia@ddec.pr.gov](mailto:energia@ddec.pr.gov)
    - iii. 16-04: Instalación de Luminarias Tipo Diodo Emisor de Luz (LED)
  - c. En el sector existen líneas eléctricas aéreas trifásica a un voltaje 4.16kV con 4 conductores calibre números 336 SPACER, líneas eléctricas aéreas, trifásica a un voltaje 13.2kV con 4 conductores calibre números 556 ACSR y líneas eléctricas aéreas, trifásica a un voltaje 38kV con 4 conductores calibre números 300 CU.
  - d. Será responsabilidad del diseñador del proyecto indicar la localización exacta de este, ilustrar las líneas eléctricas existentes y de ser necesario, coordinar la reubicación de líneas eléctricas.
  - e. Deberá incluir en los planos de diseño las coordenadas Lambert correspondientes a la ubicación del Proyecto, en versión del North American Datum (NAD 83) y la unidad de medidas en metros [Refiérase al inciso 1 de este informe]; estas coordenadas deberán aparecer impresas en el plano de localización a ser radicado para revisión y eventual endoso, en una escala de 1:10,000 o 1:20,000. Incluir planos en formato .DWG o .DXF, el mismo deberá estar georreferenciado.
  - f. Serán requisitos en conjunto con la radicación de los planos la carta explicativa del proyecto, cómputos de carga, tensión y flecha para los sistemas aéreos, y cómputos de caída de voltaje para diseños de sistema soterrados.
  - g. A menos de una milla de distancia de la costa tanto los equipos como los materiales deberán ser en acero inoxidable, y el conductor a utilizar será ACAR (Aluminum Conductor Alloy Reinforced), AAAC (All Aluminum Alloy Conductor) o su equivalente en cobre. Incluir nota al efecto en los planos de diseño.
  - h. Esta evaluación no constituye una revisión del plano de diseño. El diseñador es responsable de cumplir con los códigos, reglamentos, manuales, estándares y normas aplicables vigentes para los sistemas eléctricos en Puerto Rico. Además, deberá cumplir con los reglamentos de ordenación de la infraestructura en el espacio público (Reglamento de Planificación Número 22), según exige la Oficina de Gerencia de Permisos (OGPe). Los sistemas de distribución y transmisión a desarrollarse en estas zonas deberán seguir las guías establecidas por este reglamento. Incluir nota al efecto en los planos de diseño.
  - i. El dueño del proyecto o su representante deberá notificarle a la Oficina de Ingeniería de Distribución de la región de Bayamón el comienzo de la obra posterior al endoso de los planos y previo al inicio de los trabajos eléctricos del proyecto para la requerida inspección, aprobación y coordinación necesaria. Incluir nota al efecto en los planos de diseño.
3. Para servir el proyecto, el proponente será responsable de lo siguiente y deberá incluir notas al efecto en los planos de diseño:
- a. Someterá diseño para relocalizar los tramos de los alimentadores primarios trifásicos a 4.16kV número 1714-05 y 13.2kV número 1711-05, y la línea de subtransmisión a 38kV número 4300 que se vean afectados por el proyecto, de soterrarse los alimentadores primarios serán en conductor 750CU XLP y la línea de subtransmisión en calibre 800CU XLP. Además, deberá someter diseño para relocalizar los servicios secundarios afectados por el proyecto.
  - b. **El dueño del proyecto deberá confirmar con el Gerente de Distrito Técnico de la región de Bayamón el voltaje primario a ser utilizado, previo a la compra de los transformadores.**

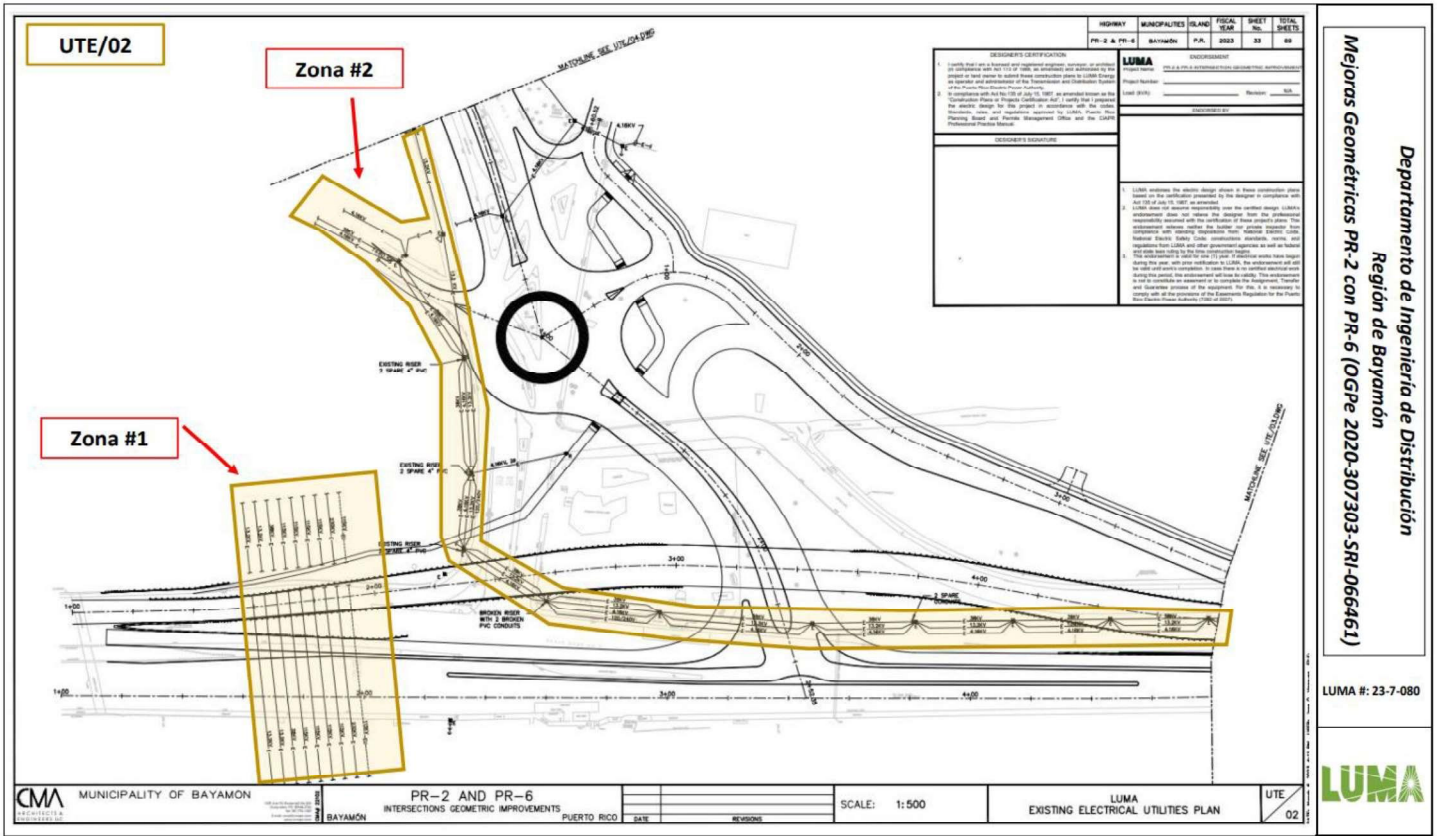


- c. Obtener y gestionar todos los endosos de las agencias reguladoras pertinentes tales como:
  - i. Departamento de Recursos Naturales y Ambientales (DRNA) - Declaración de Impacto Ambiental (DIA)
  - ii. Instituto de Cultura Puertorriqueña - División de Permisos Arqueológicos
  - iii. Cuerpo de Ingenieros de Estados Unidos
  - iv. Departamento de Transportación y Obras Públicas Estatal o Municipal
  - v. Junta de Planificación
  - vi. Oficina de Gerencia y Permisos (OGPe)
  - vii. Otras agencias gubernamentales, federales y privadas requeridos para el desarrollo del proyecto.
4. Para servir el proyecto, LUMA realizará los siguientes trabajos con cargos al dueño y deberá incluir notas al efecto en los planos de diseño:
  - a. Realizará cualquier trabajo de interconexión y desconexión con la infraestructura a construirse y a ser retirada.
  - b. Una vez endosado el plano de diseño, para conocer el costo por concepto de los trabajos a ser realizados por LUMA especificados en este informe, deberá formalizar la solicitud del estimado. Una vez recibido el estimado podrá realizar el pago de la cotización y notificar a este Departamento de Ingeniería de Distribución con tres meses de anticipación de los trabajos estimados para el proyecto y dentro de la vigencia de la cotización (90 días).
5. Este proyecto está afectado por líneas eléctricas, por tanto:
  - a. El dueño del proyecto es responsable de cumplir con los requisitos establecidos en el Reglamento de Servidumbres para la Autoridad de Energía Eléctrica. Toda nueva servidumbre para constituirse para líneas y equipos eléctricos debe cumplir con los requisitos establecidos en el Apéndice B del Reglamento. De igual forma, con los requisitos relacionados a las servidumbres asociadas a instalaciones eléctricas existentes en el área del proyecto.
  - b. Cualquier trabajo necesario de reubicación de líneas eléctricas energizadas, será realizado por LUMA con cargos al dueño y deberá coordinarse con el Gerente de Distrito de la región de Bayamón. Además, se prohíbe la realización de cualquier tipo de trabajo en las franjas de servidumbre de paso eléctricas sin la autorización escrita de LUMA. LUMA no aprobará la conexión de proyectos con condiciones de invasión de servidumbres o que no cumplan con los despejos de seguridad requeridos.
  - c. Dentro de los límites de este proyecto discurre las líneas eléctricas de transmisión a 230KV número 50200 y 50900, las líneas eléctricas de transmisión a 115KV número 36100, 37500, 38200, y 40600 y líneas eléctricas de subtransmisión a 38KV número 4300 y 9800. Por tanto, el dueño del proyecto será responsable de solicitar certificación al área al Departamento de Terrenos de LUMA quien administra el catastro de la Autoridad. Deberá completar todo el proceso de certificación y endoso de los planos conforme exige el Reglamento 7282. El endoso que emite la oficina de terrenos no es un endoso para uso de la servidumbre sino solamente certifica los derechos reales a favor de la Autoridad en el lugar. Deberá ilustrar en los planos de diseño las líneas de transmisión con su correspondiente servidumbre certificada y entregar dicha certificación con los planos para el endoso. Además, en los límites del proyecto, se ilustra en los planos la intención de construir un elevado, en esta área se tiene que cumplir con los despejos de seguridad requeridos por el NESC y LUMA para las líneas transmisión y distribución. Incluir nota al efecto en los planos de diseño. En adición, deberá cumplir con lo siguiente:
    - i. No se permite ninguna construcción, movimiento de tierra, rodaje ni ninguna actividad incompatible con el derecho de servidumbre establecido en el terreno. Se refiere al desarrollador al Reglamento 7282 de 25 de enero de 2007 Para Servidumbres Para La Autoridad de Energía Eléctrica (Reglamento

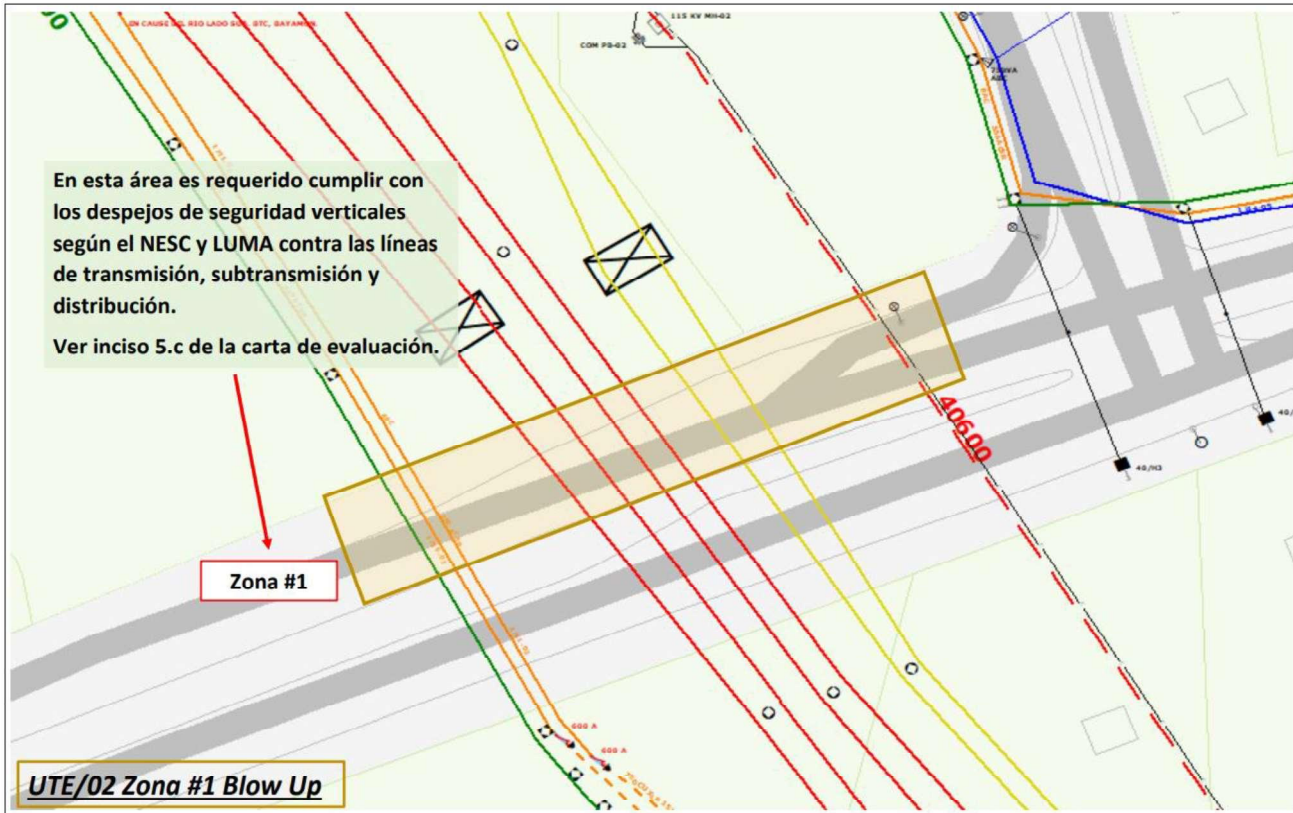
7282) y la Ley 143 de 1979 (Ley 143), según enmendada. Cualquier asunto relacionado a las servidumbres se regirá por el Reglamento y ley antes citada.

- ii. El uso del área de las servidumbres de paso de líneas de transmisión y subtransmisión no está permitido. LUMA permite el uso de la servidumbre de paso, vía excepción, para algunos usos específicos. Cualquier excepción en el uso del área de servidumbre deberá ser solicitado al Departamento de Terrenos de LUMA quien hará la evaluación correspondiente conforme al Reglamento. No se hará ninguna obra en área de servidumbre sin el consentimiento escrito según requerido en el Reglamento y comunicados técnicos correspondientes. De realizarse alguna obra o actividad incompatible con el derecho de servidumbre el proponente, su contratista o desarrollador será responsable de cualquier daño causado a propiedad, persona o ambiente.
  - iii. El proponente será responsable de completar los procesos de constitución de servidumbre para su proyecto y cumplir con todo lo requerido por el Reglamento 7282 y otros Reglamentos que LUMA administra.
  - iv. Los sellos, endosos o cartas de evaluación en los planos eléctricos o propuestos en ninguna manera significan endosos al uso del área de servidumbre ni sustituyen el proceso establecido en el Reglamento 7282 y la Ley 143.
- d. Para constituir la servidumbre de paso de las líneas existentes dentro de los límites del proyecto, deberá someter plano certificado por un agrimensor o ingeniero licenciado autorizado a ejercer la profesión de la agrimensura en Puerto Rico (RPA), ilustrando las mismas en su ubicación exacta para endoso (cuatro copias en papel y una digital en formato .PDF). Incluir leyenda describiendo la servidumbre y la tabla de mensura de la servidumbre.
  - e. Deberá localizar las líneas y estructuras eléctricas de transmisión y distribución a instrumento de agrimensura preciso y calibrado, y respetar las servidumbres de paso de aquellas que pasen por el proyecto. En caso de la construcción de nuevas líneas eléctricas que requieran servidumbre deberá incluir en el plano de diseño la ubicación exacta, su ancho y una leyenda que describa la misma en conjunto con la tabla de mensura certificada por un agrimensor o ingeniero licenciado autorizado a ejercer la profesión de la agrimensura en Puerto Rico (RPA) (Secc. IV, Art. C – 1j del Reglamento de Servidumbres). En adición, deberá indicar claramente los límites del Proyecto, colindantes y propietarios afectados. El dueño es responsable de cumplir con los requisitos establecidos en el Reglamento de Servidumbres para la Autoridad de Energía Eléctrica, con relación a las nuevas servidumbres a constituirse como parte del proyecto y a las servidumbres asociadas a instalaciones eléctricas existentes en el área de este.
6. Incluimos como parte de esta evaluación, un croquis con información gráfica sobre facilidades eléctricas.
  7. Cualquier duda sobre esta evaluación y su contenido, puede comunicarse a nuestra oficina al correo electrónico [ingenieria.distribucionbayamon@lumapr.com](mailto:ingenieria.distribucionbayamon@lumapr.com) o al número telefónico (787) 521-1625.
  8. Esta evaluación caduca al año de la fecha de emisión, y cancela y sustituye cualquier otra realizada previamente.

Cordialmente,  
**Marlene Ortiz Rivera**  
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by Marlene  
Ortiz Rivera  
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Marlene Ortiz Rivera  
Ingeniera  
Ingeniería de Distribución Región de Bayamón

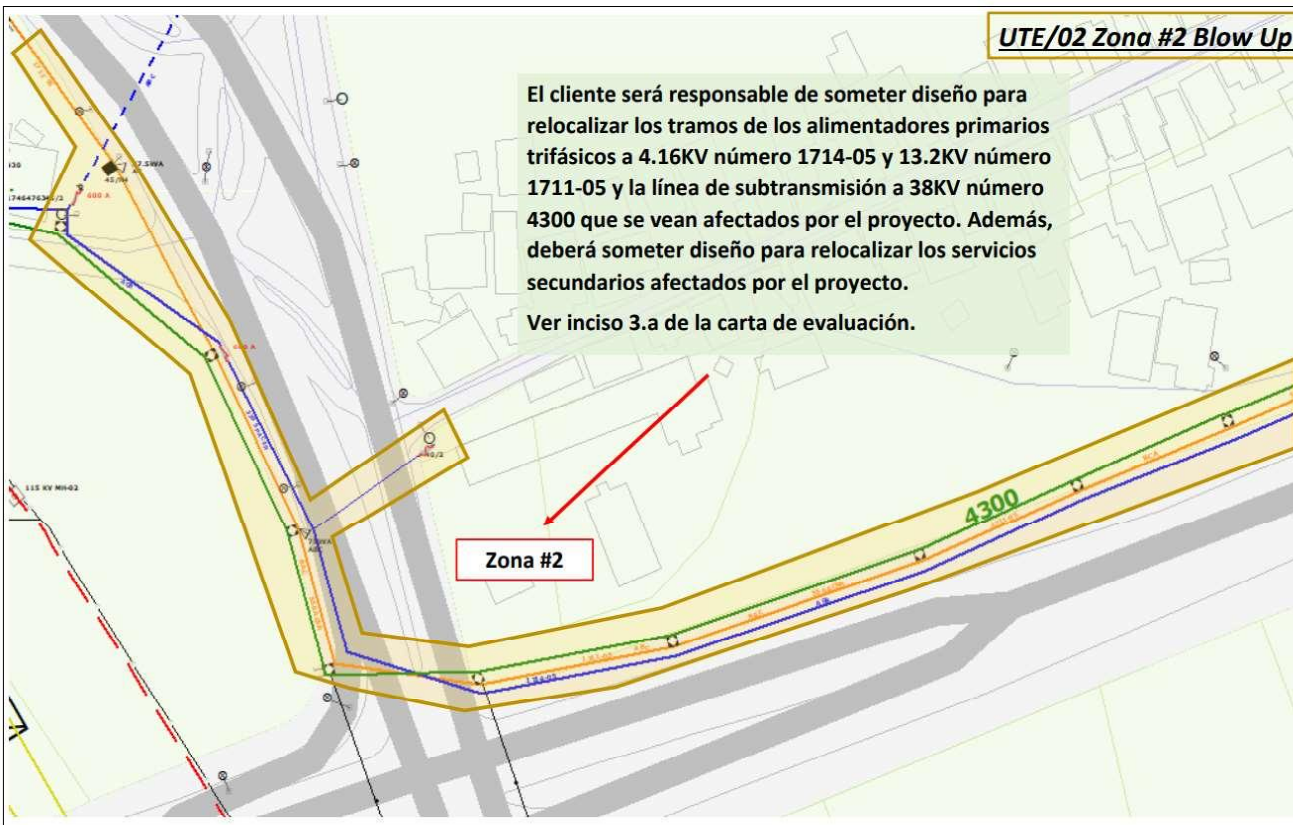






Departamento de Ingeniería de Distribución  
Región de Bayamón  
Mejoras Geométricas PR-2 con PR-6 (OGPe 2020-307303-SRI-066461)

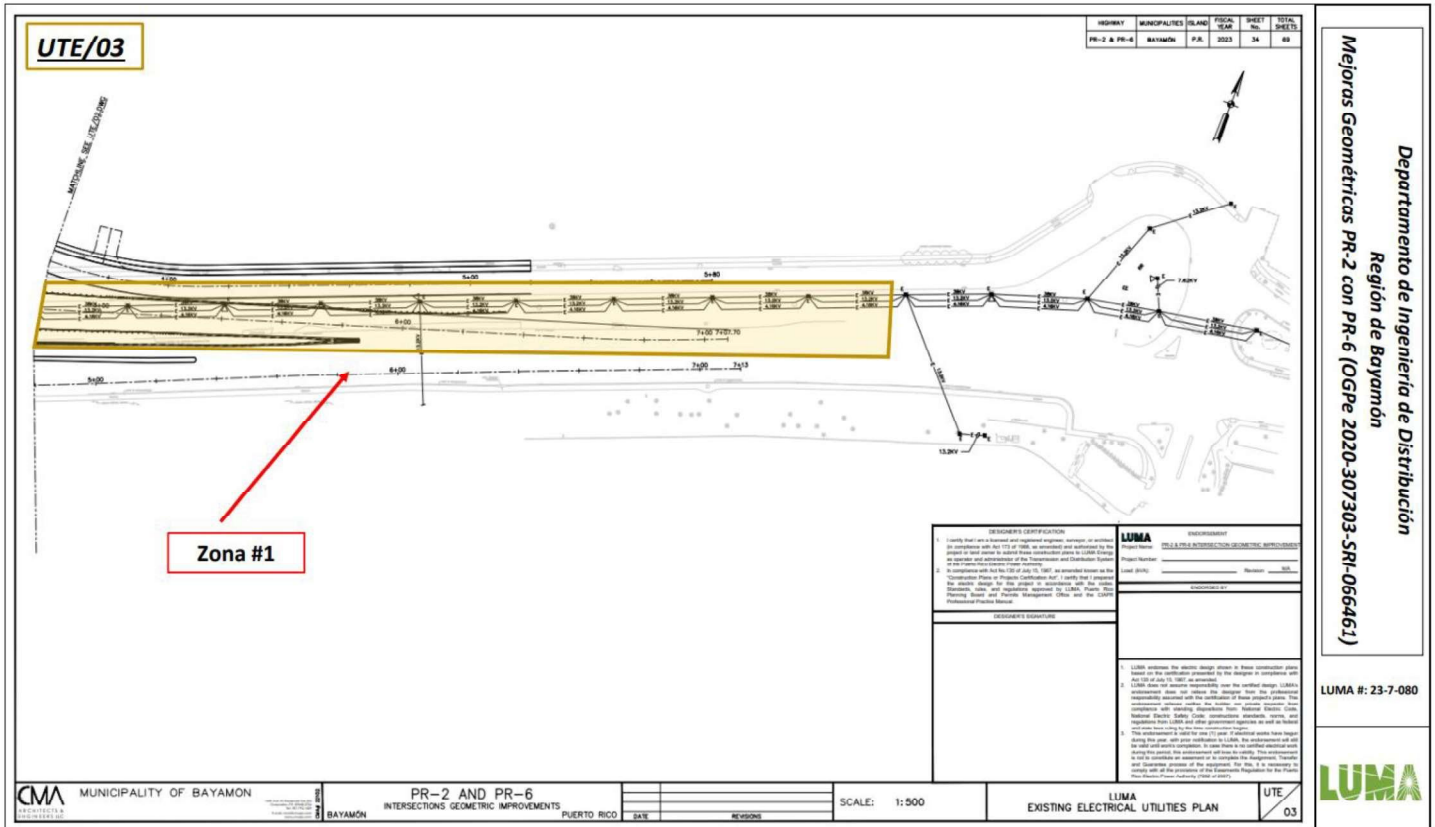
LUMA #: 23-7-080



Departamento de Ingeniería de Distribución  
Región de Bayamón  
Mejoras Geométricas PR-2 con PR-6 (OGPe 2020-307303-SRI-066461)

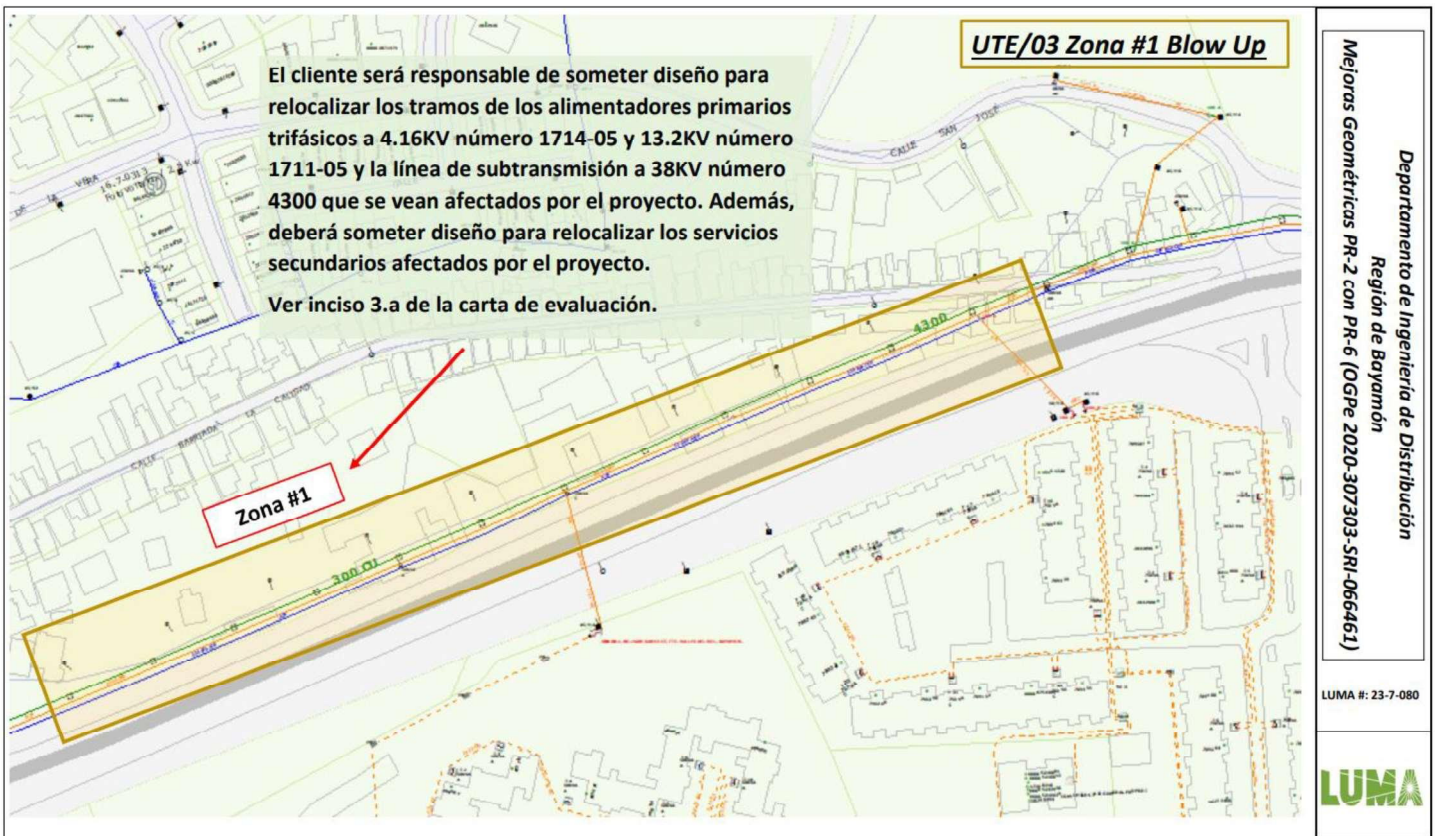
LUMA #: 23-7-080





Departamento de Ingeniería de Distribución  
 Región de Bayamón  
 Mejoras Geométricas PR-2 con PR-6 (OGPe 2020-307303-SRI-066461)

LUMA #: 23-7-080



Departamento de Ingeniería de Distribución  
 Región de Bayamón  
 Mejoras Geométricas PR-2 con PR-6 (OGPe 2020-307303-SRI-066461)

LUMA #: 23-7-080



**Attachment 18: AAA Recommendation**





# GOBIERNO DE PUERTO RICO

## Autoridad de Acueductos y Alcantarillados

30 de abril de 2020

Ing. Gabriel Hernández Rodríguez  
Secretario Auxiliar  
Oficina de Gerencia de Permisos (OGPe)  
PO BOX 41179  
San Juan, Puerto Rico 00940-1179

Ingeniero Hernández Rodríguez:

**AAA-RM-20-11-0015; BAYAMÓN – MEJORAS GEOMÉTRICAS INTERSECCIÓN PR-2 Y PR-6  
PROPIEDAD DE LA AUTORIDAD DE CARRETERAS Y TRANSPORTACIÓN  
CARRETERA ESTATAL PR-2 INTERSECCIÓN PR-6, BO. JUAN SÁNCHEZ  
OGPe: 2020-307303-SRI-033078  
RECOMENDACIONES**

Nos referimos al proyecto de epígrafe, presentado ante nuestra consideración para que se informe sobre las facilidades existentes, que puedan verse afectadas por la acción propuesta. De acuerdo a la información presentada, se proponen mejoras geométricas en la intersección de la carretera PR-2 PR-6. De acuerdo a la información presentada, las mejoras impactarán registros sanitarios y válvulas.

### Sistema de Acueductos

Por el área discurren tuberías de agua potable de 8", 10", 12", 30" y 48" de diámetro. Deberá coordinar a través de la oficina de Coordinación de Excavaciones adscrita a la Comisión de Servicio Público, para el marcado de las tuberías existentes.

### Sistema de Alcantarillado Sanitario

Por el área discurren dos líneas de 8", y 54" de diámetro. Deberá coordinar a través de la oficina de Coordinación de Excavaciones adscrita a la Comisión de Servicio Público, para el marcado de las tuberías existentes. El proyecto no deberá impactar las elevaciones de las invertidas existentes. Solo se podrá ajustar el nivel del tope del registro, conforme a las Normas de Diseño de esta Autoridad.

El proyectista, o el dueño del proyecto, coordinará con esta Autoridad toda gestión de marcado de las tuberías existentes a fin de evitar roturas o interrupción del servicio antes, durante y al final de la construcción.

El dueño o proyectista deberá considerar la posibilidad de relocalizar, a su costo, toda línea que sea impactada por los trabajos a realizarse en el proyecto. Cualquier daño a las líneas de distribución de agua o alcantarillado sanitario deberá ser notificado a la mayor brevedad para la reparación correspondiente. Los costos por concepto de reparación podrán ser cargados al proyecto.



**Infraestructura / Proyectos Públicos y Privados METRO:** #604 Avenida Barbosa, Hato Rey - PO Box 7066, San Juan, PR 00916-7066

Antes de iniciar el proceso de construcción, deberán radicar a través de la Oficina de Gerencia de Permisos (OGPe) los planos de las obras de acueducto para la aprobación de la AAA, los cuales deberán estar sellados y firmados por el profesional responsable de los mismos.

Estos incluyen, según aplique al caso, planos que contemplen:

- Sistemas de distribución de agua y su conexión a los sistemas de la AAA
- Relocalización o extensión de obras de acueducto
- Obras Extramuros e Instalaciones para ser transferidas a la AAA para su operación

Deberá cumplirse con los requisitos establecidos en el Reglamento Conjunto de Permisos para Obras de Construcción y Usos de Terrenos.

Los planos deberán ser sometidos y aprobados por esta Autoridad, de acuerdo al Reglamento para la Certificación de Planos de Construcción, antes de proceder con la construcción de las obras.


Al someter el plano final para aprobación, se deberá cumplir también con los siguientes requisitos:

1. Someter los documentos de certificación del ingeniero o arquitecto debidamente cumplimentados
  - a. AAA-972 (Solicitud de Aprobación de Planos de Construcción)
  - b. AAA-1294 (Certificación de Ingeniero o Arquitecto)
2. Someter un estimado desglosado y por partida de las obras de acueducto a instalarse en el proyecto.
3. Someter evidencia de pago de los sellos y aranceles que apliquen

El cómputo final de las unidades equivalentes estará basado en lo que, al presentar los planos hidráulicos, resulte ser la demanda requerida para el proyecto propuesto. Si las unidades equivalentes, resultan ser diferente a lo contemplado para fines de esta evaluación, esta Autoridad se reserva el derecho de modificar los términos de esta recomendación.

Estas recomendaciones estarán vigentes por el término de dos (2) años, a partir de la fecha de esta comunicación, al cabo del cual, de no haberse sometido planos de construcción de las obras de acueducto, el proyecto deberá someterse nuevamente ante la consideración de esta Autoridad.

Cordialmente,



Ing. Gina M. Carrillo Garcia, PE  
Gerente Técnico Proyecto Públicos y Privados

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c Expediente, Archivo de Lectura

**Attachment 19: ACT Recommendation**



## RECOMENDACIONES

21 de junio de 2023

Lcdo. Félix Rivera Torres  
Secretario Auxiliar Interino  
Departamento de Desarrollo Económico y Comercio de PR  
Oficina de Gerencia de Permisos  
Apartado 41179  
San Juan, PR 00940-1179

**CASO NÚM.: 2020-307303-SRI-069304**  
**MEJORAS GEOMÉTRICAS A LA**  
**INTERSECCIÓN DE LAS CARRETERAS PR-2 Y PR-6**  
**CARRETERAS PR-2 Y PR-6**  
**BARRIO JUAN SÁNCHEZ, BAYAMÓN**

Estimado licenciado Rivera Torres:

Hacemos referencia a los documentos recibidos digitalmente el 19 de mayo de 2023, en la Oficina de Control de Accesos de esta Autoridad, relacionados con este asunto.

Esta Autoridad revisó los documentos radicados en el SBP del caso mencionado en el asunto e informó que **será condición “Sine Qua Non”** que se deberán cumplir con los siguientes requisitos, recomendaciones y comentarios:

1. No tenemos comentarios al estudio de tránsito fechado noviembre 2022, preparado por la firma Traffic Engineering Consultants, PSC, para el proyecto propuesto, ya que las mejoras geométricas propuestas mejorarán las condiciones de tráfico del área.
2. La Oficina de Utilidades e Iluminación del Área de Diseño de esta Autoridad evaluó el plano sometido para el proyecto de referencia e informó que se deberán cumplir con los siguientes comentarios y requisitos:
  - a. El plano deberá mostrar todas las utilidades eléctricas existentes afectadas con el

proyecto. Los trabajos de relocalización deberán establecerse conforme a las diferentes etapas del Mantenimiento de Tránsito (MOT) propuesto. Los planos deberán incluir información de los postes propuestos (estándar de LUMA), herrajes, conductores, además del detalle de la base propuesta. Dicha base deberá quedar a nivel de terreno.

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- b. La localización de los postes y líneas eléctricas deberá localizarse lo más alejado posible del área de la rotonda, por razones de seguridad. De igual modo, se deberá verificar la existencia de líneas soterradas en el área del proyecto. El plano deberá incluir el diseño de relocalización propuesto para la infraestructura soterrada, la cual no podrá localizarse en el área de la rotonda. Los planos deberán mostrar las líneas eléctricas existentes a permanecer, remover e instalar.
  - c. Los postes eléctricos existentes a permanecer e instalar no podrán localizarse en el área de las aceras, si no tienen las distancias requeridas para estar en cumplimiento por la Ley ADA.
  - d. El plano deberá mostrar el “Right of Way” (ROW) existente de las Carreteras PR-2, incluyendo su calle marginal, y PR-6. Todas las utilidades eléctricas deberán instalarse dentro de dicho ROW. De no existir espacio, se deberá adquirir servidumbre adicional.
  - e. En lo relacionado al cruce de las líneas eléctricas en áreas de carreteras estatales, se deberá incluir perfil mostrando los despejos verticales, los cuales deberán estar en cumplimiento con las distancias establecidas para estas utilidades.
  - f. En lo relacionado a las utilidades de Telecomunicaciones, se deberá identificar toda la infraestructura afectada con el proyecto e incluir el diseño de relocalización propuesto. Estos trabajos deberán ser coordinados con los dueños de dicha infraestructura como CLARO, Liberty, entre otros. Los planos deberán incluir información de las personas de contacto de las compañías de Telecomunicaciones. Cada una de las utilidades de las compañías deberán mostrarse en plantas separadas. No se permitirán utilidades de comunicaciones aéreas y soterradas, como registros, conductos, postes, etc., dentro de la rotonda, por lo cual, éstas deberán ser relocalizadas fuera de dicha área, por razones de seguridad, y evitar afectar el tráfico y la rotonda en caso de mantenimiento de las utilidades. El plano deberá incluir el diseño de relocalización propuesto. De proponerse soterrar infraestructura de telecomunicaciones de varias compañías localizada en una misma ruta, estos trabajos deberán ser realizados utilizando trincheras mancomunadas.
  - g. Por razones de seguridad, la rotonda, incluyendo el área de la intersección de las carreteras estatales, deberán tener niveles de iluminación mayores a 2 fc., o conforme a los estándares establecidos para el tipo de carretera. De igual modo, hay que asegurarse que se provea niveles de iluminación adecuados de transición

desde los extremos de las Carreteras PR-2 y PR-6. El alumbrado del proyecto deberá extenderse hasta los límites del proyecto, y el mismo deberá ser totalmente nuevo. El área debajo del puente deberá ser provisto de luminarias “underpass”. De proponerse instalar postes en el área del puente, se deberá incluir el detalle de la base propuesta.

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- h. El plano deberá incluir la información y especificaciones de los postes y luminarias LED propuestas para el proyecto, las cuales deberán proveer los niveles de iluminación y uniformidad (3:1) requerida para esta área. De igual modo, la luminaria deberá cumplir con especificaciones requeridas por LUMA y por esta Autoridad.
- i. El plano deberá especificar la carga de viento para la cual los postes deberán estar diseñados, conforme al mapa de vientos, revisado y vigente; la base deberá estar diseñada para aguantar las cargas de estos vientos, por lo que se deberá incluir el detalle correspondiente en los planos.
- j. Se deberá someter la corrida del programa de alumbrado utilizado indicando los niveles de iluminación propuestos en el área del proyecto. Las corridas del programa sometidas en donde se especifican los niveles de iluminación establecidos deberán identificar el área evaluada.
- k. En lo relacionado a los equipos de alumbrado, estos deberán estar conforme con los estándares de los Planos Modelos de esta Autoridad, por lo cual se deberá hacer referencia a dichos planos modelos, o incluir dichos detalles en los planos. De igual modo, el plano deberá incluir la tabla de “Load Calculation”, circuitos, detalles, notas, etc., correspondientes al proyecto propuesto.
- l. El plano de alumbrado deberá mostrar la localización de la subestación propuesta para alimentar el sistema de alumbrado. Se deberá establecer si el mismo será un medido, o el mantenimiento pasará a ser responsabilidad de LUMA, conforme al tipo de poste y luminaria propuesta. De ser medido, el Municipio Autónomo de Bayamón deberá aceptar el mantenimiento y consumo de dicho sistema. De esto ser así, se deberá someter carta de aceptación por parte del Municipio.
- m. En lo relacionado a los planos de PRASA (agua y sanitaria), se deberán identificar todas las utilidades que discurren por el área del proyecto (Carreteras PR-2, PR-6 y calle marginal de la PR-2). Además de las líneas de agua y sanitaria, se deberán mostrar las tomas, metros contadores, válvulas, registros, etc., y verificar como se verán afectadas con los trabajos propuestos. Se deberá mostrar toda la ruta de las líneas existentes dentro de los límites del proyecto, evitando mostrar solo parte del tramo. Todos los símbolos de las utilidades de PRASA deberán estar conforme con los estándares establecidos por la Autoridad de Acueductos y Alcantarillados (AAA), incluyendo los símbolos de las líneas.



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- n. No se permitirán utilidades aéreas y soterradas cruzando por el área de la rotonda, por lo cual, las líneas deberán ser instaladas o relocalizadas fuera de esta área. De igual modo, no se permitirán instalar registros en áreas de isletas centrales, por razones de seguridad y mantenimiento. El plano deberá incluir el diseño de relocalización correspondiente, el cual deberá cumplir con la Política de Acomodo de Utilidades dentro de las Carreteras de esta Autoridad y el “Roadside Design Guide” de la “American Association Of State Highway and Transportation Officials” (AASHTO). Esto aplica a todas las utilidades propuestas en el proyecto.
- o. Se deberá identificar la existencia de utilidades soterradas en el área del proyecto, para saber cómo se verán afectadas con los trabajos propuestos. Se deberán someter los planos a las diferentes agencias y compañías de utilidades para su identificación y/o utilizar la tecnología SUE, para una localización más exacta de éstas. Las utilidades existentes a permanecer, a remover y propuestas a instalar deberán ser mostradas en los detalles transversales para poder verificar de forma más clara su afectación, y establecer su localización propuesta.
- p. Los trabajos de relocalización deberán establecerse conforme a las diferentes etapas del Mantenimiento de Transito (MOT) propuesto. De ser requerido, se deberán considerar trabajos de relocalización temporeros para las diferentes utilidades, entiéndase LUMA, AAA, Telecomunicaciones, etc. De igual forma, se deberá evaluar proveer sistema de alumbrado temporero durante la construcción.
- q. Todos los planos de Utilidades, como LUMA, PRASA, Telecomunicaciones, se deberá incluir la leyenda que aplique, además de las notas, detalles, perfiles, cantidades, etc., correspondientes a los trabajos propuestos.
- r. Se deberán considerar los comentarios emitidos por la Autoridad de Acueductos y Alcantarillados (AAA), LUMA y las Compañías de Telecomunicaciones, y someter copia de estas recomendaciones, para información de esta Autoridad.

Para aclarar cualquier duda o preguntas sobre el particular, el proponente podrá comunicarse con la Ing. María Marcano de dicha Oficina de Utilidades e Iluminación al 787-721-8787, extensión 51429 o al siguiente correo electrónico: mmarcano@act.pr.gov.

- 3. El Área de Diseño de esta Autoridad evaluó el plano sometido para el proyecto de referencia e informó que se deberán cumplir con los siguientes comentarios y requisitos:
  - a. Se deberá someter el estudio de suelos.
  - b. Se deberán someter los planos estructurales del puente propuesto en la Carretera PR-2, los cuales deberán cumplir con los Planos Modelos y las Directrices de diseño, vigentes de esta Autoridad, entre otros.

- c. Se deberán someter los cálculos estructurales.
4. El plano del proyecto deberá estar debidamente firmado y sellado por un profesional licenciado y colegiado autorizado a ejercer en Puerto Rico.
  5. El diseño del proyecto propuesto deberá cumplir con el “A Policy on Geometric Design of Highways 2018” de la “American Association Of State Highway and Transportation Officials” (AASHTO), las guías de la Administración Federal de Carreteras (FHWA, por sus siglas en inglés) “Roundabouts: An Informational Guide, Second Edition- 2010 (NCHRP Report 672)”, “Roundabouts Technical Summary”, con el Manual de la “American Association Of State Highway and Transportation Officials” (AASHTO), vigente. A su vez, se deberá cumplir con el “Roadside Design Guide”, vigente, el “Separated Bike Lane Planning and Design Guide” de la “Federal Highway Administration (FHWA)”, las Guías de Planificación y Diseño de Calles Completas, el “Public Right-of-Way Accessibility Guidelines (PROWAG)” y con el Plan Comprensivo Ciclista y Peatonal Puerto Rico, adoptado por el MPO en septiembre de 2018 (<https://act.dtop.pr.gov/Bike-and-Ped-OCT262018-Final.pdf>).
  6. Se deberán ilustrar en el plano las servidumbres de paso existentes en las Carreteras PR-2 y PR-6. Se deberá incluir en el plano una sección transversal en donde se ilustren dichas servidumbres de paso existentes.
  7. De ser necesaria la adquisición de predios de terreno adicionales a las servidumbres de paso existentes en las Carreteras PR-2 y PR-6, para completar las obras necesarias en dichas carreteras, el Municipio Autónomo de Bayamón deberá adquirir dichos predios y deberá transferir los mismos al Departamento de Transportación y Obras Públicas. Se deberá someter los planos de adquisición, si alguno, para la evaluación correspondiente.
  8. Del proyecto propuesto afectar algún acceso en las vías estatales, éstos deberán tener un ancho de 3.65 metros a 7.62 metros para las residencias y de 7.62 metros a 10.67 metros para los comercios. En los lugares en donde existan aceras dichos accesos serán tipo rampa, por lo que deberán tener radios de curvatura de 1.52 metros mínimo en el enlace con la carretera estatal y en los lugares en donde no existan aceras dichos accesos serán tipo calle, por lo que deberán tener radios de curvatura de 6.09 metros mínimo en el enlace con dicha carretera estatal. Se deberá proveer una distancia del acceso al límite de la propiedad colindante de 0.91 metro mínimo, excluyendo el radio de curvatura. Los accesos propuestos en vías estatales deberán quedar retirados de la esquina con otras vías estatales a una distancia mínima de 18.29 metros, excluyendo los radios de curvatura, y los accesos en vías municipales deberán quedar retirados de la esquina con vías estatales a una distancia mínima de 12.19 metros, excluyendo los radios de curvatura.
  9. No se permitirá la construcción de verja ni de estructura alguna dentro de la servidumbre de paso existente de las Carreteras PR-2 y PR-6, por lo que no se permitirán elementos o

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estructura alguna dentro de la rotonda e isletas propuestas en las Carreteras PR-2 y PR-6.

10. Se deberán producir las transiciones correspondientes en marcado de pavimento entre la sección propuesta y la existente en las Carreteras PR-2 y PR-6.

11. Se deberá someter la geometría del diseño de la rotonda propuesta y los detalles de las intersecciones propuestas tales como: “Common Inscribed Circle Diameter”, circunferencia de la isleta central, además los radios y “offsets” de las isletas recomendadas, entre otros para la evaluación correspondiente.

12. Como parte del diseño de la rotonda, se deberá someter una corrida con el camión WB-67 (WB-20M) en “Auto turn”.

13. Toda acera, encintado, áreas verdes, pavimento, cunetas, drenajes, etc., afectados con los trabajos de este proyecto, deberán ser reparados de acuerdo con los estándares vigentes de esta Autoridad y del Departamento de Transportación y Obras Públicas. Se deberán incluir las notas y los detalles correspondientes en los planos.

14. El proyecto propuesto no deberá afectar las paradas y rutas de transporte colectivo existentes, si alguna, en el sector.

15. En lo relacionado a los planos con el diseño de los sistemas de semáforos, el plan de mantenimiento de tránsito (MOT, por sus siglas en inglés), el marcado de pavimento y la rotulación final, los mismos serán evaluados una vez se incluyan todos los requisitos indicados en esta comunicación.

16. Debido a que las calles completas son las diseñadas para permitir seguridad y cómodo acceso para peatones, ciclistas, conductores y usuarios del transporte público, independientemente de su edad, habilidades o capacidades y una calle completa implica que la movilidad en todas las formas, es segura, tiene la infraestructura para hacer que el viaje sea agradable, es estéticamente agradable y promueve el intercambio social y económico, para fines de fomentar el desarrollo urbano ordenado y la creación de un espacio público seguro y agradable a peatones y ciclistas, se deberán incorporar en el plano del proyecto las siguientes recomendaciones:

a. Las aceras y todos los espacios públicos deben facilitar el acceso y la movilidad de todas las personas que los utilicen, independientemente de sus capacidades o habilidades, conforme a los requisitos de la Ley ADA (Sec. 204 – 2010 ADA Standards for Accessible Design) y los principios de “Calles Completas” y “Diseño Universal” (ver: Plan y Guías de Diseño de Calles Completas para Puerto Rico en <https://act.dtop.pr.gov/PR-Complete-Streets-Plan-and-Design-Guidelines-Final.pdf>).

b. Se recomienda que las aceras sean diseñadas y construidas con un material que sea

de fácil mantenimiento, y que no representen en el futuro un peligro (losas sueltas o rotas, etc.) para las personas que caminen por el área.

- c. De acuerdo con el “US Access Board” se deberá evitar el diseño de rampas diagonales o rampas de tipo esquina, pues constituyen un riesgo para las personas ciegas. Se recomienda el diseño de rampas individuales por cada dirección que cruza. Por lo tanto, las rampas para personas con diversidad funcional deberán diseñarse de acuerdo con los planos modelos de esta Autoridad, deberán estar alineadas entre sí y no podrán estar ubicadas en los radios de curvatura de las intersecciones. Se deberá hacer referencia a los planos modelos de esta Autoridad, ADA 01 – 08 de junio de 2012.
- d. Las rejillas, tapas, y otros accesorios no deberán estar ubicados en rampas, zona de descanso frente a rampas, transiciones a rampas y canaletas dentro de la ruta de acceso peatonal.
- e. El diseño deberá atender eficazmente posibles problemas de drenaje pluvial en el área (acumulación de agua), específicamente en las aceras y rampas en éstas.

17. El Artículo 31 del Reglamento para el Control de Accesos y Obras o Facilidades de Construcción en las Vías Públicas de Puerto Rico, según enmendado, establece que el concesionario vendrá obligado a relocalizar cualquier poste del tendido eléctrico, de teléfono, de alumbrado o de otro tipo o tuberías utilizadas para servicios públicos y cualquier obstáculo que pudiera interferir con las obras o facilidades propuestas para lo cual deberá obtener el permiso de la agencia o compañía correspondiente. Los gastos en que se incurran serán sufragados por dicho concesionario. A su vez, se deberá cumplir con el “Roadside Design Guide”, vigente.

18. Todas las dimensiones y detalles geométricos del diseño del proyecto en las vías estatales y municipales deberán ser ilustrados en los planos en escala métrica y se deberá incluir una escala gráfica.

El proponente deberá solicitar una nueva recomendación a la Oficina de Gerencia de Permisos, en donde se deberán someter el estudio de suelos, los cálculos estructurales y los planos corregidos del proyecto en formato digital protegido (PDF) y en formato DXF georeferenciado con las coordenadas NAD83, de acuerdo con nuestros comentarios y requisitos, y ésta deberá consultar a la Oficina de Control de Accesos de esta Autoridad para la evaluación correspondiente. Los documentos y planos requeridos deberán estar firmados y sellados por un profesional colegiado autorizado y deberán cumplir con los requisitos de presentación de esta Autoridad. Se deberá hacer referencia al número de esta recomendación en la nueva solicitud.

Esta comunicación tiene un año de vigencia, **no constituye un endoso** ni una autorización para comenzar obra de construcción alguna, por lo que se deberán cumplir con los requisitos indicados en la misma y aplica al proyecto “Mejoras Geométricas a la Intersección de las Carreteras PR-2 y

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PR-6”, las cuales consisten en la construcción de un puente, una intersección tipo “High T” y una intersección tipo Rotonda, propuesto en el sector de referencia. Cualquier otro proyecto a desarrollarse en este sector, deberá ser sometido a la Oficina de Gerencia de Permisos para la evaluación y comentarios que apliquen.

Para cualquier aclaración o información adicional relacionada con este asunto, puede comunicarse con la Oficina de Control de Accesos de esta Autoridad al 787-721-8787, extensión 52805, haciendo referencia al número de control de esta carta. Las llamadas y visitas serán atendidas los días laborables de 8:30 a 11:00 de la mañana y de 1:00 a 2:30 de la tarde.

Cordialmente,



Lissette Lugo Colón, PE  
Directora  
Área de Ingeniería de Tránsito y Operaciones

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